GraybaR

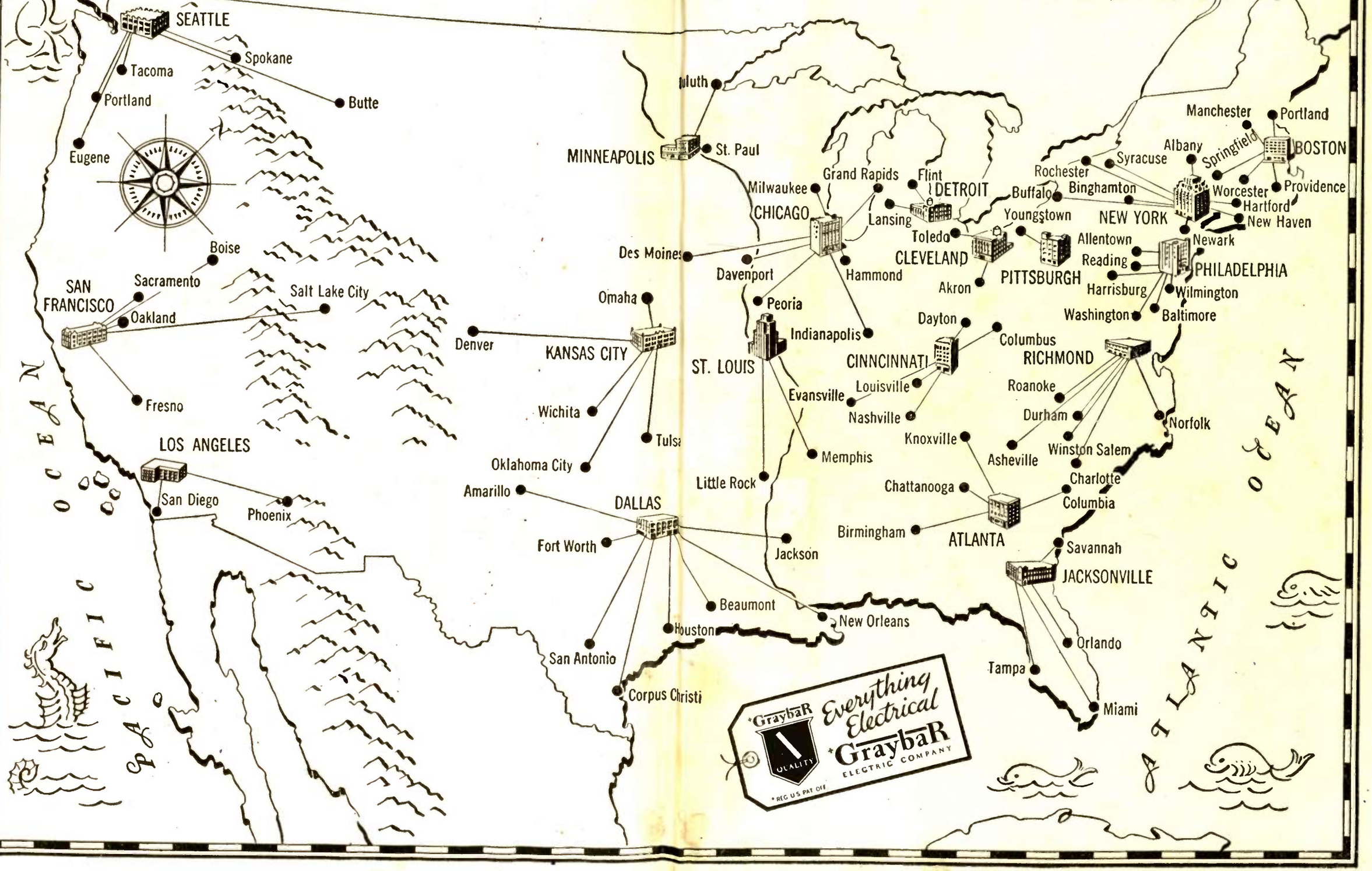
TELEPHONE SUPPLIES

Catalog No. 11-S

CENTRAL OFFICE EQUIPMENT AND SUPPLIES
MISCELLANEOUS SUBSCRIBER EQUIPMENT
POLE LINE AND UNDERGROUND EQUIPMENT
TOOLS, WIRE, CABLE AND ACCESSORIES

GraybaR
ELECTRIC COMPANY

A NATION-WIDE SERVICE OF DISTRIBUTION



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TELEPHONE SUPPLIES

1947

GraybaR

THE INDEPENDENT

• Experience

In a specialized business such as the telephone operating company, experience on the part of material suppliers with telephone problems and needs can be very useful. Even on lines widely used in other industries there are special telephone uses and applications which your supply house must be familiar with, if you are to be served quickly and correctly. Graybar celebrates its 79th year in 1948 and since the beginning of the telephone industry has been in close touch with telephone requirements. We sincerely believe that in experience we are fitted to serve you well.

• Tested Products

Another important requirement for the supply house serving telephone companies is—do they handle only tried and tested products? By tried and tested we mean designed, built and successfully used in the telephone industry, not for some other application. Our aim for many, many years has been to represent only manufacturers whose products completely meet the strictest requirements of practical telephone use. We believe that Graybar distributed telephone supplies will meet any reasonable test you want to give them.

• Availability

Another important factor in choosing your source of telephone supply items is availability. Your nearby Graybar warehouse makes readily available to you a complete line of telephone supplies. While some items are scarce today we can find a way to supply what you need. The list of Graybar Houses shown at the back of this catalog suggests that we can give you convenient availability.

Service for

TELEPHONE INDUSTRY

• Guarantee of Satisfaction

In the maintenance of telephone service you can't afford to gamble. In case of fire, illness, or other emergency, telephone service may save a life or valuable property. A replacement if defective guaranty, while useful and important, will not restore service if materials or equipment fail. Buy from a supply house that gives you assured quality and which also has established with its customers over the years the reputation of selling goods that give a full measure of satisfaction.

• Service Setup

Service is a much abused word and one requiring definition. We mean that we will do our level best to help you select the product best suited to your needs, to get that product to you where and when you want it and to see that this product does the job the way you want it done. All this with the least expenditure on your part of time or worry about our performance of our supply job. If not now using Graybar Telephone Supply Service, try us on your next order, whether it is large or small. Our Service Setup is particularly planned to meet your needs for all types of telephone supplies—no order too small or too large.

• Wider Selection of Items

Through our years of service to the telephone industry and our relations with the leading manufacturers of telephone supplies we have gradually built up an extremely complete line of supplies which are best suited to telephone needs. Whatever your supply need, we can supply it quickly, often from stock and if not, experience tells us where to get it most rapidly and with assurance that it will satisfy your needs.

SECTIONAL INDEX

Western Electric

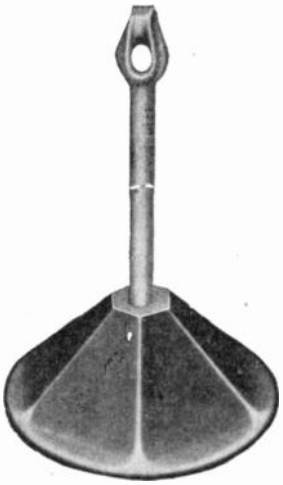
TELEPHONE APPARATUS

We do **not** list WESTERN ELECTRIC telephone cable and equipment in this catalog. However, full information and prices from the new No. 11 WESTERN ELECTRIC catalog are available at your nearby Graybar office. Below is a partial list of these items:

Apparatus Blanks
Backboards
Battery Boxes
Bells
Binding Posts
Booths, 5 and 6
Booth Switches—Railway
Buzzers
Electric Clocks
Carrier Telephone Equipment
Condensers
Condenser Adapters
Condenser Brackets
Condenser Straps
Connecting Blocks
Cords
Cord Accessories
Cord Fasteners
Cord Hooks
Cord Pulleys
Cord Tips
Cord Weighs
Designation Strips
Dials
Dial Adapters
Dial Mountings
Dial Number Plates
Dial Testers
Distributing Frames
Distributing Rings
Fanning Strips
Fuses
Fuse Blocks
Fuse Chambers
Fuse Posts
Gauges
Gongs
Gong Attachments
Hand Sets
Hand Set Hangers
Hand Set Mountings
Hand Telephone Sets
Head Bands
Heat Coils
Induction Coils
Jacks
Jack Mountings
Jack Spacers
Keys
Key Levers
Key Mountings
Key Spacers
Key Units
Lamps
Lamp Caps
Lamp Sockets
Lamp Socket Mountings
Loading Coils
Message Registers
Mounting Plates
Number Plates
Number Plate Dials
Plugs
Plug Seats
Plug Trouble Caps
Protectors
Protector Blocks
Protector Groups
Protector Mountings
Push Buttons
Receivers
Receiver Units
Relays
Relay Covers
Repeaters
Repeating Coils
Resistances
Resistance Lamps
Retardation Coils
Ringers
Ringer Oscillators
Signals
Signal Mountings
Signal Plugs
Supervisory Signals
Subscriber Sets
Switch Hooks
Telephones
Telephone Central Battery
Telephone Set Mountings
Terminal Punchings
Terminal Strips
Testing Apparatus
Tools
Transmitters
Transmitter Arms
Transmitter Attachments
Transmitter Brackets
Transmitter Arm Brackets
Wire

Chance Pyramid Cone Anchors

Without Rods



The Chance cone anchor has flat opposing faces and flaring base, creating a wedging action that greatly increases holding power.

Nut retainer aids installation.

Anchor No.	Size Anchor Inches	Area Sq. In.	Rod, Inches Diam.	Rod, Inches Lgth.	Soil Holding Str., Lb. Soil Classification *2	3	4	5	Wt. Lb. per 100
8	8	63	5/8	84	Rod Strength	14000	11000	9000	650
10	10	104	5/8	84	Rod Strength	19000	15000	11500	975
12	12	132	3/4	96	Rod Strength	21500	17500	14000	1575
16	16	239	3/4	108	Rod Strength	31000	25000	20000	2600
19	19	336	1	120	Rod Strength	38500	31000	25000	4850

*In shale or stone, these anchors develop the strength of the rod.

Chance Steel Expanding Anchors

Without Rods

The Chance Steel Expanding Anchor will withstand the most severe punishment without danger of breakage. It is fool-proof in construction and powerful in pull.

Easily installed in any position. Nut retainer prevents riding up the rod during expansion.

No.	Size Anchor In.	Area Sq. In.	Rod, Inches Diam.	Rod, Inches Lgth.	Soil Holding Str. Lb. Soil Classification *3	4	5	6	7	Wt. Lb. per 100
62	..	50	1/2	84	13000	11000	9000	7000	4000	...
64	6	70	1/2	84	16000	14000	11000	8500	5000	745
826	8	98	5/8	84	20000	17500	13500	10500	7000	1018
846	8	115	5/8	84	22000	19000	15000	11500	7500	1384
8410	8	130	3/4	84	24000	20500	16000	12500	8500	1567
841	8	130	1	84	24000	20500	16000	12500	8500	1583
1044	10	200	1	108	31000	26500	21000	16500	12000	2525
124	12	300	1	120	40000	34000	26500	21500	16000	4175

*Not recommended for hard, dry soils.

Chance Never-Creep Anchors

Without Rods

This anchor pulls against solid undisturbed earth; none of the holding area is wasted.

Easy to handle and easy to install. To install, bore the hole, drive rod into hole, and hang plate on rod.

Consists of a rod and a plate. Rod is drop-forged steel with thimble-eye head and pointed Never-Creep knob on lower end. Plate is a certified malleable casting.

Order the rod separately.

Steel

No.	Size of Anchor Inches	Area Sq. In.	Rod, Inches Diam.	Rod, Inches Lgth.	Soil Holding Str. Lb. Soil Classification 3	4	5	6	7	Wt. Lb. per 100
617	6x17	102	5/8	84	21500	18500	14500	11500	7500	904
622	6x22	132	3/4	96	25000	21500	17500	13500	9500	1180
822	8x22	176	3/4	96	30000	26000	20500	16000	11500	1689
827	8x27	216	3/4	108	34000	29000	23500	18500	13500	1935

Malleable

835	8x35	280	1	108	41000	34500	27500	22000	16500	2750
1040	10x40	400	1	120	50000	43000	34000	27500	21000	4761

No. 15 Chance Never-Creep Installing Bars

Used for placing the plate in position in the hole; the opposite end is for tamping. Length, 10 feet.

Net weight, 9 pounds.

Chance Expanding and Tamping Bars

Fits over rod. Used to expand anchor and tamp loose dirt.

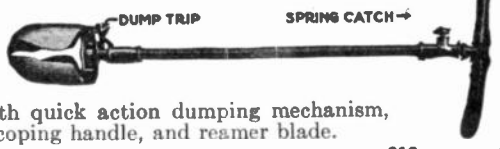
	Regular 10	Regular 12	Heavy 10H	Heavy 12H
No.	10	12	10H	12H
Length.....feet	10	12	10	12
Net Weight.....pounds	21	28	25½	33½

No. 16 Chance Never-Creep Mauls

Used especially for driving Never-Creep Rods. Has two wood faces and two iron faces.

Net weight, 12 pounds.

Chance Heavy Telegraph Augers



With quick action dumping mechanism, telescoping handle, and reamer blade.

No.	812	610
Diameter of Holes Bored.....inches	8–12¾	6½–8½
Net Weight.....pounds	28	26

Chance No-Wrench Screw Anchors

With Rods

This anchor has a large triple eye rod which admits a bar for a wrench to use in screwing the anchor down.

Easy to install. Hub is small and the blade is sharp and thin. Drill point aids dirt displacement and speeds installation.

Has extra holding power because of small hub and wide tapered blade. Drop-forged steel rod and anchor are securely welded together at both top and bottom of anchor blade.

No.	Size Anchor Inches	Area Sq. In.	Rod, Inches Diam.	Rod, Inches Lgth.	Soil Holding Str., Lb. Soil Classification 4	5	6	7	No. In. Bdl.	Wt. Lb. per 100
4345	4	12½	¾	54	6000	4500	3000	1500	5	805
6346	6	28	¾	66	8500	6500	5000	2500	5	1040
816	8	50	1	66	11000	8000	6500	3500	3	1900
10146	10	78	1¼	66	13000	10000	8000	4500	1	3200
10148	10	78	1¼	96	16000	12500	10000	6000	1	4100

Chance Swamp Screw Anchors

Without Pipe

The Chance Swamp Anchor is so constructed that the pipe wedges into the hub and becomes a part of the anchor.

Extra lengths of pipe may be added to attain the desired depth.

The triple eye nut accommodates 1, 2, or 3-guy strands.

No.	Size Anchor Inches	Area Sq. In.	Size Pipe In.	*Soil Holding Str., Lb. Soil Classification	No. In. Bdl.	Wt. Lb. per 100
8125-A	8	50	1¼	6000	2	1300
10150-A	10	78	1½	9000	2	1600
122-A	12	113	2	12000	2	2670
152-A	15	176	2	15000	1	3675

*These values are only typical figures for installations extending 8 feet into the plastic clay underneath the layer of mushy silt or quicksand. Because of the wide variations found in testing in swamps, a test set-up is recommended where extensive guying in a swampy area is contemplated. High loads can be sustained where these anchors are driven very deep.

Chance Rock Anchors

With Rods

Before Expansion

This anchor eliminates the necessity for carrying lead, concrete, or grouting equipment on the job.

Installed in a small hole bored with hand or mechanical rock drill. Expanded and wedged against the side of the hole by turning the rod.

When strain is applied the wedge becomes tighter.

This anchor does an excellent, safe, rock anchoring job.

After Expansion

No.	Size Anchor Inches	Rock Drill Size Inches	Rod, Inches. Diam.	Rod, Inches. Lgth.	Soil Anchor Ultimate Str., Lb. Soil Classification 1	Wt. Lb. per 100
R-315	1¾	2	¾	15	Rod Strength	498
R-330	1¾	2	¾	30	Rod Strength	678
R-353	1¾	2	¾	53	Rod Strength	954

Set in holes drilled 2 inches in diameter and 12 inches deep in hard rock, these anchors will develop the full strength of the anchor rod.

Chance Wrench Type Screw Anchors

With Rods

This wrench type anchor has a socket and a square shank combined. A regular screw anchor wrench fits down over the square shank that is built up inside the socket.

There is no danger of splitting the wrench and no need for extra wrench fittings.

Anchor is shipped complete with threaded steel rods and thimble-eye nuts.

No.	Size Anchor Inches	Area Sq. In.	Rod, Inches Diam.	Rod, Inches Lgth.	Soil Anchor Ultimate Strength, Pounds Soil Classification 4	5	6	7	No. In. Bdl.	Wt. Lb. per 100
1126-S	6	28	½	67	8500	6500	5000	2500	5	988
1586-S	6	28	⅝	67	8500	6500	5000	2500	5	1120
1588-S	8	50	⅝	67	11000	8000	6500	3500	3	1680
1348-S	8	50	¾	67	11000	8000	6500	3500	3	1980
15810-S	10	78	⅝	67	13000	10000	8000	4500	3	2170
13410-S	10	78	¾	67	13000	10000	8000	4500	3	2455

No. 600 Chance Screw Anchor Wrenches

This wrench gives ample leverage for turning a screw anchor into the ground.

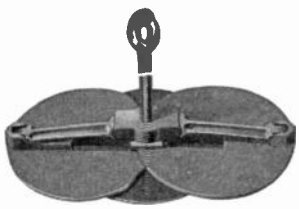
Net weight, 36 pounds.

Everstick Expanding Anchors

For All Types of Pole Line Construction

2-Way Anchors

Open



Closed

Sturdy anchor, easy to install.

No.	Each	Anchor Hole In.	Size Rod or Smaller In.	Area Expanded Sq. In.	Wt. Anchor Lb.	Holding Power, Pounds Sand	Clay	Hardpan
62	....	6	5/8	55	7	3000	5000	7000
82	....	8	3/4	100	11	6000	11000	16000

3-Way Anchors

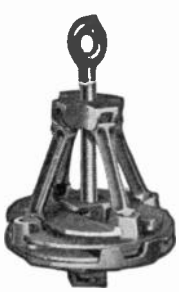
Open

Closed

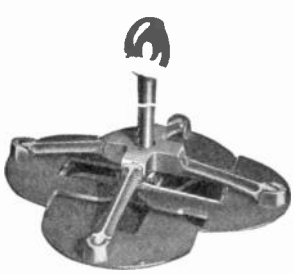
Ideal guy anchor for all around construction and maintenance. Easy to install. Simple to expand. Maximum holding power.

No.	Each	Anchor Hole In.	Size Rod or Smaller In.	Area Expanded Sq. In.	Wt. Anchor Lb.	Holding Power, Pounds Sand	Clay	Hardpan
633	....	6	5/8	65	7½	5000	8000	11000
834	....	8	5/8	90	11	6000	10000	14000
836	....	8	3/4	110	14	8000	13000	18000
8310	....	8	3/4	125	15	12000	18000	24000
8312	....	8	1	125	16	12000	18000	24000
10316	....	10	1	175	28	18000	32000	45000

4-Way Anchors



Open



Closed

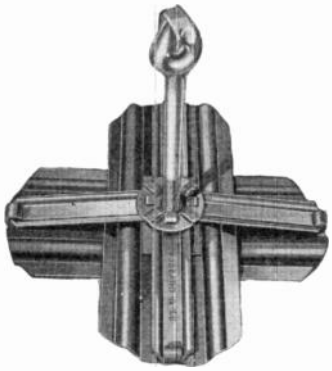
For heavy duty guying. Ease of expansion, super strength, and excess holding power are features of this anchor.

No.	Each	Anchor Hole In.	Size Rod or Smaller In.	Area Expanded Sq. In.	Wt. Anchor Lb.	Holding Power, Pounds Sand	Clay	Hardpan
64	....	6	5/8	70	9	5000	8000	12000
84–¾"	....	8	3/4	125	16	12000	18000	24000
84–1"	....	8	1	132	16	12000	18000	24000
104	....	10	1	210	30	20000	35000	50000
124	....	12	1¼	310	55	30000	50000	70000

Hubbard Hub-Anchors

Expanding Type

Patent Applied For



Hubbard Anchors are made in two styles, two-way and four-way, and with various areas. Installation is accomplished by digging an 8-inch diameter hole (6-inch for No. 26050) at the proper angle for the guy, inserting the anchor and rod and applying any standard expanding tool until the anchor is fully expanded. Tamp dirt solidly after each three or four shovels-full, while back filling.

Hub-Anchors are constructed of heavy gage steel and will stand expansion into the hardest types of soil encountered without deformation.

No.	Per 100 Pcs.	Style	Area Sq. In.	Rod Diameter Inches	Approx. Ship. Wt. Lbs. per 100 Pcs.
26050	....	2-Way 6"	53	½ & 5/8	485
28090	....	2-Way 8"	94	5/8 & ¾	965
48100	....	4-Way 8"	112	5/8 & ¾	1350
48120	....	4-Way 8"	125	5/8 & ¾	1400
48135	....	4-Way 8"	135	5/8 & ¾	1500

Everstick Cone Anchors

Used wherever rigid type anchor is required. Made of malleable iron with special ribbed construction which adds to its holding power and strength.

Everstick nut housing feature is used to assure a compact, tight connection between rod and anchor.

Holding Power. In setting cone anchor, a sufficient amount of rock, dependent upon soil conditions, must be well tamped on top of anchor before back filled.

No.	6-C	8-C	10-C	12-C	16-C	19-C	23-C
Each	...	...	....	....	....	....	....
Size Anchor and Hole ....in.	6	8	10	12	16	19	23
Size Rod or Smaller.in.	5/8	¾	¾	1	1	1	1¼
Weight Anchor.lb.	2½	5	10½	14	20	40	54

Hubbard Steelwing Anchors

Hot Galvanized

Anchor turns into the ground like a corkscrew and holds against a large area of undisturbed earth. It is easy to install or reclaim and the large Hubeye permits the insertion of a bar for leverage. The wing diameter is stamped on the rod (except Nos. 7542 and 7543) just under the eye as a permanent, above-ground record of its holding strength.

The No. 7524 Baby Steelwing, furnished with a 4-inch wing, is designed for permanent light guying or a temporary anchorage for heavier guys.

Nos. 7542 and 7543 are smaller sizes designed for anchoring fences, trees and other similar light work.

Hubeye No.	Hubeye Per 100	E.E.I. Eye No.	E.E.I. Eye Per 100	Wing Diam. In.	Wing Pitch In.	Rod Diam. In.	Overall Lgth. Ft.	Shipping Wt. Lb. per 100
....	....	*7542	....	2¾	1⅜	½	1½	130
....	....	7543	....	2¾	1⅜	½	2½	200
7524	....	†7524-A	....	4	1¾	¾	4½	800
7526	....	7526-A	....	6	1½	¾	5½	1100
7527	....	7527-A	....	7	1¾	1	5½	1750
7528	....	7528-A	....	8	2	1	5½	2000
7530	....	7530-A	....	10	2½	1¼	5½	3200
7550	....	7550-A	....	10	2½	1¼	8	4300

*Open eye. †A. T. & T. Co. Std.
Prices upon application.

Swamp Anchors

Consists of a steel wing and short shaft. Short shaft is threaded to take a 1¼-inch standard pipe coupling or 1½x1¼-inch malleable iron pipe reducer.

The pipe coupling and reducer are not included but will be furnished if specified.

A special Hubeye nut, threaded to fit the pipe, is provided for the guy attachment.

No.	Wing, Inches Diam.	Wing, Inches Pitch	Rod Diam. In.	Overall Lgth. Ft.	Pipe Size In.	Ship. Wt. Lb. per 100
7548	8	2	1.66	*	1¼	† 920
7549	10	2½	1.66	*	1½	†1370

Prices upon application.
*10 inches plus pipe.
†Less pipe.

No. 7546 Hubbard Rock Guy Bolts

Hot Galvanized

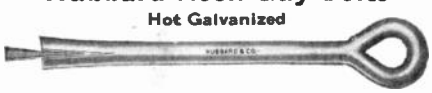
Used in solid rock formations or in stone or concrete walls.

Of 1-inch round steel, 18 inches over all, with standard drop forged oval eye (1½x2 inches inside eye).

No. **7546**, Ship. Wt. 660 Pounds.....per 100 **$237.98**

Hubbard Rock Guy Bolts

Hot Galvanized



Used in solid rock formations, in stone or concrete walls.

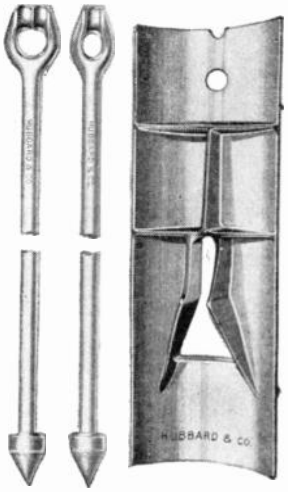
Has split bottom end and wedge that spreads end as bolt is driven against bottom of hole. Of one-inch round steel, 18 inches over all with standard drop forged oval eye (1½x 2-inch inside eye).

Shipping weight per 100, 665 pounds.

*No. **7547**, Eye Bolt and Wedge.....per 100 **$279.69**
No. **7547-G**, Hubeye Bolt and Wedge.....per 100 **300.95**

*A. T. & T. Co. Std.

Hubbard Plate Anchors and Anchor Rods



Hubbard plate anchors are made of malleable iron and are used with Hubeye plate anchor rods.

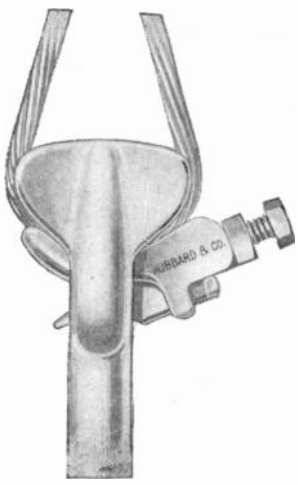
A hole is dug at right angles to the line of stress and the rod driven through to it. The anchor plate is then lowered by an installing tool and hooked over the conical end of the anchor rod. Tension is applied and the hole is filled.

Plate Anchors

No.	Per 100	Approx. Area Sq. In.	Anchor Size, In. Width	Anchor Size, In. Length	Rod Diam. In.	Ship. Wt. Lb. per 100
2615	....	90	6	15	½–⅝	844
2618	....	110	6	18	⅝–¾	969
2620	....	120	6	20	⅝–¾	1075
2820	....	160	8	20	⅝–¾	1650
2825	....	200	8	25	¾	1950
2830	....	240	8	30	¾	2875
2835	....	280	8	35	¾–1	2750
1040	....	400	10	40	1	4761
1300	....	Installing Tool				900

Plate Anchor Rods

Hubeye No.	Hubeye Per 100	Hubeye Ship. Wt. Lb. per 100	Tu-Hubeye No.	Tu-Hubeye Per 100	Tu-Hubeye Ship. Wt. Lb. per 100	Diam. Rod In.	Overall Lgth. Ft.
28405	$143.68	390	.....	.....	....	½	5
28406	155.18	450	.....	.....	....	½	6
28407	167.30	510	.....	.....	.....	½	7
28416	167.60	680	28516	$217.42	688	⅝	6
28417	185.89	755	28517	255.00	763	⅝	7
28418	204.11	830	.....	.....	....	⅝	8
28426	236.60	960	28526	240.99	970	¾	6
28427	263.00	1120	28527	267.39	1130	¾	7
28428	289.41	1245	28528	293.79	1255	¾	8
28429	315.83	1350	28529	320.19	1460	¾	9
28430	342.36	1500	.....	.....	....	¾	10
28437	460.62	2150	28537	467.31	2160	1	7
28438	509.43	2300	28538	514.65	2310	1	8
28440	607.39	2600	28540	611.14	2610	1	10
.....	.....	....	28542	707.63	2910	1	12



No. 4243 Hubbard Bonding Clamps

Hot Galvanized

Affords a uniform contact area between the guy strand and the curve of the Hubeye.

Weight per 100, 20 pounds.

No. **4243** . . .per 100 **$40.86**

Hubbard Anchor Rods

Hot Galvanized

Standard oval eye anchor rod used to form the dead-man type of anchorage. The eye is drop forged and is stronger than the rod itself. Diameters of ¾ inch or under have rolled threads, larger diameters have cut threads. All rods threaded 3½ inches.

No.	Per 100	Diam. Rod In.	Overall Lgth. Ft.	Width Eye In.	Length Eye In.	Shipping Wt. Lb. per 100
7355	$107.75	½	5	1¼	1½	350
7356	119.25	½	6	1¼	1½	405
7357	130.79	½	7	1¼	1½	510
7415	148.09	⅝	5	1½	2	550
§7416	166.41	⅝	6	1½	2	650
‡7417	184.70	⅝	7	1½	2	750
§7418	202.99	⅝	8	1½	2	850
7426	230.57	¾	6	1½	2	910
7427	256.09	¾	7	1½	2	1060
‡§7428	281.61	¾	8	1½	2	1220
7429	308.68	¾	9	1½	2	1360
§7430	335.92	¾	10	1½	2	1520
7438	490.70	1	8	1½	2	2265
§7440	587.27	1	10	1½	2	2735
§7442	683.84	1	12	1½	2	3200
7444	1129.65	1¼	10	1¾	2¼	4500

Hubbard Hubeye Anchor Rods

Hot Galvanized

Hubeye

Tu-Hubeye

Designed to provide a smooth curve with an ample radius for protection to the strand at the bend, thereby eliminating the use of a guy thimble. The strength of the Hubeye is greater than that of the rod.

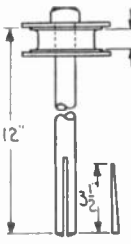
The Tu-Hubeye, for two guys, is forged with the same generous radius as the Hubeye.

Hubeye			Tu-Hubeye				
No.	Per 100	Ship. Wt. Lb. per 100	No.	Per 100	Ship. Wt. Lb. per 100	Diam. Rod In.	Overall Lgth. Ft.
8405	$117.33	370	....	.....	....	½	5
8406	128.84	440	....	.....	....	½	6
†8407	140.38	500	....	.....	....	½	7
8415	157.68	550	8515	$164.60	615	⅝	5
8416	176.00	654	8516	183.14	674	⅝	6
8417	194.29	758	8517	201.68	778	⅝	7
†8418	212.57	862	8518	219.71	882	⅝	8
8426	243.50	960	8526	245.31	1000	¾	6
8427	269.03	1145	8527	272.38	1195	¾	7
8428	294.55	1400	8528	299.45	1440	¾	8
†8429	321.62	1460	†8529	325.16	1500	¾	9
8430	348.86	1665	8530	352.38	1705	¾	10
8437	461.03	2050	8537	466.76	2175	1	7
8438	508.67	2300	8538	514.11	2400	1	8
8439	556.32	2550	8539	561.41	2625	1	9
†8440	605.24	2800	†8540	610.59	2860	1	10
8442	701.80	3370	8540½	707.06	3360	1	12
....	.....	....	†8541	1173.41	4400	1¼	10
....	.....	....	8542	1501.48	5230	1¼	12

†A. T. & T. Std. ‡A. R. A. Std. §E. E. I. Std.

Hubbard Rock Guy Anchors

Hot Galvanized



No. 7544

Used in solid rock or in masonry. Installed at about right angle to line of guy pull.

No. 7544 consists of a 1-inch round steel bolt with a 1½-inch square head, 2 round washers and a round thimble. Bottom of bolt is split to spread end of anchor.

No. 7545 consists of 2 drop forged, wedge shaped sides, 1 shim and a ¾x2½-inch machine bolt. Proper size hole is drilled and 2 sides are placed in hole. Shim is driven between sides, expanding them against sides and bolt is re-assembled.

No.	*7544	*††7545
Per 100	$442.59	215.29
Size Hole to Be Drilled.....inches	1	1¾
Length Overall.....inches	12¾	9½
Approx. Ship. Wt. per 100 Pieces...lb.	400	520

* A.T.&T. Co. Std. †Western Union Std. ‡A.R.A. Std.

Hubbard Steel Ground Rods

With Copper Wire—Hot Galvanized

The wired rod has a length of No. 12 gage copper wire bonded firmly to upper end with five inches free for making ground wire connection.

All possibility of wire stripping loose is eliminated by the top turn being looped under itself, relieving the bond from carrying strain concentrated at that point. Special lengths of wire are available.

No.	Per 100	Diameter Inches	Length Feet	Ship. Wt. Lb. per 100
*9505	$94.76	½	5	365
9506	107.70	½	6	418
9516	148.46	⅝	6	660
9538	477.96	1	8	2420

*A. T. & S. Co. Std.

Without Copper Wire—Hot Galvanized

Ground rod without wire has a hole at the upper end for attaching ground wire. Hole is located 1 inch from the upper end of rod.

	No.	Per 100	Diameter Inches	Diameter Hole Inches	Length Feet	Shipping Wt. Lb. per 100
Without Wire	9555	$48.00	⅜	⅛	5	203
	9556	55.58	⅜	⅛	6	245
	9565	70.61	½	5/32	5	346
	9566	86.93	½	5/32	6	415
	9567	99.60	½	5/32	7	484
	9576	122.44	⅝	3/16	6	650
	9577	141.16	⅝	3/16	7	750
	9578	160.90	⅝	3/16	8	850
	9580	200.06	⅝	3/16	10	1043
	9582	239.79	⅝	3/16	12	1251

Hubbard-Copperweld Ground Rods

Made by molten weld process which assures a permanent bond between the copper and the steel. Prices upon application.

⅜-In. Diam.			⅝-In. Diam.			¾-In. Diam.		
No.	Lgth. Ft.	Ship. Wt. Lb. per 100	No.	Lgth. Ft.	Ship. Wt. Lb. per 100	No.	Lgth. Ft.	Ship. Wt. Lb. per 100
9415	5	200	9442	12	1280	9458	18	2890
9416	6	240	9443	13	1390	9459	19	3045
9387	7	280	9443½	14	1500	9460	20	3100
9388	8	320	9444	15	1605	1-In. Diam.		
½-In. Diam.			9656	16	1715	9466	6	1650
9425	5	340	9657	17	1825	9467	7	1925
9426	6	410	9658	18	1935	9468	8	2200
9427	7	480	9659	19	2045	9469	9	2475
9428	8	550	9660	20	2155	9470	10	2750
9429	9	615	¾-In. Diam.			9471	11	3025
9430	10	685	9445	5	775	9472	12	3300
9431	11	755	9446	6	930	9473	13	3575
9432	12	825	9447	7	1085	9473½	14	3850
9433	13	895	9448	8	1240	9474	15	4130
9434	14	965	9449	9	1395	9476	16	4405
9434½	15	1035	9450	10	1550	9477	17	4680
⅝-In. Diam.			9451	11	1705	9478	18	4955
9435	5	535	9452	12	1860	9478½	19	5230
9436	6	640	9453	13	2015	9479	20	5500
9437	7	750	9454	14	2170	9691	25	6875
9438	8	855	9455	15	2425	9693	30	8250
9439	9	960	9456	16	2580	9695	35	9625
9440	10	1070	9457	17	2735	9697	40	11000
9441	11	1180						

Type B Hubbard-Copperweld Ground Wire Clamps

Designed to allow the use of Hubbard-Copperweld ground rods and clamps at a lower assembly cost.

Provides a permanent high pressure connection, which is made quickly without the use of solder.

With Safety Set-Screw Safety Screw Type No.	With Square Head Bolt Square Head Bolt Type No.	Rod Diam. In.	Wire Size	Approx. Ship. Wt. Lb. per 100
6490	6590	⅜	6 to 14 A.W.G.	8
6491	6591	½	2 to 10 A.W.G.	15
6492	6592	⅝	2 to 8 A.W.G.	30
6493	6593	¾	2 to 8 A.W.G.	40

Hubbard Eye Bolts

Hot Galvanized

Standard Oval Eye Bolts

No.	Per 100	Diam. Rod Inches	Length Under Eye Inches	Width Eye Inches	Length Eye Inches	Shipping Wt. Lb. Per 100
39937	.....	½	6	1¼	1½	82
39939	.....	½	8	1¼	1½	94
39941	.....	½	10	1¼	1½	107
39943	.....	½	12	1¼	1½	120
39945	.....	½	14	1¼	1½	134
39947	.....	½	16	1¼	1½	147
39949	.....	½	18	1¼	1½	160
39951	.....	½	20	1¼	1½	172
§39956	$51.33	⅝	6	1½	2	131
39957	.....	⅝	7	1½	2	138
§39958	53.94	⅝	8	1½	2	145
39959	.....	⅝	9	1½	2	157
§39960	56.69	⅝	10	1½	2	169
§39962	59.20	⅝	12	1½	2	179
§39964	61.81	⅝	14	1½	2	192
§39966	64.46	⅝	16	1½	2	205
§39968	67.20	⅝	18	1½	2	229
§39970	69.79	⅝	20	1½	2	242
39972	72.42	⅝	22	1½	2	267
39974	75.04	⅝	24	1½	2	280

§E.E.I. Std.

Double Arming Eye Bolts

Furnished with three nuts and roll-threaded to 1½ inches from the eye. Furnished with the standard E.E.I. eye.

29784	$104.93	⅝	14	...	...	203
29786	108.04	⅝	16	...	...	253
29788	111.73	⅝	18	...	...	267
29790	115.42	⅝	20	...	...	286
29794	131.39	¾	14	...	...	290

Hubbard Screw Eye Bolts

Hot Galvanized

Supplied with either E.E.I. type eyes or Hubeye. Threads are gimlet point style.

No.	39929	39930	39931	39932
Per 100	$50.78	61.42	83.29	105.80
Diameter.....inches	⅜	½	⅝	¾
Length Under Eye....inches	2½	6	6¾	6¾
Shipping Weight .....per 100 pounds	20	77	112	183

Hubbard Hubeye Bolts

Hot Galvanized

No. 9062

No. 9152

Hubbard drop forged straight and angle Hubeye bolts are designed to provide a smooth curve through the eye with a large radius for protection to the strand at the bend, thereby eliminating the use of guy thimbles.

The eyes of the angle Hubeye bolts are forged at a 45° angle to the shank.

One-inch sizes have cut threads, smaller sizes are roll-threaded.

All Hubeye bolts are drive pointed.

Straight No.	Straight Per 100	Angle No.	Angle Per 100	Dimensions, Inches Diam.	Lgth. Under Eye	Lgth. of Thread	Approx. Ship. Wt. Lb. per 100
9056	$61.94	9149	$67.41	⅝	6	4	110
9057	63.23	9149½	68.74	⅝	7	6	121
9058	64.55	9150	70.06	⅝	8	6	132
9059	65.88	9150½	71.35	⅝	9	6	143
9060	67.20	9151	72.67	⅝	10	6	154
9062	69.92	9152	75.41	⅝	12	6	176
9064	72.53	9153	78.00	⅝	14	6	198
9065	73.90	9153½	79.27	⅝	15	6	209
9066	75.28	9154	80.53	⅝	16	6	220
9068	77.89	9155	83.39	⅝	18	6	242
9070	80.53	9156	86.11	⅝	20	6	264
9076	89.56	9159	96.38	¾	6	4	179
9078	94.34	9160	101.14	¾	8	4	204
9080	99.12	9161	105.90	¾	10	6	229
9082	103.73	9162	110.55	¾	12	6	255
9084	108.51	9163	115.45	¾	14	6	280
9085	110.95	9163½	117.82	¾	15	6	306
9086	113.41	9164	120.19	¾	16	6	319
9088	118.19	9165	124.97	¾	18	6	344
9090	123.05	9167	129.73	¾	20	6	369
9092	127.81	9168	134.49	¾	22	6	395
9094	132.70	9169	139.25	¾	24	6	420
8458	261.31	9170	275.42	1	8	6	400
8460	272.32	9171	287.02	1	10	6	448
8462	283.69	9172	298.39	1	12	6	497
8464	294.07	9173	309.90	1	14	6	546
8466	304.22	9174	320.78	1	16	6	594
8468	315.10	9175	332.53	1	18	6	642
8470	320.55	.....	.....	1	20	6	690

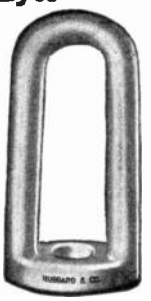
Hubbard Drop Forged Bolt Eyes

Hot Galvanized

No. 7514

Used extensively for dead-ending and guying. The standard bolt eye may be used for attaching dead-ending insulators to the cross arm. The long type is often used for supporting suspension insulators with a hook in the cap of the upper unit.

Unthreaded slot provides clearance for the insertion of bolt.



No. 7515

Standard Bolt Eye

No.	Per 100	Diam. Bolt In.	Bolt Hole In.	Width Eye In.	Length Eye In.	Shipping Wt. Lb. per 100
7514	$58.09	5/8	11/16 x 13/16	1 1/8	1 21/32	83

Long Bolt Eye

7515	$65.05	5/8	11/16 x 13/16	1 3/8	3 9/32	117
7516	65.03	3/4	13/16 x 1 1/16	1 3/8	3 9/32	119
5717	58.46	5/8	11/16 x 1	1 5/16	2 13/32	109
7518	58.46	3/4	13/16 x 1 1/16	1 5/16	2 13/32	112

Hubbard Drop Forged Straight Bolt Hubeyes

Hot Galvanized

Has unthreaded slot to provide clearance for the insertion of bolts. Used for cross arm guying where a circuit has been dead-ended, although it is suitable for many other guying and dead-ending needs.

Follows the standard Hubeye design. Will take strand 1/2 inch diameter and under.

No.	7519	7520
Per 100	$73.62	73.75
Diameter Bolt ... inches	5/8	3/4
Bolt Hole ... inches	11/16 x 1	13/16 x 1 1/8
Width Eye ... inches	1 5/16	1 5/16
Length Eye ... inches	2 1/2	2 1/2
Shipping Weight per 100 ... pounds	138	138

Hubbard Drop Forged Angle Bolt Hubeyes

Hot Galvanized

Used almost exclusively for down guys. Eliminates the use of strain plates, guy hooks, guy thimbles, nails and lag screws and saves from three to five feet of guy strand. Often used on the nut end of a bolt for a down guy attachment with a straight bolt eye under the head of the bolt as a dead-end.

Nos. 1100 and 1101 will take strand 1/2 inch diameter and under. Furnished with round unthreaded hole, no clearance being needed.

No.	1100	1101
Per 100	$55.10	55.30
Diameter Bolt ... inches	5/8	3/4
Bolt Hole ... inches	3/4	7/8
Width Eye ... inches	5/8	3/4
Length Eye ... inches	1	1
Ship. Wt. per 100 ... pounds	118	118

Hubbard Drop Forged Standard Eye Nuts

Hot Galvanized

This eye nut requires the use of a thimble. Used on through bolts, eye bolts, double arming bolts, etc. and for other attachments where it is desired to convert a standard, threaded bolt to an eye bolt.

Commonly used for dead-ending a messenger wire or span guy on the threaded end of an angle hubeye bolt on the opposite end of which is attached a down guy.

No.	Per 100	Diam. Bolt In.	Width Eye In.	Length Eye In.	Shipping Wt. Lb. Per 100
7500	$42.88	1/2	1 1/8	1 1/8	55
7501	42.88	5/8	1 1/8	1 1/8	55
*7502	42.69	5/8	1 1/2	1 11/16	65
7503	49.43	3/4	1 1/2	1 11/16	65
7504	49.43	3/8	1 1/8	1 1/8	36
7505	49.43	1/2	1 1/8	1 1/8	34
7506	49.43	5/8	1 1/8	1 1/8	32

*Western Union Std.

Hubbard Drop Forged Hubeye Nuts

Hot Galvanized

Used on through bolts, eye bolts, double arming bolts, straight and angle hubeye bolts, cross arm bolts, anchor rods and for other attachments where it is desired to convert a standard, threaded bolt to a hubeye bolt.

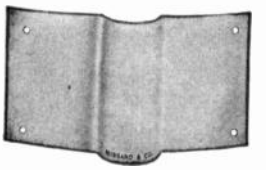
Commonly used for dead ending a messenger wire or span guy on the threaded end of an angle hubeye bolt on the opposite end of which is attached a down guy.

No.	Per 100	Diam. Bolt In.	Width Eye In.	Length Eye In.	Shipping Wt. Lb. Per 100
7509	$63.14	1/2	7/8	1 1/2	80
7510	63.14	5/8	7/8	1 1/2	80
7511	71.54	3/4	7/8	1 1/2	77
7512	82.97	1	1 1/4	1 11/16	166

Hubbard Strain Plates

Hot Galvanized

No. 7575



No. 7576

Used to protect the pole fibers from being cut by messenger or guy strand.

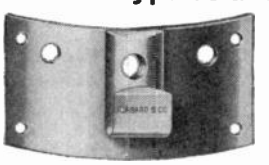
Furnished standard, with offset to fit 1 1/4-inch maximum diameter ground wire moulding.

Diameter nail holes, 7/32 inch.

No.	†*7575	7576	7579
Per 100	$21.85	22.59	25.90
Type	Standard	Moulding	Standard
Dimensions ... inches	4x8	4x8	4x6
Gage	14	14	14
Ship. Wt. per 100 ... pounds	95	95	75

*Western Union Std. †A. R. A. Std.

Hubbard Hook Type Strain Plate



No. 7580

Used to protect the pole fibers from being cut by messenger or guy strand.

No. 7577 has a welded hook, one 11/16-inch guy hook and hole, and two 7/16-inch lag screw holes.

No.	7577	7580
Per 100	$72.19	54.20
Type	Heavy Guy Hook	Heavy Guy Hook
Dimensions ... in.	4x8	4x6
Gage	14	14
Ship. Wt. per 100 .. lb.	134	114

Turnbuckles

Eye and Eye

Hook and Eye

All parts are drop-forged from open hearth steel. Bodies are fitted with hexagonal ends so that turnbuckles may be taken up with a wrench at the end as well as with a lever at the center.

Available in the following types: eye and eye; hook and eye.

Diameter ... in.	1/2	1/2	1/2	5/8	5/8	3/4
Takeup ... in.	6	9	12	9	12	12
Galv. ... per 100	$96.00	$145.00	$170.00	$175.00	$210.00	$270.00
S.C. ... per 100	80.00	120.00	140.00	145.00	170.00	220.00

Dimensions

Diam. Bolt ... in.	1/2	1/2	1/2	5/8	5/8	3/4
Open ... in.	18	24	30	25	31	31 1/4
Closed ... in.	12	15	18	16	19	19 1/4
Lgth. Opening ... in.	6	9	12	9	12	12
Weight per 100 ... lb.	163	206	250	415	477	682

Hubbard Guy Shims

Hot Galvanized

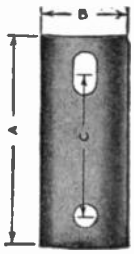
Six or more guy shims are used per pole to prevent messenger or guy strand from cutting into the wood.

Diameter of nail holes, ¼-inch.

No.	7570	7571
Per 100	**$10.74**	**13.16**
Dimensions....inches	1⅞x⅞x8	1¼x3/16x8
Ship. Wt. Per 100....pounds	57	68

Hubbard Load or Breast Plates

Hot Galvanized



No. 8877

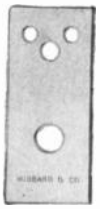
Used as back bearing plates when either the guy loop and saddle or the straight-away loop and saddle are subject to heavy strains.

The curved plate is provided with one hole and one slot on four-inch centers.

No.	8877	8878
Per 100	**$31.75**	**31.75**
Bolt Hole....in.	¾	⅞
Bolt Slot....in.	¾x1¼	⅞x1½
Hole Spacing....in.	4	4
Size Steel....in.	7x2½x¼	7x2½x¼
Ship. Wt. per 100...lb.	112	112

Hubbard Flat Lift Plates

No. 8890



No. 8891

No. 8890, No. 8891 inch hole, and one 1½-inch hole.

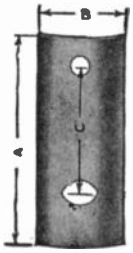
No. 8891 measures 7x2½x5/16 inches and has two 9/16-inch holes, one 11/16-

No. 8890 measures 7x2½x¼ inches and has one 9/16-inch hole, and one 1x13/16-inch oval hole.

No.	Per 100	Bolt Diam. In.	Size Bolt Hole In.	Plate Thickness Inches	Approx. Ship. Wt. Lb. per 100
8890	**$31.75**	¾	13/16x1	¼ Flat	124
*8891	**34.69**	1	1 3/32	5/16 Flat	151

*A.T. & T. Co. Std.

Hubbard Curved Lift Plates



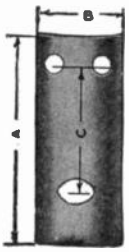
No. 8887

Hot Galvanized

These plates are used under the eye of Hubeye angle bolts to distribute the strain of down-guys over a greater area.

Dimensions, 7x2½ in.

All plates curved.

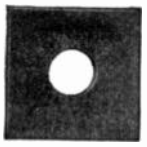


No. 8897

No.	Per 100	Diameter Bolt Inches	Size Bolt Hole Inches	Thick. Plate Inches	Attach. Holes No.	Attach. Holes Diam. In.	Shipping Wt. Lb. per 100
8887	**$25.47**	⅝	11/16x 15/16	3/16	1	9/16	99
8888	**31.75**	¾	13/16x1 1/16	¼	1	9/16	128
8889	**34.69**	1	1 1/16x1 5/16	5/16	1	9/16	151
8897	**25.47**	⅝	11/16x 15/16	3/16	2	9/16	95
8898	**31.75**	¾	13/16x1 1/16	¼	2	9/16	124
8899	**34.69**	1	1 1/16x1 5/16	5/16	2	9/16	148

Hubbard Square Washers

Hot Galvanized



Cleanly cut and smoothly galvanized. There are no irregularities of the zinc coating to interfere with the proper seating of bolt heads or nuts.

Can be supplied with nail holes at slight extra cost.

No.	Per 100	Size Inches	Diamter Hole Inches	Diameter Bolt Inches	Ships Wt. Lb. per 100
7811	**$3.83**	2 x2 x1/8	9/16	½	16
7812	**3.83**	2 x2 x1/8	11/16	⅝	16
7812½	**5.00**	2 x2 x3/16	13/16	¾	19
7813	**5.98**	2¼x2¼x3/16	11/16	⅝	25
7813½	**5.98**	2¼x2¼x3/16	9/16	½	25
‡†*§7814	**5.98**	2¼x2¼x3/16	13/16	¾	25
7816	**10.00**	3 x3 x3/16	13/16	¾	53
‡†*§7817	**13.01**	3 x3 x¼	13/16	¾	69
7818	**18.23**	4 x4 x3/16	13/16	¾	96
‡**7819**	**24.08**	4 x4 x¼	15/16	¾ & ⅞	127
7819½	**50.40**	4 x4 x½	13/16	¾	218
‡†*§7820	**50.40**	4 x4 x½	1 3/16	1	251
†*7826	**26.51**	3½x3½x3/8	15/16	¾ & ⅞	136
†7827	**82.67**	6 x 6x3/8	1 3/16	1	407

*Western Union Std., †A. T. & T. Co. Std., ‡A. R. A. Std. §E. E. I. Std.

Hubbard Curved Washers

Hot Galvanized

Cleanly cut and smoothly galvanized. There are no irregularities of the zinc coating to interfere with the proper seating of bolt heads or nuts.

No.	Per 100	Size Inches	Diameter Hole Inches	Diameter Bolt Inches	Ship. Wt. Lb. per 100
7809½	**$24.13**	4 x4 x¼	15/16	⅞	127
7810	**13.27**	3 x3 x3/16	13/16	¾	46
7822	**7.70**	2½x2½x3/16	11/16	⅝	34
7823	**13.58**	3 x3 x¼	13/16	¾	66
7823½	**13.58**	3 x3 x¼	11/16	⅝	66
7824	**21.86**	3 x3 x5/16	1⅛	1	94
***7825**	**16.95**	3¼x3⅛x¼	13/16	¾	85
***7829**	**28.41**	3½x3⅜x3/8	13/16	¾	120
***7830**	**28.41**	3½x3⅜x3/8	1⅛	1	120

*A. R. A. Std.

Hubbard Round Washers

Hot Galvanized

Cleanly cut and smoothly galvanized. There are no irregularities of the zinc coating to interfere with the proper seating of bolt heads or nuts.

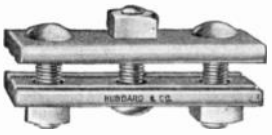
Can be supplied with nail holes at slight extra cost.

No.	Per 100	O.D. In.	Gage No.	Diameter Hole Inches	Diameter Bolt Inches	Ship. Wt. Lb. per 100
†*§7801	**$.70**	1	14	7/16	⅜	1.8
†§7802	**1.09**	1¼	14	½	⅜ Carriage	2.9
‡†*§7803	**1.73**	1⅜	12	9/16	½	4.6
†*§7805	**3.43**	1¾	10	11/16	⅝	9.2
7805½	**3.43**	1¾	10	13/16	¾	9.2
7806	**4.38**	2	9	13/16	¾	11.0
7808	**7.35**	2½	8	1 1/16	1	19.0

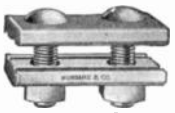
*Western Union Std. †A. T. & T. Co. Std. ‡A. R. A. Std. §E. E. I. Std.

Hubbard Guy Clamps

Hot Galvanized



No. 7461



No. 7402

Hot rolled to a 3/8-inch thickness from steel plates. Clamping principle employed is the straight, parallel groove, smoothly galvanized.

Particular care is exercised to keep clamp sections straight so that bolts will not be drawn tight on an area which may be warped out of contact with strand with consequent loss of holding power. Accurately spaced grooves and carefully centered holes. Cleanly sheared sections so that groove ends cannot cut or injure strand.

Clamp bolts are made of special steel to prevent elongation and eliminate stripping. Heads are made large to provide maximum clamping area and shoulders trap bolts to prevent turning while tightening.

Sizes with three or more bolts shipped with bolts reversed.

Heavy Type—5/8-Inch Clamp Bolts

No.	Per 100	No. of Bolts	Length Inches	Width Inches	Size Strand Inches	Shipping Wt. Lb. per 100
7460	$194.76	3	6	2 1/8	3/8 to 5/8	397
†§7461	83.87	3	6	1 21/32	5/16 to 1/2	284
7462	56.59	2	4	1 21/32	5/16 to 1/2	186
7464	111.50	4	8	1 21/32	5/16 to 1/2	388

Medium Type—1/2-Inch Clamp Bolts

7447	$30.95	1	1 7/16	1 9/16	1/4 to 7/16	64
*‡7448	39.89	2	3 3/8	1 9/16	1/4 to 7/16	138
7449	56.34	3	4	1 9/16	1/4 to 7/16	188
*‡7450	68.72	3	6	1 9/16	1/4 to 7/16	224

Light Type—1/2-Inch Clamp Bolts

7401	$27.04	1	1 3/4	1 9/32	1/8 to 1/4	48
7402	37.19	2	3 3/4	1 9/32	1/8 to 1/4	106
7403	53.25	3	5 3/4	1 9/32	1/8 to 1/4	150
7404	68.83	4	7 3/4	1 9/32	1/8 to 1/4	210
7445	30.95	1	1 1/4	1 1/4	1/8 to 7/32	30

*Western Union Std. †A. T. & T. Co. Std. ‡A. R. A. Std. §E. E. I. Std.

Hubbard Wire Rope Clips

No. 7486

Size Strand Inches	Malleable No.	Malleable Per 100	Malleable Wt. Lb. per 100	Drop-Forged No.	Drop-Forged Per 100	Drop-Forged Wt. Lb. Per 100
1/4	8480	$8.00	14	7480	$35.00	30
5/16	8481	9.00	16	7481	35.00	30
3/8	8482	12.00	22	7482	40.00	47
7/16	8483	15.50	28	7483	45.00	71
1/2	8484	18.50	40	7484	45.00	73
9/16	8484 1/2	24.50	52	....	.....	...
5/8	8485	24.50	55	7485	55.00	101
3/4	8486	35.00	85	7486	70.00	157
7/8	8487	50.00	125	7487	85.00	242
1	8488	60.00	145	7488	100.00	264
1 1/8	8489	95.00	240	7489	125.00	332
1 1/4	8490	112.00	300	7490	150.00	448
1 3/8	8491	130.00	435	7491	175.00	488
1 1/2	8492	150.00	480	7492	200.00	544
1 3/4	....	.....	...	7194	550.00	880

Hubbard Guy Thimbles

Hot Galvanized

No. 7593

Made from half oval steel, grooved to fit guy strand and bent to proper radius to prevent the strand from being sharply bent.

Furnished with open loop so it may be slipped over eyes.

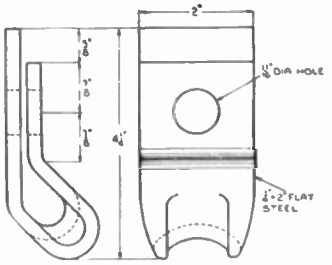
No.	7593	7594	7595
Per 100	$9.58	12.93	17.96
Size Strand...inches	3/8	1/2	5/8
Size Guy Rod...inches	1/2 & 5/8	5/8 & 3/4	1
Ship. Wt. per 100...lb.	11	21	42

If desired thimble can be supplied in copper or bronze at special prices.

Hubbard Storm Guy Straps

Single Bolt Type

Hot Galvanized



No. 6006

Nos. 6005 and 6006 are similar with the one exception of the diameter of the mounting holes.

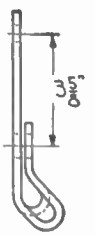
The wire groove is rounded so as to give the strand a safe bending radius.

No.	6004	6005	6006
Per 100	$26.32	46.25	46.25
Material...inches	1/4x1 1/2	1/4x2	1/4x2
Diameter of Hole...inches	11/16	13/16	11/16
Ship. Wt. per 100...pounds	86	110	110

Hubbard Storm Guy Straps

Flat Strap Type

Hot Galvanized



No. 6001

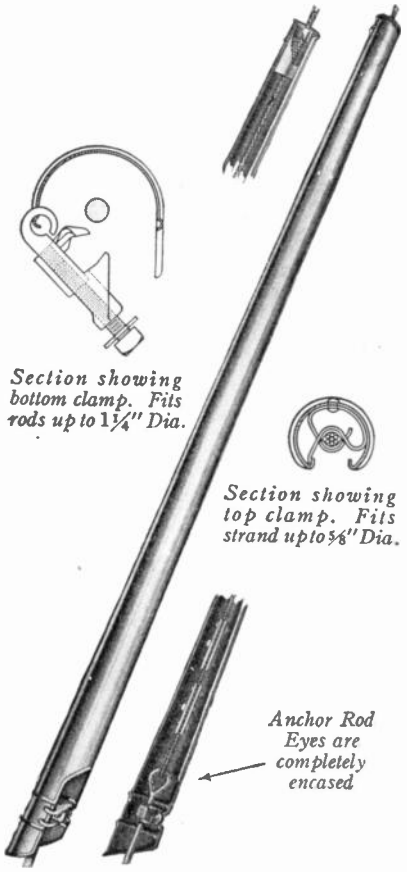
Necessary to meet the needs of various operating companies, both power and communications. Generally mounted back to back. Constructed with rounded wire grooves to give the strand a safe bending radius.

Nos. 6001, 6002 and 6011 are made of steel.

No. 6003 is made of malleable iron.

No.	6001	6002	6003	6011
Per 100	$44.78	62.21	57.23	44.78
Material...inches	1/4x1 1/2	1/2x2	...	1/4x1 1/2
Length...inches	7	7 1/4	5 1/2	7
Upper Hole Diameter..inches	9/16	9/16	9/16	9/16
Lower Hole Diameter..inches	13/16	13/16	11/16	11/16
Ship. Wt. per 100 Pieces...lb.	117	195	100	119

Guy Wire Protectors
Hot Galvanized



No. 7658 Loxfast-Light Type

Loxfast Type

Top attachment accommodates strand up to ⅝-inch diameter. Bottom clamps are adjustable to fit rods up to 1¼ inches in diameter.

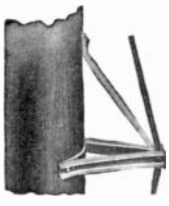
No.	Per 100	Overall Length Feet	Diameter, In. Inside Top	Inside Bottom	Steel Gage	Ship. Wt. Lb. per 100
		Loxfast-Light				
7657	**$406.11**	7	2	3¾	18	1100
7658	**434.49**	8	1¾	3¾	18	1200
		Loxfast-Heavy				
27657	**$446.47**	7	2	3¾	16	1400
27658	**492.57**	8	1¾	3¾	16	1550

Half-Round

Clamping is accomplished by U-bolts which are designed to fit either strand, rod or clamp. The protector will not turn over on the wire.

No.	Per 100	Length Feet	Steel Gage	No. Bolts	Ship. Wt. Lb. per 100
7557	**$345.81**	7	14	2	1100
7558	**374.67**	8	14	2	1200
7559	**384.55**	8	14	3	1300

Peirce Pole Struts
Hot Galvanized



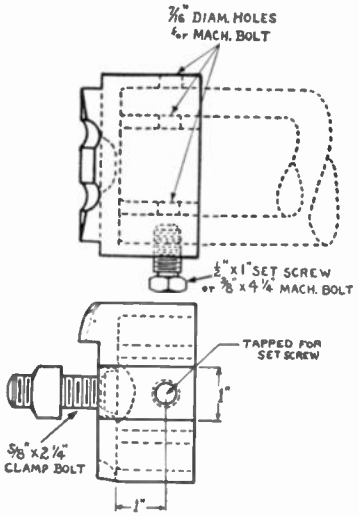
Pole can be made self-supporting or hog-guyed by means of pole struts.

Such trussed poles should be set in concrete, deeper than usual, and slack spans used on each side.

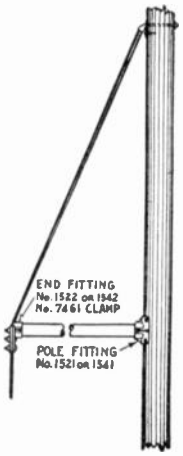
Made of heavy steel channel. May be sprung slightly during installation to fit variation in pole diameter. Three ½-inch lag screws attach them in position. Two struts are needed for each pole. Braces are 1x½x⅛-inch channels for all sizes.

No.	1500	1518	1519
Per 100	$498.28	$518.57	678.51
Extension from Pole....in.	11	18	24
Channel Horizontal Legs..in.	2x9/16x3/16	2x9/16x3/16	2½x5/8x3/16
Shipping Weight, Per 100..lb.	850	1050	1600

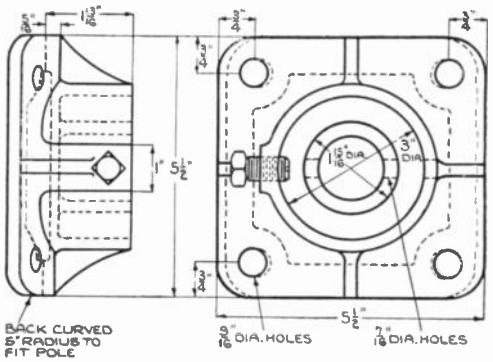
Peirce Pipe Sidewalk Guy Arm Fittings
Hot Galvanized



No. 1522 to 1542 End Fittings



Fittings Installed



Nos. 1521 to 1541 Pole Plates

Designed for two sizes of pipe, 2-inch and 2½-inch. The smaller size fits over the central core and the larger size fits inside the outer shell. This arrangement is indicated by the top view of the end fitting diagram.

Assembly is secured by a set screw against the pipe or a machine bolt through the pipe.

A No. 7461 guy clamp is attached over the ⅝-inch stud which replaces the end bolt of the clamp.

End Fittings for Sidewalk Guying

No.	Per 100	Furnished With	*Use Guy Clamp No.	Size Pipe Inches	Approx. Ship. Wt. Lb. per 100
1522	**$193.79**	Set Screw, ½x1-Inch	7461	2 & 2½	337
1542	**193.79**	Mach. Bolt, ⅜x4¼-Inch	7461	2 & 2½	355

*Not included.

Pole Plates for Sidewalk Guying

No.	Per 100	Furnished With	Size Mtg. Holes In.	No. of Mtg. Holes	Approx. Ship. Wt. Lb. per 100
1521	**$232.36**	Set Screw, ½x1-Inch	9/16	4	472
1541	**232.36**	Mach. Bolt, ⅜x4¼-Inch	9/16	4	490

Hubbard Servisleevs

PAT. No. 192177

Hot Galvanized

Installed by slipping sleeve over guy wire, belled end toward the clamp, and driving it over loose end of strand.

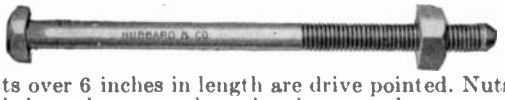
No	7451	7452	7453	7454	7455	7456
Per 100	$10.60	10.60	10.60	12.76	12.76	18.70
Size Strand ... in.	3/16	1/4	5/16	3/8	7/16	1/2
Length Overall ... in.	1 1/4	1 3/8	1 1/2	1 3/4	2	2 1/4
Ship. Wt. per 100 .. lb.	2.2	3.4	5.5	7.8	11.0	14.3

For Copperweld

No	27452	27453
Per 100	$10.60	10.60
Strand Size	3 No. 9	5/16-Inch
Length Overall ... inches	1 3/8	1 1/2
Approx. Ship. Wt. per 100 ... pounds	3	5

Hubbard Machine and Crossarm Bolts

Hot Galvanized



Bolts over 6 inches in length are drive pointed. Nuts are included; washers must be ordered separately.

3/8-Inch Diameter

No.	Per 100	Lgth. In.	Lgth. Thrd. In.	Ship. Wt. Lb. per 100
9601	....	1	1	8.2
9601 1/4	....	1 1/4	1 1/4	8.8
9601 1/2	....	1 1/2	1 1/2	9.9
9602	....	2	2	11.4
9602 1/2	....	2 1/4	2 1/2	12.8
*†9603	$5.12	3	3	13.8
9603 1/2	5.35	3 1/2	3	16.8
*§9604	5.71	4	3	18.4
§9604 1/4	5.92	4 1/2	3	18.9
†§9605	6.21	5	3	20.1
*†9605 1/2	6.50	5 1/2	3	22.8
9606	6.72	6	3	23.5

1/2-Inch Diameter

No.	Per 100	Lgth. In.	Lgth. Thrd. In.	Ship. Wt. Lb. per 100
9701	....	1	1	15.0
9701 1/4	....	1 1/4	1 1/4	17.6
9701 1/2	....	1 1/2	1 1/2	20.2
9702	....	2	2	22.7
†9702 1/2	....	2 1/2	2 1/2	24.6
9703	....	3	3	27.3
9703 1/2	....	3 1/2	3	29.7
‡*9704	....	4	3	33.6
‡*†9704 1/2	$9.83	4 1/2	3	36.6
‡†9704 3/4	10.01	4 3/4	3	38.5
†§9705	10.23	5	3	41.6
‡*†§9706	11.18	6	3	45.1
§9707	15.81	7	3	51.9
9708	17.09	8	4	60.6
9709	....	9	4	68.4
9710	19.24	10	4	76.2
9712	$21.07	12	6	85.8
9714	23.20	14	6	91.6
9716	25.83	16	6	106.0
9718	28.21	18	6	121.0
9720	30.72	20	6	133.0

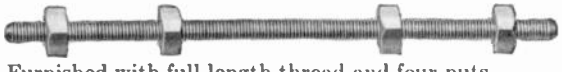
5/8-Inch Diameter

No.	Per 100	Lgth. In.	Lgth. Thrd. In.	Ship. Wt. Lb. per 100
9801 1/2	....	1 1/2	1 1/2	37.0
9802	....	2	2	41.0
9802 1/2	....	2 1/2	2 1/2	45.0
9803	....	3	3	49.0
9803 1/2	....	3 1/2	3 1/2	53
9804	....	4	3	57
9805	....	5	3	67
9806	$19.96	6	3	80
9807	21.30	7	3	90
‡†§9808	22.78	8	4	100
9809	23.94	9	4	108
‡*†§9810	25.90	10	4	113
9811	....	11	6	120
‡*†§9812	28.40	12	6	127
‡*†§9814	31.28	14	6	131
‡*†§9816	33.81	16	6	157
‡*†§9818	36.59	18	6	180
‡*§9820	39.07	20	6	195
‡§9822	44.27	22	6	213
‡§9824	46.74	24	6	237
9826	49.45	26	6	242
9828	51.89	28	6	259

†A.T. & T. Co. Std. *Western Union Std. §E.E.I. Std. ‡A.R.A. Std.

Hubbard Double Arming Bolts

Hot Galvanized



Furnished with full length thread and four nuts.

No.	Per 100	Diameter Inches	Length Overall Inches	Shipping Wt. Lb. per 100
9844	$28.32	1/2	14	120
9846	30.02	1/2	16	129
9848	32.78	1/2	18	138
9850	34.40	1/2	20	146
9852	36.82	1/2	22	163
9854	38.48	1/2	24	172
‡*§9864	53.05	5/8	14	194
‡*§9866	55.50	5/8	16	200
‡*§9868	59.31	5/8	18	218
‡*§9870	61.83	5/8	20	235
‡*§9872	65.77	5/8	22	253
‡*§9874	68.30	5/8	24	271

†A.T. & T. Co. Std. *Western Union Std. §E.E.I. Std. ‡A.R.A. Std.

Hubbard Carriage Bolts

Hot Galvanized

Used in attaching braces to crossarms. Furnished with standard heads, shoulders, nuts and rolled threads.

No.	Per 100	Diameter Inches	Length Inches	Length Thread Inches	Approx. Shipping Wt., Lb. per 100
9633	$4.53	3/8	3	1 3/4	14.5
9633 1/2	4.84	3/8	3 1/2	1 3/4	16.5
*†‡§9634	5.12	3/8	4	1 3/4	18.3
*†‡§9634 1/2	5.37	3/8	4 1/2	1 3/4	20.0
§9635	5.62	3/8	5	1 3/4	21.1
9635 1/2	5.92	3/8	5 1/2	1 3/4	22.5
9636	6.15	3/8	6	1 3/4	23.3
9643	8.19	1/2	3	2 1/2	26.7
9643 1/2	8.60	1/2	3 1/2	3	29.2
9644	9.03	1/2	4	3	33.3
9644 1/2	9.45	1/2	4 1/2	3	36.7
9645	9.90	1/2	5	3	38.6
9645 1/2	10.34	1/2	5 1/2	3	41.2
9646	10.84	1/2	6	3	44.0

*Western Union Std. †A.T.& T. Co. Std. ‡A.R.A. Std. §E.E.I. Std.

Hubbard Lag Screws

Hot Galvanized

Fetter Drive

Gimlet Point

Unless otherwise specified, fetter drive lag screws will be furnished on all orders except for 1/4 and 5/16 inch diameters, which are furnished with gimlet point thread only.

No.	Per 100	Diameter Inches	Length Inches	Length Thread Inches	Approx. Shipping Wt., Lb. per 100
9721 1/2	.....	1/4	1 1/2	1 1/8	2.0
9722	$3.24	1/4	2	1 5/8	3.5
9722 1/2	3.52	1/4	2 1/2	1 3/4	5.0
9723	3.80	1/4	3	2	6.5
9724	4.43	1/4	4	2 1/2	8.0
9732	3.75	5/16	2	1 3/4	5.2
9732 1/2	4.17	5/16	2 1/2	2	6.2
9733	4.53	5/16	3	2 1/4	7.5
9733 1/2	5.01	5/16	3 1/2	2 1/2	9.7
9734	....	5/16	4	2 1/2	11.9
‡9742 1/4	4.21	3/8	2 1/4	2	8.8
*9742 1/2	4.34	3/8	2 1/2	2	9.7
9743	4.53	3/8	3	2	11.0
9743 1/2	4.80	3/8	3 1/2	2 1/2	12.8
*†9744	5.16	3/8	4	2 7/8	14.6
9744 1/2	5.35	3/8	4 1/2	3	16.4
9745	5.62	3/8	5	3	16.9
9746	6.19	3/8	6	3	19.9
9752 1/2	6.17	1/2	2 1/2	2	18.4
9753	6.72	1/2	3	2 1/2	20.9
9753 1/2	7.28	1/2	3 1/2	3	23.4
§9754	7.73	1/2	4	2 1/2	26.0
*†‡9754 1/2	8.17	1/2	4 1/2	2 7/8	27.8
9755	8.84	1/2	5	3 1/4	32.1
9755 1/2	....	1/2	5 1/2	3	33.9
9756	9.85	1/2	6	3	38.3

*Western Union Std. †A.T.& T. Co. Std.‡ A.R.A. Std. §E.E.I. Std.

Peirce Wood Screws

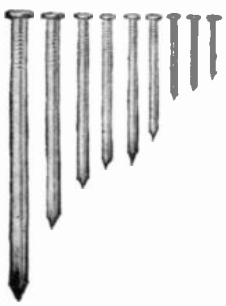
Hot Galvanized

Threads and screwdriver slot are kept clean and free of excess zinc.

No.	1051½	1052½	1053
Per 100	$3.88	4.66	5.40
Size No.	16	16	16
Length ..... inches	1½	2½	3
Ship. Wt. per 100 ..... lb.	3.1	4.6	5.4

Hubbard-Copperweld Nails

Used for attaching strain plates, or for locking pins and detachable pole steps, mounting conduit or cable guard straps and many other attachments where permanent safety from corrosion is necessary.



No.	Per 100	Nail Size	Length Inches	Shipping Wt. Lb. per 100
8252	.....	2d	1	1/9
8253	.....	3d	1¼	1/6
8254	.....	4d	1½	¼
8255	.....	5d	1¾	½
8256	.....	6d	2	¾
8258	.....	8d	2½	1⅕
8259	.....	9d	2¾	1⅖
8260	.....	10d	3	1⅗
8262	.....	12d	3¼	1¾
8266	.....	16d	3½	2¼
8270	.....	20d	4	3¼
8280	.....	30d	4½	4¾
8290	.....	40d	5	6¼
8300	.....	50d	5½	7½
8310	.....	60d	6	10

Hubbard-Copperweld and Galvanized Staples

The larger sizes of Hubbard-Copperweld Staples are used for attaching ground wire moulding to the pole and the smaller sizes for insulated or bare ground wires.

Nos. 7521 and 7522 are used for standard one-inch moulding attachments.

Copperweld Rolled Point Staples

No.	Per 100	Length Inches	Width Inside Inches	Thickness Inches	Approx. Shipping Wt. Lb. per 100
7493	.....	1¼	¼	114	1.0
7494	.....	1½	5/16	.144	1.5
7495	.....	1¾	⅜	.144	2.0
7496	.....	2	½	.162	2.25
7497	.....	3	¾	¼	7.0
7498	.....	3	1½	¼	8.5
7499	.....	3¾	1¾	5/16	15.0
7521	.....	2	1 1/16	3/16	4.0
7522	.....	3	1	¼	8.0
7523	.....	3½	1½	¼	10.0

Copperweld Cut Point (Fence) Staples

7650	.....	2	½	.162	2.25
7651	.....	1⅜	½	.162	1.75
7652	.....	1½	⅜	.162	2.00
7653	.....	2	¼	.162	2.25
7654	.....	1¼	3/16	.114	.75

Galvanized Rolled Point Staples

8511	.....	1	⅜	⅛	.75
8512	.....	2	½	.162	2.25
8513	.....	2	1 1/16	3/16	2.80
8521	.....	3	¾	¼	6.65
8522	.....	3	1 1/16	¼	7.00
8523	.....	3	1½	¼	7.75

Galvanized Cut Point Staples

8533	.....	1½	3/16	.148	1.50
8535	.....	1½	3/16	.148	1.75

Staples

For Ground Wire

Packed in standard kegs weighing 100 pounds.

Length ..... inches	1½
Spread ..... inches	5/16
Galvanized Wire Gage No.	9
Approximate Number in Keg	7200

Prices upon application.

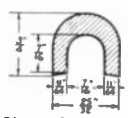
For Ground Wire Moulding

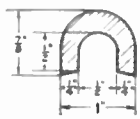
Hot dipped galvanized after cutting.
Packed in standard kegs weighing 100 pounds.

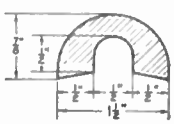
Length ..... inches	2	3
Spread ..... inches	1	1
Size Wire ..... inches	3/16	¼
Approximate Number in Keg	2800	1200

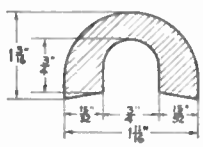
Prices upon application.

Rainier Wood Ground Wire Moldings





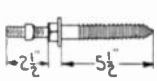




No.	RGM-1-A	RGM-1	RGM-2	RGM-3
Each	.....	.....	.....	.....
Wt. per 1000 Lin. Ft. ..... lb.	100	120	180	310

No. 8966 Hubbard Cable Suspension Screws

Hot Galvanized



Used in place of a standard through bolt or double arming bolt. Suspension clamps are mounted over the ⅝-inch stud.

Overall length, 8¾ inches. Length lag end under shoulder, 5½ inches; machine screw end above shoulder, 2½ inches.

No. 8966, Ship. Wt., 131 Pounds ..... per 100 .....

Hubbard Reinforcing Links

Hot Galvanized

Relieves side strains at angles in line. 4000 lb. test. Steel, ½ in. Mtg. hole diam., 9/16 in.

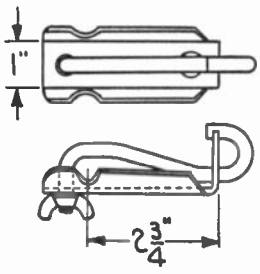
No.	8919	*†8929
Per 100	$66.93	85.66
Overall Length ..... inches	5¾	8⅜
Ship. Wt. per 100 ..... pounds	107	125

*Western Union Std. †A.R.A. Std.

Hubbard Span Clamps

Hot Galvanized

No. 8917



This clamp is used for taking off telephone service connections between spans in connection with wire clamps which attach through the wire attachment loop.

Strand size, ¼ to ⅜ inch. Steel size, No. 11 gage.

Length of cable groove to wire attachment loop, 3¼ inches.

No. 8917, Ship. Wt. 144 Pounds.....per 100 **$42.26**

No. 8918

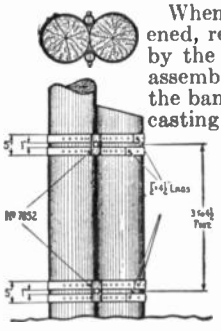
Used for the same purpose as No. 8917. Consists of a clamp and spacer with holes for two knobs.

Strand size, ¼ to 7/16 inch. Steel size, ⅛ inch. Insulator spacing, 5¾ inches.

No. 8918, Ship. Wt. 152 Pounds.....per 100 **$133.29**

Type A Hubbard Pole Reinforcing Material

Hot Galvanized



When pole butts become rotted and weakened, reinforcing or stubbing is accomplished by the application of bands. Band and pipe assemblies are tightened in place by drawing the band together. No. 7852-A is a malleable casting which serves the same purpose as the pipe.

Band is attached first by a nail through the small hole in end. After wrapping pole and stub tightly by hand, a ½-inch lag screw is driven through loose end so that it engages both inside and outside wrap. Lag screws may be driven in either of end holes which are spaced farther apart than others. This allows lining up with nearest inside hole. Four bands and four pipes are needed for a set.

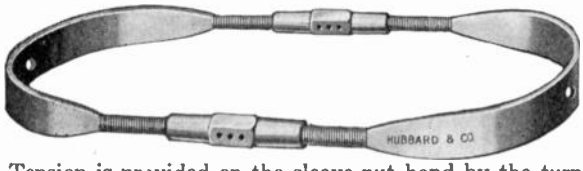
Lag screws and take-up bolts should be ordered separately.

No.	Per 100	Description	Size	Ship. Wt. Lb. per 100
†7850	$107.30	Reinforcing Band...	12-Ga. x 2″ x 68½″	451
†7851	132.13	Reinforcing Band...	12-Ga. x 2″ x 89½″	577
†7852	124.05	Reinforcing Pipe...	Ex. Hvy. 2″ x 5″	242
7852-A	124.05	Reinforcing Casting	5 5/16″ Long, 1¼″ Rad.	150
†7855	163.04	Reinforcing Band...	12-Ga. x 2″ x 99″	858
†7856	197.06	Reinforcing Band...	12-Ga. x 2″ x 120″	1100

†A. T. & T. Co. Std.

Hubbard Sleeve Nut Reinforcing Bands

Hot Galvanized



Tension is provided on the sleeve nut band by the turnbuckle nut. In general, poles are stubbed across the line. If they must be stubbed on the line, dowels are used.

Peep-holes are provided in the nut for gauging take-up.

Order two bands for a set.

No.	Per 100	Pole and Stub Diameter Inches	Length Sleeve Nut Inches	Shipping Weight Pounds per 100
7750	$345.19	8	4½	367
7751	367.19	10	6	550
7752	389.21	12	6	625
7753	412.89	14	6	700
7754	433.48	16	6	780
7755	488.78	18	8	950
7756	510.66	20	8	1020
7757	532.93	22	8	1100

Hubbard Reinforcing and Safety Straps

Hot Galvanized

No. 8905 No. 8906 No. 8907

Used as an added safeguard for cable suspension clamps at points of extreme stress.

No. 8905 is employed to reinforce messenger bolt. No. 8906 is a safety strap to prevent cable from falling if messenger gives way. No. 8907 combines two items in one piece.

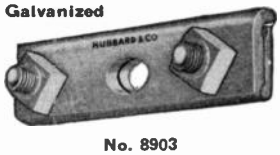
No.	Per 100	Size Steel In.	Ship. Wt. Lb. per 100
†*8905	$39.07	1½x⅛	32
†*8906	58.67	1¾x⅛	64
*8907	99.60	1¾x⅛	100

*A.T.& T. Co. Std. †A.R.A. Std.

Hubbard Cable Suspension Clamps

Hot Galvanized

No. 8901



No. 8903

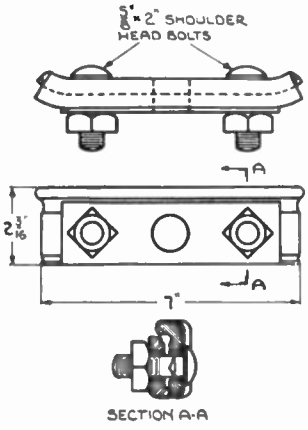
For use over a through bolt which is also employed as a clamp bolt. One or more nuts or washers are generally used between clamp and pole to provide clearance.

No.	‡†*8901	‡†*8903	8904
Per 100	$29.54	77.41	77.41
Type	1-Bolt	3-Bolt	3-Bolt
Overall Length...in.	2⅜	5⅝	5⅝
Mounting Hole Diam...in.	11/16	11/16x15/16	13/16
Strand Size...in.	¼ to 7/16	¼ to 7/16	¼ to 7/16
Shipping Weight per 100...lb.	84	224	224

*A.T.& T. Co. Std. †A.R.A. Std. ‡Western Union Std.

No. 8902 Corner Cable Suspension Clamps

Hot Galvanized



For power or communication cable messengers. Used for heavy strains at corners where the included angle of the messenger is approximately 110° or over up to 180°.

It is used with the curved ends pointing toward the pole when the pull is toward the pole and with the curved ends away from the pole when the pull is away.

Used on 6000 and 10000-pound strand with the cable groove of the clamp below the pole bolt and on 16000-pound strand with the groove above the pole bolt. A reinforcing strap is recommended when 16000-pound strand is used. Clamp is drop forged from high carbon steel.

Three-bolt type. Overall length, 7 inches. Mounting hole diameter, 13/32 inches. Strand size, ¼ to 7/16 inch inclusive.

Shipping weight per 100 375 pounds.

No. 8902.....per 100 **$155.00**

No. 8930 Hubbard Crossover Clamps

Hot Galvanized

Used for clamping messengers together when they cross at right angles.

Size of strand, 5/16 to ½ inch. Size of sides, 3¼x1½x½ inches.

Bolts furnished are ½-inch oval shoulder, clamp bolts.

No. 8930, Ship. Wt. 170 Pounds.....per 100 **$134.49**

Hubbard Grade Clamps

Hot Galvanized

Used to prevent creepage where cables are run on grades.

Drop-forged clamp is equipped with four ½-inch, oval neck clamp bolts, which cannot turn while nuts are being tightened.

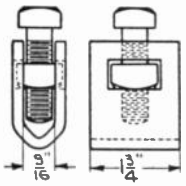
Tolerances are held very close in order to grip both cable and messenger with the proper pressure when tightened in place.

No. 8989

No.	Per 100	For Messenger Size Inches	For Cable Size Inches	Size Clamp Inches	Shipping Wt., Lb. per 100
8986	**$282.57**	5/16 to ½	1⅜	5¼x4	495
8987	**317.10**	5/16 to ½	2 1/16	6¼x4	594
8988	**331.54**	5/16 to ½	2½	7 x4	659
8989	**344.43**	5/16 to ½	2⅞	7⅜x4	704
8999	**548.85**	5/16 to ½	3⅜	7⅞x5	781

No. 8956 Hubbard Strand Ground Clamps

Hot Galvanized



Used to provide a permanent electrical ground between cable sheath and messenger. Connection is soldered to cable sheath and mechanically clamped to messenger wire. Bolt can be completely removed.

Size steel, 3/16x1¾ inches. Bolt size, ½x1¾ inches.

No. **8956**, Ship. Wt. 57 Lb. .....per 100 **$23.50**

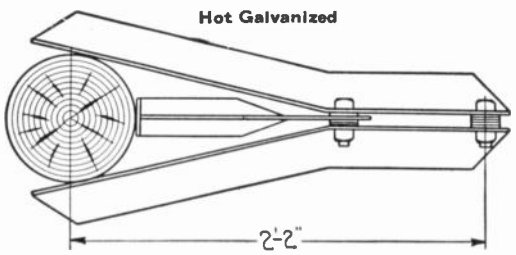
National Messenger Hangers

Non-breakable.

Strand Size.....inches	5/16 or Smaller	3/8 or Larger
Stock No.....	404	405
Approx. Ship. Wt. per 100.....pounds	150	150

Hubbard Cable Extension Arms

Hot Galvanized



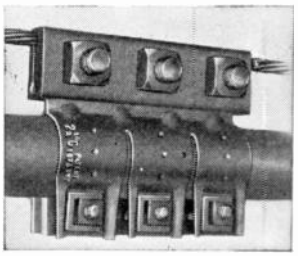
To suspend cables at some distance from the pole. Attached at the top by one ⅝-inch through bolt. T-iron brace is fastened by lag screws. Cable attached by a short ⅝-inch machine bolt with a washer under the head.

No. 8903 Three-bolt cable suspension clamp is attached on the machine bolt under the arm in a horizontal position. Extension of the cable from the pole can be varied 8½ inches with No. 8920 and 18 inches with No. 8921.

No.....	*8920	*8921
Per 100.....	**$1480.91**	**2693.42**
Extension from Center of Pole...in.	26	44½
Angle Size.....in.	3x2½x¼	3½x2½x5/16
Ship. Wt. Per 100.....lb.	3050	6050

*A. T. & T. Co. Std.

Diamond Telephone Grade Clamps

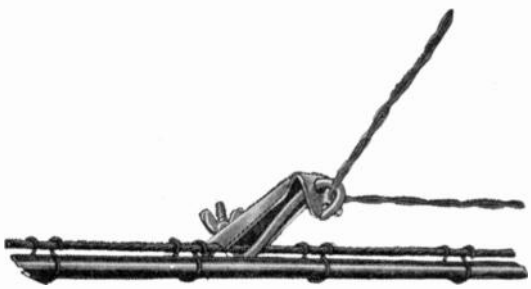


Used on each side of pole, when line is set on a grade, to overcome slipping of cable. Made of cold rolled steel. Three lower bolts furnished with clamp, but not upper guy clamp and bolts. Hot galvanized after fabrication.

No.	Per 100	Size Inches	Cable Diameter Inches	Carton	Ship. Wt. Lb. per 100
870	**$43.00**	2½A	1½	25	110
871	**44.00**	2½B	1 11/16	25	112
872	**45.00**	2½C	1 15/16	25	114
873	**51.50**	3	2 3/16	25	130
874	**54.00**	3½	2⅝	20	140
875	**58.00**	4	3¼	15	165

No. 865 Diamond Style A Span Clamps

For Suspended Cable



Used for taking off drop wire leads along the span.

Also used for pull-offs to hold the cable away from trees, thus avoiding the use of tree guards.

Can only be used with suspended cable.

Plate is made of ⅛-inch steel. Hooks are made of 5/16-inch round, high tensile strength steel.

All parts are hot-dipped galvanized after fabrication.

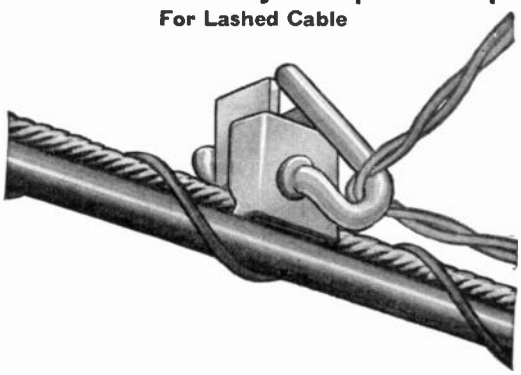
Packed 100 to a carton.

Shipping weight, 47 pounds.

No. **865**.....per 100 **$25.00**

No. 866 Diamond Style B Span Clamps

For Lashed Cable



Used for taking off drop wire leads along the span.

Also used for pulloffs to hold the cable away from trees, thus avoiding the use of tree guards.

Can be used for both lashed and suspended cable.

Plate is made of ⅛-inch steel. Hooks are made of 5/16-inch round, high tensile strength steel. All parts are hot-dipped galvanized after fabrication. Packed 100 to carton.

No. **866**, Shipping Weight, 41 Pounds.....per 100 **$25.00**

Hubbard Guy Hooks

Hot Galvanized

No. 7584 No. 7585 No. 7586

Necessary to meet the needs of various operating companies, both power and communication.

Constructed with rounded wire grooves to give the strand a safe bending radius. Made of steel.

No.	7583½ ‡	†*7584	7585	7586
Per 100	$12.38	26.90	19.16	26.90
Description	Light	Med.	Hvy.	Hvy.
Material	¼x1¼ in.	⅜x1¾	⅜x1½	⅜x1½
Length in.	3¼	4	3½	6
Upper Hole Diam. in.	....	....	....	9/16
Lower Hole. Diam. in.	9/16	11/16	9/16	9/16
Ship. Wt. per 100 lb.	40	89	65	91

*A. T. & T. Co. Std. †Western Union Std. ‡A. R. A. Std.

Peirce Detachable Pole Steps

Hot Galvanized

To install this pole step, slip the plate, which acts as a bearing surface for step, over lag screw and drive lag in until plate bites into pole. Step slips down in a groove on each side of lag screw head and is prevented from turning by a lug projecting from bottom of plate. A nail driven through a hole in plate offers additional security against turning. Five steps per pole are generally used. Unlicensed climbing is prevented by removing steps.

No.	Per 100	Description	Lag Screw Inches	Extension from Pole Inches	Approx. Shipping Wt. Lb. per 100
7235	$39.82	Lag and Plate	9/16x4	...	93
7236	65.39	Step	....	5⅛	50

Hubbard Pole Steps

For Wood Poles

Hot Galvanized

No. 7125 No. 7126

No. 7129

Made of open hearth steel and can be bent to an angle of 75° around its own diameter without fracture. Hook head step has drive head and fetter drive threads. Button head step has twist drive threads and a square shoulder.

No.	Per 100	Type Head	Diameter Inches	Length Overall Inches	Approx. Shipping Wt. Lb. per 100
7123	$22.32	Standard Hook	9/16	9	70
7124	24.63	Standard Hook	5/8	9	88
§‡†*7125	26.19	Standard Hook	5/8	10	94
*7126	37.80	Long Hook	5/8	10	116
7182	32.04	Button	5/8	9 5/16	84
§†7129	32.04	Button	5/8	9 11/16	105
7130	43.50	Button	9/16	10	110

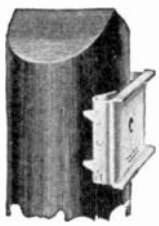
*A. T. & T. Co. Std. †Western Union Std. ‡E. E. I. Std. §A. R. A. Std.

Peirce Pole Gains and Reinforcing Plates

Hot Galvanized

Used to form a highly efficient method of attaching and reinforcing a crossarm.

Presteel Pole Gains



Used for attaching crossarms to poles efficiently and quickly without the need for gaining the pole.

Permits easy adjustment for alignment of the crossarm and spaces the arm away from the pole allowing ample drainage and ventilation.

Compared with gaining a pole for double arming, an added spacing of approximately 2 inches between arms is obtained by using metal gains. The four spurs on the gain insure permanence of the original alignment.

No.	Per 100	Arm Size Inches	Bearing Surface on Crossarm Inches	Steel Gage No.	Ship. Wt. Lb per 100
5091	$118.62	3¼x4¼	4¼x6	9	288
5092	118.62	4½x4½	4½x6	9	288
5093	118.62	3¾x4¾	4¾x6	9	288
5094	118.62	4 x5	5 x6	9	288

Crossarm Reinforcing Plates

Designed to give greater effectiveness than the square washer.

Prevents checking and splitting of the crossarm at the point of attachment.

5042	$49.45	3¼x4¼	4¼x3⅞	7	120
5043	49.45	3½x4½	4½x3⅞	7	128
5044	50.17	3¾x4¾	4¾x3⅞	7	136
5045	61.54	4 x5	5 x3⅞	7	144
5046	69.31	3¾x5¾	5¾x3⅞	7	160
5047	73.52	6 x8	8 x3⅞	7	206

Hubbard U-Cable Guards and Straps

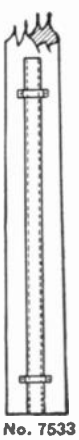
Hot Galvanized

When telephone or power cables enter the ground at the base of a pole or the side of a building, they are protected by U-cable guards. The guards are formed of No. 14 gage steel pressed to a U-shape which provides protection for pedestrians as well as providing stiffness for guard.

Nos. 7536 and 7537 have a 2⅛-inch inside diameter belled bottom to fit over ground conduit.

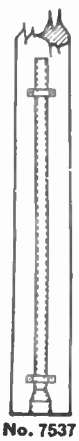
A. T. & T. Co. Standard.

U-Cable Guards



No. 7533

No.	Per 100	Length Feet	Inside Diam. Inches Top	Inside Diam. Inches Bottom	Ship. Wt. Lb. per 100
7531	$140.13	6	1⅛	1⅛	495
7531½	.....	8	1⅛	1⅛	660
7532	200.46	5	2 3/16	2 5/16	825
7533	297.81	8	2 3/16	2 5/16	1408
7534	349.01	5	3 3/16	3 3/16	1210
7535	428.30	8	3 3/16	3 3/16	1925
7536	275.50	5	1¼	2⅛	550
7537	437.54	8	1¼	2⅛	875



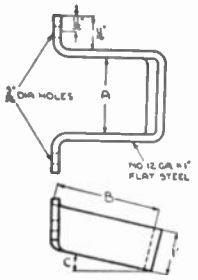
No. 7537

Mounting Straps

No.	Per 100	Size Steel Inches	Used with Cable Guard No.	Diam. Holes In.	Ship. Wt. Lb. per 100
7538	$7.85	⅛x ¾	7531	9/32	19
7539	9.49	⅛x ¾	7532-3	9/32	23
7540	17.22	3/16x1	7534-5	11/32	61
7541	7.84	⅛x ¾	7536-7	9/32	19

Hubbard Bracket Straps

Hot Galvanized



No. 8065

Two bracket straps, top and bottom, are used on each wood bracket. A.T. & T. Standard.

No.	Per 100	Description	Dimensions A In.	Dimensions B In.	Dimensions C	Ship. Wt. Lb. per 100
8065	$11.86	Bottom	1 15/16	15/16	19°	16
8066	12.87	Top	1 15/16	2 1/16	19°	25
8067	14.15	Top	1 3/4	2	15°	22
8068	11.86	Bottom	1 3/4	7/8	15°	15

No. 8913 Hubbard Strand Connectors

Hot Galvanized

Used with guy clamps for joining messenger ends. Non-insulating.

Cable grooves and eyes are 3/4-inch diameter. Cable loops around 1 3/4-inch diameter thimble. Eye is egg-shaped to accommodate large and small strand and to facilitate threading.

No. 8913, Ship. Wt. 100 Pounds.....per 100 **$142.68**

No. 867 Diamond Telephone Strand Connectors

Will accommodate up to 25,000 pound strand.

The enlarged, oval-shaped holes facilitate threading strand through the connector. The larger body diameter around which the strand is looped in the connector distributes pressure over more of the strand.

The deep grooves follow a smooth, continuous arc, forming a perfect seat for the strand, thus eliminating wear from vibration.

Weight, 1 pound.

No. 867.....each **$.50**

Hubbard Flat Crossarm Braces

Hot Galvanized

Made from new open hearth steel punched for a 1/2-inch through bolt or lag screw at the pole end and 3/8-inch carriage bolt at the arm end. Ribbed braces. Clearance is allowed so that ribbed portion does not interfere with attachment to arm on either side.

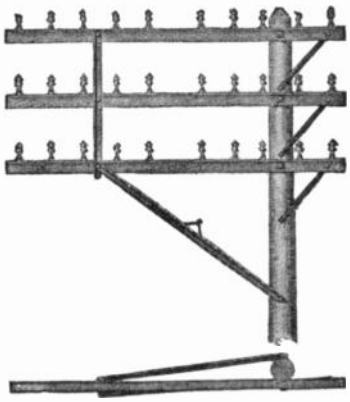
All braces are furnished with rounded corners.

Plain No.	Plain Per 100	Ribbed No.	Ribbed Per 100	Size Steel Inches	Length Overall Inches	Ship. Wt., Lb. per 100
*†8020	$26.97	6620	....	7/32x1 7/32	20	131
8022	29.28	6622	....	7/32x1 7/32	22	144
8024	31.71	6624	....	7/32x1 7/32	24	157
8026	34.19	6626	....	7/32x1 7/32	26	170
††8028	36.53	6628	....	7/32x1 7/32	28	183
*8030	38.93	6630	....	7/32x1 7/32	30	196
8032	41.37	6632	....	7/32x1 7/32	32	209
8120	33.12	8320	....	1/4x1 1/4	20	165
8122	36.21	8322	....	1/4x1 1/4	22	182
8124	39.14	8324	....	1/4x1 1/4	24	198
8126	42.19	8326	....	1/4x1 1/4	26	215
§8128	45.12	8328	....	1/4x1 1/4	28	231
8130	48.29	8330	....	1/4x1 1/4	30	248
8312	51.22	8332	....	1/4x1 1/4	32	264

*A.T.&T. Co. Std. †A.R.A. Std. ‡Western Union Std. §E.E.I. Std.

Hubbard Extension Fixtures

Hot Galvanized


Diagonal Brace, Back Brace, and Vertical Brace Installed

When it is necessary to clear buildings or trees without the use of high poles, these fixtures are used. Also used to offset arms on a pole where such construction will partially relieve the strain of a slight angle in the line. This method of offsetting is also useful where lines follow country roads with many slight bends in both directions. With extension fixtures the poles may be set at the roadside, and by extending arms either toward road or away from road, to compensate for conditions, the wires may be strung in a straight line. A. T. & T. Co. Standard.

†No. 8050 Diagonal Braces

For use on both 6 and 10-pin arms. Provided with a 6-inch step for lineman and may be used on either side of pole. Fastened to side of pole by a 1/2-inch lag screw and to cross arm by a 1/2-inch machine bolt.

Made of 2x2x3/16-inch angle steel. Bolts not included.

Length overall, 83 inches.

No. 8050, Ship. Wt. 1892 Pounds.....per 100 **$488.00**

†A.T.& T. Co. Std.

†Back Braces

This brace is attached to pole by a 5/8-inch through bolt and to cross arm by a 1/2-inch machine or carriage bolt.

Made of 2x2x1/4-inch angle steel. Bolts not included.

No.	8051	8052
Per 100	$325.89	397.94
For Use with Arms	6-Pin	10-Pin
Length Over All.....inches	54 1/2	66 7/16
Approx. Ship. Wt. per 100 Pcs.....lb.	1364	1892

†A. T. & T. Co. Std.

No. 8054 Vertical Braces—Communication Type

Designed for three arms spaced 12 inches apart, or two arms on 24-inch centers, additional arms being cared for by placing other Vertical Braces in Series with the first.

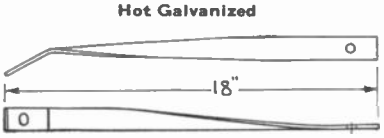
Made of 1 3/4x1 3/4x1/4-in. angle and provided with holes for 1/2-in. bolts. Bolts are not included. Length over all, 30 5/8 in.

No. 8054, Ship. Wt. 792 Pounds.....per 100 **$175.87**

†A. T. & T. Co. Std.

No. 9240 Hubbard Guard Arm Braces

Hot Galvanized



This guard arm brace is used for supporting guard arms at points on poles where a cable is suspended.

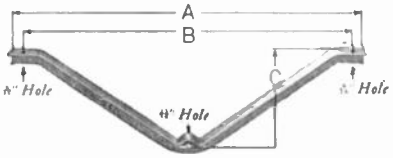
Steel size, 18x1 7/32x1/4 inches. Diameter hole straight end, 7/16 inch. Diameter hole bent end, 9/16 inch.

No. 9240, Ship. Wt. 170 Pounds.....per 100 **$49.94**

†A. T. & T. Co. Std.

Hubbard Angle Crossarm Braces

Hot Galvanized



In the construction of heavy pole lines, the one-piece angle steel crossarm brace is in general use. It fastens under the arm with ½-inch machine bolts and to the pole with a ⅝-inch through bolt or lag screw. Special sizes supplied on request. When ordering, state size of angle, A, B, and C dimensions, and hole sizes.

No.	Per 100	Angle Size Inches	Dimensions Inches A	B	C	Ship. Wt. Lb. per 100
7948	$226.80	1½x1½x3/16	51	48	14	974
7950	196.65	1½x1½x3/16	40	37	12	781
7952	226.80	1½x1½x3/16	51	48	14¾	979
7953	309.73	1¾x1¾x3/16	63	60	18	1408
7954	343.58	1¾x1¾x3/16	69	66	20	1551
7955	364.30	1¾x1¾x3/16	75	72	18	1639
7956	413.16	2 x2 x3/16	75	72	22	1958

E.E.I. Standard

No. 7940. For use with E.E.I., 7 foot, 2-pin medium voltage crossarm.

No. 7942. For use with E.E.I., 10 foot, 4-inch pin, medium voltage crossarm.

No. 7943. For use with E.E.I., special high voltage crossarms.

7940	$212.51	1½x1½x3/16	45	42	12	858
7941	244.04	1½x1½x3/16	51	48	18	1067
7942	268.51	1½x1½x3/16	63	60	18	1210
7943	375.73	1¾x1¾x3/16	75	72	22	1716

Hubbard Vertical Braces

Standard Type

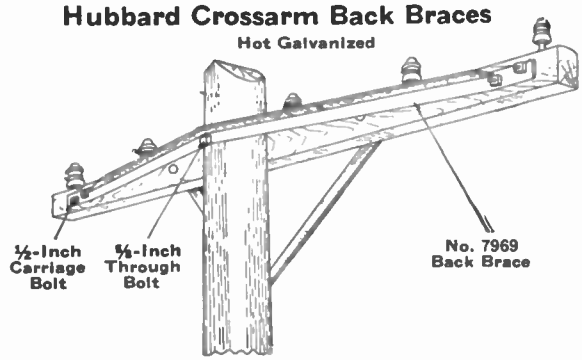
Hot Galvanized

No.	Per 100	No. of Arms	Spacing Inches	Length Overall Inches	Size Angle Inches	Shipping Wt. Lb. per 100
7976	$81.60	2	18	20	1½x1½x3/16	300
7977	141.28	3	18	38	1½x1½x3/16	620
7978	204.30	4	18	56	1½x1½x3/16	840
*7986	102.32	2	24	26	1½x1½x3/16	380
*7987	189.66	3	24	50	1½x1½x3/16	700
7988	268.63	4	24	74	1½x1½x3/16	1160

*E. E. I. Std.

Hubbard Crossarm Back Braces

Hot Galvanized



Used to reinforce crossarms at corners and terminal poles and in many cases eliminates the necessity for double arming.

The angles are made of open hearth steel and are attached to the arm by means of two ½-inch machine bolts at each end. If vertical brace is not used, crossarm attachment may be made by using ½-inch carriage bolts.

No.	Per 100	Angle Size Inches	Overall Length Inches	Shipping Wt. Lb. per 100
7964	$205.39	1½x1½x3/16	48	500
7965	307.42	1½x1½x3/16	60	750
7966	378.38	1½x1½x3/16	72	1060
7967	477.68	1¾x1¾x3/16	94	1660
*7969	525.20	1¾x1¾x3/16	109	1825

*A. T. & T. Co. Std.

Hubbard Angle Steel Cable Cross Arms

Hot Galvanized

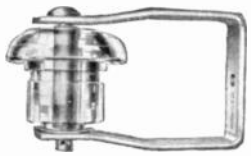
For telephone cables. Furnished complete with No. 8901 messenger clamps, clamp bolts and nut spacers.

Braces and brace bolt are not included.

No.	Per 100	Use Cross Arm Brace No.	No. of Cables	Spacing Between Overall Cables, Inches Length	Center Two	Side	Size Angle Inches	Ship. Wt. Lb. per 100
8923	$870.05	8120	4	36	20	6	3x3x¼	2225
8924	1007.78	8130	6	48	20	6	3x3x¼	3025
8933	1133.88	8120	4	36	20	6	5x3x5/16	3225
8934	1740.13	8130	6	48	20	6	5x3x5/16	4425
8938	2616.49	8130	4	48	32	6	5x3x½	6525

Hubbard Dead-Ending Shackles

Hot Galvanized



No. 9290 Shackle
No. 9291 Insulator

Used by signal and railroad companies for dead-ending or breaking bare signal wires. Made to clamp around crossarm.

Square holes for ½-inch carriage bolt, running vertically through arm; ⅜-inch lag screw at side of arm.

Shackles

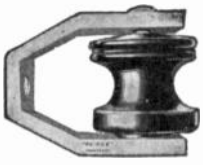
Size crossarm, 3¼x4¼ inches. Size steel, 3/16x1 3/16 inches.

No.	Description	Overall Length Inches	Ship. Wt. Lb. per 100	Per 100
*9290	Shackle Only, less Insulator	...	265	$161.91
9296	Shackle with No. 1609 Wet Process Brown Porcelain Insulator	...	401	195.34
	Insulators			
1612	Wet Process Brown Porcelain, Skirt Style	3 7/16	148	$63.87
*9291	Glass, Double Skirt Style	3¼	192	120.19

*Western Union Standard.

Hubbard Insulated Clevises

Hot Galvanized



No. 561

Formed of 1½x9/16-inch channel steel. A sturdy dead-end or corner attachment. Used with No. 355 dry process insulator for low voltage lines.

Oval mounting hole, 1 1/16x25/32 inches.

Shipping weight, 242 pounds per 100.

No. 561, with Insulators.per 100 $84.25

No. 8820

Formed of flat steel.

Has 1 1/16-inch round mounting hole for ⅝-inch mounting bolts.

Uses No. 357 dry process insulator.

Shipping weight, 131 pounds per 100.

No. 8820, with Insulators..per 100 $46.13

Hubbard Insulated Fork Bolts

Type No. 1

Hot Galvanized

Equipped with insulator No. 357.

No.	8811	8814	8815
Per 100	$108.97	120.07	125.21
Length of Bolt...in.	9 13/16	11 13/16	13 13/16
Diameter...in.	½	⅝	⅝
Ship. Wt. per 100...lb.	205	226	247

Hubbard Standard Transposition Brackets

Hot Galvanized

Nos. 9252 and 9255 furnished in heavy stock for use with pins having transposition insulators.

Except for No. 9255 all have 3/8-inch hole for a wood screw and holes for 3/8-inch carriage bolt. No. 9255 has 7/16-inch wood screw hole and 9/16-inch carriage bolt hole.

No.	Per 100	Steel Size Inches	Cross Arm Size Inches	Ship. Wt., Lb. per 100
9249	$76.65	1¼x5/16	2¾x3¾	277
*9250	76.91	1¼x5/16	3 x4	286
†9251	76.91	1¼x5/16	3¼x4¼	284
†9252	134.28	1½x3/8	3¼x4¼	416
9255	171.71	1½x½	3½x4½	475

*Western Union Std. †A. T. & T. Co. Std.

No. 9270 Hubbard Transposition Brace Plates

Hot Galvanized

This brace plate is designed to prevent the transposition bracket from being pulled out of vertical, on slight angles in the line, because of the constant strain in one direction.

Holds the bracket in perfect alignment under excessive side pull.

Used with No. 9275 on R.S.A. roofed cross arms.

Shipping Weight, 58 Pounds.

No. **9270**, ...per 100 **$48.93**

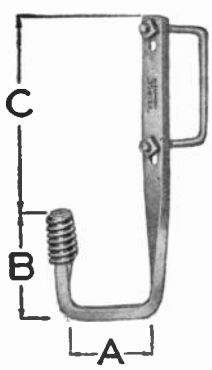
No. 9275 Hubbard Transposition Brackets

For Phantom Circuits

Hot Galvanized

Furnished in two pieces.
Pin holes are for ½-inch short shank pins.
Assembly on arm is accomplished with ½-inch machine bolts.
Size steel, 1½x3/8 inches. Any size cross arm can be used.
Pins and bolts are not included.
Western Union Std.
No. **9275**, Ship. Weight 797 Pounds.....per 100 **$276.72**

Peirce Single Point Type Transposition Brackets



No. 20111

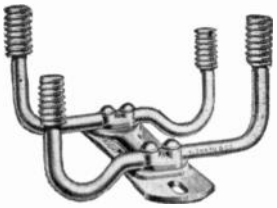
Hot Galvanized

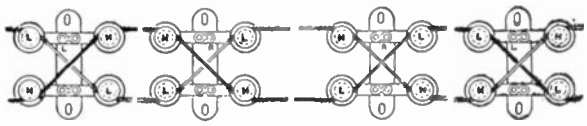
Made of channel steel and fitted for one insulator.
Threads are standard 1-inch diameter.
No. 20110 is used for normal spans and No. 20111 is used for long spans.
Unless otherwise specified, cross-arm U-bolt No. 1021, for 3¼x4½-inch arms, will be furnished.
Furnished punched and slotted.

No.	Per 100	Dimensions, Inches — Channel	A	B	C	Approx. Ship. Wt. Lb. per 100
20110	$88.00	⅜x⅜x⅛	3½	4⅜	6½	101
20111	113.24	1x½x⅛	3½	4½	8	171

Hubbard Point Type Transposition Brackets

Hot Galvanized





Hubbard point type right and left hand transposition brackets are attached on standard crossarms through adjacent pin holes with ½x6-inch crossarm bolts fitted with a clipped washer. Both attachment holes are slotted to provide a total of two inches of adjustment.

Mounting hole spacing, 10 to 12 inches.

Line spacing, 6¾ inches.

Base steel size, ¼x3x13 5/16 inches.

Point steel size, ¾-inch round.

System of Transposition

PATENTED

In establishing a transposition of the right and left hand point type, a pair of brackets is employed as shown by the illustration in which one wire is black to distinguish it from the other.

Assuming that a complete transposition is the crossing of one wire over the other and then eventually back to its original position in relation to the other wire, two complete transpositions are shown by the illustration. Note that the first one is black over white and the second is black under white, maintaining perfect balance. No cutting is necessary, and no tangles result when arms or poles are wrecked as is the case with the spiral type of transposing on the average bracket.

Mounting slots fit standard drilled arms with a 2-inch adjustment range.

Mounting bolts are furnished.

Lead thread or wood cobs are available.

Hubbard point type brackets listed were designed specifically for use with this system. The purchaser of Hubbard brackets is assured a license permitting the transposing of wires as covered by the above patent.

If further details are desired, communicate with the nearest Hubbard factory office.

No.	Description	*Approx. Ship. Wt. Lb. per 100
9272LT	Right Hand Bracket, Lead Thread.....	*900
9273LT	Left Hand Bracket, Lead Thread.....	*900
9272	Right Hand Bracket, Wood Cob.....	*800
9273	Left Hand Bracket, Wood Cob.....	*800

Prices upon application.

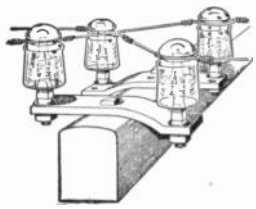
Accessories

No.	Each	Description	*Approx. Ship. Wt. Lb. Per 100
9706	$11.18	½x6-Inch Bolt (Two Furnished). ..	45.1
7881	1.82	½-Inch Clipped Washer (Two Furnished.....	3.3

*Including bolts.

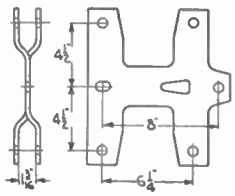
Hubbard Transposition Break Iron Brackets

Hot Galvanized

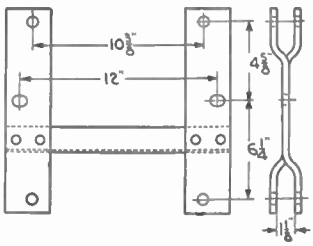


No. 9285

No. 9285 covers a plate, two No. 8061 pins and a machine bolt. Two sets are needed for transposition. Pins and 5/8-inch bolt are included.



No. 9286



No. 9287

Nos. 9286 and 9287 accomplish the same result except that the entire assembly is made up in one piece. Neither pins nor mounting bolts are included.

No.	9285	*9286	*9287
Per 100	$236.97	345.88	576.68
Type	Single	Double	Riveted
Size Steel...inches	1/2	5/16	3/8
Size Mounting Holes...inches	11/16	11/16x1	11/16x7/8
Diameter of Pin Holes...inches	11/16	11/16	11/16
Ship. Wt. per 100...pounds	470	660	1100

*A. T. & T. Co. Standard.

No. 3299

Peirce Wireholders

Multi-Point Type

Hot Galvanized

The insulators can be installed after back has been mounted to building. Insulators can be easily removed or installed to make wireholders of various wire spacing.

Back pressed from 12-gage steel; has 7/16-inch holes in center of 5/16x1 1/2-inch slot.

No.	No. Wires	Wire Spacing In.	Ext. to Ctr. of Wire Hole, In.	Insulator No.	Ship. Wt. Lb. per 100
3296	2	6	2 1/2	1654	297
3299	2	9	2 1/2	1654	325
3394	3	4 1/2	2 1/2	1654	410
3396	3	6	2 1/2	1654	435
24296	2	6	2 1/8	4-11-64	245
24299	2	9	2 1/8	4-11-64	260
24394	3	4 1/2	2 1/8	4-11-64	330
1654	Insulator with 3/8" Bolt & Cork Washer				90
4-11-64	Insulator with 3/8" Bolt				70

Prices upon application.

Hubbard Telephone Distributing Brackets

Hot Galvanized

No. 9200

No. 9200 L House Type

Used at the house end of a telephone service for dead ending twisted pair telephone wires.

Size steel, 3/16x1 3/4 inches. Length legs, 3 7/16x2 inches.

A. T. & T. Co. Std.

No. 9200, Ship. Wt. 56 Pounds..per 100 $16.36

L Pole Type

For taking off telephone services, or for short runs on poles.

Size steel, 1/4x2 inches. Length legs, 4x2 inches. Approximate shipping weight, 100 pieces, 97 pounds.

No.	†*9202	*9203
Per 100	$24.87	23.68
No. of Holes	3	2
Size Holes...inches	15/32	9/16

*Western Union Std. †A. T. & T. Co. Std.

Hubbard Telephone Corner Brackets

Hot Galvanized

Used where leads from the pole come to the building at an angle and to carry leads around the corner of a building.

No.	*9204	*9205	†9206	†9207
Per 100	$30.76	34.00	31.99	38.19
Mounting Hole Size...in.	11/32	11/32	9/32	9/32
Insulated Holes...in.	11/32	11/32	11/32	13/32
Size Steel...in.	7/32x1 1/2	7/32x1 1/2	3/16x 1/2	1 1/4x1 1/2
Length Overall...in.	4 3/8x2 1/2	8 1/2x1 5/16	3 1/4x3 1/8	3 1/4x4 7/8
Ship. Wt. per 100...lb.	66	96	71	121

*Western Union Std. †A. T. & T. Co. Std.

Porcelain Knobs for Telephone Brackets

Dry Process

No. 9225

White glaze, porcelain knob insulator for use with telephone corner brackets.

No. 9226

No.	9225	9226
Per 100	$14.79	25.39
No. of Grooves	2	4
Diam. Bolt Hole...inches	3/8	7/16
O.D...inches	1 1/8	1 3/4
Height...inches	1 7/16	2 1/4
Ship. Wt. per 100...pounds	22	40

Hubbard Bolts for Telephone Brackets

Hot Galvanized

Used for attaching porcelain knob insulators to telephone pole or house brackets.

No.	Stove Bolt 9232	Stove Bolt 9233	Machine Bolt 9603	Machine Bolt 9605 1/2
Per 100	$3.77	4.76	5.12	6.50
Diam...inches	5/16	5/16	3/8	3/8
Length...inches	2	3	3	5 1/2
Ship. Wt. per 100...lb.	6.6	8.6	13.8	22.9

Peirce Cross Arm U-Bolts

Horizontal Construction

Hot Galvanized

Used in position illustrated.

Formed of 3/8-inch round steel.

Has 1 1/2 inches of thread.

No.	1018	1021	1022	1023	1024
Per 100	$40.25	40.13	40.15	40.19	40.23
Size Crossarm...in.	2 3/4x3 3/4	3 1/4x4 1/4	3 1/2x4 1/2	3 3/4x4 3/4	4x5
Diam. of Steel...in.	3/8	3/8	3/8	3/8	3/8
Spread...in.	3 3/4	4 1/4	4 1/2	4 3/4	5
Length of Bolt...in.	3 3/4	4 1/4	4 1/2	4 3/4	5
Ship. Wt. per 100.lb.	40	53	59	66	73

Hubbard Wireholders

Hot Galvanized

No. 4-11-44

Will accommodate all normal sized service wires or cables which formerly needed a special sized wire hole.

Screws are smooth, sharp pointed for easy starting and full threaded so they will hold any normal loading even when attached through timbers thinner than the length of the screw.

Size of wire hole, 7/8x1 inch.

No.	Type Bolt or Screw	Size Screw or Bolt, Gage No. or In.	Length Screw or Bolt, In.	Ship. Wt., Lb. per 100
4-11-40	Toggle Bolt	5/16	4 1/2	80
4-11-42	Carriage Bolt	3/8	5	80
4-11-44	Wood Screw	No. 22	2 1/4	65
4-11-45	Wood Screw	No. 22	3	67
4-11-46	Wood Screw	No. 22	4	69
4-11-48	Wood Screw	No. 22	6	73
4-11-49	Wood Screw	No. 22	7 1/2	76
4-11-50	Wood Screw	No. 22	2 1/2	66
4-11-64	Stud Bolt	3/8	1/2	65
4-11-100	Wood Screw	No. 22	2 1/4	65

Prices upon application.

Peirce Wireholders

All-Porcelain Type

Nos. 1607, 1617, 1707, 1717 — No. 1618 — Nos. 1621, 1631 — Nos. 1625, 1635, 1725, 1735

With Insulators as on No. 1607—Wire Hole 3/4x13/16 Inches

Screw or Bolt Cemented In.	No. Screw or Bolt Leaded In	Size of Screw or Bolt Inches	Insulator Process	Ship. Wt. Lb. per 100
1607	1607L	No. 22x2 1/4 Galv. Screw.....	Dry	95
1617	1617L	No. 22x2 1/4 Everdur Screw....	Dry	95
1619	1619L	No. 24x2 1/4 Galvanized Screw..	Dry	95
1627	1627L	1/4x4 1/2 Toggle Bolt.....	Dry	100
1637	1637L	3/8x5 Carriage Bolt.....	Dry	125
1657	1657L	1/4x4 1/2 Everdur Toggle Bolt....	Dry	105
1707	1707L	No. 22x2 1/4 Galv. Screw.....	Wet	100
1717	1717L	No. 22x2 1/4 Everdur Screw....	Wet	100

With Insulators as on No. 1618—Wire Hole 1/2" Diam.

1618	1618L	14x1 1/2 Cadmium Plated Screw.	...	40

With Insulators as on No. 1621—Wire Hole 5/8" Diam.

1621	1621L	No. 20x2 1/4 Galvanized Screw..	Dry	65
....	1621A	No. 20x1 1/2 Galvanized Screw..	Dry	60
1623	1623L	No. 22x2 1/4 Galvanized Screw..	Dry	70
1631	1631L	No. 20x2 1/4 Everdur Screw....	Dry	65
1633	1633L	No. 22x2 1/4 Everdur Screw....	Dry	65
1641	1641L	1/4x4 1/2 Toggle Bolt.....	Dry	80
1651	1651L	3/8x5 Carriage Bolt.....	Dry	80

With Insulators as on No. 1625—Wire Hole 29/32" Diam.

1625	1625L	No. 22x2 1/4 Galvanized Screw..	Dry	125
1635	1635L	No. 22x2 1/4 Everdur Screw....	Dry	125
1645	1645L	1/4x4 1/2 Toggle Bolt.....	Dry	150
1655	1655L	3/8x5 Carriage Bolt.....	Dry	140
1725	1725L	No. 22x2 1/4 Galvanized Screw..	Wet	135
1735	1735L	No. 22x2 1/4 Everdur Screw....	Wet	135

No. 1670 Leaded in Screw Only—Wire Hole 1 1/2" Diam.

....	1670	5/8x3, Gimlet Point Lag Screw..	Dry	390

Prices upon application.

Peirce Wireholders

Hot Galvanized

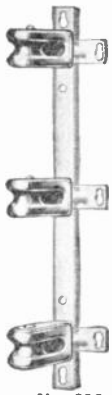
Light Type

No. 191

No. 191-A

No. 296

No. 299A is same as No. 299 except that it has a hole in center of back. When No. 191A is mounted in this hole it changes No. 299 from 2-wire 9-inch spacing to 3-wire 4 1/2-inch spacing. No. 191A is equipped with 5/16x5/8-inch stove bolt for attaching to back. Mounting slots are for 1/4 and 3/8-inch screws.



No. 396

No.	With Insulators per 100	No. Wires	Wire Spacing Inches	Ship. Wt. Lb. per 100
191	$64.28	1	0	94
191A	58.60	1	0	77
296	127.41	2	6	211
299	131.87	2	9	229
299A	131.87	2	9	229

No.	With Insulators per 100	No. Wires	Wire Spacing Inches	Ship. Wt. Lb. per 100
394	$181.60	3	4 1/2	299
396	185.98	3	6	330
494	252.51	4	4 1/2	430
1602	22.57			
	Insulator Only—Wire Hole 1/2"x11/16"			38

Heavy Type

1191	$143.35	1	0	222
1296	224.13	2	6	340
1299	231.94	2	9	368

1396	$331.52	3	6	568
1604	36.74			
	Insulator Only—Wire Hole 1 1/8"x1 1/8"			77

Peirce Corner Irons

Hot Galvanized

Attached by 5/16-inch screws or expansion bolts. Made of 12-gage, 1-inch steel.

No.	501	503
Per 100	$30.50	47.29
Extension from Bend...in.	11/16	3
Mounting Holes.....in.	11/32	7/16
Mounting Slots.....in.	11/32x11/16	7/16x1
Size Bolt.....in.	5/16x3/4	1/4x3/4
Ship. Wt. per 100.....lb.	44	52

Peirce Insulated Telephone Knob Screws

Hot Galvanized

No. 2919

No. 2920

Porcelain knob used generally for running telephone wires along the sides of buildings.

Provided with small white glaze insulator No. 2917. Overall length, 3 inches. Size screw, No. 11x1 7/8 inches.

Shipping weight, 11 pounds.

No. 2919, with Insulators.....per 100 $23.39

No. 2920

May be used for dead-ending duplex or twisted pair telephone wires. Also as a service attachment for low voltage power lines in localities not visited by snow and sleet.

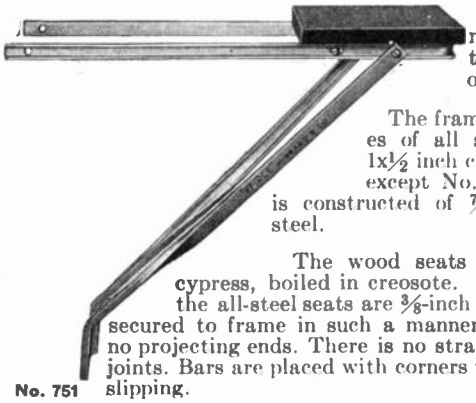
Provided with large brown glaze insulator No. 2927. Overall length, 4 1/4 inches. Size screw, No. 22x2 1/2 inches.

Shipping weight, 48 pounds.

No. 2920, with Insulators.....per 100 $33.12

Hubbard Pole Seats

Hot Galvanized



No. 751

Will support more than three fourths of a ton safely.

The frames and braces of all sizes are of 1x1½ inch channel steel, except No. 9030, which is constructed of ⅞-inch round steel.

The wood seats are 1⅛-inch cypress, boiled in creosote. The bars of the all-steel seats are ⅜-inch square steel, secured to frame in such a manner as to leave no projecting ends. There is no strain on riveted joints. Bars are placed with corners up to prevent slipping.

No. 757

With Wood, Creosoted Seat

No.	Per 100	Size Seat Inches	Shipping Wt. Lb. Per 100
751	$629.18	11x12	1300
753	910.13	11x20	1400

With Steel, Galvanized Seat

755	$653.45	12x13⅞	1400
757	623.07	12x11	1300

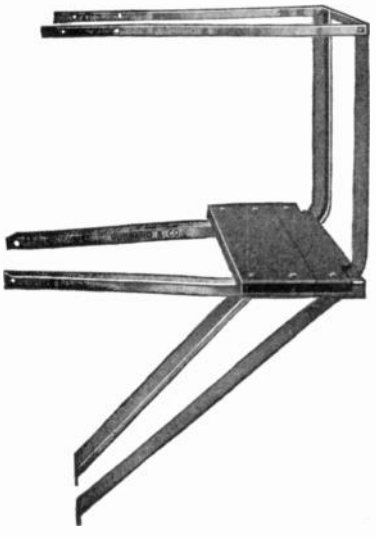
With Wood, Painted Seat

†9030	$3487.57	8x26	4300

†A. T. & T. Co. Std.

Hubbard Pole Balconies

Hot Galvanized



No. 9035

Used for convenience and comfort in telephone terminal box work and serves as switching platform with power companies.

Frame, braces and guard rails of No. 9035 are made of open hearth steel, galvanized by hot-dip process. Wooden platform is of thoroughly seasoned oak, painted with two coats of standard green pole paint.

Nos. 9035 and 9045 are identical except that the railing on No. 9035 fastens to a telephone terminal box and the railing on No. 9045 fastens to the pole.

Upright braces are 1½x1½x3/16 inch steel; the platform supports, 1¾x1¾x3/16 inch angle steel; and the guard rail of 1¼ inch flat steel.

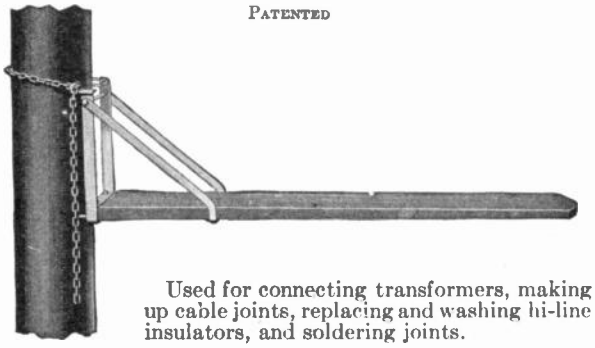
The complete balcony includes all bolts for fastening parts together but not the bolts for attaching to pole.

No.	†9035	9045
Per 100	$5404.26	6726.37
Size Seat....inches	14x30	14x30
Shipping Weight Per 100....pounds	6300	6700

†A. T. & T. Co. Std.

No. 600 Peirce Lineman's Safety Platforms

PATENTED

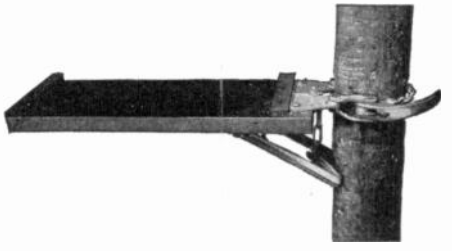


Used for connecting transformers, making up cable joints, replacing and washing hi-line insulators, and soldering joints.

Width, 9⅝ inches. Length, 71 inches.

No. 600. Ship. Wt. Each, 50 Pounds....per 100 $11,494.31

Chance Economy Platforms



Used wherever a board of 24 or 30 inches in length is required or where maximum economy is desired.

Easily attached to pole by a single chain tightener. There is no brace pole, the board being fully supported by its mounting bracket.

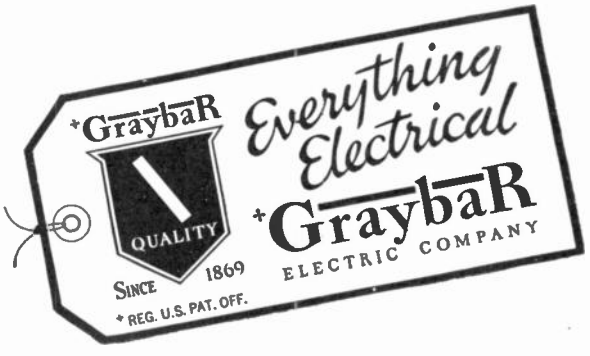
Recommended for use where working space is limited.

Will support the weight of one man. Has been tested to loads up to 850 pounds.

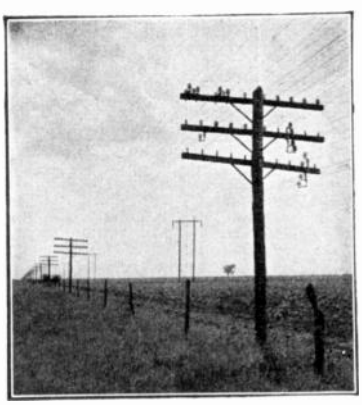
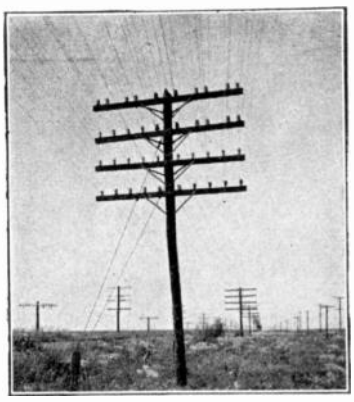
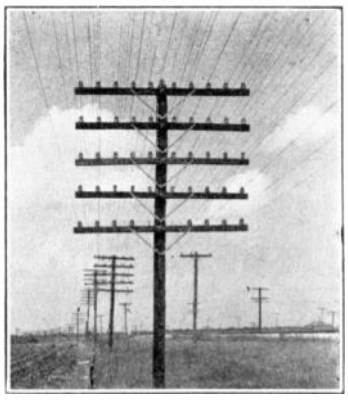
On towers, blocks should be placed under the chain on the inside of the tower leg angle in order to give the chain a firm grip.

Top of board finished with grip tread.

No.	M-4901-51	M-4901-52
Each	$14.75	15.50
Length....inches	24	30
Rated Strength....pounds	600	600
Weight....pounds	26	29



International Creosoted Pine Poles

Old Telephone Lines of International Creosoted Pine Poles—25 Years in Service
In Above Lines—6960 Poles—Less than 1% Replaced to Date

General

Graybar Electric Company brings to the telephone trade the highest quality in creosoted pine poles and offers for support of this statement the fact that its supplier has more long-time service records of poles without failures than any creosoting concern. Low annual cost, reliability, the fact that in times of financial stress or weather hazard the telephone company *needs lines that will stand without failure*, all of these have dominated us in our creosoted pine pole policy.

International As A Supplier

Our supplier, International Creosoting and Construction Company, organized in 1875 and one of the largest commercial creosoting concerns in the business, has an outstanding record and a dominant place in the treating industry. We call special attention to the records of old and new lines cited in this concern's photographs here shown. They are typical, and a few of the many available.

Operating in one of the finest timber-producing areas in the South-West, International has added to its advantages of location and natural resources the skill of graduate chemical engineers and treating operators whose work is conducted in modern plants and well equipped laboratories. Pioneered and trained by a background of 72 years experience, International timbermen select the cream of the timber area (surpassing even the quality of the lumber logging operations) for the manufacture of Graybar-International poles. This production moves to conditioning yards at the treating plants by means of a highly developed and well organized concentrating system. The yards themselves have been built in conformity with Government seasoning recommendations.

Always advocating pure coal tar creosote and the best grade only in the treatment of its poles, and standing against every tendency towards departures in quality or reduction in quantity of the preservative that would make of the user's line an experimental laboratory, Graybar-International creosoted pine poles have gone to almost every state of the Union and without exception have given outstanding service.

Reasons For The Standing Of The International Pine Pole

1—Long Life	**5**—Cleanliness
2—Low Annual Cost	**6**—Fire Resistant
3—Great Strength	**7**—Bird Resistant
4—Lasting Strength	**8**—Termite Resistant

The utilities of the United States use more creosoted pine than all other treated poles put together. Only briefly need their qualifications be given to account for this preference. The tall straight pine trees of the South are natural poles. They grow with a gradually tapering stem, practically without branches, and when sheared of their bark and browned as the result of treatment, they present a stately appearance in the line. Their wood is the strongest of the poles commonly used in line construction. Fortunately pine is a wood into which creosote goes very deeply during the course of scientifically controlled and proper treating operation, and the depth of this protection is the reason for the exceedingly long life of the pine pole. It is the explanation also of pine's resistance to termite attacks, for the checks which open in every wood and expose it to the ravages of these insects do not go past the deep creosote penetration in the pine pole. Modern methods and advances in the science of wood preservation now makes available the creosoted pine pole so well manufactured in appearance, and with surface so clean that they are in use on the streets of New York, Detroit, Los Angeles, St. Louis, Baltimore, Boston, San Francisco, and thousands of other cities.

American Standards Association Specifications for Southern Pine Poles

Approved June 20, 1931

ASA

Introduction

These specifications cover southern pine poles which are to be given a preservative treatment. The poles are to be classified in accordance with the American Standard Dimensions of Creosoted Southern Pine Poles (05e2–1931), which is a part of these specifications.

The length and class of poles wanted and full details of the framing desired shall be stated in the orders.

The details of any marking, including length and class marks, to be placed on the poles shall be in accordance with instructions from the purchaser.

Complete detailed instructions shall be given the supplier in all cases where modifications are to be made in these specifications to meet special requirements.

1.—Material Requirements

1.1—Species

All poles shall be cut from live southern pine timber: Longleaf Pine (Pinus palustris), Shortleaf pine (Pinus echinata), Loblolly Pine (Pinus taeda), Slash Pine (Pinus caribaea), and Pond Pine (Pinus rigida serotina).

1.2—Prohibited Defects

All poles shall be free from decay, red heart, cracks, plugged holes, and bird holes. Nails, spikes, and other metal shall not be present in the poles unless specifically authorized by the purchaser.

1.3—Permitted Defects

1.31 Blue Sap Stain.—Blue sap stain that is not accompanied by softening or other disintegration of the wood (decay) is permitted under these specifications.

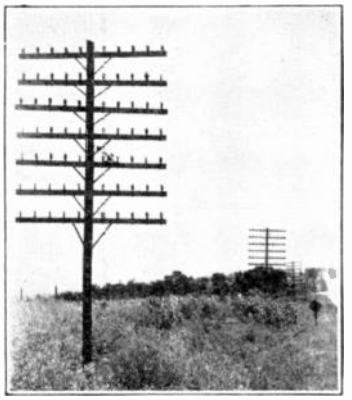
1.32 Hollow Pith Centers.—Hollow pith centers in the tops or butts of poles and in knots are permitted.

1.4—Limited Defects

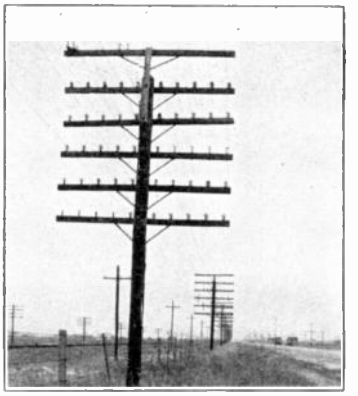
1.41 Checks.—The top and side surfaces of poles shall be free from injurious checks.

1.42 Shakes.—Shakes in the butt surface extending over not more than one-quarter (¼) of the circumference are permitted provided they are at least one (1) inch distant from the edge of the butt. Shakes extending over more than one-quarter (¼) of the circumference are permitted when they are inside of a circle whose center corresponds to the center of the butt surface and whose diameter equals one-half (½) of the average butt diameter.

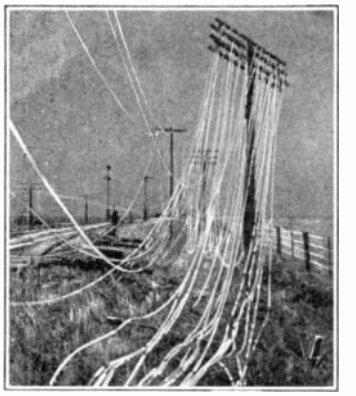
International Creosoted Pine Poles



Strength



Endurance



Reliability

Remarkable Service of International Poles
Left—These 25'6" Top Poles Have Carried 61 Wires for Several Years
Center—Metal Extension Used to Add Extra Crossarms to 27-Year Old Poles
Right—Poles Standing After All Wires Carried to Ground by Sleet

Specifications for Southern Pine Poles

Continued

Shakes in the top surface whose width does not exceed one-sixteenth (1/16) of an inch are permitted provided they do not extend over more than one-half (1/2) of the top circumference.

1.43 SPLITS.—Splits are prohibited in the top surfaces of poles. Splits in butt surfaces are permitted provided that their height from the butt along the side surfaces does not exceed two (2) feet.

1.44 GRAIN.—No pole shall have more than one (1) complete twist of grain in any twenty (20) feet of length.

1.45 INSECT DAMAGE.—Insect damage consisting of holes less than one sixteenth (1/16) of an inch in diameter is permitted.

1.46 KNOTS.—The diameter of any single knot or knot cavity, or the sum of the diameters of all knots and knot cavities in any one (1) foot section shall not exceed the limits set up in the following table. Knots and knot cavities one-half (1/2) of an inch or under in diameter shall be ignored in applying the limitations for sum of diameters.

Limitations of Knot Size

	Maximum Sizes Permitted, Inches		
	Diameter of Any Single Knot or Knot Cavity		Sum of Diameters of All Knots and Knot Cavities in Any 1 Foot Section
Length of Pole	Classes 1-3	Classes 4-10	All Classes
45 Ft. and Under	4	3	8
50 Ft. and Over	5	5	10

Knots one (1) inch or over in diameter, showing discoloration or softness of fibre, indicating possible decay, shall be neatly gouged to a depth of not more than one-fifth (1/5) of the diameter of the pole at the point where the knot is located, to permit determination of the character and extent of decay. The gouging shall be done without unnecessary removal of sound wood, and in such a manner as to insure drainage of water from the hole when the pole is set. Where such gouging does not completely remove the decay (heart rot), the pole shall be rejected.

Knots under one (1) inch in diameter need not be gouged unless after trimming the presence of decay is revealed and upon further examination the decay is found to extend to a depth of more than two (2) inches.

When more than one (1) cavity is present in a pole, the sum of the depths of all cavities in the same six (6) inch longitudinal section of the pole shall not exceed one-third (1/3) of the mean diameter of that section.

1.47 SCARS.—No pole shall have a turpentine face or other scar located within two (2) feet of the ground line.

In other sections of the pole, scars which have been smoothly trimmed so as to remove all bark and all surrounding or overhanging wood that is not completely intergrown with the wood of the body of the pole are permitted, provided

(a) that such trimming does not result in abrupt changes in the contour of the pole surface and that trimmed scar does not have a depth of more than one (1) inch, except that where the diameter of the pole at the location of the scar is more than ten (10) inches the depth may be one-tenth (1/10) of the diameter; and

(b) that the circumference of the pole at any point on trimmed surfaces located between the butt and a point two (2) feet below the ground line is not less than the circumference of the pole at the ground line.

1.48 SHAPE.—Poles shall be free from short crooks.

A pole may have sweep subject to the following limitations:

(a) Where sweep is in one (1) plane and one (1) direction only, a straight line joining the surface of the pole at the ground line and the edge of the pole at the top shall not be distant from the surface of the pole at any point by an amount greater than one (1) inch for each six (6) feet of length between these points.

(b) Where sweep is in two (2) planes (double sweep) or in two (2) directions in one (1) plane (reverse sweep), a straight line connecting the mid-point at the ground line with the mid-point at the top shall not at any intermediate point pass through the external surface of the pole.

2.—Dimensions

2.1—Length

Poles under fifty (50) feet in length shall not be over three (3) inches shorter or six (6) inches longer than nominal length. Poles fifty (50) feet or over in length shall not be over six (6) inches shorter or twelve (12) inches longer than nominal length.

Length shall be measured between the extreme ends of the pole.

2.2 —Circumference

Poles shall be classified in accordance with the American Standard Dimensions of Creosoted Southern Pine Poles. Minimum allowable circumferences at six (6) feet from the butt (except for Classes 8, 9, and 10), and at the top, for each length and class of pole listed, are shown in this standard. Poles having circumferences which are greater, at the same points of measurement, than those shown for the length and class desired, shall be acceptable, provided that the six (6) foot from butt circumference is less than the minimum given for the second larger class pole of the same length. The top dimensional requirement shall apply at a point corresponding to the minimum length permitted for the pole.

International Creosoted Pine Poles

Specifications for Southern Pine Poles

Continued

Dimensions of Creosoted Southern Pine Poles

Lgth. of Pole Ft.	Ground Line Dist. from Butt Feet	Class 1	2	3	4	5	6	7	*8	*9	*10
		Minimum Top Circumference, Inches									
		27	25	23	21	19	17	15	18	15	12
		Minimum Circumference at 6 Feet from Butt, Inches									
16	3½	....	....	....	....	21.5	19.5	18.0	..	..	..
18	3½	....	....	26.5	24.5	22.5	21.0	19.0	..	..	..
20	4	31.5	29.5	27.5	25.5	23.5	22.0	20.0	..	..	.
22	4	33.0	31.0	29.0	26.5	24.5	23.0	21.0	..	..	..
25	5	34.5	32.5	30.0	28.0	26.0	24.0	22.0	..	..	..
30	5½	37.5	35.0	32.5	30.0	28.0	26.0	24.0	..	..	..
35	6	40.0	37.5	35.0	32.0	30.0	27.5	25.5	..	..	..
40	6	42.0	39.5	37.0	34.0	31.5	29.0	27.0	..	..	..
45	6½	44.0	41.5	38.5	36.0	33.0	30.5	28.5	..	..	..
50	7	46.0	43.0	40.0	37.5	34.5	32.0	29.5	..	..	.
55	7½	47.5	44.5	41.5	39.0	36.0	33.5	....	..	..	.
60	8	49.5	46.0	43.0	40.0	37.0	34.5	....	..	..	.
65	8½	51.0	47.5	44.5	41.5	38.5	....	....	..	..	..
70	9	52.5	49.0	46.0	42.5	39.5	....	....	..	..	..
75	9½	54.0	50.5	47.0	44.0	....	....	....	..	..	..
80	10	55.0	51.5	48.5	45.0	....	....	....	..	..	..
85	10½	56.5	53.0	49.5	....	....	....	....	..	..	..
90	11	57.5	54.0	50.5	....	....	....	....	..	..	..

*No butt requirement on Classes 8, 9 and 10.

3.—Manufacturing Requirements

3.1—Bark Removal

Outer bark shall be completely removed from all poles.

No patch of inner bark left on the pole surface shall be more than one quarter (¼) of an inch in width or more than four (4) inches long.

3.2—Sawing

All poles shall be neatly sawed at the butt along a plane which shall not be out of square with the axis of the pole by more than two (2) inches per foot of diameter of the sawed surface. Beveling at the edge of the sawed butt surface not more than one-twelfth (1/12) of the butt diameter in width, or an equivalent area unsymmetrically located, is permitted.

3.3—Trimming

Branch stubs, partially overgrown knots, and completely overgrown knots rising more than one (1) inch above the pole surface shall be trimmed close. Completely overgrown knots less than one (1) inch high need not be trimmed.

3.4—Framing

All poles shall be framed in accordance with the terms of the order before they are subjected to the preservative treatment.

Gains on poles showing sweep or curvature shall be located on the concave side in the plane of the greatest curvature.

All gains on the same pole shall be cut so that their flat surfaces are approximately parallel. Conformance to this requirement may be tested by placing straight edges thirty (30) inches long on the faces of the finished gains so that the ends of the straight edges extend fifteen (15) inches on either side of the center line of the pole. The straight edges in any two (2) gains, when sighted in the direction of the longitudinal axis of the pole, shall not be out of parallel at their ends by more than one-sixteenth (1/16) of an inch. Bolt holes shall be bored perpendicular to the faces of the gains.

4.—Storage and Handling

4.1—Storage

When it is necessary for any reason to hold in storage poles offered under these specifications, they shall be stacked on creosoted or non-decaying skids of such dimensions and so arranged as to support the poles without producing noticeable distortion of any of them. Poles shall be piled in such a manner as to permit free circulation of air and they shall be supported at all points at least one (1) foot above the general ground level, or any vegetation growing thereon. No decayed or decaying wood shall be permitted to remain underneath stored poles.

4.2—Handling

Pole tongs, cant hooks, and other pointed tools capable of producing indentations of more than one (1) inch in depth shall not be used on poles furnished under these specifications.

5.—Definitions of Terms

The following definitions shall apply in these specifications:

5.1—Fungous Defects

5.11 Blue Sap Stain.—Blue sap stain is a bluish coloration in the sapwood, caused by the action of certain molds and fungi, that is not accompanied by softening or other disintegration of the wood.

5.12 Decay.—Decay is disintegration of wood substance due to the action of wood-destroying fungi. Rot and Dote mean the same as Decay.

5.13 Red Heart.—Red heart is the incipient stage of a destructive heart rot caused by *Trametes pini* that occurs in the living tree. It is characterized by a reddish or brownish color in the heartwood.

5.2—Insect Defects

5.21 Insect Damage.—Insect damage is the result of boring in the pole by insects or their larvae. Scoring or channeling of the pole surface is not classed as insect damage.

5.3—Timber Defects

5.31 Checks.—Checks are lengthwise separations of the wood in a generally radial direction.

Heart checks are checks which extend from the pith center of the pole toward but not to the periphery of the pole.

5.32 Cracks.—Cracks are breaks or fractures across the grain of the wood.

5.33 Scars.—Scars or cat faces are depressions in the surface of the pole, generally elliptical in shape, resulting from wounds where healing has not re-established the normal cross section of the pole.

5.34 Shakes.—Shakes are separations of the wood, generally parallel with the annual rings.

5.35 Splits.—Splits are separations between the fibers of the wood extending from surface to surface through the pole.

5.4—Shape

5.41 Short Crook.—A short crook is a localized deviation from straightness which, within any section of five (5) feet or less in length, is more than one-half (½) the mean diameter of the crooked section. (See Diagram 3 of the subsidiary drawing entitled "Measurement of Sweep and Short Crook in Poles.")

5.42 Sweep.—Sweep is the deviation of a pole from straightness. (See diagrams 1 and 2 of the subsidiary drawing entitled "Measurement of Sweep and Short Crook in poles.")

5.5—Miscellaneous

5.51 Knot Diameter.—The diameter of a knot is its diameter on the surface of the pole measured in a direction at right angles to the lengthwise axis of the pole.

5.52 Live Timber.—Live timber is that cut from a tree which was standing and living at the time of cutting.

6.—Subsidiary Drawing

The following drawing is subsidiary to the text of these specifications:

Measurement of Sweep and Short Crook in Poles.

7.—Subsidiary Standard

The foregoing dimension table is subsidiary to the text of these specifications: It is designated as:

American Standard Dimensions of Creosoted Southern Pine Poles (05e2–1931).

International Creosoted Pine Poles

Measurement of Sweep and Short Crook in Poles

Diagram 1—Measurement of Sweep in One Plane and One Direction

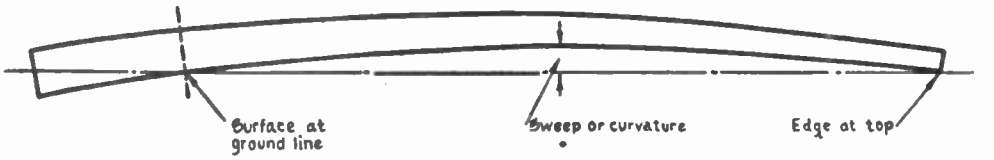
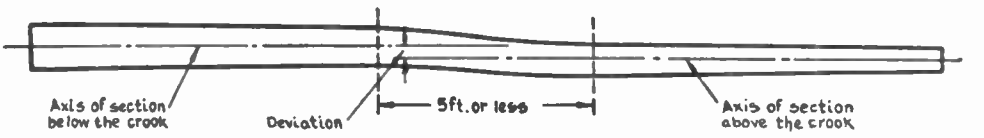


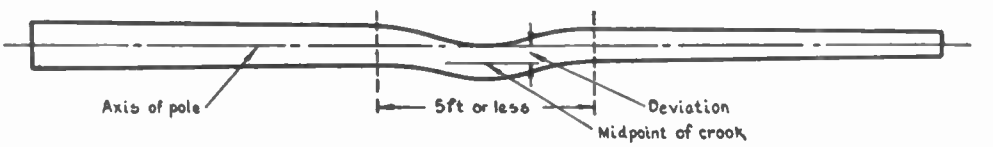
Diagram 2—Measurement of Sweep in 2 Planes (Double Sweep) or in 2 Directions in One Plane (Reverse Sweep)

NOTE: Diagram No. 2 applies to the measurement of double sweep in Western Red Cedar and Southern Pine Poles. For measurement of double sweep in Northern White Cedar and Chestnut Poles, see text.

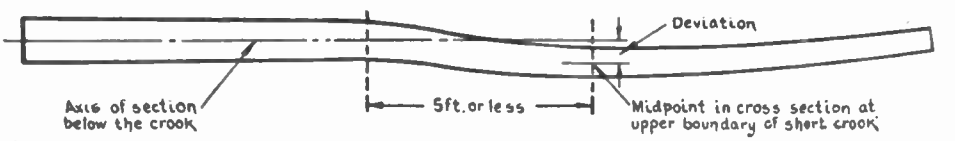
Diagram 3—Measurement of Short Crook (Three Cases Shown)



Case 1—Where the Reference Axes are Approximately Parallel

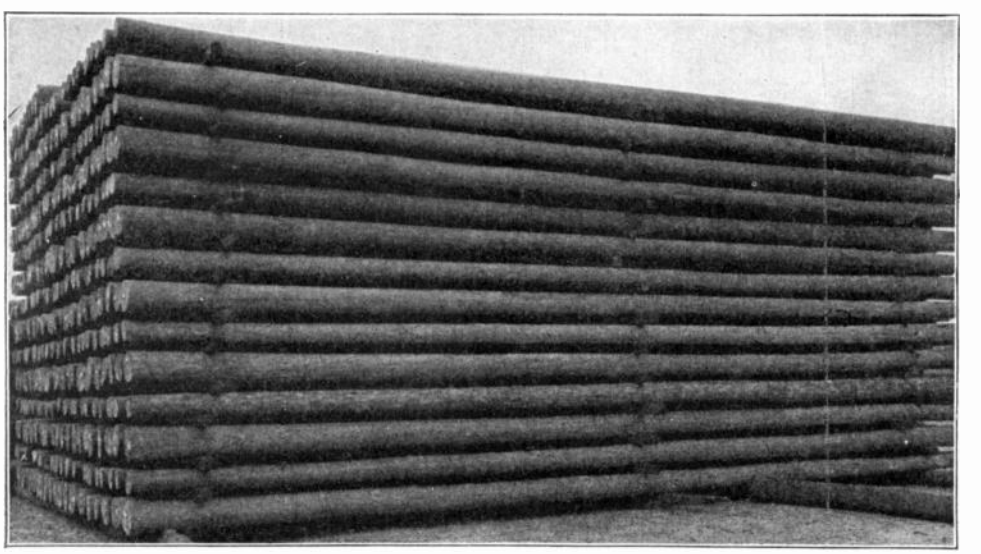


Case 2—Where Axes of Sections above and below the Crook Coincide or are Practically Coincident



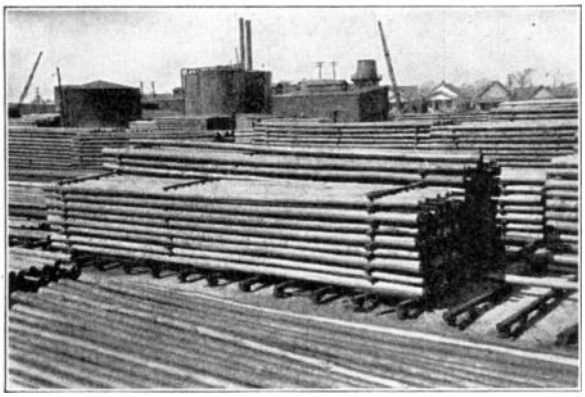
Case 3—Where Axis of Section above Short Crook is not Parallel or Coincident with Axis below the Crook

NOTE: The three cases shown under Diagram 3 are typical and are intended to establish the principle of measuring short crooks. There may be other cases not exactly like those illustrated.



International Pine Poles have the Straightness and Symmetry of a Machined Product

International Creosoted Pine Poles



Stacks Such as Here Shown on One of International's Conditioning Yards Make Possible Our Quick Shipment of Quality Creosoted Pine Poles

Top Dimension Poles

Top dimension poles conform in all respects to American Standards Association Specification poles, with the sole difference that top diameter poles specify minimum top diameter only; whereas A. S. A. Specification poles specify both minimum top circumference and circumference six feet from the butt.

Length Feet	Top Diameter in Inches*						
16	4–5	5–6	6–7	...	...	....	.....
18	4–5	5–6	6–7	...	...	....	.....
20	4–5	5–6	6–7	7–8	...	....	.....
25	4–5	5–6	6–7	7–8	8–9	....	.....
30	...	5–6	6–7	7–8	8–9	....	.....
35	...	5–6	6–7	7–8	8–9	....	.....
40	...	...	6–7	7–8	8–9	9–10	.....
45	...	...	6–7	7–8	8–9	9–10	.....
50	...	...	...	7–8	8–9	9–10	.....
55	...	...	...	7–8	8–9	9–10	.....
60	...	...	...	7–8	8–9	9–10	10–11
65	...	...	...	7–8	8–9	9–10	10–11
70	...	...	...	7–8	8–9	9–10	10–11
75	...	...	...	7–8	8–9	9–10	10–11

Anchor Logs

Anchor logs conform in all respects to the specification for top dimension poles.

3	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13
4	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13
5	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13
6	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13
7	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13
8	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13
9	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13
10	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13
11	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13
12	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13
13	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13
14	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13
15	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13

*Note: Top diameter is determined by placing a tape around the circumference of the pole at the base of the roof.

What an Order Should Show

To avoid delays and prevent the possibility of error, an inquiry or an order for International poles should contain the following information:

1.—Name of consignee.
2.—Destination of shipment.
3.—Date shipment is desired.
4.—Number of poles required.
5.—Length and minimum top diameter.
6.—Number of pounds of creosote required per cubic foot of wood.
7.—Type of framing desired. A blue print or sketch is preferable. Poles can be framed more economically at a treating plant than in the field at point of installation. Insofar as possible therefore complete framing instructions are desirable.

*Specification for the Preservative Treatment of Southern Yellow Pine Poles

Rueping Empty Cell Process

*Note: A descriptive specification only. It must be recognized that specifications do not guarantee quality, and should not be regarded as adequate protection to the buyer. In any treated wood, the all important factor is the source of supply.

General

The following specification is intended to obtain an empty cell treatment for the poles; and if the material to be treated is in a different condition as to moisture and seasoning, material for each retort charge shall be selected as to condition of moisture so that there will be no great difference in degree of seasoning in any one charge. Only perfectly sound poles shall be treated. The treating plant shall be equipped with indicating and recording gauges and other necessary apparatus for accurately observing and recording the treating process. Above the level of the creosoting cylinder there shall be an overhead drum for the purpose of determining that the cylinder is full of preservative and free from air and the gauge reading indicating a full cylinder shall not be taken until the preservative is seen to overflow through the valve on top of this drum; there shall also be a sap drum below the level of the cylinder by means of which sap and condensation shall be removed regularly. The treating plant must have all the necessary chemicals, a laboratory and laboratory apparatus to enable the quality of preservative to be determined.

Seasoning

Air-Seasoning

In air-seasoning, the poles shall be stacked in such a manner as to provide free air circulation and minimum contact between individual pieces in each stack. These stacks shall be placed on treated or otherwise permanent skids at least six inches above the ground on a well drained storage yard free from vegetation and decaying wood, so located that prevailing winds strike it freely, and each layer shall be separated by creosoted strips. Alleys between the stacks shall be wide, continuous and straight. The material shall remain until in the judgment of the inspector it is sufficiently seasoned to obtain the maximum benefit from the treatment.

Seasoning By Steam

When time for air-seasoning is not available, steam seasoning shall be used. Live, saturated steam shall be admitted to the treating cylinder taking care that all air is swept from the cylinder before the outlet valve is closed. Pressure shall then be raised gradually to the maximum temperature desired, this maximum being determined by the treating inspector. It should not be less than 254° F., not more than 259° F. The duration of the steaming process is dependent upon the degree of seasoning of the poles in the cylinder charge but shall in no case be carried to such an extent as to injure the timber.

Initial Vacuum

After the steaming process has been completed the steam shall be blown off and the treating cylinder exhausted as quickly as possible to as high a vacuum as possible, which must be at least twenty-four inches at sea level or proportionately less at higher altitudes. This vacuum shall be maintained for at least one hour or for whatever longer period is necessary, so that the wood may be as dry and free from air as practicable. During the exhaustion process the temperature within the treating cylinder shall be maintained by means of steam under pressure in the closed coils. The cylinder shall be relieved of sap and condensation continuously.

International Creosoted Pine Poles

Specification for the Preservative Treatment of Southern Yellow Pine Poles

Seasoning—Continued

Initial Air Pressure

In the case of air-seasoned poles, Initial Air Pressure is the first step in the treating process. With steam-seasoned poles this step immediately follows the Initial Vacuum.

The poles shall be subjected to air pressure of sufficient intensity and duration (usually 40 lbs. to 100 lbs.) to provide under a quick high vacuum the ejection of surplus preservative, and to insure a retention and proper distribution of the stipulated number of pounds of preservative per cubic foot of wood.

Treatment

The creosote shall be introduced between 170° F. and 210° F., the cylinder pressure being maintained constant until the cylinder is filled. The oil must be seen by the inspector to flow from the overhead drum on top of the treating cylinder, thus assuring him that the cylinder is completely filled with the preservative. The pressure shall then be gradually raised to and maintained at a minimum of 150 lbs. per square inch until there is obtained the largest gross absorption that can be reduced to the stipulated final retention, calculation being based on readings of the working tank gauges and the weight of the creosote at 100° F. The quantity of oil for final retention shall be based on the cubic content of wood in the treating cylinder as determined by actual measurement of the top and butt of each pole in each charge. Under no conditions may shortage of oil in one charge be offset by overage in another; the minimum final retention in each case must be 100 per cent of the quantity of creosote specified.

Final Vacuum

After pressure is completed and the cylinder is emptied of oil a sufficient vacuum shall be promptly created and maintained until the timber can be removed from the cylinder free from dripping oil.

Penetration

The treating processes shall be directed toward complete sapwood penetration with the preservative.

Preservative

For preservative see Creosote Specification.

Note: A final retention of 8, 10 or 12 pounds of creosote per cubic foot are most frequently used. Of these, the 8-pound treatment is specified in the great majority of cases.

Standard Specifications for Creosote Oil American Wood Preservers Association

Grade 1

1.—The oil shall be a distillate of coal-gas tar or coke-oven tar.[1] It shall comply with the following requirements:

2.—It shall not contain more than three per cent of water.

3.—It shall not contain more than 0.5 per cent of matter insoluble in benzol.[2]

4.—The specific gravity of the oil at 38° C., compared with water at 15.5° C., shall be not less than 1.03.

5.—The distillate, based on water-free oil, shall be within the following limits:

Up to 210°C., not more than 5 per cent.

Up to 235° C., not more than 25 per cent.

6.—The residue above 355° C., if it exceeds 5 per cent shall have a float test of not more than 50 seconds at 70° C.

7.—The oil shall yield not more than 2 per cent of coke residue.

8.—The foregoing tests shall be made in accordance with the standard methods of the American Wood-Preservers' Association. (See Manual—Creosote, Analysis.)

[1]Owing to the complexity of the chemical composition and physical properties of coal-tar creosote oil, and to the fact that some of the same compounds and properties which characterize coal-tar creosote are found in certain petroleum derivatives, the determination of the purity of creosote is difficult. When there is not certain assurance that the oil is a pure product, the following tests will aid in arriving at an opinion as to its coal-tar origin:

A.—Fraction distilling between 210° and 235° C. is usually solid or contains some solids when cooled to 25° C.

B.—All of the fractions up to 315° C. contain tar acids in varying amounts, usually at least 1 per cent calculated on the amount of the fraction tested. (See Manual—Creosote, Analysis, Tar Acids.)

C.—The specific gravity of the fraction between 235° and 315° C. is usually not lower than 1.025 and specific gravity of the fraction between 315° and 355° C. is usually not lower than 1.085 at 38° C. compared with water at 15.5° C. However, some pure coal-tar distillates fall slightly below these limits.

If the oil does not comply with at least one of the foregoing tests it is undoubtedly not a pure coal-tar creosote.

[2]Samples of oil taken from working tanks may show an increase in matter insoluble in benzol due to treating operations. Such increases provided they do not exceed by 1 per cent the specification limits should not serve to cause rejection of the oil for non-conformity with specifications if it can be shown that the original fresh oil was of specified quality.

Depth of Creosote Penetration

Increment Borer

The increment borer shown here is used for extracting sections of wood from poles to determine how deeply the preservative has penetrated into the wood.

The use of this instrument is recommended as one means by which the buyer can gauge the quality of the product he receives. It does not damage the pole and the only precaution is that a creosoted wood plug be driven into the hole after the boring has been extracted.

For adequate protection it is essential that creosote penetrates wood deeply (see discussion on penetration later in this section).

Prices for increment borers, on request.

Machine Trimming

All International poles are now being machine trimmed for their entire length. The machines are the most modern type that has been developed, and the depth of cut is uniform from top to butt. Only a light shaving is made to remove the knots and other protuberances. The grading into classes is done after the trimming.

Machine trimming has many advantages. The freshly trimmed surface facilitates seasoning. Unnecessary cutting into the body of the pole by hand trimming and gouging is eliminated. The appearance of the pole is greatly improved and bleeding is further reduced.

International Creosoted Pine Poles

Estimated Weights of Poles

American Standards Association Specification Poles

8 Pounds Final Retention

Length Pole Feet	Estimated Weights in Pounds — A.S.A. Size Group 1	2	3	4	5	6	7	8	9	10
16	....	....	....	....	254	212	179	240	179	122
18	....	....	409	363	301	263	216	277	212	141
20	635	555	479	418	353	310	259	315	235	169
25	898	808	686	602	508	423	362	423	324	221
30	1241	1076	921	780	672	573	489	541	423	...
35	1603	1410	1213	996	865	733	616	682	..	...
40	1974	1734	1499	1260	1048	884	761	...	...	...
45	2369	2087	1772	1528	1250	1062	921	...	...	...
50	2820	2435	2068	1777	1476	1246	1081	...	...	...
55	3220	2801	2411	2077	1739	1481	....	...	...	...
60	3798	3187	2750	2298	1988	1683	....	...	...	...
65	4362	3628	3163	2646	2265	....	....	...	...	...
70	4874	4145	3502	2947	2538	....	....	...	...	...
75	5429	4644	3892	3285	....	....	....	...	...	...

10 Pounds Final Retention

16	....	....	....	....	262	218	184	247	184	126
18	....	....	422	364	310	272	223	286	218	146
20	655	572	495	432	364	320	267	325	243	175
25	926	834	708	621	524	437	373	437	335	228
30	1280	1111	951	805	694	592	504	558	437	...
35	1654	1455	1251	1028	892	757	635	703	...	...
40	2037	1790	1547	1300	1082	912	786	...	...	...
45	2444	2153	1828	1576	1290	1096	951	...	...	...
50	2910	2512	2134	1833	1523	1285	1116	...	...	...
55	3322	2891	2488	2144	1795	1528	....	...	...	...
60	3919	3288	2837	2372	2052	1736	....	...	...	...
65	4501	3744	3264	2731	2338	....	....	...	...	...
70	5029	4278	3613	3041	2619	....	....	...	...	...
75	5602	4792	4016	3390	....	....	....	...	...	...

12 Pounds Final Retention

16	....	....	....	....	270	225	190	255	190	130
18	....	....	435	375	320	280	230	295	225	150
20	675	590	510	445	375	330	275	335	250	180
25	955	860	730	640	540	450	385	450	345	235
30	1320	1145	980	830	715	610	520	575	450	...
35	1705	1500	1290	1060	920	780	655	725	...	...
40	2100	1845	1595	1340	1115	940	810	...	...	...
45	2520	2220	1885	1625	1330	1130	980	...	...	...
50	3000	2590	2200	1890	1570	1325	1150	...	...	...
55	3425	2980	2565	2210	1850	1575	....	...	...	...
60	4040	3390	2925	2445	2115	1790	....	...	...	...
65	4640	3860	3365	2815	2410	....	....	...	...	...
70	5185	4410	3725	3135	2700	....	....	...	...	...
75	5775	4940	4140	3495	....	....	....	...	...	...

Top Dimension Poles

8 Pounds Final Retention

Length Pole Feet	Estimated Weights in Pounds — Top Diameter, Inches 4-5	5-6	6-7	7-8	8-9	9-10	10-11
16	113	164	226	....	....	....	....
18	146	207	277	....	....	....	....
20	160	226	306	400	....	....	....
25	226	316	418	536	672	....	....
30	...	408	541	686	855	....	...
35	...	522	682	855	1058	....	....
40	...	...	857	1048	1278	1537	....
45	...	...	1011	1255	1523	1824	....
50	...	...	....	1485	1791	2129	....
55	...	...	....	1734	2082	2463	....
60	...	...	....	2012	2402	2825	3285
65	...	...	....	2312	2740	3210	3722
70	...	...	....	2636	3111	3628	4188
75	...	...	....	2989	3511	4075	4686

10 Pounds Final Retention

16	116	169	233	....	....	....	....
18	150	213	286	....	....	....	....
20	165	233	315	412	....	....	....
25	233	325	431	553	693	....	....
30	...	421	558	708	882	....	....
35	...	538	703	882	1091	....	....
40	...	...	873	1081	1319	1586	....
45	...	...	1043	1295	1571	1882	....
50	...	...	....	1532	1848	2197	....
55	...	...	....	1789	2148	2541	....
60	...	...	....	2076	2478	2915	3390
65	...	...	....	2386	2827	3312	3841
70	...	...	....	2720	3210	3744	4321
75	...	...	....	3084	3623	4205	4835

12 Pounds Final Retention

16	120	175	240	....	....	....	....
18	155	220	295	....	....	....	....
20	170	240	325	425	....	....	....
25	240	335	445	570	715	....	....
30	...	435	575	730	910	....	....
35	...	555	725	910	1125	....	....
40	...	...	890	1115	1360	1635	....
45	...	...	1075	1335	1620	1940	....
50	...	...	....	1580	1905	2265	....
55	...	...	....	1845	2215	2620	....
60	...	...	....	2140	2555	3005	3495
65	...	...	....	2460	2915	3415	3960
70	...	...	....	2805	3310	3860	4455
75	...	...	....	3180	3735	4335	4985

Characteristics of Quality Pine Poles

Status of Pine Poles

During a period covering the last several years, more treated pine poles have been used than all other treated poles put together. The utility that uses this commodity therefore is using the most generally accepted pole of the utility field. Important lines *that must stand up* under greatest stress and for the longest period of time are well built when built with quality-creosoted pine poles. Every sleet storm brings a further degree of proof of this fact. Bearing in mind the salvage value even of an abandoned line of creosoted pine poles, the costliness of individual pole failures, and creosoted pine's comparatively low annual cost, it seems difficult to think of any line not sufficiently important to justify their use.

Life of Creosoted Pine Poles

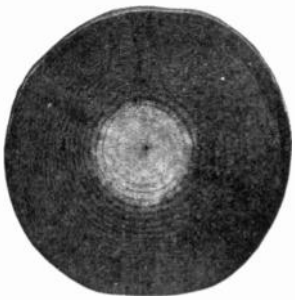
Whole lines of creosoted pine poles furnished by our supplier 25 and 30 years ago are still in use with practically no replacements, and are obviously good for many years to come. Many estimates have been made of the life to expect, and the Pennsylvania Electric Association, as the result of a study, estimated 35 years. This figure seems conservative with so many International creosoted pine lines now approaching that age and still in good condition. The oldest lines still standing, and differences in climatic conditions, make it impossible to forecast definitely just what life to expect from the creosoted pine pole.

Section of the Chemistry Laboratory
Scientific Control Is Essential

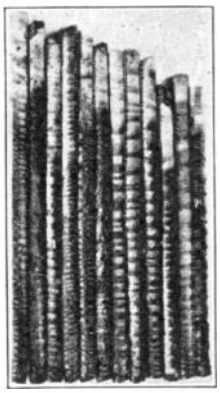
International Creosoted Pine Poles
Characteristics of Quality Pine Poles

Continued

Value of Penetration



Uniform Penetration Is a Criterion of Good Treatment



Deep Penetration Means Long Life For the Poles

While several factors are important, and particularly the grade of preservative is important, no single factor has such bearing on the life and the quality of creosoted pine poles as the depth of creosote penetration and the uniformity of creosote penetration. Untreated wood of any kind commonly used for poles will decay eventually, and the only preventive is to have the penetration of the preservative deep and uniform and of proper grade. This is accomplished only when skilled technicians analyze the creosote and apply the treating process.

Strength

The standard for ultimate fiber stresses for the commonly used pole woods has been developed by the Sectional Committee on Wood Poles under the sponsorship of the Telephone Group, American Standards Association. These ultimate fiber stresses quoted verbatim are tabulated below.

Northern White Cedar	3600 lbs. per sq. in.
Western Red Cedar	5600 lbs. per sq. in.
Chestnut	6000 lbs. per sq. in.
Southern Yellow Pine (Creosoted)	7400 lbs. per sq. in.

Fire Resistance

Fires that rage across the dry cane fields of Cuba crack insulators, melt steel, and burn untreated wood to ashes, but creosoted pine poles stand the flames. Such is the actual experience. Along almost every railroad right-of-way fire gangs burn the weeds each fall and it is a matter of common record that while untreated posts burn completely, creosoted pine poles are undamaged. Under these severe conditions the creosoted pine pole may take fire and smolder and smoke for a while, but finally the fire smothers itself out, leaving a practically undamaged pole. The action is analogous to a burning oil lamp wherein the wick though it forms the support for the flame is itself consumed very slowly.

Appearance and Cleanliness

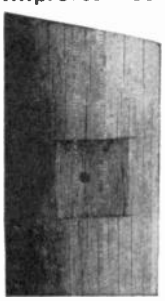
Early in the history of the development of creosoted pine poles some question was raised as to their use on city streets. It was feared that the bleeding of some of the poles might cause trouble if the clothing of pedestrians rubbed against them. No longer are these objections heard either in protest or propaganda. International's care in timber selection, the skill of its production and manufacturing forces. and advances in the science of timber treatment all have contributed to relegate these objections to the background and to give to the business district and the residential street the security and economy of the creosoted pine pole. Graybar-International poles are in use in the business and residential districts of the largest cities of the United States, and in thousands of the smaller ones. The present-day pole is a clean pole. It is smooth and shapely and stands with the appearance of tapered wrought-iron pipe, rather than that of processed trees.

Termites

Termites are attracting more and more attention because of their attacks on poles. Formerly termites lived in the forests, but as the forests become depleted they seek shelter elsewhere and find their way into untreated structural wood. Untreated pole lines have been accused of acting as termite highways by means of which they could fly from pole to pole and then to residence; infesting new areas. It is a fact that termites have now been found in all but three states of the United States.

Creosoted pine poles are practically immune to termite attack. Even though checks in the wood may form, they do not go deep enough to expose untreated interior wood that would afford shelter for these insects.

Improved Roof



The illustration shows a new type of pole roof that many of the utility companies are standardizing upon. It is a one-way roof, cut at an angle of 15°. It is to be recommended.

The advantages of this roof are:

1. Reduces Checking

A roof cut in this  manner leaves a minimum of wood along the center line, the natural cleavage point of the pole. This invites checking. The one-way roof eliminates this disadvantage.

2. Provides Better Drainage

As the roof of a pole weathers, the springwood rings of any species being softer than the summerwood, weather faster, causing the summerwood to stand out in ridges. On the two-way roof these ridges form retaining cups for rain water while on the one-way roof they drain.

3. Conserves the Preservative

Evaporation is a surface phenomenon. There is less surface on a one-way than on a two-way roof.

Marked Poles

Above is the mark by which Graybar-International poles are identified wherever found. This appears as a date-brand on the side ten feet from the butt of the pole; and is supplemented by an identifying brand on the top and the butt of each pole. These marks are conclusive evidence of our confidence in the quality of the product and the desire to be permanently identified with it.

Beware of unmarked poles. If in a few years they begin to fail, the experience is that it is impossible to tie them definitely to the source of supply. On the other hand when a company consistently uses high grade materials and good preservative treatment which result in long-time dependable service, the company willingly and permanently attaches its name to the product.

POLES

WESTERN RED • NORTHERN WHITE
DOUGLAS FIR

The National Pole & Treating Co., Division of Minnesota and Ontario Paper Company, supplier of Graybar poles for more than twenty-five years, has a well earned reputation for furnishing a quality product.

It maintains, at the treating plants, both a graduate chemist and a graduate timber pathologist, who are charged with treating operations, oil analyses, yard sanitation and research—all important essentials in the manufacture of quality poles.

It also maintains, at its concentrating yards, trained workmen, who, for a small extra charge, roof, gain and stain poles to specifications.

PRESSURE TREATED DOUGLAS FIR POLES

•

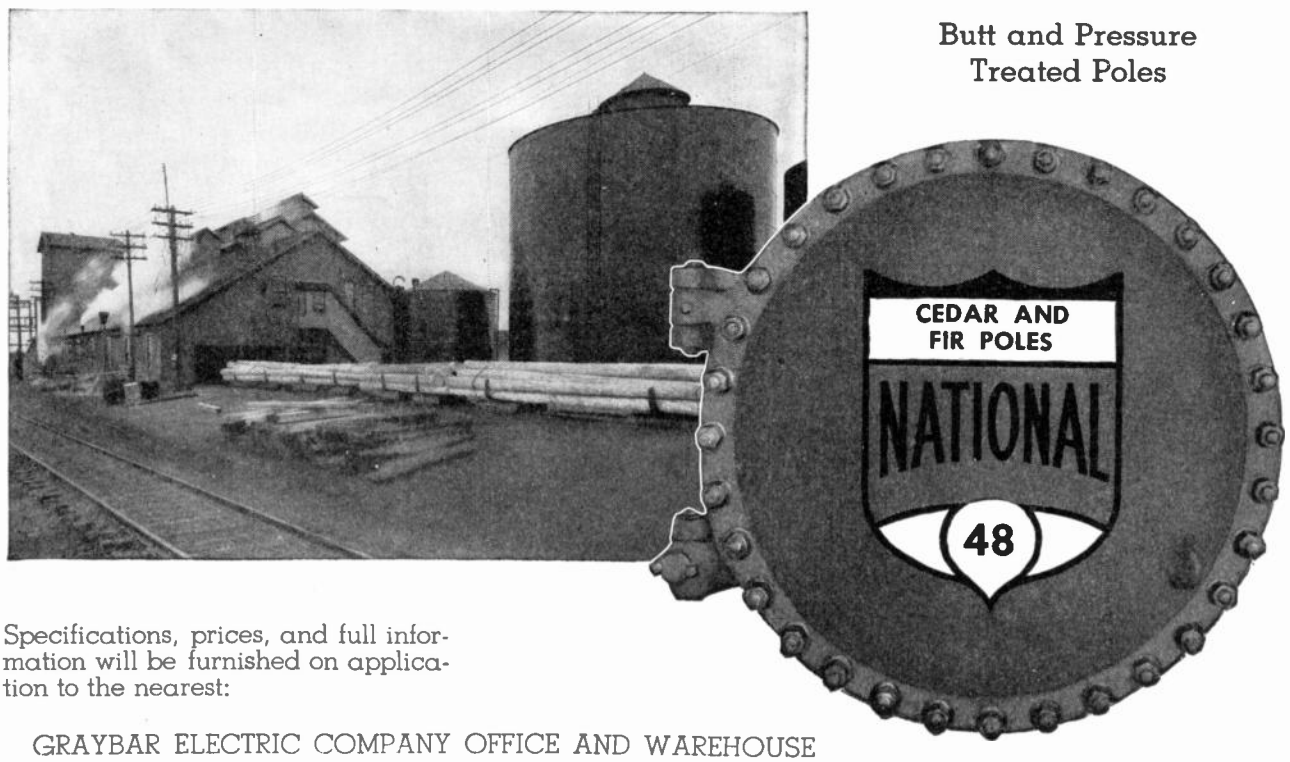
FULL LENGTH PRESSURE TREATED SUPER-CEDAR POLES

•

BUTT TREATED CEDAR POLES

All poles comply with A.S.A. current standard specifications, and all treatments comply fully with American Wood Preservers' Association specifications.

Treating plants are located at Minnesota Transfer, Minnesota and Hillyard, Washington.



Butt and Pressure Treated Poles

Specifications, prices, and full information will be furnished on application to the nearest:

GRAYBAR ELECTRIC COMPANY OFFICE AND WAREHOUSE

Hubbard Pole Dating Nails

Used for indicating the year or pole heights. Any two numerals may be ordered.

Square head, 9/16-inch. Square shank, 1/4-inch. Length, 2 1/2 inches.

Approximate shipping weight per 100 pieces, 5.5 pounds.

No.	Per 100	Stamped No.	No.	Per 100	Stamped No.	No.	Per 100	Stamped No.
1900	$3.16	Blank	1940	$3.16	40	1946	$3.16	46
1915	3.16	15	1941	3.16	41	1947	3.16	47
1920	3.16	20	1942	3.16	42	1948	3.16	48
1925	3.16	25	1943	3.16	43	1949	3.16	49
1930	3.16	30	1944	3.16	44	1950	3.16	50
1935	3.16	35	1945	3.16	45	1955	3.16	55

Hubbard Pole Markers

Any marking will be quoted on request. Nos. 6000 and 7006 are specially heat treated to provide driving strength. A heavy rim protects stamping from hammer blows.

Consecutively numbered markers are furnished with depressed numerals, all other characters in relief.

	Copper		Aluminum	
No.	2000	7000	6000	7006
Overall Length....inches	2	2	2	2
Diameter Head....inches	1	1 1/4	1	1 1/4
Diameter Shank....inches	.298	.328	.298	.328
Ship. Wt. per 100....pounds	8.0	9.5	2.5	3.0

Prices upon application.

Premax Embossed Aluminum Letters and Figures

Made of 99% pure aluminum rolled especially for this purpose, will neither rust, tarnish nor corrode. Plain finish. Being perfectly smooth, letters and figures do not catch or hold dirt.

Standard packing, 100 per carton.

Size Inches	Type	Size Inches	Type
1/2	Roman	2	Roman
3/4	Roman	3	Roman
1	Roman	4	Roman
1 1/2	Roman	6	Roman
1 1/2	Gothic (Figures only)	..	.....

Escutcheon Pins and Eyelets

Size Inches	Description	No. per Pound
1	No. 15 Galvanized Steel	900
1	No. 15 Brass	700
3/4	No. 15 Brass	950
5/8	No. 15 Brass	1100
5/8	No. 15 Cadmium Plated Steel	1200

Smaller or special sizes of pins furnished on request.

Standard Western Union or Signal Pins

Hot Galvanized

For use with standard insulators having one-inch pin holes. Furnished with air dried oak cobs, boiled in paraffine. Pins of high-carbon steel, with clean threads and square nuts.

Long Shank Pins

For Wood Crossarms

No.	‡*8000	‡†*8005
Plain....per 100	$25.94	$41.16
Galvanized....per 100	29.16	44.93
Diameter Shank....in.	1/2	5/8
Length above Shoulder....in.	4 1/4	4 1/4
Length below Shoulder....in.	5	5
Ship. Wt. Per 100....lb.	88	125

Lag Screw Pins

For Wood Arms and Poles

No.	8006	8007
Galvanized....per 100	$33.61	50.17
Diameter Shank....in.	1/2	5/8
Length above Shoulder....in.	4 1/4	4 1/4
Length below Shoulder....in.	3	3
Ship. Wt. Per 100....lb.	61	99

*A. T. & T. Co. Std. †Western Union Std. ‡A. R. A. Std.

Standard Western Union or Signal Pins

Hot Galvanized

Short Shank Pins

For use with standard insulators having one-inch pin holes. Furnished with air dried oak cobs, boiled in paraffine. Pins of high-carbon steel, with clean thread and square nuts.

For Steel Crossarms, Transposition Brackets and Break Irons

No.	‡†*8010	‡†*8015	‡8015A
Galvanized....per 100	$32.15	39.77	41.52
Diam. Shank....in.	1/2	5/8	5/8
Lgth. above Shoulder....in.	4 1/4	4 1/4	4 1/4
Lgth. below Shoulder....in.	1	1	1 3/8
Ship. Wt. Per 100....lb.	55	82	102

With Long Cob for Transposition Insulators

No.	*8011	8016
Galvanized....per 100	$43.99	53.75
Diameter Shank....in.	1/2	5/8
Length above Shoulder....in.	5	5
Length below Shoulder....in.	1	1
Ship. Wt. Per 100....lb.	58	100

*A. T. & T. Co. Std. †Western Union Std. ‡A. R. A. Std.

Hubbard Wood Top Pins

With Steel Bolts

Hot Galvanized

Made of properly seasoned wood tops, thoroughly impregnated with paraffine. The head of the solid steel bolt is sunk in the pin top to eliminate pressure against insulator. Furnished assembled.

For 1-Inch Insulator Pin Hole


No. 8070

			Wood Top			Size Bolt			
No.	Per 100	Diam. Top In.	Diam. Bottom In.	Lgth. In.	Diam. In.	Lgth. In.	Lgth. Below Wood Top In.	Ship. Wt. Lb. per 100
8064	$36.03	1	1 13/16	4	1/2	9	5	80
8070	37.49	1	1 7/8	4 1/2	1/2	5 1/2	1	60
8071	47.28	1	2 1/4	5 1/4	1/2	6 1/2	1 1/4	78
8074	43.12	1	1 7/8	4 1/2	1/2	9 1/2	5	87
8075	52.74	1	2 1/4	5 1/4	1/2	10 1/2	5 1/4	101
8076	53.60	1	2 1/4	5 1/4	1/2	11 1/2	6 1/4	113

Rainier Wood Insulator Pin Specifications

Standard

Scope

This specification covers wood pins made of yellow locust (sometimes called black locust from the color of its bark).

General

The specification and drawings are intended to include all instructions necessary for the guidance of the manufacturer in his work. They are intended to supplement each other and any details indicated in one and not in the other shall be executed the same as if indicated in both.

Dimensions. Pins shall be of the style and dimensions shown, and allowable variations must not be exceeded. Pins and threads shall be smoothly and accurately formed. Figures on the drawing shall be followed in preference to scale measurements.

Seasoning. Pins manufactured from green or partially seasoned wood shall, when seasoned, conform to the requirements of this specification.

Material. Finished pins shall not contain any of the defects listed below, and, where any of these defects are present, they shall be cause for rejection.

Annular Rings. Rings which depart from parallelism with the center line of pin by a sufficient amount to allow a ring starting at the center of the bottom of the pin to run out of the side below the lower thread.

Checks. Checks exceeding 3 inches in length or 1/16 inch in width.

Knots. Loose or unsound knots. Sound knots exceeding 1/8 inch in diameter above the shoulder or exceeding 1/4 inch in diameter below the shoulder. The least diameter of a knot shall be considered its diameter for the purpose of this specification.

Loose Heart.

Pitch Pockets.

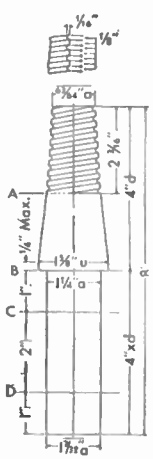
Rot.

Sapwood. Sapwood exceeding 1/8 inch in thickness except on the shoulder of the pin.

Shakes. Cracks or splits concentric to the annular rings of the wood.

Wane. Wane or bark above the shoulder.

Worm Holes. Worm holes in the top 7-inch section of the pin.



8-Inch Pin

Allowable Variations

8-Inch and 9-Inch

Dimension	a	d	u	xd
Over ... inches	1/64	1/8	1/32	3/8
Under ... inches	1/64	1/8	3/16	1/8

Standard Pins

No.	Size In.	Diam. Top In.	Wt. Lb. per 1000
RLP-508	1¼x8	1	325

Transposition Pins

RLP-512	1¼x9	1	400

Rainier Wood Insulator Bracket Specifications

Bracket

Pole Step

Scope. This specification covers wood brackets made of oak.

Brackets. Brackets shall be free from cracks, shakes, brashy wood and all other imperfections, except as hereinafter specified.

Seasoning. The maximum moisture content of seasoned brackets shall be 20%.

Checks. The presence of checks is permitted provided that they do not extend into the threaded section of the bracket or intersect any nail hole and are not greater than 2 inches in length.

Grain. The grain shall be straight and shall be practically parallel to the axis of the threaded portion of the bracket. The grain at either of the right-angled corners at the end of the bracket shall not run out below the bottom thread on the opposite side of the bracket.

Insect-Holes. In wood otherwise sound, a few small insect-holes not exceeding 1/16 inch in diameter may be present, provided that they are scattered and appear only in the portion of the bracket between the turned section and the small nail hole. No more than 5% of the brackets furnished shall contain such insect-holes.

Knots. Brackets shall be free from loose or unsound knots. Sound knots are permitted in the turned section of the bracket up to a diameter not greater than 1/4 inch, provided that the distance between any 2 knots is not less than 1 inch. Sound knots are also permitted in the portion between the turned section and the small nail hole up to a diameter not greater than 1/2 inch, provided that not more than 3 knots are present in this portion of the bracket and that all such knots are at least 1/4 inch distant from either nail hole.

Sapwood. Brackets may contain sapwood along any edge provided it does not appear on any face to a distance greater than 1/4 inch from the edge.

Standard Wood Brackets

No.	Size Inches	Weight Pounds per 1000
ROB-550-4	1½x2 x10	600
ROB-552-5 (AT&T)	1⅝x2 x12	800
ROB-555-6 (WU)	2 x2⅜x12	1000
ROB-556-7 (WU)	2 x2¾x12	1150

Standard Wood Pole Steps

ROB-576	1¾x2¾x7	700

Rainier Crossarms

The indispensable characteristics in a crossarm are strength and durability. Strength to carry the dead load of conductor, sleet and wind, and to withstand shock within any combination of these two duties that may be imposed upon the arm in service. Durability is just as necessary as strength because the arm is intended for many years of service and the cost to replace an arm in the line is many times the price of the arm itself.

Lightness in weight is also important. The lighter arms are less costly to transport and install and of course they place a lesser burden on the pole structures.

Rainier fir crossarms meet all of these requirements. They are carefully graded with the strength reducing defects eliminated. They are seasoned to approximately equilibrium moisture content which adds further to the strength. They are seasoned slowly and under such control that from the start to the finish of the seasoning process, the moisture content of the interior is substantially the same as at the surface of the arm. Even microscopic as well as visible checking is held to a minimum, so that the finished arm is sound and solid. It will not readily soak up moisture nor admit decay fungi to the interior of the arm.

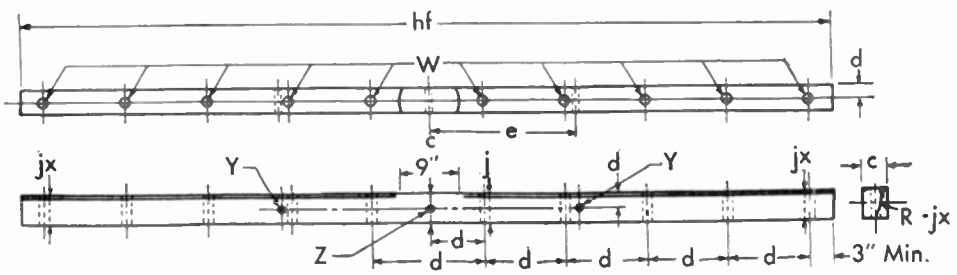
The largest factory is at Chehalis, Washington, where the finest dry kilns and kiln control equipment are located. The dry kiln operations are supervised by men who are specialists and experts in the drying of crossarm sizes of Douglas fir. Carload orders can be shipped economically from Chehalis to all parts of the United States.

Minimum Carload Weight—Fir from Pacific Coast Mills, 44,000 pounds. Small cars are scarce and weight of at least 50,000 pounds should be figured on. Cars to contain as high as 90,000 pounds can be had.

For the benefit of customers who desire LCL quantities of crossarms, particularly with drillings of non-standard sizes or specially spaced, and to provide immediate delivery of any quantities in emergencies, factories are maintained at Chicago, Illinois; Kansas City, Missouri; Newark New Jersey and Texarkana, Texas. These factories are fully provided with manufacturing equipment and are heavily stocked with crossarm lumber which permits prompt attention to the needs of users in all parts of the country. Kiln drying at these factories is not economical due to the cost of fuel, but each point carries a reasonable stock of blanks, kiln dried on the West Coast, for customers who ask for kiln dried arms. All these factories have well designed drying sheds in which the ventilation is controlled. All of these plants are equipped with precision instruments for checking the character of drying while the lumber is being conditioned and in all of them the highest standards of lumber grading are followed.

Southern yellow pine when properly graded is rated equal in strength to Douglas fir. With proper care before treatment, then with pressure treatment under the recognized standards with high grade creosote oil, there can be no question of such arms lasting as long as any other part of the line structure. Pine arms are considerably heavier than fir, but are preferred in a good many localities, due to shorter distances from the source of supply and consequent saving in freight rates. Creosoted yellow pine crossarms are produced at Texarkana, Texas.

Dimensional Tolerances



Pin and bolt holes shall be bored so as to take steel gages as follows: W, pin holes, 1¼-inch gage without forcing, but not 1¹⁹⁄₆₄-inch gage; Y, brace bolt holes, ⅜-inch gage without forcing; and Z, middle bolt hole, ⅝-inch gage without forcing.

Size, Spacing and Weight of Standard Arms

No.	Type	Size	Pole Pins Inches	Side Pins Inches	Ends Inches	Brace Bolts Inches	Weight, Pounds Per 100 Fir	Weight, Pounds Per 100 S.Y.P. Creo. 8#
RA150	Six Pin	3¼"x4¼"x 6′	16	12	4	25	2124	3100
RA152	A	3¼"x4¼"x10′	16	12	4	42	3540	5100
RA153	B	3¼"x4¼"x10′	32	10	4	42	3540	5100
RA151	Code No. 8	3¼"x4¼"x 8′6"	16	9¾	4	32	3009	4300
RA107	102" Pony	2¾"x3¾"x102"	16	9¾	4	28	2295	3200
RA106	82" Pony	2¾"x3¾"x 82"	16	9¾	3¾	28	1845	2600
RA105	62" Pony	2¾"x3¾"x 62"	16	9¾	3½	28	1395	2000
RA104	42" Pony	2¾"x3¾"x 42"	16	9½	3½	28	945	1300

Allowable Variations

Dimensions	c	d	e	hf	j	jx
Over inches	1/16	1/8	1/4	1	3/32	3/32
Under inches	1/16	1/8	1/4	1/2	3/32	3/16

Rainier Clear Douglas Fir Crossarm Specifications

General. This specification covers clear Douglas fir crossarm in sizes 5x6-inch cross-section and smaller.

Dimensions. All arms furnished shall conform to the design and dimensions specified by the purchaser. Allowable variations shall be within the limits shown on the drawing included herewith. Where allowable variations are not shown approximate conformity to the dimensions given, consistent with good commercial practice, is required.

Seasoning. The average moisture content of any lot of arms shall be not less than 12% nor more than 20% of the oven dry weights. The difference between the moisture content of a 1-inch cube cut from the center and that of a slab ½-inch thick cut from the outer surface of any cross-section, shall not be more than 4%.

Annual Rings. Not less than 8 annual rings per inch on either end of the piece, except that arm having 33⅓% summerwood may have not less than 6 rings per inch.

Checks, Shakes and Splits. No arm shall contain shakes or splits. On top of arm, no checks more than 6 inches long. No checks anywhere shall measure more than one-third the length of the arm nor more in depth than one-fourth the distance to the opposite face.

Grain. Except in deviations at knots and pitch pockets, arms shall be free from spiral or diagonal grain with a slope of more than 1-inch in 12 inches.

Pitch Pockets. No pitch pocket on top of an arm more than 4 inches in length, nor more than 8 inches in length elsewhere.

Knots. No knots in clusters. No knot exceeding 1 inch in the middle half and no knot exceeding 1⅛ inches in any part of the arm. No 6-inch section in the middle half shall contain plurality of knots of which the diameters added together exceed 1 inch and no 12-inch section elsewhere shall contain knots of which the diameters added together exceed 1¼ inches.

No knot exceeding ½ inch shall intersect any pin or bolt-hole, and no knot exceeding ¾ inch shall be closer than its own diameter to any hole bored for a wood pin.

The size of any knot shall mean its measurement across the smallest diameter.

Sapwood. Not over 25% on any cross-section.

Loose Heart or Boxed Heart. No loose heart nor heart centers.

Rot. No stain, rot or decay.

Wane. No wane within ¼ inch of pin or bolt hole or on more than one edge. No wane surface more than ¾ inch wide within 12 inches of the middle bolt hole, or 1½ inches elsewhere.

Warp. A straight edge laid lengthwise on the concave surface of an arm shall show no offset for the arm greater than ⅒-inch per foot of length. No arm shall be twisted nor bent in more than one direction.

Finish. Arms shall be planed smooth on all 4 sides, cut accurately to length, ends coated with transparent but moisture-resistant gloss oil compounds, bored and roofed as ordered.

Rainier Structural Douglas Fir Crossarm Specifications

General. This specification covers Rainier Structural Douglas Fir Crossarms made from dense select structural fir lumber in sizes 5x6-inch cross-section and smaller.

Dimensions. All arms furnished shall conform to the design and dimensions specified by the purchaser. Allowable variations shall be within the limits shown on the drawing included herewith. Where allowable variations are not shown, approximate conformity to the dimensions given, consistent with good commercial practice, is required.

Seasoning. The average moisture content of any lot of untreated arms of cross-section not exceeding 4x5 inches shall be not less than 12% nor more than 20% of the oven dry weights. The difference between the moisture content of a section one-half the width and one-half the height of the arm, cut from the center and the slabs surrounding such section shall not be more than 5%.

Dense Material. All crossarms shall be manufactured from lumber containing not less than six annular rings per inch on either one end or the other of a piece and in addition one-third or more summerwood (the dark portion of the annual ring) on either one end or the other. The contrast in color between summerwood and springwood shall be distinct. Coarse grained pieces excluded by this rule are accepted as dense if they average one-half or more summerwood.

Checks. On top of arm. No checks more than 6 inches long. No checks anywhere shall measure more than one-third the length of the arm nor more in depth than one-fifth the distance of the opposite face.

Grain. Except in case of deviations at knots and pitch pockets, the grain, meaning the direction of the longitudinal wood fibers, shall throughout the central one-third portion of the arm, not depart from parrallelism with the axis of the crossarm by more than 1 inch in 15 inches (approximately 4 degrees).

Knots. No knots in clusters. No knot exceeding ½ inch in its smallest diameter intersecting pin or bolt holes. In the middle half of the arm no knot exceeding ¾ inch in diameter shall be closer than its own diameter to any hole bored for wood pins.

Otherwise any number of knots in any location may appear as follows:

Face.....inches	3–4	4¼–6
Diam. between Center and Brace Bolt Holes.in.	1	1¼
Diam. between Brace Bolt Holes and Ends..in.	1¼	1½

Loose knots and knot holes that show no evidence of decay shall not be cause for rejection provided their diameters are within maximum limits for knots, and will drain water when the arm is in its normal position on the pole.

Knots shall be measured across smallest dimension.

Pitch Pockets. Shall not exceed ¾ inch in depth. No pitch pocket on top of an arm more than 4 inches in length, nor more than 8 inches in length elsewhere.

Sapwood. Bright sapwood permitted on not more than one-third the girth.

Loose Heart or Boxed Heart. No arms shall contain loose heart nor the exact pith center of the log.

Rot. Rot, dote or red heart will not be permitted.

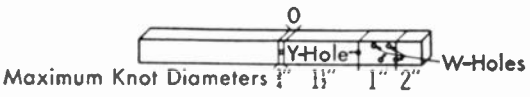
Wane. Wane shall not be present within ¼ inch of pin or bolt hole or on more than one edge of an arm. The width of the wane surface shall not exceed ¾ inch within 12 inches of the middle bolt hole and 1½ inch elsewhere.

Warp. A straight edge laid lengthwise on the concave surface of an arm shall show no offset for the arm greater than one-tenth or an inch per foot of length. No arm shall be twisted nor bent in more than one direction.

Finish. Arms shall be planed smooth on all four sides, cut accurately to length, ends coated with transparent but moisture-resistant gloss oil compound, bored and roofed as ordered. All workmanship of highest commercial quality.

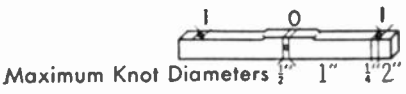
Rainier Southern Yellow Pine Crossarm Specifications

Pressure Creosoted 8#—For Telephone Use

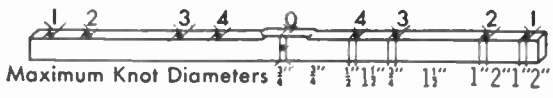


Guard Arm

6-Pin Arm

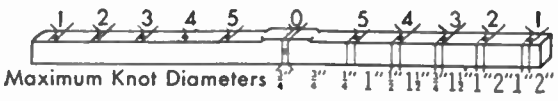


2-Pin Arm

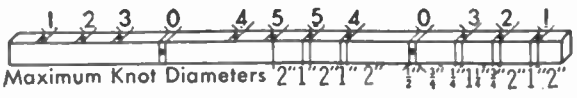


8-Pin, Types S and W Arms

4-Pin Arm



10-Pin, Types A, B, CS, and CW Arms



H Fixture Arm

This specification covers Southern yellow pine crossarms, pressure creosoted for telephone use.

Defects Prohibited. No shakes, through checks, splits, pitch seams, cracks, rot, red-heart, decayed knots, or unsound knots.

Grain. Except in the case of deviations at knots and pitch pockets the general direction of the grain shall not slant from the lengthwise edge of an arm by more than 1 inch in 12 inches.

Knots. The maximum size of single sound knots measured across the smallest diameter including permissible and incased knots that are permitted in the tops or sides of the arms, is given on the drawing above. Sound knots appearing only on the bottom of an arm may have a diameter 50% greater, provided that the diameter of any knot does not exceed 2 inches. Loose knots not greater in diameter than sound knots permitted in the top of the arm, are permitted in the bottom of an arm only.

Pitch Pockets. Pitch pockets shall not be over 1½ inches deep. Pitch pockets entering pin holes may be 4 inches long, provided they are not more than ⅛ inch in width or 2 inches long, provided they are not more than ¼ inch in width.

Pitch pockets up to and including ⅛ inch in width, shall not be more than 8 inches long in any part of the arm, over ⅛ inch and up to ⅜ inch the length shall be reduced proportionately, so that a ⅜ inch pitch pocket, the maximum width allowed anywhere, shall not exceed 4 inches in length.

Checks. Checks in the pin holes of crossarms shall be not more than 2 inches long. Checks in pin holes shall not appear along the same line of grain at adjacent pin holes. Checks that do not intersect pin holes shall be not more than ½ inch deep in the top surfaces nor more than ¾ inch deep in the sides and bottom surfaces. The length of such checks shall not exceed 12 inches divided by the depth of the checks.

Wane. Wane shall not appear on more than two edges of a crossarm nor shall it approach a pin hole closer than ¼ inch nor extend across the full width of either side surface.

Insect Damages. Insect damages are prohibited in the middle half of the crossarm.

Warp. Warp is permitted in one direction only. When a straight-edge is laid full length on the concave side of a warped arm, the offset shall not exceed 1/10 inch for each foot of arm length.

Finish. All lengthwise surfaces of the arm shall be dressed or planed, except that one side or bottom may be rough sawn on not more than 3% of a lot or shipment. Pin and bolt holes shall be reasonably smooth inside and shall not intersect. The arms shall not be splintered to a depth of more than ¼ inch on the side or bottom where the bits break through.

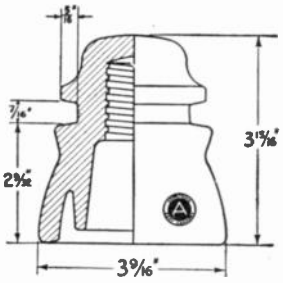
Treatment. Specifications governing the quality of the coal tar creosote, the preparation of the arms for impregnation, and the treatments, shall be those adopted as standard by the American Wood Preservers' Association and published in its manual of recommended practice for the empty cell process with initial air pressure and a final retention of not less than 8 pounds of creosote per cubic foot of timber.

Armstrong's Glass Insulators

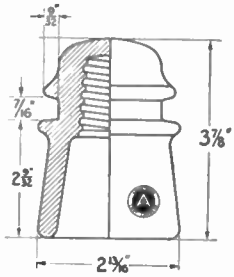
Made by the Armstrong Cork Company

Armstrong's No. 1 meets the Bell System's standards for "DP", No. 2 for "Toll Line." No. 3 for "Exchange Line," and "TW" for "Transposition."

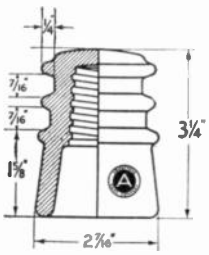
Western Union and the country's leading railroads use Armstrong's No. 1.



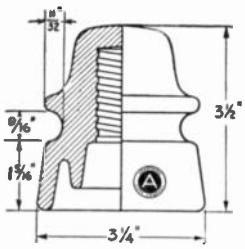
No. 1 Double Petticoat Type



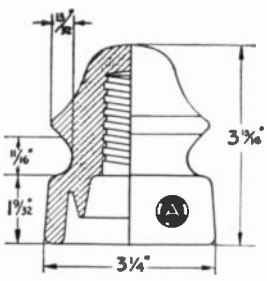
No. 2 Toll Line Type



No. 3 Exchange Line Type

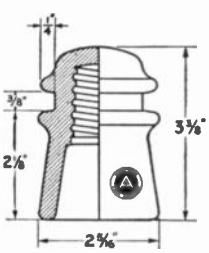


No. 4 Deep Groove, Double Petticoat Type

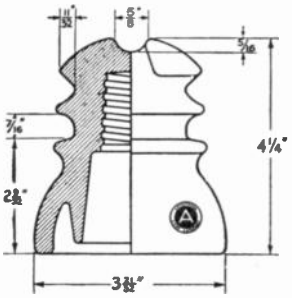


No. 5 Extra Deep Groove, Double Petticoat Type

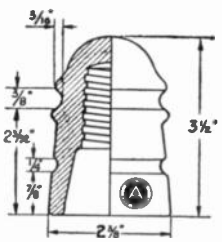
No.	1	2	3	4	5
Average Wet Flash-Over Voltage	25,000	22,000	22,300	20,500	23,000
Average Dry Flash-Over Voltage	52,900	39,300	38,600	42,100	43,000
Leakage Distance, inches	7 1/4	5	4 1/2	4 15/16	5 5/16
Wet Arcing Distance, inches	1 1/8	5/8	1/2	7/8	15/16
Standard Package	40	50	50	50	50
Average Weight Each, ounces	24 1/4	16	10 3/4	17 1/4	18 1/2
Approx. Ship. Wt., Std. Pkg., pounds	65	54	36	59	61
Approx. Ship. Wt., per 1000, pounds	1625	1080	720	1174	1220



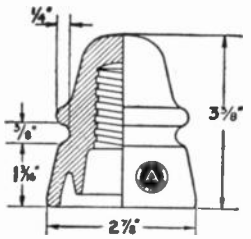
No. 9 Pony Type



No. 10 Top Groove, Western Union Type

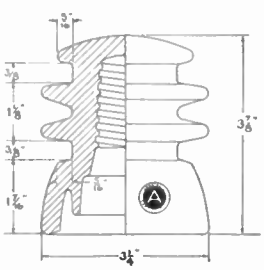


No. 13 Double Groove, Pony Type

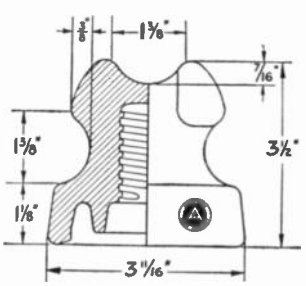


No. 14 Deep Groove, Double Petticoat Pony Type

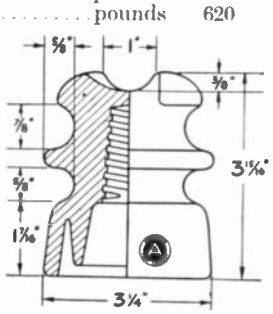
No.	9	10	13	14
Average Wet Flash-Over Voltage	20,800	26,700	20,100	16,500
Average Dry Flash-Over Voltage	34,900	59,500	37,000	35,600
Leakage Distance, inches	4 1/8	8 1/8	4 1/4	3 15/16
Wet Arcing Distance, inches	3/8	1	1/2	7/8
Standard Package	50	40	50	50
Average Weight, Each, ounces	9 3/8	26 1/2	9 5/8	12 1/2
Approx. Ship. Wt., Std. Pkg., pounds	31	72	32	41
Approx. Ship. Wt., per 1000, pounds	620	1800	640	820



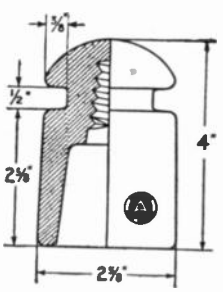
TW- One-Piece Transposition Type



No. 511A Cable Type



No. 512U Universal Distribution Type



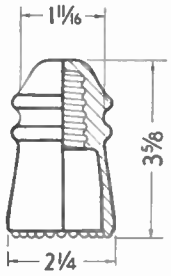
CSC For mounting on a steel pin cushioned with a .016-inch lead thimble.

No.	15	511A	*512U	CSC
Average Wet Flash-Over Voltage	26,600	26,000	.....	.....
Average Dry Flash-Over Voltage	54,500	59,000	.....	.....
Leakage Distance, inches	6 5/8	4 1/2	.....	.....
Wet Arcing Distance, inches	1	1	.....	.....
Standard Package	30	32	50	50
Average Weight Each, ounces	29 1/4	23 1/4	.....	.....
Approximate Ship. Wt., Std. Pkg., pounds	58	50	73	56
Approximate Ship. Wt., per 1000, pounds	1930	1562	1440	1120

*Furnished in brown glass only

Prices Upon Application

Hemingray Communication Insulators



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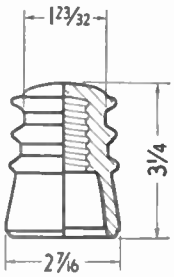

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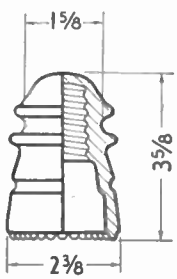

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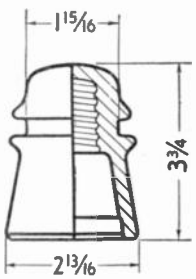

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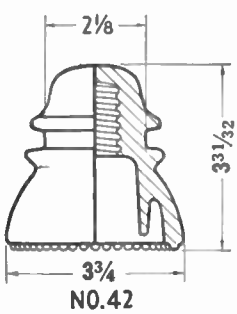

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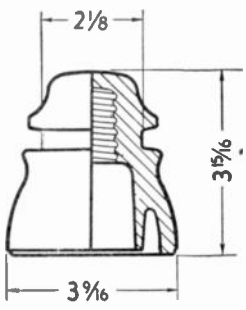

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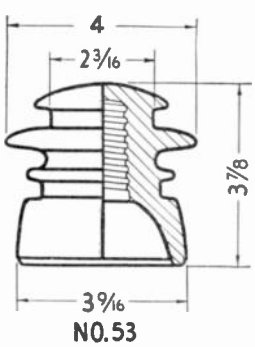

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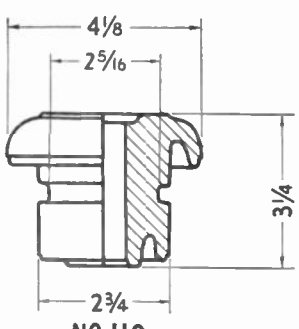


NO.110

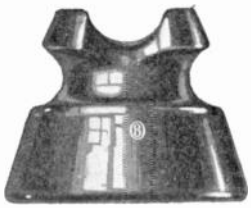
All Insulators Above Have Pin Hole Size of 1 Inch

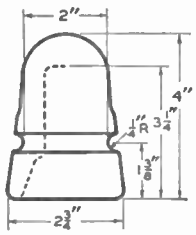
No.	9	10	12	16	42	45	53	110
Carton	50	50	50	50	40	40	30	40
Wt. per Ctn. ...lb.	30	35½	32½	54½	60	67	58½	76
Approx. Wt. per 1000.....lb.	600	710	650	1090	1500	1675	1950	1900

Prices on Request

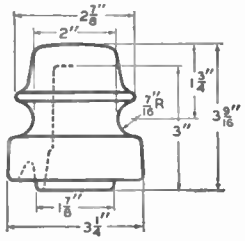
O-B Low-Voltage Pintype Insulators

For Distribution and Farm Lines

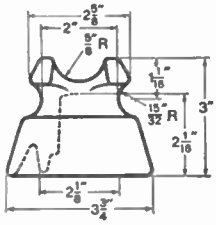




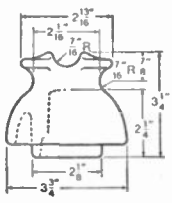
No. 30418



No. 29207



No. 9404

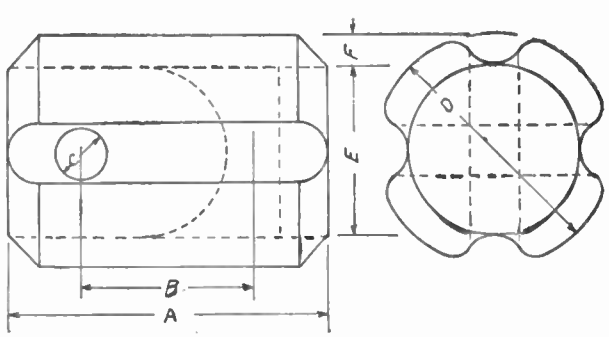


No. 12847

Number	30418	29207	9404	12847
Dry Flashover.....kilovolts	30	35	50	*50
Wet Flashover.....kilovolts	15	20	25	25
Leakage Distance.....inches	2⅝	4	4	5
Dry Arcing Distance....inches	2	2¼	3⅜	3⅜
Mechanical Strength...pounds	2500	3000	2500	2500
Diameter Pinhole.....inches	1	1	1	1
Pin Recommended.....inches	4	4	4	4
No. in Standard Package.....	50	50	50	50
Shipping Wt. per 100...pounds	104	117	132	138

*For untreated insulators. Silentype insulators may have flashover values as much as 5 kilovolts below these values.

No. 500 Porcelain Strain Insulators

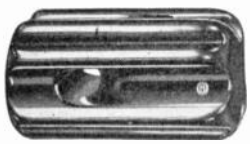


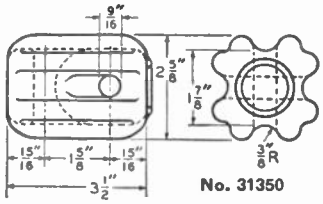
No.	Dimensions, Inches A	B	C	D	E	F	Std. Pkg.	Wt., Lb. per 100 (Packed)
500	2⅜	1	⅜	1 9/16	1 1/16	⅜	200	25
*502	3½	1¾	⅝	2½	1¾	⅝	50	128
*504	4¼	2¼	⅞	2⅞	2⅛	⅜	36	178
*506	5⅜	3⅛	1	3⅜	2⅜	½	25	368

*Furnished in wet or dry process porcelain; unless otherwise ordered wet will be shipped. No. 500 in dry process only.

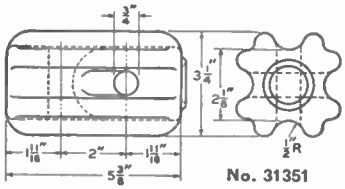
Prices Upon Application

O-B Multi-Fin Strain Insulators
For Distribution and Farm Lines





No. 31350



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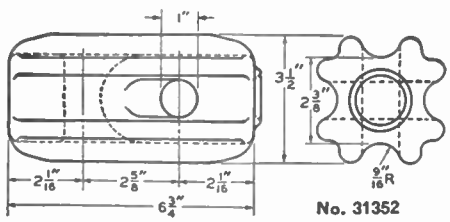
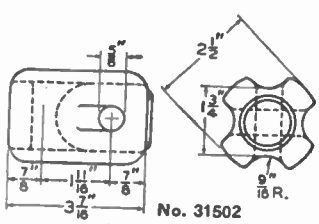


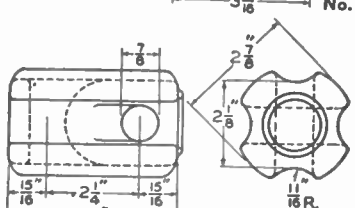
No. 31352

No.		31350	31351	31352
Dry Flashover	kilovolts	30	35	40
Wet Flashover	kilovolts	17	20	24
Leakage Distance	inches	2⅛	2¾	2¾
Rated Ultimate Strength	pounds	10,000	12,000	20,000
No. in Standard Package		50	25	16
Shipping Weight per 100	pounds	150	350	485

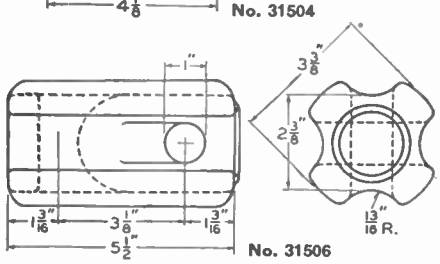
O-B Type J-B Strain Insulators
For Distribution and Farm Lines



No. 31502



No. 31504



No. 31506

No.		31502	31504	31506
Dry Flashover	kilovolts	25	30	35
Wet Flashover	kilovolts	14	16	18
Leakage Distance	inches	1⅝	1⅞	2¼
Rated Ultimate Strength	pounds	10,000	12,000	20,000
No. in Standard Package		50	50	25
Shipping Weight per 100	pounds	125	200	375

One-Wire Glazed Cleats
White Glaze Standard

Style A

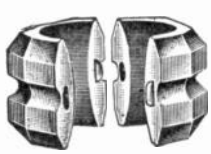
The Style R (regular) wire grooves are ½ inch from surface of both cap and base.

Style A wire grooves are 1 inch from surface to base, and ½ inch from surface of cap.

Style B wire grooves are 1 inch from surface of both cap and base.

Cat. No.	Per 1000 Pair	Takes Wire Sizes	Size Groove In.	No. Pr. per Barrel	Ship. Wt. Lb. per 1000 Pair
1R	$74.00	14–2	3/16 – ½	2800	170
1A	80.00	14–2	3/16 – ½	2400	220
1B	86.00	14–2	3/16 – ½	1800	270
1½R	96.00	6–1	⅜ – 9/16	1800	260
1½A	108.00	6–1	⅜ – 9/16	1400	340
1½B	120.00	6–1	⅜ – 9/16	1150	420
2R	110.00	4–00	7/16 – 11/16	1500	310
2A	120.00	4–00	7/16 – 11/16	1200	395
2B	140.00	4–00	7/16 – 11/16	1000	480
2½R	140.00	4–0000	7/16 – ¾	950	500
2½A	156.00	4–0000	7/16 – ¾	800	575
2½B	172.00	4–0000	7/16 – ¾	750	650
3R	180.00	2–400M	½ –1	800	560
3A	196.00	2–400M	½ –1	700	650
3B	212.00	2–400M	½ –1	650	740
3¼B	260.00	10 Duplex Parallel	....	450	900
3½B	260.00	000–700MCM	¾ –1¼	450	1000
4B	330.00	600MCM–900MCM	1⅛ –1⅜	375	1400
4¼B	500.00	800MCM–1250MCM	1⅝ –1⅝	250	2300
4½B	620.00	1MMCM–2MMCM	1 15/32–2¼	300	2700

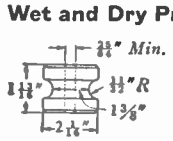
No. 22 Victor Porcelain Split Insulators



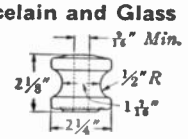
Has 1-inch hole and 5/16-inch groove.

Cat. No.	Hght. In.	Diam. In.	No. in Bbl.	Wt., Lbs. per Bbl.	Price per 1000
22	1⅝	2⅛	1250	332	$156.00

Peirce Spool Insulators
Wet and Dry Process Porcelain and Glass



No. 357



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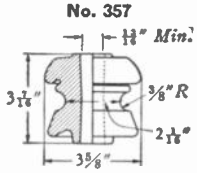

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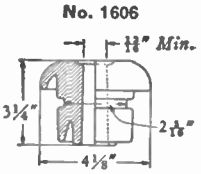


No. 9291

No.	Per 100	Color of Glaze	Type of Porcelain	Overall Length Inches	Approx. Ship. Wt. Lb. per 100
357	$12.72	Brown	Dry Process	1 13/16	44
1606	15.37	Brown	Dry Process	2⅛	70
1606-W	15.37	White	Dry Process	2⅛	70
1706	21.33	Brown	Wet Process	2⅛	70
1612	63.87	Brown	Wet Process	3 1/16	149

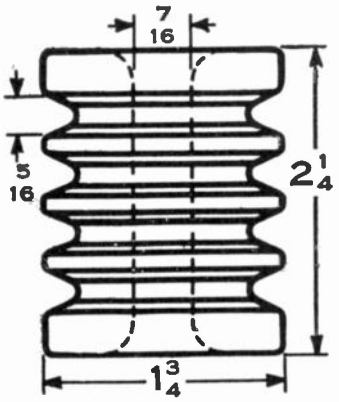
Glass Double Skirt Style

No.	Per 100	Color of Glass	Overall Length Inches	Approx. Ship. Wt. Lb. per 100
9291	$120.19	Colorless or Green	3¼	193

Porcelain Telephone Knobs

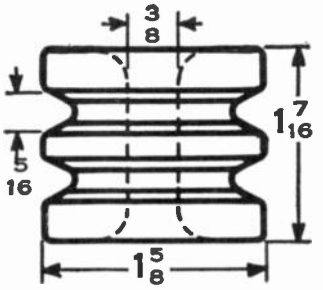
Dry Process Porcelain

No. 6062



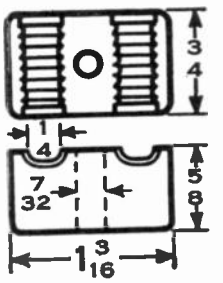
No.	6062
No. in Barrel	1000
Ship. Wt. per Barrel.....lb.	375

No. 6061



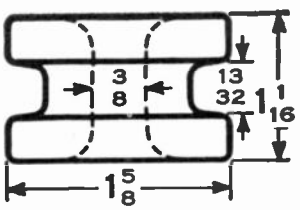
No.	6061
No. in Barrel	2000
Ship. Wt. per Barrel.....lb.	455

No.7137-C



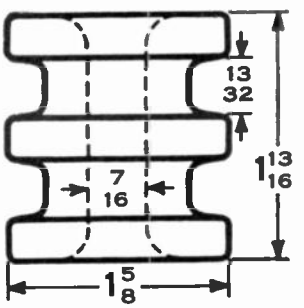
No.	7137-C
No. in Barrel	5000
Ship. Wt. per Barrel.....lb.	460

No.7138-S



No.	7138-S
No. in Barrel	2500
Ship. Wt. per Barrel.....lb.	375

No.7139-T

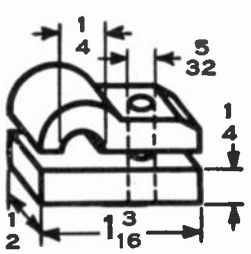


No.	7139-T
No. in Barrel	1500
Ship. Wt. per Barrel.....lb.	360

Porcelain Telephone Cleats

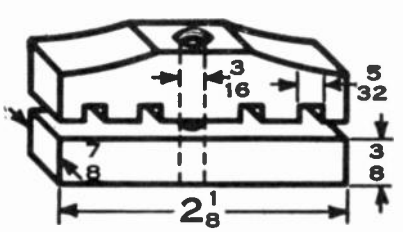
Drop Process Porcelain

No. 333, Top
No. 333½, Base



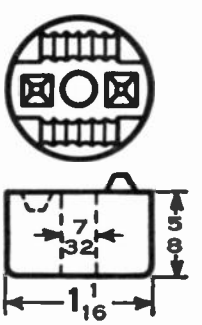
No.	333	333½
No. in Barrel	21,500	22,000
Ship. Wt. per Barrel.lb.	465	475

No. 314, Top
No. 315, Base



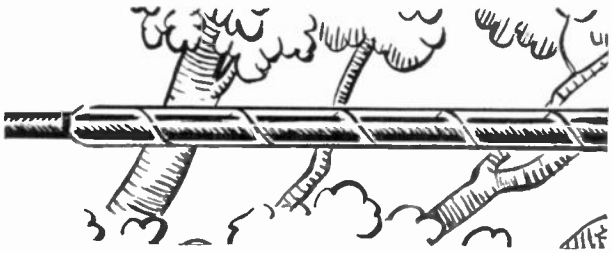
No.	314	315
No. in Barrel	3000	3000
Ship. Wt. per Barrel. lb.	350	375

No. 6250



No.	6250
No. in Barrel	5000
Ship. Wt. per Barrel.....lb.	460

Plastic Tree Wire Guard



For auxiliary protection on power and light conductor or telephone drop wire where it is impracticable to obtain adequate clearance from trees making it necessary to protect conductor or wire from abrasion. Particularly useful where conditions require protection on a considerable length of wire.

Can be thread over an end of the drop wire at the time of installation or can be spiralled on the wire after it is already in place. It is held in position by an S clamp placed at each end of the guard, or series of guards, or can be fastened at each end with friction tape.

Made from a flat strip of clear Tenite II (cellulose acetate butyrate) which is wound into a close helix to form a guard three feet long.

Available in five sizes; ⅜, ⅝, ¾, 1, and 1¼ inches (inside diameter).

Packed 10 in a carton.

Porcelain Tubes

Unglazed

Approximate Number of Standard Tubes per Barrel and Approximate Shipping Weights per 1000

Length Under Head Inches	5/16-Inch Hole 5/16-Inch O.D. Tubes per Barrel	Per 100	Wt. Lb. per 1000	⅜-Inch Hole 11/16-Inch O.D. Tubes per Barrel	Per 100	Wt. Lb. per 1000	½-Inch Hole 13/16-Inch O.D. Tubes per Barrel	Per 100	Wt. Lb. per 1000
½	13000	$1.60	26	12000	$2.00	30	....	....	...
1	9500	1.70	32	8800	2.10	37	5500	$2.70	56
1½	8200	1.80	40	7500	2.20	48	4200	2.80	74
2	7000	1.90	45	6000	2.40	54	3500	3.00	86
2½	5500	2.10	58	4000	2.70	76	3000	3.30	100
3	4500	2.30	62	3100	3.00	107	2500	3.70	114
4	3600	3.00	80	2000	4.00	117	2000	4.80	138
5	2900	3.90	100	1900	5.00	142	1600	6.00	169
6	2000	5.00	118	1500	6.00	183	1300	7.20	204
8	2000	9.00	155	1200	10.50	225	1000	13.00	255
10	1600	16.70	194	1000	18.60	275	900	21.50	311
12	1050	24.40	244	800	26.70	350	800	30.00	344
14	900	32.10	333	650	34.80	400	700	38.50	393
16	750	39.80	387	550	42.90	483	550	47.00	500
18	650	47.50	435	450	51.00	580	450	55.50	589

Diamond Insulated Screw Eyes

Hot galvanized by the Diamond process.

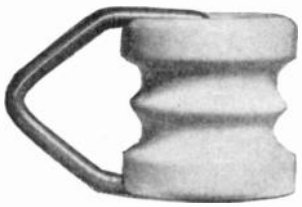
Porcelain ring has a diagonal opening which allows the easy insertion of wires and when pulled taut they cannot become released from the ring.

Size steel, ¼ inch. Opening size, 9/32 inch.

Packed 100 in a container.

No.	830	831	832	833
Per 1000	$76.67	83.34	100.00	103.34
Type	5/8"S	5/8"L	1"S	1"L
Eye, inches	5/8	5/8	1	1
Shank, inches	1	2	1⅛	2⅛
Weight per 1000, pounds	85	95	180	190

National C-B Knobs for Drop Wires



For use on buildings and in trees, C-B Knobs offer many advantages over the rigid knob or insulator.

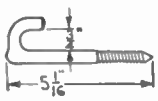
The knob is hooked into the bridle ring and the drop is dead ended on the knob. When used in trees to prevent abrasion, the drop wire is simply carried over the knob with a simple tie.

It makes no difference at what angle the drop wire approaches, as the knob provides a flexible and self-adjusting support, equalizing the strain and taking up all vibration.

No.	190	191
Style	Single Groove	Double Groove
Shipping Wt. per 1000, lb.	250	250

No. 1316 Hubbard Drive Hooks

Hot Galvanized



Used for wire clamp attachments on poles, arms or buildings. Has fetter drive threads and a drive head.

Steel diameter, 5/16 inch. Overall length, 5 1/16 inches. Length of thread, 2 inches.

No. 1316, Ship. Wt. per 100, 29 Pounds . . . . per 100 **$15.30**

No. 1 Reliable Station Ground Clamps

For grounding of communication circuits.

For ⅜ to 1¼-inch pipe. .

Tinned copper strips, round edge with close fitting threads.

Standard package, 100.

No. 1, Shipping Weight, 6 Pounds per 100. . . . . per 100 **$7.00**

Reliable Telephone Drop Wire Clamps

An ideal device for attaching No. 17 B.&S. twisted pair or parallel drop wire to poles and buildings.

The clamp makes a very neat appearing installation. It is easy and quick to install. Two of them can be used to make an angular turn. Slack in drop wires can be taken up quickly without leaving any weak spots.

The P Clamp is wedge-shaped, with a copper wire loop at one end for hooking over a common drive hook, masonry hook or porcelain knob. When using twisted pair wire, it is essential to parallel the wires through the clamp.

The R Clamp for resistance braid (heavy duty drop wire) is the same design as the P clamp but is slightly larger.

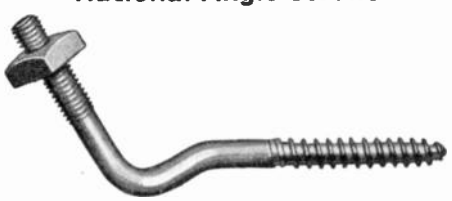
No.	Per 100	Cable	Clamp Range, In. Max.	Clamp Range, In. Min.	Width In.	Bail Lgth. In.	Std. Pkg.	Ship. Wt. Lb. per 100
P	$7.00	Twisted Pair or Parallel	.160	.140	.250	4	25	14
R	7.50	Twisted Pair or Parallel	.270	.250	.343	4	25	14

Steel Drive Hooks

Hot dipped galvanized, 7/16-inch diameter, 5¼ inches long. Shipping weight per 100, 26 pounds.

Per 100 ..... $8.20

National Angle Screws



Designed for use with porcelain knobs in dead ending drop wires on building, where angle between drop and building is 30° or more.

Hot-dip galvanized.

Made to A.T.&T. standard.

Size	inches	5/16
Approx. Shipping Weight per 100	pounds	12

National Galvanized Bridle Rings

These rings are hot-dip galvanized, giving them high rust resistance.

They are a screw type ring, made to A.T.&T. standard, for running twisted pair, bridle, or parallel drop wire on building walls, fences, and poles.

Style		A	C	E	F
Eye Size	inches	1 5/8	1¼	5/8	3
Approx. Shipping Wt. per 1000	pounds	115	75	30	300

National Drive Rings

Low cost, efficient, hammer drive rings for use where only a few pairs of wire are being run. Hot-dip galvanized. Made to A.T.&T. standard. Eye size, ½ inch. Length, 2 inches. Approximate shipping weight per 1000, 17 pounds.

Diamond Bridle Rings

Wood and Machine Screw Thread

Wood Screw

Machine Screw

For pole line and interior block distribution.

When using Style A, C, E, or F in masonry installations, use the size anchor shown.

Wood Screw Thread
Hot-Dip Galvanized or Enameled

No.	Per 100	Style	Eye Inches	Shank Inches	Steel Inches	Size Anchor	Wt. Lb. per 1000 Galv.	Wt. Lb. per 1000 Enam.
810	....	A	1 5/8	1¼	¼	10–14x1	110	150
812	....	C	1¼	1¼	¼	10–14x1	95	125
814	....	E	5/8	7/8	3/16	10–14x ¾	35	50
816	....	F	3	1 7/8	9/16	16–18x1½	300	335

Opening 5/16-inch. Specify galvanized or enameled.

Machine Screw Thread
Hot-Dip Galvanized Only

No.	Per 100	Style	Eye Inches	Thread	Wt. Lb. per 100
821	$3.50	K	¾	10–24	4
823	3.75	M	1¼	10–24	6
825	7.80	Q	1¼	¼–20	9.5
827	8.30	R	1 5/8	¼–20	11

Diamond Bridle Rings

Toggle Type

Made of hard drawn wire.

Available in Diamond hot galvanized or enameled coating.

No	TBR2	TBR4
Per 100	$28.00	40.00
Size ..... inches	3/16x4	¼x4
Eye ..... inches	5/8	1¼
Weight per 100 ..... pounds	8	17

Diamond Drive Rings

Hot galvanized by the Diamond process.

Accomplishes the same purpose as the screw threaded pigtail bridle ring, but is designed for driving instead of screwing into structures. When attached to wood, drive as an ordinary wire nail. When attached to hard substances, brick, stone, or concrete, use the ½-inch size with the 3/16x7/8-inch Diamond Hammer drive anchors, and the 5/8 and 7/8-inch size with ¼x1-inch Diamond hammer drive anchor. Packed 100 to a box.

No.	801	802	803
Per 1000	$7.00	12.00	17.00
Diameter Eye ..... inches	½	5/8	7/8
Overall Length ..... inches	2 1/16	2¼	2 3/16
Size Hammer Drive Anchor to Use in.	3/16x7/8	¼x1	¼x1
Weight per 1000 ..... pounds	18	28	53

No. 1 Diamond Toggle Bolts

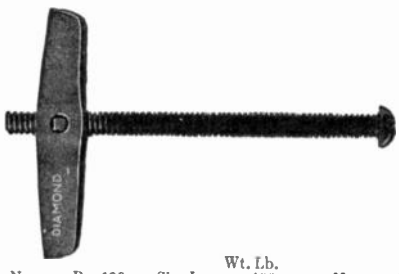
Used for making attachments to hollow brick, tile, or lath walls.

Furnished with steel toggles and steel bolts, also with brass toggles and brass bolts.

Threaded bolt riveted to toggle.

No.	Per 100	Size Inches	Shipping Wt. Lb. per 100	No.	Per 100	Size Inches	Shipping Wt. Lb. per 100
7122	$6.60	1/8 x2	2 3/4	7154	$13.00	5/16x4	12 1/2
7123	6.80	1/8 x3	3	7155	14.00	5/16x5	14 1/2
7124	7.00	1/8 x4	3 1/4	7156	15.00	5/16x6	16 1/2
7133	7.00	3/16x3	4 1/4	7163	14.00	3/8 x3	17 1/2
7134	7.30	3/16x4	4 3/4	7164	16.00	3/8 x4	19 1/2
7135	8.40	3/16x5	5 1/2	7165	18.00	3/8 x5	22 1/2
7136	8.90	3/16x6	6	7166	20.00	3/8 x6	24 1/4
7143	7.70	1/4 x3	7	7183	22.00	1/2 x3	33
7144	8.00	1/4 x4	9	7184	25.00	1/2 x4	40
7145	9.40	1/4 x5	10	7185	28.00	1/2 x5	44 1/2
7146	9.80	1/4 x6	10 1/4	7186	30.00	1/2 x6	52
7153	12.00	5/16x3	11	....	.....	.....	....

No. 5 Diamond Toggle Bolts



Swivel nut in the toggle head permits a stove bolt being screwed in with a finished head at the outside of the work.

Furnished with round or flat slotted steel or brass toggle heads and brass bolts.

No.	Per 100	Size In.	Wt. Lb. per 100	No.	Per 100	Size, In.	Wt. Lb. per 100
7522	$6.60	1/8x2	1 1/2	7546	$9.80	1/4x6	10 1/2
7523	6.80	*1/8x3	2	7553	12.00	5/16x3	11
7524	7.00	*1/8x4	2 1/4	7554	13.00	5/16x4	12 1/2
7533	7.00	3/16x3	4 1/4	7555	14.00	5/16x5	14
7534	7.30	3/16x4	4 3/4	7556	15.00	5/16x6	16 1/2
7535	8.40	3/16x5	5 3/4	7563	14.00	3/8x3	17 1/2
7536	8.90	3/16x6	6	7564	16.00	3/8x4	19 1/2
7543	7.70	1/4x3	7	7565	18.00	3/8x5	22 1/2
7544	8.00	1/4x4	9	7566	20.00	3/8x6	24 1/4
7545	9.40	1/4x5	10	....	.....	.....	....

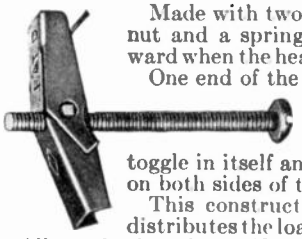
*Mushroom head style 1/8-inch diameter only.

Diamond DHD Hammer Drive Anchors

For nailing to concrete, brick or stone. Shields are non-rusting, made of aluminum alloy; made of 1 piece of metal, a single unit which cannot become disarranged. Furnished with heavily galvanized nails.

No.	Per 100	Diam. and Lgth. of Shield In.	Diam. Drill to Use In.	Avg. Load Sustained Lb.	Working Load Lb.	Std. Pkg.	Wt. Lb. per 100
4314	$8.00	3/16x 7/8	3/16	500	100	100	1
4320	9.00	3/16x1 1/4	3/16	650	130	100	1 1/8
4416	10.00	1/4x1	1/4	1200	240	100	1 1/2
4420	11.00	1/4x1 1/4	1/4	1300	260	100	2
4424	12.00	1/4x1 1/2	1/4	1400	280	100	2 1/8
4520	14.00	5/16x1 1/4	5/16	1450	290	100	2 3/4
4528	16.00	5/16x1 3/4	5/16	1500	300	100	3 1/2
4536	18.00	5/16x2 1/4	5/16	1750	350	100	4 1/2
4544	20.00	5/16x2 3/4	5/16	1750	350	100	5
4632	20.00	3/8x2	3/8	2000	400	100	6 1/2
4652	25.00	3/8x3 1/4	3/8	2000	400	100	8 1/4
4836	30.00	1/2x2 1/4	1/2	3000	600	50	11 1/2
4856	35.00	1/2x3 1/2	1/2	4000	800	50	15 1/2

Diamond Steel Spring Toggle Bolts



Made with two wings that engage a trunnion nut and a spring which forces the wings outward when the head has passed through the wall. One end of the spring is extended to prevent rotation of the head while turning in the screw.

Each wing is a complete toggle in itself and forms a bridge with bearing on both sides of the hole.

This construction gives great strength and distributes the load over a maximum of wall area.

All toggle threads are National Standard Thread.

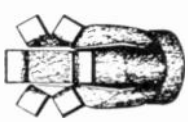
Head and bolts packed 100 in a box.

TYPE **R**—with round head screws. TYPE **F**—with flat head screws and TYPE **M** with mushroom head screws furnished in 1/8-inch diameter only. TYPE **N**—reverse **R** or **F** screw and add nut. TYPE **P**—reverse **R** or **F** screw and add acorn nut. Cap nuts extra.

No.	Per 100	Steel Toggle Heads Only per 100	Bolt Size—Diameter In.	Wire Gage No.	Thrds. per In.	Lgth. In.	Size Drill Req. In.	Ship Wt. Lb. per 100
7022	$6.60	$6.30	1/8	6	32	2	3/8	1 3/4
7023	6.80	6.30	1/8	6	32	3	3/8	2
7024	7.00	6.30	1/8	6	32	4	3/8	2 1/4
7033	7.00	6.40	3/16	10	24	3	1/2	3 3/4
7034	7.30	6.40	3/16	10	24	4	1/2	4 1/4
7035	8.40	6.40	3/16	10	24	5	1/2	4 3/4
7036	8.90	6.40	3/16	10	24	6	1/2	5 1/2
7043	7.70	7.00	1/4	..	20	3	11/16	6
7044	8.00	7.00	1/4	..	20	4	11/16	7 1/4
7045	9.40	7.00	1/4	..	20	5	11/16	8 1/2
7046	9.80	7.00	1/4	..	20	6	11/16	9 1/2
7053	12.00	9.00	5/16	..	18	3	13/16	11
7054	13.00	9.00	5/16	..	18	4	13/16	13
7055	14.00	9.00	5/16	..	18	5	13/16	15
7056	15.00	9.00	5/16	..	18	6	13/16	17

For prices on brass bolts and brass toggle heads, multiply the steel by 2.8.

Diamond Crimp-Nuts



Meets the need for a secure means of attachment which may be quickly placed in position on a partially or wholly completed sheet metal structure even though the back or interior of structure is not readily accessible.

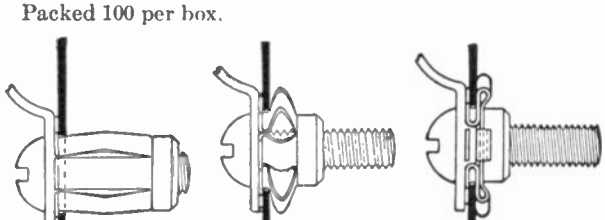
It may be used in a hollow section where space is closely confined. Usually 1/2-inch of space is sufficient.

Holding capacity equals that of a standard bolt.

No tool is required for making ordinary attachments. When many uniform attachments are to be made, use of the attaching tool is recommended.

Prices do not include screws.

Packed 100 per box.



Inserted and Ready — Partly Expanded — Completely Attached

Screw Size....	6-32	8-32	10-24	10-24	10-32	1/4"-20	5/16"-18
Per 100.....	$7.50	7.50	7.50	10.00	7.50	8.50	9.00
Hole Diam. in.	3/8	3/8	3/8	3/8	3/8	15/32	17/32
Length.....in.	9/16	9/16	9/16	1 1/16	9/16	1/2	1/2
Wt. per 100 lb.	.7	.7	.7	1.4	.7	.9	1.0

Rapid Attaching Tool.....each $12.50

Diamond P Lag Screw Expansion Shields

Malleable iron. Prices without lag screw.

Diam. Lag Screw Inches	Long Standard No.	Per 100	O.D. & Drill Size Inches	Length Shield Inches	No. per Pkg.	Ship. Wt. Lb. per 100	Short Standard No.	Per 100	O.D. & Drill Size In.	Length Shield In.	No. Per Pkg.	Ship. Wt. Lb. per 100
3/16	....	.....	...	...	...	...	1003	$15.00	3/8	1	100	2
1/4	1104	$15.00	1/2	1 1/2	100	4	1004	15.00	7/16	1	100	3
5/16	1105	18.00	9/16	1 3/4	100	5	1005	18.00	1/2	1	100	4
3/8	1106	25.00	5/8	2 3/4	50	11	1006	25.00	5/8	2	50	7
1/2	1108	38.00	3/4	3 1/2	50	17	1008	38.00	3/4	2	50	10
5/8	1110	45.00	7/8	3 1/2	25	21	1010	45.00	7/8	2	50	13
3/4	1112	65.00	1 1/8	3 1/2	25	31	1012	65.00	1 1/8	2	25	21
7/8	1114	95.00	1 3/8	5	25	75	....	.....	...	.	...	..
1	1116	110.00	1 1/2	5	25	90	....	.....	...	.	...	..
1 1/4	1120	250.00	1 7/8	8 3/4	20	270	...	.....	...	.	...	..

Keystone Single Expansion Shields

For Machine Bolts and Machine Screws

Made of malleable iron.

Diam. of Screw or Bolt Inches	No.	Per 100	Length Inches	Outside Diam. and Size Drill to Use, Inches	No. per Pkg.	Shipping Weight, Pounds per 100
1/4	1504	$15.00	1 5/16	1/2	100	4
5/16	1505	18.00	1 1/2	9/16	100	6
3/8	1506	25.00	1 5/8	11/16	50	9
1/2	1508	38.00	1 7/8	7/8	50	16
5/8	1510	45.00	2	1	25	19
3/4	1512	65.00	2 3/4	1 3/16	25	38

Keystone Interlocking Expansion Shields

Double—For Use with Machine Bolts

No. per package: 1/4 and 5/16 inch, 100; 3/8 and 1/2 inch, 50; 5/8 to 1 inch inclusive, 25; and 1 1/4 inches, 20.

Makes permanent fastenings to concrete, brick or stone. Prevents nut being drawn out of shield when heavy loads are applied. Guides mechanic in determining when to stop tightening up bolt. Prevents nut being drawn past point of maximum expansion. Locks two sides and nut into a unit of resistance against load.

Diam. Screw or Bolt In.	No.	Shields Only Per 100	Length Shield In.	O.D. and Size Drill to Use In.	Wt. Lb. Per 100
1/4	1404	$15.00	1 1/2	1/2	5
5/16	1405	18.00	1 3/4	9/16	6
3/8	1406	25.00	2	11/16	10
1/2	1408	38.00	2 1/2	7/8	18
5/8	1410	45.00	2 7/8	1	27
3/4	1412	65.00	3 1/4	1 1/8	35
7/8	1414	95.00	4	1 1/2	85
1	1416	110.00	4 1/4	1 5/8	100
1 1/4	1420	250.00	6	2 1/8	240

Diamond Calking Anchors

For Use with Machine Screws

Cat. No.	Per 100 Without Screws	Diameter Bolt or Screw, In.	Size, Hole Inches Diam.	Depth	Std. Pkg.	Weight Pounds per 100
3020	$3.80	No. 6-32	1/4	3/8	100	3/4
3025	4.50	No. 8-32	5/16	1/2	100	1 1/2
3030	4.95	No. 10-24	3/8	5/8	100	2
3035	6.50	No. 12-24	7/16	3/4	100	3 1/2
3040	7.20	1/4-20	1/2	7/8	100	5 1/2
3050	9.75	5/16	5/8	1	50	10 1/2
3060	12.00	3/8	3/4	1 1/4	50	16
3070	15.00	7/16	7/8	1 1/2	50	21
3080	15.00	1/2	7/8	1 1/2	50	21
3100	25.00	5/8	1 1/8	2	50	41
3120	50.00	3/4	1 1/4	2 1/4	50	64

Diamond Calking Tools

One tool packed in each box of anchors.

Style B Diamond Super-Grip Expansion Bolts

Shield expanded by long, tapered cone shaped end of bolt. Nut grips work and expands shield. Bolts hot galvanized by the Diamond process. One calking tool furnished in each box of 100 bolts. Prices include bolts.

No.	Per 100	Size In. Diam.	Size In. Lgth.	O.D. In.	Depth of Hole Inches
2041A	$15.50	1/4	1 1/2	7/16	1
2042	15.65	1/4	2	7/16	1
2042A	15.80	1/4	2 1/2	7/16	1
2043	15.95	1/4	3	7/16	1
2052	23.50	5/16	2	1/2	1 1/4
2052A	24.00	5/16	2 1/2	1/2	1 1/4
2053	24.50	5/16	3	1/2	1 1/4
2062A	29.25	3/8	2 1/2	9/16	1 1/2
2063	30.00	3/8	3	9/16	1 1/2
2063A	30.75	3/8	3 1/2	9/16	1 1/2
2064	31.50	3/8	4	9/16	1 1/2
2065	33.00	3/8	5	9/16	1 1/2
2066	34.50	3/8	6	9/16	1 1/2
2083	44.40	1/2	3	3/4	2 1/8
2084	47.00	1/2	4	3/4	2 1/8
2085	48.20	1/2	5	3/4	2 1/8
2086	49.40	1/2	6	3/4	2 1/8
2103	76.40	5/8	3	7/8	3
2104	80.00	5/8	4	7/8	3
2105	83.80	5/8	5	7/8	3
2106	87.60	5/8	6	7/8	3
2124	114.60	3/4	4	1	3 1/8
2125	120.00	3/4	5	1	3 1/8
2126	125.40	3/4	6	1	3 1/8

Diamond N.Y. Screw Anchors

For Wood Screws

Made of non-corroding, rustproof composition metal. Packed 100 in a box.

No.	Per 100	Diam. of Screw Inches	Length Anchor In.	O.D. Anchor In.	Size Screws	Wt. Lb. per 100
6208	$4.40	1/8	1/2	1/4	5- 6- 7	1
6210	4.40	1/8	5/8	1/4	5- 6- 7	1
6212	4.40	1/8	3/4	1/4	5- 6- 7	1
6216	4.40	1/8	1	1/4	5- 6- 7	1 1/2
6308	5.00	3/16	1/2	5/16	8- 9-10-11	1 1/2
6312	5.00	3/16	3/4	5/16	8- 9-10-11	2
6316	5.00	3/16	1	5/16	8- 9-10-11	3
6320	5.50	3/16	1 1/4	3/8	8- 9-10-11	5
6326	6.25	3/16	1 5/8	5/16	8- 9-10-11	3 1/2
6412	5.60	1/4	3/4	7/16	12-13-14	3
6416	5.60	1/4	1	7/16	12-13-14	4
6424	8.00	1/4	1 1/2	7/16	12-13-14	6
6432	10.00	1/4	2	7/16	12-13-14	8 1/4
6440	12.00	1/4	2 1/2	7/16	12-13-14	10 1/2
6512	6.25	5/16	3/4	7/16	15-16-17-18	3
6516	6.25	5/16	1	7/16	15-16-17-18	3 1/2
6524	9.00	5/16	1 1/2	7/16	15-16-17-18	6 1/4
6532	9.50	5/16	2	7/16	15-16-17-18	8 1/4
6616	9.00	3/8	1	9/16	20-22-24	6 1/2
6620	9.00	3/8	1 1/4	9/16	20-22-24	8 1/2
6632	10.00	3/8	2	9/16	20-22-24	11
6832	25.00	1/2	2	3/4	26-28-30	21 3/4
6840	30.00	1/2	2 1/2	3/4	1/2-In. Lag	28
6932	30.00	5/8	2	7/8	5/8-In. Lag	25
6956	50.00	5/8	3 1/2	7/8	5/8-In. Lag	42

Diamond Multi-Size Screw Anchors

Designed to accommodate in one anchor several diameters of wood screws. Made from high grade malleable iron.

Packed 100 in a box.

No.	Per 100	Designating Sizes	For Wood Screws No.	Lgth. In.	Drill Size Inches	Wt. Lb. per 100
5212	$5.00	Nos. 6 to 8x ¾"	6 to 8	¾	¼	1
5224	5.60	Nos. 6 to 8x1½"	6 to 8	1½	¼	1¾
5312	5.60	Nos. 10 to 14x ¾"	10 to 14	¾	5/16	1½
5316	5.60	Nos. 10 to 14x1 "	10 to 14	1	5/16	1¾
5324	8.00	Nos. 10 to 14x1½"	10 to 14	1½	5/16	2½
5516	6.25	Nos. 16 to 18x1 "	16 to 18	1	⅜	2¾
5524	9.00	Nos. 16 to 18x1½"	16 to 18	1½	⅜	4
5628	10.00	Nos. 20 to 24x1¾"	20 to 24	1¾	7/16	5¼

Diamide Rotary Drills

Cemented Carbide Tipped

For masonry drilling. Heat-treated shank. Tip retains its edge under abrasive cutting. Can be resharpened on loose bonded silicon carbide wheels.

No.	Each	Drill Diam. In.	Over-all Shank Diam. In.	For Drill Lgth. In.	For Cap. In.	Std. Ctn.	No.	Each	Over-all Shank Diam. In.	For Drill Lgth. In.	For Cap. In.	Std. Ctn.
DK 3	$1.80	3/16	⅛	4	¼	12	DK11	$3.75	11/16	½	8	½	6
DK 4	1.80	¼	3/16	5	¼	12	DK12	4.20	¾	½	8	½	6
DK 5	1.95	5/16	¼	5	¼	12	DK13	4.75	13/16	½	8	½	6
DK 6	2.15	⅜	¼	5	¼	12	DK14	5.10	⅞	½	8	½	6
DK 7	2.40	7/16	¼	6	¼	12	DK16	7.00	1	½	10	½	6
DK 8	2.70	½	¼	6	¼	12	DK18	8.70	1⅛	½	10	½	6
DK 9	3.00	9/16	¼	6	¼	12	DK20	10.50	1¼	½	10	½	6
DK 8A	2.70	½-A	⅜	8	½	12	DK24	12.90	1½	½	10	½	6
DK10	3.30	5/8	½	8	½	6	.....	.....	.....	.....	.....	.....	.....

Diamond N Drills

No. 700 4-Point or Star Drill

No. 710 Diamond or Single Point Drill

Made of high grade octagon drill rod. Quality of steel is tested for uniformity. Heat treatment is scientifically conducted; heats for hardening and drawing the temper are determined by pyrometer and thermometer.

Diam. Drill In.	8-In. Length Per Doz.	8-In. Length Wt. Lb. per Doz.	12-In. Length Per Doz.	12-In. Length Wt. Lb. per Doz.	18-In. Length Per Doz.	18-In. Length Wt. Lb. per Doz.	24-In. Length Per Doz.	24-In. Length Wt. Lb. per Doz.
¼	$8.25	1⅛	$8.50	1¾	$11.00	3	$13.50	3½
5/16	8.25	1½	8.50	2¼	11.00	3⅞	13.50	5⅛
⅜	8.25	2¼	8.50	3½	11.00	5	13.50	7⅛
7/16	8.70	3⅛	9.00	4¾	11.50	7	14.00	9
½	9.65	3¼	10.00	4⅜	12.50	7¾	15.00	10¼
9/16 & ⅝	11.65	5½	12.00	8½	15.00	13¾	17.50	18¼
11/16 & ¾	13.70	6¾	14.00	10½	17.50	16¾	20.00	22¼
13/16 & ⅞	15.30	8¼	16.00	12½	20.00	20½	22.50	27½
1	17.00	10	18.00	19	22.50	30	25.00	40
1⅛	23.00	16	24.00	25	28.00	42	32.00	54
1¼	.....	.....	30.00	25	35.00	42½	40.00	57
1⅜	.....	.....	40.00	33	45.00	53	50.00	72
1½	.....	.....	50.00	33	56.00	54	62.00	72
1⅝	.....	.....	60.00	40	66.00	63	72.00	84
1¾	.....	.....	75.00	44½	81.00	70	87.00	93
1⅞	.....	.....	90.00	50	97.00	80	104.00	106
2	.....	.....	105.00	52	112.00	81	120.00	108
2¼	.....	.....	135.00	53	145.00	83	165.00	110
2½	.....	.....	165.00	75	175.00	119	195.00	158

Can be furnished with tapered shanks to fit electric hammers. Supplied on order in lengths up to 6 feet for rock drilling.

No. 720 Diamond Di-Forge Twist Drills

Forged from a solid bar of Vanadium tool steel. For use with a hand or electric hammer. Rotates clockwise if used with hand hammer; rotates continuously if used with electric hammer. May be used with Diamond Styles A, B, and C.

Diam. In.	Per Dozen	Length Overall Inches	Depth Hole Inches	Wt. Lb. per Dozen
3/16	$10.80	2¾	1⅜	½
¼	10.80	3¼	1¾	¾
5/16	12.80	4¼	2½	1
⅜	14.80	5	3	1¼
7/16	18.80	5¼	3¼	1½
½	22.80	5⅜	3¼	2
9/16	26.80	5½	3¾	2½
⅝	28.80	5¾	4	2½

No. 730 Diamond N Drill Points

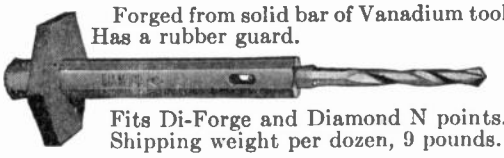
Made of steel.

Drills are carefully tempered to insure sufficient hardness at the point to withstand the wear of cutting and the temper is drawn away toward the shank, so as to produce a softer steel where it enters the handle to prevent its breaking off at that point.

May be used with Diamond Drill Holders Styles A, B and C and Diamond Hammer Drills.

Size Inches	Per Dozen	Length Inches	Depth Hole Inches	Wt. Lb. per Dozen	Size Inches	Per Dozen	Length Inches	Depth Hole Inches	Wt. Lb. per Dozen
¼	$8.50	4½	2	1¼	9/16 & ⅝	$12.00	6¼	5	3¾
5/16	8.50	4¼	2	1¼	11/16 & ¾	14.00	6½	5½	4½
⅜	8.50	4¼	2	1½	13/16 & ⅞	16.00	7	6	6
7/16	9.00	4⅞	3¾	2	1	18.00	7¼	7	7¾
½	10.00	5	4	2	.....	.....	.....	.....	.....

No. 745 Style A Diamond Drill Holders



Forged from solid bar of Vanadium tool steel. Has a rubber guard.

Fits Di-Forge and Diamond N points. Shipping weight per dozen, 9 pounds.

No. 745 ..... per dozen **$27.00**

No. 750 Style B Diamond Drill Holders

A hand drilling tool made of steel.

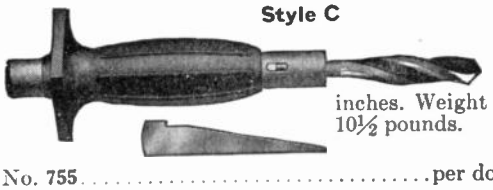
Either Diamond N or Di-Forge drill points may be used.

Weight per dozen, 8½ pounds.

No. 750, without Points ..... each **$2.00**

No. 755 Diamond Rubber Grip Drill Holders

Style C



Overall length, 6¼ inches. Weight per dozen, 10½ pounds.

No. 755 ..... per dozen **$48.00**

Peirce Lead Sleeve Expansion Bolts

Galvanized

Consists of a steel bolt with a wedge or cone shaped head, tapering toward shank and provided with a lead sleeve.

No.	Per 100	Bolt Size In.	Overall Length In.	Drill Hole Diam. In.	Shipping Wt. Lb per 100
1	$9.73	1/4	1 3/4	1/2	7.7
2	9.96	1/4	2	1/2	8.8
3	10.34	1/4	2 1/2	1/2	8.8
4	12.49	1/4	3 1/4	1/2	11.0
4A	14.15	1/4	4	1/2	12.1
4B	17.69	1/2	5	1/2	13.2
5	17.31	3/8	2 1/2	5/8	16.5
6	18.57	3/8	3	5/8	17.6
7	19.84	3/8	3 1/2	5/8	18.7
8	23.25	3/8	4 1/2	5/8	20.9
9	23.61	3/8	5	5/8	22.0
10	25.14	3/8	5 1/2	5/8	23.1
11	26.03	1/2	2 1/2	7/8	45.1
12	30.59	1/2	3 1/2	7/8	51.7
13	32.38	1/2	4	7/8	55.0
14	33.12	1/2	4 1/2	7/8	58.3
15	35.25	1/2	5	7/8	61.6
16	36.66	1/2	5 1/2	7/8	64.9
17	39.06	1/2	6 1/2	7/8	68.2
18	43.86	1/2	8	7/8	80.3

Extra Lead Sleeves

No.	22	23	24
Per 100	$3.27	5.29	16.19
For Bolt Diameter...inches	1/4	3/8	1/2
Overall Length...inches	9/16	3/4	1 1/2
Ship. Weight Per 100...pounds	3.3	6.6	24.2

Peirce Expansion Nuts

Installed independently, and tapped to receive the bolt.

No.	Per 100	Cone Material	Mach. Screw No. or Size In.	Diam. Drill In.	Min. Depth Hole In.	Shipping Wt. Lb. per 100
6200	....	Brass	6	1/4	3/8	.6
6202	....	Brass	8	5/16	1/2	1.0
6204	....	Brass	10	3/8	1/2	1.9
6206	....	Brass	12	7/16	3/4	2.6
6208	....	Brass	1/4	1/2	3/4	3.8
6210	....	Brass	5/16	5/8	7/8	7.7
6212	....	Steel	3/8	3/4	1 1/4	14.3
6214	....	Steel	1/2	7/8	1 3/8	22.0
6216	....	Steel	5/8	1 1/8	2	45.1
6220	....	Steel	3/4	1 3/8	2 1/8	75.9

Prices upon application.

No. 31 Peirce Expansion Shields

Used with wood or lag screws for masonry attachments.

Size screw, Nos. 20 and 22. Shield: diameter, 1/2 inch; length 2 inches.

Shipping weight per 100, 12 pounds.

No. 31 ..... per 100 **$18.70**

Peirce Hammer Drills

Holes may be drilled in masonry with this drill in about one quarter of the time required by ordinary methods. The hazard of injured hands is also completely eliminated. Jammed drill points are quickly removed and most important, holes are neatly and quickly drilled. The outer end of the hammer drill is hollow for tamping lead sleeves. Chuck takes all sizes of drills.

No.	50	53
Per 100	$2608.53	2778.28
For Tamping Bolt...inches	1/4	3/8
Ship. Weight per 100...pounds	825	880

Peirce Drill Points

Made of fine tool steel, carefully tempered to the proper hardness and toughness. Two inches of the point is contained in the chuck.

Special sizes up to 1-inch diameter and any length can be furnished to fit Peirce Hammer Drill Chucks.

No.	Per 100	Drill Diam. In.	Overall Drill Length In.	Bolt Diam. In.	Shipping Wt. Lb. per 100
56	$156.85	3/8	4	3/16	22
56-A	186.70	7/16	4	3/16	22
57	156.85	1/2	4	1/4	25
58	178.60	1/2	6	1/4	36
59	384.03	1/2	12	1/4	72
60	289.16	5/8	6	3/8	42
61	578.20	5/8	12	3/8	90
62	404.13	3/4	6	7/16	52
63	809.19	3/4	14	7/16	148
64	532.66	7/8	6	1/2	63
65	1066.13	7/8	12	1/2	150

No. 55 Peirce Hand Chucks

Chuck allows the use of Pierce Drill Points with the old method of hand-and-hammer drilling. Similar to chuck of Peirce Hammer Drill. Will fit any Peirce Drill Points.

No. 55, Ship. Wt. 285 Pounds.....per 100 **$351.65**

Peirce Tamping Tools

Used for tamping lead sleeves into masonry.

Nos. 47, 48 and 49 are straight slotted for use on hooks and similarly shaped items.

Nos. 67, 68 and 69 are straight for standard straight bolts or screws.

No.	47	48	49	67	68	69
Per 100	$51.10	73.59	107.88	110.15	113.58	126.11
Diam. Expansion Bolt...in.	1/4	3/8	1/2	1/4	3/8	1/2
Overall Length...in.	6	6	8	6	6	8
Ship.wt.per100...lb.	30	64	110	37	54	132

Diamond 1-Hole Steel Clamps

Standard

A very efficient fastening where light construction is to be used.

Made of cold rolled steel. Diamond hot dip galvanized after fabrication.

For telephone work, made in brown or ivory enamel. Can also be supplied in other finishes and metals.

No.	Per 100	Cable Size Inches	Pipe Size Inches	*Thinwall Conduit Inches	Stock Size Inches	Std. Pkg.	Shipping Wt., Lb. per 100
L-3	$.60	3/16	...	...	1/2x.072	500	1
L-4	.75	1/4	...	...	1/2x.062	500	1
L-5	.85	5/16	...	...	1/2x.062	500	1
L-6	.95	3/8	1/8	...	1/2x.048	500	1
L-7	1.05	7/16	...	...	1/2x.048	500	1.1
L-8	1.15	1/2	...	...	1/2x.048	500	1.2
L-9	1.20	9/16	...	...	1/2x.048	500	1.2
L-10	1.25	5/8	1/4	3/8	1/2x.048	500	1.3
L-11	2.25	11/16	3/8	1/2	5/8x.062	500	4
L-12	2.85	3/4	1/2	...	11/16x.062	500	4.5
L-14	3.00	7/8	...	3/4	11/16x.062	500	5
L-16	3.45	1	3/4	...	3/4x.080	250	7
L-18	3.60	1 1/8	...	1	3/4x.080	250	7.5
L-20	4.95	1 1/4	1	...	7/8x.115	100	15
L-24	6.65	1 1/2	...	1/4	7/8x.115	100	16
L-26	7.10	1 5/8	1 1/4	...	7/8x.115	100	17
L-28	7.30	1 3/4	...	1 1/2	7/8x.115	100	19
L-30	7.45	1 7/8	1 1/2	...	7/8x.115	100	20

*E.M.T.

Diamond 1-Hole Steel Conduit and Cable Clamps

Offset Type

Made of rolled steel and Diamond process hot dip galvanized after fabrication.

Also available in other regular finishes and metals.

No.	Per 100	Min.	Max.	Pipe Size In.	Stock Size In.	Ship. Wt. Lb. per 100
403	$.35	5/32	7/32	...	5/16x.048	.40
405	.40	1/4	5/16	...	5/16x.048	.50
406	.60	5/16	3/8	...	1/2x.048	1.00
407	.65	3/8	1/2	1/8	1/2x.048	1.10
408	.70	1/2	9/16	1/4	1/2x.050	1.20
409	1.25	9/16	5/8	...	3/4x.060	2.50
411	1.50	5/8	11/16	3/8	3/4x.060	2.87
413	2.50	3/4	7/8	1/2	3/4x.078	4.12
417	2.90	1	1 1/16	3/4	3/4x.078	5.31
421	4.30	1 1/8	1 1/2	1	3/4x.115	9.75
425	5.00	1 1/2	1 3/4	1 1/4	3/4x.115	10.62
430	5.50	1 13/16	2	1 1/2	3/4x.115	12.43
435	7.50	2 1/8	2 3/8	2	3/4x.130	16.00
442	8.50	2 1/2	2 7/8	2 1/2	3/4x.130	18.43

Diamond 2-Hole Steel Conduit and Cable Straps

Standard

Designed to withstand strains and vibrations. Because of its great strength, fewer straps need be used in conduit or cable runs.

Made of steel. Diamond hot dip galvanized after fabrication.

No.	Per 100	Cable Size In.	Pipe Size In.	Stock Size In.	Ship. Wt. Lb. per 100	No.	Per 100	Cable Size In.	Pipe Size In.	Stock Size In.	Ship. Wt. Lb. per 100
T7	$1.50	7/16	1/8	1/2x.048	1.5	T24	$9.00	1 1/2	..	7/8x1/8	15.25
T10	1.65	5/8	1/4	1/2x.048	2.0	T26	9.60	1 5/8	1 1/4	7/8x1/8	16.50
T11	3.00	11/16	3/8	5/8x.062	3.2	T28	10.20	1 3/4	..	7/8x1/8	17.00
T12	3.15	3/4	..	11/16x.062	4.1	T30	10.80	1 7/8	1 1/2	7/8x1/8	19.00
T14	3.75	7/8	1/2	11/16x.062	4.4	T40	17.30	2 1/2	2	1x1/8	26.00
T16	4.65	1	..	3/4x.080	6.9	T46	20.40	2 5/8	2 1/2	1x1/8	31.00
T18	5.10	1 1/8	3/4	3/4x.080	7.3	T56	23.50	3 1/2	3	1x1/8	35.00
T20	7.50	1 1/4	1	7/8x1/8	13.5	....	.....	..	..	...	.....

Diamond 2-Hole Steel Conduit and Cable Straps

Extra Heavy

Designed to withstand heavy strains and vibration. Because of its great strength, fewer straps need be used in conduit or cable runs.

Made of steel. Diamond hot dip galvanized after fabrication.

No.	Per 100	Cable Size In.	Pipe Size In.	Stock Size In.	Shipping Wt. Lb. per 100	No.	Per 100	Cable Size In.	Pipe Size In.	Stock Size In.	Ship. Wt. Lb. per 100
N1	$2.60	7/16	1/8	1x1/16	4.5	N8	$8.35	1 1/4	1	1x1/8	19.2
N2	3.00	5/8	1/4	1x1/16	5.5	N9	9.50	1 1/2	..	1x1/8	21.5
N3	3.50	11/16	3/8	1x1/16	6.7	N10	10.65	1 3/4	..	1x1/8	23.5
N4	3.70	3/4	..	1x1/16	7.1	N11	11.25	1 7/8	..	1x1/8	24.7
N5	3.90	7/8	1/2	1x1/16	7.7	N12	11.80	2	..	1x1/8	26.0
N6	4.75	1	..	1x1/16	8.3	N13	12.40	2 1/8	..	1x1/8	27.2
N7	7.20	1 1/8	3/4	1x1/8	17.9	N14	13.00	2 1/4	..	1x1/8	28.5

Diamond One-Hole Malleable Clamps

Hot galvanized. Annealed twice before galvanizing to assure ductility. Will not crack in installation.

Has but one screw hole and cuts in half the expense of screws or expansion bolts and the labor of installing as compared to the two-hole strap.

For Standard Conduit

Pipe Size Inches	No.	Per 100	Cable Size Inches	Capacity Inches	Length Inches	Diam. Screw Hole Inches	Std. Pkg.	Approx. Ship. Wt. Lb. per 100
1/4	MC-25	$2.15	.50	1/2	1 3/8	3/16	100	3
3/8	MC-38	2.90	.67	9/16	1 5/8	3/16	100	4
1/2	MC-50	3.50	.84	3/4	2 1/8	5/16	100	6
3/4	MC-75	4.55	1.05	1	2 3/8	5/16	100	6
1	MC-100	5.70	1.31	1 3/16	2 7/8	5/16	100	11
1 1/4	MC-125	9.80	1.66	1 5/8	3 1/2	3/8	50	16
1 1/2	MC-150	13.60	1.90	1 13/16	4	7/16	50	23
2	MC-200	30.15	2.37	2 1/4	5 1/4	1/2	50	45
2 1/2	MC-250	53.30	2.87	2 3/4	6 3/8	5/8	50	100
3	MC-300	74.05	3.50	3 7/16	7 3/16	5/8	35	141
3 1/2	MC-350	110.80	4.00	4	8 1/8	11/16	25	200
4	MC-400	162.20	4.50	4 9/16	9 1/4	11/16	25	245

For Thinwall Conduit

Specify (Type S) when ordering.

1/2	MC-50S	$3.50	.706	5/8	2	1/4	100	5
3/4	MC-75S	4.55	.922	13/16	2 1/4	5/16	100	6
1	MC-100S	5.70	1.163	1 1/16	2 11/16	5/16	100	10
1 1/4	MC-125S	9.80	1.508	1 3/8	3 1/2	3/8	50	16
1 1/2	MC-150S	13.60	1.738	1 5/8	3 7/8	7/16	50	23
2	MC-200S	30.15	2.195	2 1/16	5	1/2	50	42

Di-Stampt Conduit Clamps

Pressed Steel—Hot Galvanized

Hot dipped galvanized by the Diamond process. The hollow or arched section of this clamp gives maximum strength with minimum weight.

Conduit Size In.	Per 100	No. Wood Screws	Std. Pkg.	Wt. Lb. per 100
* 1/4	$2.69	10	100	3
* 3/8	2.69	10	100	3
1/2	3.34	10	100	5
3/4	4.30	14	100	8
1	6.69	14	100	9
1 1/4	11.16	18	50	20
1 1/2	17.85	18	50	36

*These sizes are made of flat stock.

National Rigid Steel Conduit

Enameled Conduit

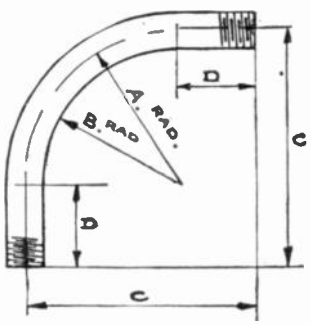
Enameled conduit is manufactured from mild drawn steel tubing. Before enameling, the tubing is thoroughly cleaned and freed from dirt, grease, scale, silicates and burrs. This process leaves clean surface for the application of the compound.

Sheararduct

Sherarduct rigid conduit is made of full weight mild spellerized steel tube and finished under the famous sherardizing process. In this process pure zinc is alloyed with the steel tube both inside and outside to form a rustproof finish which is so entirely a part of the pipe that it cannot be knocked or chipped off.

Standard Pipe Size Inches	Per 100 Feet	Diameter, Inches Inside	Diameter, Inches Outside	Wall Thickness Inches	Threads per Inch	Wt. Lb. per 1000 Feet
½	.....	.635	.840	.1025	14	852
¾	.....	.837	1.050	.1065	14	1134
1	.....	1.070	1.315	.1225	11½	1684
1¼	.....	1.409	1.660	.1255	11½	2281
1½	.....	1.633	1.900	.1335	11½	2731
2	.....	2.094	2.375	.1405	11½	3678
2½	.....	2.502	2.875	.1865	8	5819
3	.....	3.102	3.500	.199	8	7616
3½	.....	3.588	4.000	.206	8	9202
4	.....	4.072	4.500	.214	8	10889
4½	.....	4.548	5.000	.226	8	12642
5	.....	5.097	5.563	.233	8	14810
6	.....	6.109	6.625	.258	8	19185

Conduit Elbows



Size Inches	Per 100	Actual Diameter Inches Inside	Actual Diameter Inches Outside	Dimensions, Inches A	B	C	D	Weight Pounds per 100
½	.....	.622	.840	4	3 9/16	6¾	2¾	82
¾	.....	.824	1.050	4½	4	6⅞	2⅜	109
1	.....	1.049	1.315	5¾	5 1/16	8 19/32	2 27/32	201
1¼	.....	1.380	1.660	7¼	6 7/16	9 15/16	2 11/16	313
1½	.....	1.610	1.900	8¼	7 5/16	11 15/16	3 11/16	441
2	.....	2.067	2.375	9½	8 5/16	13 13/16	4 5/16	707
2½	.....	2.469	2.875	10½	9 1/16	16	5½	1411
3	.....	3.068	3.500	13	11¼	18 13/16	5 13/16	1850
3½	.....	3.548	4.000	15	13	22	7	2979
4	.....	4.026	4.500	16	13¾	23 1/16	7 1/16	3528
5	.....	5.047	5.563	24	21¼	30 5/32	6 5/32	6575
6	.....	6.065	6.625	30	26 11/16	36 7/16	6 7/16	9645

Couplings

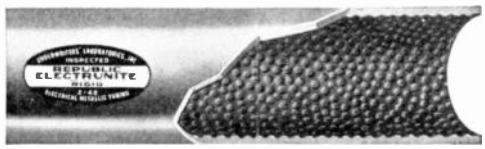
Standard Pipe Size Inches	Per 100	Length Inches	Weight Pounds per 100	Standard Pipe Size Inches	Per 100	Length Inches	Weight Pounds per 100
½	.....	1 3/8	11.6	3	.....	3 1/8	249.8
¾	.....	1 5/8	20.9	3½	.....	3 5/8	424.1
1	.....	1 7/8	34.3	4	.....	3 5/8	474.1
1¼	.....	2 1/8	53.5	4½	.....	3 5/8	550.0
1½	.....	2 3/8	74.3	5	.....	4 1/8	700.0
2	.....	2 5/8	120.8	6	.....	4 1/8	750.0
2½	.....	2 7/8	172.0	...	.....	...	.....

In ordering, specify finish desired.

Republic Electrunite E.M.T.

Lightweight Threadless Rigid Steel Conduit

Inch-Marked



No threads to cut, ductile, bends easily, is light, tough and strong; resists corrosion.

Steeltubes takes up less space and consequently can be used in narrower quarters.

Knurled inside finish shows by actual test a saving of 20 to 30 per cent in the effort required to pull cable through. Cable rides the tops of the tiny knobs instead of making contact the entire length.

The National Electrical Code approves Steeltubes for open and concealed work and buried in concrete.

Size Inches	Diameter Internal Inches	Diameter External Inches	Ft. to a Bundle	Approx. Wt., Lb. per 1000 Ft.
⅜	.493	.577	200	250
*½	.622	.706	100	321
*¾	.824	.922	100	488
*1	1.049	1.163	100	711
1¼	1.380	1.508	50	1000
1½	1.610	1.738	50	1180
2	2.067	2.195	30	1500

*Furnished with knurled inside finish and inch-marked.

Elbows

Elbow Size Inches	Radius to Center Line (45° and 90°) Inches	Offset (90° Elbows) Inches	Straight Leg or Tangent (90° Elbows) Inches	Std. Pkg. (90°)	Weight, Lb. Per 100 Pcs. (90° Elbows)
1	5.063	9.438	4.375	25	100
1¼	5.500	10	4.500	25	144
1½	6.875	10.938	4.063	20	180
2	8	13	5	10	277

Electrunite Benders

For Use with Inch Marked Electrunite Steeltubes

A one-piece malleable iron casting.

Instructions and markings for making stubs, back-to-back bends, and offsets are built into side of bender.

No.	1472	1473	1474
Each	$3.23	4.78	7.25
Size....inches	½	¾	1
Pipe Handle Size....inches	¾	¾	1
Standard Package	10	10	2
Weight per 100....pounds	250	420	800

E.M.T. Hickeys

For Thin Wall Conduit

An excellent tool for stubing-up in concrete work and for making short or close bends.

Makes bends of any desired radius. To insure against kinking, the tube should be inched through, not more than 10 degrees being pulled at a time.

Standard package, 1.

No.	2195	2196	2197	2198	2199	2200
Each	$2.11	2.64	5.27	7.03	8.43	10.54
Size....inches	½	¾	1	1¼	1½	2
Size Pipe Handle to Use....inches	¾	1	1	1¼	1¼	1½
Weight Each..pounds	1¾	2¾	4	10	12½	15

Appleton Conduit Fittings

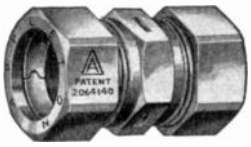
Schedule TW

For Electrical Metallic Tubing—Cadmium Finish

Gland Ring Type Couplings and Connectors

Approved Raintight—PATENT 2064140

Couplings



Gland ring type coupling and connector are furnished with a round split curved ring and tightening nut. The ring drops into position and the nut tightens the ring securely to the electrical metallic tubing, making a rigid connection which is absolutely raintight. Couplings in ½ to 2-inch sizes have hexagonal nuts and the center portion is also hexagonal so that it can be held rigidly with wrench when connecting lengths of electrical metallic tubing.

No.	Size In.	Std. Pkg.	Carton	Wt., Lb. Std. Pkg.
95T038	⅜	200	50	12
95T050	½	200	50	13
95T075	¾	100	25	15
95T100	1	50	25	20
95T125	1¼	25	5	50
95T150	1½	10	2	80
95T200	2	5	2	140

*Designed to take ⅜-inch electrical metallic tubing, and the other end is threaded and furnished with locknut to fit in regular ½-inch knock out.

Connectors

Connector is similar to coupling except that one end is threaded and equipped with a locknut for use in connecting to boxes.

No.	Size In.	Std. Pkg.	Carton	Wt., Lb. Std. Pkg.
*96T038	⅜	200	50	10
96T050	½	200	50	11
96T075	¾	100	25	13
96T100	1	50	25	20
96T125	1¼	25	5	50
96T150	1½	10	2	60
96T200	2	5	2	100

Appleton Conduit Adapters

Schedule TW

For Use with Electrical Metallic Tubing

For Threaded Conduit Fittings

This adapter practically makes a no-thread fitting out of any threaded conduit fitting.

No special parts are needed.

No.	Size In.	Carton	Std. Pkg.	Wt., Lb. per 100
80T59	⅜	50	200	1½
80T60	½	50	200	1½
80T61	¾	25	100	5
80T62	1	25	50	6
80T63	1¼	10	20	10
80T64	1½	5	10	15
80T65	2	2	5	20

Galvanized Conduit Straps

*Armored cable.

No.	Per 100 Pounds	Size In.	No. to Lb.	No.	Per 100 Pounds	Size In.	No. to Lb.
208	$31.80	*	68	214	$31.80	1½	11
209	31.80	⅜	50	215	31.80	2	7
210	29.40	½	45	216	31.80	2½	5
211	29.40	¾	30	230	31.80	3	4
212	29.40	1	17	231	31.80	3½	2
213	29.40	1¼	13	...	.....	...	..

National Conduit Locknuts

Size In.	Per 100	Std. Pkg.	Wt., Lb. Std. Pkg.	Size In.	Per 100	Std. Pkg.	Wt., Lb. Std. Pkg.
2½	$14.66	30	8	4½	$80.80	10	10
3	21.90	25	10	5	97.98	10	13
3½	33.72	25	14	6	175.98	10	20
4	40.76	25	20	...	.....	..	..

National Conduit Bushings

Galvanized finish

Packed in strong wooden cases.

Size In.	Per 100	Std. Pkg.	Wt., Lb. Std. Pkg.
½	$1.28	2500	63
¾	2.04	1000	37
1	3.58	500	38
1¼	6.02	200	20
1½	6.32	100	12
2	9.28	50	9
2½	15.60	30	10
3	25.06	25	13
3½	46.10	25	16
4	66.52	25	23
4½	117.90	10	10
5	143.46	10	15
6	279.62	10	20

Ideal Fish Tape, Reels and Pullers

Three tools in one: a reel, a puller and a tape. Tape is pulled through the conduit and reeled in one operation; reel automatically locks tape in place. By keeping the tape reeled up, it is prevented from spreading all over the job, avoding breakage and possibility of tape contacting live parts.

No.	Each	Tape Length Feet	Tape Size Inches
31-007	$1.91	50	⅛x.045 (3/64)
31-008	3.18	50	⅛x.060 (1/16)
31-009	6.22	100	⅛x.060 (1/16)
31-010	6.85	100	3/16x.060 (1/16)
31-011	7.49	100	¼x.060 (1/16)
31-012	6.22	100	⅛x.030 (1/32)
31-013	6.22	100	3/16x.030 (1/32)
31-014	6.22	100	¼x.030 (1/32)
31-016	9.18	200	⅛x.060 (1/16)

Ideal Fish Tapes

Ideal Fish Tape is made of the highest grade of tempered spring steel wire—no curling. Tape is flexible and easy to use on long runs of conduit having several bends.

All sizes are available in any length, multiples of 50 feet.

Packed in individual cartons.

No.	Per 100 Ft.	Tape Size Inches
31-057	$1.60	⅛x.030(1/32)
31-064	2.19	3/16x.030(1/32)
31-071	2.39	¼x.030(1/32)
31-036	2.19	⅛x.060(1/16)
31-043	2.88	3/16x.060(1/16)
31-050	3.53	¼x.060(1/16)

No. 1629 Klein Pullers

A lightweight strong puller which can be carried in the vest pocket.

Weight each, 3½ ounces.

For Fish Tape

No. **1629**.....each **$3.00**

No. 12 Iron Wire

No. **1629A**.....each **3.00**

Schedule CR

Obround Series Conduletes


Type C


Type E

No.	Each	Threaded Size In.	No.	Each	Size In.
C17	$.40	½	E17	$.30	½
C27	.45	¾	E27	.35	¾
C37	.65	1	E37	.50	1
C47	1.05	1¼	E47	.80	1¼
C57	1.40	1½	E57	1.04	1½
C67	2.40	2	E67	2.14	2
		Threadless—Thick Wall			
C197	$.50	½	E197	$.35	½
C297	.60	¾	E297	.45	¾
C397	.90	1	E397	.60	1
C497	1.50	1¼	E497	1.10	1¼
C597	2.10	1½	E597	1.50	1½
C697	3.50	2	E697	2.75	2


Type LB


Type LR

		Threaded			
LB17	$.40	½	LR17	$.40	½
LB27	.45	¾	LR27	.45	¾
LB37	.65	1	LR37	.65	1
LB47	1.05	1¼	LR47	1.05	1¼
LB57	1.40	1½	LR57	1.40	1½
LB67	2.40	2	LR67	2.40	2
		Threadless—Thick Wall			
LB197	$.50	½	LR197	$.50	½
LB297	.60	¾	LR297	.60	¾
LB397	.90	1	LR397	.90	1
LB497	1.50	1¼	LR497	1.50	1¼
LB597	2.10	1½	LR597	2.10	1½
LB697	3.50	2	LR697	3.50	2


Type LL


Type T

		Threaded			
LL17	$.40	½	T17	$.48	½
LL27	.45	¾	T27	.57	¾
LL37	.65	1	T37	.80	1
LL47	1.05	1¼	T47	1.22	1¼
LL57	1.40	1½	T57	1.69	1½
LL67	2.40	2	T67	2.55	2
		Threadless—Thick Wall			
LL197	$.50	½	T197	$.65	½
LL297	.60	¾	T297	.80	¾
LL397	.90	1	T397	1.10	1
LL497	1.50	1¼	T497	1.90	1¼
LL597	2.10	1½	T597	2.70	1½
LL697	3.50	2	T697	4.30	2


Type X

Threaded			Threadless—Thick Wall		
X17	$.60	½	X197	$.80	½
X27	.77	¾	X297	1.10	¾
X37	1.05	1	X397	1.50	1
X47	1.40	1¼	X497	2.30	1¼
X57	1.78	1½	X597	3.10	1½
X67	3.50	2	X697	5.50	2

Covers


Blank Metal


Wire Hole

170	$.06	½	*1773	$.10	½
270	.08	¾	*2773	.15	¾
370	.17	1	*3773	.25	1
470	.24	1¼	.....	....	...
570	.24	1½	.....	....	...
670	.42	2	.....	....	...

*Knockouts, composition.

Crouse-Hinds Condulets

Schedule CR

Receptacles

Composition Porcelain


Parallel Slots

No.	Each	Size In.
1748	$.60	½
2748	.70	¾


3-Wire

No.	Each	Size In.
1729	$.85	½
2729	.90	¾

Lamp Receptacles

660 Watts, 600 Volts
Porcelain
With Shade Holder Groove

No.	1706	2706
Each	$.45	.50
Size...inches	½	¾

Gaskets

Size In.	Cork No.	Rubber No.	Each
½	Gask671	Gask571	$.10
¾	Gask672	Gask572	.10
1	Gask673	Gask573	.15
1¼	Gask674	Gask574	.20
1½	Gask675	Gask575	.20
2	Gask676	Gask576	.25

FS Single Gang

Threaded


Type FS


Type FSC

For devices 1⅝ inches deep or less.

No.	Each	Size In.	No.	Each	Size In.
FS1	$.65	½	FSC1	$.75	½
FS2	.75	¾	FSC2	.90	¾
FS3	.85	1	FSC3	1.10	1
		Threadless—Thick Wall			


Type FS


Type FSC

FS191	$.70	½	FSC191	$.85	½
FS291	.85	¾	FSC291	1.10	¾
FS391	1.00	1	FSC391	1.40	1

Single Gang Covers

Surface Type


Toggle switch style.
Made of sheet steel.
No. DS32.....each $.15


Spring door style.
Made of cast Feraloy.
No. DS10g.....each $1.25


Duplex receptacle style.
Made of sheet steel.
No. DS23.....each $.15


Blank style.
Made of sheet steel.
No. DS100.....each $.10


Blank with gasket style.
Made of cast Feraloy.
No. DS100g....each $.25

Vaportight Covers

Single Gang Switch Covers
Rocker Type


Made of cast Feraloy.

No.	Switch	Each
DS108	Push	$1.75
DS181	Toggle	1.75

FS 2-Gang Condulets

Threaded


Type FS


Type FSC

For 2 devices 1⅝ inches deep or less.

No.	Each	Size, In.	No.	Each	Size, In.
FS12	$1.20	½	FSC12	$1.30	½
FS22	1.30	¾	FSC222	1.40	¾
FS32	1.40	1	FSC32	1.55	1
		Threadless—Thick Wall			
FS192	$1.25	½	FSC192	$1.40	½
FS292	1.40	¾	FSC292	1.60	¾
FS392	1.55	1	FSC392	1.85	1

Schedule CR

Covers for 2-Gang FS


Double toggle switch.
Made of sheet steel.
No. S322.....each $.30


Toggle and duplex receptacle.
Made of sheet steel.
No. S32232.....each $.50

Vaportight Covers


Double push button.
Made of cast Feraloy.
No. DS1082...each $3.00


Double toggle.
Made of cast Feraloy.
No. DS1812...each $3.00

Schedule CM

Entrance Caps


For threaded heavy wall conduit. Composition cover with knockouts.

No.	Per 100	Wire	Size In.
F184	$37.20	6	½
F284	41.40	5	¾
F384	62.20	5	1
F484	68.50	7	1¼
F584	112.00	4	1½
F684	228.00	4	2

Capped Elbows

Right Angle Fitting with Weatherproof Cover

No.	Per 100	Size In.	No.	Per 100	Size In.
LBY1	$52.80	½	LBY4	$206.40	1¼
LBY2	60.60	¾	LBY5	228.00	1½
LBY3	74.40	1	.....	.....	...

Groundulet Equipment

For Nos. 6 or 4 Unarmored Ground Conductor or Insulated Building Wire


Size of water pipe or o.d. of ground rod, ½ to 1 inch.
No. GCH91.....per 100 $38.25

Strap Clamp Terminals

No.	GCE012	GCE014
Per 100	$80.20	89.50
Size Water Pipe, in.	½–2	½–4
Size Grounding Elec.....in.	⅝–1	⅝–1

GC Strap Clamps

No.	Per 100	Material
GC101	$21.25	Steel
GC102	42.50	Brass

No. GC100 Grounding Straps

Flexible Copper, Tinned

Broken Coils Less than 50 Feet.....per 100 ft.	$40.00
1 to 10 Coils of 50 Feet Each .....per coil	18.00
11 to 25 Coils of 50 Feet Each .....per coil	17.00
26 to 50 Coils of 50 Feet Each .....per coil	16.00
51 or More Coils of 50 Feet Each.....per coil	16.00

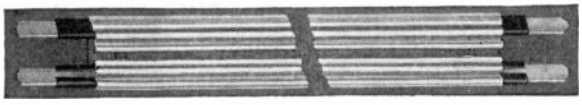
Bull Dog Universal Type Trol-E-Duct Systems

Portable Electricity

Universal Trol-E-Duct provides a flexible wiring system, in contrast to the old fixed outlet system.

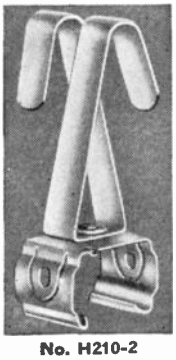
Consists of standardized duct sections enclosing copper busbars into which can be inserted plugs and trolleys for feeding current to lights and small tools.

Duct Lengths



Rated capacity: 50 amperes, 250 volts. Available in ten lengths, measured from ends of busbars.

No.	Each	Lgth. In.	Std. Pkg. No.	Std. Pkg. Wt. Lb.	No.	Each	Lgth. In.	Std. Pkg. No.	Std. Pkg. Wt. Lb.
D701	$3.00	1	10	5	D706	$7.00	6	10	37
D702	4.50	2	10	12	D707	7.00	7	10	45
D703	4.50	3	10	17	D708	8.00	8	10	50
D704	6.50	4	10	25	D709	8.00	9	10	55
D705	6.50	5	10	30	D710	8.00	10	10	60



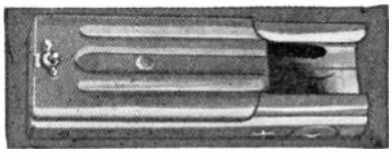
No. H210-2

Hangers

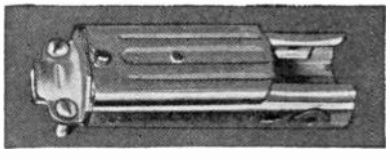
Available without hooks, for mounting flush against wall or ceiling, and with hooks for use with messenger cable.

No.	Each	Hook Inches	Std. Pkg. No.	Std. Pkg. Wt. Lb.
H710-0	$.10	None	100	6¼
H210-2	.30	1¼	50	6¼
H210-4	.30	3¼	100	12½

End Caps



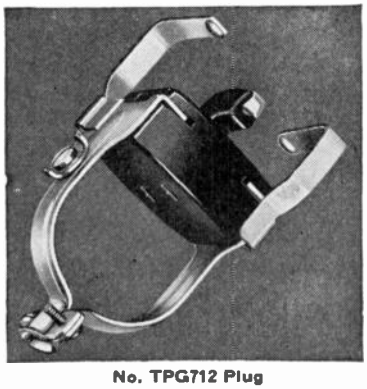
No. TEC210



No. PEP250

Used for closing up the ends of duct runs. Also used as feed-in or trolley entrance point.

No.	Each	Type	Std. Pkg. No.	Std. Pkg. Wt. Lb.
PEP250	$3.00	Cord Grip	10	3¾
PEP230C	2.50	Cord Clamp	10	3¾
TEC210	1.50	Trolley Entrance	20	5



No. TPG712 Plug

Hangers

The terminal type plug or trolley is used where the connection to the light fixture or appliance is likely to be permanent; the receptacle type where it is necessary to frequently disconnect the appliance or fixture.

Cord set is not included.

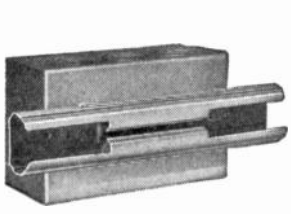
Plugs
125 Volts, 20 Amperes, A.C.
125 Volts, 15 Amperes, D.C.

No.	Each	Type	Std. Pkg. No.	Std. Pkg. Wt. Lb.
TPG712	$2.00	Terminal	20	4
RPG712	2.00	Receptacle	20	4

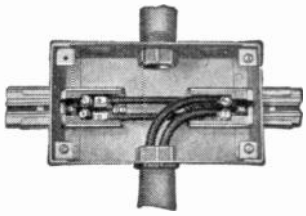
Trolleys
250 Volts, 20 Amperes, A.C.
250 Volts, 20 Amperes, D.C.

TTG712	$3.00	Terminal	20	4½
RTG712	3.00	Receptacle	20	4½

Duct Couplings



No. FCB 710



No. FCB711

Provides a means for joining the duct sections electrically and mechanically.

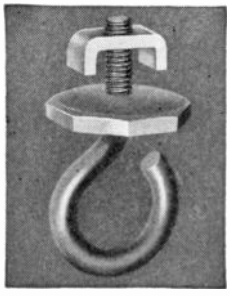
Standard Couplings

No.	Each	Type	Std. Pkg. No.	Std. Pkg. Wt. Lb.
C710	$1.50	Plain	40	15
TC710	3.00	Trolley Entrance	20	9
UC710	3.00	Union	10	5½
USC710	3.50	Sectionalized	10	5½

Feed-In Couplings With Outlet Box

FCB710	$7.00	Standard	4	10
SFB710	8.00	Sectionalized	4	10
FCB711	7.00	Standard	4	10
SFB711	8.00	Sectionalized	4	10
EFB711	6.00	End Feed	4	10

No. WS710B Weight Support

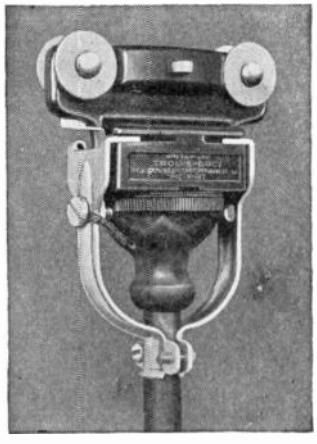


When inserted in the duct, it supports loads such as lighting fixtures, transformers, etc., up to 75 pounds. It locks in place by turning 90° in duct, bringing prongs of clamp down into duct grooves and then tightening lock nut against the outside of duct.

Standard package, 50.

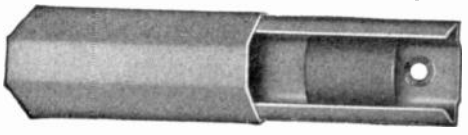
Weight per standard package, 4½ pounds.

No. WS710B.....each $.30

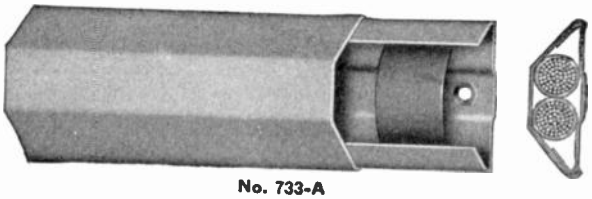


No. RTG712 Trolley

National Florduct



No. 711-A



No. 733-A

Florduct makes practical surface floor wiring across aisles and will stand the abuse of hand trucks and general office traffic. Consists of two pieces, base and capping so formed formed as to snap together, the capping snapping over the base. Capping is a ramp like plate offering the minimum of obstruction.

Neutral gray finish can be painted to match or harmonize with any given surface.

No. 711A capacity, 3 No. 12 or 14 wires, 6 No. 16 wires, 8 No. 18 wires. Four twisted pairs inside telephone wires; 20 annunciator wires.

No. 733-A capacity, 3 No. 6 wires, 7 No. 8 wires, 10 No. 10, 12 or 14 wires, 20 No. 16 wires, 24 No. 18 wires. Eight twisted pair inside telephone wires. Cable up to 26 pair; 50 annunciator wires.

Unit package, 8⅓ feet. Standard package, 100 feet.
No. 711-A, Wt. Std. Pkg., 38 Lb.....per 100 feet **$24.00**
No. 733-A, Wt. Std. Pkg., 78 Lb.....per 100 feet **27.20**

National Florduct Fittings

No. 738-B Small Internal Adapter Elbow

No. 352-F Baseboard Junction Box

No. 766-BA Outlet Extension Cap

No.	Per 100	Description	Unit Pkg.	Std. Pkg.	Wt., Lb. Std. Pkg.
738-B	$13.00	For No. 711-A Florduct only. For making bends from Florduct on floor to open wiring of No. 333 metal molding on baseboard. Furnished with fiber bushing to be used with open wiring.....	5	20	1¼
352-F	86.50	For No. 711-A Florduct only. For branch from top to face of baseboard. Similar to No. 352 but provided with opening for No. 333 and elbow cap	5	20	9
766-BA	40.00	For No. 711-A or No. 733-A Florduct. Used as junction fitting between Florduct and the outlet from which extension is made. Arranged for mounting on wood floor. May also be used as a flat elbow or junction of Florduct.....	10	20	4

National Florduct Fittings

No. 702 Adapter

No. 704 Adapter

No. 765-A Outlet Extension Cap

No. 740-AR Adapter

No. 740A Large Internal Adapter Elbow

No. 839 Utility Box

No. 352 Utility Box

No. 715 Strap

No. 324 Rawl Drive

No.	Per 100	Description	Unit Pkg.	Std. Pkg.	Wt., Lb. Std. Pkg.
702	$13.00	For No. 711-A and No. 733-A Florduct. For connecting and fastening No. 765 extension cap to ½ inch threaded outlet on floor box.....	10	20	1¼
703	16.00	Same as No. 702 above except for ¾-inch threaded outlet on floor box.....	10	20	1¼
704	24.00	For No. 711-A or No. 733-A Florduct. Used with No. 703 for 1 inch threaded outlet on floor box.....	10	20	4
765-A	40.00	For No. 711-A Florduct only. Used as junction fitting between Florduct and the outlet from which extension is made. Arranged for mounting on wood floor. May be used as flat elbow or junction of Florduct runs.....	5	20	5½
740-A	22.00	For No. 733-A Florduct only. For making bends from Florduct on floor to molding on wall or baseboard, with twistouts in base for ½ and ¾ inch quarter round.....	5	20	1½
839	84.00	For No. 733-A Florduct only. Combination ½ and 1 inch KO in base. Size 4⅞x3⅛ inches. Depth, 1⅜ inches..	1	10	10
740-AR	25.00	For No. 733-A Florduct only. No. 888 to 333 metal molding used with No. 740-A.....	10	20	2½
352	44.00	For No. 733-A Florduct only. With combination ½ inch conduit and drop cord eyelet. Four twistouts for molding or Xtensionduct.....	5	20	7
		Fastenings			
715	5.00	For No. 711-A Florduct Strap	50	500	7
745-A	5.00	For No. 733-A Florduct only. Strap.....	50	500	7
324	8.60	Rawl drive.....	100	100	2

National Florduct Potential Fittings

No. 739-A Internal Adapter Elbow

No. 751-A In and Out Fitting

No. 750-TA Service Fitting

No. 753-A Rubber Gasket

No. 749-A Service Fitting

No. 750-A Service Fitting

No. 750-BA Service Fitting

No. 764-A Brass Base

No. 761-A Duplex Floor Receptacle

Low Potential Fittings

No.	Per 100	Description	Unit Pkg.	Std. Pkg.	Wt. Lb. Std. Pkg.
739-A	$16.00	For open wiring to No. 733 Florduct. For telephone cables up to 2-26 pair telephone cable. Furnished with fiber bushing to be used with open wiring. Twistouts for ½ and ¾ inch quarter round	5	20	1½
751-A	44.00	Will take up to two pair telephone cables	1	10	4
*750-TA	56.00	†Sheath has opening for up to 26 pair telephone cable	1	10	4½
*749-A	90.00	†Service fitting	1	10	4½
*750-A	56.00	†Sheath has .422 opening	1	10	4½
753-A	10.00	For use with Nos. 749-A, 750-A, 750-BA and 750-TA. To make fitting watertight	10	50	2¼
*750-BA	48.00	Same as No. 750-A without sheath, ⅞ inch opening for ½ inch conduit	1	10	4

High Potential Fittings

764-A	254.00	For standard ¾ inch floor receptacle and fittings. Also used with Nos. 768-A, 769-A and 770-A box assemblies	1	10	9

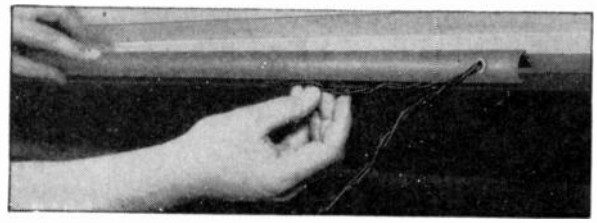
Auxiliary Fittings

761	121.00	For Nos. 711-A and 733-A Florduct. T-slot	1	10	7

*To make this fitting watertight, No. 753-A gasket may be used.

†For Nos. 711-A or 733-A. To be used at the new outlet location for protecting wires leaving Florduct and extending to apparatus on desks, etc. Equipped with four triple twistouts used at ends, for through runs or for right angles branches.

No. LT-606 National Lopo-Trim Raceways



A hollow steel quarter-round raceway used to carry low potential wires such as telephone, inter-communication, and buzzer on top of the baseboard. Also used as a toe-plate where wall or baseboard meet, as a low potential wiring raceway at chair-rail moulding, and as a quarter-round trim above or beneath (or both) installations of Plug-In Strip.

Steel prongs exert a tension that holds the trim snugly in place.

Wiring can be brought out anywhere along the raceway. Merely drill a hole through the rounded surface, insert a standard grommet, and bring the wires out.

Furnished in six-foot sections which match perfectly for continuous installation. Sections are cut to fit and corners are mitered identically like wood quarter-round.

Cross-sectional dimensions: 1 1/16 x ¾ inches.

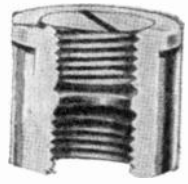
Has neutral satin gray finish, matching Plug-In Strip, and harmonizes with all tones used in interior decoration. Can be repainted to match baseboard, floor, or walls.

Standard package, 17 six-foot lengths. Weight per standard package, 20 pounds.

No. LT-606 ..... per six-foot length $1.32

T&B Brass Floor Couplings

Approved by Underwriters' Laboratories

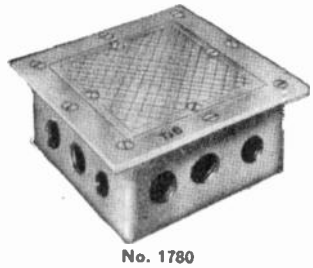


Designed for use with bushed elbows and bulb tees. Can be used with ordinary conduit elbows.

No.	Per 100	Size Inches	Std. Pkg.	Wt., Lb. per 100
480	$125.00	½	100	23
481	150.00	¾	100	32
482	175.00	1	25	60
483	400.00	1¼	10	100

No. 1780 T&B Floor Boxes

For Signal Systems



No. 1780

For use in post offices. Inside measurements 5½ inches square, 3 inches deep. Complete with overlapping checkered brass cover. Standard conduit drilling is two 1-inch and one ⅜-inch tapped holes on each of the four sides.

No. 1780 ..... each $10.00

T&B Watertight Floor Boxes

Non-Adjustable

Approved by Underwriters' Laboratories

Cover plate and bell nozzle are lacquered heavy bronze drop forgings.

Wide flange on box provides ample support for wood floor work. Four screw holes are cast so that the screws may be put in at any angle.

Standard conduit drilling is four holes on sides and two on bottom, tapped for ½-inch, with four holes plugged. Also tapped ¾-inch when specified at no extra charge.

Nos. 1700, 1701, and 1702 are furnished with receptacle (rating 10 amp., 250 volt or 15 amp., 125 volt), bell nozzle and blank cover disc. No. 1703 has no receptacle or bell nozzle and is supplied with a flat cover disc drilled and tapped for ½-inch with plug.

Dimensions: height, 3 3/16 inches; diameter of cover plate, 3¾ inches.

No.	Each	Description	Carton	Std. Pkg.	Weight Pounds
*1700	$4.00	Two-Wire	1	25	2
1701	5.00	Three-Wire	1	10	2¼
1702	5.00	Three-Wire Ground	1	10	2½
1703	3.00	Telephone or Signal	1	25	2

*Attachment plug furnished at extra charge when specified.

T & B Floor Box Accessories

For 1700, 1730, and 1760 Series

No. 1707 Disc

No. 1708 Nozzle

No. 1709 Disc

No. 1710 Reversible Disc

No. 1739 Triple Nozzle

No. 1707. Bronze disc; standard equipment on entire 1700 series of boxes except 1703, 33, and 63.

No. 1707.....each $.25

No. 1708. Bronze bushed outlet nozzle; standard equipment on 1700-1-2.

No. 1708.....each $.80

No. 1742 Extension Piece

No. 1709. Bronze disc with ½-inch hole, for telephone or signal work; standard equipment on 1703, 33, and 63.

No. 1709.....each $.80

No. 1710. Bronze reversible disc with fiber bushing.

No. 1710.....each $1.00

No. 1739. Bronze Bushed Triple Nozzle.....each $1.50

***No. 1742.** Bushed extension piece, ½-inch pipe size, 6 inches long.

No. 1742.....each $1.70

***No. 1745.** Two 2-wire receptacles (15 amperes 125 volts each) on extension ½-inch pipe size, 6 inches long.

No. 1745.....each $3.50

*Bushed extension piece can be furnished in any length. Extensions furnished in ¾ and 1-inch stock, any length.

Standard package, $100.00 list value. Accessories may be assorted with complete boxes to obtain standard package.

H & H Door Switches

6 Amperes, 125 Volts; 3 Amperes, 250 Volts

No. 6550

Nos. 6550 and 2022 are made so that light is on when door is open; No. 2023 so light is on when door is closed.

No. 6550 is rectangular in shape, mounted in a porcelain base, and fits all standard door switch boxes.

Nos. 2022 and 2023 are mounted in a steel box, porcelain lined.

No. 2022

No.	Per 100	Plate Dim. Inches	Hole Required, In. Width	Length	Depth	Carton	Std. Pkg.	Pkg. Wt. Lb.
6550	$370.00	4⅝x1¼	1 1/16	3⅜	1⅝	5	25	15
2022	370.00	3¾x1¼	1 1/16	2⅜	1½	5	25	14
2023	370.00	3¾x1¼	1 1/16	2⅜	1½	2	10	6

Trumbull Telephone or Battery Knife Switches

Schedule B

Front Connections—Mounted

30 Amperes—125 Volts

No. 707

No. 711

No. 9

Porcelain Base

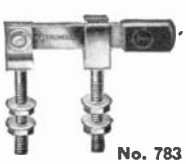
No.	Each	Style	Size, In. Length, Width	Std. Pkg.	Std. Pkg. Wt. Lb.
707	$.50	S. P. S. T.	2 7/16x1¼	10	2½
708	.65	S. P. D. T.	3⅝x1 5/16	5	1½
709	.75	D. P. S. T.	2 7/16x2	10	3½
710	.95	D. P. D. T.	3⅝x2	5	2½
711	1.20	3 P. S. T.	2 7/16x3¼	5	3
712	1.50	3 P. D. T.	3⅝x3¼	5	5

Fiber Base

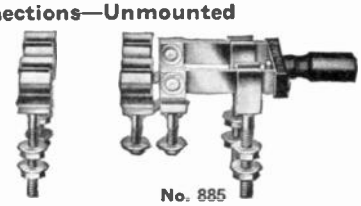
No.	Each	Style	Size, In. Length, Width	Std. Pkg.	Std. Pkg. Wt. Lb.
7	$.70	S. P. S. T.	2½x1⅛	20	3
8	.85	S. P. D. T.	3¾x1⅛	10	2
9	1.00	D. P. S. T.	2½x2	10	2½
10	1.30	D. P. D. T.	3¾x2	10	4
40	1.50	3 P. S. T.	2½x3¼	10	5
41	2.10	3 P. D. T.	3¾x3¼	10	6
42	2.30	4 P. S. T.	2½x4⅜	10	6
43	3.30	4 P. D. T.	3¾x4⅜	10	10

Trumbull Telephone or Battery Knife Switches

Back Connections—Unmounted



No. 783



No. 885

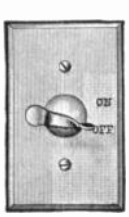
Length of studs, 1½ in., threaded ⅜ inch from the ends with 10x24 threads. Plain finish. Also available with polished finish.

No.	Each	Style	Std. Pkg	Std. Pkg. Wt. Lb.
		No Fuse		
783	$.65	S. P. S. T.	50	10
784	.80	S. P. D. T.	50	13
785	1.00	D. P. S. T.	50	18
786	1.30	D. P. D. T.	25	10
787	1.40	3 P. S. T.	25	10
788	2.00	3 P. D. T.	10	5
789	2.10	4 P. S. T.	10	5½
790	2.70	4 P. D. T.	10	8
		Fusible		
883	$.85	S. P. S. T.	50	13
885	1.30	D. P. S. T.	25	15
887	1.90	3 P. S. T.	25	20
889	2.60	4 P. S. T.	10	12

H & H Weatherproof Switches

For Outlet Boxes or Wall Cases

T Rating 125 Volts Only



No. 7981

For installations exposed to weather, dampness and special atmospheric conditions as on porches, garages, patios, industrial plants and other exposed locations.

Switch is operated with a lever pointing to On and Off positions.

Each switch includes a brass plate, cadmium finished, and a weatherproof mat.

No.	Per 100	Description	Amperes 125 V.	250 V.	Carton	Std. Pkg.	Pkg. Wt. Lb.
7981	$197.00	Single Pole	10T	5	2	10	7
7865	256.00	Single Pole	20T	10	2	10	7
7982	250.00	Double Pole	10T	10	2	10	7
7866	292.00	Double Pole	20T	20	2	10	7
7983	220.00	Three-Way	10T	5	2	10	7
7867	285.00	Three-Way	20	10	2	10	7
7984	479.00	Four-Way	5T	2	2	5	4

Appleton 3¼-Inch Octagonal Outlet Boxes and Covers

Schedule OB

Black Enamel or Galvanized

No. 3-0 Box

No. 8301 Cover

No. 8301-A Cover

No. 8302-A Cover

No. 8311 Cover

No. 8317 Cover

No. 8320 Cover

No. 8321 Cover

No. 8314-LR Cover

Boxes

No.	Universal No.	Description	Std. Pkg.	Wt., Lb. per 100
3-0-½	24151-½	1½ In. Deep, 4-½-Inch K.O. in Sides, 1 in Bottom	100	47
3-0-¾	24151-¾	1½ In. Deep, 4-¾-Inch K.O. in Sides, 1 in Bottom	100	47
3-0 Special	24151 Special	1½ In. Deep, 2-½-Inch and 2-¾-Inch K.O. in Sides, 1-½-Inch in Center of Bottom	100	47

Covers

No.	Universal No.	Description	Std. Pkg.	Wt., Lb. per 100
8301	24C2	Raised, Closed	100	23
8301-A	24C1	Flat, Blank	100	20
8302-A	24C12	Raised, with ⅜-inch Steel Bushing	100	23
8303	.....	Flat, with Cord Grip	100	18
8311	24C35, 24C36	Raised, 1½-Inch Hole for Sign Receptacles	100	19
8317	24C28	Flat, Spider with Bolts	100	18
8320	24C6	Flat, ½-Inch K.O. in Center	100	21
8321	24C7	Raised, ½-Inch K.O. in Center	100	23
8314-LR	.....	With Openings, For Duplex Receptacle	100	15

Appleton 4-Inch Octagonal Outlet Boxes and Covers

Schedule OB

Black Enamel or Galvanized

No. 4-0 Box

No. 8424 Cover

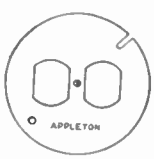
No. 8434 Cover

No. 8441 Cover

No. 8400 Cover

No. 8401 Cover

No. 8409 Cover



No. 8420-LR Cover

No. 4-OD Box

Boxes

No.	Universal No.	Description	Std. Pkg.	Wt., Lb. per 100
4-0-½	54151-½	1½ In. Deep, 4-½-Inch K.O. in Sides, 5-½-Inch K.O. in Bottom	100	65
4-0-¾	54151-¾	1½ In. Deep, 1-¾-Inch K.O. in Each Side, 3-½-Inch and 2-¾-Inch K.O. in Bottom	100	65
4-0 Spec.	54151 Spec.	1½ In. Deep, 2-½-Inch and 2-¾-Inch K.O. in Sides, 3-½-Inch and 2-¾-Inch K.O. in Bottom	100	65
4-OD-½	54171			
4-OD-¾	54171	2⅛ In. Deep, Furnished with Knockouts for ½, ¾ or 1-Inch Conduit	50	84
4-OD-1	54171			
4-OD Spec.	54171 Spec.	2⅛ In. Deep, 2-½-Inch and 2-¾-Inch K.O. in Sides, 3-½-Inch and 2-¾-Inch K.O. in Bottom	50	84

Covers

No.	Universal No.	Description	Std. Pkg.	Wt., Lb. per 100
8400	54C48	Raised, Open	100	24
8401	54C2	Raised, Closed, ⅝ Inch High	100	36
8402-A	54C12	Raised with ⅜-Inch Steel Bushing	100	37
8403	54C1	Flat, Blank	100	28
8404	54C28	Flat, Spider with Bolts	100	27
8407	54C31	Raised, with 1 41/64-Inch Hole for Federal Receptacles	100	26
8409	54C3	Raised, ⅝-Inch Open with Ears, 2 23/32 Inches Center to Center	100	25
8409-D	.....	Raised, 1¼ Inches Open with Ears, 2 23/32 Inches Center to Center	100	38
8413	54C6	Flat, ½-Inch K.O. in Center	100	28
8414	54C7	Raised, ½-Inch K.O. in Center	100	35
8424	54C35, 54C36	Raised, 1½-Inch Hole for Sign Receptacles	100	26
8434	54C14	Raised, for Single Flush Device	100	27
8439	.....	Raised, for Use with Combination Hickey and Swivel Fixture Joints	100	28
8441	.....	Flat, with Cord Grip	100	36
8419-LR	.....	With Opening for Single Receptacle	100	27
8420-LR	.....	With Openings for Duplex Receptacle	100	24

P&S Despard Specifications Type Flush Tumbler Switches

No. 1311, Single Pole

No. 1311-LT, Single Pole with Luminous Handle

No. 1313, Double Pole

One, two or three switches may be installed in a single-gang box. May be wired with either common or separate feed. When installing these switches, it is necessary to use mounting straps. Switches will satisfactorily handle Type C lamp loads and carry Underwriters' T rating as indicated below.

Made of bakelite; front and back are enclosed, making switch dustproof.

The handle and strap are insulated from the mechanism. Switching mechanism has a 4-point break to insure against breakdown from overloads. Contact member is designed to snuff all arcs.

Conform to the most rigid government and architectural specifications. Each switch is tested under full load current in the factory before shipment.

No.	Per 100	Description	Amperes 125 V.	Amperes 250 V.	Std. Pkg.	Wt. Lb. Std. Pkg.
1311	$48.00	Single Pole, Brown...	*10	5	100	11
1411	52.00	Single Pole, Ivory....	*10	5	50	6
1311-LT	83.00	Single Pole with Luminous Handle, Brown.....	*10	5	100	11
1411-LT	90.00	Single Pole with Luminous Handle, Ivory.....	*10	5	50	6
1312	98.00	Double Pole, Brown..	10	10	10	2½
1412	102.00	Double Pole, Ivory...	10	10	10	2½
1313	68.00	Three-Way, Brown...	*10	5	50	8
1413	72.00	Three-Way, Ivory....	*10	5	30	3
1314	200.00	Four-Way, Brown....	*5	2	10	2½
1414	204.00	Four-Way, Ivory.....	*5	2	10	2½

No. 1311-L

Lock Type

Switch body is made of brown bakelite.

Top is made of polished nickel.

One key is furnished with each switch.

No.	Per 100	Description	Amperes 125 V.	Amperes 250 V.	Std. Pkg.	Wt. Lb. Std. Pkg.
1311-L	$121.00	Single Pole.....	*10	5	100	11
1312-L	180.00	Double Pole.....	10	10	10	2½
1313-L	146.00	Three-Way.....	*10	5	50	8
1314-L	280.00	Four-Way.....	*5	2	10	2½
1498	18.00	Key for Nos. 1311-L and 1313-L.....	..	...	1	1/16
1499	18.00	Key for Nos. 1312-L and 1314-L.....	..	...	1	1/16

*Switches carry Underwriters' T Rating.

P&S Despard Residential Type Flush Tumbler Switches

No. 1391, Single Pole

Bakelite, totally enclosed.

No.	Per 100	Description	Amperes 125 V.	Amperes 250 V.	No. in Std. Pkg.	Wt. Lb. Std. Pkg.
1391	$34.00	Single Pole, Brown	10	5	100	9
1491	38.00	Single Pole, Ivory	10	5	50	5
1393	44.00	Three-Way, Brown	10	5	50	5
1493	48.00	Three-Way, Ivory	10	5	30	3

P & S Despard Convenience Outlets

No. 1320

No. 1341

No. 1327

No. 13202

No. 13203

Outlet Rating; 15 Amperes, 125 Volts; 10 Amperes, 250 Volts

Single Convenience Outlets

For assembly in combination with switches, radio outlets, or any other P & S Despard devices. These outlets have bakelite bodies, and double, wide contact surfaces with spring tension sufficiently removed from heat of arc to prevent withdrawal of temper, which is the cause of loose contacts.

Where one convenience outlet is to be switch-controlled, a combination of two No. 1320 or 1420 outlets having separate feed and return may be installed. Where common return is desired, the two negative terminals may be bussed together.

No.	Per 100	Description	No. in Std. Pkg.	Wt. Lb. Std. Pkg.
1320	$17.00	Parallel Slots, Brown..	100	6
1420	25.00	Parallel Slots, Ivory..	100	6
1341	29.00	Pilot Light Outlet, Parallel Slots, Brown.....	30	4
1441	36.00	Pilot Light Outlet, Parallel Slots, Ivory.....	20	3
1327	12.00	Insul. Adapter, Brown	50	4
1427	18.00	Insul. Adapter, Ivory.	30	3

Duplex and Triplex Convenience Outlets

These outlets have one-piece bakelite bodies, four binding screws for feed-thru circuits, and embody the same constant tension contacts as single convenience outlets.

No.	Per 100	Description	No. in Std. Pkg.	Wt. Lb. Std. Pkg.
13202	$30.00	Duplex, Parallel Slots, Brown....	100	22
13202Y	37.00	Same as 13202; with separate Feeds, Common Returns	100	22
14202	36.00	Duplex, Parallel Slots, Ivory....	50	11
14202Y	44.00	Same as 14202; with separate Feeds, Common Returns	50	11
13203	38.00	Triplex, Parallel Slots, Brown....	100	25
14203	44.00	Triplex, Parallel Slots, Ivory....	50	13

P & S Despard Rectangular Attachment Plug Caps

No. 1321

Bakelite

Parallel blades; 9/32-inch cord hole.

No.	Per 100	Description	No. in Std. Pkg.	Wt. Lb. Std. Pkg.
1321	$10.00	Brown.....	100	5
1421	15.00	Ivory.....	50	4
1326	11.00	Polarized, Brown.....	100	7
1426	16.00	Polarized, Ivory.....	50	4

NOTE. The use of P & S Despard Convenience Outlets with non-insulated metal plates is not recommended unless the plates are equipped with bakelite insulating adapters.

P & S Despard Radio Outlets

No. 1322 Radio Outlet

For antenna and ground connections.

Outlet can be used in outlet box singly, in multiple, or with other P & S Despard devices.

No. 1346 Box Divider keeps ground and antenna circuits separate from power circuits.

Cap blades are set at an angle which prevents insertion in power slots.

Standard package, 10; weight, 1 pound.

No. **1322**, Brown Outlet.....per 100 **$47.00**
No. **1422**, Ivory Outlet.....per 100 **53.00**
No. **1323**, Brown Cap, 9/32" Hole.per 100 **15.00**
No. **1423**, Ivory Cap, 9/32" Hole..per 100 **21.00**

P&S Despard Accessories and Box Covers

Hoods, Reflectors and Lamps


No. 1342


No. 1343

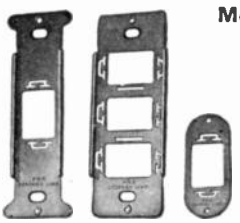

No. 1352

No.	Per 100	Description	No. in Std. Pkg.	Wt. Lb. Std. Pkg.
1342	$40.00	Red Plastic Jewel for Nos. 1376 and 1377	30	1½
1343	23.00	C. P. Hood for No. 1340	30	2
*1343-B	23.00	Brush Brass Hood for No. 1340-B	30	2
1343-BR	23.00	Brown Enam. Hood for No. 1340-BR	30	2
1343-I	23.00	Ivory Enam. Hood for No. 1340-I	30	2
1352	23.00	C. P. Reflector for No. 1339	30	2
*1352-B	23.00	Brush Brass Reflector for No. 1339-B	30	2
1352-BR	23.00	Brown Enameled Reflector for No. 1339-BR	30	2
1352-I	23.00	Ivory Enameled Reflector for No. 1339-I	30	2
†S-6	40.00	Clear Lamp	120	5
†S-6	50.00	Red Lamp	120	5

*Can be supplied in special finishes.

†For use in pilot light receptacles and night lights. Lamps are rated 6 watts, 120 volts.

Mounting Straps


No. 1347 No. 1348 No. 1354

Mounting Straps. The correct style of mounting strap is packed with each P&S Despard plate. Straps may, however, be ordered separately, and for that purpose they are listed below. No. 1347 is 4¾₂ inches long and 1⁵⁄₁₆ inch wide. No. 1348 is 4¾₂ inches long and 1¹⁵⁄₃₂ inch wide. Screw hole spacing on both numbers, 3⅜₂ inches.

Appliance Strap. For mounting single P & S Despard devices in small spaces. Ideal for appliance applications. Length, 2⅞₂ inches; width, ²⁹⁄₃₂ inch. Mounting screw holes, tapped for 6-32 screws, spaced on 1³¹⁄₆₄-in. centers.

No.	Per 100	Description	No. in Std. Pkg.	Wt. Lb. Std. Pkg.
1347	$8.00	Single Opening	50	3
1348	8.00	Three Openings	50	3
1354	4.00	Appliance Strap	100	3

No. 1346 Metal Box Dividers

Used to keep antenna and ground wires separate from any power circuit in same box.

For 1½, 2 or 2½-inch switch boxes.

Standard package, 10; weight, 3 pounds.

No. 1346 ..... per 100 $30.00


No. 1363

Metal Box Covers

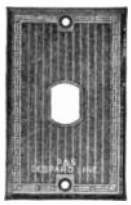
For mounting any one P&S Despard device directly on a 3¼-inch outlet box, or any one or two P & S Despard devices on a 4-inch outlet box. They are especially adapted for surface or exposed work. Covers have a bright metallic finish and are furnished complete with the necessary straps for installing devices.

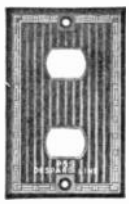
No.	Per 100	Description	No. in Std. Pkg.	Wt. Lb. Std. Pkg.
1361	$15.00	Single Opening Cover for 3¼-In. Box.	100	25
1362	18.00	Single Opening Cover for 4-In. Box	100	33
1363	24.00	Two Opening Cover for 4-In. Box	50	18

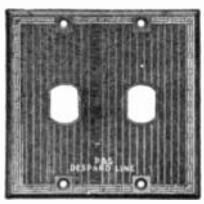
Uniline Bakelite Plates for P&S Despard Devices

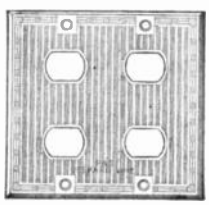
These plates have thick, strong sections, and the wiring device strap furnished with each plate has been designed to form a metal backing or reinforcement for the plate. These two features, combined with the fact that the plate fastening screws are located at the extreme ends near the bevel, make it impossible for plates to warp or crack.

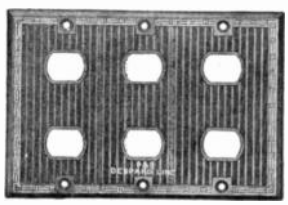
Brown bakelite plates are furnished as standard with brown plated screws. Ivory plates are furnished as standard with metal screws in ivory enamel finish.


No. 91041 Single Gang


No. 91021 Two Gang


No. 91042 Two Gang


No. 92022 Two Gang


No. 91023 Three Gang

Single Gang

Unilne No.	Per 100	Descriptica	Std. Pkg.	Wt. Lb. Std. Pkg.
91041	$14.00	One Vertical Opening, Brown	100	14
92041	19.00	One Vertical Opening, Ivory	100	14
91011	14.00	One Horizontal Opening, Brown	100	16
92011	19.00	One Horizontal Opening, Ivory	100	16
91021	14.00	Two Openings, Brown	50	8
92021	19.00	Two Openings, Ivory	50	7
91031	14.00	Three Openings, Brown	30	6
92031	19.00	Three Openings, Ivory	30	6

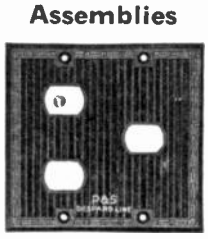
Two Gang

91042	$28.00	Two Vertical Openings, Brown	50	16
92042	38.00	Two Vertical Openings, Ivory	30	10
91012	28.00	Two Horizontal Openings, Brown.	50	16
92012	38.00	Two Horizontal Openings, Ivory	30	10
91022	39.00	Four Openings, Brown.	30	9
92022	49.00	Four Openings, Ivory	30	9
91032	55.00	Six Openings, Brown	20	5
92032	65.00	Six Openings, Ivory	20	5

Three Gang

91023	$78.00	Six Openings, Brown	20	6
92023	93.00	Six Openings, Ivory	20	6

P&S Despard Two-Gang Plates for Radio Assemblies


No. 91052

For radio outlet and T-slot power outlet assemblies.

No.	Each	Description	Std. Pkg.	Wt. Lb. Std. Pkg.
91052	$39.00	Brown	30	9
92052	49.00	Ivory	30	9

Thor ¼-Inch Thorite Plastic Portable Electric Drills

Heavy Duty—Ball Bearing

Universal Motor—110 Volts—25 or 60 Cycles—A.C. or D.C.

A light, sturdy, durable drill with housing, field case, gear case and grip handle made of tough, specially developed Thorite plastic, a nonconductor. The operating parts are encased within an inner skeleton metal frame, plastic housing serves as a protective shell. Great protection from shock, cool-running and easy to service. Internal parts are metal mounted.

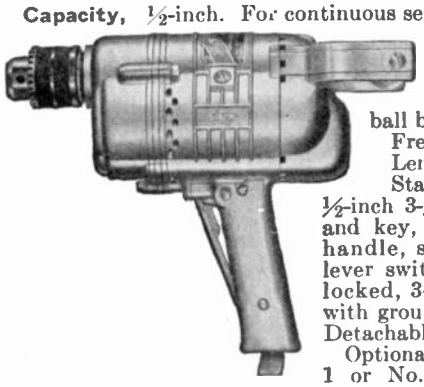
Equipped with 3-jaw Jacobs chuck and key, 3-conductor cable with ground wire and attachment plug, pistol grip handle with trigger switch.

Weight, 3¼ pounds. Shipping weight, 5 pounds.

No.	U14K	U12K	U13K
Each	$42.00	43.50	43.50
Free Speed....rpm.	2500	3750	5000

No. U44 ½-Inch Heavy Duty Thor Portable Electric Drills

Universal Motor A.C. or D.C.—For 110 Volts, 25 to 60 Cy., Sgl. Ph.



Capacity, ½-inch. For continuous service on high production jobs.

Helical, alloy steel gears, insulated armature; ball bearings.

Free speed, 500 rpm.

Length, 12 inches.

Standard equipment: ½-inch 3-jaw Jacobs chuck and key, horizontal spade handle, side handle with lever switch which can be locked, 3-conductor cable with ground wire and plug. Detachable dead handle.

Optional equipment: No. 1 or No. 2 Morse Taper socket instead of chuck, if specified.

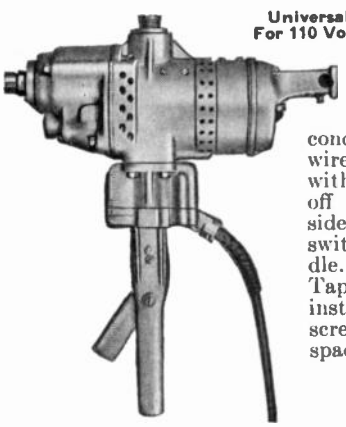
Also available for 32, 220, 250 and special voltages.

Net weight, 9½ pounds; shipping weight, 13 pounds.

No. U44, Specify Voltage.... each **$64.50**

Thor ¾-Inch Heavy Duty Portable Electric Drills

Universal Motor, A.C. and D.C. For 110 Volts, 25 to 60 Cy., Sgl. Ph.



Std. equip.: Spade and dead handles, ¾-inch Jacobs chuck, 3-conductor cable with ground wire and plug. No. UES, with side handle with on-and-off switch; No. UFH, with side handle with momentary switch. Ball bearing on spindle. Optional: No. 2 Morse Taper socket can be furnished instead of Jacobs chuck. Feed screw can be substituted for spade handle.

	For Low Speeds	For High Speeds
No.	UES	UFH
Each	$97.50	105.00
Free Speed....rpm.	330	550
Length....inches	16¾	18¾
Net Weight....pounds	22	25¾

Thor Electric Drill Stands

No. 8

No. 26

Quickly converts a portable electric drill to stationary service not requiring the extreme sensitivity of the drill press. Has six to one leverage which permits tremendous pressure on the work.

Stand constructed so drill is accurately and securely arranged with minimum effort and held square and rigid.

No. 8 accommodates drills of capacities 3/16 to ½ inch.

No. 26 and **No. 30** accommodate drills of capacities ½ to 1 inch. When ordering, specify for what size tool.

No.	Vertical Movement Inches	Can Be Used with the Following Drills	Adjusted Vertically Inches	Beach Space Inches	Wt. Lb.	Each
8	2	All U14 Class	11	13 x9	29	$24.50
	3	UL, UK, UA, UB	9	11½x9½	32	24.50
	3¾	U 44	10	13 x9	30	24.50
26	5	UDA, UEN, UFH, UFZ,	14	15 x9	50	36.00
30	5	UDA, UEN, UFH, UFZ,	14	*	68	40.00

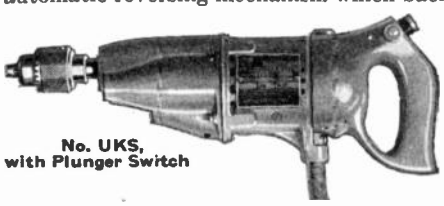
*Wall to center of drill, 14½ inches.

Thor Universal Portable Electric Tappers

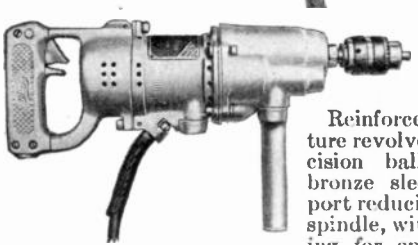
Heavy Duty—Ball Bearing

Universal Motor—110 Volts—25 to 60 Cy.—Sgle. Phase—A.C. or D.C.

Adapted to tapping thread holes in metal. Equipped with automatic reversing mechanism which backs tap out of the threaded hole quickly. A slight pull on the tool disengages the forward action and throws it into reverse motion.



No. UKS, with Plunger Switch



No. UBR, with Momentary Trigger Switch

Powered for continuous production service. Tangential ventilation insures cool running.

Reinforced casings. Armature revolves on oversize, precision ball bearings; long, bronze sleeve bearings support reducing gear shafts and spindle, with heavy ball bearing for spindle end thrust. Nickel-chromium, alloy steel reducing gears, heat treated.

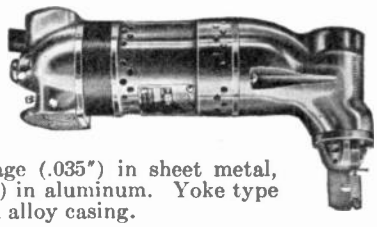
STANDARD EQUIPMENT: Jacobs chuck and key, 3-conductor cable with ground wire and plug. Closed grip handle with on-and-off plunger switch. No. UBR has dead handle and momentary trigger switch.

No.	UKS	UBR
Each	$78.00	97.50
Capacity in Steel....inches	¼	3/8
Free Speed....rpm.	460	500
Size Jacob Chuck Furnished....inches	5/16	3/8
Side of Case to Ctr. of Spindle....inches	1	1 3/16
Overall Length....inches	14¾	16¼
Weight....pounds	8¼	11½

Prices on application for 32, 220, 250 or other voltage.

No. U1N Thor Portable Electric Nibblers

Universal Motor, A.C. or D.C.—For 110 Volts, 25 to 60 Cycles, Single Phase



For cutting sheet metal and tubing. By cutting its own clearance, it cuts corrugated and curved sheets without distortion.

Capacity: No. 20 gage (.035″) in sheet metal, and No. 16 gage (.065″) in aluminum. Yoke type front head. Aluminum alloy casing.

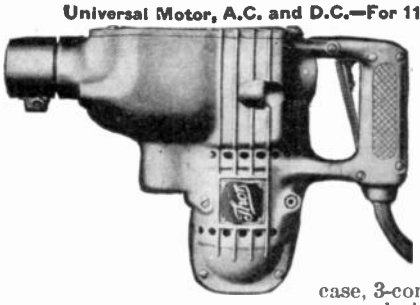
Overall length, 9 inches. Diameter of body, 2½ inches. Weight, 3¾ pounds.

No. U1N, Complete, Specify Voltage .....each **$69.00**

Also available for 32, 220, 250, and special voltages.

No. U100 1-Inch Heavy Duty Thor Portable Electric Hammers

Universal Motor, A.C. and D.C.—For 110 or 220 Volts



Capacity in concrete up to 1-inch Star drill; 1600 blows per minute. Length overall, 13½ inches. Equipment includes 9/16-inch Star drill, turning handle, ejector pin, dust shield, carrying case, 3-conductor cable with ground wire and molded rubber plug, momentary grip switch with lock.

Net weight, 14 lb.; shipping weight with case, 32 lb.

No. U100, Complete, Specify Voltage .....each **$145.00**

Thor Heavy Duty Portable Electric Screwdrivers and Nut Setters

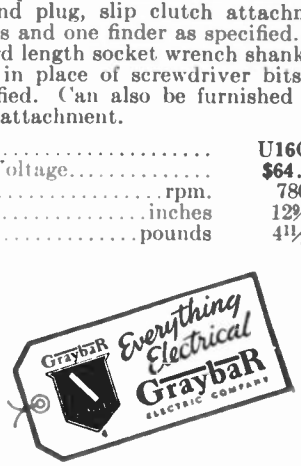
Universal Motor, A.C. and D.C.—For 110 Volts, 25 to 60 Cy., Sgl. Ph.

Capacity: wood screws from No. 4 to No. 12, and machine screws and nuts up to ¼-inch. Die-cast aluminum alloy casing.

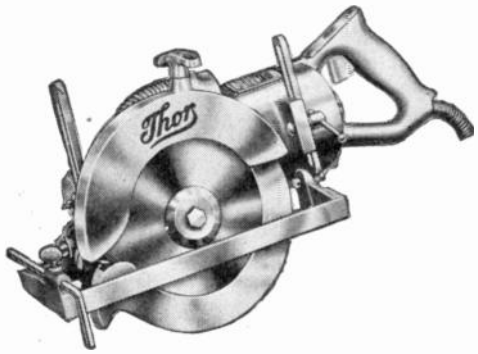
Equipped with trigger momentary type switch which can be locked for continuous operation. One hand operating. Ball bearings on spindle.

Standard equipment: 3-conductor cable with ground wire and plug, slip clutch attachment, screwdriver bits and one finder as specified. Optional: Standard length socket wrench shank and socket wrench in place of screwdriver bits and finder, if specified. Can also be furnished with positive clutch attachment.

No.	U16CP	U18CP
Each, Specify Voltage	$64.50	68.00
Free Speed, rpm.	780	1000
Length, inches	12 9/16	12 9/16
Net Weight, pounds	4 11/16	4 11/16



Thor Portable Electric Saws



A powerful saw for depth and bevel cutting to maximum angle of 45°.

Convenient grip handle for comfortable operation. Automatic telescope guard assures safety. Adjustable without wrenches.

Size, inches	6	7	8
Each	$90.00	119.50	147.50
Blade Diameter, inches	6¼	7¼	8¼
Free Speed, rpm.	4500	4250	3500
Maximum Cutting Capacity in Wood, in,	1 7/8	2 3/8	2 5/8
Weight, pounds	10¾	17¾	21¾

Thor Portable Electric Grinders

Universal Motor, A.C. and D.C.—For 110 Volts, 25 to 60 Cycles Single Phase

Has heat-treated, alloy steel, spiral helical gears, shock absorber spindle. Armature and spindle have large over-size ball bearings. Outer end of spindle support has labyrinth grease seal reinforced with steel hub at wheel guard. Furnished with ground wire, wheel guard and 10 feet of cable. Width of wheel, ¾ inch. Spindle thread, ½-inch x 13; spindle offset, 1 inch. Length, 19½ inches. Shipping weight, 18 pounds.

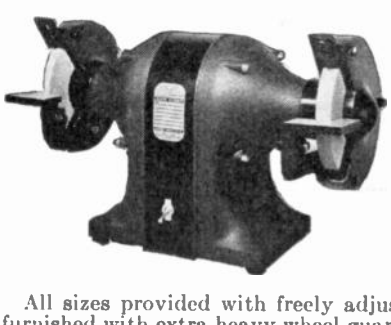
No.	U54	U55
With Grinding Wheel, each	$69.00	90.00
Wheel Capacity, inches	4	5
Free Speed, rpm.	6000	4500

Also available for 32, 220 or 250 volts. Specify voltage.

Thor Electric Grinders

Bench Type

For 110 or 220 Volts—3450 RPM.



For all-around service in grinding, buffing and wire wheel work.

Has a cool, quiet running, completely enclosed motor dynamically balanced for vibrationless operation. All ball bearings are oversize and dust-tight; require only annual greasing attention.

All sizes provided with freely adjustable tool rests and furnished with extra heavy wheel guards; those on 220-volt sizes are enclosed type with exhaust chute and tapered end bells to permit grinding on both sides of wheel.

	Std. Duty	Heavy Duty			
Size, inches	6	6	6	7	7
Volts	110	110	220	110	220
Wheel Diameter, inches	6	6	6	7	7
Wheel Width, inches	½	1½	¾	1	1
Bore, inches	½	½	½	⅝	⅝
Each	$39.50	49.00	49.00	72.50	72.50

Prices include 1 medium grit and 1 fine grit wheel.

No. 201 Klein Side Cutting Pliers

For use on bare and insulated wire. Curved handles. Powerful leverage and keen cutting knives.

No.	201-5	201-6	201-7	201-8	201-9
No. 201 ....each	$5.50	6.00	6.50	7.50	8.50
Size....inches	5	6	7	8	9

No. 212 Klein Side Cutting Pliers

With Sleeve Joint Twisters

For use on bare and insulated wire, with sleeve joint twister.

No.	212-6	212-7	212-8
Each	$6.50	7.50	8.50
Size....inches	6	7	8

No. 201 Klein Side Cutting Pliers

N. E. Type

Nose and all edges rounded and shoulder of head removed.

No.	201-5NE	201-6NE	201-7NE	201-8NE	201-9NE
Each	$5.50	6.00	6.50	7.50	8.50
Size....in.	5	6	7	8	9
Wt., Doz.lb.	3	5¼	7¼	11¼	13½

No. 212 N. E. Klein's Side Cutting Pliers

N. E. Type with Sleeve-Joint Twister

For use on bare and insulated wire by linemen, electricians and mechanics. Opening provided for twisting double tube sleeve joints.

Polished head, handle temper blued.

Packed 6 in a standard package.

No.	212-6N.E.	212-7N.E.	212-8N.E.
Each	$6.50	7.50	8.50
Size....in.	6	7	8
Sleeve Opening, N.B.S.	14 & 17	14 & 17	12
Sleeve Opening, B.&S.	12(.045″)	12(.045″)	10(.104″)
Weight per Dozen..lb.	5¼	7¼	11¾

No. 202 Klein Oblique Cutting Pliers

Lap joint type. Cuts close. The narrow head permits its use in confined places.

No.	Each	Size In.
202-5	$5.00	5
202-6	5.10	6

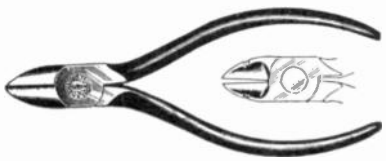
No. 245 Klein's Oblique Cutting Pliers

Can easily be carried in vest pocket.

For electricians, telephone men and switchboard builders.

No. 245-5, 5-Inch, Weight per Doz., 3 Lbs....each $5.00

No. 245-5-W Klein's Oblique Pliers



For removing acetate cellulose insulation from .050 and .058 wires.

Has two W shaped notches at back of cutting knives.

Length, 5 inches.

No. 245-5-W, Weight per Dozen, 3 Pounds.....each $5.50

No. 240-S Klein's Oblique Cutting Pliers

With Wire Stripping Notch and Sleeve Openings

For the use of electricians, telephone men, and switchboard builders. Stripping notch provides a means for crimping on .032–.025-inch single tube copper sleeves often used in telephone work for splicing .032-inch bridle wire and .025-inch inside wire.

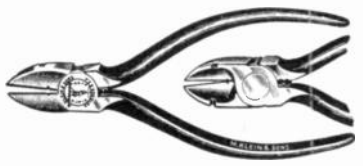
Size, 5 inches. Polished head, handle temper blued.

Weight per dozen, 3¾ pounds.

No. 240-5-S.....each $5.40

No. 202-SW Klein's Oblique Cutting Pliers

With W Stripping Notches, Sleeve Openings and Skinning Hole—Bell System Type



An all-purpose cutting tool for telephone installation and maintenance work. The W notches will slit acetate cellulose and other insulations from wires up to .058-inch o.d. A stripping hole .052-inch diameter is provided in blades which also provides means to crimp on .032 and .025 single tube copper sleeves. Sleeve openings in handles.

Size, 5½ inches. Polished head, handle temper blued.

Weight per dozen, 3¾ pounds.

No. 202-5SW.....each $5.80

No. 202 Klein's Narrow Nosed Oblique Pliers

For telephone or radio work.

Has narrow hinge and pointed nose, polished head and tempered blued handles.

No. 202-5A, 5-Inch Size; Wt. per Doz., 4 Lb.....each $5.00
No. 202-6A, 6-Inch Size; Wt. per Doz., 4¼ Lb...each 5.10

No. 242-6 Klein Oblique Cutting Pliers

For use where it is not necessary to reach into confined spaces.

Polished head, handles blued.

Size, 6 inches, Packed 6 in box.

No. 242-6, Weight per Dozen, 4¼ Pounds.....each $5.50

No. 220-7 Klein's Oblique Cutting Pliers

With Handform Handles

A 7-inch plier made especially for automotive mechanics.

Useful for pulling cotter pins, for choke wires, etc.

Hammer forged from high grade tool steel of special analysis. Knives are close cutting and carefully matched for their full length.

Individually fitted, tempered, adjusted and tested.

Handform handles provide full leverage and comfort for continual use.

Polished head, handle temper blued.

Packed 6 in a standard package.

Weight per dozen, 7 pounds.

No. 220-7.....each $6.50

No. 301 Klein's Long Nose Pliers

Without Cutters

For stripping insulated wire ends. Point, 3/32 inch round. Extra long nose, 2¾ in.

No. 301-5, 5-Inch Size; Wt. per Doz., 3¼ Lb...each $4.80
No. 301-6, 6-Inch Size; Wt. per Doz., 3¾ Lb...each 4.90
*No. 301-7, 7-Inch Size; Wt. per Doz., 4¼ Lb...each 5.00

No. 203 Klein Long Nose Side Cutting Pliers

With Cutting Knives

For stripping insulated wire ends. Point, 3/32-inch round. *Extra long nose, 2¾ in.

No. 203-5, 5-Inch Size; Wt. per Doz., 3¼ Lb...each $4.80
No. 203-6, 6-Inch Size; Wt. per Doz., 3¾ Lb...each 4.90
*No. 203-7, 7-Inch Size; Wt. per Doz., 4¼ Lb...each 5.00

No. 303-6 Klein's Long Needle Nose Pliers

Long nose permits use in confined spaces. Has polished head and handles temper blued.

Weight per dozen, 3¾ pounds.

No. 303-6, Length, 6 Inches.....each $4.90

No. 217 Klein's Chain Nose Pliers

Side Cutting

With side cutting knives. Size, 6 in. Polished head, handles temper blued.

Weight per dozen, 3½ pounds.

No. 217-6 ea.$5.50

No. 317 Klein's Chain Nose Pliers

Without Cutters

For general use. Size, 6 inches. Hammer forged from high grade tool steel. Polished head, handles temper blued.

No. 317-6, Weight per Dozen, 3½ Pounds.....each $4.90

No. 305-6 Klein's Long Flat Nose Pliers

Has long wide flat nose. Inside of jaws left smooth if desired. Has polished head and handles temper blued. Weight per dozen, 3½ pounds.

No. 305-6, Length, 6 Inches.....each $4.70

No. 313 Klein's Heat-Coil Pliers

Particularly adapted for the removing of heat coils from switchboards and telephone terminals, as the points of the nose are shaped to fit the coils. This tool is also serviceable in removing caps from batteries or from binding posts, as well as holding any cylindrical object.

Size, 6 inches.

Polished head, handles temper blued.

Packed 6 in a standard package.

Weight per dozen, 3¾ pounds.

No. 313-6.....each $5.00

No. 206-6 Klein Side Cutting Pliers

Long Flat Nose

Long wide cutting knives. Smooth jaws if desired. Has polished head, handles tempered blued. Length, 6 inches. Packed 6 in a box.

No. 206-6, Weight per Dozen, 3½ Pounds.....each $5.50

Klein's Long Flat Nose Spring Adjusting Pliers

Hollow ground on outside of jaws to reach between and grasp springs easily.

No. 311-5½, 5½ Inch, Weight per Doz., 3¼ Lbs.each $4.90

No. 316-S Klein's Long Nose Sleeve Pliers

Bell System Type

Sleeve openings permit twisting No. 17 N.B.S. and smaller copper sleeves. Point, 3/32 inch round.

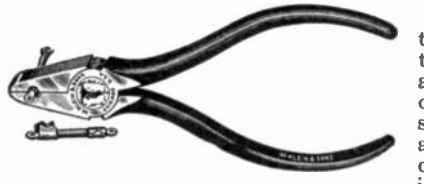
No. 316-S, 6-Inch Size; Wt. per Doz., 3¾ Lb....each $4.90

No. 301-C Klein's Long Nose Cord Crimping Pliers

For telephone switchboard work; oval groove for crimping telephone cords. Point, 3/32 inch round.

No. 301-C, 6-Inch Size; Wt. per Doz., 3¾ Lb....each $4.90

No. 039 Klein's Cord Tip Closing Pliers



The jaws of this tool are designed to permit its use as a hand press for closing cord tips such as W.E. 101 and 102. The circular opening in the jaws is correctly sized to insure a perfect connection when the closure is completed.

Size, 5 inches.

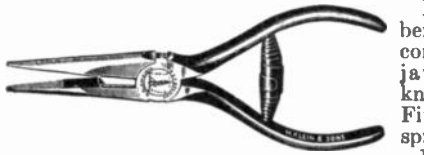
Polished head, handles temper blued.

Packed 6 in a standard package.

Weight per dozen, 3 pounds.

No. 039.....each $6.00

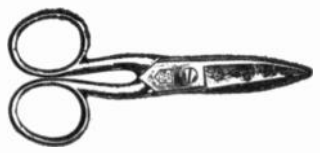
No. 203-5-V Klein's Long Nose Cutting Pliers



For production bench work where a combination of long jaws with cutting knives is required. Fitted with volute spring. Length, 5¾ ins.

No. 203-5-V, Weight per Dozen, 2¾ Pounds....each $7.50

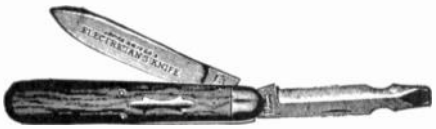
Xela Electrician's Scissors



Made of high grade steel properly tempered. Has screw hinge. Nickel plated finish. Size, 5 in. Weight per dozen, 2 pounds.

No. 2100-5.....each $3.30

No. 1550-2 Klein's Xela Electricians' Knives



A handy combination for the electrician, combining an emergency screwdriver, a knife blade for cutting or stripping wire; safely locked so that it cannot close during use.

Has a well-tempered cutlery steel blade, a strong joint, a solid well-proportioned hand fitting cocobola handle.

Screwdriver blade is locked when open; to unlock a slight side pressure of the thumb releases the lock and permits the blade to be closed readily.

No. **1550-2**, Double Blade.....each **$3.20**

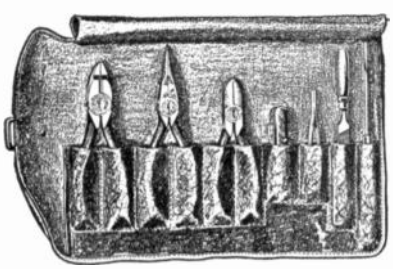
No. 1305-2 Klein's Inspectors' Tool Kits

Solid black leather folding case strongly stitched, reinforced back. Fitted with one each of the following tools: No. 201–6 side-cutting plier; No. 301–5 long nose plier; No. 1550-2 Xela electricians' knife; 1 pair electricians' tweezers; 1 special file; 1 special screwdriver.

A handy assortment to fit the pocket.
Weight, 1½ pounds.

No. **1305-2**.....each **$18.00**

Klein Tool-Kits



Designed for mechanics, service men and electricians.

Contains long nose plier, special side cutting plier, diagonal cutting plier, electrician's knife, a pair of electrician's tempered tweezers, 4½-inch file and a screw driver with insulated handle. All contained in a Keratol roll fastened with a strong strap and buckle.

No. **1305-33A**.....each **$23.00**

No. 5139 Klein's Canvas Tool-Packs

Made of sturdy, brown canvas. A heavy zipper instantly closes or opens the full length mouth. Especially useful for a selection of frequently used small tools.

Weight per dozen, 3 pounds.

No. **5139**, Size, 6x12 Inches.....each **$1.70**

Klein's Rubber Glove Pouches

Scotch chrome leather pocket for carrying rubber gloves. Comes equipped with snap and D ring, ready to attach to body belt.

No.	5120–9	5120–15
Each	$5.00	6.80
Size.....in.	7½x9	7½x15
Weight per Doz.....lb.	4½	7

Leather Plier Pockets

No. 5107

No. 5112

Made of good quality leather. Has slits for belt.
No. **5107**, Weight per Dozen, 2½ Pounds.....each **$2.00**
No. **5112**, Weight per Dozen, 2½ Pounds.....each **2.80**

Klein Combination Tool Pockets

No. 5118-K

Made of heavy harness leather. Opening at bottom prevents accumulation of dirt or water. Top flap of double thickness leather is for riveting to belt.

Space provided for pliers fits 6, 7, 8 and 9-inch side cutting pliers.

No. 5118-K For Pliers and Knife

Weight per dozen, 7½ pounds.
No. **5118-K**, Size, 4¾x8 In....each **$3.30**

No. 5118-S For Pliers and Screwdriver

Weight per dozen, 5½ pounds.
No. **5118-S**, Size, 4x8 In.....each **$2.80**

No. 5118-R For Pliers and 6-Foot Rule

Weight per dozen, 7½ pounds.
No. **5118-R**, Size, 4¾x8 Inches.....each **$3.30**

No. 5111 Klein's Hip Pocket Tool Cases

Suitable for carrying pliers or other tools in hip pocket.

Prevents cutting of clothes, or possible injury to the person.

Made of black leather, 5x7 inches.

Weight per dozen, 5½ pounds.

No. **5111**.....each **$2.80**

No. 3146 Klein Linemen's Wrenches

Bell System Type

Wrench is particularly adapted for use on heavy 3-bolt guy clamps on which the clearance for a wrench is limited.

This wrench is forged of select bar steel, heat treated, and is of the open end type with two openings of a different size at each end. There is a hole provided at the larger end so that the wrench may be used for turning in standard pole steps.

Size, 13 inches. Weight per dozen, 23 pounds.

No.	3146	3146-A
Each	$5.20	5.20
For Size Hardware.....inches	⅝	¾
Openings on Larger End..inches	1⅛ and 15/16	15/16 and 1 5/16
Openings on Smaller End inches	13/16 and ⅝	⅝ and ⅞

Chance Linemen's Socket Wrenches

Fits heads and nuts of all standard bolts for pole and guy work.

Drop forged.

No.	154	234
For Nut Size.....inches	⅝ & Smaller	¾ & Smaller
Net Weight.....pounds	2½	3¼

No. 132-12 Klein's Combination Wire and Sleeve Clamps

For telephone and telegraph general line and trouble work.
This clamp has four round holes for twisting bare wire.
Copper wire Nos. 6, 8, 10, 12, B. & S.
Iron wire Nos. 8, 10, 12, 14, B. W. G.
The reverse side has four double chambers for twisting sleeves.
Copper sleeves Nos. 8, 10, 12, 14, 17, B. & S.
Iron sleeves Nos. 10, 12, 14, 16, 19, B. W. G.
Hammer forged from high grade crucible tool steel. Oil tempered, polished head and black handle.
Weight per dozen, 11 pounds.

No. **132-12**, Size, 9 Inches.....each **$7.70**

No. 132-15 Klein Combination Wire and Sleeve Clamps

Used for telegraph, telephone and power line work. Has an unusual range of wire and sleeve sizes. Made with 5 round holes for twisting bare wire and an oval opening for guy wire or messenger strand. Copper wires No. 4, 6, 8, 10, 12, A.W.G. Iron wire Nos. 6, 8, 10, 12, 14, B.W.G. Strand opening, .437x.624.
Reverse side has 5 chambers for twisting double tube sleeves. Copper sleeves Nos. 6, 8, 10, 12, 14, 17, A.W.G. Iron sleeves Nos. 8, 10, 12, 14, 16, 19, B.W.G.
Hammer forged from high grade crucible tool steel. Oil tempered, polished head and black handles.
Size, 11¼ inches. Weight per dozen, 18 pounds.

No. **132-15**.....each **$10.50**

No. 132-39 Klein's Strand and Wire Holding Tools

This tool serves as a temporary clamp to hold together two sections of strand or wire while placing permanent clamps or splicing and serving.
Openings will fit: 7/16-inch strand (16000-lb. Bell System); 3/8-inch strand (10000-lb. Bell System); 5/16-inch strand (6000-lb. Bell System); 3/16-inch strand (2200-lb. Bell System); 7/64-inch solid No. 12 B.W.G. iron or No. 10 B. & S. copper wire; and 3/32-inch solid No. 13 B.W.G. iron or No. 11 B. & S. copper wire.
Hammer forged from high grade tool steel. Polished head and handles temper blued.
Weight per dozen, 18 pounds.

No. **132-39**, Size, 11¼ Inches.....each **$10.50**

Porter Heavy Duty Shear Type Cable Cutters

For insulated cable. Two sharp edges avoid mashing or damaging cable strands.

Made in two types: FT, for regular cable, telephone office inside cable, fine stranded flexible conductors, not armored, and FH, for armored cable, stranded copper conductors No. 12, 3-wire BX, also for up to 500,000 cm. There are so many types of cable that it is advisable to submit samples to be cut.

No.	2	3
Complete.....each	$8.80	$10.00
Cutterhead, Complete.....each	7.10	8.25
Jaws.....per pair	6.20	7.15
Approximate Length.....inches	27	34
Capacity Insulated Cable.....inches	1⅜	1¾
Approximate Weight.....pounds	4⅝	7¼

Klein's Linemen's Pole Climbers

(Also Called Spurs or Hooks)

Safety is the first and vital point in considering linemen's pole climbers. The lineman going up a pole depends entirely upon his spurs.

To assure utmost dependability Klein's Climbers are forged from special steels and are individually tempered. Shanks and gaffs are tested to insure perfect riveting and temper.

Leg iron or shank is made of spring steel; gaff or spur is forged from tool steel.

The shape of Klein's Climbers has been carefully considered. It is the result of many years' experience and much practical suggestion from linemen. Klein's Climbers have flexible shanks and yield readily to pressure of leg; they do not chafe. Gaff or spur is correct in shape, set of angle and temper. It is hand riveted to leg iron in secure manner.

No. 1939 Klein Streamlined Linemen's Climbers

A newly designed climber in which the use of any unnecessary metal has been carefully avoided. Leg irons are flexible and tapered in width and thickness. The "critical" section from 3 inches above the gaff to half way across the stirrup has been designed for ample strength. The gaffs are slender type, preferred on treated (Black Jack) poles. A detachable wrought ring carries the ankle strap. Gaffs 3½ inches long measured on the outside. Riveted top loop.
Each climber individually tested.
Size is measured from instep to end of shank. Special sizes on order.
Average weight per pair, 2½ pounds.
Made in sizes, 15, 15½, 16, 16½, 17, 17½ and 18 inches.

No. **1939**.....per pair **$12.70**

Klein's Eastern Climbers

Has riveted strap loops.
Tested before leaving factory.
Standard sizes, 15, 15½, 16, 16½, 17, 17½, and 18 inches. Other than standard sizes to order.
When ordering, specify length of shank desired. Measure from instep to extreme end.
Packed 1 pair in a carton.

No.	1901–M	1903–M
Per Pair	$9.50	10.50
Weight.....pounds	3⅜	2⅞

No. 1907 Klein's Tree Climbers

This is the standard tree climber used by forest rangers, top loggers, fire wardens, surveyors, etc. Tested before leaving factory.
Has riveted strap loop. Gaffs, or spurs, are 5½ inches long measured on the outside and 3½ inches long measured on the underside. They are set high in the leg iron so that points clear the ground.
When ordering, specify length of shank desired. Measure from instep to extreme end.
Packed 1 pair in a carton. Weight 4 pounds.

No. **1907**.....per pair **$10.40**

Klein Linemen's Climber Straps and Pads

All leather used is first quality harness leather. All sewing is lock stitched with genuine linen thread hot waxed. Buckles and buckle tongues are Klein standard solid steel drop forgings, tested to 1500 pounds.

With Square Pads—Straps 1¼-Inches Wide

This set consists of 2 upper or calf straps and two lower or ankle straps; and two square pads. Size straps, 1¼x22 inches. Size pads, 4x4 inches.

No.	Description	Per Set	Wt. Lb per Doz. Sets
5301–1	With Plain Pads	$8.20	20
5301–2	With Sheep-Lined Pads	8.60	20
5301–3	With Felt-Lined Pads	8.60	20

With Square Pads—Straps 1-Inch Wide

5301–11	With Plain Pads	$7.90	18
5301–12	With Sheep-Lined Pads	8.40	18
5301–13	With Felt-Lined Pads	8.40	18

Without Pads

Set consists of one pair, (2 straps).

5301–4	Strap Size, 1¼x22 Inches	$3.30	8
5301–9	Strap Size, 1x22 Inches	3.20	6
5301–14	Strap Size, 1¼x26 Inches	3.70	9
5301–10	Strap Size, 1x26 Inches	3.60	8

With Pads

Set consists of one pair, (2 straps), and two plain pads, size, 4x4 inches.

5301–5	Strap Size, 1¼x22 Inches	$4.80	12
5301–15	Strap Size, 1x22 Inches	4.70	11

Square Shape Climber Pads

Size, 4x4 inches. Set consists of one pair, (2 pads).

8200	Sheep-Lined	$2.00	4
8201	Felt-Lined	2.00	4
8202	Plain Leather	1.50	4

No. 8206 Klein Linemen's Pear Shape Climber Pads

Made of two thicknesses of select harness leather riveted together. Outer piece punched with two slots for climber strap and one cross slot through which leg iron of climber is passed. Size, 3½x6 inches.

No. 8206 ..... per pair $1.70

Klein Ankle Straps

For Ring Attachment on No. 1939 Klein Linemen's Climbers

Made in two pieces and furnished with rivets and burrs. Punched ready for quick attachment.

Weight per dozen pairs, 10 pounds.

No.	5301–16	5301–26
Per Pair	$4.70	4.50
Size ..... inches	1¼x24	1x24

No. 1901-MG Klein's Linemen's Climber Gaff Guards

Made of harness leather. The wings of the guard fit around leg iron of climber just above the gaff and snap on.

The gaff is covered and protected by the leather fold with fiber stop.

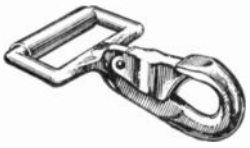
Weight per dozen pairs, 1¾ pounds.

Set consists of one pair, 2 pieces.

No. 1901-MG ..... per pair $1.20

Klein Safety Snaps

A solid steel snap used on body belts, safety straps, etc. Each piece integral, no joints or welds. There are three patterns as illustrated below, individually tested to 1500 pounds. Galvanized finish.



Standard Snaps

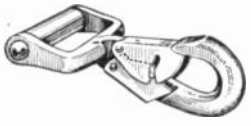
Has wide nose covering spring latch protecting it from accidentally twisting out of Dee Ring. Can be used with any Dee.

Straps listed with plain catalog numbers have Standard Snaps.

Hank's Snaps

Of special construction and must be used in conjunction with Hank's Dee Rings on belt.

Straps listed with "H" prefixing catalog numbers have Hank's Snaps.



Klein-Lok Snaps

Has a twin latch arrangement. Both latches must be pressed simultaneously to release. Full factor of safety. Can be used with any Dee.

Straps listed with "KL" prefixing catalog numbers have Klein-Lok Snaps.

Klein's Tool Belts

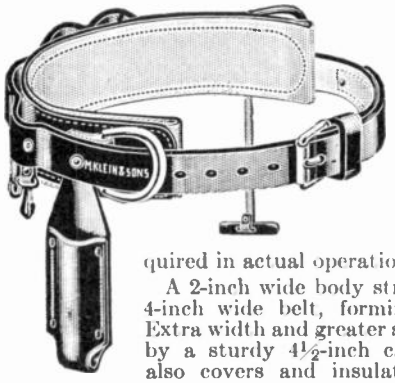
All Klein Belts are made of first quality vegetable tanned harness leather. Sewing is with genuine linen thread, hot waxed, lock stitched. Rivets are solid copper, hand set with burrs. Buckles, including tongues, and Dee Rings are steel drop forgings tested to 1500 lbs.

Catalog numbers prefixed by the letter "H" indicate belts fitted with Hank's Dee Rings which must be used with Hank's Safety Straps. All other makes are fitted with Standard Double or Single Bar Dees.

To insure proper fit select size that allows heel of Dee Rings to come about 1 inch in front of hip bones as per following table.

Distance Between Dee Rings, In.	20	22	22	24	26	28
Belt Size, In.	36	38	40	42	44	46

No. 5204-KK Klein-Kord Tool Belts



Made of multiply Klein-Kord—specially woven, long staple cotton, with each ply laid in rubber and vulcanized—a material that is extremely flexible, waterproof and has a tensile strength many times that required in actual operation.

A 2-inch wide body strap is riveted to the 4-inch wide belt, forming four tool loops. Extra width and greater support are provided by a sturdy 4½-inch canvas lining, which also covers and insulates all rivets. The canvas lining also prevents condensation of body heat. "D" rings are solid steel drop forgings mounted in steel roller safety clips, which in turn are riveted to the 4-inch section of the belt. To assure additional safety, the 2-inch body strap passes through the "D" rings.

Belt is fitted with a Klein-Kord plier pocket, knife snap, tape thong, glove pouch loop, and lag wrench keeper.

Made in 36, 38, 40, 42, 44 and 46-inch sizes.

Weight per dozen, 45 pounds.

No. 5204-KK, with Standard "D" Rings ..... each $22.00

No. 5228 Klein's Leather Tool Belts

Made of one piece of soft pliable, tough russet latigo leather, doubled to form comfortable rolled edges and returned at each end. Cushion is 4½ inches wide at the center of the back and tapers to 3½ inches wide at the front. Body strap is first quality russet harness leather, 2 inches wide, stitched to the cushion at back and passing through loops at end of cushion as well as through the dee rings. A russet harness leather tool strap, 1¾ inches wide with five loops in the 1¼-inch loop strap is carried on leather hangers from the body strap to which it is looped at the ends. This keeps the tool loops from contracting when belt is buckled on.

Constructed so that no rivets come through to inside of belt. Dee rings and buckle are single bar type solid steel drop forgings. All hardware tested to 1500 pounds. Galvanized finish. Fitted with leather pliers pocket, knife snap and tape thong, complete. Weight per dozen, 45 pounds.

Size.....inches	36	38	40	42	44	46
No. *5228 .....each	$25.60	25.60	25.60	25.60	25.60	25.60

*With standard (single bar) dees.

Klein Tool Belts

With Standard Dees

No. 5204 DE

No.	Each	Width In.	Wt., Lb. per Doz.
5204	$14.00	3½	34
5205	15.50	†2¼	35
5202	13.50	2¼	32
*5204DE	17.00	3½	38

*With pliers pocket, knife snap and tape thong attached.

†Double thickness.

No. 5204-TSO Klein Texas Belts

Lined throughout with soft latigo leather. With standard dees.

Made 4 inches wide at center of back for full support, tapering to 2¼ inches wide at hips to permit free bend to body of wearer.

Weight, 36 pounds per dozen.

No. 5204-TSO.....each $24.70

Klein Leather Safety Straps

No. 5251

Leather Wear Pads

No.	Each	Size	Wt., Lb. per Doz.
5251	$13.70	1¾ In.x5 Ft. 8 In.	32½
KL5251	15.40	1¾ In.x5 Ft. 8 In.	32½

Stainless Steel Wear Pieces

5250	$13.70	1¾ In.x5 Ft. 8 In.	32½
KL5250	15.40	1¾ In.x5 Ft. 8 In.	32½
5253	15.20	2 In.x5 Ft. 8 In.	40
KL5253	16.90	2 In.x5 Ft. 8 In.	40

Bell System Type

5275S	$15.80	2 In.x5 Ft. 1½ In.	39
5257L	16.70	2 In.x5 Ft. 10 In.	41

E.E.I. Specifications

5258	$17.10	2 In.x5 Ft. 6 In.	40
KL5258	18.20	2 In.x5 Ft. 6 In.	40

Klein's Klein-Kord Safety Straps

Fixed Length Type

This fixed length strap avoids wear close to the buckles, due to the smooth way it moves on the pole.

Effective length, 1¾x56 inches.

Weight per dozen, 25½ pounds.

No. KL-5234, with Klein-Lok Snaps.....each $12.50

No. 5234, with Standard Snaps.....each 10.80

No. 5233 Klein Klein-Kord Safety Straps

Has standard snaps, stainless clips.

Takes a load of 2400 pounds before ripping. Red center fabric made of 6 plies of long staple cotton of special weave, each ply laid in rubber and vulcanized. Size, 1¾ in. by 5⅔ feet. Other lengths on order.

No. 5233, Weight per Dozen, 36 Pounds.....each $13.70

No. 5215 Klein's Extension Straps

This strap is 1¾ inches wide, made of first quality harness leather and fitted with special forged D ring and buckle. It is worn attached to D ring on main body belt and used when large diameter poles necessitate a longer safety strap than the regular. By engaging snap of the regulation safety strap to the special D ring on the extension strap the lineman can immediately adapt his outfit so that he has no difficulty in working conveniently. No matter how large the pole—can be lengthened or shortened.

Size, 1¾x15 inches.

Weight per dozen, 14 pounds.

No. 5215, Forged D Ring.....each $7.20

No. 1700-30 Klein's Chicago Linemen's Tools

This tool is a combination of No. 1613-30 Chicago Grip and No. 1702-20 Howes Wire Tool. It is largely used by telephone companies.

Swivel hook, main body piece and lever of grip are forged steel. Draw parts are wrought steel gripping. Jaws are machined smooth. Rivets machine turned.

For No. 6 wire and smaller down to No. 13. Other sizes of grips can be furnished in this combination to order only.

Weight, 4 pounds.

No. 1700-30 ..... each $16.80
Strap for No. 1700-30, 1¼ In. x 7 Ft. ..... each 4.90

No. 1702-20 Klein's Howes Wire Tools

The strap is harness leather 1¼ inches wide and 7 feet long. At one end a forged steel swivel hook is provided with opening to permit anchoring round insulator pin. The forward end has a locking device to hold the load at any distance and is so arranged that a wire grip can be readily attached.

The metal parts are galvanized.

Weight per set, 2½ pounds.

No. 1702-20. ..... each $12.30
Extra Strap, 1¼ Inches x 7 Feet. ..... each 4.90

No. 1802-30 Klein Self-Locking Block Tackles

Consists of light steel galvanized shell block, fitted with a snubbing hook to lock load in any position. Block is arranged with spring guard snap hooks.

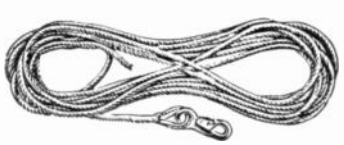
When pulling up wire to make a splice it may be used with two grips attached to the snaps, or with one grip and hook No. 258 to anchor to an insulator pin or other convenient anchorage. Hook is specially shaped to fit under double petticoat insulator on cross arm.

Furnished with 25 feet of ⅜-inch, 4-strand manila rope and detachable anchor hook. Shipped unassembled

Weight each, 3 pounds.

No. 1802-30. ..... each $10.20

No. 1803 Klein's Hand Lines



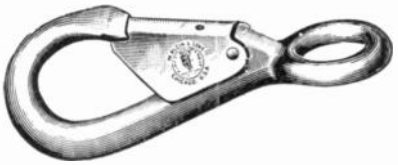
Best quality manila rope which will not twist. Spliced to eye of snap hook with galvanized steel thimble. Snap hook is drop forged with round eye, opens to ¾ inch.

Complete with ⅜-inch, 4-strand manila rope and No. 443-A snap.

No. 1803-60, With 75-Foot Rope, Weight Each, 3½ Pounds. ..... each $9.20
No. 1803-120, With 120-Foot Rope, Weight Each, 5¼ Pounds. ..... each 12.40

No. 443-A Klein's Snaps

For Hand Lines and Light Hoists



Can be used on all light hoisting, for roofers, etc.

Drop forged with galvanized finish. Hook and eye are integral drop forging. Duck bill nose closes around latch.

Will carry loads up to 2000 pounds. When fitted to a 4-inch tackle block, it provides an ideal means for connecting with come-along; no taping is necessary.

Opening will take up to ¾ inch. Eye, 1 1/16 inches. Length overall, 5½ inches.

Weight per dozen, 6½ pounds.

No. 443-A ..... each $2.90

Klein's Chicago Grips

For Messenger and Guy Strand, Heavy Cable, Etc.

Forged from alloy steel, heat treated. Gripping jaws are machined smooth. Safe load, 15,000 pounds.

No.	Each	For Cable: Galv. Steel Strand In.	For Cable: Copper Strand	For Cable: A.C.S.R No.	Max. Open. In.	Approx. Wt. Lb.
1628-16	$46.00	5/16–⅜	1/0 B.&S.–300,000 C.M.	2–4/0	.69	15½
*1628-16B	53.70	*	*	*	.69	15½
*1628-16BP	61.30	...	1/0 B.&S.–550,000 C.M.	2–†477,000	1.06	17

*With bronze lined jaws. †C. M.

Klein's Chicago Grips

Main body piece and lever are forged steel. Draw parts are wrought steel. Gripping jaws are machined smooth.

No. 1613—For Bare Wire

Bronze lining of jaws prevents slippage and consequent surface abrasion of conductor or strand.

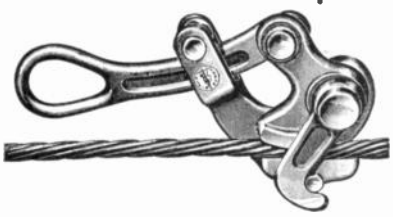
No.	Each	B. & S. Wire Size: Maximum	B. & S. Wire Size: Minimum	Approx. Max. Open. In.	Approx. Wt. Lb.
1613-30	$5.20	6 Solid (.162")	12 Solid (.081")	.22	1½
1613-30B	7.70	Same as above, with Bronze Lined Jaws			
1613-40	8.20	0 Strd. (.373")	10 Solid (.102")	.44	3
1613-40B	13.80	Same as above, with Bronze Lined Jaws			
1613-50	13.80	4/0 Solid (.460")	6 Solid (.162")	.52	8
1613-50B	23.00	Same as above, with Bronze Lined Jaws			

Klein Haven's Steel Grips

All parts are solid steel drop forgings, heat treated. Eye is pear shaped, and a roller fitted to body yoke makes motion free and allows load to come on smoothly. Instantaneous hold, yet a shake on tackle rope releases grip. Will not slip due to hand cut serration in face of eccentric. Galvanized finish.

No.	1604-10	1604-20
Each	$4.80	7.50
For Wire Size, and Smaller	No. 4 B.&S.	½ In.
Approx. Maximum Opening....in.	15/64 (.24)	17/32 (.53)
Approx. Minimum Opening....in.	1/16 (.06)	9/64 (.14)
Width of Eye....inches	⅞	1⅛
Weight per Dozen....pounds	12	28½

No. 1625-20 Klein's Improved Haven's Grips



For wires ¾ inch to No. 2 B.& S. For use on solid or strand wires. Swing latch engages stud on lower jaw, preventing any distortion of body or cross bolt under load. For use on trolley wire; is weatherproof. Can be readily adapted, at slight extra cost, for hot line work on weatherproof (insulated) conductors. Approximate maximum opening, 25/32 inch (.78); approximate minimum opening, 7/32 inch (.22). Parts are alloy steel drop forgings properly heat treated. Swing latch holds tool on line in position for pull. Eye is pear shaped 1¼ inch wide. Hand cut serration in face of eccentric assures a hold that cannot slip. Galvanized finish.

No. **1625-20**. Weight per Dozen, 15 Pounds.. each **$16.10**

No. 5108 Klein's Inspectors' Harness Leather Tool Bags

This bag is made of harness leather and will stand rough and hard usage. The leather does not absorb moisture.

Bag has a shoulder strap combined with a pad and hand strap. The bottom is three-ply and is protected with steel studs. Retaining straps pass clear around the bag so that it may be loaded to the limit of its capacity and be securely held intact. All seams are sewed with hot waxed linen thread, lock stitched.

No.....	5108-14	5108-16	5108-18	5108-20	5108-22	5108-24
Each....	$17.90	19.20	22.00	25.00	26.70	28.20
Size...in.	14x8	16x8	18x8	20x8	22x8	24x8
Wt....lb.	5	5¾	6	6½	7	7¼

Klein's Linemen's Canvas Tool Bags

With Leather Bottoms

This bag is made of one piece of white duck reinforced all around the bottom with heavy bag leather. The bottom is made of heavy leather outside and duck inside, lock stitched all around. The bottom is protected with strong steel studs. Bottom and sides are joined together with lock stitched leather welt seams.

Mouth of the bag is formed by a 12-gage steel frame. The canvas is clinched between this frame and an inside secondary steel frame.

Bag has harness leather handles and two retaining straps with buckles.

No. 5102, with Leather 3¼ Inches up Sides

No.	Each	Size Inches	Weight Pounds
5102-12	$11.70	12	2¼
5102-14	12.50	14	2½
5102-16	13.00	16	3
5102-18	13.90	18	3¼
5102-20	14.50	20	3½
5102-22	15.00	22	3¾
5102-24	15.50	24	4

No. 5105, with Leather 8 Inches up Sides

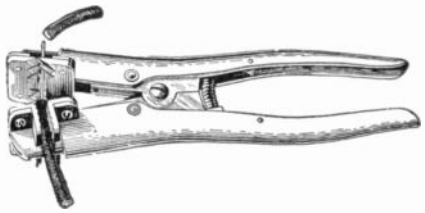
No.	Each	Size Inches	Weight Pounds
5105-16	$14.20	16	3
5105-18	15.00	18	3½
5105-20	15.70	20	3¾
5105-22	16.20	22	4
5105-24	16.70	24	4¼

Linemen's bags can be furnished with lock and key, and shoulder strap at slight additional cost.

Ideal Wire Strippers

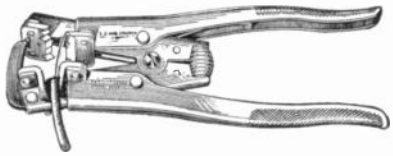
For Solid or Stranded Wire

Standard Model



Cutting edges are shielded. Blind centers of the V-notches on blades prevent cutting or scarring of wire.

Automatic Model



Lever stops return of arms until wire is removed after stripping, then they are quickly snapped back to normal. Lever will not operate unless wire with insulation .050 inch or larger is inserted between grippers. When no wire is inserted, lower gripper moves upward when handles are squeezed, pushing trigger and lever up and out of action.

No.	Standard Each	Automatic Each	Extra Blades per Set	Strips Wire Gage	Shipping Weight Pounds
Universal	....	$5.65	$1.18	10-22	1½
0	$4.71	5.65	1.18	20-30	1½
01	4.71	5.65	1.18	16-22	1½
1	4.71	5.65	1.18	12-18	1½
2	4.71	5.65	1.18	10-16	1½
3	4.71	5.65	1.18	8-14	1½

No. 1515-1 Klein's Cable Sheath Splitting Knives

Cutlery steel blade, oil tempered. Riveted, harness leather handle.

Weight per dozen, 12 pounds.

No. **1515-1**.....each **$4.90**

No. 1560-3 Klein Linemen's Skinning Knives

In constructing this knife, the shape of the blade has been considered to make it a safety tool.

Half hard rubber handle is molded on securely and provides adequate insulation and a positive grip.

Hole in handle is through the solid rubber.

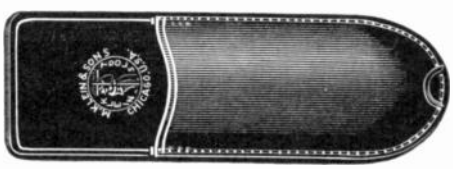
Length of blade, 3 inches; overall length, 8 inches.

Weight per dozen, 4¼ pounds.

No. **1560-3**.....each **$3.50**

No. 5163 Klein Skinning Knife Sheaths

For No. 1560-3 Knife

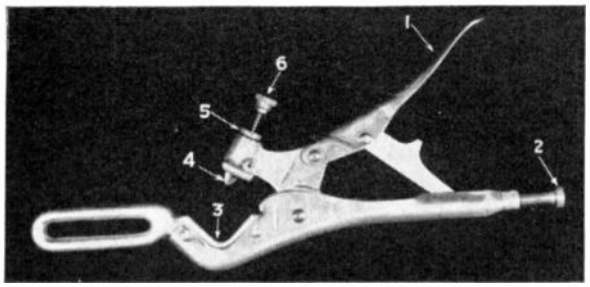


Can be riveted to belt or carried in hip pocket. Opening at bottom to prevent collection of dirt and permit escape of water.

Size, 3x9 inches. Weight per dozen, 4 pounds.

No. **5163**.....each **$2.20**

Jones Cable Strippers



Strips lead sheath, basket weave armor, and other forms of insulation from electric wire and cable.

Stripper is adjustable and will strip electric wire and cable from ⅜ to 1¾ inches in diameter. The cutting blade can be adjusted for any thickness of armor or insulation up to ¼ inch and can be reversed to cut along the insulating cover as well as around it.

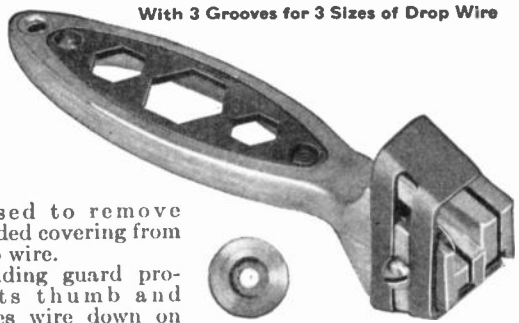
Made of bronze and steel, cadmium plated, with a special tempered steel knife blade.

Weight, 1 pound, 2 ounces.

Each $7.50

No. 779 Diamond B Braid Stripper

With 3 Grooves for 3 Sizes of Drop Wire



Used to remove braided covering from drop wire.

Sliding guard protects thumb and forces wire down on cutting blade. Blade can be rotated to new position when used section becomes dull.

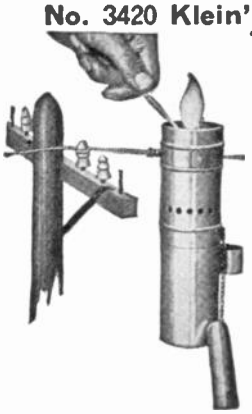
Handle is equipped with steel wrench plate with hexagonal openings of ⅜, 7/16, and ⅝ inches for bridging connectors, nuts or heads.

Made of die-cast aluminum with natural finish.

Packed 12 to a carton. Weight, ¼-pound.

No.	Per Dozen	Width, In.	Depth of Cut, In.
779	$33.00	.270	.060
		.330	.080
		.375	.110

No. 3420 Klein's Staysalite Linemen's Torches



This torch burns alcohol without odor or noise and stays lit in a wind.

Light and small and is lit or extinguished in a moment, as wanted. Has no adjusting parts.

The Staysalite is carried in the lineman's belt and eliminates the ground man; can be hung directly on the wire under joint to be soldered.

Provided with a cup for holding soldering paste. Can be used as a small heater or for soldering iron.

Weight, 1¼ pounds.

No. 3420 . . . . . each $13.30

Unique Gasoline and Kerosene Blow Torches

No. 3

No. 7

For heavy duty hard service under severe weather conditions and applications requiring large volume of flame and extra heat.

Flame, 1½x12 inches, 2000°F. Flame can be regulated to small jet.

Closing the valve forces slender cleaning needle through orifice, keeping it clean and full size.

Has replaceable, threaded needle and orifice block, and removable channel plugs for cleaning, and powerful, dependable pump.

	Gasoline		Kerosene	
No.	3-L	7	3-K	7-K
Each	$13.33	16.66	16.66	20.00
Tank Capacity . . . . . quarts	1	2	1	2
Weight . . . . . lb.	4½	5½	4½	5½

No. 0 Unique Gasoline Blow Torches

1-Pint Capacity

A compact torch for the tool kit; for use in places hard to get at. Produces an intense heat of 1900°F. plus. Burns in any position. Fine flame control. Closing fuel valve forces the steel cleaning needle through orifice, clearing it of foreign particles. The needle, threaded orifice block and all other parts are replaceable. Channels fitted with removable threaded plugs for cleaning.

Steel tank, brazed fittings, and welded construction for safety. Top filler opening. Oval tank is 2¾ inches through center; 5-inch circle. Size flame, 1x6 inches. Weight, 3 pounds. Generator wind-shield included.

No. 0 . . . . . each $7.33

No. 1 Unique Gasoline Blow Torches

1-Quart Capacity

A medium, small flame torch. Produces an intense heat of 1900°F. plus. Burns in any position. Fine flame control. Closing fuel valve forces steel cleaning needle through the orifice, clearing it of foreign particles. Cleaning needle, orifice block and all parts replaceable at small cost. Channels are fitted with removable threaded plugs for cleaning.

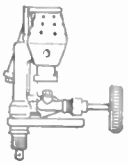
Steel tank, powerful pump, brazed fittings, and welded bottom for safety. Filled through bottom funnel filler. Size flame, 1x6 inches.

Weight, 3¾ pounds.

No. 1 . . . . . each $7.33

No. 50 Unique Heavy Duty Gasoline Public Utility Furnace

With Style A Hood



No. 50 Generator

Melts 50 pounds of solder in 10 minutes. Flame, 2000°F, ½x12-inch length. Extra fine flame control which holds steady without change.

Generator is made of bronze alloy casting, fitted with replaceable orifice block and removable channel plugs.

Tank is made of heavy steel, welded throughout.

Top-Plate has ample support for large kettles and solder pots up to 8-inch size. Handle locks to support solder iron.

Hood. Style **A** is standard and has open top. Style **B** hood (for solder irons) may be substituted and accommodates irons up to 12 pounds per pair. Heating time, 4 minutes. Style A hood is furnished as standard.

Tank capacity, 1⅛ gallons. Dimensions, 9½x13 inches.

No. 50, Weight 15 Pounds.....each **$22.33**

No. 58 Unique Kerosene Heavy Duty Public Utility Furnaces

Figure 8 Generator and Orifice Scraper

Melts 50 pounds of solder in 10 minutes. The figure 8 generator burns the fuel without carbon formation, producing a clean flame of 2000°F.

Orifice is cleared of foreign particles by turning flame control valve while furnace is burning.

Tank is made of heavy steel, welded throughout.

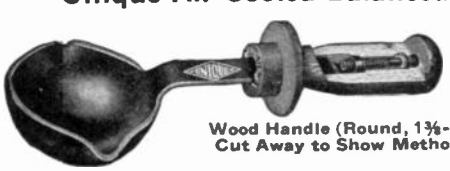
Top-Plate has ample support for large kettles and solder pots up to 8-inch size. Handle locks to support solder iron.

Hood. Style A hood is standard and has open top. Style **B** hood (for solder irons) may be substituted and accommodates irons up to 12 pounds per pair. Heating time, four minutes.

Tank capacity, 1⅛ gallons. Dimensions, 9½x13 inches.

No. 58, Weight 15 Pounds.....each **$22.33**

Unique Air Cooled Balanced Ladles



Wood Handle (Round, 1⅜-Inch Diameter) Cut Away to Show Method of Attaching

Comfortable insulated, "close to the bowl" grip eliminates strain, and makes it easy to direct and control the flow of molten metal.

Made of pressed steel and treated so that solder cannot stick.

Wood handle can be easily and inexpensively replaced.

Bowl Diameter.....inches	2½	3	3½	4
Each.....	$1.40	1.50	1.70	1.80
Capacity.....pints	⅛	¼	⅜	½
Weight.....ounces	10	12	14	16

Unique Gasoline Plumbers' Fire Pots

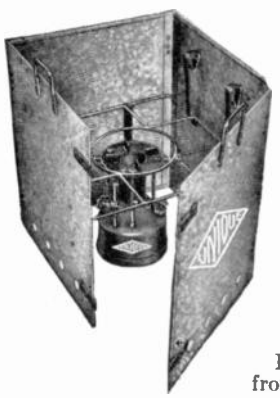
A high grade furnace which can be easily changed to heavy duty torch. The 10-inch flame melts 20 pounds of lead in 7 minutes and 40 pounds in 10 minutes. Fine flame control keeps molten lead at right temperature. Prevents dross and saves fuel. Economical, burns 4 to 6 hours per gallon.

Generator is a seamless steel U-tube encased in a casting and protected so that the tube cannot scale or burn away. Welded steel tank has powerful pump, funnel filler and bottom shock ring. Furnace height, 12 in. Weight, 12 pounds.

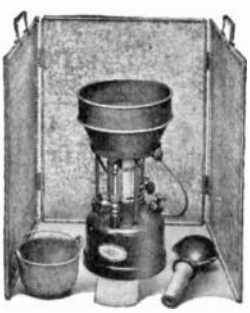
No. 43, For Pots Up to 6 Inches Diameter.....each **$12.00**
No. 43A, For Pots Up to 8 Inches Diameter....each **13.33**

Unique Safety Folding Shields

For Furnaces and Firepots



No. 50



No. 50-C

Protects workers and by-standers from hot materials and shields furnace from wind. Affords a protective spot for tools and accessories. Galvanized iron with edges rolled around ¼-inch rod. Rust proofed. No sharp corners. Folds flat for carrying and storing.

No. 50 is a four-panel shield with welded steel grate and supporting brackets for large pots and kettles. Grate hooks on bracket to hold shield in open position.

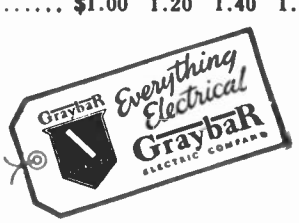
No. 50-C is a three-panel shield without grate

No. 50 Weight, 15 pounds.....each **$16.66**
No. 50-C Weight, 27 pounds.....each **8.00**

Wrought Steel Melting Ladles

Double Lip, Extra Deep

Size.....inches	2½	3	3½	4	5	6
Each.....	$1.00	1.20	1.40	1.60	2.10	2.40



G-E Calrod Soldering Irons

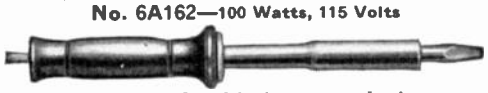
For industrial use. Furnished with 6-foot cord and plug; supporting stand. Available in 230 volts at no extra cost.

No. 6A161—75 Watts, 115 Volts

For light, intermittent soldering on switchboards, wiring devices, ignition systems, meters, and instruments.

Diam. Tip In.	Calorized Tip Each	Ironclad Tip Each	Wt. Oz. Without Cord	Wt. Oz. With Cord	Shipping Wt. Oz.
3/8	$9.55	$10.20	15	20	26
1/2	9.55	10.20	15	20	26
*1/2	10.10	10.90	15	20	26

No. 6A162—100 Watts, 115 Volts



For light, high-speed soldering on telephones, switchboards, appliances, and meters. For service and repair men.

3/8	$9.55	$10.20	15	20	26
1/2	9.55	10.20	15	20	26
*1/2	10.10	10.90	15	20	26

No. 6A200—100 Watts, 115 Volts

For light, high-speed soldering on radios and switchboards; medium, intermittent work on tin and wiring.

3/4	$10.80	$12.20	16	21	27

Ironclad Renewal Tips

No corroding, no filing. Lower upkeep cost, less maintenance, and longer life. Illustration shows the effect of solder (250°C. for 363.5 hours) on plain copper (right) and Ironclad copper (left) soldering tips.

*Long tip.

American Beauty Electric Soldering Irons

No. 3138

No. 3158

All irons are made with a special baffle plate at the shank to prevent free conduction of heat to handles.

Copper tips are treated with special nickel coating to prevent oxidation and corrosion.

The heating element core is made of solid steel rod. The outer surface is heat treated to prevent or reduce to the minimum oxidation and corrosion.

Stands are supplied with all irons.

Pyramid type tips are regularly supplied with Nos. 3138 and 3158, chisel type with Nos. 3178 and 3198. All numbers can be supplied with either type tip, when so specified. A special long drawn semi-chisel shape tip can be furnished for No. 3138.

No. 3138. Primarily adapted for light work; radio, telephone, telegraph, ignition work, etc.

No. 3158. For the same purposes as No. 3138 iron and work of a somewhat heavier nature; for electric starter and ignition manufacturers, repair work, etc.

No. 3178. For use on heavy work; connections, light commutators, and for service and production work.

No. 3198. For shop, service, production work, etc. Supplies a large volume of heat at high temperature.

No.	3138	3158	3178	3198
Each	$8.00	9.60	12.90	16.80
Diameter Tip...inches	3/8	5/8	7/8	1 1/8
Watts	100	200	300	550
Length Overall...inches	12 7/8	13 5/8	14 3/8	15
Diameter Overall...inches	7/8	1 1/4	1 9/16	1 3/4
Net Weight...pounds	1	1 3/4	2 5/8	3 3/4
Shipping Weight...pounds	2	3	4	5 3/4

No. S-76 American Beauty Electric Soldering Irons

For 110-120 Volts

For small, light work; consumes 50 watts. Specially treated copper core with aluminum head, to which tip screws with taper fit.

For all standard voltages and for 12 and 32 volts.

Diameter tip 7/16-inch; length, 11 5/8 inches.

Net weight, 6 ounces.

No. **S-76**	each $5.00
No. **9276** Element	each 3.00
No. **3734**, Tip	each .40

Extra Tips for American Beauty Electric Soldering Irons

	3738 for 3138 Iron	3758 for 3158 Iron	3778 for 3178 Iron	3798 for 3198 Iron
No.	3738	3758	3778	3798
Each	$.50	1.10	1.90	2.20
Weight...ounces	2 1/2	7	16	28

Heating Elements for American Beauty Electric Soldering Irons

No.	9273	9275	9277	9279
Each	$3.60	4.80	6.50	8.55
For Iron No.	3138	3158	3178	3198
Weight...ounces	4	8	12	18

Soldering Coppers

Made of drawn copper bolts of the best quality and shaped like a hammer. By this method they are as solid as metal can be made, are better heat retainers and should not be compared with such as are cast from copper ingots.

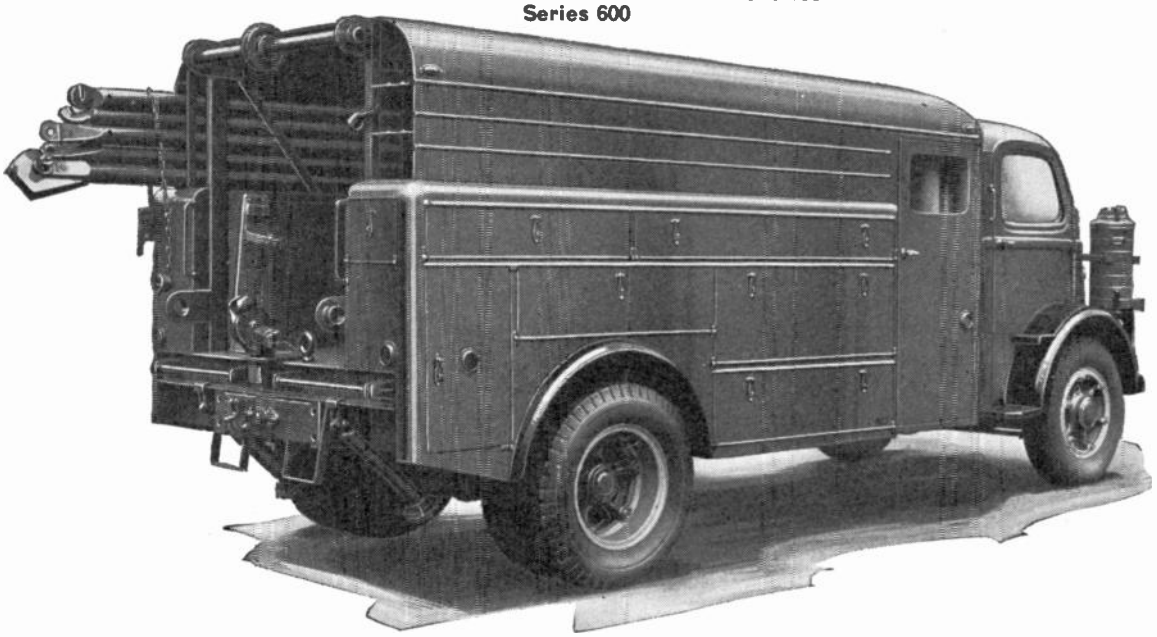
Weight, per Pair...lbs.	3/4	1	1 1/4	1 1/2
Soldering Coppers...each	....	....	....	....

Unique Air-Cooled Solder-Copper Handles

Shank contact with wood is minimized. This safe handle won't let go—the piano wire grip contracts and expands with the shank—a tight grip always. Simply drive the handle over the pointed shank—no special tools required.

No.	1	2
For Copper Shanks...inches	7/32 to 3/8	3/8 to 1/2
Wood Handle Dimensions...inches	1 1/4 x 6	1 1/2 x 6
Each	$1.00	1.20

Powers Truck Bodies
For Construction and General Maintenance
Series 600

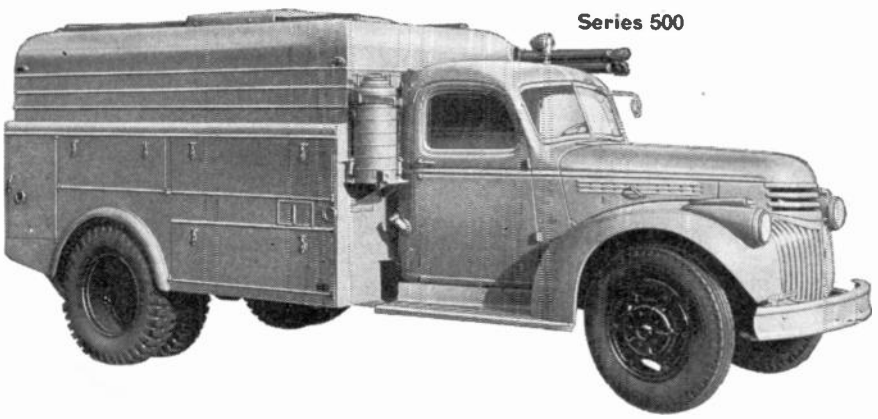


Series 600C Line Construction and General Maintenance Body

Designed for efficiency and crew comfort. Powers' engineering and experience in building line bodies for utilities is the assurance of well-designed, well-balanced equipment, properly arranged to carry all tools and supplies for construction and maintenance. In the Series 600C model, special attention has been given to crew accommodations. A roomy compartment in the forward part of the body seats 4 men, while 3 more ride in the truck cab.

Line construction bodies and all accessories are available as a complete package unit.

Series 500



Series 500 Line Construction and General Maintenance Body

Powers' makes a complete line of standardized bodies for construction and general maintenance service, each model designed and constructed to meet the most exacting requirements.

Series 500 embodies the latest improvements and conveniences suggested by utility engineers and operators. Standard equipment includes a winch and pole derrick. Body comes with either telescopic steel roof or open top with tarpaulin. Models available for all conventional or C.O.E. chassis.

All equipment is carried inside of body.

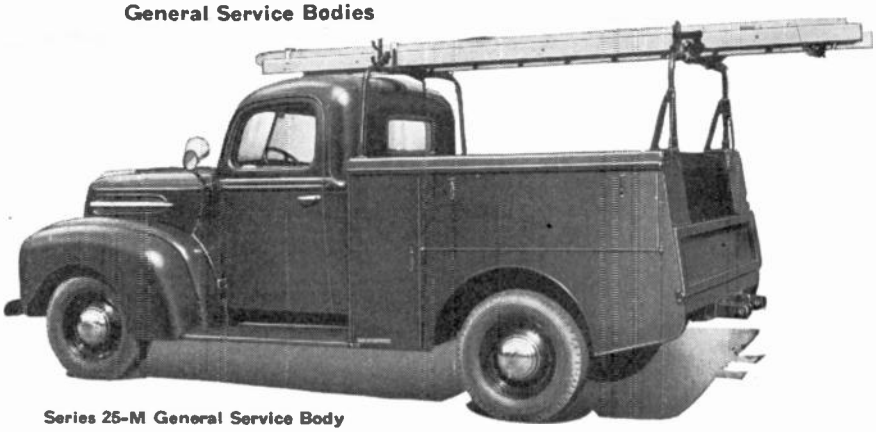
General Service Bodies

Ideal for all types of general service utility work—electric, gas, water, street light maintenance, and telephone. Standardized models also available for plumbing, heating, and other service contractors.

All models of the general service line are available with a 24-foot, two section extension ladder and hinged ladder rack assembly.

Cast aluminum fittings on ladder rack reduce overall weight and permit easy adjustment to fit equipment carried.

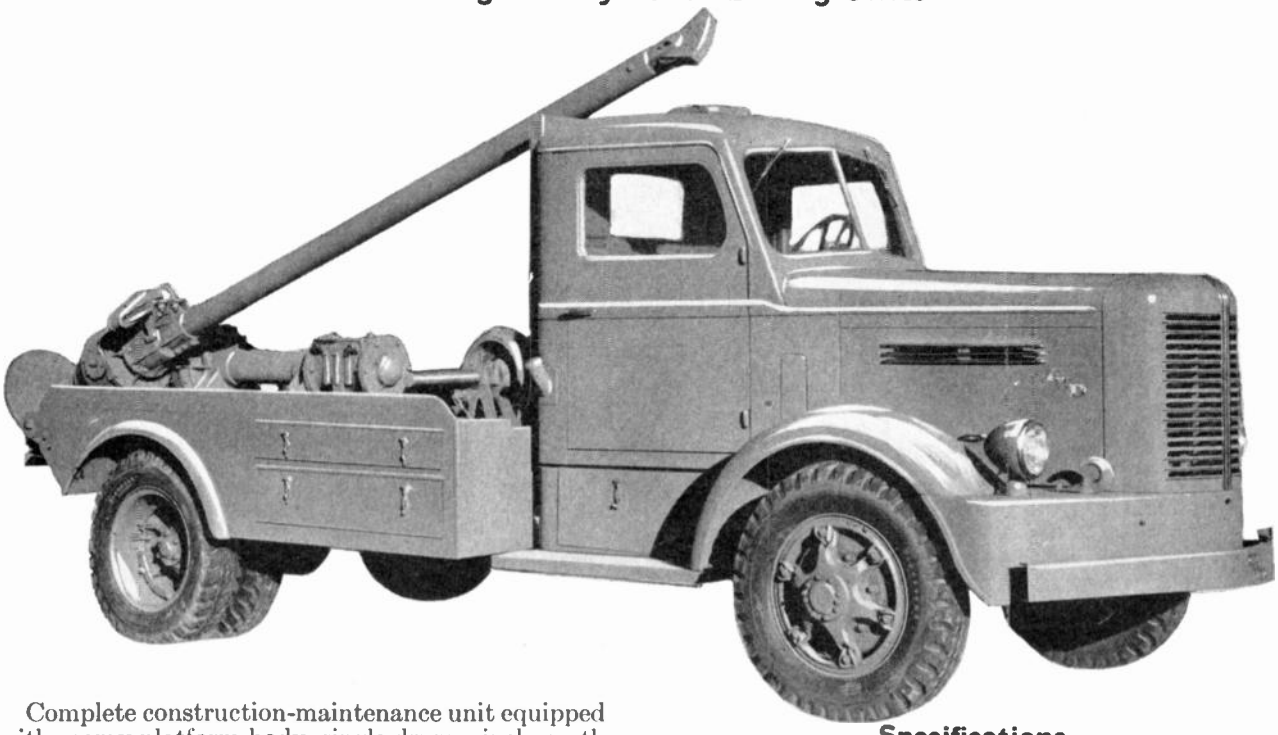
Series 25M. For ½-ton chassis.
Series 35M. For ¾-ton chassis.
Series 50M. For ½-ton chassis.
Series 55M. For ½-ton chassis.
Series 60M. For ¾-ton chassis.
Series 65M. For ¾-ton chassis.



Series 25-M General Service Body

Complete Bulletins Furnished on Request

FWD Light Duty Earth Boring Units



Complete construction-maintenance unit equipped with roomy platform body, single drum winch, earth boring machine with integral type derrick, fully enclosed drive, attractive coupe type cab, and other accessory equipment.

Ideal for large or small utility. Bores holes 16 to 20 inches in diameter, 7-feet deep.

Handles poles up to 45 feet in length.

Specifications

Gross vehicle weight, 17,000 pounds. Brake horsepower, 95 at 2800 revolutions per minute. Wheelbase, 144 inches. Tread, 69 inches. Tires, 8:25x20; duals rear.

Complete specifications and information furnished upon request.

FWD Heavy Duty Earth Boring and Pole Setting Machines

For Power Line Construction

For boring holes up to 56 inches in diameter, 12-feet deep through ice, frost, sandstone, shale, or any soil that can be dug by hand without blasting.

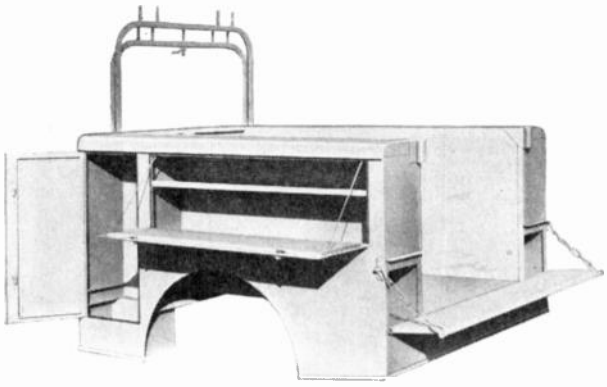
Features 180° turntable, derrick integral with borer, and power elevated boring tower. Write for Bulletin No. 452 for complete information.

FWD All Steel Pick-Up Bodies

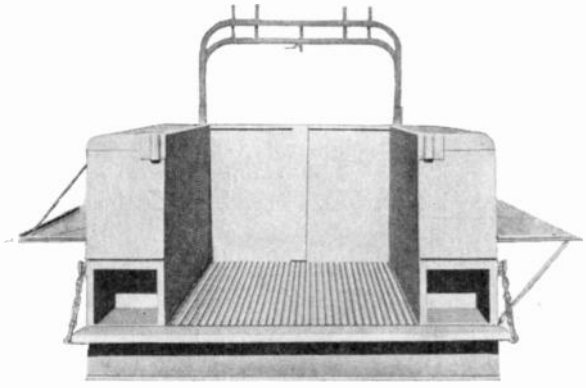
For large and small utilities. Ruggedly built to render years of satisfactory service.

Model B6

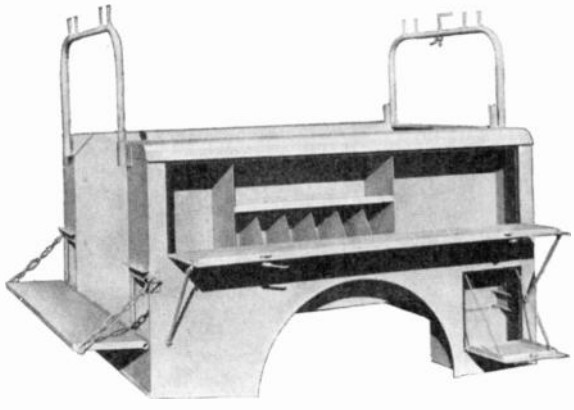
For Mounting on Any ½-Ton Chassis with Cab-to-Axle Dimension of Approximately 38 Inches.



Left Side View of Model B6 Body Showing Spacious Compartments and Ladder Racks in Forward Position



Rear View of Model B6 Body Showing Corrugated Floor Which Is Double Thick in Center to Insure Maximum Strength



Right Side of Model B6 Body. All Compartments are Weather Stripped; Dust and Moisture-proof

Specifications

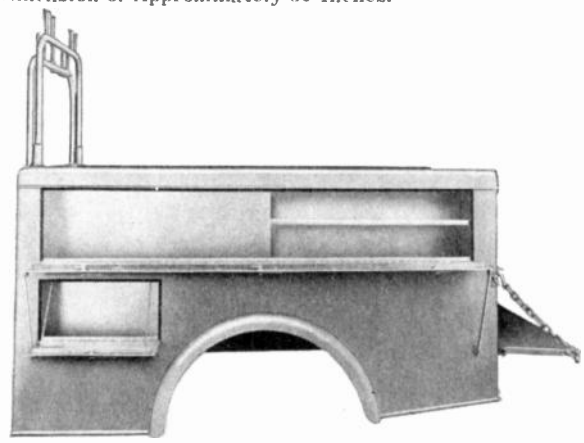
Model B6 is of durable construction, built for long, economical service.

Length, 74 inches. Width, 67 inches. Floor width between compartments, 42 inches.

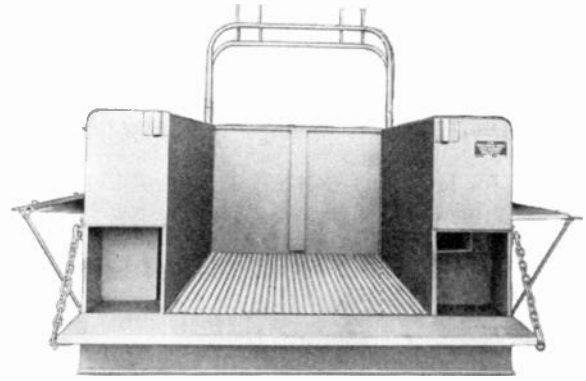
Weight, approximately 600 pounds.

Model B7

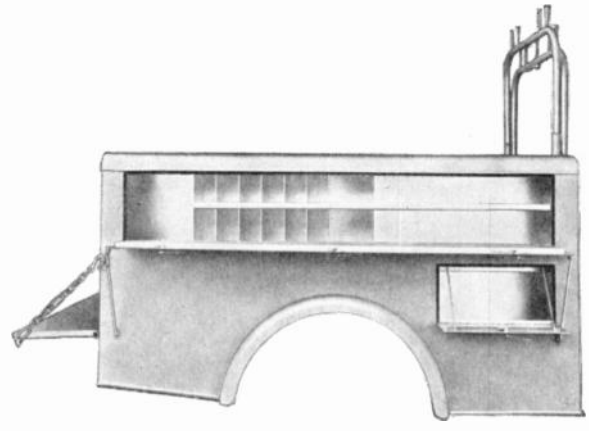
For mounting on All ¾-Ton Chassis with Cab-to-Axle Dimension of Approximately 50 Inches.



Right Side of Model B7 Body Showing Dust and Moisture Proof Compartments. All-Steel, Compact, and Practical



Rear View. Body Has 30 Square Feet of Floor Space



Left Side. Ladder Racks Shown in Forward Resting Position

Specifications

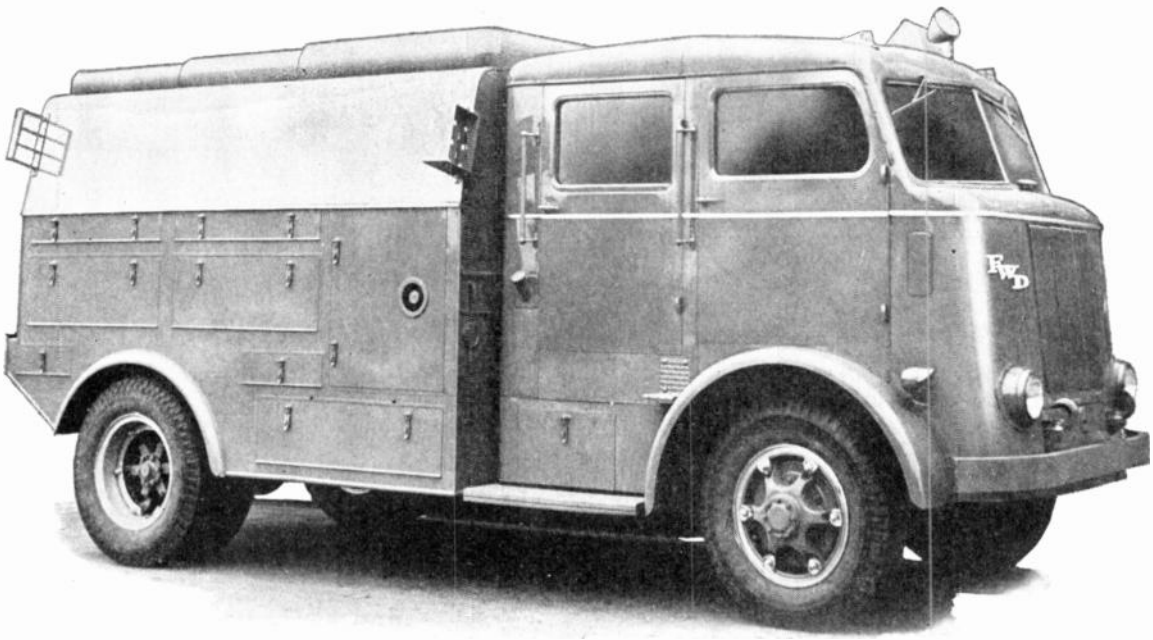
Length, 84 inches. Width, 67 inches. Floor width between compartments, 42 inches.

Weight, approximately, 975 pounds.

Complete Information and Prices Furnished upon Request

FWD Line Construction and Maintenance Units

With Utility Model U-10 All Steel Body



Model U-10 all steel body designed for large and small utility companies is highly adaptable for mounting winch, derrick, boring machine and other accessories. For mounting on all makes of trucks with a cab-to-axle dimension of approximately 84 inches.

This line construction and maintenance unit is furnished complete as shown.

Body Specifications

Dimensions: length, 123½ inches; height, 78 inches; and width, 90 inches.

Winch compartment is 62 inches wide, and 20 inches high, and 24 inches deep.

Write for complete information and prices.

Model 1417 Towing Hooks

For trucks up to 3½-ton capacity.

Attaches to frame of truck with braces to the side bars.

Has coil spring to cushion starting and stopping shocks.

Positive locking latch eliminates danger of uncoupling.

Weight, 48 pounds.

Prices upon request.

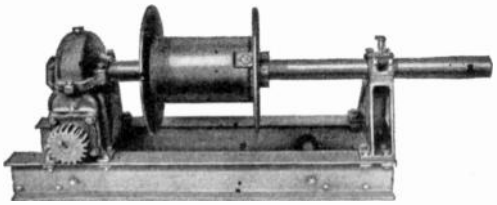
Type L Draw Bars

For use with pole dinkey and light trucks. Attaches to wood pole and forms link for connecting to pintle hook on truck. Inside diameter of pintle eye ring, 2⅝ inches.

Weight, 31 pounds.

Prices upon request.

No. L-12 Single Drum Winches
10,000-Pound Capacity

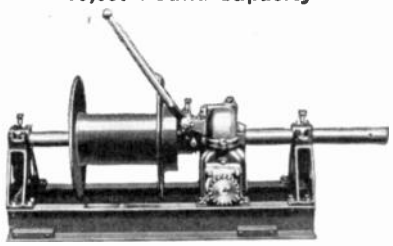


Modified version of the single drum winch, furnished without clutch or brake as winch must be power driven when pulling, raising or lowering load. Ideal for every purpose requiring pulling rope on a drum.

Automatic winch worm brake is standard equipment.

Drum measures 12 inches between flanges; holds 600 feet of ½-inch steel cable. Weight, approximately 430 pounds.

Model L-12-CD Single Drum Winches
10,000-Pound Capacity

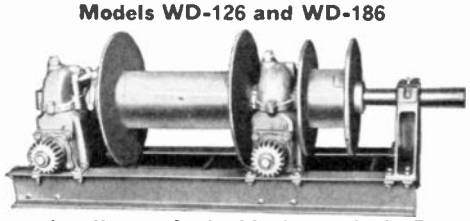


Basically the same as Model L-12 winch except that it is equipped with clutch and brake and free spooling drum.

Automatic winch worm brake is standard.

Drum measures 12 inches between flanges; holds 600 feet of ½-inch steel cable. Weight, approximately 516 pounds.

Double Drum Winches
Models WD-126 and WD-186



An exceptionally sturdy double drum winch. Large drum measures 18 inches between flanges; holds 909 feet of ½-inch steel cable, and is furnished with clutch and brake.

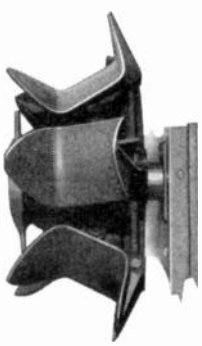
Small drum, which may be operated independently, is available in 6-inch size. Large drum on Model WD-126 measures 12 inches; small drum measures 6 inches.

Automatic winch worm brake standard on both units. Weight, approximately 880 pounds.

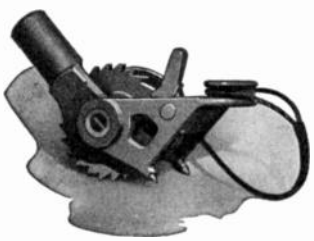
Model CR Collapsible Power Reels

Picks up loose wire in neat, compact roll. Attaches to winch by means of pin type socket.

Cast of aluminum.



Pole Binders

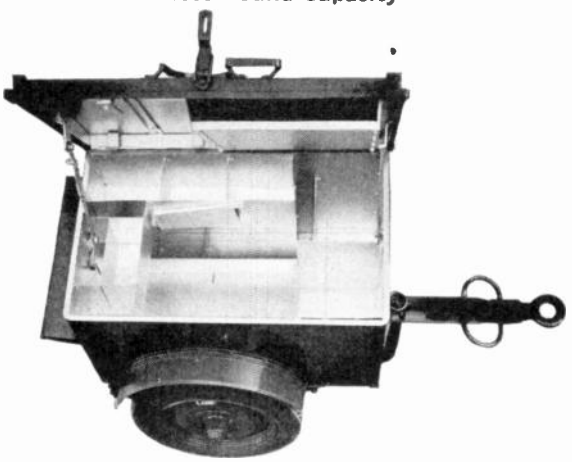


A small winch with a ratchet type holding attachment. For all bulky loads.

Furnished with 18 feet of 5/16-inch steel cable, carried on drum.

Weight, 18½ pounds.

Model S Cable Splicer's Carts
1000-Pound Capacity



An all steel, compact, rugged, and theft-proof cart.

Compartments provide a place for every tool within easy reach of the splicer. A folding leg supports the front end of the cart when parked.

Dimensions: overall length, 74 inches; height, 41 inches; axle, 1¼-inch square; tread, 34 inches.

Has steel disc wheels; Timken bearings; tires 4:00x18, 4-ply.

Weight, 480 pounds.

Model 1775 Pole Dinkies
1-Ton Capacity

For light construction or repair work.

Triangular shaped tongue is two 3-inch, 5-pound channel beams. Bolsters are cast steel. Overall length, 104 inches. Axle is heat treated, high carbon steel 2 inches square.

Tires, 6.00x16 singles 6-ply or 6.00x20 singles 6-ply. Tread, 56 inches.

Weight, 390 pounds.

Winch Line Hooks

For attaching two wire rope lines as used on truck winches.

It attaches easily and quickly to a line or loop and holds firmly until the pole is set. Slack in the line then permits detaching from ground with pike pole.

As line must be threaded through derrick sheave a hook that detaches easily increases the efficiency of the line crew.

Weight, 4½ pounds.

Safety Hooks

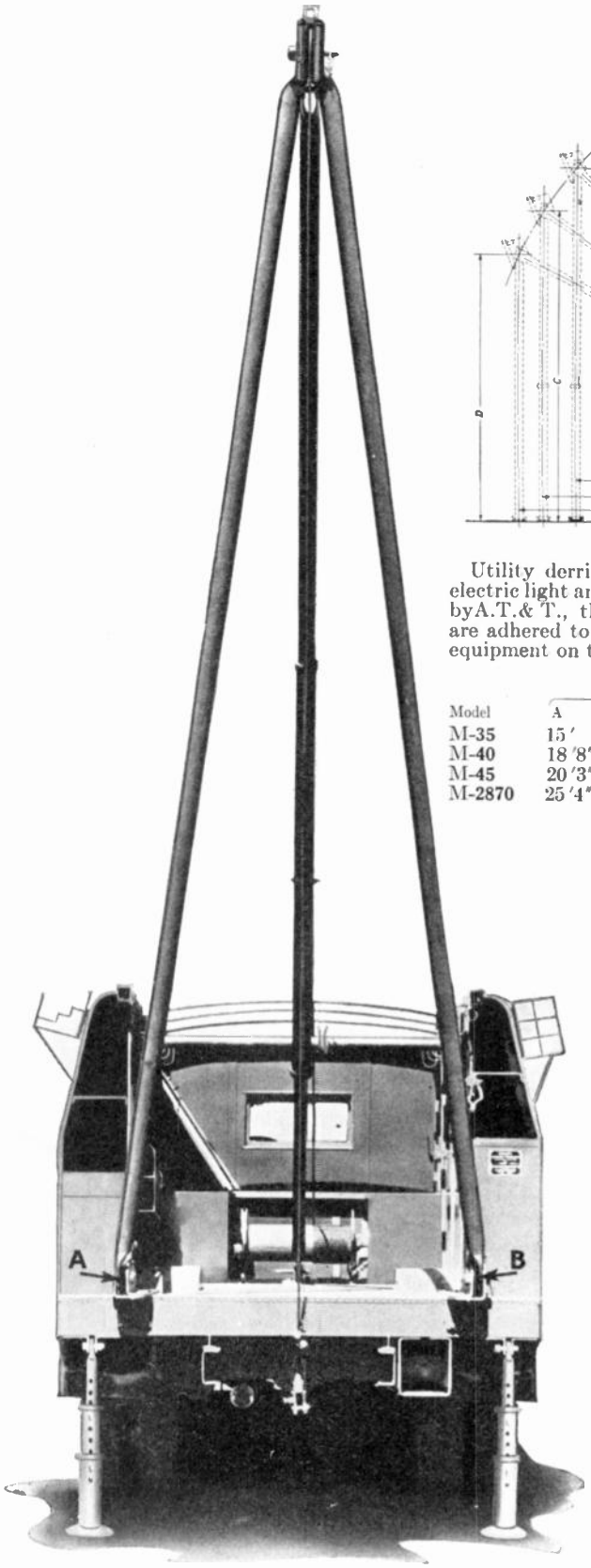
Used with derrick and truck winch when raising derrick to operating position. Line is passed over spindle bar and threaded through the derrick sheave then attached to the safety hook. Winch power will then raise the derrick so it can be bolted in place by the linemen.

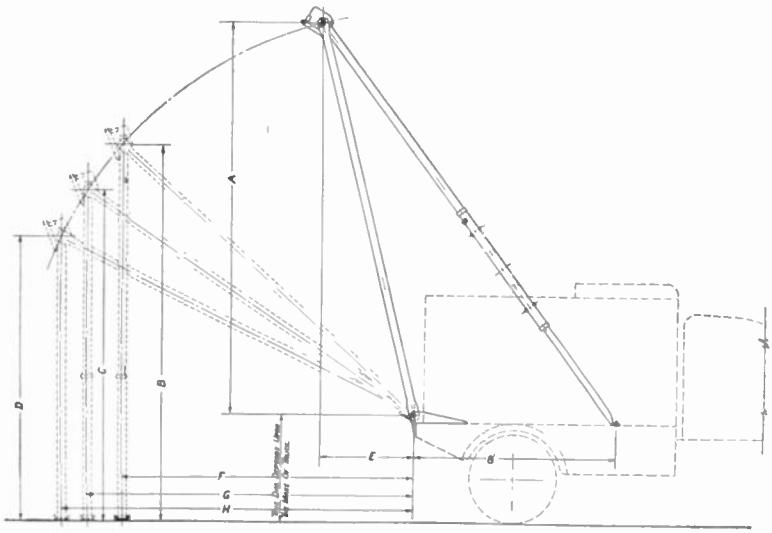
Hook is forged steel, designed so that the heaviest load is carried on the heavy section of the hook.

Weight, 3½ pounds.

Prices upon Request

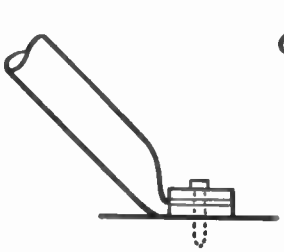
Utility Derricks
Middle Type
Models M-35, M-40, M-45, and M-2870



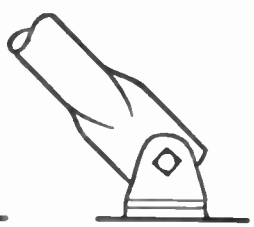


Utility derricks have kept apace with modern telephone, telegraph, and electric light and power line construction and maintenance methods. Designed by A.T.& T., the world's largest user of pole derricks, their specifications are adhered to in every detail of manufacture. Utility derricks are standard equipment on the majority of Bell system line construction trucks.

Model	Comparison Derrick Dimensions Assembled							
	A	B	C	D	E	F	G	H
M-35	15′	14′6″	12′9″	11′	3′9″	11′6″	12′11″	13′11″
M-40	18′8″	16′11″	13′11″	11′	3′5″	14′9″	16′3″	17′8″
M-45	20′3″	18′10″	13′10″	11′	6′9″	15′5″	19′1″	20′5″
M-2870	25′4″	21′5″	16′5″	13′7″	6′	19′6″	23′1″	24′4″



Standard Foot Type Center Leg Lower Section



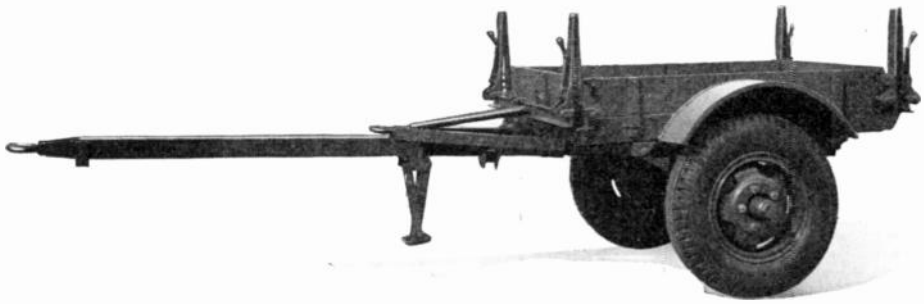
Hinge Type Center Leg Lower Section (Optional—No Charge)

Available in four models: The M-35 for poles up to 35 feet in length, the M-40 for poles up to 45 feet in length, the M-45 for poles up to 55 feet in length, and the M-2870 for poles up to 70 feet in length.

Each derrick is designed and built to insure an ample reserve of strength for the safety of men and equipment. All models can be furnished with telescoping side legs at slight additional cost.

	Lifting Capacities, Pounds			
	M-35	M-40	M-45	M-2870
Ground Position, Center Leg, Fully Telescoped	10000	10000	12000	13500
Ground Position, Center Leg, Fully Extended	6000	6000	7200	10000
Truck Position	2500	3000	4000	5000

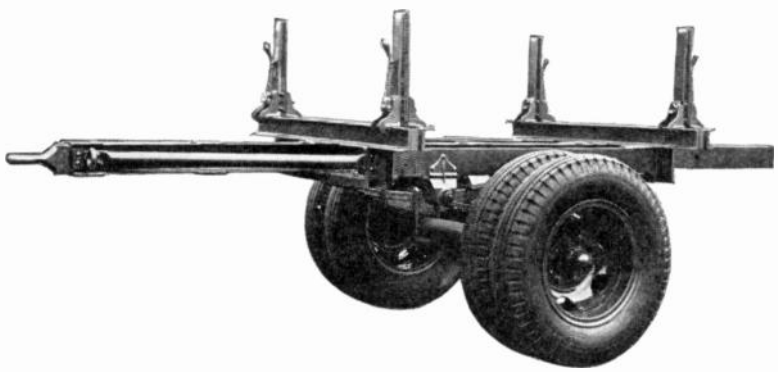
Model P8T Combination Cargo and Pole Trailers



The most complete combination, dual purpose trailer thus far developed.

Available with or without fenders, side boards, pole carrying bolsters, load binders, brakes, or extension tongue.

Capacity from 4200 to 9800 pounds depending on tire size.

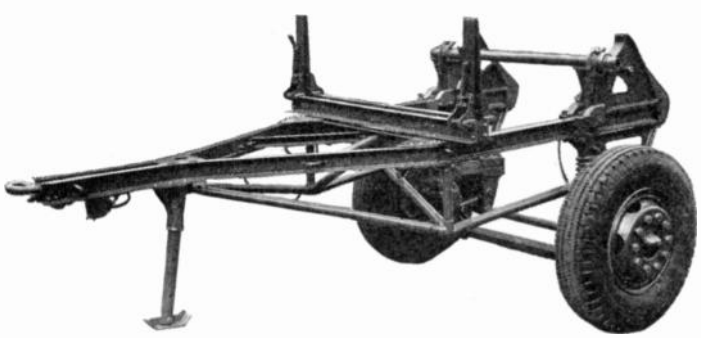


Models M and H Heavy Duty Pole Trailers

3 and 5-Ton Capacities

Exceptionally rugged. Built for hard usage and long trailer life.

Construction features include extension type tongue, adjustable cam locking uprights, heavy duty wheel bearings, and overall safety factors 50 per cent in excess of actual rated capacity.



Combination Cable Reel and Pole Trailers

Models PCP and W-PCP

An easily convertible cable reel and pole trailer. Converted by using simple hand tools.

Ideal for the utility whose requirements do not demand full-time use of two separate units. Model PCP handles cable reels from 34 to 38 inches and Model W-PCP, reels from 44 to 48 inches in width.

Furnished complete with set of bolsters, cam locking uprights, and cable reel saddles.

No. 1485 Pole Dinkies

All steel especially constructed for the exceptionally hard service of hauling poles. Wide tread permits high speed hauling when empty, without danger of it turning over. Tubular type axle gives maximum strength with least possible weight. Capacity, 3 to 4 tons.

No. 1485-A Pole Dinkies

For high speed hauling and rugged service. Has tubular tongue and axle to insure the greatest strength with a minimum of weight. Rear bunk balances trailer. Permits easier handling when empty. Capacity, 3 to 4 tons.

Write for Complete Information and Prices

Oshkosh Straight Handle Shovels

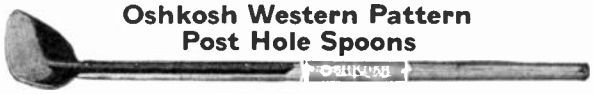
BLADE—Black finish; unpolished. Strap length, 22 inches.
HANDLE—Lacquered; straight from end to end. Diameter, $1^{13}/_{16}$ inches. Packed 6 to a bundle.

With Carbon Steel Blade
Maple Handle

No.	Each	Handle Length Feet	Weight Pounds	Extra Handles No.	Extra Handles Each	Wt. Lb.
867	$6.90	7	8	993	$2.25	4
868	7.05	8	9	994	2.85	5
869	7.95	9	10	995	3.90	6
870	8.30	10	11	996	4.95	7
		*Ash or Hickory Handle				
1032	$7.05	7	8	1005	$2.70	6
1033	7.25	8	9	1006	3.50	6
1034	8.10	9	10	1007	4.60	7
1035	8.60	10	11	1008	5.85	7
		With Alloy Steel Blade				
		*Ash or Hickory Handle				
2032	....	7	8	2005	....	6
2033	....	8	9	2006	....	6
2034	....	9	10	2007	....	7
2035	....	10	11	2008	....	7

*For hickory handle, add letter H to No.

Oshkosh Western Pattern Post Hole Spoons



Blade, plain black finish. Handle lacquered. Six in bundle.

With Carbon Steel Blade
Maple Handle

No.	Each	Handle Length Feet	Strap Length Inches	Weight Pounds	Extra Handles No.	Extra Handles Each	Wt. Lb.
859	$6.90	7	22	10	993	$2.25	4
860	7.05	8	22	10	994	2.85	5
861	7.95	9	22	11	995	3.90	6
862	8.30	10	22	12	996	4.95	7
			*Ash or Hickory Handle				
1023	$7.05	7	22	10	1005	$2.70	6
1024	7.25	8	22	10	1006	3.50	6
1025	8.10	9	22	11	1007	4.60	7
1026	8.60	10	22	12	1008	5.85	7
1027	9.85	12	22	14	1009	7.20	8
			With Alloy Steel Blade				
			*Ash or Hickory Handle				
2023	....	7	22	10	2005	....	6
2024	....	8	22	10	2006	....	6
2025	....	9	22	11	2007	....	7
2026	....	10	22	12	2008	....	7
2027	....	12	22	14	2009	....	8

*For hickory handle, add letter H to No.

Oshkosh Crooked Handle Shovels

BLADE—Black finish; strap length, 22 inches.
HANDLE—Lacquered; made of selected second-growth northern white ash, tough, strong highland hickory, or hard rock maple. Diameter, $1^{13}/_{16}$ inches.
Packed 6 to a bundle.

With Carbon Steel Blade
Maple Handle

No.	Each	Handle Length Feet	Weight Pounds	Extra Handles No.	Extra Handles Each	Wt. Lb.
874	$9.55	7	8	1000B	$6.55	4
875	10.20	8	9	1000	7.20	5
		*Ash or Hickory Handle				
1040	$9.55	7	8	1014	$6.55	6
1041	10.20	8	9	1015	7.20	6
1042	10.90	9	10	1016	8.15	7
1043	11.45	10	11	1017	10.50	7
		With Alloy Steel Blade				
		*Ash or Hickory Handle				
2040	.....	7	8	2014	.....	6
2041	.....	8	9	2015	.....	6
2042	.....	9	10	2016	.....	7
2043	.....	10	11	2017	.....	7

*For hickory handle, add letter H to No.

Oshkosh Eastern Pattern Post Hole Spoons

With Carbon Steel Blade
Maple Handles

Cat. No.	Each	Handle Feet	Strap Inches	Weight Pounds	Extra Handles Cat. No.	Extra Handles Each	Wt. Lb
859E	$6.90	7	22	10	993	$2.25	4
860E	7.05	8	22	10	994	2.85	5
861E	7.95	9	22	11	995	3.90	6
862E	8.30	10	22	11	996	4.95	7
			*Ash or Hickory Handles				
1023E	$7.05	7	22	10	1005	$2.70	6
1024E	7.25	8	22	10	1006	3.50	6
1025E	8.10	9	22	11	1007	4.60	7
1026E	8.60	10	22	12	1008	5.85	7
1027E	9.85	12	22	14	1009	7.20	8
			With Alloy Steel Blade				
			*Ash or Hickory Handles				
2023E	....	7	22	10	2005	....	6
2024E	....	8	22	10	2006	....	6
2025E	....	9	22	11	2007	....	7
2026E	....	10	22	12	2008	....	7
2027E	....	12	22	14	2009	....	8

*For hickory handle, add letter H to No.

Oshkosh Short Handled Shovels

Used for starting and filling in holes.

With Carbon Steel Blade

The handle is made of Northern white ash, air seasoned.

No.	Each	Style of Blade	Wt. Lb.	Extra Handles No.	Extra Handles Each	Extra Handles Length Feet	Wt. Lb.
1090R	$3.05	Round Point	5	1091	$1.90	4½	2
1090S	3.05	Square Point	5	1091	1.90	4½	2

With Alloy Steel Blade

Equipped with fine quality ash handle.

2090R	.....	Round Point	5	2091	....	4½	2
2090S	.....	Square Point	5	2091	....	4½	2

Oshkosh D-Handled Shovels

Used for trench work.

With Carbon Steel Blade

The handle is second growth Northern white ash and is fitted with a pressed steel D top.

No.	Each	Style of Blade	Wt. Lb.	Extra Handles No.	Extra Handles Each	Wt. Lb.
1092R	$3.05	Round Point	4	1093	$1.90	2
1092S	3.05	Square Point	4	1093	1.90	2

With Alloy Steel Blade

The handle is of clear straight grained ash, sharply bent, and fitted with a steel D top.

2092R	.....	Round Point	4	2093	....	2
2092S	.....	Square Point	4	2093	....	2

Oshkosh Diggers

No. 2051

The blades are made of special alloy steel. Welding is used for attaching the blades instead of riveting, making a durable joint. The fulcrum members are of heavily constructed, channel-shaped, steel forgings.

There are two pivot points for the blades, one on each side. This gives much stronger leverage and greater durability.

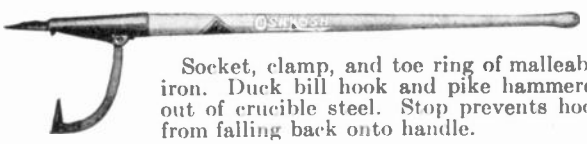
Made in two types, with split handles or with two solid handles. The handles are made of straight grained hard wood, 8 feet long.

Measurement marks are placed on the handles so that the workman can easily determine the exact depth of the hole.

The diameter of the circle circumscribed by the digger blades is 6 inches.

No. 2050, Split Handle Type, Wt., 13 Pounds. . .each **$10.45**
No. 2051, Two Solid Handle Type, Wt., 14½ Lb. each **10.45**

Oshkosh Malleable Socket Peavies



Socket, clamp, and toe ring of malleable iron. Duck bill hook and pike hammered out of crucible steel. Stop prevents hook from falling back onto handle.

With Hard Rock Maple Handles

		Handle			Extra Handles		
No.	Per Dozen	Diam. In.	Lgth. Ft.	Wt. Lb.	No.	Per Dozen	Wt. Lb.
121	$6.90	2¼	4	7	541	$1.90	3
122	7.15	2¼	4½	7	542	2.05	3
124	7.15	2½	4	9	544	2.05	3
125	7.30	2½	4½	9	545	2.40	4
With Second Growth Hickory Handles							
134	$9.00	2¼	4	8	572	$2.40	3
135	9.45	2¼	4½	8	573	2.55	3
137	9.45	2½	4	9	575	2.55	4
138	9.95	2½	4½	10	576	2.70	4

Oshkosh Carrying Hooks
Chisel Point Pattern

For carrying poles. Rock maple handle; malleable clasp. Crucible steel hooks attached to handle with malleable swivel.

		Handle		Wt. Lb. Per	Extra Handles		Wt. Lb. per
No.	Each	Diam. In.	Lgth. Ft.	Doz.	No.	Each	Doz.
295	$6.35	2½	4	85	593	$2.05	40
296	6.60	2½	4½	90	594	2.40	45
297	6.90	2½	5	95	595	2.55	50
298	10.25	3	5	115	963	4.10	63
299	10.60	3	6	165	964	4.95	78

Oshkosh Wood Jenney Pole Supports

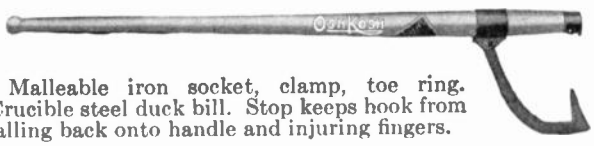
Made of clear, straight-grained fir. Strong and stiff when set up; easily collapsible to a small size for carrying in trucks.

Center or pivot holes for bolt in cross pieces are reinforced with steel bushings. Steel pikes fastened to bottom of each leg stop any tendency to slide. Cross brace is placed high to prevent interference with walking.

Thickness, 1¾ inches; width, 3½ inches.

No.	842	843	844
Each	$17.70	20.35	22.35
Size . . . . . feet	6	7	8
Weight . . . . lb.	25	30	35

Oshkosh Cant Hooks

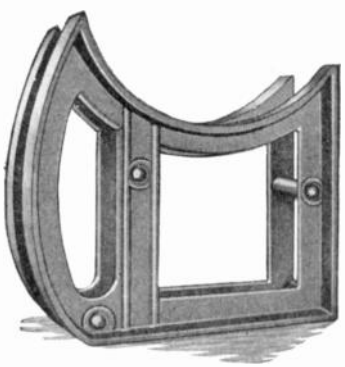


Malleable iron socket, clamp, toe ring. Crucible steel duck bill. Stop keeps hook from falling back onto handle and injuring fingers.

With Hard Rock Maple Handles

		Handle			Extra Handles		
No.	Each	Diam. In.	Lgth. Ft.	Wt., Lb. per Doz.	No.	Each	Wt., Lb. per Doz.
188A	$5.65	2¼	4	80	541	$1.90	33
189A	5.90	2¼	4½	85	542	2.05	35
188	5.90	2½	4	80	544	2.05	40
189	6.25	2½	4½	85	545	2.40	45
With Hickory Handles							
199A	$7.85	2¼	4	86	572	$2.40	38
200A	8.20	2¼	4½	90	573	2.55	40
199	8.20	2½	4	91	575	2.55	45
200	8.55	2½	4½	97	576	2.70	50

Leach E-Z-Up Pole Cradles



For lifting poles in position for framing.

Operated by one man without any lifting strain.

Uses the simple cam principle of rocking the pole off the ground and up.

Made of malleable iron.

To operate, place the cradle against the pole and drop the point of a cant hook or peavey between the two rockers. Then catch the hook in the opposite side of the pole, pull back on the handle.

The pole can be rotated in the saddle of the cradle by using the cant hook.

Each, Weight, approximately 26 pounds. **$25.00**

Oshkoss Pike Poles

Handle is of old growth yellow Washington fir; only straight, close-grained fir is used.

Pike is of special steel made of one piece with upset face, which takes end thrust and distributes it over the entire end of the handle. Pike is set in oil and a rivet runs through malleable iron ferrule, handle, and pike to further secure them. Pike projects 4 inches.

Standard Light Pattern

No.	Each	Handle Diam. In.	Handle Lgth. Ft.	Handle Wt. Lb.	Extra Handles No.	Extra Handles Each	Extra Handles Wt. Lb.
806	$5.80	2	12	8	971	$5.15	7
807	6.15	2	14	10	972	5.55	9
808	6.85	2	16	11	973	6.15	11

A. T. & T. Pattern

818	$7.45	*2½	12	13	982	$6.75	12
819	8.25	*2½	14	14	983	7.65	13
820	8.75	*2½	16	15	984	8.10	14
821	9.85	*2½	18	18	985	9.10	16
822	10.95	*2½	20	20	986	10.35	19

*Diameter at center; tapers to 2 inches at both ends.

No. 10 Oshkosh Pike Pole Guards

For guarding the hazardous point on pike poles. Will fit either the 2-inch or 2½-inch pike poles.

The guard works easily and fastens securely in either the guarded or open position. When in the unguarded position, the guard is completely out of the way, snugly fitted around the pole. When in the guarded position, it automatically locks in place and provides complete protection from the pike point.

Shipping weight, ¾ pound.

No. **10**.....each **$2.10**

Oshkosh Special Pike Pole Coating

Oshkosh Pike Poles finished with this specially developed coating prevent loss of time caused by slivers and splinters.

It gives a smooth, hard, transparent coating.

This coating keeps the grain from raising.

It is a non-conductor of electricity.

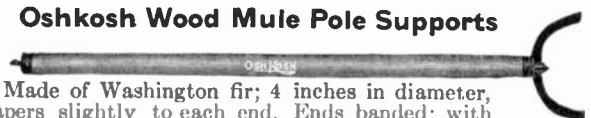
Can be applied at a slight additional charge.

No. 740 Oshkosh Fir Deadman Wood Pole Supports

Of clear, straight grained fir. Measures 3x3 inches square, 8½ feet over all. Steel fork has three prongs.

No. **740**, Weight, 40 Pounds.....each **$24.10**

Oshkosh Wood Mule Pole Supports

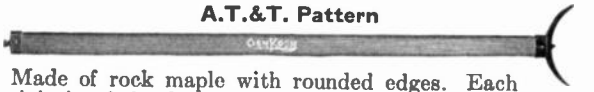


Made of Washington fir; 4 inches in diameter, tapers slightly to each end. Ends banded; with forged crucible steel fork in one end, pike in other end.

No.	845	846	847
Each	$23.25	24.10	26.30
Size.....feet	6	7	8
Weight.....pounds	23	26	29

No. 848 Oshkosh Standard Deadman Wood Pole Supports

A.T.&T. Pattern



Made of rock maple with rounded edges. Each end is banded. Steel fork is fastened to upper end; pike in lower end. Thickness, 2 inches; width, 4 inches.

No. **848**, Size 8 Feet, Weight 29 Pounds.....each **$26.30**

Oshkosh Tamping Bars

Handle is made of hard rock maple. The tamping head is faced with an iron shoe, and measures 1¾x4 inches.

No.	854	855	856
Each	$7.35	8.30	9.20
Length.....feet	7	8	9
Weight.....pounds	13	14	16

Oshkosh Tamping Bars

With Extra Heavy Iron Shoe

Made with hard rock maple handle with 1¼x½-inch steel shoe on tamping face. Tamping face is 1¼ inches wide and 3½ inches long.

No.	1054	1055	1056
Each	$8.30	9.10	10.05
Length.....feet	7	8	9
Weight.....pounds	13	15	17

No. 1044 Oshkosh Electric Tamping Bars

Made of steel tubing with malleable iron tampers of different size on each end.

Length, 8 feet. Weight, 15 pounds.

No. **1044**.....each **$7.70**

Oshkosh Crow and Digging Bars

Made of special octagon crucible steel. Has 2-inch chisel on one end, pointed on other end.

No.	1061	1062	1064	1065	1066
Each	$7.25	7.55	7.75	8.70	10.30
Size	1"x7'	1"x8'	1⅛"x7'	1⅛"x8'	1⅛"x9'
Weight..pounds	20	23	26	28	31

Oshkosh Tamping and Digging Bars

Made of special octagon crucible steel, tough and stiff. Has 2-inch chisel on one end, malleable iron tamper on other end.

No.	1071	1072	1074	1075
Each	$7.55	7.90	8.20	9.30
Size	1"x7'	1"x8'	1⅛"x7'	1⅛"x8'
Weight.....pounds	21	24	27	30

Oshkosh Plain Digging Bars

Made of special octagon crucible steel, tough and stiff. Has 2-inch chisel on one end.

No.	1081	1082	1084	1085
Each	$6.80	7.75	7.90	8.60
Size	1"x7'	1"x8'	1⅛"x7'	1⅛"x8'
Weight.....pounds	20	23	26	28

No. 852 Oshkosh Digging Spuds with Tamper

A light, evenly balanced digging tool. Handle is made of steel tubing with a tamping head of malleable iron, and the blade and socket are of one piece of forged high carbon steel. Blade measures 3½ inches wide.

Length, 9 feet. Weight, 20 pounds.

No. **852**.....each **$12.50**

Coffing Power Pike Poles

This pole is built of two pieces of galvanized pipe, one telescoping the other. Power is obtained through the use of a Coffing Load Binder or Safety-Pull Hoist.

For straightening leaning poles one man, with this tool, can do the work of from two to six men.

Pole has a heavy steel base. Top cannot slip off pole.

Load binder or hoist can be used for many other purposes.

Height: minimum, 8 feet 2 inches; maximum, 11 feet 7 inches.

Weight 32 pounds.

Complete with Model A Load Binder.....each **$35.45**
Pole Only.....each **18.20**

Coffing Midget Light Line Pullers

A tool for pulling telephone and light wires, and for many other uses. Built on the ratchet and/or crank principle.

Equipped with roller chain, five feet long.

Rated capacity, 600 pounds. Handle so constructed with a safety feature that it will bend at 100 per cent overload.

Each, Wt. 6 lbs.....**$24.95**
Extra Chain.....per foot **.60**

Coffing Load Binders

Drop-forged steel hooks with swivels on both ends. The take-up is 5/8 inch to each stroke of the handle.

If load becomes loose, it can be bound tight simply by drawing on lever. After load is taken off chain, both levers can be tripped at once and chain can be pulled through binder free.

Can also be used as a hoist and for stretching wire or cable.

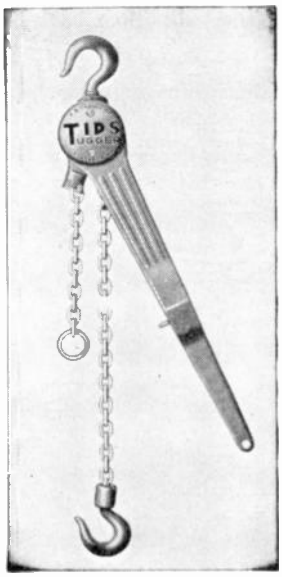
Model		A	F
Load Binder	each	$17.25	$24.00
Super Attachment (Special Iron Block)	each	5.55	7.20
Extra Chain	per lifting ft.	1.10	2.25
Rated Capacity	tons	2	3
Standard Lift	feet	2	2
Standard Chain	feet	2	2
Lifting Speed per Minute	in.	36	48
Weight	lbs.	11½	24

No. 325 Chance Pole Unloaders

The Chance Safety Trip Pole Unloader features a safety lock pin plus a toggle trip arrangement which prevents release of the load until the lever is pulled by hand line to shift the toggle past dead center. Using this safety trip method, only two men are needed for unloading poles instead of an entire crew. A once hazardous job is made safe.

Safety Pole Unloader Set Complete consists of: 2 safety trips with bolts and large washers; 2 steel rope cables, 25'x3/8"; 2 thimbleye bolts, 3/4x12 inches with large washers; 4 Crosby wire rope clamps for 3/8-inch wire rope.

Approximate weight, 58½ pounds.



Chance Tugger-Steel Hoists

A lightweight spur geared puller with ratchet handle and friction brake.

All working parts of mechanism and brake are fully enclosed and protected.

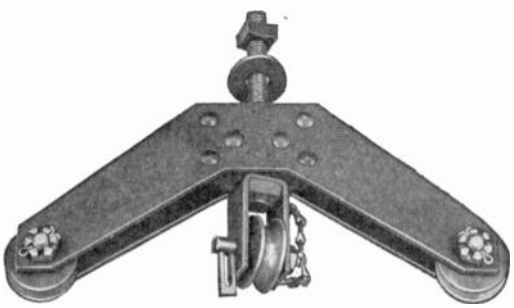
Simple button adjustments A and B free brake and ratchet mechanism permitting free wheeling to make easy connections.

Standard lift, 5 feet.

Length of lever, 20½ inches.

No.	75T	150T
Capacity	¾	1½
Pull on Lever to Lift Full Load ...lb.	60	83
Min. Distance Between Hooks ...in.	9½	12¾
Length Chain.in.	66	76
Weight.....lb.	13	24

No. 869 Diamond Slack Pullers



Sufficient slack can be temporarily taken up in messenger strand with this tool for the purpose of making splices or repairs in aerial cable.

Steel grooved rollers in each end of tool for support on the messenger strand. The lifting screw in the center is equipped with a removable grooved roller. Tension is applied by tightening up standard nut on upper end.

Black finish.

Weight, 10 pounds.

No. 869.....each **$15.00**

Coffing Safety-Pull Ratchet Lever Hoists

***With Single Locking Pawl**

Nos. AG, FG Nos. ATG, FTG No. ZG

A safe and fast ratchet lever hoist. Equipped with a dual ratchet and pawl assembly, independent of each other, therefore the load is always under control. There is no clutch to slip and the hoist cannot drop its load.

Because of its adaptability to all types of work where a full stroke of the handle is permitted this single pawl hoist is the choice of most light and power and telephone construction and maintenance crews. Can be used for lifting or pulling.

Has side lever for positive up or down and a neutral position for automatic safety control, making hoist easy to operate. Has free chain feature, that is, when there is no load on hoist a slight pressure on thumb latch on side of lever allows load chain to be pulled through hoist, either up or down, without operating lever.

Malleable iron safety-valve handle will bend at maximum overload before chain will break or hooks will straighten out. Reversible handle. Safety stops prevent handle from spinning in case operator's hand should slip off handle.

All Safety Pull hoists are factory tested at 100 percent over their rated capacity.

Nos. ATG, FTG and ZG hoists are readily converted by unsnapping the special snap hook from connecting link at bottom of hoist and allowing snap hook to act as a lug, preventing end of chain from passing through the super block.

No.	Each	Extra Lift per Foot	Rated Cap. Tons	Min. Dist. between Hooks In.	Lift Speed per Min. In.	Lb. on Lever to Lift Rated Cap.	Std. Lift Inches	Wt. Lb.
*AG	$36.30	$1.10	¾	13	36	56	56½	14
*ATG	45.10	2.20	1½	15	18	60	57	17
*FG	52.25	2.25	1½	16	48	116	56½	25
*FTG	65.45	4.50	3	17	24	124	57	34
ZG6	126.50	9.00	6	25	12	124	53	59
WG9	258.50	11.25	9	30	9.6	124	60	120
WG11	280.50	13.50	11	30	8	124	60	130
WG13	302.50	15.75	13	30	7	124	60	140
WG15	330.00	18.00	15	30	6	124	60	150

*If wanted with intermediate locking pawl, add $5.50 to list.

NOTE. By attaching a special iron block, called a super attachment, to Nos. AG or FG along with 5 feet of chain, to keep the standard 5-foot lift, they can be converted into double their rated lifting capacities. Super attachment for No. AG, $5.55; for No. FG, $7.20.

Chance Capstan Pulley Blocks

A light weight tool, easy to handle. Has a leverage ratio of 32 to 1. Equipped with ratchet handle.

Pulleys and drum are aluminum. Handle, housing, and hooks are drop-forged steel. Rope is manila.

No.	Capacity Pounds	Size Rope Inches	Net Weight Pounds
2	2000	½	15
* 2A	2000	½	13
4	4000	⅝	25¼
* 4A	4000	⅝	20½
22	3000	½	19¼
*22A	3000	½	16¾
44	5000	⅝	31¼
*44A	5000	⅝	25¾

*Without rope.

B&L Star Brand Public Utility Snatch Blocks

For Manila Rope

Eastern Pattern—Malleable Shells

Drop-Forged Flatted Stiff Swivel Hooks

Has malleable iron shell, extra heavy drop-forged flatted stiff swivel hook, wrought iron straps, safety-locking link and smooth rounded edges to prevent chafing rope.

No. PU-2357, Open

Size Sheave Inches	Self-Lubr. Iron Bushed Each	Roller Bushed Each	Graphite Bronze Bushed Self-Lubr. Each	For Rope Diam. In.	Lgth. Shell In.	Approx. Wt., Lb. Each
3 x1⅛x1½	$10.50	$11.00	$12.00	⅞	6	9
4½x1⅜x ⅝	14.00	15.00	16.00	1	8	16
5¾x1⅞x ¾	22.00	23.00	25.00	1¼	10	27

B & L Star Brand Public Utility Snatch Blocks for Wire Rope

Drop Forged Flatted Stiff Swivel Hooks, Heads and Links

No. PU-35

Used with pole derricks; for pulling aerial cable, etc. Impression prevents rope jumping between sheave and shell.

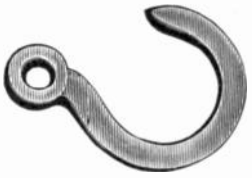
All galvanized with sheave for wire rope, with graphite-bronze self-lubricating bushing. Rope guard prevents rope interfering with safety attachment.

Size Block....inches	6	8	10
Each.....	$18.00	26.00	37.00
Size Wire.....inches	⅜	½	⅝
Weight Ea...pounds	15	32	52

Extra Iron Sheaves

Size.....in.	6x1x¾	8x1¼x⅞	10x1¼x1
Each.....	$3.90	7.50	10.10
Wt. Each....lb.	3½	8	12

No. 258 Klein's Anchor Hooks for Tackles



Solid steel drop forging. Overall length, 5½ inches x 3¼ inches across the hook. Size opening, 2 inches; inside diameter of eye, ⅝-inch.

Galvanized finish.

Weight per dozen, 4 pounds.

No. 258.....each $1.70

B&L Star Brand Metal Tackle Blocks

For Manila Rope
Malleable Iron Shells—Iron Sheaves
With Loose Side Hooks

No. PU-2325-A Single

No. PU-2326-A Double

No. PU-2327-A Triple

All connections drop forged. Japanned finish.

Lgth. Shell In.	For Rope Diam. In.	Iron Bushed — No. PU-2325 -AC Single Each	Iron Bushed — No. PU-2326 -AC Double Each	Iron Bushed — No. PU-2327 -AC Triple Each	Roller Bushed — No. PU-2325 -AR Single Each	Roller Bushed — No. PU-2326 -AR Double Each	Roller Bushed — No. PU-2327 -AR Triple Each	Graphite Bronze Bushed Self-Lubricating — No. PU-2325 -AB Single Each	Graphite Bronze Bushed Self-Lubricating — No. PU-2326 -AB Double Each	Graphite Bronze Bushed Self-Lubricating — No. PU-2327 -AB Triple Each
3	3/8	$2.40	$3.60	$4.80	$3.00	$4.70	$6.40	$4.00	$6.60	$9.20
4	1/2	2.70	4.00	5.30	3.30	5.10	6.90	4.30	7.00	9.70
5	5/8	3.50	5.30	7.10	4.10	6.40	8.70	5.10	8.30	11.50
6	3/4	4.10	6.30	8.50	5.00	8.00	11.00	6.00	10.00	14.00
7	7/8	5.80	8.40	11.00	7.00	10.50	14.00	8.00	12.50	17.00
8	1	6.60	10.80	15.00	8.00	13.50	19.00	9.00	15.50	22.00
9	1 1/8	10.00	15.00	20.00	12.00	18.00	24.00	13.00	20.00	27.00
10	1 1/4	12.00	18.00	24.00	15.00	24.00	33.00	16.00	26.00	36.00
12	1 1/2	18.00	29.00	40.00	22.00	37.00	52.00	23.00	39.00	55.00

B & L Star Brand Regular Mortise Inside Iron Strapped Wood Tackle Blocks

For Manila Rope
With Iron Sheaves—Loose Side Hooks

No. PU-2207 Single

No. PU-2208 Double

No. PU-2209 Triple

Lgth. Shell In.	For Rope Diam. In.	Iron Bushed Only — No. Pu-2207-C Single Each	Iron Bushed Only — No. Pu-2208-C Double Each	Iron Bushed Only — No. Pu-2209-C Triple Each	Roller Bushed — No. PU-2207-R Single Each	Roller Bushed — No. PU-2208-R Double Each	Roller Bushed — No. PU-2209-R Triple Each	Graphite Bronze Bushed Self-Lubricating — No. PU-2207-B Single Each	Graphite Bronze Bushed Self-Lubricating — No. PU-2208-B Double Each	Graphite Bronze Bushed Self-Lubricating — No. PU-2209-B Triple Each
3	3/8	$1.50	$2.40	$3.30	$2.10	$3.40	$4.70	$3.10	$5.20	$7.30
4	1/2	1.70	2.60	3.50	2.30	3.70	5.10	3.20	5.50	7.80
5	5/8	2.10	3.20	4.30	2.80	4.50	6.20	3.70	6.20	8.70
6	3/4	2.50	4.00	5.50	3.40	5.70	8.00	4.40	7.70	11.00
7	7/8	3.00	4.80	6.60	4.00	6.60	9.20	5.40	9.20	13.00
8	1	4.20	6.40	8.60	5.60	8.80	12.00	7.00	12.00	17.00
10	1 1/8	7.00	11.00	15.00	9.00	14.00	19.00	11.00	18.00	25.00
12	1 1/4	12.00	19.00	26.00	14.00	22.00	30.00	16.00	26.00	36.00

Beckets furnished in all single blocks, one half in double blocks and one third of triple blocks without charge.

Amco All Weather Manila Rope

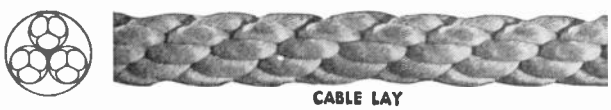
This is the very best manila rope. It is made entirely of select long fiber Phillipine Hemp by the American Manufacturing Company, Brooklyn, New York, one of the world's largest cordage mills. Amco All Weather Manila Rope is treated with a special waterproofing and rotproofing solution to insure long life and serviceability. It is made in a full range of sizes for all utility and industrial uses.

Also availabe American Brand Pure Manila Rope—Regular No. 1 Rope.

Standard and Special Lays in a Full Range of Sizes

STANDARD 3-STRAND

4-STRAND TRANSMISSION



CABLE LAY

Weight and Strength Chart

Diam. In.	Circumference In.	Approx. Gross Weight per Coil	Approx. Length per Coil Feet	Approx. Feet per Pound	Approx. Weight per Foot Lb.	Minimum Tensile Strength Lb.	Safe Working Strains Lb.
3/16	5/8	45	3000	66.6	.015	450	90
1/4	3/4	55	2750	50.0	.020	600	120
5/16	1	65	2250	34.5	.029	1000	200
3/8	1 1/8	66	1620	24.4	.041	1350	270
7/16	1 1/4	63	1200	19.0	.053	1750	350
15/32	1 3/8	75	1200	16.0	.063	2250	450
1/2	1 1/2	90	1200	13.3	.075	2650	530
9/16	1 3/4	125	1200	9.61	.104	3450	690
5/8	2	160	1200	7.50	.133	4400	880
3/4	2 1/4	200	1200	6.00	.167	5400	1080
13/16	2 1/2	234	1200	5.13	.195	6500	1300
7/8	2 3/4	270	1200	4.45	.225	7700	1540
1	3	324	1200	3.71	.270	9000	1800
1 1/16	3 1/4	375	1200	3.20	.313	10500	2100
1 1/8	3 1/2	432	1200	2.78	.360	12000	2400
1 1/4	3 3/4	502	1200	2.40	.418	13500	2700
1 5/16	4	576	1200	2.09	.480	15000	3000
1 1/2	4 1/2	720	1200	1.67	.600	18500	3700
1 5/8	5	893	1200	1.34	.744	22500	4500
1 3/4	5 1/2	1073	1200	1.12	.895	26500	5300
2	6	1290	1200	.93	1.08	31000	6200

Larger size specifications upon request.

Four-strand weights about 7 per cent more than 3 strand.

Oshkosh Combination Pay-Out and Take-Up Reels

As a Pay-Out Reel

A pay-out and take-up reel, all in one. It is lightweight, yet strong and durably constructed. The frame is made of tubing. Easy portability; the guide pins fold flat so that the whole reel is compact and easy to carry or slide in truck.

The guide pins are easily and quickly adjustable to take any size coil of wire from 13 to 27 inches inside diameter, to 34 inches outside diameter.

The automatic brake is another feature. As the wire is pulled the brake releases and the wire pays out freely. The instant tension is released, the brake sets and any possibility of back-lashing is prevented.

For converting into a take-up reel 2 braces are furnished which hold the reel in an upright position. Hand crank attached for ease in taking up wire.

The carrier frame is removable so that the reel can be bolted to a truck. A thumb screw terminal is provided for grounding the reel.

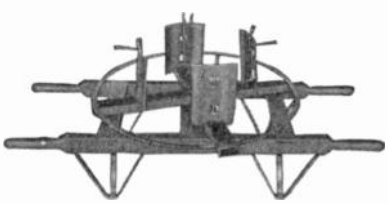
Length overall, 63 inches; width, 34 inches; height overall (guides up), 13¼ inches; height overall (guides down) 8¾ inches.

Weight, 75 pounds.

Reel, Complete.....each $100.00
Reel, less Carrier Frame.....each 80.00

No. 900 Oshkosh Barrow Reels

Heavy Western Union Type—With Guards



Used for heavy wire and heavy work.

Made of hardwood, braced and reinforced with steel. A wide bearing, together with a long pivot and sleeve, allow the reel to turn easily. Rests on strong, steel legs.

Reel pins adjustable for 12, 18, and 24-inch coils.

No. 900, Weight 80 Pounds.....each $41.75
No. 901, Extra Pins, Weight 4 Pounds...per set of 4 4.50

No. 902 Oshkosh Plain Pay-Out Reels

For gang mounting on a wagon when paying out several wires at one time.

Made of hardwood, braced and reinforced with sheet steel.

Reel pins adjustable for 12, 18, and 24-inch coils.

No. 902, Wt. 40 Lb.. ..... each $21.50

No. 897 Oshkosh Folding Take-Up Reels

The reel part collapses and automatically throws off the coil at the same time and in an instant is ready for another coil. The frame, made of heavy hardwood, is strong and heavily reinforced throughout and folds up like a hinge.

Reel is made of malleable iron and steel.

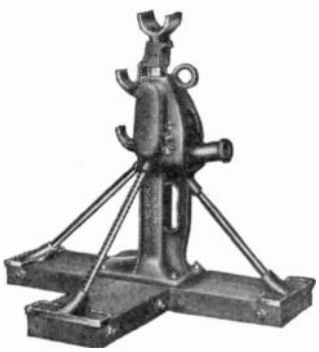
It can be taken down in a moment merely pulling the pin out of the shaft, throwing off the coil and folding up the frame.

Take-up, 21 inches. Weight, 42 pounds.

No. 897.....each $30.35

No. 1030-CR Duff-Norton Automatic Lowering Cable Reel Jacks

With T Base—10-Ton Capacity



For heavy cable reels 20 to 84 inches in diameter, and for outside work where uneven ground conditions are encountered.

Attached to a T-frame base which has been sectioned to prevent warping. Top hook is for 3-inch diameter spindles, the two lower hooks for 2½-inch diameter spindles.

Height 30 inches. Raise, 14 inches.

Weight, 110 pounds

No. 1030-CR..each $92.00

Duff-Norton Screw Type Cable Reel Jacks

5-Ton Capacity

Used by utility companies. Reliable and efficient. To operate, lift the curved cap to the reel spindle, spin the 3-way nut down to the frame, and insert a ¾-inch steel bar in the 3-way nut and turn.

Lifting hook will accommodate up to 2¼-inch diameter spindles.

No.	520-CR	530-CR
Each	$32.00	42.00
For Reels, Diameter...inches	42 to 60	60 to 90
Closed Height...inches	20	30
Raise...inches	11½	16½
Weight...pounds	66	90

Duff-Norton Genuine Barrett Ratchet Reel Jacks

Single Acting — Automatic Lowering—5, 10 and 15-Ton Capacities

Used to handle reels of cable, wire, etc. Hooks will seat 2-inch spindles.

Nos. 516-MCR and 524-MCR equipped with adjustable hook lifts for handling reels of different diameters. Furnished with double round sockets and steel operating lever, 1x30 in. long. No. 516-MCR for reels 15 to 40 in. in diameter. No. 524-MCR for reels 20 to 60 in. in diameter—has reinforced solid oak base for use outdoors.

No. 524-M-CR

No. 1022-CR

Nos. 1022-CR and 1522-CR equipped with extra long lifting racks with hooks placed at various heights for handling reels of different sizes. Furnished with single round socket and steel operating lever, 1¼x62 inches long. No. 1022-CR, hooks located 12, 22½, 33 and 38 inches from ground level for handling reels from 25 to 90 inches in diameter; housing bolted to solid oak base. No. 1522-CR, hooks located 18, 26, 34 and 39 inches from ground level for handling reels from 38 to 90 inches in diameter; reinforced oak base has quick detachable clamps.

No.	516-MCR	524-MCR	1022-CR	1522-CR
Each	$37.00	50.00	82.00	110.00
Capacity....tons	5	5	10	15
Height....inches	16	21	38	39
Raise.....inches	9	14	12	11
Base.....inches	5½x7¾	9x19	9¾x24	10x24
Weight...pounds	42	68	100	138

No. 500 Duff-Norton Genuine Barrett Pole Jacks

Capacity, 15 Tons

For lifting, straightening or moving poles of all kinds. Eliminates the necessity of digging around stumps before moving or straightening.

Height, 37½ inches.

Raise, 23 inches.

Furnished complete with operating lever, 10 feet of ¾-inch chain and channel base.

Weight, 250 pounds.

No. 500, With Chain.....each $110.00
No. 500, Without Chain.....each 99.50

No. 529 Duff-Norton Small Pole Pulling Jacks

Capacity, 5 Tons

Designed especially for lifting or moving small poles, such as are found on rural lines, quickly and easily. Has top lift and chain lift.

Poles are handled by means of the sling, which consists of a forged steel chain and hook. Chain fits into slot in top of jack.

Height, 28 inches. Raise, 18 inches.

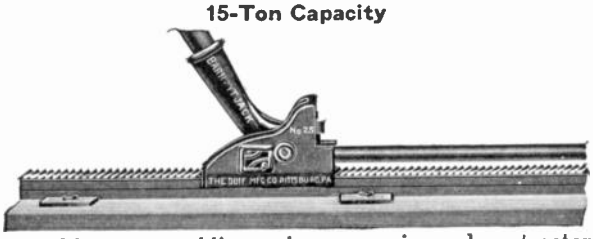
Weight, 91 pounds.

No. 529, with Chain.....each $68.00
No. 529, without Chain....each 65.75

Deduct $1.00 for lever bar if not required.

No. 125 Duff-Norton Pipe Forcing Jacks

15-Ton Capacity

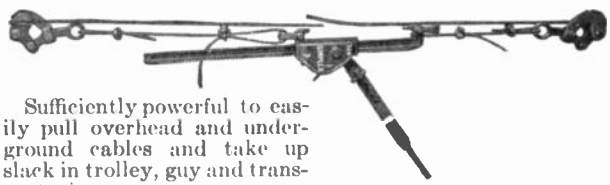


Used by many public service companies and contractors for laying water, gas, and other pipe in places difficult of access. Made of high carbon steel and steel castings. Will force pipe, from ¾ to 4 inches, through favorable ground conditions from 60 to 300 feet. Trench, 9 feet long, required for operation of jack at starting point. Total length, 8 feet. Travel of cage, 7 feet.

No. 125; Weight, 292 Pounds.....each $150.00

No. 324 Simplex Aerial Cable and Wire Tensioning Jacks

Capacity, 2 Tons



Sufficiently powerful to easily pull overhead and underground cables and take up slack in trolley, guy and transport wires.

The speed trigger permits instant slack take up at any point when the jack is not under load. Steel lever furnished with safety spring clip that prevents it from falling.

Easy to set up because of its non-flexible rack bar. Exerts a direct line pull.

For tensioning bare wire, use two bare wire grips and two wire slings. When used for splicing overhead cable, special equipment consisting of two double eye split cable grips, two 3-bolt clamps and two wire slings, are required.

No.	324
Each	$32.00
Capacity.....tons	2
Travel.....inches	20¼
Weight.....pounds	13

Simplex Screw Type Reel or Drum Jacks

No. 1CR

No. 3CR

For economically handling heavy reels. Has one spindle cap for 2¼-inch spindles.

No. 1CR for reels 40 to 60 inches in diameter, **No. 2CR** for 60 to 92-inch reels. The 3-way nut makes it possible to operate easily and quickly.

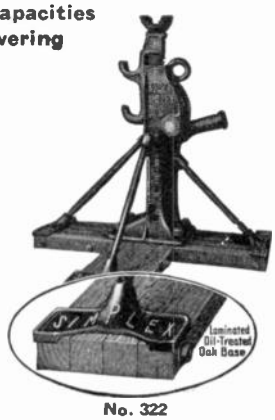
No. 3CR for reels 50 to 84 inches in diameter, recommended for heavy duty field work. Braced T-base has area of 240 square inches. Has ratchet lever socket, 42-inch lever.

No.	1CR	2CR	3CR
Each	$32.00	42.00	48.00
Capacity.....tons	5	5	15
Height.....inches	19¾	30½	25½
Lift.....inches	11½	16½	17½
Weight.....pounds	60	88	72

Simplex Reel or Drum Jacks

5 and 10-Ton Capacities
Ratchet Lowering

No. 320A



No. 322

Equipped with laminated, oil treated, oak bases.

No. 320A (5 Tons), Single Acting—For warehouse and shop service. Handles reels from 20 to 60-inch diameters. Has 3 lifting hooks: 1 for 2½-inch and 2 for 2-inch spindles.

No. 321 (10 Tons), Single Acting—Also for warehouse and shop service, but handles reels from 20 to 96-inch diameters. Has 5 lifting hooks: 1 for 3½-inch, 1 for 3-inch, and 3 for 2½-inch spindles.

No. 322 (10 Tons), Double Acting—T shaped base with the 3-threaded and adjustable steel rods insures a non-rocking foundation for heavy outdoor service. Built with right and left hand bases; base area, 319 square inches. Handles reels from 36 to 84-inch diameters. Has 3 lifting hooks: 1 for 3-inch and 2 for 2½-inch spindles.

No.	Each	Height Inches	Lift Inches	Length Lever	Weight Pounds
320A	$50.00	21	10	30"	48
321	82.00	34¼	15	60"	108
322	92.00	29	13¾	60"	104

Simplex Pole Pulling and Pole Straightening Jacks

No. 329

For pulling or straightening telephone, telegraph, electric power and trolley poles quickly, without digging, and regardless of size or depth in the ground.

One or two men can pull or straighten poles, pull butts or move loaded poles without interrupting service.

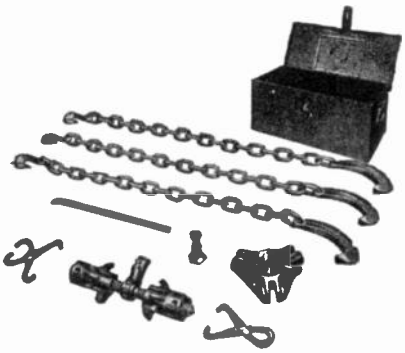
Nos. 325 and 329 are single acting and ratchet lowering.

No. 325 is a 5-ton jack, light, and durable, for pulling 25 and 30-foot poles, straightening poles, and for tightening guy lines. No. 329 is a 15-ton jack.

Standard equipment of the No. 325: a 4-foot steel pinch bar lever; 5-foot steel chain; an 8x15-inch steel channel base; 8-foot pike pole, equipped with a malleable iron forked cap for biting into wood for straightening poles. Standard equipment of the No. 329: an 8-foot scarf-welded BBB steel chain, fitted with pear-shaped link; a 10x24-inch I-beam base with hand hole; and a 5-foot steel lever bar.

No.	325	329
Each	$78.00	110.00
Capacity...tons	5	15
Height...inches	50	37¾
Lift...inches	36	22
Weight of Jack...pounds	34	95
Weight Complete...pounds	98	193

Simplex Util-A-Tools



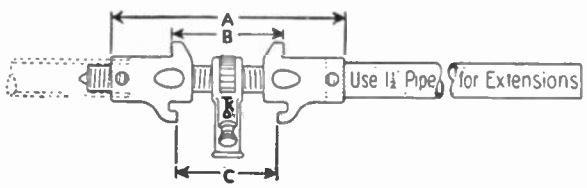
This tool pushes objects apart on the drop forged and corrugated nut ends, or on pipes inserted in nut wells or on the spreading lugs.

It pulls together, using chains with the sky hooks, which are inserted in the nut holes, or on clamping lugs.

It lifts when the triangular snap-on base is attached. Pulls spoked or solid center wheels and gears by attaching the three-way chain base, centering the live center in the shaft after removing the nut and connecting the three chains with the base and object to be pulled.

Util-A-Tool clamps parts for welding or assembly; straightens bent objects; bends pipe and structural steel members; loosens and pulls frozen objects; tensions guy wires; holds down portable machines, etc.

Specifications



Dimension A...inches	9¼
Dimension B...inches	3½
Dimension C...inches	2¾
Capacity, on Lugs of Nuts...tons	2½
Rated Capacity...tons	10

Prices

No.	610	612	614	616	618
Each	$18.50	19.00	19.50	20.00	20.50
Length Screw..inches	10	12	14	16	18
Screw Travel..inches	4¾	6¾	8¾	10¾	12¾
Weight...pounds	11	12	13	14	15

Util-a-Tool Maintenance Sets

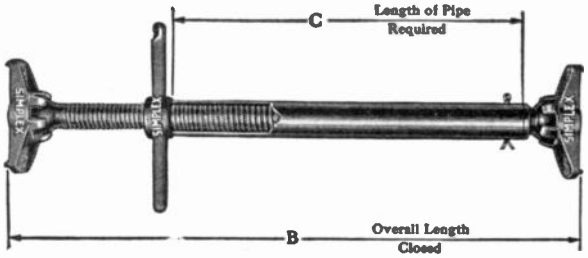
Set consists of the following:

*No. 610 Simplex Util-A-Tool...each	$18.50
Sky Hooks (2), Drop Forged, Chrome Nickel Steel.	4.80
3-Way Base, Drop Forged Steel, Heat Treated.each	5.50
No. 3-A Spreader Jack...each	3.40
½x40-Inch Heat Treated Chains (3), Fitted with Drop Forged Grab Hooks and Grab Claws...	18.50
¾ Inch Round by 18 Inches Long Chisel Pointed Lever Bar, Drop Forged, Heat Treated...each	1.00
18x8x8-Inch Steel Tool Box for Carrying Set...each	4.30
Complete Set with Tool Box; Weight, 78 Pounds.each	56.00

*The Nos. 612, 614, 616 or 618 may be substituted in the maintenance set (see prices above). The jacks may be purchased with any of the equipment.

Stud links (3), drop forged steel, heat treated, **$3.30.**

Simplex Drop-Forged Steel Trench Braces



Complete with Pipe

Constructed entirely of steel drop forgings. The safety lever nut is blunt, which prevents injuries and damage. The ball and socket joints at each end permit quick adjustment and tight gripping at all angles. Three way nuts can be furnished in lieu of lever nuts at no extra cost.

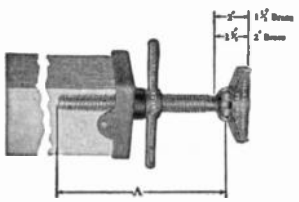
Specifications Complete with Pipe

No.	Per Dozen	Pipe and Screw Diam. Inches	A Length of Screw Inches	B Length of Brace Closed Inches	C Length of Pipe Inches	Safe Extension of Screw Inches	Wt., Lb. per Doz. with Pipe
2	$69.00	1½	12	18	10½	7	193
3	72.00	1½	14	21	13½	9	210
4	72.00	1½	14	24	16½	9	218
5	78.00	1½	16	27	19½	10	235
6	78.00	1½	16	30	22½	10	243
10	153.00	2	18	36	26	10	480
11	156.00	2	18	42	32	10	502
12	159.00	2	18	48	38	10	524
13	162.00	2	18	54	44	10	545
14	165.00	2	18	60	50	10	567

Specifications without Pipe

No.	Without Pipe per Dozen	Screw Ends Only per Dozen	Socket Butts Only per Dozen	Diameter Screw Inches	Length Screw Inches	Safe Extension of Screw Inches	Weight Pounds per Dozen
16	$60.00	$45.00	$15.00	1¼	12	7	164
17	63.00	48.00	15.00	1½	14	9	173
18	66.00	51.00	15.00	1½	16	10	182
20	135.00	99.00	36.00	2	18	10	385

Simplex Drop-Forged Timber Braces



Especially valuable and practical for wide and deep trenches; also for foundation and subway work.

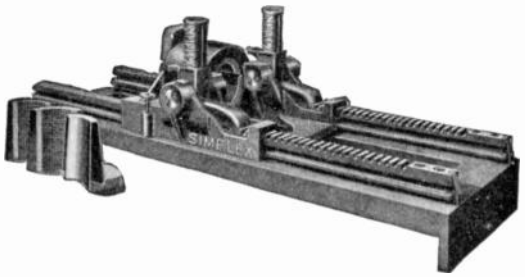
The screw ends are the same as the Simplex Trench Braces. Timbers are not furnished.

Three-way nuts can be furnished in lieu of lever nuts at no extra charge.

No.	21	22	24	25
Per Dozen Sets	$70.50	$78.00	$129.00	$144.00
Timber Caps.....per doz.	22.50	30.00	30.00	45.00
Diameter Screw.....in.	1½	1½	2	2
A, Length Screw.....in.	14	14	18	18
Size Timber Caps.....in.	4x4	6x6	6x6	8x8
Weight per Doz.....lb.	133	169	343	353

Simplex Double Leverage Pipe Pushing and Pulling Jacks

15 and 25-Ton Capacities



This jack is constructed with reversible carriages which eliminate the necessity of reversing the complete pipe pusher to pull pipe. Double levers and double track insure accurate and powerful pushing of pipe under paved streets, alleys, tracks, sidewalks, etc. Pipe can be pulled for lead pipe and duct installations, etc.

Equipment: one set of tapered jaws, one pilot, two 4-foot steel lever bars and two steel pipes for extending lever bars. Specify size of jaws and pilot required.

No.	R-332R	R-334R
Each	$240.00	$320.00
Extra Jaws.....per set	38.00	49.50
Capacity.....tons	15	25
Travel.....inches	30	28½
For Pipe Diameter.....inches	¾–2	2–4
Weight Complete.....pounds	218	321
Weight Jack Only.....pounds	150	208

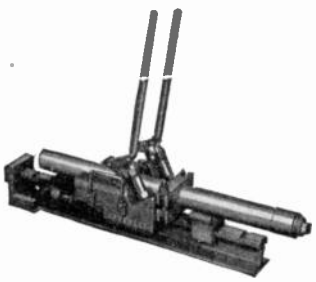
An adapter, furnished at $41 additional enables the No. R-334R to push ¾ to 2-inch pipe.

Extra Pilots

Size.....in.	¾	1	1¼	1½	2	2½	3	3½	4
Each.....	$4.00	4.00	4.00	4.00	6.60	6.60	6.60	6.60	6.60

No. 790 Greenlee Hydraulic Pipe Pushers

For underground installation in gas, electric, waterworks, telephone and other fields.



Eliminates tunneling, extensive trenching, backfilling and tamping, tearing up lawns, streets, sidewalks, railroad tracks, repaving.

Hydraulic unit does actual pushing, developing up to 75 tons piston pressure in large model.

One or two men can easily develop pressure needed to push pipe.

Unit is compact and simple to handle. Easy to carry and set up.

For ¾ to 4-inch pipe, inclusive. Has six different operating speeds to match varying soil conditions, with pushing pressures ranging from 6,500 to 40,000 pounds. Greater speed for light soil, sufficient power for difficult soil conditions.

Power unit travels on notched steel base, supplied in 5½, 6½, 7½ and 8½-foot lengths, permitting pushes of from 4 to 7 feet between changes of the pipe clamp. Each base is equipped with one backing plate and two pipe supports.

Weight of power unit only, 160 pounds.

No. 790, Power Unit Only.....each $185.00

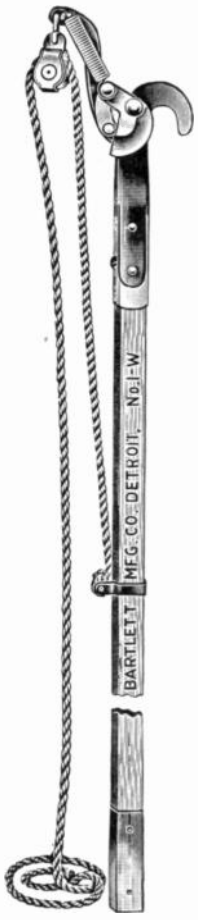
Steel Bases, with Pipe Support and Backing Plate

Length.....feet	5½	6½	7½	8½
Each	$30.00	35.00	40.00	45.00
Weight.....pounds	145	165	185	205

Quick Acting Clamps

Pipe Size..in.	¾	1	1¼	1½	2	2½	3	3½	4
Each...	$10.00	10.00	10.00	10.75	11.50	12.75	15.00	17.50	22.50

No. 1-W Bartlett Pulley Type Tree Trimmers



A very powerful cutting tool.

It not only has the compound lever, but it also has double leverage due to the pulley which is attached to the curved lever.

Will sever any branch up to 1¼-inch diameter, and the pulley enables the operator to pull the rope at any angle. A special coil spring positively returns the blade to a full cutting position.

An important feature of this tree trimmer is the light weight, the head complete weighing only 1¾ pounds.

All poles have two coats of waterproof shellac to prevent moisture absorption.

Furnished with 1¼x1⅛-inch rectangular poles, one piece poles or short sections joined together with No. 156 brass sleeves which have a positive locking device.

With Rectangular Pole and No. P156-2 Ferrule

4-Foot Length	each	$8.85
6-Foot Length	each	9.35
8-Foot Length	each	9.85
10-Foot Length	each	10.35
12-Foot Length	each	10.85
14-Foot Length	each	11.45
16-Foot Length	each	12.05
No. 1-W Head Complete with Pulley	each	6.00

Extra Rectangular Sections, With No. 156-1 and 2 Body and Ferrule

4-Foot Length	each	$3.50
6-Foot Length	each	4.20
8-Foot Length	each	4.90
10-Foot Length	each	5.60

Six and 8-foot octagon poles with round sleeves are obtainable if desired.

Bartlett Combination Pruners and Saws

Octagon Poles

This combination has two separate tools for head sections, mounted on short pieces of 1¼-inch octagon sitka spruce poles, with No. 146-2 round ferrule attached to the lower end and extra 6 or 8-foot octagon section fitted with round brass sleeve body which engages the ferrule and locks securely.

Combination makes it possible to use either head with same handle section, and several intermediate lengths can be added if desired.

For convenience in shipping, head sections may be ordered without extra sections if desired.

No. 1-WE, 30-Inch Head Section, Wt., 2¾ Lb.	each	$6.90
No. 44WE, 30-Inch Head Section, Wt., 1½ Lb.	each	5.20
8-Ft. Intermediate Section with No. 146-1 and 2 Body and Ferrule	each	4.90
8-Ft. Handle Section with No. 146-1 Sleeve Body	each	4.25
No. 146-1 Sleeve Body, Complete	each	1.45
No. 146-2 Sleeve Ferrule	each	.65

Seymour Smith Tree Pruner

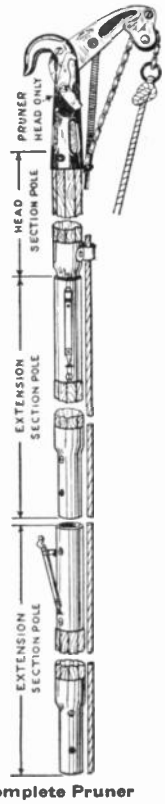
No. 111

No. 111.—Cuts 1-inch diameter branches. It is a lightweight, powerful, general purpose pruner for light trimming and line clearing along electric light, power and telephone wires.

No. 12

No. 12.—Easily cuts 1½-inch diameter branches. Especially designed for electric light, power and telephone line clearing. Will stand up and give long efficient service under the hardest use and even abuse.

Furnished complete with rope and 18-foot wood pole.



Complete Pruner

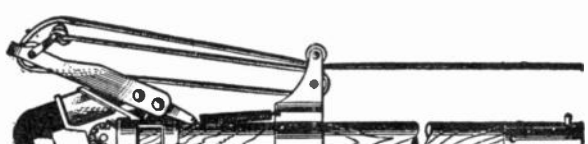
No. 111

No.	Description	Ship. Wt., Lb.	Each
111–18	Complete Pruner	10	$12.00
111	Pruner Head Only	1½	3.00
1	6-Foot Head Section Pole	2¼	2.40
1	6-Foot Extension Section Pole	3	3.40
51	6-Foot Tapered Head Section Pole	3¼	5.00
21	6-Foot Tapered Extension Section Pole	3½	6.30

No. 12

12–18	Complete Pruner	19	19.00
12	Pruner Head Only	4	6.00
2	6-Foot Head Section Pole	4½	3.30
2	6-Foot Extension Section Pole	5½	4.90

Newman Heavy Duty Tree Trimmers



Will cut 1½-inch tree limbs because the knife shears down from the top. Gravity spreads the cut behind the knife; and wedging or choking is eliminated.

Trimmer is hung on the limb and the cut made by pulling the rope. High-powered leverage is provided by compound toggle lever and double pulleys. A broad 1½-inch anvil base, against which the blade cuts, holds the tool in alignment with the limb so there is no side stress on the cutter.

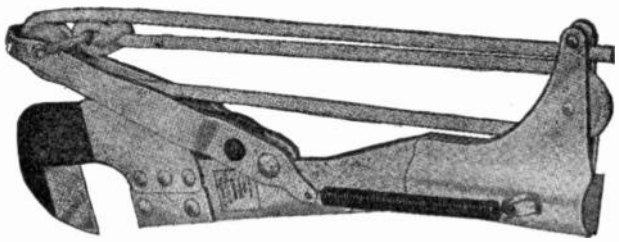
Cutter head parts is aluminum heat treated alloy casting. The cutting blade itself is made of high chrome, high carbon tool steel carefully tempered for maximum strength. Metal parts are rust resistant plated.

No. 900, with 1½-Inch Pole and Multiple Pulley Action; Complete with Two 5-Foot Sections, 10 Feet Overall; Weight, 6½ Pounds. ..... each $13.45

No. 975, Additional Center Section; 5 Feet Long; 1½ Inches Diameter; Weight 2 Pounds. ..... each 2.75

No. 1000 Newman Longrange Wire Cutters

For Overhead Wires



Used to cut wires overhead where manual applied energy is at a minimum and where the operator must dodge a falling wire after it has been cut.

Cuts energized or cold lines and cables by the hot stick method with extensions.

Ideal for holding, leading or wrapping hot lines overhead at a safe distance.

Jaw opening of 1½ inches permits cutting or cleaning of wire in conduit.

Circular cutting action of jaw gives a smooth cut.

Handles are tested for 75,000 volts as is operating rope.

Insulating materials will not gum jaws.

Overall length, 4 feet.

Additional 4-foot extensions are available.

Weight, 6 pounds.

No. 1000	each	$25.00
No. 1050, Replacement Blade, Wt., ½ Lb.	each	5.00
No. 925, Replacement Spring, Wt., 2 Ounces	each	.30
No. 1085, 5-Foot End Ext. Handle, Wt. 1¾ Lb.	each	5.00

No. 700 Newman Featherweight Tree Trimmers

Used for topping or work in the tree.

Cuts limbs and branches up to 1 inch in diameter.

Has single action pulley design.

All pulleys are ball bearing for easier operation.

Overall length, 10 feet.

Handle diameter, 1¼ inches.

No. 700, Weight, 4¾ Pounds..... each $9.50

Accessories

No. 750, Replacement Blade	each	$2.75
No. 875, Center Extension Handle	each	2.75
No. 885, End Extension Handle	each	2.75

No. 800 Newman Bantamweight Tree Trimmers

For trimming limbs and branches from trees.

Also light enough for horizontal use in the tree.

Cutting capacity, 1 inch.

Overall length, 10 feet consisting of a 5-foot head or cutting section, 5-foot end extension. For longer use, a 5-foot center extension is available.

All pulleys are ball bearing for easier operation.

Handle diameter, 1¼ inches.

No. 800, Weight, 5¼ Pounds..... each $12.50

Accessories

No. 750, Replacement Blade	each	$2.75
No. 875, Center Extension Handle	each	2.75
No. 855, End Extension Handle	each	2.75

Newman Curved Type Tree Saws

Designed for cutting limbs over 1½ inches in diameter, and where blade with slight curve is required.

Adjustable to three angles.

Blade is long and is ground for clearance to prevent binding.

Separate extension handles may be used or the extension handles on Nos. 700, 800, and 900 trimmers may be used.

Overall length of saw and ferrule equipped handle, 6½ feet. Weight, 3¾ pounds.

No. 1300, for 1½-Inch Pole	each	$7.20
No. 1300A, for 1¼-Inch Pole	each	7.20

Newman Swedish Steel Tree Saws

Designed for cutting limbs up to 4 inches in diameter. By undercutting, limbs up to 8 inches in diameter can be cut. Saw cuts on the draw, thus giving maximum ease of operation. Long blade, 35½ in. in length. Overall length, 4 ft.

No. 1200, for 1½-Inch Pole	each	$10.50
No. 1200A, for 1¼-Inch Pole	each	10.50

No. 44 Bartlett Pole Saws

For large limbs.

Has 16-inch peg tooth blade with 7 teeth per inch. Saw is securely held by the head, which is stamped from stiff cold rolled steel and fastened to the pole by three bolts.

Head is made of two strips of steel riveted together so as to secure a truss shaped support for the blade, which is fastened between the two sides. Hook serves as a means for hanging the tool on a limb when not in use.

Saw can be adjusted to three angles to suit operator's position and the blade is ground for clearance, which prevents binding.

File blade with No. 395 cant file.

Furnished without ferrule.

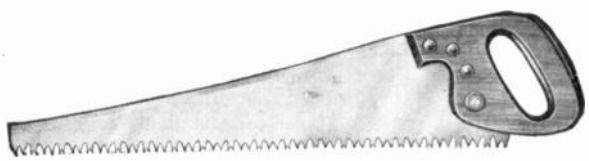
Size pole, 1¼x1⅛ inches.

4-Foot Length	each	$6.20
6-Foot Length	each	6.60
8-Foot Length	each	7.00
10-Foot Length	each	7.40
12-Foot Length	each	7.80
14-Foot Length	each	8.20
16-Foot Length	each	8.60

Paint brush clip will be attached to side of pole near head at 50 cents extra when desired.

No. P156-2 ferrule attached at 50 cents each, when extra sections are ordered.

No. 41 Bartlett Utility Saws

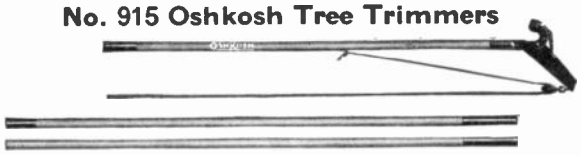


Used by utility companies. Will sever the largest branches. Extra large, special handle.

Tuttle tooth blade.

Length Blade	inches	20	24
No. 41	each	$3.25	3.50

No. 915 Oshkosh Tree Trimmers



This trimmer has positive locking ferrules.

Head is made of two pieces of light forged steel, reinforced and riveted together. These sides act as a guide for the thin saw steel cutting blade. Blade is pivoted and starts cutting with a slicing motion the moment the rope is pulled. Cuts limbs up to 1½ inches in diameter.

Handle is made in three sections of 1½-inch diameter straight-grained, clear Washington fir. One 6-foot section is attached to head and two 7-foot lengths; all equipped with couplings. Furnished complete with handle and a short section of rope to which can easily be attached any kind and size of rope. One-half-inch rope is suggested for best results.

No. 915, Trimmer, less Rope. Wt. 13 Lb.	each	$17.95
No. 915B, Extra Blade. Wt. 10 Oz.	each	4.75
No. 915S, Extra Spring. Wt. 2 Oz.	each	.85
No. 915EM, Extra 7-Ft. Middle Ext. Wt. 4 Lb.	each	5.45
No. 915EE, Extra 7-Ft. End Extension. Wt. 4 Lb.	each	4.00
No. 915R, 20-Foot Rope with Connector. Wt. 4 Oz.	each	3.30

No. 916 Oshkosh Tree Saws

Saw blade is strong, thin, and has fine teeth. It cuts clean. Blade is fastened in the frame.

Steel frame has hook for hanging saw in tree. The 6-inch handle has a ferrule on bottom to which can be connected the regular extensions of the trimmer.

No. 916, Saw. Weight 5 Pounds.	each	$10.90
No. 916B, Extra Blade. Weight 4 Ounces.	each	2.65
No. 916T, Extra Tightener. Weight 4 Ounces.	each	2.15

No. 50 Bartlett Safety Back Pole Saws

Constructed to give the maximum amount of safety possible in hazardous work.

Bent wood back tapers from standard size pole to a narrow point which enables the user to operate the saw in close crotches.

In order to make the cutting most effective the cutting head has been designed so that the blade can be turned to three positions by simply loosening the thumb nut and turning the knurled holder until the pin drops into the desired position, then again tightening the thumb nut with the lower pin in a position corresponding to the upper end.

Steel blade is 36 inches long and ⅞ inch wide, having a draw cut of 5 points per inch, and will cut with great rapidity.

Saw has a cutting capacity of 5 inches.

File blade with No. 390 slim file.

5-Ft. Top Section with Blade and No. 156-2 Ferrule.	each	$9.40
4-Ft. Section with Sleeve Body.	each	2.85
6-Ft. Section with Sleeve Body.	each	3.55
8-Ft. Section with Sleeve Body.	each	4.25
10-Ft. Section with Sleeve Body.	each	4.95

No. 114BD Bartlett Utility Pruning Saws

For fast cutting. Has diamond point teeth with well-shaped raker. Special handle. Length of blade, 24 inches.

No. 114BD, without Snap	each	$4.50

No. 114 Bartlett Utility Rapid Cut Saws

Cuts very fast. Teeth are diamond point with a well-shaped raker. Handle has an extra large grip permitting gloves and is comfortably shaped for the hand.

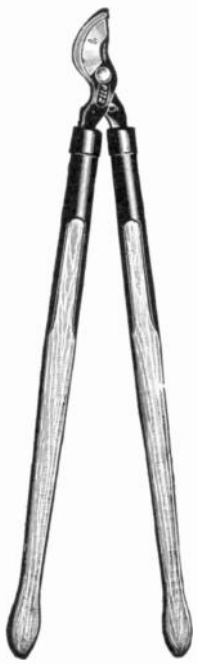
Can be obtained with or without the automatic on and off belt snap.

Use 6-inch safeback cant file.

Length, blade, 26 inches.

No. 114, with Snap	each	$5.50
Without Snap	each	5.00
Extra Snaps, Complete	each	.50

No. 777 Bartlett Two-Hand Pruners



Due to the fact that the majority of men are right-handed, the blade has been placed on the opposite side than is the general custom. This permits the blade to be placed next to the body or main limb of the tree with hook handle held in left hand, while the right hand operates the blade.

Hook remains stationary while blade closes, instead of blade being held stationary while hook closes by twisting around the branch, wounding the bark.

Blade positively will not cut or dig into the hook. By dropping the hook considerably below the center line, a superior positive draw cut has been produced, with an opening between blade and hook, allowing a straight thrust at the branch.

Both blade and hook are hardened drop forged crucible tool steel. Has white ash handle.

26-Inch Handle with 10-Inch Strap Ferrule.	each	$5.00
26-Inch Handle with 4½-Inch Plain Ferrule.	each	4.75

Porter Foresters

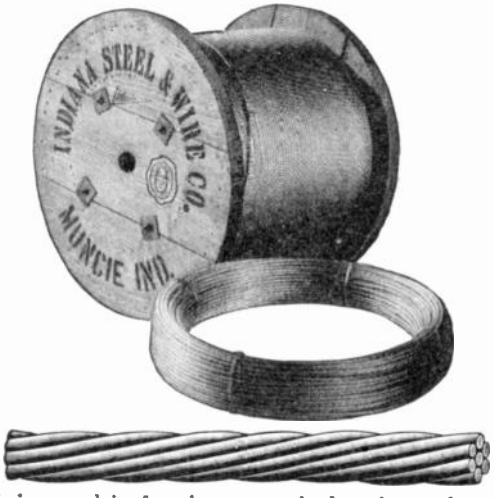
No. 2 is recommended as a forestry tool for pine pruning and rust control.

No. 3 cuts hardwood such as oak, maple and beech; for reforestation work such as brush cutting, trail clearing, etc.

Has slide shift 3-power slot which provides great extra power in the middle of a difficult cut. Edges are protected when handles are closed. All parts heat treated; fully interchangeable. Cuts clean, no damage to bark.

No.	2	3
Each	$8.50	9.75
Length, inches	27	34
Capacity Cut, inches	1½	2
Weight, pounds	4⅝	7¼

Crapo Galvanized Steel Strand



All wire used in forming a particular size and grade is produced from steel of selected properties, scientifically processed under laboratory supervision and galvanized by the Crapo process. Both wire and strand are subjected to laboratory tests for tensile strength, elongation, galvanizing, ductility, and gage to insure high uniform quality in the finished product.

Furnished in the following standard lengths: 3/8-inch diameter and smaller in 250, 500 and 1000-foot coils and 2500 and 5000-foot reels; 7/16-inch diameter and larger in 250 and 500-foot coils and 1000, 2500 and 5000-foot reels. When ordering specify size and grade, method of packing (coils or reels) and number of feet per coil or reel.

Guy and Messenger Strand
7 Wires Twisted Into 1 Strand

Nom. Diam. Strand In.	Wire Diam. In.	Wt. Per 1000 Ft. Lbs.	Minimum Breaking Strength, Pounds — Common Grade (Single & Extra Galv.)	Siemens-Martin Grade (Extra Galv.)	High Strength Grade (Extra Galv.)	Extra High Strength Grade (Extra Galv.)
5/8	.207	813	11600	19100	29600	42400
1/2	.165	517	7400	12100	18800	26900
7/16	.145	399	5700	9350	14500	20800
3/8	.120	273	4250	6950	10800	15400
5/16	.104	205	3200	5350	8000	11200
9/32	.093	164	...	4250	6400	8950
1/4	.080	121	1900	3150	4750	6650
3/16	.062	72.9	1150	1900	2850	3990

Specification Grade 7-Wire Strand
Utilities—Western Union—A.T.&T.

Nominal Diameter Inches	Trade Designation	Wire Diameter Inches	Weight Pounds per 1000 Feet	Minimum Breaking Strength Pounds
1/2	25000 Lb.	.165	517	25000
7/16	16000 Lb.	.145	399	18000
3/8	10000 Lb.	.120	273	11500
5/16	6000 Lb.	.109	225	6000
9/32	4000 Lb.	.093	164	4600
3/16	2200 Lb.	.065	80.3	2400

Utilities Grade 3-Wire Strand

1/4	.....	.120	116.7	3150
1/4	.....	.120	116.7	4500
5/16	.....	.145	170.6	6500
3/8	.....	.165	220.3	8500

Crapo Galvanized Construction Wire

For miscellaneous construction purposes, such as light guys, wrapping stubbed poles, lashing brackets to poles, etc.

Size B.W.G.	Diam. Inches	Approx. Weight Per Coil Pounds	Approx. Length Per Coil Feet	Breaking Strength Pounds
6	.203	150	1320	1618
8	.165	100	1320	1069
10	.134	100	2050	705
12	.109	100	3150	467
14	.083	50	2700	271

Crapo High-Tensile Line Wire

These high-tensile, low-resistance telephone line wires make possible longer-span, lower-cost construction on new lines; provide stronger spans, with lower maintenance expense, on present lines. Development of Indiana Steel and Wire Company.

Galvanized by the Crapo process, which produces a heavy, dense, uniform coating of zinc that adheres tenaciously to the wire and provides dependable protection against corrosion.

Crapo HTL-85

Used extensively for both new construction and for replacement. When used on existing pole structures it tends to increase strength of line, lessens hazard of ice and wind, minimizes service interruptions, and reduces maintenance costs.

Affords improved transmission at voice frequency with currents of voice frequency magnitude.

Has a tensile strength more than 60 per cent greater than standard B.B. wire of the same diameter. No. 12 B.W.G. size makes possible spans of 225 feet in heavy loading, 325 feet in medium loading, and 375 feet in light loading districts.

Furnished in continuous lengths without splices or joints. Galvanized steel compression-type sleeves are recommended for splicing this wire.

Size B.W.G.	9	10	12	14
Diameter.....in.	.148	.134	.109	.083
Approx. Wt. per Mile.....lb.	314	258	170	99
Coil Length.....mile	1/2	1/2	1/2	1/2
Min. Breaking Load.....lb.	1462	1199	793	460
Max. Resistance per Mile.ohms	18.47	22.48	34.12	58.59

Crapo HTL-135

Possesses two and one-half times the strength of standard B.B. wire, which makes possible spans of 350 feet in heavy loading districts, 450 feet in medium loading districts, and 500 feet in light loading districts.

The average number of pole structures per mile can usually be reduced to approximately one-half the number required for B.B. wire.

The effective resistance at voice frequencies with currents of voice frequency magnitude is superior to that of the older grade.

Regularly furnished in No. 12 B.W.G. and in continuous lengths without splices of joints.

Galvanized steel compression-type sleeves are recommended for splicing.

Size	No. 12 B.W.G.
Nominal Diameter.....inches	.109
Minimum Breaking Strength.....pounds	1213
Resistance per Mile.....ohms	38.23
Approximate Weight per Mile.....pounds	170
Weight per Coil, Approximate ....pounds	150
Length per Coil, Approximate..... feet	4659

Crapo Galvanized Telephone and Telegraph Wire

Drawn from iron or steel, of specific properties, processed under laboratory supervision, galvanized by the Crapo process, and rigidly inspected. Meets all standard specifications for electrical conductivity, tensile strength, elongation, galvanizing, and ductility which users of line wire require.

Size B.W.G.	Diam. In.	Wt. Lb. per Mile	Coil Length Mile	Minimum Breaking Strength, Pounds E.B.B.	B.B.	Steel	Maximum Resistance Per Mile at 68°F., International Ohms E.B.B.	B.B.	Steel
4	.238	811	¼	2028	2271	2433	5.98	7.15	8.32
6	.203	590	⅓	1475	1652	1770	8.22	9.83	11.44
8	.165	390	½	975	1092	1170	12.43	14.87	17.31
9	.148	314	½	785	879	942	15.44	18.47	21.50
10	.134	258	½	645	722	774	18.79	22.48	26.16
11	.120	206	½	515	577	618	23.54	28.16	32.77
12	.109	170	½	425	476	510	28.52	34.12	39.71
14	.083	99	½	247	277	297	48.98	58.59	68.18

Crapo Galvanized Steel Cable Lashing Wire

Used with modern cable spinning machines to lash cable to messenger strand.

Coils are neatly and compactly wound, tied with easily removed cotton tape, and contain 325 feet of wire, plus or minus 10 feet.

Wire diameter, .091 inch.

Coil dimensions: arbor hole, straight hub, 1⅞ inches; outside diameter (nominal), 6 inches; width (nominal), 1½ inches.

Packed 6 coils in a carton.

Per Coil, Approximate Weight, 7.2 Pounds.....

Crapo Galvanized Tie Wires

Manufactured specially to facilitate tying in telephone line wire. Galvanized by Crapo process.

Furnished in coils or straightened and cut to length.

Standard bundle for horseshoe tie, 25 pounds.

Standard bundle for armor tie, 50 pounds.

Size B.W.G.	Standard Coils Approx. Length Feet	Approx. Weight Pounds	Straightened and Cut to Length For Horseshoe Tie Length Inches	No. Pieces	For Armor Tie Length Inches	No. Pieces
10	2040	100	18	350	48	260
10	2040	100	16	390	46	270
12	3100	100	14	675	44	430
14	2650	50	14	1150	40	810

Crapo Galvanized Ground Wire

For pole grounds. Regularly furnished in coils of approximately 150 pounds.

Size B.W.G.	Diameter Inches	Approx. Wt. Lb. per Coil	Approx. Length Feet
6	.203	150	1320
8	.165	150	2030
9	.148	150	2520

Copperweld Telephone Line Wire

40 Per Cent Conductivity Grade

Made by molten-welding a thick, protective copper covering to an alloy steel core. Combines high strength of steel and high conductance, excellent voice and high frequency characteristics of non-rusting copper. Put up in mill length coils; approximate weight, 200 pounds. Prices on request.

*Type	Diam. In.	Breaking Load Lb.	Resistance Ohms Per 1000 Ft.	Per Mile	Wt. Lb. per Mile
10 AWG H.S.	.1019	1130	2.547	13.45	152.1
.104″ Diam. H.S.	.1040	1177	2.445	12.91	158.5
12 AWG H.S.	.08081	785	4.051	21.39	95.68
.080″ Diam. H.S.	.080	770	4.133	21.82	93.77
.104″ Diam. E.H.S.	.104	1325	2.445	12.91	158.5

*H.S. indicates high strength; E.H.S. extra high strength.

Diamond Telephone Tie Splints and Tie Wires

Features a better vibration dampener, greater grip on line wire, and no contact between line wire and insulators.

The core diameter of the spiral sections is slightly smaller than that of the line wire. It is this feature which produces the increased vibration dampening effect and holds the line wire against slipping. When break occurs in the span due to sleet loads or other causes, the repair job is confined to one span.

Abrasion wear is greatly reduced because there is no contact between insulator and line wire.

Furnished in sets with tie wires.

Crescent Annunciator Wire

Single Conductor—Twisted Pair

Consists of solid, soft annealed bare copper conductor insulated with two wraps of cotton applied in reverse directions, saturated in paraffin, and polished.

Single conductor is furnished in assorted standard colors.

Twisted pair is made up of two different colored conductors for polarity identification.

Available with a black, weatherproof finish for use in damp places.

Standard carton, 10 spools. Single conductor is also put up in ¼, ½, and 1-pound coils packed individually.

Size A.W.G.	Approx. Ft. per Lb.	Std. Spool Lb.	*Single Conductor Shipping Carton—Weight, Lb. 10 Spools	100 Quarter-Pound Coils	100 Half-Pound Coils	50 One-Pound Coils	Twisted Pair Approx. Ft. per Lb.	Std. Spool Lb.	Ship. Wt. Lb. Ctn. of 10 Spools
22	310	5	58	30	55	55	155	5	58
20	230	6	68	30	55	55	115	5	58
18	160	7½	83	30	55	55	80	5	58
16	106	8½	93	30	55	55	53	5	58

Connecting wire: single conductor wire is also used as connecting wire for blasting purposes and is furnished on 1-pound spools packed 50 spools in a carton weighing 58 pounds.

Whitney Blake No. 17 A.W.G. Teleprene Drop Wire

Bronze, Parallel, Specification 17 TBP
Bronze, Reinforced Parallel, Specification 17 TBP-R

Used to extend telephone circuit from open wire or distributing cable terminals on pole to subscribers' station.

Teleprene drop wire is furnished with No. 17 A.W.G. Teleplate coated bronze conductors insulated with a rubber compound designed for long life and excellent electrical characteristics, and jacketed with a tire tread type of Neoprene compound.

The Teleplate coating consists of a lead coating applied directly to the bronze wire to resist corrosion and an electroplated brass coating over the lead to give enduring adhesion of the insulation to the conductor.

The protective lead coating meets the Ammonium Persulfate Test for continuity of coating of A.S.T.M. Specification B-189-44T.

The reinforced types have a tough reinforcing textile braid between the conductor insulation and the outer jacket.

A double ridge raised tracer on the side of the jacket gives positive polarity identification.

Reinforced Teleprene has, substantially, twice the compression resistance, half again higher insulation resistance, three times the dielectric strength, and, by test, is fifteen times as rugged as corresponding weather-proof drop wires.

The tire tread type Neoprene jacket has extremely good resistance to sunlight, weather, and natural aging. The Neoprene jacket has excellent resistance to oil, most acids, alkalies, and other corrosive chemicals which destroy braids. It is practically unaffected by changes in temperature, does not melt or soften in summer, or become hard and brittle in winter. It withstands the effects of smoke, various fumes, and air conditions found in manufacturing areas, mines, and railroad centers.

Specification No	17TBP	17TBP-R
Conductor Resistance, Ohms per 1000 Ft. Max	16	16
Conductor Breaking Strength, Min. lb.	170	170
Overall Dimensions, Nominal ..... in.	.175x.286	.195x.306
Coil Eye, Approx ..... in.	16	16
Approx. Weight per 1000 Feet ..... lb.	41	42

Whitney Blake No. 17 A.W.G. Teleprene Drop Wire

Bronze, Twisted Pair, Specification 17TB2
Bronze, Reinforced Twisted Pair, Specification 17TB2-R

Has double ridged tracer on jacket of one wire for polarity identification.

Has same Teleplate coated conductors, rubber conductor insulation, and tough Neoprene outer jacket as Specification 17TBP.

Reinforced twisted pair has strong textile inner braid similar to Specification 17TBP-R.

Specification No	17TB2	17TB2-R
Coil Eye, Approximate ..... in.	16	16
Approx. Weight per 1000 Feet ..... lb.	40	40

Whitney Blake No. 17 A.W.G. Weatherproof Drop Wire

Bronze, Parallel, Specification 17BP

The standard bronze conductor is signal bronze but Hitenso bronze, having properties listed below, can be supplied when specified.

All conductors are Teleplate coated for corrosion resistance and to promote good adhesion between conductor and insulation.

Conductor insulation is long life, highly compression resistant rubber compound with excellent electrical properties. A raised ridge in the rubber insulation on one conductor provides polarity identification.

A heavy braid of strong, unbleached, two-ply cotton yarn is closely woven over the two parallel insulated conductors to give added service life to the wire.

The braid is completely saturated with an asphalt base compound, containing straight asphalt of crude oil origin, that is both moisture and weather resistant. A tough, flexible, high melting point, finishing coat of Stearine pitch and mica is applied over the saturated braid. The life of the rubber and braid are increased by this effective seal against light, moisture and oxygen.

Specification No	17BP	*17
Max. Conductor Resistance, Ohms per 1000 Feet	16	6
Conductor Breaking Strength, Minimum ..... lb.	170	145
Diameter over Rubber, Nominal ..... in.	.110	.110
Coil Eye, Approximate ..... in.	16	16
Approx. Weight per 1000 Feet ..... lb.	32	32

*Hitenso Bronze.

Whitney Blake No. 17 A.W.G. Weatherproof Drop Wire

Bronze, Twisted Pair, Specification 17B2
Copperweld, Twisted Pair, Specification 17CW2

Has raised tracer in rubber insulation on one wire, permitting more even application of weatherproof finish and providing more uniform wear of the braid.

Conductors are Teleplate coated.

Has same high grade rubber insulation, braid, and weather-proofing conductor resistance, breaking strength and diameter over rubber as Specification 17BP.

Specification 17B2 can be furnished also with Hitenso Bronze conductor.

Specification No	17B2	17CW2
Coil Eye, Approximate ..... in.	16	16
Approx. Weight per 1000 Feet ..... lb.	33	33

Whitney Blake No. 17 A.W.G. Weatherproof Drop Wire

Bronze, Parallel, Specification 17BT
Hawser Twine Braid, Abrasion Resistant Tree Wire

Made for service where swaying of tree limbs rub and fray the standard braids quickly.

Constructed similar to Specification 17BP except that the braid is heavy hawser twine.

Standard conductor is signal bronze Teleplate coated. Conductor resistance, breaking strength, diameter over rubber, rubber insulation, and weatherproofing are the same as Specification 17BP.

Specification No	17BT
Coil Eye, Approx ..... in.	16
Approx. Weight per 1000 feet ..... lb.	47

Whitney Blake No. 14 A.W.G. Outside Wire

Hard Copper, Twisted Pair, Specification 14HC2

Used in drops extending telephone circuits from open wire or distributing cable terminals where transmission loss of the drop must be lower than that of No. 17 Bronze or Copperweld.

Used also in bridling toll line circuits.

Has raised ridge in rubber insulation on one conductor for polarity identification.

All conductors are Teleplate coated for corrosion resistance and to promote good adhesion between conductor and insulation.

Conductor insulation is long life, highly compression resistant rubber compound with excellent electrical properties.

A heavy braid of strong, unbleached, two-ply cotton yarn is closely woven over each of the two parallel insulated conductors to give added service life to the wire.

The braid is completely saturated with an asphalt base compound, containing straight asphalt of crude oil origin, that is both moisture and weather resistant. A tough, flexible, high melting point, finishing coat of Stearine pitch and mica is applied over the saturated braid. The life of the rubber and braid are increased by this effective seal against light, moisture, and oxygen.

Specification No.	14HC2
Max. Conductor Resistance, Ohms per 1000 Feet	3
Conductor Breaking Strength, Minimum ..... lb.	190
Diameter over Rubber, Nominal ..... in.	.156
Coil Eye, Approximate ..... in.	16
Approximate Weight per 1000 Feet ..... lb.	60

Whitney Blake No. 16 A.W.G. Outside Wire

Hard Copper, Twisted Pair, Specification 16HC2

For same application as Specification 14HC2.

Rubber insulation, braid, Teleplate coated conductors and weatherproofing are the same grade as Specification 14HC2.

Specification No.	16HC2
Max. Conductor Resistance, Ohms per 1000 Feet	4.55
Conductor Breaking Strength, Minimum ..... lb.	125
Diameter over Rubber, Nominal ..... in.	.125
Coil Eye, Approximate ..... in.	16
Approximate Weight per 1000 Feet ..... lb.	42

Whitney Blake Bridle Wire

No. 18 Soft Copper, Twisted Pair, Specification 18B2
No. 20 Soft Copper, Twisted Pair, Specification 20B2

Used in ring wiring and in bridling open wire lines.

Conductor Teleplate coated for corrosion resistance and good adhesion of insulation to conductor.

Weatherproof braid has raised tracer threads or threads to identify conductors in pair, triple, or quadruple wires.

Rubber insulation similar to Specification 14HC2.

Saturated and finished the same as Specification 14HC2.

Specification No.	18B2	20B2
Max. Conductor Resistance, Ohms per 1000 Feet	7.5	11
Diameter over Rubber, Nominal ..... in.	.090	.080
Coil Eye, Approximate ..... in.	16	9
Approximate Weight per 1000 Ft. ..... lb.	31	20

Whitney Blake Teleprene Outside Wire

No. 14 A.W.G. Hard Copper, Twisted Pair, Specification 14THC-2
No. 16 A.W.G. Hard Copper, Twisted Pair, Specification 16THC-2

Used in drops extending telephone circuits from open wire or distributing cable terminals where transmission loss of the drop must be lower than that of No. 17 bronze or copperweld. Used also in bridling toll line circuits.

Has double ridged tracer in jacket on one conductor for polarity identification.

Teleplate conductors, rubber insulation, and tough Neoprene jacket same as that for Specification 17TB-2.

Size A.W.G.	14	16
Conductor Resist., Ohms per 1000 Ft. Max.	3	4.55
Conductor Breaking Strength ..... pounds	190	125
Nominal Diameter Over Jacket ..... inches	0.226	0.185
Approximate Coil Eye Size ..... inches	16	16
Approximate Weight per 1000 Feet ... pounds	80	55

Whitney Blake No. 18 A.W.G. Teleprene Bridle Wire

Soft Copper, Twisted Pair, Specification 18TBC-2
Soft Copper, Triple, Specification 18TBC-3

Used in ring wiring and in bridling open wire lines.

Conductor Teleplate-coated for corrosion resistance and good adhesion of insulation to conductor.

Rubber insulation and tough Neoprene outer jacket similar to that of Specification 17TB-2.

Double and triple ridge tracers on jacket identify conductors in twisted pair and triple types.

Specification No.	18TBC-2	18TBC-3
Conductor Resistance, Ohms per 1000 Ft. Max.	7.5	7.5
Nominal Diameter Over Jacket inches	0.140	0.140
Approximate Coil Eye Size	16	16
Approximate Weight per 1000 Feet ..... pounds	32	48

Whitney Blake Teleseal Signal and Communication Wire

Twisted Pair, Hard Copper

For low voltage signal and communication purposes in wet locations. Has double-ridged tracer on jacket of one wire for polarity identification.

Furnished in two sizes, Nos. 14 and 16, with Teleplate coated hard copper conductors. Characterized by low moisture absorption, low transmission losses at telephone frequencies, and stability of operation under water.

Over the insulation, and adherent to it, is a tough, tire tread type of Neoprene jacket identical in composition to that used on Teleprene.

Size A.W.G.	14	16
Conductor Resistance, Ohms per 100 Ft. Max.	3	4.55
Conductor Breaking Strength, Minimum lb.	190	125
Nominal Diameter Over Jacket ..... inches	0.238	0.203
Approximate Coil Eye Size ..... inches	16	16
Approximate Weight per 1000 Feet ... pounds	85	60

Whitney Blake No. 22 A.W.G. Distributing Frame or Duct Wire

Twisted Pair Plastite Insulation, Specification 22S2

Triple, Plastite Insulation, Specification 22S3

Quadruple, Plastite Insulation, Specification 22S4

Used on distributing frames, cross connecting racks, and in conduit or duct.

Bare soft copper conductor insulated with tough, high dielectric strength Plastite insulation.

Twisted pair has one black and one red conductor; in triple, third leg is cream; and in the quadruple, fourth leg is green.

Specification No.	22S2	22S3	22S4
Number of Conductors	2	3	4
Conductor Resistance, Ohms per 1000 Feet Max.	20	20	20
Diameter over Insulation, Nominal..in.	.074	.074	.074
Coil Eye, Approximate.....in.	7	7	7
Approx. Weight per 1000 Ft.....lb.	9	13	17

Whitney Blake Inside Telephone Wire

No. 22 A.W.G. Soft Copper, Twisted Pair, Plastite Insulation, Specification 22PN2

No. 19 A.W.G. Soft Copper, Twisted Pair, Plastite Insulation, Specification 19PN2

No. 19 A.W.G. Soft Copper, Twisted Pair, 1/64-Inch Rubber Insulation, Specification 19N2

Used inside buildings for extending circuits from arrestors or other terminating fixtures of outside lines to station sets.

Furnished in single pair, triple, and quadruple.

Plastite insulated types have soft copper conductors with smooth Plastite, synthetic resin insulation that has high dielectric strength and is tough, flame proof, and highly resistant to abrasion, water, oil, alkali, and most solvents.

Plain, single and double ridged tracers make identification easy. Standard colors are ivory and brown.

Rubber insulated type has braid of brown hard glazed yarn over each insulated conductor.

Specification No.	22PN2	19PN2	19N2
Conductor Resistance, Ohms per 1000 Feet Max.	20	20	10
Diameter over Insulation, Nominal.....in.	.074	.086	.096
Coil Eye, Approximate.....in.	7	9	9
Approx. Weight per 1000 Ft.....lb.	9	14	21

Type SJ Whitney Blake Rubber Sheathed Cord

Maximum Voltage Rating, 300 Volts

Approved by Underwriters' Laboratories

Recommended for light duty tools, refrigerators, vacuum cleaners, washing machines, sewing machines, multigraph machines, cash registers, billing machines, drop lights, extension cords, etc.

Made with flexible and extra flexible stranded copper conductors, separator, 30 per cent rubber insulation, twisted with fillers and covered with cotton binder, 40 per cent tough rubber jacket overall. Also made with oil resistant Neoprene jacket, Type SJO.

Flexible stranding is for stationary service and extra flexible stranding for movable devices.

The rubber compounds of this moisture-proof cord are age-resisting and provide high resistance to abrasion, shock, and twisting.

Put up in 250-foot coils or, where quantity warrants, in factory lengths on reels.

	Flexible Stranding		Extra Flexible Stranding	
Size A.W.G.	18	16	18	16
No. of Strands	16	26	41	65
Size Wire	30	30	34	34
Current Carrying Cap.....amps.	7	10	7	10
2 Conductor:				
Approx. O.D.....in.	.305	.330	.305	.330
Approx. Wt. per 1000 Ft.....lb.	50	62	50	62
3 Conductor:				
Approx. O.D.....in.	.330	.360	.330	.360
Approx. Wt. per 1000 Ft.....lb.	63	87	63	87

Type S Whitney Blake Rubber Sheathed Cord

Maximum Voltage Rating 600 Volts

Approved by Underwriters' Laboratories

For heavy portable tools, pendant lighting, car heaters, conveyors, garage heaters, ticket vendors, floor polishers, sanders, etc.

Made with flexible stranded copper conductors, separator, 30 per cent rubber insulation, conductors twisted with fillers and covered with cotton binder, 40 per cent heavy duty rubber jacket overall. Also made with oil resistant Neoprene jacket, Type SO.

The rubber compounds of this moisture-proof cord are age-resisting and provide high resistance to abrasion, shock, and twisting.

Put up in 250-foot coils or, where quantity warrants, in factory lengths on reels.

				2 Conductor		3 Conductor	
Size A.W.G.	No. of Strands	Size Wire	Current Carrying Capacity Amperes	Approx. O.D. Inches	Approx. Wt. Lb. per 1000 Feet	Approx. O.D. Inches	Approx. Wt. Lb. per 1000 Feet
18	41	34	7	.390	74	.405	99
16	65	34	10	.405	87	.430	126
14	41	30	15	.530	142	.560	170
12	65	30	20	.605	172	.635	215
10	104	30	25	.640	210	....	...

Building Wire and Cable
Rubber Insulated

Code Grade Type RL—600 Volts

Solid Conductors

Conductors Size A.W.G.	No Strands	Diam. Individual Strands In.	Diam. In.	Insulation Thickness In.	Sheath Thickness In.	Overall Diam. In.	Wt. Lb. per 1000 Feet
14	Solid	.....	.06408	2/64	2/64	.22	95
12	Solid	.....	.08081	2/64	2/64	.24	115
10	Solid	.....	.1019	3/64	3/64	.32	260

Stranded Conductors

14	7	.0242	.0726	2/64	2/64	.22	102
12	7	.0305	.0915	2/64	2/64	.24	127
10	7	.0385	.116	3/64	3/64	.32	260

Synthetic Insulated

Type T Small Diameter—600 Volts
Type TW Small Diameter—600 Volts
(Approved by Underwriters' Laboratories for Use in Wet Locations)

Solid Conductors, No Outer Covering

Size A.W.G.	Insulation Thickness Inches	Overall Diameter Inches	Wt. Lb. per 1000 Feet	Size A.W.G.	Insulation Thickness Inches	Overall Diameter Inches	Wt., Lb. per 1000 Feet
14	2/64	.130	20	10	2/64	.168	41
12	2/64	.147	28	..	..	....	..

Stranded Conductors, No Outer Covering

14	2/64	.140	22	10	2/64	.182	44
12	2/64	.158	30	..	..	....	..

Weatherproof Wire

Consists of double or triple braids of closely woven covering, thoroughly impregnated with weatherproof compounds, and has a smooth, polished finish. Especially adapted to withstand changes in climatic conditions. Furnished either hard or soft temper for copper. Soft temper will be shipped unless otherwise specified.

Size B.& S.	Approximate Weight Pounds Per 1000 Ft.	Per Mile
10	53	280
12	35	185
14	25	132

Type POSJ Whitney Blake Tru-Rip Rubber Sheathed Parallel Cord

Maximum Voltage Rating, 300 Volts
Approved by Underwriters' Laboratories

Used for lamps, clocks, radios, fans, toys, scales, signs, cash registers, etc. Made with flexible stranded copper conductors, separator, and a 40 per cent rubber insulation.

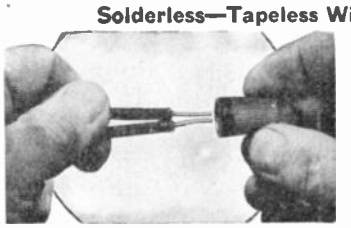
Waterproof, and slits, strips, and handles easily.

Available in black, brown, and ivory, and other Nema colors on request.

Put up—Type POSJ-64, 500-foot spools; Type POSJ-32, 250-foot spools; or where quantity warrants, in factory lengths on reels.

Type	POSJ-64	POSJ-32	POSJ-32
Size A.W.G.	18	18	16
No. of Strands	41	41	65
Size Wire	34	34	34
Approx. O.D. ....in.	.230x.125	.295x.155	.315x.170
Current Carrying Capacity....amps.	7	7	10
Approx. Wt. per 1000 Ft. ....lb.	26	38	48

Ideal *Wire—Nuts
Solderless—Tapeless Wire Connectors



Replaces solder and tape, plug connections, terminal blocks, binding posts, etc.

Listed by Underwriters' and Factory Mutual Laboratories. Recommended by National Electrical Code.

Making a joint with an Ideal Connector is just like screwing a nut on a bolt. The connector simply screws on giving a positive and permanent contact. Spiral metal insert which acts as a current carrying sleeve. presses threads into the wires and binds them together in a vise-like grip—assuring a doubly secure joint.

No. 72 Fixture-Appliance Type

For fixture wiring, joints in appliances, etc.

No.	Description	Per 100	Per 1000
72	For 3 No. 18, or 1 No. 14 and 1 No. 18 Wires, Solid or Stranded	$1.65	$14.71

No. 73 Junior Universal Type

For fixture wiring, joints in shallow canopies, signs, etc.

73	For Nos. 14, 16, and 18 up to 2 No. 14 and 2 No. 18 or 4 No. 16 or 5 No. 18 Wires, Solid or Stranded	$1.77	$15.89

No. 74 Standard Universal Type

For all joints of common wiring practice.

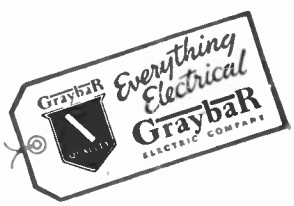
74	For Nos. 12, 14, 16 and 18 up to 2 No. 12 and 1 No. 18 or 4 No. 14 and 1 No. 18 Solid or Stranded	$2.24	$21.18

No. 76 Large Universal Type

For larger gage wires or where a large number of small wires are to be joined.

76	For Nos. 10, 12, 14, 16 and 18 up to 3 No. 10 and 1 No. 18, 6 No. 14 and 1 No. 18, or 4 No. 12 and 1 No. 18 Solid or Stranded.	$3.24	$30.59

*Trade Mark Reg. U. S. Pat. Office.



T&B Sta-Kon Solderless Terminals

A secure mechanical grip on the wire is produced by the pressure of the stake-mark, which parallels the strands.

Wire Size A.W.G.	No.	Per 1000	Carton	Std. Pkg.	Wt. Lbs. per 1000
22, 20, 18	A18-6	$5.00	100	1000	1½
22, 20, 18	A18-10	5.00	100	1000	1½
22, 20, 18	A18-14	5.00	100	1000	3
16, 14	B14-6	5.00	100	2000	2½
16, 14	B14-10	5.00	100	2000	3
16, 14	B14-14	5.00	100	2000	3½
12, 10	C10-6	6.00	50	1000	4½
12, 10	C10-10	6.00	50	1000	5
12, 10	C10-14	6.00	50	1000	5½
12, 10	C10-516	6.00	50	1000	7½
9, 8, 7	D8-10	10.00	25	500	10
9, 8, 7	D8-14	10.00	25	500	12
9, 8, 7	D8-516	10.00	25	500	16
6, 5	E6-14	12.00	20	200	17
6, 5	E6-516	12.00	20	200	20
6, 5	E6-38	12.00	20	200	20
4, 3	F4-14	15.00	20	200	24
4, 3	F4-516	15.00	20	200	25
4, 3	F4-38	15.00	20	200	25
2, 1	G1-14	25.00	10	100	40
2, 1	G1-516	25.00	10	100	47
2, 1	G1-38	25.00	10	100	45
		Series H to M			
1/0	H10-14	30.00	10	100	42
2/0	J20-38	35.00	10	100	60
3/0	K30-38	45.00	5	50	82
4/0	L40-38	50.00	5	50	110
MCM 250	M250-38	60.00	5	50	135

T&B Sta-Kon Two and Four-Way Connectors

Wire Size A.W.G.	Two-Way No.	Per 1000	Carton	Std. Pkg.	Wt. Lb. per 1000	Four-Way No.	Per 1000	Carton	Std. Pkg.	Wt. Lbs. per 1000
22,20,18	2A18	$7.00	100	1000	2½	4A18	$14.00	50	500	5
16,14	2B14	7.00	100	1000	3½	4B14	14.00	50	500	6
12,10	2C10	8.00	50	500	7	4C10	16.00	25	250	13
9,8,7	2D8	15.00	25	250	19	.....	.....	..	...	..
6,5	2E6	18.00	20	200	27	.....	.....	..	...	..
4,3	2F4	20.00	15	150	36	.....	.....	..	...	..

T&B Sta-Kon Hand Tools

No. WT-111M — No. WT-115

Used to install Sta-Kon terminals. Every tool accommodates several sizes of terminals and tips. Standard package, 1.

No.	WT-111M	WT-115	21076
Each	$5.00	31.00	35.00
For Use on Wire Nos.	22 to 0	8 to 1	2,1,1/0,2/0,3/0 4/0, 250M CM
Color of Handle	Red	Black	Grey
Weight...pounds	¾	4½	5

No. WT-116 Holders

For Nos. WT-115 or 21076 tools for bench mounting. Standard package, 1.

No. WT-116, Weight, 2½ Pounds.....each $2.00

Power tools for rapid high production installations are also available. Information on request.

No. 20 T&B Sta-Kon Terminal Kits

Designed for work on electric wires No. 22 to 10 inclusive.

Contents

One box of 100 terminals for wire sizes Nos. 22 to 18, to fit No. 8 or 10 bolt.

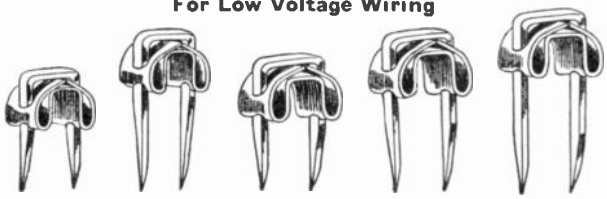
One box of 100 terminals for wire size Nos. 16 to 14, to fit No. 8 or 10 bolt.

One box of 50 terminals for wire size Nos. 12 to 10, to fit No. 8 or 10 bolt. One installing tool.

No. 20.....each $10.00

Superior Standard Insulated Staples

For Low Voltage Wiring



No. 1 — No. 3 — No. 5 — No. 6 — No. 7

100 Size—For Industrial and Telephone Use

Coppered insulated staples packed 100 to the box, 1000 to the container, 25 boxes to the standard carton.

Nos. 1, 3, or 5.....per 1000 $1.90

Nos. 6 or 7.....per 1000 2.00

50 Size—For Commercial and Household Use

Coppered insulated staples packed 50 to a box, 1000 to a container, 25 boxes to the standard carton.

Furnished in red-white-blue cellophane window boxes.

Nos. 1, 3, or 5.....per 1000 $2.00

40 Size—For Commercial and Home Use

Colored insulated staples packed 40 to the box, 1000 to the container, 25 boxes to the standard carton.

Available in white, brown, or ivory finish.

Furnished in display cartons with cellophane window boxes.

Nos. 1, 3, or 5.....per 1000 $2.50

Add 12 cents to prices for white finish.

No. F4 Superior Insulated Fiber Washer Telephone Wiring Nails

Made in sizes of ½ and ⅞-inch.

Available in white, brown, and ivory.

Packed 100 size.

No. F4.....per 1000 $4.24

No. 18 Superior Fiber Head Wiring and Upholstering Nails

Made in sizes of ⅝ and ⅞-inch.

Available in white, brown, and green finish.

Packed either 100 size (1000 to the container) or 1000 size.

Add 12 cents to above for white finish.

No. 18, Packed 1000 Size.....per 1000 $2.60

No. 18, Packed 100 Size.....per 1000 2.84

Superior All Steel Metal Wiring Nails

For inside and outside low voltage electrical wiring. Made in sizes of ½ and ⅞-inch.

Available in olive drab, brown, ivory, and white.

Packed 100 size, 1000 to the container, 25,000 to the standard carton.

No. IW9, ½-Inch.....per 1000 $3.50

No. IW10, ⅞-Inch.....per 1000 3.50

Add 12 cents per 1000 to prices for white finish.

No. F5 Superior Plastic Wiring Nails

Insures permanent installation, permanent color, and a secure grip on all inside wiring including synthetic wire.

Made in sizes of ½ and ⅞-inch.

Available in white, brown, and ivory.

Packed 100 to the box, 10 boxes to a container, and 25 containers in a shipping carton, which totals 25,000 nails. Shipping weight per carton, 30 pounds.

No. F5.....per 1000 $7.10

National Nicopress Splicing Sleeves

The Nicopress sleeves, for the splicing of copper, copperweld, steel, and A.C.S.R. conductors, are easily installed, and the resultant splice, which is of permanently high conductivity, exceeds the rated strength of the conductor.

Stock Number—Nicopress Sleeves

Every Nicopress sleeve has a stock number. This is of value to the customer as well as the manufacturer, in that the stock number, which consists of threeparts, alludes to the material of which the sleeve is made, the diameter of the wire on which the sleeve is used, and the proper tool groove for compressing the sleeve.

The first section of the stock number identifies the metal of which the sleeve is made by means of any one of the numerals from 1 to 5. Numeral 1 designates copper sleeves, 2 designates galvanized copper sleeves, 3 designates bronze sleeves, 4 designates galvanized bronze sleeves, and 5 designates galvanized steel sleeves.

The middle section or next three numerals of the sleeve stock number denotes the decimal equivalent of the diameter of the wire for which the sleeve is suitable.

The third part, or letter, at the end of the sleeve stock number indicates the Nicopress tool groove required to properly compress the sleeve. The several Nicopress tool grooves or dies are identified and marked by a letter and any Nicopress sleeve whose stock number ends with that letter can be compressed in that particular tool groove.

For Example: (Sleeve No. 1-162J)

1 Indicates Copper
.162 Indicates Diameter of 6B &S Copper
J Indicates Proper Tool Groove

Stock Number—Nicopress Dead-Ends

The stock numbers of Nicopress dead-ends are practically the same as for the splicing sleeves except that they have a prefix of either 7 or 9. The figure 7 indicates that it is a suspension dead-end, and the figure 9 indicates that it is an offset type dead-end; thus 71-162J and 91-162J, respectively, are the stock numbers of the suspension and offset dead-ends.

Nicopress Splicing Sleeves

For Telephone Drop, Bridle, and Inside Wire

Completed Splice

Wire Size	Type	For Tool No.	Sleeve Stock No.	Approx. Ship. Wt., Lb. per 200
19, 20, 22 B&S	Copper	17-2	3-036A	½
17, 18 A.W.G.	Copperweld	17-2	3-045B	¾
17 B&S	Bronze	17-2	3-045B	¾
17, 18 B&S	Copper	17-2	3-045B	¾
16 B&S	Copper	17-2	3-051B	¾
16 A.W.G.	Copperweld	17-2	3-051B	¾
14 B&S	Copper	17-2	3-064B	¾
18, 19 B.W.G.	Ironite	17-2	4-049B	¾

Nicopress Splicing Sleeves

For Solid Copper Wire

Sleeve

Completed Splice

Wire Size B&S	Tool Groove	Sleeve Stock No.	Approx. Ship. Wt., Lb. per 100	Wire Size B&S	Tool Groove	Sleeve Stock No.	Approx. Ship. Wt., Lb. per 100
12	C	1-080C	1½	8	J	1-128J	4½
12	D	1-080D	1½	6	J	1-162J	4½
10	C	1-102C	1¼	4	M	1-204M	6¾
10	D	1-102D	1½	4	P	1-204P	6¾
10	E	1-102E	2	3	P	1-229P	7¼
9	D	1-114D	1½	2	T	1-258T	11¾
9	E	1-114E	2	2	X	1-258X	14
8	E	1-128E	1½	1	X	1-289X	13

For Copperweld

Wire Size A.W.G.	Tool Groove	Sleeve Stock No.	Approx. Ship. Wt., Lb. per 100
14 Solid	C	1-061C	1½
12 Solid	C	1-080C	1½
12 Solid	D	1-080D	1½
12 Solid	E	1-080E	2½
10 Solid	J	1-102J	5
9 Solid	J	1-114J	3¾
8 Solid	M	1-128M	8¼
8 Solid	P	1-128P	13½
6 Solid	P	1-162P	12½

Nicopress Splicing Sleeves

For Steel Conductors

Wire Size B.W.G.	For Galvanized Wire	Tool Groove	Sleeve Stock No.	Approx Ship. Wt., Lb. per 100
14	BB or 85	C	2-083C	1½
14	BB or 85	C	5-083C	1½
12	BB	C	4-109C	1¼
12	BB	C	5-109C	1½
12	BB	D	2-109D	1¾
12	85	D	5-109D85	2
12	135	D	5-109D135	2½
10	BB	J	2-134J	3
10	85	J	2-134J85	4½
9	BB or 85	J	2-148J	4½
8	BB	J	2-165J	4½

Nicopress Repair Sleeves

For Replacing Defective Line Wire Joints

When cutting out defective joints in line wire, the ideal way to re-splice is with the Nicopress repair sleeve. The length and the design of this sleeve allows the wire to be re-spliced without having to change the initial line wire sag and eliminates the cutting in of a new section of wire.

For Copper Wire

Wire Size	Tool Groove	Sleeve Length Inches	Sleeve Stock No.	Approx. Ship. Wt., Lb. per 100
12B&S	C	7	R1-080C	6
12B&S	D	7	R1-080D	7½
10B&S	C	7½	R1-102C	5¼
10B&S	D	7½	R1-102D	7¼
9B&S	D	8	R1-114D	7
9B&S	E	8	R1-114E	9
8B&S	E	8	R1-128E	8½
6B&S	J	10	R1-162J	16½

For BB Iron Wire

14B.W.G.	C	7	R2-083C	6
12B.W.G.	C	7½	R4-109C	5½
12B.W.G.	D	7½	R2-109D	7
10B.W.G.	J	8½	R2-134J	16½
8B.W.G.	J	9	R2-148J	16
9B.W.G.	J	10	R2-165J	16½

National Nicopress Reducing Sleeves

For Copper Wire

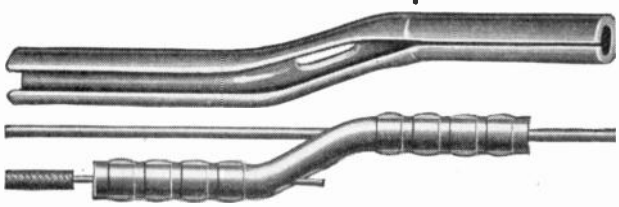
Wire Size B&S	Tool Groove	Sleeve Stock No.	Approx. Ship. Wt., Lb. per 100
12 to 17	C	1-080x045C	1½
10 to 17	C	1-102x045C	1½
10 to 14	C	1-102x064C	1½
10 to 12	C	1-102x080C	1½
8 to 10	E	1-128x102E	2
6 to 8	J	1-162x128J	3¼

For Steel Wire

12 B.W.G. to 17 B&S	C	2-109x045C	2
12 B.W.G. to 14 B.W.G.	C	4-109x083C	1½
10 B.W.G. to 12 B.W.G.	J	2-134x109J	3

Also available in other sizes. Information upon request.

National Nico-Taps



Completed Tap

For tap-off connections of line to drop, line to line, and pair to drop. Easily and quickly installed.

Features installation over conductor without cutting or disturbing the line wire in any way.

Wire Size	Tool Groove	Stock No.	Wt., Lb. per 100
17 B&S to 17 B&S	No. 17-2 Tool	T2-045B	½
12 B.W.G. to 12 B.W.G.	D	T2-109D	2½
12 B.W.G. to 17 B&S	D	T2-109x045D	2½
12 B.W.G. to 16 B&S	D	T2-109x051D	2½
12 B.W.G. to 14 B&S	D	T2-109x064D	2½
10 B&S to 10 B&S	D	T1-102D	2½
10 B&S to 17 B&S	D	T1-102x045D	2½
10 B&S to 16 B&S	D	T1-102x051D	2½
10 B&S to 14 B&S	D	T1-102x064D	2½
9 B&S to 9 B&S	D	T1-114D	2½
9 B&S to 17 B&S	D	T1-114x045D	2½
9 B&S to 16 B&S	D	T1-114x051D	2½
9 B&S to 14 B&S	D	T1-114x064D	2½

National Twist Sleeves

National Double Tube Copper Sleeves

National Double Tube Sleeve

Completed Double Tube Splice

Made from the best grade of pure copper, exact to size.

Solid B&S Gage	Solid B.W.G. Gage	Solid N.B.S. Gage	B&S Gage 7-Wire Stranded Cable	Length Inches	Approx. Ship. Wt. Lb. per 100
18	..	..	..	4	1.5
17	..	..	..	4	1.5
16	..	..	..	4	1.8
14	16	..	..	4	2.0
12	14	14	..	4½	2.3
10	12	12	..	4¾	3.0
9	11	..	..	5¼	5.0
8	10	..	..	5½	6.0
7	9	..	..	5¾	8.5
6	8	..	..	6	10.0

Also available in tinned copper.

Nicopress Offset Dead-Ends

Offset Dead-End Sleeve and Completed Dead-End

Installed with the same tool groove that is used on the splicing sleeves. For pin or strain insulator dead-ending.

For Solid Copper

Wire Size B&S	Tool Groove	Dead-End Stock No.	Approx. Ship. Wt., Lb. per 100
12	C	91-080C	1½
12	D	91-080D	1¾
10	C	91-102C	1½
10	D	91-102D	1½
10	E	91-102E	1¾
9	D	91-114D	1½
9	E	91-114E	1¾
8	E	91-128E	1½
8	J	91-128J	5½
6	J	91-162J	4½

For Solid Copperweld

Size A.W.G.	Tool Groove	Dead-End Stock No.	Approx. Ship. Wt., Lb. per 100
12 Solid	D	91-080D	1¾
10 Solid	J	91-102J	5¾
8 Solid	M	91-128M	11
8 Solid	P	91-128P	14
6 Solid	P	91-162P	12½

For Steel Conductors

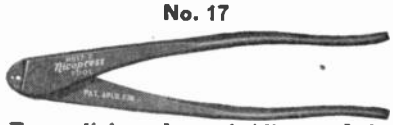
Wire Size B.W.G.	For Galvanized Wire	Tool Groove	Dead-End Stock No.	Approx. Ship. Wt., Lb. per 100
14	BB or 85	C	95-083C	1¼
14	BB or 85	C	92-083C	1½
12	BB	C	95-109C	1½
12	85	D	95-109D85	1¾
12	135	D	95-109D135	2½
10	BB or 85	J	92-134J	5¼
9	BB or 85	J	92-148J	5
8	BB	J	92-165J	5

Nicopress Tools

For Telephone, Telegraph, and Signal Work

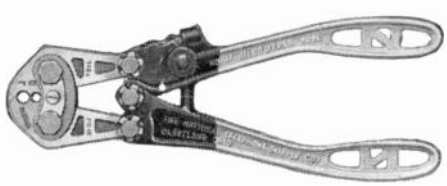
In making the splice the tool must be of a size that is convenient and practical for the lineman to handle either in the air or on the ground. It must be so efficient in use that pressure can be applied with a certainty that each compression made will be exactly as required.

No. 17



No. **17.** For splicing drop, bridle, and inside wire. Length, 8 inches. Weight, 9 ounces.

No. 31



For communication line wire. Available in groove combinations, DC, DJ, CE, DE, CJ and EJ. Also available with single grooves. Length, 11½ inches. Weight, 2 pounds.

Simplex-Telex Twin Underground Telephone Cable

A rubber insulated, non-water absorptive telephone cable made with a rodent resistant tough rubber jacket, or with an armor over the jacket, but without lead, for laying directly in the ground for rural telephone lines, private estates and similar applications.

Standard packages of 2500 feet of rubber jacketed and 1500 feet of armored cable are carried in stock on 22-inch non-returnable reels. No charge for this stock type reel; and no credit will be allowed.

If other lengths are required, there will be an extra charge for packaging or for the use of returnable reels.

Rubber Jacket Telex Cable

No. 17 solid tinned copper twin cable, insulated with tough rubber jacket.

Outside diameter, .35 x.20-inch.

Standard package is 2500-foot length on 22-inch non-returnable reel.

Shipping weight per 1000 feet, 50 pounds.

Per 1000 Feet..... ....

Armored Telex Cable

No. 17 solid tinned copper twin cable, insulated with a tough rubber jacket; armored with 2 bright steel tapes. Impregnated paper tape overall.

Does not require a ground wire, but the following precautions should be taken.

At each splice a jumper wire should be soldered from steel to steel to assure continuous electrical circuits in the steel.

At the pole line end a jumper wire should be soldered onto the steel of the cable and connected to the grounding system which is always a part of the installation at the last pole of the overhead run.

The jumper wire should be about No. 14 A.W.G. either tinned or lead coated and without insulation. A special solder should be used to resist corrosion.

Outside diameter, .42x32-inch.

Standard package is 1500-foot length on 22-inch non-returnable reel.

Shipping weight per 1000 feet, 140 pounds.

Per 1000 Feet..... .....

Telex Ground Wire

No. 14 (.066) lead dipped bare copper wire for grounding.

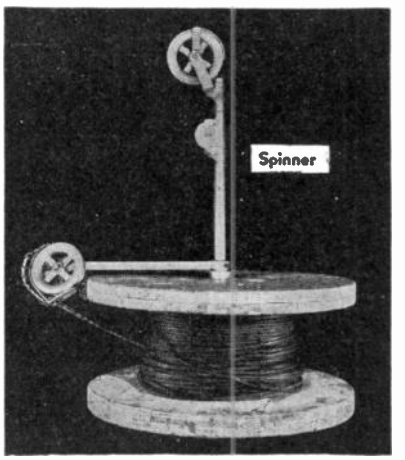
Furnished on 11-inch non-returnable reels containing 3000 feet.

Shipping weight per 1000 feet, 14 pounds.

Per 1000 Feet..... .....

Accessories for Simplex-Telex Twin Underground Telephone Cable

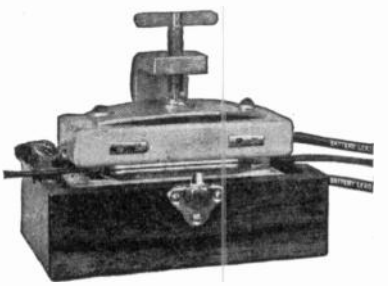
Spinners



A means of transposing conductor every 3 to 5 feet, and at the same time protecting the cable as it comes off over the head of the reel.

Each..... ....

Vulcanizers



Including mold, indicating light, buzzer, battery leads and clips, self-contained in cover box for use with 6-volt automobile battery.

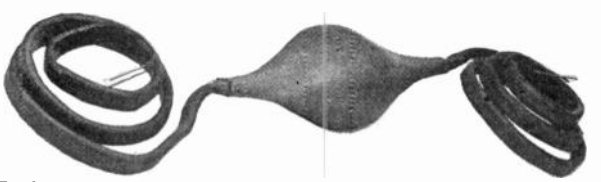
Each..... .....

No. 102-A U-Type Terminal Boxes

For rubber jacket or armored cable.

Each..... .....

No. 153-A Loading Coil Cases Equipped with No. 638 Coil



Each..... ....

Crimping Tools

For crimping brass sleeves to copper conductors.

Each..... **$4.00**

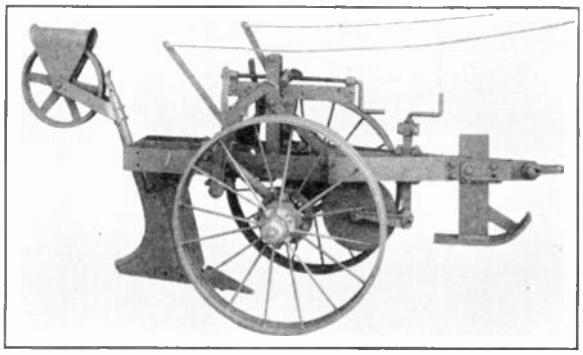
Splicing Kits

Rubber slab and four brass conductor splicing sleeves, two extra.

Packed in individual packages.

For One Splice.....each ....

Killefer Cable Layers



Designed for burying small cable, flat counterpoise and heavily insulated wire without ditching or backfilling.

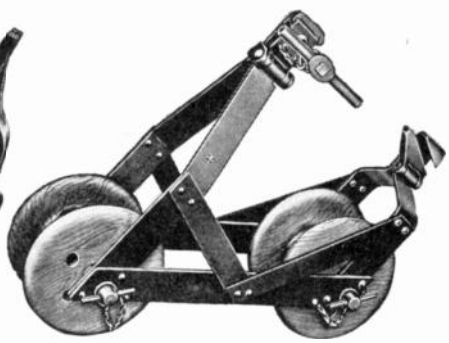
Strongly constructed frame of structural steel; welded and hot riveted. Wearing parts are protected and reinforced Each part is removable and replaceable.

Wheels are constructed of highest-grade steel for lasting strength. Heavy-duty spokes are riveted into wide rims which are flanged and grooved for extra sturdiness and to protect the spoke heads. Each wheel turns on a low-cost replaceable sleeve which takes the wear and protects the axle.

No.		201-C	251-C
Maximum Penetration	inches	20	24
Point Size	inches	1x2½	1x3
Standard	inches	1x6	1x8
Shin Blade	inches	1x2	1x2
Planting Tube, Inside Diameter	inches	1¾	1¾
Wheel Diameter	inches	42	48
Wheel Tread	inches	38	40
Wheel Tire	inches	5	6
Power Required	horsepower	25to35	25 to 40
Weight	pounds	1150	1730

B & L Star Brand Cable Blocks and Aerial Cable Guides

No. PU-30, Single Sheave Cable Block



No. PU-39, Aerial Cable Guide

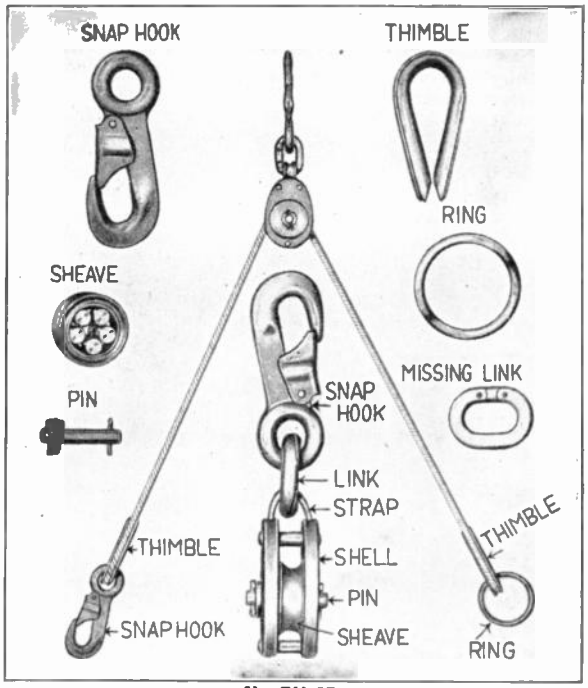
No. PU-30 Single Sheave Cable Blocks. For guiding winch lines in conjunction with aerial cable guides. Standard for 2⅝-inch diameter cable. Other sizes made up for larger diameter cable.

No. PU-30, Weight, 11 Pounds.....each **$18.00**

No. PU-39 Aerial Cable Guides. For pulling lead covered cable into supporting rings. Has wood rollers.

No. PU-39, Weight, 32 Pounds.....each **$80.00**

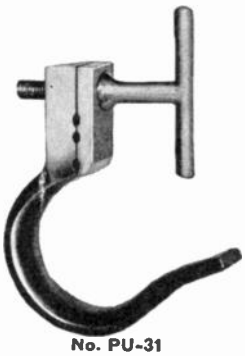
B & L Star Brand Aerial Hand Lines



No. PU-37

Consists of 3-inch single roller bushed galvanized hollow steel block, 2 snap hooks, ring, 2 thimbles, missing link, and rope.

	⅜" Rope	½" Rope
Complete with 60 Ft. of Manila Rope...each	$14.00	$17.50
Complete with 75 Ft. of Manila Rope...each	15.20	20.00
Blocks Only without Rope (No Connections)....each	3.60	



No. PU-31

B & L Star Brand Booster Hooks

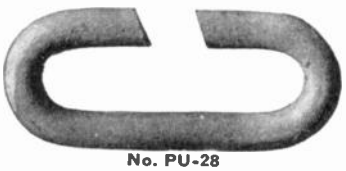
Supports the cable while being pulled through the supporting rings.

Some rings, while adequate for supporting a stationary cable, tend to creep when performing the dual function of supporting and resisting movement while the cable is being placed.

Securely clamped to the messenger strand and presents a smooth rounded surface to the moving cable sheath.

Approximate weight, 3 pounds.

No. PU-31 .....each **$6.00**



No. PU-28

B & L Star Brand C Hooks

For connecting the winch or pulling line to the cable grip or core hitch. Also used at the end of the winch line for attaching to poles, transformers, etc.

Approximate weight, 2½ pounds.

No. PU-28 .....each **$6.00**

No. PU-41

B & L Star Brand Flatted Swivel Hooks

Galvanized

For Come-Along

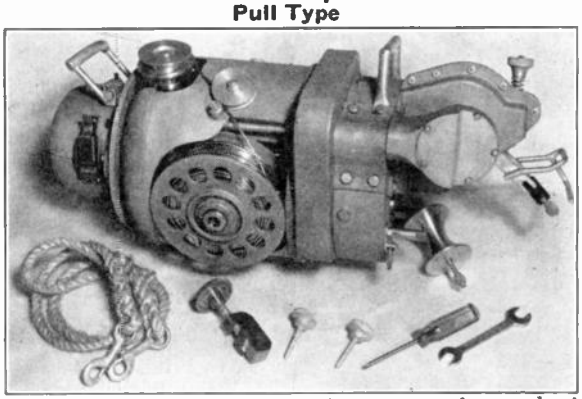
Size	inches	½	⅝
No. PU-41	each	$4.60	7.15
For Dbl. Blocks	inches	3	4
Length Overall	inches	7¼	8
Weight	pounds	⅝	1

Cable Spinning Equipment

The following list of equipment was designed to support and maintain aerial cable and wires to steel supporting strand by the spinner method, which consists of spiraling a wire of suitable size and material around the wires or cable to be supported and the supporting strand. This method has proved its worth and has been adopted as standard practice.

No. 300 Neale Model D Spinners and Chests

Pull Type



Designed for use by a construction gang to place and spin new cable or maintenance spinning of existing cable.

Operates on 10 ball bearing surfaces.

Adjustable to take cable from 11 pair, 26 gage to the maximum size 909 pair, 24 gage, sheath diameter 2¼ inches.

Ring pusher is removable. Wire supply is always visible.

Will operate with either .091 or .061-inch spinning wire.

A ratchet on the strand wheel prevents slack in the spinning wire when pull on tow line is released.

Length, 24 in. Diameter, 10 in. Weight, 42 pounds.

Furnished with one lashing wire clamp.

Packed in a durable chest made of ⅜-inch plywood reinforced with metal on all edges and corners. Weight of chest empty, 33 pounds.

No. 100 Neale Model B Spinners and Chests

A one-man machine to place and spin new cable or for maintenance spinning of existing cable. Operated either by a hand crank or may be pulled along the supporting strand by a man on the ground. A dead weight of 50 to 100 pounds can be substituted for a rider in order to prevent slippage.

The two supporting trolley wheels are connected together by means of a bicycle chain. A removable gate is provided in the spinner head, which permits the spinner to be placed over strand and cable at the beginning of a span and readily removed when the next pole is reached. Has ball bearings at all points of wear. Frame is made of steel tubing. Chain drive is geared for upgrades.

Wire is carried on an aluminum reel which holds approximately 325 feet of wire.

Furnished with three sets of rollers to accommodate different sizes of cable. Equipment includes spinner chest, seat and safety belt, one tube of grease, and one spinning wire clamp. All metal parts not aluminum or bronze are cadmium plated.

Packed in a durable chest made of ½-inch plywood reinforced with metal on all edges and corners. Weight of chest empty, 53 pounds.

No. PC2 Cable Spinning Platform Clamps

For supporting a splicer's platform from aerial cable.

Can be used on either spun cable or cable supported by other methods.

Made of bronze alloy.

Clamps on the strand without damage to the cable and locks in position with a thumb nut. No wrench is needed.

Will not slide on a grade.

Length from jaw to rope hole, 7½ inches.

Packed one pair to a carton.

Weight, 5 pounds.

No. PC2 ..... each

No. SPH18 Cable Spinning Single Eyed Platform Hooks

Used on the four supporting ropes of a splicer's platform, where the ropes are adjustable on the platform.

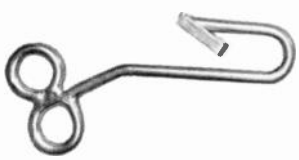
Made of braced steel.

Packed from one to ten to a carton.

Weight, 1 pound each.

No. SPH18 ..... each

No. DPH19 Cable Spinning Double Eyed Platform Hooks



Used on splicer's platforms where the supporting ropes are not adjustable on the platform.

Made of braced steel.

Weight, 1 pound each.

Packed from one to ten in a carton.

No. DPH19 ..... each

No. 27 Chance Rubber Wheel Flexible Safety Cable Car

This car can be collapsed, strapped or tied for convenient transportation. Adjustable up or down, by snaps and chain. Chain is made of steel, electric welded on sides of links to guard against weld opening. Snaps used are linemen's snaps of drop forged, galvanized steel.

Holes are provided in open side of car frame for snapping on safety belt.

Car is equipped with hand brake to hold chair stationary.

Seat is made of high grade fir lumber, reinforced with strap steel imbedded in wood.

Width, 21 inches. Weight packed, 27 pounds.

No. 27 ..... each

Cable Spinning Equipment

No. HB3

No. HB3 S&S Hand Line Block is a tool especially designed for spun cable but is also used on cable supported by other methods. It clamps on the strand without damage to the cable and will not slip on a grade. No wrench is needed. Made of bronze alloy. Length, 10 inches. Weight, 4 pounds.

No. LC5

No. LC5 Neale Spinning Wire Clamp is a positive action clamp to hold the spinning wire in place when terminating at the pole and to keep the slack from running back when repairing cable. Made of bronze alloy with cadmium plated screw. Length closed, 3¾ inches. Length open, 4½ inches. Weight, 1 pound.

No. CR9 Cable Spinning Bronze Cable Placing Rollers

Used to place cable when it cannot be placed directly from reel and spun in same operation.

Has bronze roller for cable to move over and positive lock.

Furnished with snap but no rope unless specified.

Packed from one to fifty to a carton.

Weight, 1¾ pounds.

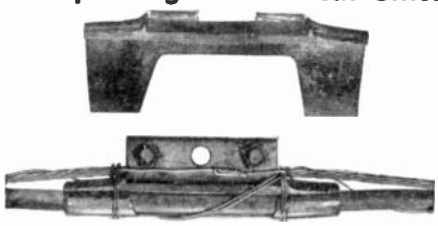
No. CR9.....each .....

No. 6RS14 Cable Spinning Spring Steel Cable Placing Rings

Used to place new cable. Made of heavy spring steel and attached to ¼-inch rope at 5-foot intervals. In use, rings are slipped onto strand at pole, end of cable is slipped through all of rings and attached to pulling line, one end of rope attached to rings is attached to pole, other end to pulling line. As cable is pulled in, rings distribute themselves throughout span at 5-foot intervals. Furnished in sets of 20, attached to a rope 110 feet long. For span lengths greater than 110 feet, two or more sets may be fastened together. Packed 4 sets to a carton. Weight, 25 pound per carton.

No. 6RS14.....per set .....

Cable Spinning Molded Lead Shields



Designed for maximum protection of cable at the pole. Also serves as a dampner to high frequency vibrations.

Allows no slacking-off of spinning wire; no chance for injury to the cable by patented supports or hangers; and no possible chance for cable to bow at the pole.

Available in three sizes: No. 1 shield accommodates a 1-inch diameter cable; No. 2 shield accommodates a 1½-inch diameter cable; No. 3 shield accommodates 2.61-inch diameter cable.

Mechanical Data on Lead Shield Size

No. 13 Gage—Type TJ

Pairs	Thick. Sheath Inches	Diam. In.	Wt. Lb. per Foot	Shield No.
11	.125	1.18	2.45	2
16	.125	1.34	2.93	2
26	.125	1.65	3.90	2
51	.125	2.18	5.84	3
76	.125	2.62	7.61	3

No. 16 Gage—Type TH

Pairs	Thick. Sheath Inches	Diam. In.	Wt. Lb. per Foot	Shield No.
11	.125	.93	1.77	2
16	.125	1.06	2.10	2
26	.125	1.25	2.65	2
51	.125	1.59	3.78	2
101	.125	2.15	5.80	3
152	.125	2.53	7.48	3

No. 19 Gage—Type CNB

Pairs	Thick. Sheath Inches	Diam. In.	Wt. Lb. per Foot	Shield No.
6	.070	.44	.45	1
11	.070	.53	.60	1
16	.070	.61	.72	1
26	.070	.72	.93	1
51	.075	.95	1.46	2
76	.080	1.14	1.98	2
101	.085	1.30	2.48	2
152	.090	1.56	3.37	2
202	.095	1.78	4.25	3
303	.105	2.15	5.98	3
404	.115	2.48	7.77	3
455	.115	2.61	8.46	3

No. 19 Gage—Type DNB

Pairs	Thick. Sheath Inches	Diam. In.	Wt. Lb. per Foot	Shield No.
6	.070	.48	.51	1
11	.070	.61	.69	1
16	.070	.70	.84	1
26	.075	.84	1.13	1
51	.080	1.13	1.78	2
76	.085	1.33	2.35	2
101	.090	1.52	2.94	2
152	.105	1.84	4.23	3
202	.105	2.09	5.11	3
303	.115	2.51	7.11	3

No. 22 Gage—Type BSA

Pairs	Thick. Sheath Inches	Diam. In.	Wt. Lb. per foot	Shield No.
11	.070	.44	.45	1
16	.070	.48	.52	1
26	.070	.58	.67	1
51	.070	.73	.95	1
76	.075	.87	1.27	1
101	.080	.97	1.58	2
152	.080	1.16	2.03	2
202	.085	1.33	2.55	2
303	.095	1.60	3.50	2
404	.095	1.78	4.28	2
455	.105	1.90	4.93	3
606	.105	2.15	6.02	3
909	.115	2.61	8.50	3

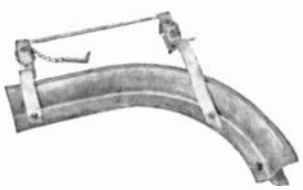
No. 24 Gage—Type ASM

Pairs	Thick. Sheath Inches	Diam. In.	Wt. Lb. per foot	Shield No.
11	.070	.39	.38	1
16	.070	.44	.45	1
26	.070	.52	.56	1
51	.070	.64	.77	1
76	.075	.76	1.02	1
101	.075	.85	1.20	1
152	.080	1.00	1.59	2
202	.080	1.14	1.91	2
303	.085	1.36	2.56	2
404	.090	1.56	3.22	2
455	.095	1.66	3.69	3
606	.105	1.90	4.69	3
909	.105	2.21	6.06	3
1212	.115	2.61	7.97	3

No. 26 Gage—Type ST

Pairs	Thick. Sheath Inches	Diam. In.	Wt. Lb. per foot	Shield No.
1818	.115	2.61	7.88	3

No. CS8 Cable Spinning Cable Placing Shoes



Used ahead of the spinner to raise the cable from the reel to the strand, when placing and spinning cable in the same operation directly from a cable reel pulled along the lead.

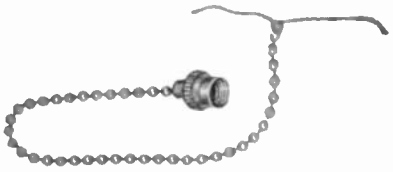
Made of cast aluminum with steel arms and rollers. Rollers are equipped with safety pins to eliminate any possibility of the shoe coming off the strand.

Packed 1 to a carton.

Weight, 10 pounds.

No. CS8 .....each .....

No. DPV15 Cable Spinning Drop-Proof Valve Caps



Used on cables maintained under gas pressure.

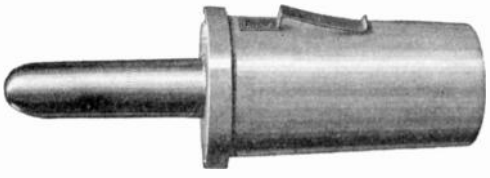
Attached to the valve stem by means of a swivel chain and a soft wire, which allows the cap to be placed or removed without the possibility of misplacing or dropping.

From one to 100 to a carton.

Weight, 3 ounces each.

No. DPV15.....each .....

Nos. SC17 and B17 Cable Spinning Soap or Paint Cans



A lightweight, cast aluminum can with a tight fitting screw top.

Cover of top holds paint brush for applying drop wire paint or pressure testing soap.

Side of container is furnished with a spring belt clip.

Will keep pressure testing soap or paint in excellent condition.

Packed one to a carton.

Weight, 1½ pounds.

SC & B17—Soap Container & Brush.....each .....

No. PPH16 Cable Spinning Long Plug Polishers

Designed to fit on the shaft of a motor with either a ⅜ or ½-inch shaft.

Uses treated felt washers to polish the plug.

Packed one to a carton.

Weight, one pound each.

No. PPH16.....each .....

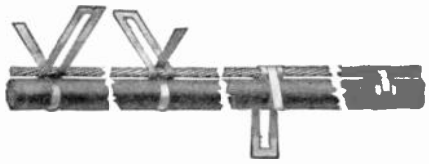
Cope Aerial Cable Feeders and Straighteners

For pulling in aerial cable.

The wide mouth aluminum bells and flexible steel tubing prevent danger to cable or sheath. Holding clamps which securely grip messenger wire can also be used for dead-ending and splicing work. Interior surfaces are smoothly finished to accommodate up to 3-inch cables.

Complete with 6-Foot Tube, 2 Pairs Malleable Iron Clamps	each	$38.25
Extra Lengths of Tubing	per foot	1.50
Holding and Splicing Clamps	per pair	9.00

Reliable Cable Hangers



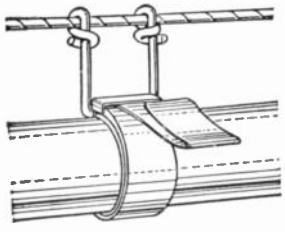
Cable hangers have proved that wear on cable sheath can be eliminated. Entire sheath is grounded solidly to messenger and grade clamp is not needed as cable does not creep on steepest grade.

Hanger is rust-proof and unusually neat in appearance. Maintenance cost of aerial cable is materially reduced and enclosure of entire cable and messenger with cable molding in trees is facilitated.

Zinc hangers are used for supporting lead-covered cable sheath to steel strand. Copper hangers are used for supporting insulated wires or cable to Copperweld strand.

Lgth. In.	Zinc No.	Zinc Per 1000	Copper No.	Copper Per 1000	Wire Size, Inches Strand	Cable Max.	Cable Min.
7⅞	1	$18.00	1C	$22.00	5/16	¾	½
11	2	30.00	2C	35.00	⅜	1⅛	½
14	3	40.00	3C	45.00	⅜	1⅝	½
16	4	50.00	4C	53.00	⅜	1⅞	⅞
18	5	60.00	5C	71.00	⅜	2¼	1½
19½	6	70.00	6C	80.00	⅜	2 1/16	2
21	7	80.00	7C	80.00	⅜	2⅝	2⅜
22½	8	90.00	8C	90.00	⅜	2⅞	2⅞

Diamond Aerial Cable Supports



The purpose of aerial cable supports is to supply flexible supports at each side of the pole to prevent ring cut. The strap is wrapped around the cable three times over itself, passing through the hinge member. Adjustable to any height. Provides a flat bearing which will not injure the cable sheath.

The supports are placed two on each side of each pole. They are placed 20 inches apart.

The aerial cable support is composed of a zinc strip, a hinge joint member which holds the free end of the zinc strip in position on a soft galvanized U-shaped wire, 5 inches long.

No.	Per 1000	Length Strap Inches	Maximum Diameter of Cable or Sleeve Inches	Maximum Circumference of Cable or Sleeve Inches	Standard Carton	Weight Pounds per 1000
891	$75.00	10	¾	2 5/16	500	84
892	91.00	16	1 3/16	3⅝	500	110
893	107.00	22	2	6 5/16	300	130
894	130.00	28	2⅝	8 5/16	300	162
895	147.00	34	3⅛	10	300	186
896	189.00	50	†5S	15 13/16	200	256
897	225.00	64	†6½S	20½	200	315
*898	264.00	64	†6½S	20½	200	350

*No. 8 is exactly the same as No. 7 except No. 8 has 10-inch long U-shaped wire on end instead of 5-inch long wire as on regular supports.

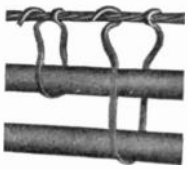
†Maximum diameter of sleeve.

National Galvanized Cable Rings

With Tension Grip

For Hanging Cable

The Ring



2 Cables on Single Strand with Regular and Extra Long Rings

Handy-Five Cluster

The Extra Long Ring

Quickly and easily placed on the messenger, and once in position, will not slip along or jump off, remaining rigid in position because of the tension grip design. Use of these rings enables pulling the cable from either direction and eliminates necessity of reriding the messenger to replace or respace rings. Made from flat, high carbon steel wire with rounded edges. Hot-dip galvanized, with an even deep coating of zinc assuring smoothness and long life.

Gathered in Handy-Five Clusters for convenience in handling. This simple method of gathering, prevents hooking together of rings and does away with all ground litter.

National Regular Cable Rings

Size In.	Cable Diameter Inches	*Strand Size	Std. Pkg.	Approx. Ship. Wt. Lb. per 1000
1½	½ to 1 3/16	....	1000	47
2 Light	15/16 to 1 9/16	....	500	66
2 Heavy	15/16 to 1 9/16	....	500	90
2½	1 5/16 to 1 15/16	....	500	108
3	1 15/16 to 2¼	....	400	125
3½	2¼ to 2⅝	....	300	140
4	2⅝ to 3	....	250	192
4½	3 to 3½	....	200	210

National Copperweld Cable Rings

Size In.	Strand Size	Std. Pkg.	Approx. Ship. Wt. Lb. per 1000
1½	5/16 and 3/8	1000	48
2	5/16 and 3/8	500	96
2½	3/8	500	110
3	7/16	400	125
3½	7/16	300	140

Also furnished in calsun bronze.

National Extra Long Cable Rings

Size In.	*Strand Size	Length Under Strand Inches	Std. Pkg.	Approx. Ship. Wt. Lb. per 1000
1½	....	4¾	500	114
2	....	5¼	300	170
2½	....	6¾	250	216
3	....	7½	200	255
3½	....	8	200	270

Can also be furnished in copperweld and calsun bronze.

*Made in all strand sizes. Specify size desired.

National Cable Ring Saddles

Furnished in aluminum, galvanized steel, and bronze.

Made in sizes 1½, 2, 2½, 3, and 3½ inches.

National Zinc Cable Clips

The broad flat zinc strap of the assembly provides a wide surface for the cable to rest on and the hooks are so constructed that they move on the strand allowing the necessary play as the cable vibrates, expands, and contracts.

Specify length of strap when ordering.

					Over
Strap Length.....in.	4–5	6–7–8	9–10–11	12–14	14 to 20
Approx. Ship. Wt. per 100.....lbs.	7	8½	10	11	14

National Aerial Cable Supports

Broad, flat smooth zinc strap of support, wrapped 3 times around cable in installation, assures maximum strength and permanence. Support wires applied so that they do not bind but slide easily, to assure flexibility as cable vibrates, expands, contracts or sways.

Maximum Size Cable, Inches — Diameter	Circum.	Length Strap Inches	Lgth. Wire Support Inches	Stock No.	Approx. Ship. Wt. Lb. per 100
¾	2 5/16	10	5	1	8
1 3/8	4 5/16	16	5	2	10
2	6 5/16	22	5	3	12½
2⅝	8 5/16	28	5	4	15½
3 3/16	10	34	5	5	17
5 Sleeve	15¾	50	5	6	24½
6½ Sleeve	20 7/16	64	5	7	28
6½ Sleeve	20 7/16	64	10	8	30½

National Marline Cable Hangers

Specify length of loop.

Maximum Diameter Cable Inches	Length Loop Inches	Approx. Ship. Wt. Lb. per 1000
⅞	9	35
1	10	36
1⅛	11	37
1¼	12	38
1½	13	39
1⅝	14	40
1¾	15	42
2	16	45
2¼	18	49
2½	20	62

National Marline Twine

Furnished in 1-pound balls.

No.	415	416
Ply	2	3

Reliable Steel Pulling Cable Grips

Solid Wire

Double Weave

No.	Each	Cable Diam., In. Min.	Cable Diam., In. Max.	Length Inches	Tensile Strength Pounds	Ship. Wt. Lb.
801	$3.25	1/2	5/8	18	5,300	1
802	3.50	3/4	7/8	22	6,300	1
803	3.75	1	1 3/8	22	6,300	1 1/2
804	4.00	1 1/2	1 7/8	22	8,500	1 1/2
805	4.25	2	2 3/8	22	15,000	2
806	4.50	2 1/2	2 7/8	30	18,300	4
807	4.75	3	3 3/8	30	23,000	3
808	5.00	3 1/2	3 7/8	30	23,000	4
811	3.50	1/2	5/8	24	5,300	1
812	4.50	3/4	7/8	30	6,300	1 1/2
813	4.75	1	1 3/8	30	6,300	1 1/2
814	5.00	1 1/2	1 7/8	30	8,500	1 1/2
815	5.25	2	2 3/8	30	15,000	2
816	5.50	2 1/2	2 7/8	45	18,300	3
817	5.75	3	3 3/8	45	23,000	5
818	6.00	3 1/2	3 7/8	45	23,000	5 1/2

Plain Flexible

		18-Inch—Single Weave				
821	$2.00	1/2	5/8	18	2,800	1
		24-Inch—Single Weave				
822	$2.25	3/4	7/8	24	3,350	1
823	2.50	1	1 3/8	24	6,300	2
824	2.75	1 1/2	1 7/8	24	8,400	1 1/2
825	3.00	2	2 3/8	24	12,300	2 1/2
826	3.25	2 1/2	2 7/8	24	15,400	2 1/2
827	3.50	3	3 3/8	24	15,400	3
828	3.75	3 1/2	3 7/8	24	15,400	3
		36-Inch—Double Weave				
933	$4.00	1	1 3/8	36	10,500	2
934	4.25	1 1/2	1 7/8	36	12,500	3
935	4.50	2	2 3/8	36	18,500	4
936	4.75	2 1/2	2 7/8	36	24,500	4 1/2
937	5.00	3	3 3/8	36	27,700	7
938	5.25	3 1/2	3 7/8	36	27,700	6

Reinforced Flexible

		24-Inch—Double Weave				
1023	$4.60	1	1 3/8	24	10,500	2 1/2
1024	5.10	1 1/2	1 7/8	24	12,600	3
1025	5.60	2	2 3/8	24	18,500	3 1/2
1026	6.10	2 1/2	2 7/8	24	24,500	5
1027	6.60	3	3 3/8	24	33,500	5 1/2
1028	7.10	3 1/2	3 7/8	24	33,500	6
		36-Inch—Double Weave				
1033	$6.10	1	1 3/8	36	10,500	2 1/2
1034	6.60	1 1/2	1 7/8	36	12,600	3
1035	7.10	2	2 3/8	36	18,500	4 1/2
1036	7.60	2 1/2	2 7/8	36	24,500	5 1/2
1037	8.10	3	3 3/8	36	33,500	6
1038	8.60	3 1/2	3 7/8	36	33,500	7
		48-Inch—Double Weave				
1043	$7.60	1	1 3/8	48	10,500	3 1/2
1044	8.10	1 1/2	1 7/8	48	12,500	4
1045	8.60	2	2 3/8	48	18,500	5 1/2
1046	9.10	2 1/2	2 7/8	48	24,500	6 1/2
1047	9.60	3	3 3/8	48	33,500	7
1048	10.10	3 1/2	3 7/8	48	33,500	8

Multiple Wire

		Single Weave				
505	$1.75	11/32	1/2	8 1/2	500	1
407	1.75	1/2	5/8	8 3/4	900	1
509	1.75	5/8	3/4	8 7/8	1,400	1
712	1.75	11/16	13/16	9 1/4	1,600	1
1220	1.75	13/16	1	9 3/8	2,100	1
2030	1.75	1	1 1/8	9 3/4	2,100	1

Reliable Steel Cable Grips

Double Eye Luffing

		18-Inch—Single Weave				
No.	Each	Min.	Max.	Length Inches	Tensile Strength Pounds	Ship. Wt., Lb.
842	$2.75	3/4	7/8	18	3,000	1
843	3.00	1	1 3/8	18	6,300	2
		24-Inch—Double Weave				
954	$5.25	1 1/2	1 7/8	24	12,600	2 1/2
955	5.75	2	2 3/8	24	16,800	3
956	6.25	2 1/2	2 7/8	24	24,600	5
957	6.75	3	3 3/8	24	24,600	5
958	7.25	3 1/2	3 7/8	24	24,600	5

Single Eye Luffing

		18-Inch—Single Weave				
1842	$2.75	3/4	7/8	18	3,300	1
1843	3.00	1	1 3/8	18	6,300	2
		24-Inch—Double Weave				
1954	$5.25	1 1/2	1 7/8	24	12,600	3
1955	5.75	2	2 3/8	24	16,800	3
1956	6.25	2 1/2	2 7/8	24	24,600	3 1/2
1957	6.75	3	3 3/8	24	24,600	4
1958	7.25	3 1/2	3 7/8	24	24,600	4

Double Eye Split

		18-Inch—Single Weave				
*862	$3.25	3/4	7/8	18	3,300	1
863	3.50	1	1 3/8	18	6,300	1 1/2
		24-Inch—Double Weave				
974	$5.60	1 1/2	1 7/8	24	12,600	3
975	6.20	2	2 3/8	24	16,800	4
976	6.80	2 1/2	2 7/8	24	24,600	4 1/2
977	7.40	3	3 3/8	24	24,600	5
978	8.00	3 1/2	3 7/8	24	24,600	5 1/2

*No hooks, rawhide lacing furnished.

Single Eye Split

		18-Inch—Single Weave				
1862	$3.25	3/4	7/8	18	3,300	1
1863	3.50	1	1 3/8	18	6,300	1 1/2
		24-Inch—Double Weave				
1974	$5.60	1 1/2	1 7/8	24	12,600	3
1975	6.20	2	2 3/8	24	16,800	4
1976	6.80	2 1/2	2 7/8	24	24,600	6
1977	7.40	3	3 3/8	24	24,600	5 1/2
1978	8.00	3 1/2	3 7/8	24	24,600	5 1/2

Reliable Bronze Cable Grips

Used for permanent fastenings and supports for cables. Bronze cable grips can be furnished in all standard designs and sizes specified for steel.

To obtain prices, add 20 per cent to steel prices for sizes 1/2-inch diameter to 1 7/8-inch diameter. For sizes 2 inches in diameter and larger, add 30 per cent. Example: No. 1023, steel price, $4.60; bronze price, $5.52.

Peirce Underground Cable Racks

Hot Galvanized

Rack section is made in three lengths which can be combined into almost any desired length. Section is made from 1½x9/16x3/16-inch open hearth steel channel, amply strong to support the heaviest cable. Should be fastened to manhole wall with ½x4-inch Peirce Expansion Bolts.

Hook is cut from open hearth steel T section and has a smooth, well rounded top surface 1½ inches wide which will not injure the sheaths of cable. Steel size, 1½x1 1/16x3/16 inches. Easily attached and with the weight of the cable on it, holds securely to the channel back.

Racks

No.	*2124	*†2125	*†2126
Per 100	$55.12	98.25	115.81
No. of Holes	8	14	18
Hook Hole Spacing, inches	1½	1½	1½
Overall Length, inches	15	24	30
Bolt Hole Spacing, inches	13½	22½	28½
Ship. Wt. per 100, lb.	155	265	375

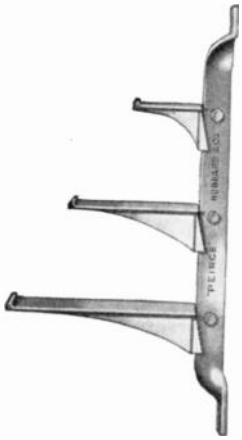
Hooks

No.	*†2131	*†2132	*†2133
Per 100	$52.51	75.39	92.97
Extension from Face of Rack, inches	4	7½	10
Ship. Wt. per 100, pounds	61	110	135

†A.T.& T. Co. Std. *Western Union Std.

Hubbard Underground Cable Racks

Hot Galvanized



Furnished to accommodate from one to four hooks. Combinations may be used for a greater number of hooks if desired.

Hook furnished in three lengths made from certified malleable iron, hot galvanized. Hook is placed in position by raising the outer end slightly above horizontal so that the supporting lug will engage the opening in the rack. It is then moved to alignment and allowed to drop into place where it is held against side movement by web braces which engage the back on both sides.

Locktype Racks

No.	2281	2282	2283	2284
Per 100	$153.04	208.59	251.98	294.47
No. of Holes	1	2	3	4
Hook Hole Spacing, inches	....	7	7	7
Length Overall, inches	14¾	21¾	28¾	35¾
Bolt Hole Spacing, inches	13	20	27	34
Ship. Wt. per 100, pounds	280	385	535	645

Locktype Hooks

No.	2254	2258	2262
Per 100	$139.25	177.33	226.68
Extension, inches	4¼	8¼	12¼
Width, inches	2	2	2
Ship. Wt. per 100, pounds	183	260	341

Cable Rack Insulators

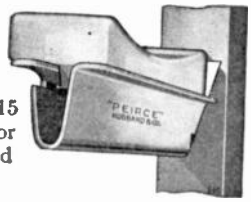
No.	For Peirce Racks 2120	For *Hubbard Racks 2122	2123
Per 100	$31.45	31.44	75.63
Radius for Cable, in.	1½	1½	2¼
Length Along Hook, in.	3	3	3 15/16
Width, in.	2¾	3	3
Ship. Wt. per 100, lb.	105	129	160

*For Locktype hooks.

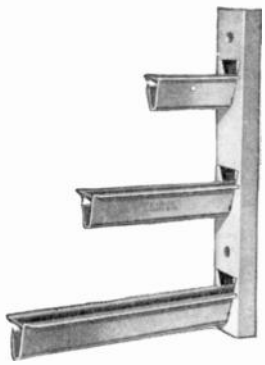
Peirce V-Type Cable Racks

Hot Galvanized

Insulator No. 2215



No. 2215 Insulator Installed



Hooks are held rigidly in a horizontal position.

No. 2291 hook accommodates one insulator, No. 2292 takes two insulators, No. 2293 takes three insulators, and No. 2294 takes four insulators.

The same number of either size insulator listed will fit on any hook. When more than one insulator is used, they are generally spaced an inch or more apart to give mechanical and electrical clearance.

A stop is furnished on each hook to prevent the insulators from sliding off the end.

No.	Per 100	No. of Slots	Dimensions, Inches: Slot Spacing	Overall Length	Flat Steel or Channel Size	Approx. Ship. Wt. Lb. per 100
2471	$79.67	2	..	8	4x1 19/32x3/16	360
2472	169.73	2	8	16	4x1 19/32x3/16	685
2473	225.27	3	8	24	4x1 19/32x3/16	1010
2474	271.71	4	8	32	4x1 19/32x3/16	1335
2475	316.47	5	8	40	4x1 19/32x3/16	1660
2476	385.04	6	8	48	4x1 19/32x3/16	1985

Hooks

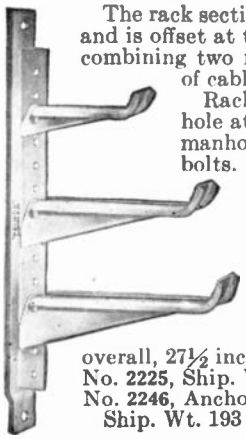
No.	Per 100	Dimensions, Inches: Extension From Face of Rack	Overall Length	Steel Size Gage	Approx. Ship. Wt. Lb. per 100
2291	$64.76	5¼	6⅝	12	145
2292	78.66	10¼	12	12	265
2293	100.03	16⅝	18	12	385
2294	128.76	22⅝	24	12	505

Insulators—White Glaze

No.	Per 100	Dimensions, Inches: Radius for Cable	Overall Length	Overall Width	Approx. Ship. Wt. Lb. per 100
2114	$29.73	1¾	4½	2⅞	170
2115	47.44	2⅝	4½	2⅞	160

No. 2225 Peirce Heavy Cable Racks

Hot Galvanized



The rack section is 2¼x2¼x¼-inch steel T section and is offset at the lower end for overlapping when combining two racks together. Any desired length of cable rack can be made in this manner.

Rack is provided with 11/16-inch mounting hole at top and bottom and is fastened to manhole walls with ½x4-inch expansion bolts. Anchor bolt No. 2246 is also used for this purpose. It consists of hook head which is cemented in masonry, opposite end being threaded and equipped with nut for attachment.

Number of holes, 14. Hook hole spacing, 1½ inches; bolt hole spacing, 25½ inches. Length overall, 27½ inches.

No. 2225, Ship. Wt. 800 Pounds....per 100 $223.63
No. 2246, Anchor Bolt, ⅝x6 Inches, Ship. Wt. 193 Pounds.....per 100 26.93

Peirce Underground Heavy Cable Rack Hooks

Hot Galvanized

Made of one-piece ⅜-inch steel pressed to channel shape. Edges are rounded, and there is a smooth surface for cable to rest upon. Width, 2½ inches.

Used with or without an insulator.

No.	2231	2232	2233
Per 100	$122.17	156.19	222.24
Extension...inches	6	10½	15
Shipping Weight per 100...pounds	180	308	489

Peirce White Glaze Insulators

Insulator fits snugly on cable hooks. Weight of cable holds it in place. Width, 3¾ inches.

No.	2117	2118	2121
Per 100	$70.87	78.66	86.28
Radius for Cable...inches	¾	1½	2⅝
Length Along Hook...inches	2¼	3	3¾
Shipping Weight per 100...pounds	90	115	125

Hubbard Cable Duct Shields

Zinc and Hot Galvanized Steel

No. 9142

This shield is used to protect cable sneaths at the entrance of ducts.

.050-Inch Sheet Zinc

No.	Per 100	Diameter Inches	Length Inches	Shipping Weight Pound per 100
9141	$37.18	3	6	63
9122	47.16	3	8	68
9123	59.44	3	10	84
9125	38.81	3¼	6	53
9126	50.59	3¼	8	71
9127	63.37	3¼	10	78
9129	41.23	3½	6	55
9130	53.88	3½	8	75
9131	67.29	3½	10	94
9133	45.25	4	6	62
9134	59.80	4	8	82
9144	74.11	4	10	103
9137	50.95	4½	6	68
9138	67.02	4½	8	91
9139	83.33	4½	10	115
No. 20-Gage Sheet Steel				
*9140	$47.67	3	6	67
No. 12-Gage Sheet Steel				
9142	$74.87	2⅝	9	187

*A. T. & T. Co. Std.

Hubbard Manhole Ladders

Hot Galvanized

Made to the specifications of the largest telephone and central station companies.

Rung spacing, 12 inches. Width inside, 12 inches. Rungs are ⅝ inch round.

No.	Per 100	Overall Feet	No. of Rungs	Ship. Wt. Lb. Per 100
†9110	$953.54	6	5	2500
†9111	1063.71	6½	6	2700
†9112	1309.63	8	7	3300
†9113	1532.51	10	9	4200
†9114	1825.63	11	10	4600
†9115	1963.27	12	11	5000
†9116	2166.53	13	12	5400
†9117	2289.88	14	13	5900

†A.T. & T. Co. Std.

No. 9145 Hubbard Plain Dowel Pins

For Clay Conduit

Used in the ends of multiple duct clay conduit for preserving alignment of adjacent sections. Made of 5/16-inch diameter steel with a shoulder in the center. Overall length, 3¾ inches. Collar diameter, ⅝ inch.

No. 9145, Ship. Wt. 9 Pounds.....per 100 $3.39

Hubbard Pulling-In Irons

For Manholes

Hot Galvanized

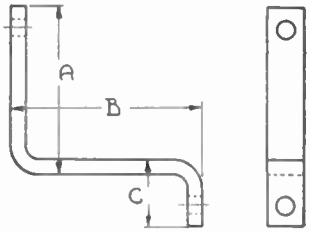
This iron is set into the concrete or brick walls of street vaults opposite duct entrances to provide a convenient and strong attachment for block and tackle when installing or removing cables.

No.	†9119	*†9120
Per 100	$168.66	175.12
Diameter Steel...in.	⅞	⅞
Extension from Wall...in.	9	12
Ship. Wt. per 100...lb.	550	660

†A.T. & T. Co. Std. *Western Union Std.

Hubbard Cable Rack Extensions

Hot Galvanized

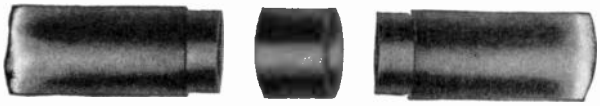


Used for mounting racks away from the wall because of obstructions, limited space or to escape water seepage. If used away from wall, racks can be mounted on approximately 4½ inches less wall space than is needed for the rack. If extension is turned around and mounted, it will occupy 10 to 13 inches more wall space than the length of rack.

Mounting is generally accomplished by means of two No. 13, ½x4-inch Peirce Expansion Bolts. Furnished 1 and 1¼ inches wide in ½-inch stock. Mounting holes are for ½-inch bolts. Order two for each rack mounting.

No.	2101	2102
Per 100	$39.96	75.50
Steel Size...inches	½x1	½x1¼
Dimension A...inches	4¼	5¾
Dimension B...inches	3⅝	6 1/16
Dimension C...inches	2¼	2⅜
Diameter Holes...inches	9/16	9/16
Ship. Weight per 100...pounds	176	270

Orangeburg Fibre Conduit



Taper Sleeve Joint

Orangeburg Conduit has been used as a raceway for underground communications and power circuits since 1893.

Manufactured by the Fibre Conduit Company, Orangeburg, New York, where continuing research and development insures a high standard of both workmanship and product improvement.

Permanence and Low Cost

Orangeburg Conduit has proven its ability to give maximum, permanent, low maintenance service under conditions that expose ducts to attack from ground waters and chemical wastes—both acid and alkaline.

Installations running back over forty years are still providing clear, usable raceways.

Low in first cost, light in weight yet amply strong to resist breakage, it can be transported to the job in large truckloads.

The material is easy to cut or work. Angle couplings, bends, and other fittings make installation simple and economical. Long lengths and readily assembled Taper Sleeve Joints make for labor saving and low installed cost.

Protection From Cable Sheath Abrasion

Scoring or abrasion of the cable sheath weakens its resistence to corrosive elements and shortens its life. Because of the smooth bore and relatively soft nature of their materials, Orangeburg ducts do not score or abrade the lead-sheath cable.

Protection From Pulling Tension

Pulling tension on cable tends to set up strains in the sheath. The coefficient of friction in Orangeburg Conduit is lower than in other types of duct material. Published data by one large utility reveal the following coefficient of friction for a large actual installation recently made in which oil-filled cable was used:

Size of Cable		Size of Cut	Coefficient
300,000C.M.	2¼-In. O.D.	3½ Inches	.25–.30
650,000C.M.	2½-In. O.D.	4 Inches	.25–.30

General Properties

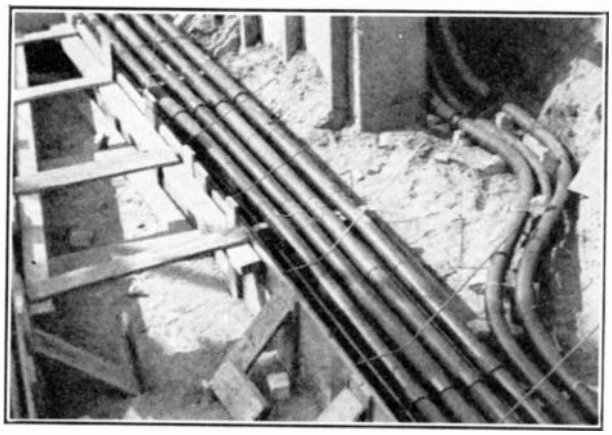
Composed of 25 per cent fibre and 75 per cent coal tar pitch with wall sections homogeneous and impregnation uniform throughout.

Specifications

Federal Specification: WC-581,
A.T.& T. (Bell Laboratories): AT-7047,
U.S. Navy: 9YE,
I.M.S.A.: 104–1942,
Civil Aeronautics Authority: CAA-606,
Association of American Railroads: XVIII-A-21 1929,
And many Public Utilities specifications.

Orangeburg *Standard* Conduit (Type I)

For Installation with Concrete Encasement



For main distribution, high tension, and downtown locations.

Orangeburg Standard (Encased in Concrete), is the most economical where duct banks of four or more ducts are involved.

Interchangeable taperjoint couplings are furnished with each length of conduit without extra charge.

A mating 2-degree factory machined taper is provided on each length of conduit and assures a watertight joint.

Orangeburg NOCRETE Conduit (Type II)

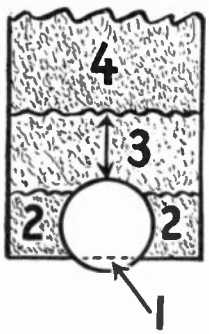
For Installation Without Concrete Encasement

Conduit for underground without concrete encasement must have three prime characteristics: (1) mechanical strength; (2) ability to endure permanently; (3) offer lasting cable protection.

For house connections, laterals and extensions; airport, street and parkway lighting, fire alarm and signal systems; industrial and institutional grounds.

How to Lay Orangeburg NOCRETE Conduit

Trench and backfill. The trench bottom should be graded true and free from stones or soft spots. Backfill should be free of stones, and should be firmly tamped around the side of the conduit to develop maximum supporting strength. Tamping on top of the conduit is not recommended.



1. Best results are obtained if a cradle is made for the conduit in the undisturbed subgrade. In rocky soil, where this is not possible, a bedding of selected backfill should be put down and tamped before laying conduit.

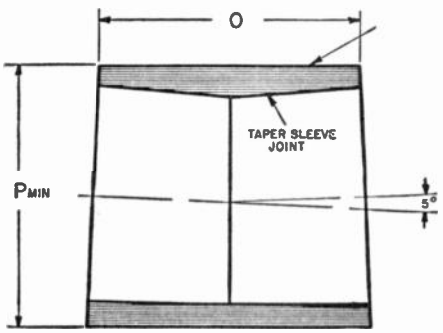
2. Sidefill up to near the top of the conduit should be firmly tamped.

3. Selected backfill (not tamped) at least 6 inches over the top of the conduit is recommended.

4. Final backfill may now be placed. Tamping may now be employed to finish grade.

Fittings for *Standard* and NOCRETE Conduit

5° Angle Couplings



Available to permit the laying of offsets, long radius bends, etc., to get around obstructions and other services which may be encountered.

The Taper Joint is provided, and a n ark on the coupling shows the direction in which the angle will point.

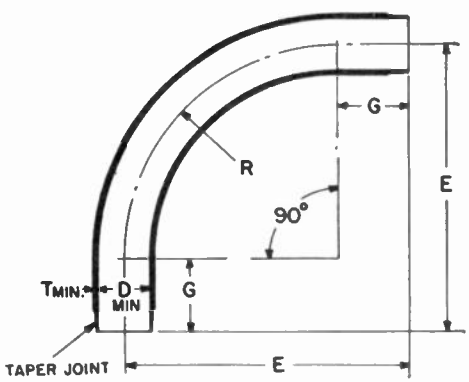
5° Angle Coupling *Standard* (Type 1)
Dimensions, Inches

Size	1	2	3	4	4.5	5	6
P MIN.	1.75	2.97	3.99	5.12	5.73	6.66	7.72
O MIN.	2.00	2.98	3.5	4.00	4.00	4.00	4.00

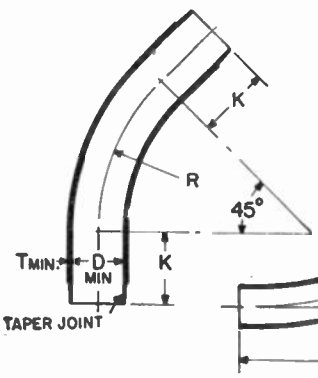
5° Angle Coupling NOCRETE (Type II)
Dimensions, Inches

Size	2	3	4
P MIN.	3.42	4.49	5.60
O MIN.	3.48	3.98	4.48

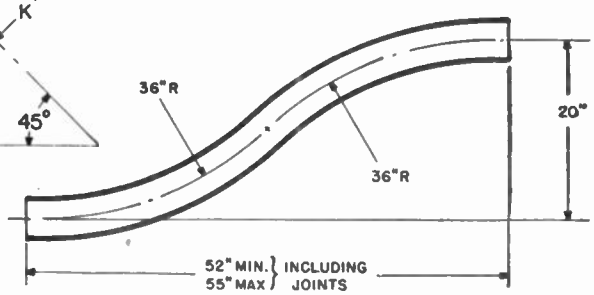
Bends and Elbows



90° Elbow



45° Elbow



20-Inch Offset Bend

Orangeburg Fibre Conduit bends and elbows are made to the required radius and degree. Furnished with standard interchangeable Taper Sleeve Joint (coupling included). Standard bends and elbows are listed with dimensions. Split bends and bends of special radius and degree may be made to order.

***Standard* Conduit (Type I) or NOCRETE Conduit (Type II)**
Nominal Inside Diameter, Inches

Type I Bend Sizes	1	2	3	4	4.5	5	6
Type II Bend Sizes	..	2	3	4	...	..	..

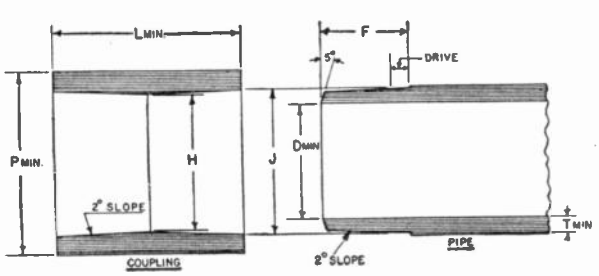
90° Elbow *Standard* Conduit (Type I)
Dimensions, Inches

Size, D MIN	1.0				2.0				3.0			4.0		4.5		5.0		6.0
T MIN.	.20				.23				.28			.32		.32		.41		.46
R	5.75	18	24	36	9.5	18	24	36	13	24	36	16	36	18	36	24	36	36
E	13.75	26	32	38	17.5	26	32	38	21	32	38	24	38	26	36	32	36	36
G	8	8	8	2	8	8	8	2	8	8	2	8	2	8	0	8	0	0
K	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

45° Elbow NOCRETE Conduit (Type II)
Dimensions, Inches

Size, D MIN	2.0				3.0			4.0	
T MIN.	.38				.43			.48	
R	9.5	18	24	36	13	24	36	16	36
E	17.5	26	32	38	21	32	38	24	38
G	8	8	8	2	8	8	2	8	2
K	8	8	8	8	8	8	8	8	8

Taper Joint Couplings



***Standard* Conduit (Type I)**
Dimensions, Inches

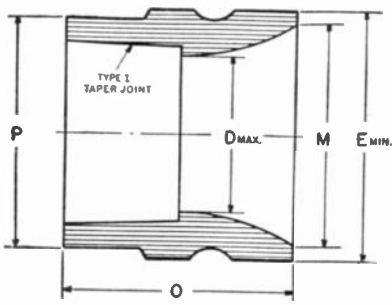
Size	1	2	3	4	4.5	5	6
D MIN.	.95	2.00	3.00	4.00	4.50	5.00	6.00
F	.94	1.43	1.69	1.94	1.94	1.94	1.94
H	1.272	2.365	3.326	4.353	4.932	5.528	6.562
J	1.342	2.470	3.448	4.493	5.072	5.668	6.702
L MIN.	2.00	3.00	3.50	4.00	4.00	4.00	4.00
P MIN.	1.75	2.97	3.99	5.12	5.73	6.66	7.72
T MIN.	.20	.23	.23	.24	.26	.36	.37
Drive	.28	.28	.28	.28	.28	.28	.28

NOCRETE Conduit (Type II)
Dimensions, Inches

Size	2	3	4
D MIN.	2.00	3.00	4.00
F	1.68	1.93	2.18
H	2.678	3.705	4.764
J	2.800	3.845	4.922
L MIN.	3.50	4.00	4.50
P MIN.	3.42	4.49	5.60
T MIN.	.38	.43	.48
Drive	.25	.25	.25

Fittings for Orangeburg *Standard* and NOCRETE Conduit

Bell Ends



For use at conduit terminals in manholes at sub stations, etc.

Standard Conduit (Type I)

Dimensions, Inches

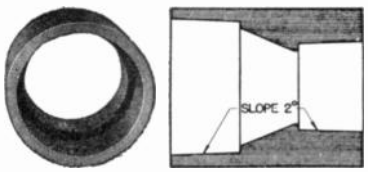
Size	1	2	3	4	4.5	5
P	1.75	3.1	4.3	5.5	6.4	6.64
D MAX.	1.08	2.15	3.15	4.15	4.65	5.15
M	1.86	3.0	4.2	5.4	6.25	6.5
E MIN.	2.07	3.37	4.56	5.73	6.66	6.83
O	2.0	3.0	3.5	4.0	4.5	4.5

NOCRETE Conduit (Type II)

Dimensions, Inches

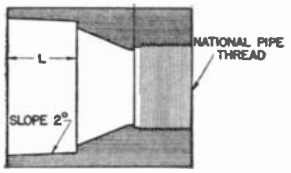
Size	2	3	4
P MIN.	3.42	4.49	5.60
D MAX.	2.15	3.15	4.15
M	3.0	4.12	5.2
O	3.5	4.0	4.5

Reducers



Reducers from one size conduit to another are available in all combinations from 1 to 6 inches inclusive. The standard reducer is Taper Sleeve Joint at both ends. Sizes and types of conduit, joints, etc. to be connected must be specified in detail.

Adapters



Adapters from metal pipe to fibre conduit are available in all combinations from 1 to 6 inches inclusive.

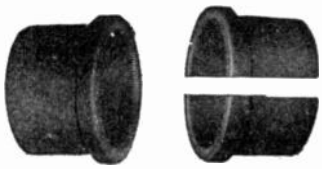
The standard adapter is Taper Sleeve Joint at the fibre end threaded for metal pipe size specified, at the other end. Can be supplied straight bore for threadless metal pipe. Sizes and types of connections desired must be specified.

Fibre Plugs

For temporarily closing ends of ducts during concreting, etc.

Available for 2 to 6-inch size conduits inclusive.

Fibre Bushings



Available for all conduit sizes 2 to 5 inches inclusive.

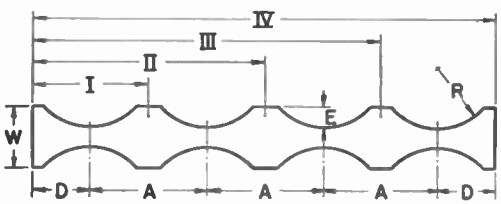
Fibre Caps

For sealing spare ducts or exposed conduit ends, etc. Taper Sleeve Joint is standard; socket joint or sleeve fit if specified.

Made for conduit sizes 1 to 6 inches inclusive.

Orangeburg Fibre Conduit Accessories

Spacers (Bridges or Separators)



For built-up fibre conduit installations, grooved spacers are available for one, two, three or four conduit wide assemblies. These spacers are cast for conduit sizes from 2 to 4½ inches inclusive.

As the general practice is to allow a separation of 1 inch between conduits, this is the standard separation provided. However, for special applications, spacers can be supplied for 1½, 2 or 3-inch separation between ducts.

Orangeburg Conduit Spacers are handled as a service item. Although built for minimum weight with adequate strength, transportation cost may make it more economical for the large user at distant points to make his own spacers. Complete information as to mix employed will be furnished upon request.

Dimension, Inches, of Conduit Spacers

Conduit Inches	R	E	1-Inch Separation A	1-Inch Separation D	1-Inch Separation W	1½-Inch Separation A	1½-Inch Separation D	1½-Inch Separation W	2-Inch Separation A	2-Inch Separation D	2-Inch Separation W	3-Inch Separation A	3-Inch Separation D	3-Inch Separation W
2	1.31	.63	3.63	1.75	2.25	4.13	2.00	2.75	4.63	2.25	3.25	5.63	2.75	4.25
3	1.81	.88	4.63	2.25	2.75	5.14	2.50	3.25	5.63	2.75	3.75	6.63	3.25	4.75
4	2.38	1.13	5.75	2.81	3.25	6.25	3.06	3.75	6.75	3.31	4.25	7.75	3.81	5.25
4½	2.69	1.25	6.38	3.13	3.50	6.88	3.38	4.00	7.38	3.63	4.50	8.38	4.13	5.50
5	3.06	1.38	7.13	3.50	3.75	7.63	3.75	4.25	8.13	4.00	4.75	9.13	4.50	5.75

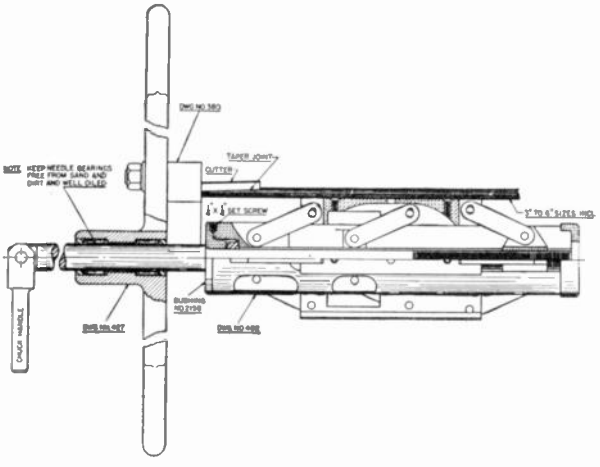
Overall Length, Inches

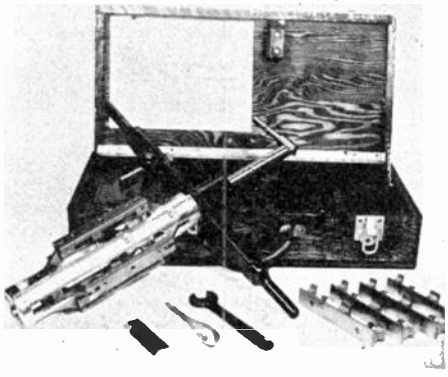
Conduit Inches	1-Inch Separation I	1-Inch Separation II	1-Inch Separation III	1-Inch Separation IV	1½-Inch Separation I	1½-Inch Separation II	1½-Inch Separation III	1½-Inch Separation IV	2-Inch Separation I	2-Inch Separation II	2-Inch Separation III	2-Inch Separation IV	3-Inch Separation I	3-Inch Separation II	3-Inch Separation III	3-Inch Separation IV
2	3.50	7.13	10.75	14.38	4.00	8.13	12.25	16.38	4.50	9.13	13.75	18.38	5.50	11 13	16.75	22.38
3	4.50	9.13	13.75	18.38	5.00	10.13	15.25	20.38	5.50	11 13	16.75	22.38	6.50	13 13	19.75	26 38
4	5.63	11.38	17.13	22.88	6.13	12.38	18.63	24.88	6.63	13.38	20.13	26.88	7.63	15 38	23 13	30.88
4½	6.25	12.63	19.00	25.38	6.75	13.63	20.50	27.38	7.25	14.63	22.00	29.38	8.25	16 63	25.00	33.38
5	7.00	14.13	21.25	28.38	7.50	15.13	22.75	30.38	8.00	16.13	24.25	32.38	9.00	18 13	27.25	36.38

Dimensions I, II, III and IV indicate overall length of spacer for 1, 2, 3 or 4 conduits laterally spaced.

Orangeburg Field Tooling Lathe

For 1 to 6-Inch *Standard* and NOCRETE Conduit





Orangeburg field tooling lathes are made of hardened steel alloy with needle bearings in the cutting handle.

With reasonable care, they maintain accuracy for many years.

No. 0902 is designed for 1-inch conduit only.

No. 0904 is designed for 2-inch conduit only.

No. 0905 is adjustable for 3 to 6-inch conduit only.

Parts List

No.	Description	Quantity
380	Cutter Holder (Taper Joint)	1
381	Short Taper Joint Cutter	1
379	Long Taper Joint Cutter	1
422	Combination Wrench	1
427	Cutting Handle	1
482	Chuck Assembly	1
2270-0905	Carrying Case	1
*420	Cutter Holder (Socket Joint)	1
*428	Socket Joint Cutter, 3 to 6-Inch Standard	
*429	Socket Joint Cutter, 3 to 4-Inch NOCRETE	

*Furnished only when specified.

Shipping Weights and Data

Economical Transportation. Orangeburg Conduit is transported by rail or truck most economically because it combines light weight with ample strength to resist breakage. The largest truck bodies can be loaded to maximum cubic carrying capacity, reducing trips and hourly costs to an almost negligible cost per foot.

Orangeburg price schedules are based on total weight of material involved, including all bends, elbows and items classified as fittings ***Standard*** and **NOCRETE**; excluding items classified as accessories (spacers, etc.)

Shorts. The right is reserved to include 15 per cent of lengths shorter than standard. All shorts included are packed separately in any shipment to facilitate identification and easy count. Shorts are cut to even lengths six or twelve inches less than standard.

Class A Orders: 30,000 pounds (minimum car) or over.

Class B Orders: 10,000 to 29,999 pounds.

Class C Orders: 9,999 pounds or less.

Crating. There is an extra charge for crating Class A and B orders, if crating is desired and specified. Class C orders are usually packaged for less than carload handling.

Weights of bends and other fiber items are included in figuring minimum weights; consequently such items on an order will decrease footage in the conduit weight tables.

The weights listed below are used for pricing computations only (approximate shipping weights).

Orangeburg *Standard* Conduit

Conduit Size ... inches	1	2	3	4	4½	5	6
Weight per 100 Feet ... pounds	50	115	140	200	240	300	425
Min. No. of Feet to Make 30,000 Lb ... ft.	60,000	26,100	21,430	15,000	12,500	10,000	7,059
Min. No. of Feet to Make 10,000 Lb ... ft.	20,000	8,700	7,144	5,000	4,167	3,334	2,353

Orangeburg NOCRETE Conduit

Conduit Size ... inches	2	3	4
Weight per 100 Feet ... pounds	180	270	360
Min. No. of Feet to Make 30,000 Pounds ... feet	16,668	11,112	8,333
Min. No. of Feet to Make 10,000 Pounds ... feet	5,556	3,704	2,778

Natco Standard Single Duct Conduit

Adapted for high tension power lines, single cable terminals or for low tension laterals, as in telephone or signal lines.

In building up duct banks, this conduit provides two heavy insulating walls between adjacent cables, and permits breaking or staggering of all joints throughout the duct bank.

Permits the splaying or separation of individual duct lines in approaches to manholes.

Conduit is scarified lengthwise on the four outer sides, to provide anchorage for bedding mortar.

The inner edges of the duct entrances are properly bevelled and smoothed to eliminate projections and to make safe the pulling of cables.

Certain square single duct shapes are provided with through dowel holes in the corners, permitting the use of steel dowel pins for assembling, centering and aligning such duct lines.

Nominal Bore In.	No. Duct Holes	Std. Lgth. In.	Duct Ft. per Pc.	Actual Size Duct Hole In.	Approx. Outside Dimen. In.	Short Lgths. In.	Min. Carload Duct Ft.
3¼ Rd.	1	18	1½	3⅜	4½x4½	3,4,6,9,12	8700
3½ Rd.	1	18	1½	3⅝	4⅞x4⅞	3,4,6,9,12	6900
4¼ Rd.	1	18	1½	4⅜	5⅝x5⅝	3,4,6,9,12	5700
5¼ Rd.	1	24	2	5⅜	6⅞x6⅞	3,4,6,9,12	4000
3¼ Sq.	1	24	2	3⅜	4¾x4¾	3,4,6,9,12	6100
3½ Sq.	1	18	1½	3⅝	5 x5	3,4,6,9,12	5700
4¼ Sq.	1	18	1½	4⅜	5⅞x5⅞	3,4,6,9,12	4800

Natco Single Duct Bends

Standard Shapes

Bore	3¼,3½ or 4¼	Round or Square
Angle	45°	90°
Radius.....inches	12,18,24 or 36	12,18,24

Arc or Length

Bore.....inches	3¼,3½ or 4¼ Rd.	3¼,3½ or 4¼ Sq.
Length.....inches	18	18
Radius.....inches	36,60,72 or 96	36,60,72 or 96

Bends also supplied that are scored for splitting apart.

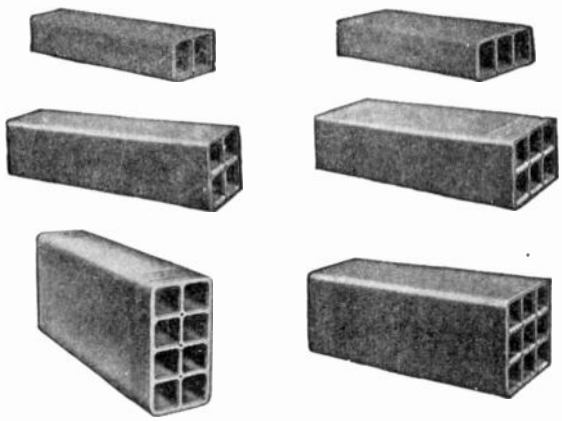
Natco Socket Joint Single Duct Conduit

Natco Single Duct Conduit is also manufactured in a new socket joint type, which is supplied in 3½, 4 and 4½-inch round bore and in either 18 or 24-inch standard lengths. This new type of duct is self-centering, provides positive alignment, lays up fast and can be installed by ordinary labor. If desired, the joints may be readily troweled or sealed with cement mortar. This new type of conduit is especially adapted for single duct lateral lines, also equally suitable for duct bank construction where this type of joint is preferred.

Nominal Bore.....inches	3½ Rd.	4 Rd.	4½ Rd.
Length.....inches	18 and 24	24	24
Actual Size of Duct Holes.....inches	3⅝	4⅛	4⅝

Also furnished in bends and mitred sections.

Natco Standard Multiple Duct Conduit



Particularly adapted for telephone, telegraph, railway signal, fire alarm and low tension light and power service. The large units are economical and quick to install, due to their longer lengths and multiplicity of duct holes.

At the extreme ends of each piece of conduit, a smooth surface is left to permit wrapping each joint with tape or fabric to exclude joint mortar from the ducts.

Supplied in either 3¼, 3½ or 4¼-inch square bore shapes and in 2, 3, 4, 6, 8 and 9-way multiple shapes.

The 3¼ inch is the standard bore, while 4¼ inch is the over-size bore, for most telephone service and for certain low tension power and lighting systems, while the 3½ inch bore is frequently specified for certain municipal installment.

Nominal Bore In.	No. Duct Holes	Std. Lgth. In.	Duct Ft. per Pc.	Actual Size Duct Hole In.	Approx. Outside Dimen. In.	Made in Short Lgths. In.	Min. Car load Duct Ft.
3¼Sq.	2	24	4	3⅜	4¾ x 8¾	6, 8, 12	8200
3¼Sq.	3	24	6	3⅜	4¾ x12¾	6, 8, 12	8100
3¼Sq.	4	36	12	3⅜	8¾ x 8¾	6, 9, 12	9600
3¼Sq.	6	36	18	3⅜	8¾ x12¾	6, 9, 12	10000
3¼Sq.	8	36	24	3⅜	8¾ x16¾	6, 9, 12	10000
3¼Sq.	9	36	27	3⅜	12¾ x12¾	6, 9, 12	10000
3½Sq.	2	24	4	3⅝	5⅛ x 9⅛	6, 8, 12	7000
3½Sq.	3	24	6	3⅝	5⅛ x13⅝	6, 8, 12	7200
3½Sq.	4	36	12	3⅝	9⅛ x 9⅛	6, 9, 12	8200
3½Sq.	6	36	18	3⅝	9⅛ x13⅝	6, 9, 12	8600
4¼Sq.	2	24	4	4⅜	5 15/16x11	6, 8, 12	5600
4¼Sq.	3	24	6	4⅜	5 15/16x16 1/16	6, 8, 12	6000
4¼Sq.	4	36	12	4⅜	11 x11	6, 9, 12	6600
4¼Sq.	6	36	18	4⅜	11 x16 1/16	6, 9, 12	6800
4¼Sq.	9	24	18	4⅜	16 1/16 x16 1/16	6, 8, 12	7300

Natco Split Conduit

Natco Conduit in both single and multiple duct shapes and in all standard bores is supplied, scored or knifed, for splitting apart on the job, for repairing or replacing duct lines, without the necessity of removing cables.

These split sections may be also used to enclose cable joints or splices in place of building manholes.

Bore Inches	No. of Duct Holes	Standard Length Inches	Short Lengths Inches
3¼, 3½ or 4¼ Rd.	Sgl. Duct	18	6, 9, 12
3¼, 3½ or 4¼ Sq.	Sgl. Duct	18	6, 9, 12
3¼ Sq.	2 or 3-Way	18	6, 9, 12
3¼ Sq.	4 or 6-Way	18 and 36	6, 9, 12
3¼ Sq.	8 or 9-Way	18	6, 9, 12
3½ Sq.	2 or 3-Way	24	6, 9, 12
3½ Sq.	4 or 6-Way	18 and 36	6, 9, 12
4¼ Sq.	2 or 3-Way	18	6
4¼ Sq.	4 or 6-Way	18	6
4¼ Sq.	9-Way	18	6

Natco Mitred Conduit

For Curve Construction


Natco Conduit, both single and multiple duct, in all standard bores, is supplied in mitred shapes, for building either simple or intricate curves in lines of clay conduit, for transposing narrow duct banks into wide ones or vice versa, or for splaying duct lines to enter manholes or service points.

Natco Mitred Conduit is made in one standard cut—3 degree and 10-foot radius. The radius of curves built of these sections, is varied simply by interposing straight short pieces between the mitred sections, and the arc of such curves is governed simply by the total number of pieces used.

True and easy curves from 10 to 30 foot radius, and ranging from 3 to 90 degrees, can thus be built.

In the 2, 3 and 6-way multiple conduit, the mitred sections are supplied in either a flat or edge position.

Mitred conduit also supplied scored for splitting apart.

Approximate length, 6x6⅝ inches. Number of pieces in 90° curve, 30.

Bore Inches	No. of Duct Holes	Position
3¼, 3½, or 4¼ Round	Single Duct	.....
3¼, 3½, or 4¼ Square	Single Duct	.....
3¼, 3½, or 4¼ Square	2, 3, or 6-Way	Flat or Edge
3¼, 3½, or 4¼ Square	4-Way	.....
3¼ Square	8-Way	Flat or Edge
3¼ or 4¼ Square	9-Way	.....

Natco Branch Conduit

For Dividing Multiple Duct Main Lines

Natco Multiple Duct Conduit is supplied in branch shapes in all standard bores.

Natco Branch Conduit is a new shape, one end of which is the same shape and size as standard conduit, while at the opposite end, certain ducts are more widely separated by means of double webs, so as to permit alignment with abutting branch lines.

Branch conduit permits the division of multiple duct main lines into two or more branch lines, each having a smaller number of ducts than the main line. Such a division is highly advantageous in splaying main duct lines into central office buildings, manholes or cable vaults, or for turning laterals or service connections. It frequently saves the necessity of manholes.

Also supplied scored for splitting apart.

Length, 24 inches.

Bore Inches	No. of Duct Holes	Type	For Branching Into
3¼, 3½ or 4¼	2-Way	1–1	2 Single Duct
3¼, 3½ or 4¼	3-Way	1–2	1 Single and 1 Two-Way
3¼, 3½ or 4¼	3-Way	1–1–1	3 Single Duct
3¼, 3½ or 4¼	4-Way	2–2	2 Two-Way
3¼, 3½ or 4¼	6-Way	2–4	1 Two-Way and 1 Four-Way
3¼, 3½ or 4¼	6-Way	2–2–2	3 Two-Way
3¼, 3½ or 4¼	6-Way	3–3	2 Three-Way
3¼ Sq.	8-Way	4–4	2 Four-Way
3¼ Sq.	8-Way	2–6	1 Two-Way and 1 Six-Way
3¼, or 4¼	9-Way	3–6	1 Three-Way and 1 Six-Way

Natco Transposition Conduit

For Transposing or Twisting 2, 3 and 6-Way Conduit Lines

Natco Multiple Duct Conduit is also supplied in transposition shapes in 2, 3, 6 and 8-way multiples, with right or left-hand twist. The degree or angle of twist is 22½° for 3¼-inch bore shapes, 18° for 3½-inch bore shapes and 15° for 4¼-inch bore shapes, and the standard length is 24 inches.

The number of pieces required to effect a quarter turn of 90° from a flat to an edge position, or vice versa, is four pieces in the 3¼-inch bore, five pieces in 3½-inch bore or six pieces in the 4¼-inch bore sizes.

These transposition shapes are of considerable advantage in changing the position of height of conduit lines, in order to avoid certain street obstructions, or to cross viaducts or bridges, or to change the position of cables on their approach to manholes or cable vaults, all of which frequently eliminates the need of manholes.

Direction of twist, right or left hand.

Bore.....inches	3¼	3½	4¼
Twist.....	22½°	18°	15°
No. of Pieces in ¼ Turn.....	4	5	6

Natco Pipe Connectors



Single Duct Connector | 2-Way Connector | 3-Way Connector

Rear View of Connector Ready to Receive Conduit

For the purpose of connecting clay conduit lines to iron pipe lines as in pole risers or to enter buildings, Natco Pipe Connectors are available in the sizes shown below.

These connectors are made of cast iron, one end is shaped to receive the end of the clay conduit line, while the opposite end of the connector is reamed to receive the iron pipe lines.

Single Duct Connector

For 3¼-inch bore conduit and 3-inch pipe or 4¼-inch bore conduit and 4-inch pipe.

2-Way Connector

For 3¼-inch bore conduit and 3-inch pipe or 4¼-inch bore conduit and 4-inch pipe.

3-Way Connector

For 3¼-inch bore conduit and 3-inch pipe or 4¼-inch bore conduit and 4-inch pipe.

No. 106 Natco Conduit

Illustrating the conversion of a 4-way multiple duct line into two 2-way multiple duct lines in an edge position, one of which is flexed or curved to one side in the direction of a pole and terminated in two riser iron pipe lines, ascending the pole, while the other 2-way line is transposed or twisted 90° from an edge to a flat position in a distance of 8 feet and then continued straight on in the form of standard 2-way multiple duct conduit—in a flat position.

Specifications

B—One-piece 4-way type 2-2 branch conduit, 2 feet long (for dividing the 4-way line into two 2-way lines).

E—Six pieces 2-way mitred conduit—edge position—3° 10-inch radius—6¼ inches long, (for flexing or curving one of the 2-way lines to one side in the direction of the pole. The angle of flexure shown is 18° but any angle of flexure divisible by 3, may be attained by varying the number of mitred pieces).

H—One-piece 2-way standard conduit, 2 feet long (laid in edge position—to extend the flexed 2-way line on towards pole).

R—One cast iron 2-way connector for 3-inch wrought iron pipe.

P—Four pieces 2-way left-hand transposition conduit, 22½°, 2 feet long (for transposing the other 2-way line 90° from an edge to a flat position).

Dowel Pins

Pressed steel pins, 5/8x3 inches, with an integral central flange or collar, are generally used for joining or aligning individual sections of multiple duct, also certain sizes of square bore single duct conduit together.

Two pins are used at each joint or for each piece of conduit.

Joint Tape

An especially prepared tape is frequently used for wrapping the joints of multiple duct conduit prior to the application of the joint mortar, also occasionally used for wrapping joints of single duct conduit in trench, subway or masonry structures, prior to the pouring of the concrete encasement.

This tape has an adhesive waterproof coating on one side, and is supplied in 4 and 6-inch widths, and put up in rolls of 25 linear yards.

Tape adheres closely and firmly to the glazed surface of the conduit and aids in sealing the joints.

In ordering, specify total number of linear yards required.

Cope Manhole Guard Rails

Made of ¾-inch standard black steel pipe with seamless steel tubing sleeves. Made with a completely welded construction.

Unless otherwise ordered, all rails are painted with two coats of Signal Red Enamel.

Type 264

This guard closely follows the design of the American Telephone and Telegraph Company's standard. The bow-shaped wing brace holds the rail absolurely rigid against collapse when in place, leaving the open side entirely free for work. The chains allow this rail to be padlocked to pole, etc. Can be supplied with or without "men working" panels.

Open 32x32x42 inches high, folded 32x2x42 inches.

Weight, 49 pounds.

Type **264**.....each **$30.75**

Type 110

This is somewhat lighter construction than the Type 264 while still holding to the same material.

It is equipped with flag holder and steel hook for holding it rigid while open.

Open 32x32x42 inches high, closed 32x3x42 inches.

Weight 40 pounds.

Type **110**.....each **$23.75**

Perfection Flat Tape Conduit Rods

In general use by power, electric light, telephone, city fire alarm systems, street railway companies, and contractors in general.

This rod will handle laterals easily. One man can rod 300 feet, using the patent grip handle.

The factor of broken rods has been eliminated. The average time required to rod 500 feet with two men is about twenty minutes, at an average cost of about ¼ cent a running duct foot.

¼x1/16-Inch Size. Will take right angles in 1½-inch conduits. With flexible cleanout leader, ball roller, and adjustable hand grip. On safety holding frame.

In 100 to 500-foot lengths.

Per 100 Feet..... **$6.00**

½x1/16-Inch Size. For 2 to 4-inch ducts. Flexible; will take laterals; will rod over another cable in ducts. Has ball roller and sliding rodding hand grip. On safety holding frame.

In 100 to 400-foot lengths.

Per 100 Feet..... **$11.25**

½x⅛-Inch Size. For 2 to 4-inch ducts. Rigid; for long runs; flexible enough to take laterals. Has ball roller which indicates clearance in duct where one or more cables are in and more cable is desired. Furnished with adjustable hand grip. On safety holding frame.

In 100 to 400-foot lengths.

Per 100 Feet..... **$15.75**

¾x1/16-Inch Size. For 2 to 4-inch ducts. This size is more flexible than the ½x⅛-inch size. Has ball roller and adjustable hand grip. On safety holding frame.

In 100 to 400-foot lengths.

Per 100 Feet..... **$12.75**

¾x⅛-Inch Standard Size. A standard duct size for long runs. For 3 to 4-inch ducts. This rod replaces the old type wooden rod.

Tensile strength, 225,000 pounds per square inch. Breaking strength, 21,000 pounds. On galvanized safety holding frame.

In 100 to 500-foot lengths.

Net Weight per 100 feet, 33 pounds.

Per 100 Feet..... **$22.00**

1x⅛-Inch Special Size. A rigid, yet sufficiently flexible rod to take laterals. On safety holding frame.

In 100 to 500-foot lengths.

Per 100 Feet..... **$28.00**

Parts

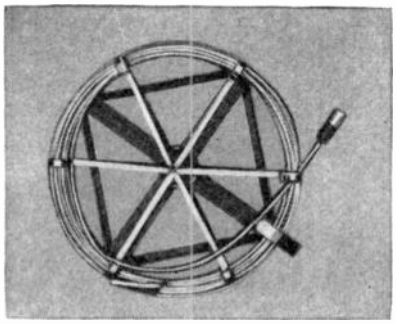
*†Large Ball Feeding Rollers	each	$2.00
*‡Small Ball Feeding Rollers	each	2.00
Revolving Spear Heads, Large	each	5.00
Revolving Spear Heads, Small	each	4.00

*Take laterals easily and slide rod through ducts rapidly.

†For 2 to 4-inch ducts.

‡For small ducts or where rodding is done over another cable in ducts.

Electroline Steel Duct-Rodding Equipment



The use of Electroline Duct-Rodding Equipment eliminates the necessity for pull-wires being left in ducts and being pulled out for inspection at least twice a year.

Made of oil-tempered spring steel wire in any length desired. To one end is attached the pick-up or female fitting. To the other end is attached the leader or male fitting. The female fitting is made of tubular steel, in sizes to fit various sizes of ducts and is equipped with spring-bound steel fingers to admit the male fitting. When the leader enters the pick-up fitting, the steel fingers lock the connection securely and make one continuous rod which can be pulled or pushed from either end. The leader is provided with a hole for attaching the pull-wire. Connector fittings are detachable to permit attachment of mandrels, swabs or other special tools for use in cleaning ducts. The rods are marked off every 25 feet, making it easy to locate a break in the duct.

Available for 3, 3½ or 4-inch duct.

Standard equipment consists of 1 reel with 400 feet of wire; 1 reel with 300 feet of wire; 1 pick-up or female unit for round or square duct; 4 leader or male units; 1 tool for separating pick-up and leader units; and 1 hand feeding tool.

Further Information and Prices Furnished Upon Request

Cope Pneumatic Fish Lines

For rodding long run round conduit ranging in size from 3 to 5 inches.

Reel Unit

The reel is equipped with crank and gear for re-reeling. Contains 1000 feet of 3/32-inch stranded steel cable having a tensile strength of 920 pounds. Only one reel unit is required for use in any size conduit.

Conduit Seal

Faced with rubber which is expanded to grip the interior surface of the conduit to prevent the loss of air and to support the reel during operation. Expansion range, 1 inch. Two sizes: No. 3, 3 to 4-inch; No. 4, 4 to 5-inch conduit.

Projectile

Consists of a pair of rubber cups fastened together. When compressed air is introduced, the projectile progresses 100 feet per minute with a pressure of less than 10 pounds. Since rubber cups must have a snug fit, each projectile will fit only one size conduit. Furnished with one projectile for any one size ranging from 3 to 5 inches.

Furnished with carrying case.

Weight, 100 pounds.

Complete	each	$205.00
Additional Seals	each	72.50
Additional Projectiles	each	20.00

Up to 2000 feet of reel cable can be furnished at additional cost.

Cope Underground Conduit Tools

Jar Hammers

Used in connection with all types of cutters for removal of stubborn obstructions such as heavy silt, cement, etc.

Made of 2-inch diameter steel tubing with heavy piston and hammer working inside the cylinder.

Size Stroke ..... inches	8
Each	$22.80

Laying Mandrels

Body is of well seasoned maple. Rear end is equipped with a leather wiping washer and the forward end with a countersunk steel hoop and tool steel cutting edge.

Length, 36 inches. In diameters to fit any size conduit.

Size ..... inches	3	3½	4	6
Each	$15.00	17.20	19.00	27.60

Test Mandrels

Round Square

Made to exact size for testing conduits after laying. Has tool steel cutting ends to remove concrete or other light obstructions. Length, 12 inches.

Size ..... inches	3	3½	4
Round ..... each	$9.50	10.50	11.50
Square ..... each	11.50	12.50	13.50

Flexible Mandrels

For testing conduits having bends through which a rigid mandrel would not pass. Constructed of tool steel discs, mounted on a flexible wire rope, securely babbitted to the heavy socket eyes. Will withstand a pull of over 5000 pounds.

Size ..... inches	3	3½	4
Each	$30.50	34.30	38.30

Pickups

Used to recover rods or tools lost in the conduit. Can also be used on long pulls where it is desirable to work from both ends.

Pickup has two steel shutters with beveled notches and spring action, so that it will recover and catch firmly no matter what position it may be in within the conduit.

Each $28.80

Rod Grapples

Used where long lines of conduit are to be rodded. Permits rodding from both ends of conduit and provides positive connection where they meet. Several hooks engage opposite

Each $14.50

Sand Scoops

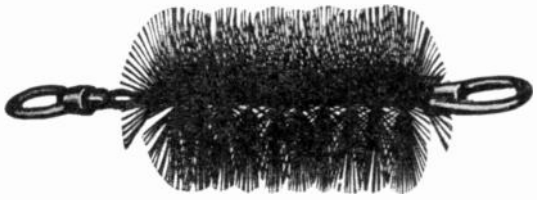
For removing loose sand and silt which may enter the conduit and prove harmful to lead sheathed cables.

Made of light weight tubing.

Size ..... inches	3x15	3½x18	4x20
Each	$11.40	13.30	15.20

Cope Wire Brush Cleaners

Single End



Double End

Brush has a flat tempered steel bristle which will remove all sand and other light obstructions.

Made for all size conduits with either a rod connection or socket eyes on both ends.

Diameter ..... inches	3	3½	4	5
Single End ..... each	$4.80	$5.30	$5.80	$6.60
Double End ..... each	5.30	5.80	6.50	7.30

Diamond Empire Conduit and Sewer Rods

Straight sticks are furnished of uniform diameter 1 inch throughout.

Couplings are malleable iron. Ends are interchangeable. Axles are machined from brass rod, solid head and shouldered on coupling. Wheels are machined at hub to fit axle and shaped to conform to curve of duct. The rod is made of best selected straight grain well seasoned hickory, tapering to 1 inch at opening.

Length ..... feet	3	4
With Wheels ..... each	$1.80	$2.00
Without Wheels ..... each	1.55	1.75

Diamond Screw Duct Rods

Couplings are made of government bronze. The hickory used in the shaft is selected stock, well seasoned. Threads are accurately cut to ¾-inch U.S.S., 10 threads per inch. Rivets are countersunk. Hickory shafts are ⅞ inch in diameter.

No. 855, 3-Foot Length ..... each	$1.65
No. 856, 4-Foot Length ..... each	1.80

Cope Quick Coupling Conduit Rods

Made from annealed malleable iron. Power-driven and securely riveted on the stick.

Stick is made of hickory.

Available in 2, 3, and 4-foot lengths with a straight shaft of 1-inch diameter. The 3 and 4-foot lengths are also made with a swell center stick, having a diameter of 1¼ inches in the center, tapering to 1-inch diameter.

Description	Each	Wt. Lb. per 100
2-Foot Rod, Straight Stick	....	105
3-Foot Rod, Straight Stick	....	205
4-Foot Rod, Straight Stick	....	245
3-Foot Rod, Swell Center Stick	....	230
4-Foot Rod, Swell Center Stick	....	275

Cope Rod Adapters

Designed to make the Quick coupling rod available for use with any conduit tool equipped for screw coupling or vice versa.

Weight, 2 pounds.

Each..... $3.00

Cope Screw Coupling Conduit Rods

Furnished in 3 or 4-foot lengths.

Coupling is made of cast bronze, octagon-shaped, with a ¾-inch U.S. standard thread.

Stick is made of hickory, and is available with either a ⅞ or 1-inch diameter. Also furnished with swell center, 1-inch diameter stick.

Diam. In.	Description	Each	Wt. Lb. per 100
⅞	3-Foot Rod, Straight Stick		155
⅞	4-Foot Rod, Straight Stick		185
1	3-Foot Rod, Straight Stick		195
1	4-Foot Rod, Straight Stick		235
1	3-Foot Rod, Swell Center Stick		220
1	4-Foot Rod, Swell Center Stick		265

Cope Iron Cable Dressers

Used to produce a smooth finish on splices or sleeves when placed over any unevenness in the splice. Made of 2x¼-inch carbon steel. Handle is movable.

Available in two sizes: No. 1 for cable up to 3½ inches in diameter; No. 2 for 4½-inch cable. Weight, 1 pound.

No	1	2
Each	$3.25	3.75

Cope Criss Cross Cleaners

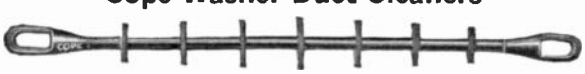
Cleans conduit. Has a multitude of edges at right angles to the surface of the conduit to assure a thorough cleaning.

Flexible spring formation makes it self-conforming.

Adjusting nuts on each end permit nominal adjustments in the outside diameter. Furnished in any diameter. Weight, 5 pounds.

Size ..... inches	3	3½	4
Each	$11.50	12.50	13.50

Cope Washer Duct Cleaners



For a final wiping and cleaning of the conduit.

Consists of a flexible wire rope with tube spacers separating leather washers of graduated sizes, faced with steel. Has heavy socket eyes fastened on both ends. Size, 3 inches.

Furnished in any diameter. Weight, 8 pounds.

Each..... $22.70

Cope Sag Gages

Used when stringing open wire.

A sag gage is hung on the cross arm at each end of the span and the target is set at a pre-determined height on the calibrated slot in the gage.

The sag in the line is conditional upon the size of wire and length of span.

The target folds when not in use, and when open presents a face 12x2 inches, painted bright yellow.

Calibrations, 4 to 18 inches.

Weight, 1½ pounds.

Each..... $3.80

Cope Rod Puller

Used for rodding long conduit lines where the weight of the rod becomes a controlling factor.

Made of malleable iron.

Can be placed on the rod at any point and can be used for either pulling or pushing by reversing the tool.

It exerts a firm pressure on the stick without cutting or otherwise injuring the rod.

Weight, 2½ pounds.

Each..... $4.70

Cope Push-Pull Jacks

Used for additional slack in a manhole or to take up slack in overhead cable installation. Converted into a pusher by reversing the drawbar.

Made of high carbon, heat treated steel.

Leverage, 30 to 1. Safe capacity, 4000 pounds. Double action makes a secure lock every half inch. Furnished with drop-forged clevis and bronze double shackle swivel.

Weight, 12 pounds.

Each..... $40.00

Type C Cope Cable Benders

Designed to form and bend large cable in underground construction.

May also be used for straightening cable.

Adjustable yoke provides seven positions of handle and permits work in close quarters.

Simply pulling back on sleeve releases ratchet and permits handle to be moved in any position.

Yoke and arm are alloy steel castings with extension handle of steel tubing.

Wide bearing surface and rounded edges of shoes prevent injury or deformation of cable sheath.

Overall dimension, 36 inches.

Weight, 14 pounds.

Type C..... each $28.40

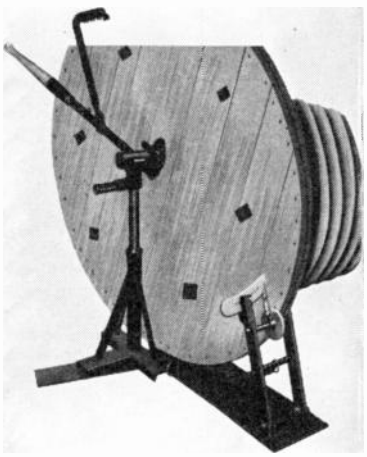
Cope Cable Puller

Used with the reel turner and reel brake in pulling out 2½ to 3-inch cable.

The grips or clamps are alloy steel castings designed to exert a positive grip on the cable when in the pulling position. Slackening of the winch or hoist permits it to be released and slid back on the cable for another pull. The grips will not cut or deform the cable. Weight, 30 pounds.

Each..... $50.00

Cope Cable Pulling Equipment



Safety Reel Brake

Used in the removal of cable to eliminate back-lash.

One man, while handling the turning bar can manage the re-reeling operation.

Adjustable to different sizes of reels. Rings are provided on the base plate for tieing to the jack.

Weight, 90 pounds.

Each..... $72.50

Reel Turner

Used to re-reel cable.

One man can safely and easily handle the turning of the reel, taking up the cable as it is pulled from the conduit.

Adjustable to any standard size reel. Weight, 23 pounds.

Each..... $50.00

No. 860 Diamond Manhole Cover Hooks

This is a useful tool for the subway construction force. It is designed to easily raise a heavy manhole cover by prying the wedged point end of the hook under the groove provided in the cover for the purpose.

The hook is made of an excellent quality of electric tool steel suitably hardened at and adjacent to the hook to prevent its bending, and at the same time sufficiently tough to prevent breaking off.

No. 860..... each $1.50

Cope Pull-In-Guide or Cable Feeders

Used to lead the cable from the street reel into the mouth of the conduit without injury.

Constructed with heavy brass bell, completely finished, securely fixed to a length of heavy steel tubing. The conduit end has a steel sleeve which will accommodate various size brass nozzles to fit the several sizes of conduit.

Guides, Length..... feet	9	12	16	20
Each.....	$86.00	95.00	106.25	118.75

Nozzles, For Conduit.in.	2	2½	3	3½	4	4½	5
Each.....	$18.25	18.25	18.25	18.25	21.00	23.75	23.75

Cope Cable Drawing-In Protectors

A heavy brass bell carefully machined and finished. To be used in the mouth of the conduit to protect the lead sheath of the cable from injury while being drawn into the conduit.

Round

Diameter.....inches	2	2½	3	3½	4	4½
Each.....	$7.75	8.50	9.50	11.00	12.50	14.25

Square

Size.....inches	3	4
Each.....	$9.50	12.50

No. 220 Simplex Manhole Sheaves

For pulling cable or carrying the winch line at right angles. Used on end of a truck or over edge of manhole in connection with a snatch block in the manhole, eliminating use of manhole skids.

Will handle cable up to 3 inches in diameter, or any size winch line.

Furnished with a ¼-inch chain, 24 inches long, with special hook for anchoring.

No.....	220
Each.....	$106.00
Large Sheave Diameter.....inches	7¾
Large Sheave Width.....inches	3
Small Sheave Diameter.....inches	4¾
Small Sheave Width.....inches	3
Weight.....pounds	100

No. PU 27 B&L Star Brand Cable Sheaves and Shackles

The cable sheave and shackle may be used in place of the pulling-in frame when it is possible or advisable to locate the rear of the truck directly over the manhole. The device is attached to the manhole pulling iron and the winch line goes over a roller or sheave at the rear of the truck then down and under the cable sheave and shackle and thus into the duct. The sheave is made of special aluminum alloy for light weight, 20 inches in diameter, with a groove large enough to take a 2⅝-inch cable. The hook is drop-forged.

Complete, Approximate Weight, 65 Pounds..... $180.00
Frame, Complete, less Sheave, Approx. Wt., 37 lb.ea. 35.00
20-Inch Diam. Aluminum Sheave, Approx. Wt., 28 Lb.....each 145.00

Cope Cable Pulling Rigging

Type B

Designed to provide a direct pull through the conduit. When in the manhole, the lower sheave is located opposite the conduit with the upper sheave above the street line to lead to the winch.

Constructed of 6-inch 8.2-pound channel, welded. The two sheaves with 10-inch minimum diameter have large, well finished grooves to prevent injury to the cable. Each sheave is mounted on a 1-inch steel shaft.

Length	feet	9	10	12
Type B	each	$60.50	64.75	72.00

B & L Star Brand Pulling-In Frames

No. PU 26

The pulling-in frame is constructed to help install cable in underground ducts.

The sheave support consists of two 13-foot sections of 6-inch steel channels, fastened together at each end by two sections of 4-inch steel channels. Each 13-foot section is provided with 24 holes on 6-inch centers in order to allow the two sheaves to be adjusted to the proper position on the sheave support for any cable installation.

Two aluminum sheaves are used with each sheave support: one large sheave and one small sheave which have diameters of 20 and 5¾ inches respectively. The diameter and groove of large sheave are of sufficient size to allow a cable to be pulled over it without harming the cable sheath, when this procedure is necessary to obtain sufficient cable in the manhole for splicing. An important feature is that each sheave is provided with Graphite Bronze self-lubricating bushing which makes the use of lubricant unnecessary.

Shipping weight, 260 pounds.

No. PU26, Complete..... .....

Type 11-B Perfection Cable Splicers' Tent Heaters

It is a convenient, safe, economical and dependable method of tent heating. Uses kerosene for fuel. Operates from 5 to 24 hours on one filling of kerosene. Tank capacity, ½ gallon. Dimensions, 11⅜x19⅞ inches.

Approximate shipping weight, 12 pounds.

Prices on request.

Cope Aerial Tents

For protection of aerial cable during installation or repair.

Made of 10-ounce U. S. Army duck double hemmed at each seam

Framework is made of steel and pipe sections which fold into a compact bundle.

Open dimensions, 52x48 inches.

Length of 104 inches gives plenty of headroom and extends well below the working platform.

Tent is lashed to working platform with ropes provided on each corner of frame. A locking device securely fastens tent frame to the messenger strand.

Weight, with frame, 40 lb.

Each..... $70.00

Cope Ground Tents

Gives full protection to men working in a manhole under adverse weather conditions.

Made of 10-ounce U.S. Army duck.

Framework is made of ½-inch heavy pipe, welded, and has hot dipped galvanized finish.

Open dimensions, 82½ inches square and 77 inches high. An additional flap, 15½ inches wide, extends around the tent on the ground. Legs of tent fold up in two sections inside the framework to form a compact package approximately 38x38x9 inches.

Weight: frame, 45 pounds; cover, 25 pounds.

Frames and Covers, Complete.....each $72.50

Frames and covers may be purchased individually.

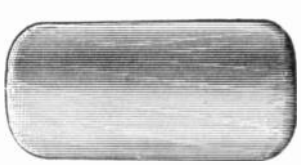
Turn Pins

No. 301, Dogwood

Size	inches	2¼	2½	2¾
Weight per Dozen	pounds	3	4½	4¾

Furnished also in dozen assortments of three sizes.

No. 302 Drift Plugs



Made of dogwood.

Furnished in sizes 1, 1¼, 1½ and 2 inches.

Packed 1 dozen in a box.

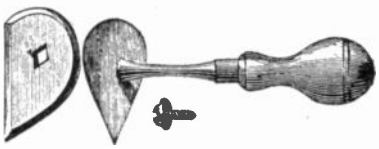
Approximate weight per dozen, 2 pounds.

Dressers

No. 295 Hardwood **No. 296 Lignum Vitae**

Weight per dozen, 15 pounds.

No. 304 Shave Hooks



Blade is removable.

Furnished with Nos. 1, 2 or 3 blade. Packed one dozen in a box.

No. 304
...per doz. .....

Shave Hook Blades

No. 1, Oval **No. 2, Half Oval** **No. 3, Triangle**

Nos. 1, 2 or 3.....per dozen .....

Ideal Acid Core Solder

Metal virgin tin and lead—no scrap metals used. A superior liquid soldering acid flux. Size of solder approximately No. 8 standard gage.

Put up in spools only of 1, 5, and 20 pounds each.

Prices upon application.

Gem Rosin Core Solder

Metals virgin tin and lead—no scrap metals used. Rosin flux. Size of solder approximately .093 inch standard gage.

Put up in spools of 1, 5, and 20 pounds each.

Prices upon application.

Nokorode Core Solder

Ready for instant use; can be used for all kinds of soldering. Will replace acid or resin core solder.

Made of pure virgin tin and lead, with the proper amount of flux to a given amount of solder. Works quickly and leaves a strong, permanent soldered joint.

Nokorode Core Solder is so combined that the flux is in a solid form, care being taken that all parts of the solder contain flux. When heat is applied, the flux does not run out and leave parts of the solder that must be thrown away.

Put up in 1½-ounce packages, 1, 5 and 20-pound spools.

Prices upon application.

Kester Plastic Rosin-Filled Solder

For Electrical and Radio Work

With plastic rosin flux, non-corrosive and electrically non-conductive.

The flux flows, as the solder melts, in just the right amounts for a perfect soldering job.

Requires only heat.

Standard size, 3/32 inch, about 50 feet to the pound.

Size Spool.....pounds	1	5	20
Each.....	....	....	....

Kester Acid-Filled Solder

For General Soldering

Easy to use, saves time, and is dependable for a permanent bond.

Contains a scientifically prepared flux that flows in just the right proportions as the solder melts. Requires only heat.

Standard size, ⅛ inch, about 25 feet to the pound.

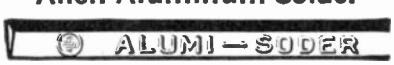
1-Pound Carton	each .....
1-Pound Spool	each .....
5-Pound Spool	each .....
20-Pound Spool	each .....

Bar Solder

An alloy of tin and lead, made up in the form of bars for convenience in handling, for making soldered joints in metals, such as lead piping systems, for cable splices and other heavy work.

Price, Solder in Regular Bars.....per pound **$1.00**

Allen Aluminum Solder



Complete solder and flux combined. Requires only heat to permanently join aluminum to itself or other metals.

Bars and wire, packed 6 pounds to carton.

¼-Pound Bars	per pound	$2.00
1-Pound Bars	per pound	1.50
Wire ⅛-Inch, 11-Gage, Square	per pound	2.20

Allen Neutral Rosin Fluid Flux

Flux of absolute safety for electric motors, telephone, radio, commutators, instrument work, fine wires, etc.

Can be spilled on the work and allowed to remain with no corrosion hazard to finest wire or metals.

Absolutely neutral and moisture free and non-conductive to electrical current.

Size Can or Bottle	1 Quart	1 Gallon
Each	$.85	3.00
No. in Carton	3	1

Nokorode Soldering Fluid

Eliminates the use of corrosive soldering acid.

Ready for instant use.

Solution is strong. May be cut with water for light work.

Size Container.....gallon	1	5	55
Per Gallon.....	$1.50	1.10	.70

Nokorode Soldering Paste

This paste will flux all metals except aluminum.

It takes the place of acid in all soldering jobs. Non-corrosive, safe as resin and rapid as acid. Not affected by heat and does not spatter.

The solder will not turn dark after using this paste.

In Cartons

Size Can.....	2-Oz.	1-Lb.
Per Can.....	$.10	$.70
Per Carton.....	1.20	4.20
No. Cans in Carton.....	12	6

By Pound

Size Can.....pounds	10	25	50	100
Per Pound.....	$.50	.45	.43	.40

Allen Ezy-Flo Torch Formula Soldering Paste

Special soldering paste for torch and sweat joint soldering. Works well with the soldering iron.

Size Can.....	Job Size	2 Oz.	4 Oz.	½ Lb.	1 Lb.	5 Lb.
Each.....	$.08	.13	.25	.50	.90	4.40
No. in Carton	24	24	24	12	6	1

Allen Soldering Paste

A corrosion free, soft form of flux.

Carries Underwriters' approval.

Size Can.....	Job Size	2-Oz.	4-Oz.	½-Lb	1-Lb.	5-Lb.
Each.....	$.08	.13	.25	.50	.90	4.40
No. in Carton....	24	24	21	12	6	1

Star and Crescent Soldering Paste

Assures a smooth, even-flowing metal and perfect results. Thoroughly mixed, so that each paste particle contains all the flux elements. Strong and rapid in action and non-corrosive. Packed in tin boxes.

Cat. No.....	2775	2776	2777	2778
Size Tins.....oz.	2	4	8	16
Price.....each	$.25	.35	.55	1.00

Burnley Soldering Paste

Requires no preparation.

Size Can Lb.	Per Lb.	Size Can Lb.	Per Lb.
⅛	*$1.40	5	$.37
¼	* 1.90	50	.29
½	.44	500	.23
1	.41	...	...

*Per dozen cans.

Allen Soldering Sticks

An economical rapid flux. Just a touch to the hot metal does the work.

Fuses the solder rapidly without fuss, muss or after corrosion. Size, 1x5¼ inches.

Samson Formula.....each	$.15
Standard Formula.....each	.30

No. 2774 McGill Star and Crescent Soldering Sticks

Each stick is tinfoil wrapped and packed in pasteboard tube with cap ends. Weight per 100 sticks, 22 pounds.

No. 2774.....each $.25

Nokorode Soldering Salts

Size Can	Standard Package	Per Pound	Per Carton
1-Lb.	6 to Carton.....	$.50	$3.00
5-Lb.	Any Quantity.....	.40	....
25-Lb.	Any Quantity.....	.30	....
50-Lb.	Any Quantity.....	.27	....
100-Lb.	In Drum.....	.24	...

Crescent Soldering Salts

A combination of several of the most efficient soldering agents in a convenient soluble form. Gives off no obnoxious gases. Much superior to old time acids for the designed purpose.

Price, No. 2779, 1-pound.....each	$.90
" " 2780, ½ " ..... "	.68

Allen Soldering Salts

These salts are dry and in concentrated form. To make up a perfect flux of sufficient strength to use on old metal add three parts water to one part salts; on new metal, use even greater dilution.

Size Bottle.....	½-Lb.	1-Lb.	5-Lb.
Each.....	$.40	.59	2.70
No. in Carton.....	12	6	1

Burnley Soldering Salts

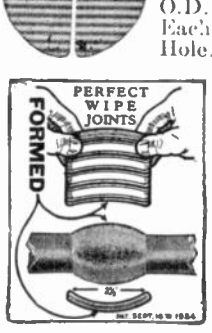
Size Can.....lb.	½	1	5
Per Pound.....	$.63	.53	.44

Unique Upright Joint Wiping Cloths

The wiping side, which comes in contact with the molten solder is perfectly smooth and free from stitches, laps, folds, seams and edges. The wiping surface is treated to prevent the solder from sticking to the surface.

O.D.....in.	9	11	12	14	17
Each.....	$1.80	2.50	3.10	3.50	5.00
Hole.....in.	1	1¾	2¾	3¾	6

Unique Formed Flexible Wiping Cloths



The permanent curved wiping surface of the formed finishing cloths produces perfectly symmetrical joints, uniform and smoothly finished. No waste of time or no wear on cloths in breaking in. Used successfully on first joint. Solder will not stick to the smooth slick surface. Gives twice the actual service of old style shapeless wiping cloth.

Add for moleskin; Formed cloths, 10 cents; flat catch cloths, 20 cents.

Ticking, Formed Finish

Size.....in.	2x2	2½x2½	3x3	3½x3½	4x4
Each.....	$.40	.40	.50	.50	.60

Ticking, Flat Catch

Size.....in.	5x5	6x6	6x7	7x8	8x8
Each.....	$.80	.90	1.00	1.20	1.30

Sticka Black Friction Tape

A popular-priced tape for general use.

Used to protect the splicing compound on a wire joint from abrasion.

Roll contains ½ pound gross of ¾-inch tape, length 60 feet to a roll.

Available in ¼-pound rolls. Special widths furnished packed in foil.

Per Pound..... **$.36**

Victor Black Friction Tape

Protects the splicing compound on wire joints from abrasion.

A high grade tape for outside or inside work.

Roll contains ½ pound gross of ¾-inch tape, 67½ feet to a roll.

Also furnished in rolls 2 inches wide, 67½ feet per roll, for repairing lead-covered telephone cables. Approximate weight per 2-inch roll in foil, 19¼ ounces.

Available in ¼-pound rolls. Special widths furnished packed in foil.

Per Pound..... **$.38**

Amazon A.S.T.M. Black Friction Tape

Highest quality friction tape to meet the most strict specifications.

Roll contains ½ pound gross of ¾-inch tape, which is 82½ feet to a roll.

Available in ¼-pound rolls. Special widths furnished packed in foil.

Per Pound..... **$.40**

Manson Friction Tape

Made with new rubber which thoroughly impregnates and coats the strong, closely woven cotton fabric. Black. Has true adhesive, aging and weathering qualities. Provides lasting protection for joint.

Roll contains 78 feet, ¾ inch wide.

Put up in ½ pound cans.

Per Pound..... **$.99**

Okonite Rubber Tape

Compounded only from new Up-River fine Para rubber. When wrapped on the joint, it fuses into a homogeneous wall of tough insulation that is impervious to moisture and stays elastic and resilient. Insures highest electrical strength and permanence. Roll ¾-inch wide contains 30 ft.

In ½-Pound Cans.....per pound **$1.16**

Ruberoid Insulating Tape

A black tape which will not vulcanize with heat or become defective by exposure or use, will not dry and crack or harden; water, acid and alkali-proof.

Furnished in ½-lb. rolls ¾ in. wide.

Per Pound..... **$.75**

Other widths made to order.

Amazon A.S.T.M. Splicing Compound (Rubber Tape)

Designed for the severest kind of service. Meets the A.S.T.M. and A.R.A. specifications as well as U.S. Navy specification 17-T-1d.

Because of the high percentage of pure plantation rubber this tape is extremely elastic. Will amalgamate into a solid tube to make a watertight joint.

Will withstand dielectric test of at least 350 volts per mil of thickness.

Roll contains ½-pound gross of ¾-inch No. 8 tape; length, 30 feet. Also available in ¼-pound rolls. Special widths packed in foil only.

Per Pound..... **$.49**

Victor Splicing Compound (Rubber Tape)

This tape is second in quality only to Amazon.

It is designed primarily for ordinary service. Its performance has more than justified the high recommendation which has been given to it.

Will withstand a dielectric test of 300 volts per mil of thickness.

Roll contains ½-pound gross of ¾-inch No. 8 tape; length, 21 feet. Also available in ¼-pound rolls. Special widths packed in foil only.

Per Pound..... **$.40**

Hydro-Proof Tape

A waterproof tape with an average dielectric strength per layer of 1850 volts.

Width, ¾ inch.

Packed 24 yards per 8-ounce roll.

Per Pound..... **$1.00**

Doe Burnishing Paste

For Plugs

For polishing telephone plugs, radio connections, signal systems, and electrical contacts of all kinds.

Non-corrosive. Chemically neutral.

Packed in 2-ounce tin container.

Per Can..... **$.50**

For Commutators

For cleaning and polishing commutators and slip rings on motors and generators.

Eliminates noise and sparking.

Acts as a lubricant to eliminate undue wear.

Non-corrosive. Chemically neutral.

Packed in 2-ounce tin container.

Per Can..... **$.50**

Minerallac Insulating Compound

For Use in Cable Joints, Potheads and Terminal Bells

High Voltage Compound

No. 1. A compound having the consistency of molasses. Not affected by moisture. Especially effective in drying out tape and cloth, and between layers of such materials when wound on high-voltage electrical apparatus.

No. 2A. Cable joint or pothead compound. Melting point, 82°C. One of the most important characteristics of this compound is its ability to adhere to metal or porcelain. Suitable for use in warm climates.

No. 64. A compound suitable for use in mild climates where there is no great variation in temperature. A hard compound with a melting point of approximately 93°C.

No. 78. Cable joint or pothead compound. Dense and adhesive with little shrinkage. Recommended as an all-purpose insulating material. Low moisture absorption; pliable. Recommended for voltages 600 and up. Melting point, 90°C. Dielectric strength 940 volts per mil at 30°C.

No. 80. Pothead compound. A hard compound for use on 600 volts and over. Melting point, 130°C. Tests 990 volts per mil at 30°C.

No. 104. A semi-solid compound for use in cable joints on high voltage lines over 600. Melting point, 50°C. Dielectric strength averages 800 volts per mil at 30°C.

No. 104A. A semi-solid compound with the same general characteristics as No. 104, except that it has a lower melting point (35°C). Average viscosity, 800 seconds at 100°C. For use on high voltage potheads and cable joints where a low melting point compound is required.

Size Container.....gallons	½	1	2	5	*400
No. 1.....per gallon	$2.80	$2.30	$2.25	$2.10	$1.80
No. 2-A.....per gallon	3.30	2.80	2.75	2.60	2.30
No. 33.....per gallon	3.80	3.30	3.25	3.10	2.80
No. 64.....per gallon	2.60	2.10	2.05	1.90	1.60
No. 78.....per gallon	2.50	2.00	1.70	1.55	.80
No. 80.....per gallon	2.50	2.00	1.70	1.55	.80
No. 104.....per gallon	2.50	2.00	1.70	1.55	.80
No. 104A.....per gallon	2.50	2.00	1.70	1.55	.80

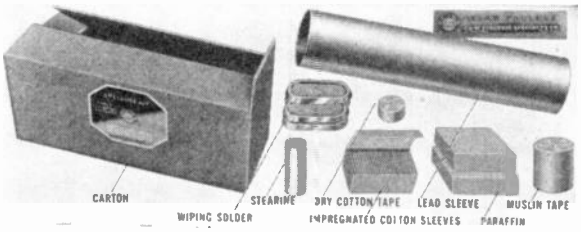
*Closed steel drum weighing approximately 400 pounds.

High Voltage Compound—Oil Insoluble

No. 33. For use in cable joints, potheads and terminals, and other electrical apparatus where a close seal against oil filtration is specified. For protection of transformer bushings on oil-filled transformers.

Size Container.....gallons	1	2	5
Per Gallon.....	$3.30	3.25	3.10

G & W Telephone Cable Splicing Kits



For 2-way straight joints for all sizes and numbers of conductors, paper-wrapped, wood pulp and silk insulated, lead covered, plain and armored cables.

Kit contains: paraffin, for boiling out the core; Stearine, flux for wiping joints; dry cotton tape, for protecting the individual conductors at the ends of the lead sheaths; muslin tape, for wrapping the spliced conductors; paper pasters, for limiting the wipes; lead sleeve, ⅛-inch thick, for housing the joint; and wiping solder, for wiping lead sleeve to cable sheaths.

No. of Pairs of Conductors	No. 22 A.W.G. Conductors: No.	Per Kit	Lead Sleeve I.D. In.	Lead Sleeve Lgth. In.	Approx. Ship. Wt. Lb.	No. 19 A.W.G. Conductors: No.	Per Kit	Lead Sleeve I.D. In.	Lead Sleeve Lgth. In.	Approx. Ship. Wt. Lb.
6	622T	$3.30	¾	15	9	619T	$3.30	¾	15	9
11	1122T	3.30	¾	15	9	1119T	3.60	¾	15	9
16	1622T	3.30	¾	15	9	1619T	3.60	¾	15	9
26	2622T	3.60	1	15	9½	2619T	3.90	1	15	9½
51	5122T	4.20	1¼	15	10	5119T	5.10	1½	15	11
76	7622T	4.50	1½	15	11	7619T	6.30	1¾	17	12½
101	10122T	4.80	1½	15	11½	10119T	7.20	2	17	13½
152	15222T	5.10	2	17	14½	15219T	9.00	2¼	20	18
202	20222T	7.50	2¼	17	15½	20219T	11.40	2¾	20	20½
303	30322T	10.80	2¾	20	20½	30319T	16.50	3½	20	25½
404	40422T	12.30	3	20	22	40419T	20.10	4	20	28½
455	45522T	12.90	3	20	22	45519T	21.00	4	20	29
606	60622T	15.60	3½	20	25	.....	.....	...	..	....
909	90922T	20.10	4	20	28½	.....	.....	...	..	....

Ozite B Filling Compounds

Ozite B is a black asphaltic compound recommended for filling joints, terminals and junction boxes operated at normal temperatures.

This compound is manufactured under an improved process which results in a product with a low carbon content. Formulated by expert cable engineers with many years of experience, this compound combines all of the desirable characteristics that a jointing or filling compound should have.

Prices and complete information upon application.

No. 2769 McGill Crescent Chatterton Compound

Domestic Brand

A para rubber compound for insulating 75% pure rubber. Gives complete assurance against danger of open contacts and terminals; can also be used for waterproofing. Used on all high grade electrical work. Formed in ¼-pound sticks, 1 inch in diameter and 8 inches long.

Put up 10 sticks in a package; weight, 2½ pounds.

No. **2769**.....per pound **$2.00**

No. 150 Minerallac Cable Pulling Compound

Minerallac Cable Pulling Compound is applied to the cable at the entrance of the cable feeder with a stiff brush. The properties of this compound cause it to cling to and lubricate the full length of the cable and conduit. The compound will follow through curves and bends in the conduit, eliminating damage to the cable sheath. No. 150 Cable Pulling Compound has the following features:

Chemically inert—no deterioration to either cable or conduit, including fiber conduit.

Economical—a comparatively small quantity is sufficient to pull a cable into the conduit: 5 to 7 pounds to pull a 2.83-inch diameter cable into approximately 400 feet of 3½-inch tile conduit.

Not affected by temperature—cables may be pulled at temperatures as low as 10° above zero (F.).

Size Can.....pounds	12	25	60	*600
No. 150.....per pound	$.14	.13	.12	.10

*Steel drum weighing approximately 600 pounds.

No. 100 Minerallac Pull-In Compound

Used to lubricate rubber covered wire and cable that is to be pulled through conduit.

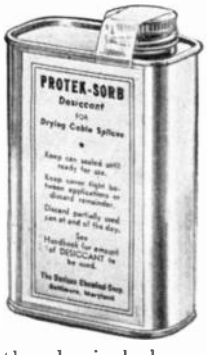
Reduces pulling tension and injury to wires and cables.

Furnished in 2-gallon cans.

No. 100.....per can $3.25

Protek-Sorb Desiccant

For Drying Cable Splices



Eliminates the hazards and inconveniences of "boiling out" cable splices with hot, melted paraffin. Splices are dried by pouring a recommended quantity of Protek-Sorb desiccant into the splice before it is closed.

It is a granular material, similar in appearance to granulated sugar. It is chemically inert and non-corrosive. It will not dust, cake, powder nor liquefy when used—even when completely saturated it looks and feels perfectly dry. Has exceptionally high dielectric constant. High moisture-absorbing capacity. The action of this desiccant is physical—not chemical—moisture removal is accomplished by the physical phenomena of surface adsorption and capillarity, best understood when it is pointed out that every cubic inch of this desiccant has a pore surface of 7,500,000 square inches.

Supplied in moisture-proof cans containing pre-determined quantities: small size contains 40 grams, 48 cans per case; medium size contains 160 grams, 12 cans per case; large size contains 650 grams, 12 cans per case.

Table Indicating Amount Recommended for Various Number of Cable Pairs

Total No. of Pairs Entering Splice	No. of Cans Required in Splice — Paper Insulation: Small	Medium	Large	Textile Insulation: Small	Medium	Large
Up to 80	½	...	...	1	...	..
81 to 130	½	...	...	2	...	..
131 to 205	1	...	...	3	...	..
206 to 255	1	...	...	..	1	..
256 to 360	1½	...	...	1	1	..
361 to 410	2	...	...	..	1½	..
411 to 475	2	...	...	..	2	..
476 to 725	3	...	...	..	2½	..
726 to 810	3	...	...	..	3	..
811 to 965	...	1	...	..	...	1
966 to 1115	1	1	...	..	...	1
1116 to 1215	1	1	...	..	½	1
1216 to 1350	...	1½	...	..	1	1
1351 to 1600	...	2	...	..	1	1
1601 to 2200	1	2	...	..	...	1
2201 to 2730	...	3	...	..	...	2
40-Gram Can.....each						
160-Gram Can.....each						
650-Gram Can.....each						

Stearine Wickless Candles

Diameter, 1¼ inches. Length, 3 13/16 inches.

Each candle individually wrapped to hold oil content.

Packed 6 to a pound, in 25-pound packages, or 150 pieces to a corrugated carton.

Per Pound..... $.60

Ruberoid Rapid Asphalt Paint

(Formerly P & B Rapid Asphalt Paint)

Dries quickly to a hard, glossy coating, exceedingly tough and durable and with high insulating properties. Adapted for cables, switchboards, battery boxes, shelving, conduit joints and all insulating requirements.

Made in medium brushing consistency.

Size Package.gal.	⅛	¼	1	5	55
Per Gallon.....	$2.00	1.70	1.40	1.25	1.10

Cope Safety Compound Kettles

Capacity, 3 Gallons

The double flue extending through the kettle bottom and up and out to the sides, conducts the heat to every part of the compound. This insures a uniform melting, thereby preventing all danger of explosion.

The short lip spout eliminates clogging and allows free pouring. The wide kettle opening provides ease in filling and also in dipping tubes and socking.

Made of heavy steel, welded throughout. Has an extra heavy bottom which is inset 1 inch from the base. Tight fitting lid prevents loss of compound. Diameter, 10 inches; height, 12 inches.

Each..... $16.90

Hammond Drierite Desiccant

Drierite is a chemical method of drying the insulation in locations where it is advisable to avoid the old paraffin boiling method. Tests have definitely proved Drierite to be effective in producing a completely dry splice.

Small Size

Size Container.....	⅛ Pt. (50 Grams)
Per Can.....	$.10
Cans per Carton....	48

Medium Size

Size Container.....	½ Pt. (200 Grams)
Per Can.....	$.20
Cans per Carton...	12

Large Size

Size Container.....	1 Qt. (800 Grams)
Per Can.....	$.45
Cans per Carton....	12

Table Indicating Amount Needed for Various Number of Cable Pairs

Total No. of Pairs Entering Splice	No. of Cans Required in Splice — Paper Insulation: Small	Medium	Large	Textile Insulation: Small	Medium	Large
Up to 80	½	..	..	1	..	..
81 to 130	½	..	..	2	..	..
131 to 205	1	..	..	3	..	..
206 to 255	1	..	..	..	1	..
256 to 360	1½	..	..	1	1	..
361 to 410	2	..	..	..	1½	..
411 to 475	2	..	..	..	2	..
476 to 725	3	..	..	..	2½	..
726 to 810	3	..	..	..	3	..
811 to 965	..	1	..	..	..	1
966 to 1115	1	1	..	..	..	1
1116 to 1215	1	1	..	..	½	1
1216 to 1350	..	1½	..	..	1	1
1351 to 1600	..	2	..	..	1	1
1601 to 2200	1	2	..	..	..	1
2201 to 2730	..	3	..	..	..	2

National Tinned Copper Cable Sleeves

Type S
For Straight Splices

Type D
For Butt Splices

B&S Gage	Type S Diam. Wire In.	Type S Length In.	Type S Approx. Ship. Wt. Lb. per 100	Type D Diam. Wire In.	Type D Length In.	Type D Approx. Ship. Wt. Lb. per 100
16	.051	1½	.3	.051	1½	.5
15	.057	1½	.3	....	...	...
14	.064	1½	.4	.064	1½	.6
13	.072	1½	.4	.072	1½	.6
12	.080	1½	.4	....	...	...
10	.102	1½	.5	.102	1½	.75
9	.114	1½	.5	....	...	...

Lead Sleeves

Lead sleeving of any diameter, length or thickness to meet any specific requirements can be furnished.

Sizes Recommended for Use with Western Electric Standard 19 and 22-Gage Cables

Thickness of sheath wanted must be specified.

Size Cable, Prs.	19 Gage I.D., In.	19 Gage Lgth., In.	22 Gage I.D., In.	22 Gage Lgth., In.
6–11–16	¾	15	¾	15
26	1	15	¾	15
51	1½	15	1¼	15
76	1¾	17	1½	15
101	2	17	1½	15
152	2½	20	2	17
202	3¾	20	2½	17
303	3½	20	2¾	20
404	4	20	3	20
455	4	20	3	20
606	...	..	3½	20
909	...	..	4	20

GRAYBAR INSULATING MATERIAL

ASBESTOS
Tapes, Sleevings, Cloth

CAMBRICS
Straight and Bias Cuts, black and yellow, standard widths and thicknesses

CORDS
Lacing and Binding

COTTON
Tapes, Webbings, Sleevings

ENAMELS
Insulating, Air Drying

MICA
Block, Plate, Moulding, Segment, Tapes, Sheets, Etc.

PAPERS
Varnished, Insulating, Fish

SLEEVINGS
Varnished, Saturated, Asbestos, Cotton, Fibre Glass, Lead

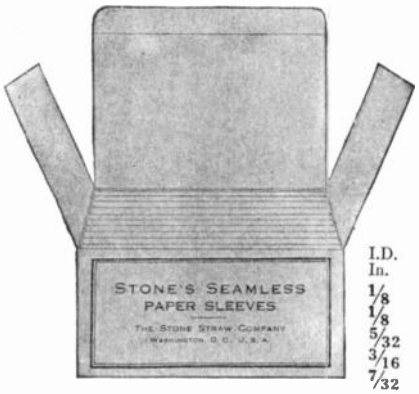
TAPES
Varnished cambric, Plastics, Adhesives, Linen

TUBING
Plastic, Varnished, Varnished Fibre Glass, Asbestos

VARNISHES
Air Drying, Baking

WEDGES

Stone's Paper Splicing Sleeves



Manila or Kraft construction.

Wall, .012 in.

Packed in individual boxes.

I.D. In.	Lgth. In.	No. per Box	Per Box
⅛	2¾	200	.....
⅛	3	200	.....
5/32	3	150	.....
3/16	3	110	.....
7/32	3	100	.....

Climax Fairstitch Linen Lacing Twine

Waxed

A linen cord made from the finest quality flax, evenly spun and of uniform strength. Used for cable lacing and other purposes.

Each tube is individually wrapped in cellophane.

No. of Cords	6	9	12
Average Tensile Strength.....pounds	41	61	82

Prices upon application.

Salisbury Cable Bandages

For general use as temporary insulation. Made of highest grade pure gum rubber. Unusually strong, very flexible, with excellent ageing qualities. Acceptance tests prove that a single thickness can withstand 10,000 volts.

In rolls 14 feet long, 3 or 4 inches wide, 1/32 inch thick.

Net weight per 3-inch roll, 10 ounces; 4-inch, 12 ounces.

Salisbury Linemen's Protector Gloves

Full Gauntlet, 4-Inch Style

Designed to wear over Linemen's Rubber Gloves to protect them from snagging, tearing or abrasive wear. Made expressly for this work and should not be confused with the ordinary work gloves.

Made of specially tanned Grade A buffed horsehide, maroon color, and from selected weights.

Remains soft and pliable under all conditions and will not become slippery when wet. Resists wire puncture to a great degree.

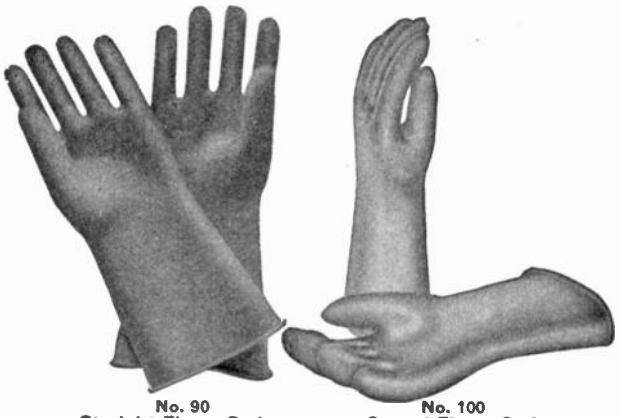
For Use With Straight Finger Rubber Gloves

No.	18-C	18	20-C	20
Style Back...	Closed	Open	Closed	Open
Covers Rubber Glove Sizes.	9, 9½, 10	9, 9½, 10	10½, 11, 12	10½, 11, 12

For Use with Curved Finger Rubber Gloves

No.	118-C	118	120-C	120
Style Back...	Closed	Open	Closed	Open
Covers Rubber Glove Sizes.	9, 9½, 10	9, 9½, 10	10½, 11, 12	10½, 11, 12

Salisbury Steam Cured Linemen's Rubber Gloves



No. 90 Straight Finger Style — No. 100 Curved Finger Style

Qualities of high insulation, low leakage, strength, flexibility and long life are evenly balanced. Each of these essentials is raised to the highest possible value without lowering the standard of some other property.

All gloves are seamless, form fitting, accurate to size, with finger lengths and widths adjusted to best meet average conditions.

Both Nos. 90 and 100 are furnished in 10,000, 15,000, and 20-000-volt ratings. Class B, 10,000-volt, 14-inch gloves are standard; Class A, 10,000-volt, heavier weight gloves are available.

Guaranteed to pass the most thorough inspection and to meet the A.S.T.M. specifications. Replacement made or return accepted of any which fail under initial tests at their rated voltage or otherwise prove unsatisfactory at time of delivery.

Furnished in sizes, 9, 9½, 10, 10½, 11, and 12.

Packed 1 pair to a box.

Salisbury Linemen's Glove Bags

Used to protect linemen's rubber gloves when not in use. Made of heavy, tightly woven, waterproof 42-ounce white duck with non-raveling edges.

Special features: Snap hook and D ring for attaching to belt; double head reinforcing rivets; sewed with linen thread, lock stitched; gusset sides and bottom, carrier flat when empty; flat lying cover; strong snap fastener; waterproof; ventilating eyelets in bottom gusset.

No.		35	25
Length	inches	15	9
Width	inches	8	8

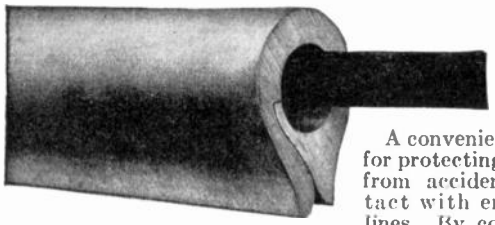
Salisbury Line Hose Connectors

Used where two or more pieces of straight line hose are employed on one wire to prevent the pieces from slipping apart and to eliminate the possibility of the conductor being exposed between adjoining ends. Also used to overlap the ends of line hose separated by a bulky joint.

Shaped to fit the outside contour of the hose, the walls being extra thick to provide the necessary grip. A series of ribs placed on the inside surface give the connector a tight hold.

Length, 12 inches. Available in two sizes to fit over either ⅝ or 1-inch line hose. When ordering specify hose size.

Salisbury Line Hose



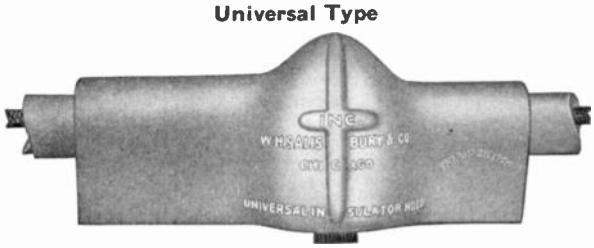
A convenient device for protecting linemen from accidental contact with energized lines. By completely surrounding the wire with a substantial wall of voltage-resisting rubber more than ample insulation is provided.

The self-locking lip prevents the hose from being accidentally detached. Short bends can be made without exposing the conductor it covers.

Furnished in ¼, ⅜, ⅝, 1, 1¼ and 1½-inch sizes, inside diameter; in standard lengths of 3, 4½ and 6-foot pieces.

Salisbury Rubber Insulator Hoods

Universal Type



Used in conjunction with line hose to cover tie-wires and conductors as they pass the insulators. Completely covers this point of hazard in a close fitting and positive manner. Can be used on double arm as well as single arm construction. The extending arms of the hood over-lap the ends of the line hose.

Compounded to secure high insulating qualities over a long period of time. Vulcanized in steel molds while under great pressure, in heavy duty presses; retains its shape and flexibility. Thick walls of solid rubber give it ability to stand up under severe conditions of use.

Requires no attachments to hold it in place. Securely locks itself to the under side of the insulator and cannot open, turn, slide or become accidentally dislodged.

Solid rubber flanges extending inwardly from under sides of the body portion serve to grip the under side of the insulators. Exterior ribs are placed to reinforce the side walls and to increase the grip.

Inside dimensions arranged so hood properly fits all popular types of pin insulators in distribution service.

Length, 14¾ inches. Height, 6¼ inches.

Weight, 4 pounds. Packed one to a carton.

Telephone and telegraph companies use a special hood shaped to fit telephone style insulators. As it is used on single arm poles only both extending arms of hood are of the same diameter and will snugly grip the ¼-inch size line hose. In ordering, specify Telephone Type.

Salisbury Rubber Protective Blankets

All Rubber—Black

Will fold, wrap or hang suspended in any position to provide an insulating barrier between electrical workers and hazards adjacent to their working position.

Bead molded on all four sides to prevent tearing.

Guaranteed on acceptance tests to resist 20,000 volts for 3 minutes.

Plain		With Eyelets	
No.	Size, Inches	No.	Size, Inches
300	36x36x⅛	300-E	36x36x⅛
400	27x36x⅛	400-E	27x36x⅛

Prices upon application.

Inter-Phone Cable

For Interior Use

For Outside Use

The conductors are provided with a single acetate yarn and single cotton insulation, which is colored in such a way that each pair and each single wire can be identified. The cable core is then impregnated with a wax compound and is covered with servings of paper and a heavy cotton braiding. In the case of lead covered cable, a lead sheath is placed over the core instead of the cotton braiding.

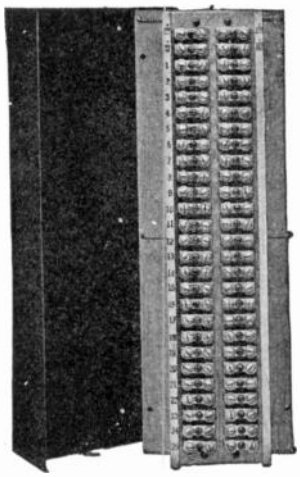
Three General Types of Cable are Provided

1. Interior Cable with outside braiding treated with gray fireproofing paint. Use only in dry places.
2. Interior Cable with brown glazed cotton outside braiding. Use only in dry places where exposed to view.
3. Outside Cable, lead covered. Always use this cable outside, and inside where there is apt to be moisture even in a small degree. In conduit installations lead covered cable should be used.

No.	*No. of Conductors	Pairs No.	Pairs Gage	Singles No.	Singles Gage	Covering	Approx. Diam. Inches
142B	8	..	..	8	22	Glazed Braid Painted Gray	.32
161B	8	..	..	7	22	Cotton Braid Painted Gray	.28
161BS	8	..	..	7	22	Lead Sheath	.27
162B	12	..	..	11	22	Cotton Braid Painted Gray	.32
162BS	12	..	..	11	22	Lead Sheath	.30
164B	12	2	18	6	22	Cotton Braid Painted Gray	.35
164BS	12	2	18	6	22	Lead Sheath	.33
244B	22	2	18	8	22	Cotton Braid Painted Gray	.38
244BS	22	2	18	8	22	Lead Sheath	.41
245B	22	2	18	8	22	Brown Cotton Unpainted	.38
246B	34	2	18	14	22	Cotton Braid Painted Gray	.42
246BS	34	2	18	14	22	Lead Sheath	.45
247B	34	2	18	14	22	Brown Cotton Unpainted	.42
248B	42	2	18	18	22	Cotton Braid Painted Gray	.45
248BS	42	2	18	18	22	Lead Sheath	.48
249B	50	2	18	22	22	Cotton Braid Painted Gray	.48
249BS	50	2	18	22	22	Lead Sheath	.51
250B	58	2	18	26	22	Cotton Braid Painted Gray	.52
250BS	58	2	18	26	22	Lead Sheath	.55
251B	72	2	18	33	22	Cotton Braid Painted Gray	.56
251BS	72	2	18	33	22	Lead Sheath	.60

*Quantity included under the heading "Conductors" includes spares.

No. 19 Type Cable Terminals



Suited for interior distributing work.

Made of hardwood, numbered and shellacked. Equipped with a sheet steel cover, treated with Parker rustproof process, finished in black enamel.

Width, 5⅞ inches; depth, 2½ inches.

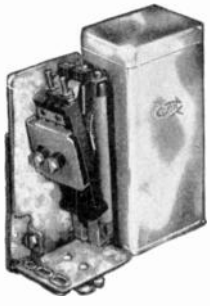
No.	19AC	19BC
Capacity.....pairs	15	27
Length.....inches	8	14

Prices upon application.

Cook Pole Jacks

For Portable Telephone Patrol Stations

Protected or Unprotected



Wherever intermittent telephone patrol service is required, the pole jack provides a compact, low cost station for plugging in portable telephones.

The Sentinel Pole Jack is widely used at docks, dry docks, firing ranges, warehouses, highway patrols, etc. Equipped with the Cook Dual Gap Protector Unit that provides in addition to fusing both primary and secondary protection from lightning, power crosses and induced high potentials. Has spring cover for the jack opening which excludes dust, moisture and insects when the jack is not in use. Height, 6¼ inches; width, 2¼ inches; depth, 1¾ inches. Net weight, 2¼ pounds.

The Commando Pole Jack has been especially designed and constructed for Coast Guard use and is completely weatherproofed and salt spray resistant. Height, 7¾ inches; width, 2⅜ inches; depth, 2 inches. Net weight, 2¼ pounds.

Housing frame is hot dipped galvanized No. 16 gage pressed steel and is equipped with a large non-corrosive ground stud. The detachable bracket for convenient mounting is also hot dipped galvanized.

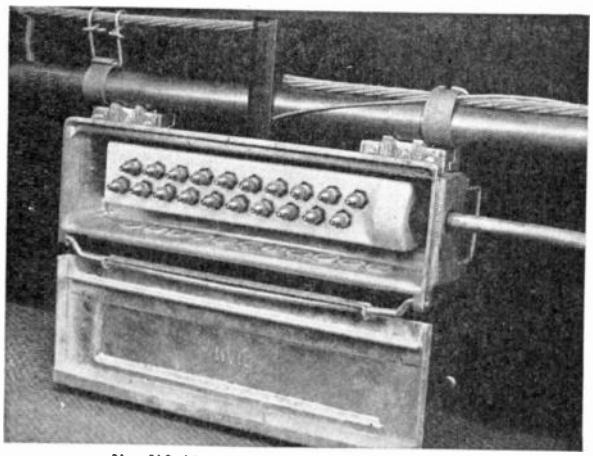
Non-corrosive cover is heavy welded zinc with drawn top. Tamper-proof hood seals can be furnished if desired.

Furnished as standard with Type JK-24 or JK-47 jack (U.S. Signal Corps designation). Other jacks can be furnished when specified.

No. **523-1**, Sentinel, Single Circuit Protected....each **$4.20**
No. **523-1**, Sentinel, Single Circuit Unprotected..each **2.40**
No. **523-70**, Commando, Single Circuit Unprotected
.....each **2.40**

NA Type Cable Terminals

Unprotected



No. NA 10 showing method of mounting on both ring hung and lashed cable.

For use in the aerial cable plant; replaces the 10 and 16-pair sizes of the F type cable terminal.

Consists of a cast aluminum alloy housing provided with a door which opens downward and contains a removable porcelain binding post chamber; arranged to mount on its associated cable by means of clamps provided for this purpose.

Each binding post chamber is provided with a 24-gage pulp and paper ribbon insulated cable stub. Standard assembly of binding post chamber in housing is such that cable stub will appear to the right when terminal is viewed from front. Terminal so designed however that should it be necessary to bring stub out at the left, the binding post chamber can be reversed in the field.

Wiring holes are provided in the bottom of housing for drop wires and three distributing rings of corrosion-resistant material are attached to rear of the housing.

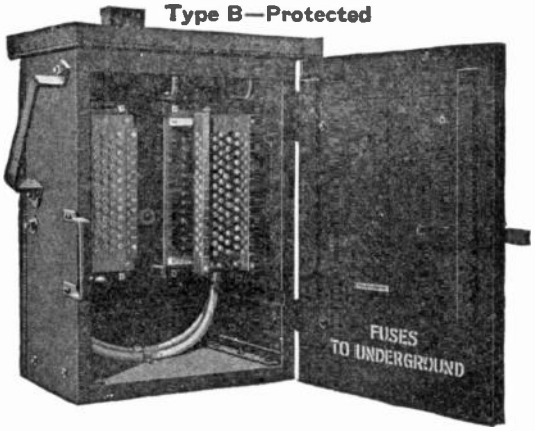
Cable stubs can be furnished in either 3 or 5-foot lengths, 3-foot length furnished unless otherwise specified.

No.	Each	No. of Pairs of Conductors Arranged for	Overall Dimensions, Inches *Height	Width	Depth
NA10	....	10	8 3/8	12 1/2	3 9/16
NA16	....	16	8 3/8	17	3 9/16

*With door open.

Western Electric Cable Terminals

Type B—Protected



No. B26, Open

The listing of Type B cable terminals complete includes a terminal box, equipped with fuse chambers and binding post chambers, each of which is supplied with a cable stub attached and potheaded. Fuse chambers and binding post chambers may be ordered as separate items.

No. B26 terminal will terminate both a 26 pair underground cable and a 26 pair aerial cable. It provides for cross-connection. Other sizes have similar capacity ratings.

Pole seats may be used with the two smaller sizes of Type B cable terminals. These together with balconies for the large terminals can be obtained.

Code No.	Capacity Pairs	Cable Terminal Box	*Fuse Chamber No.	Qty.	Binding Post Chamber No.	Qty
B 26	26	B 26	B 26A	1	B 26A	1
B 51	51	B 51	B 51A	1	B 51A	1
B 76	76	B 76	B 76A	1	B 76A	1
B101	101	B101	B101A	1	B101A	1
B152	152	B152	B 76B	2	B 76B	2
B202	202	B202	B101B	2	B101B	2
B304	304	B304	B 76B	2	B 76B	2
			B 76C	2	B 76C	2
B404	404	B404	B101B	2	B101B	2
			B101C	2	B101C	2

*B fuse chambers do not include the No. 7T fuses which must be ordered separately.

Type F—Unprotected

Open

Provides a moisture-proof seal for lead-covered cables terminated on outside walls or poles.

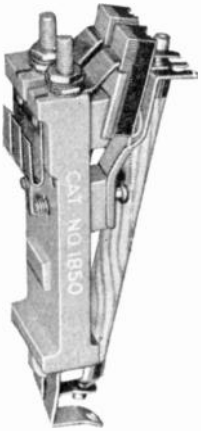
Consists essentially of a metal sealing chamber having an insulating panel with binding posts, nuts, and washers. Provided with galvanized slip cover and detachable metal mounting plate. Terminal may be mounted with stubs out of top or bottom of mounting. With 5½-foot cable stub projecting from top of terminal. Can be furnished with 10 or 12-foot cable stub (out of top only), or 8-foot cable stub (out of top or bottom as specified).

Side View

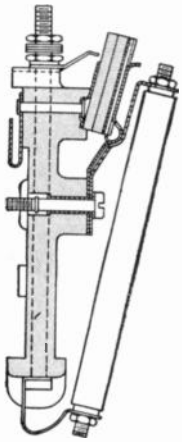
Code No.	F10	F16	F26
No. Pairs of Conductors Arranged for.	10	16	26
Overall Height.....inches	8 1/2	10 5/16	15 1/2
Overall Width.....inches	7 1/2	7 1/2	7 1/2
Overall Depth.....inches	4 5/16	4 5/16	4 3/16

For more complete information on all types of telephone apparatus and cable, consult your nearby Graybar office.

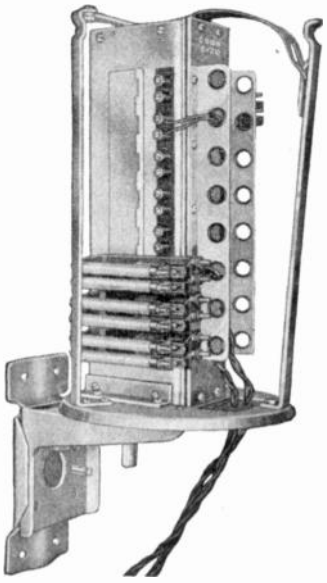
Cook S-20 Protected Cable Terminals



H-20 Protector Unit



H-52 Protector Unit



S-20

A protected terminal which enables protector units to be installed as required.

Drops enter at front and can be connected with or without protector.

The cable enters the moisture-tight cable chamber through the Cook self-soldering nozzle which is placed well to the rear of the terminal to bring the cable close to the pole.

The pure zinc cover of the cable chamber is placed directly at the front of the terminal, thus making the cable connections on the inside of the cable chamber readily accessible while terminal is in service.

Sturdy Everdur alloy studs for terminating cable wires inside corebox and protector units on outside are located in two rows down front of terminal. Drops enter base of terminal through an insulating plate equipped with knockout for each drop wire. This excludes insects and dirt.

Each pair of protectors is a complete unit in itself, consisting of two subscribers' drop terminals, two primary lightning arresters, two secondary lightning arresters, and two fuses, all mounted on heavy piece of high-strength bakelite. It is attached to terminal and to cable pair by simply placing it in position and tightening two screws.

Tru-Gap lightning arresters are at front of terminal so as to be readily accessible to maintenance men. Secondary, lightning arresters are also placed on subscribers' drop connection to give high voltage protection after a fuse has blown.

Only desired number of pairs need be equipped with protection. Remaining pairs may be left unoccupied or used as unprotected. Additional protector units can be readily installed at any time.

A light-in-weight but extremely rugged pressed steel terminal, in a hot galvanized finish. Insulation is of hard rubber and bakelite.

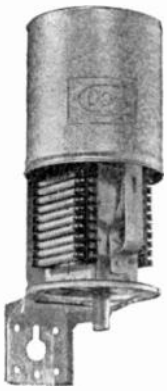
S-20 without Protector Units

No.	Capacity	Height Inches	Diam. Inches	Ship. Wt., Pounds Less Stub	Ship. Wt., Pounds With Stub
1800	6-Pair	12	9	11	18
1820	11-Pair	15½	9	15	23
1840	16-Pair	19	9	18	18
1870	26-Pair	28	9	23	35

Protector Units Complete

No. H-20, with A-7 Fuses, Ship. Wt. per 100, 26 Lbs.
No. H-52, with A-52 Fuses (or Western Electric 11C), Shipping Weight per 100, 27 Pounds.

Cook S-6 Protected Pole Cable Terminals



Strength, lightweight, rigidity and perfect insulation are combined in this terminal.

Bracket, base, cable box (except zinc front), and hood are all formed from sheet steel, hot galvanized.

Hollow studs for cable wires, and springs for holding fuses, lightning arresters and connecting jumpers, are all set in hard rubber, providing perfect insulation.

Cable box has a removable zinc cover, fastened in place with machine screws and made air-tight by a rubber gasket. After cable wires are connected and cable soldered to nozzle, it is good practice to fill the top of the nozzle around the cable wires and flood the floor with a thin layer of compound.

Treated waterproof fiber is used to protect jumper wires where they pass through steel base and side panels.

Fuse holders are made under Cook patented design, and keep fuse under permanent tension. They permit fuse to be easily installed and removed, yet hold it securely. Lightning arresters are held under permanent tension by a separate spring. These springs being of phosphor bronze, will last indefinitely.

Cable connections are made through hollow brass studs, set in hard rubber, which pass through sides of box. The outside ends of these studs are concave, and have sufficient solder to permit copper wire to be permanently fastened by the touch of a hot soldering iron. On the drop side, both screw and washer, and soldered connections, are provided for drops enter at rear.

All steel parts of terminal are grounded. To secure good contact for arrester carbons, strips of formed spring copper are soldered to the steel sides of core box. Ground wire connection is on under side of base.

The S-6 terminal is equipped with standard tubular A-7, 5-ampere wood fuse, 4¾ inches between shoulders. Lightning arresters are true gap dischargers that will not permanently ground the line.

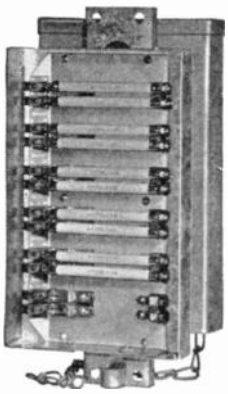
Steel core box with self-soldering nozzle, eliminates the necessity of an external pothead, simplifies method of installation, and greatly reduces its cost, at the same time securing satisfactory results. Nozzles are made of formed, seamless steel tubing thoroughly galvanized and rigidly fastened in base of cable box. Terminals are shipped with sheet solder and flux in place inside of the nozzles.

Very compact and yet has ample room for connecting both cable and jumper wires. Hood is firmly held in position by a cover spring, both when raised and lowered. Fuses and lightning arresters easily removed or replaced. On the zinc face plate of cable box is stamped a number for each cable pair. Jumper connections can readily be made. Any circuit can be tested by removing a fuse and testing through fuse holders.

This terminal will be furnished with 22 B. & S. gauge cable stub attached when so ordered.

No.	Description	Height Inches	Diameter Inches	Weight Pounds
1700	11-Pair Complete.....	14	9	12
1701	16-Pair Complete.....	17½	9	15
1702	26-Pair Complete.....	26½	9	20
1703	51-Pair Complete.....	39½	9	35
1880	102-Pair Complete.....	Twin 51-Pair		90

Cook SX Protected Cable Terminals



A terminal for use where maximum distribution is only four to six pairs and where protection is required.

Cable enters through a well in which solder is puddled so that a strong moisture-proof connection is made. A patented metal strap on mounting bracket clamps cable to prevent injury at the cable joint.

Cable wires are carried from inside cable chamber through hollow brass studs and solder to tinned end of stud. Each pair of cable studs is set in individual hard rubber blocks securely fastened into metal face plate of cable chamber. This method of construction insures high insulation and moisture-proof seal for cab'e.

Fuses are held under constant tension in phosphor bronze fuse clips, thoroughly insulated by hard rubber. Fuses are easily removed and replaced. Heavy bronze springs insure positive, permanent pressure between lightning arresters and ground plate. Protection consists of A-7 fuses, which blow at five amperes, Tru-gap dischargers, and carbons. Arresters ground on copper strip. Tru-gap dischargers do not normally ground line.

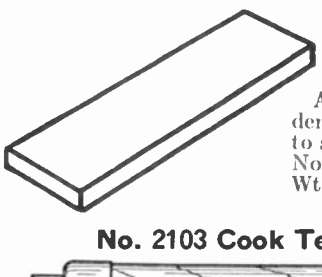
Both screw and washer and solder connections are provided. Drops pass through a patented, adjustable opening in the base of the terminal.

The cable chamber and bracket are made of steel, formed, assembled and hot galvanized. The hood is of zinc, fastened to the terminal with a strong chain.

Regularly equipped with a mounting bracket.

Furnished with cable stud attached when so ordered.

No.	Capacity	Height Inches	Width Inches	Depth Inches	Ship. Wt., Pounds Less Stub	Ship. Wt., Pounds With Stub
9000	4-Pair	15¼	7⅜	3½	11	20
9001	5-Pair	15¼	7⅜	3½	11	20
9002	6-Pair	15¼	7⅜	3½	11	20

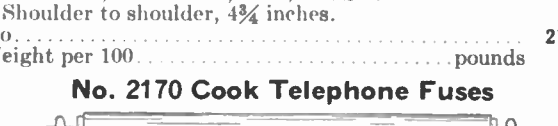


Cook Lightning Arresters

Arrester is made of hard dense carbon, carefully ground to a smooth surface.

No. **3001**
Wt. per 100. ..... lb. 1

No. 2103 Cook Telephone Fuses



A-7 Wood, Used in S-6, H-20, and SX.
Shoulder to shoulder, 4¾ inches.

No. **2103**
Weight per 100 ..... pounds 7

No. 2170 Cook Telephone Fuses

Used in H52 protector unit. Shoulder to shoulder, 4 1/16 inches.

No. **2170**
Weight per 100 ..... pounds 8

No. 4500 Cook Tru-gap Dischargers

Designed to relieve telephone circuits from high potential without permanently grounding the line.

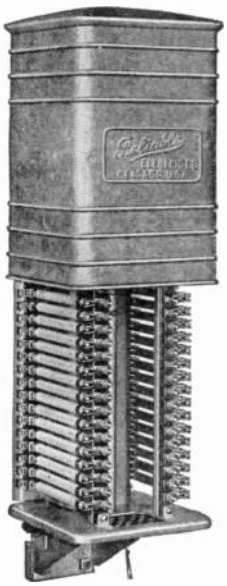
It is of rugged construction, accurately made, and free from maintenance expense. The discharger is used with a carbon block.

A heavy bronze discharger is fitted into a bakelite block the size of an ordinary carbon. On the top of this bakelite block is a bronze cap anchored to the discharger blade. The discharge surfaces are inclosed so no dust can accumulate.

No. **4500**
Weight per 100 ..... pounds 1

Reliable Protected Cable Terminals

Type B27 with No. 27L 5-Ampere Fuse
Type B56 with No. 56 5-Ampere Fiber Fuse
Type B55 with No. 55 5-Ampere Fiber Fuse



For terminating lead covered cable with facilities for drop wire distribution. Adds to the convenience of installation, wiring and maintenance. A detachable mounting bracket simplifies the installation.

The cable chamber is on the pole side and is accessible by removing the terminal from the bracket. All drop wiring is done on the side away from the pole.

Individual clips for carbons and fuses, prevent the carbons from crossing when removing fuses. It is unnecessary to remove these fuses when installing jumper wires as all binding posts are at right angles to the fuses.

The heavy binding posts are treated to prevent season cracking. Mounted in molded bakelite and cannot short or turn.

Fuse clips and all other metal parts are rounded to prevent scratches to linemen. Beveled washers on binding posts make it easy for linemen to insert wires. Jumper wires enter the terminal through a heavy fiber fanning hole in bottomplate.

The cast cable chamber is air tight with a full round rubber gasket which seals cable wires. Cable wires are terminated in hollow studs and can be soldered outside of the cable chamber.

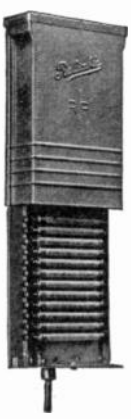
The can top is square with a heavy cast cover which acts as protection against bending or puncturing. It is guided from three points to prevent contact with live parts.

Supplied with No. P495 saw-tooth discharge blocks, No. P197 carbons and 7-foot, No. 22 A.W.G. stub.

Capacity Pairs	Each	Overall Height Inches	Stub Inches	Shipping Weight Pounds
11	**$17.50**	14½	None	21
	20.10	14½	7	30
16	**24.15**	17½	None	24
	27.30	17½	7	35
26	**33.10**	23¾	None	27
	37.00	23¾	7	37

Type RP Reliable Protected Cable Terminals

Type RP-27 with No. 27L 5-Ampere Fuses
Type RP-56 with No. 56 5-Ampere Fuses



This is a compactly designed, reversible protected cable terminal. Designed to meet requirements for a small protected terminal of high quality and fine workmanship.

Rugged in construction, yet light in weight. The mounting bracket is detachable for easy installation. The cable chamber is a durable casting—will outlast the cable. A sliding cover is provided making the terminal reversible and eliminating the bother of handling separate types for installation with stub at top and bottom.

Made of corrosion resistant aluminum alloy throughout. Insulation is molded bakelite.

Furnished with P495 sawtooth discharge blocks, P1384 carbons, and a 6-foot, No. 22 A.W.G. stub out of top.

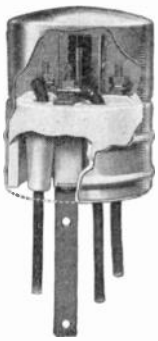
Type ..... RP
Each **$13.00**
Capacity ..... pairs 6
Height ..... inches 11
Stub ..... feet 6
Weight ..... pounds 9½

No. P495 Reliable Sawtooth Discharge Blocks

Standard package, 20.

No. P495, Ship. Wt. per 100, 2 Pounds.....per 100 **$7.50**

No. 402RR Reliable Two-Wire Cross Arm Arresters



Has galvanized steel bracket and an aluminum cover.

Furnished with P495 discharge block and P1384 carbon block.

Furnished with dry spot base of heavy porcelain.

Diameter, 3 inches. Length, 8½ inches.

Standard package, 2.

Shipping weight, 2 pounds.

No. 402RR.....each **$1.00**

Reliable Fuses

For Protectors and Terminals

1, 3, 5, and 7 Ampere Capacity

Unless otherwise specified, 7-ampere fuses will be supplied.

13/64-Inch Tip Diameter

Made in four lengths.

No.	Per 100	Shoulder to Shoulder Inches	Material	Std. Pkg.	Ship. Wt. Lb. per 100
27L	$9.00	4¾	Ceramic	50	6
77	16.80	4¾	Fiber	50	5
95L	9.00	4	Ceramic	50	5
31L	9.00	3	Ceramic	50	5

11/64-Inch Diameter Tip

Made in two lengths.

30	$9.00	3	Ceramic	50	7
106	15.00	3 1/16	Fiber	50	4

7/16-Inch Round Fiber

With ⅜-Inch Hexagon Nuts, Both Ends

Made in two lengths.

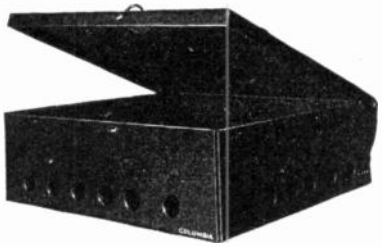
53	$18.00	3¾	Fiber	50	6
55	18.00	4 1/16	Fiber	50	7

7/16-Inch Round Fiber

With 7/16-Inch Hexagon Nut, One End

56	$20.00	4 1/16	Fiber	50	8

Type A Columbia Surface Steel Cabinets



Adapted to nearly all installations where a cabinet for surface mounting is to be used as a junction, service, switch, panel or cutout cabinet.

Construction. Of sheet steel, required thickness to conform with Underwriters'.

Finish. Standard finish is high grade baked-on black Japan. Olive green, aluminum, white enamel, or other special finishes at extra charge.

Hardware. Cabinets up to 18 inches in width or height are regularly equipped with flush ring handle and friction catch; over 18 inches wide and not exceeding 24 inches high a turn knob and latch is used. Larger cabinets and all double door cabinets are fitted with vault handle latch. Unless otherwise specified, all boxes are hinged on the long side. Code requirements for double doors and three-point catches are provided for in the listing

Knockouts. All sizes, including 12x10 inches have one ¾-inch knockout in center of each side and balance ½-inch knockouts; sizes 12x12 inches and up, one 1¼ and one 1-inch knockouts located near center of each side with remaining space filled with ½-inch knockouts.

Available in sizes 4½ inches wide and 5 inches high to 60 inches wide and 96 inches high. Cabinets 4½x5 and 4½x9 inches, 3 and 4 inches in depth; cabinets 6x6 to 8x8 inches, 3, 4, 6 and 8 inches in depth; cabinets 8x10 inches, 3, 4, 6, 8 and 10 inches in depth. Cabinets 8x12 inches and larger available in 3, 4, 6, 8, 10 and 12 inches in depth.

Cabinets 4½ and 6 inches in width, hinged on width or short side.

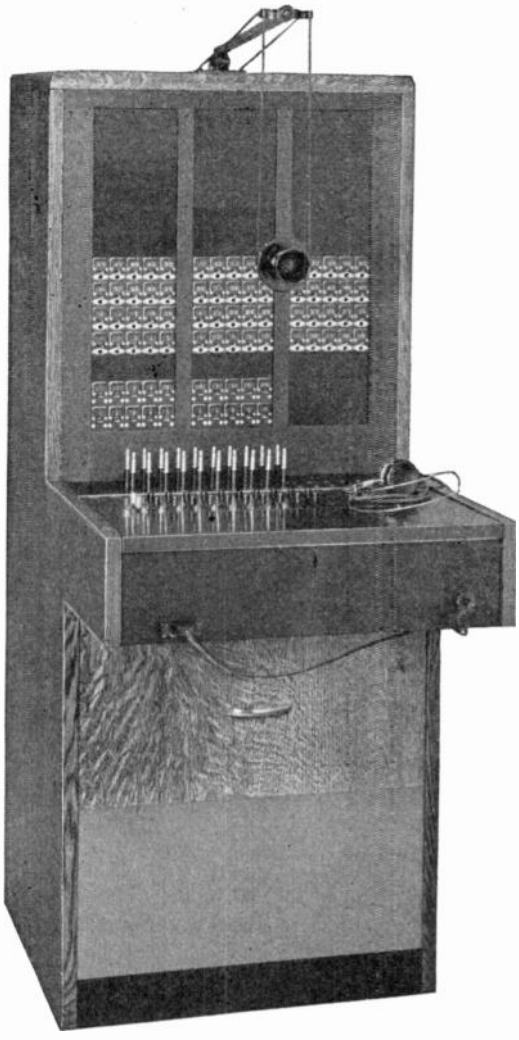
Galvanized Cabinets. Can be furnished at 30 per cent extra charge.

Boxes without Covers. Can be furnished at a deduction of 20 per cent in prices.

Flange can be supplied on front edges for mounting a wood trim or other cover when specified.

For drilled holes, 1 cent extra for each hole per box; drilled and tapped holes, 2 cents for each hole per box; minimum charge per order, 50 cents.

Prices and Complete Information Sent on Request



No. 25 Magneto Switchboard. All equipment mounted on sturdy steel frame—maintenance is simple and easy.

Leich Magneto Switchboards

No. 25 Magneto Switchboard

150-Lines—15 Cord Circuits—Drop Signals—Second Position May be Added

This switchboard is particularly adapted to the needs of the average magneto exchange. It provides excellent service. Repeating coils can be used in the cord circuits to insure good transmission. It offers, also, the simplicity of operation and ease of maintenance so necessary for profitable magneto operation. The unit type construction makes it possible to add another position to make an efficient and attractive two-position unit. This may later be separated into two single-position boards if necessary. The No. 25 switchboard has standard plug-ended cord circuits and double drop non-ring-through supervision which have been proved most advantageous for the average exchange. The low keyshelf permits the operator to use an ordinary chair.

The standard drops and jacks are mounted five to a bank. They provide dependable, positive line signals. The drop shutters are plug restored, making for speedy operation. The manually restored clearout drops are of the same construction as the line drops, which facilitates maintenance. They are arranged for double drop supervision, which indicates to the operator which party to a conversation rings off and prevents the party ringing off from signalling the party he has just talked with.

Has highly finished woodwork, simple lines, flush sides and top, combined with the long-wearing bakelite of the face and keyshelf. Oak woodwork is standard. Walnut or mahogany available if disired. Kickboard is of hard-to-scuff linoleum. Entire back easily removed for access to equipment. Hinged keyshelf makes it easy to get at key equipment. Removal of flush side makes it possible to add another position and have an attractive, harmonious two-position switchboard.

Choice of suspended type transmitter or lightweight breastplate transmitter. Both have a lightweight headband receiver. Board is equipped with a heavy duty hand generator and generator switching key for use in case of power failure.

Equipment consists of 150 plug restoring drops; 15 cord pairs with ringing, listening and ringback keys, repeating coils in cord circuits; 1 operator's transmitter and receiver set, either suspended or breastplate type; 1 hand generator and generator switching key; 1 night bell and key; and 12 feet of cable extending from top or bottom of switchboard.

NOTE.—A second position may be added to this No. 25 switchboard to make a two-position magneto switchboard with a total of 300 plug restoring drops and 30 cord pairs.

No. 4C Magneto Switchboard

50 Lines—10 Cord Circuits—Drop Signals—Low Keyshelf

This is an ideal switchboard for the smaller magneto exchange where the ultimate capacity of 50 lines can be expected to take care of future growth. It's easy to operate and is designed so that maintenance can be handled by the average person. The equipment itself is the same as is used on larger Leich switchboards. The black bakelite of the face and keyshelf contrasts with the finished cabinet woodwork to make an attractive installation. The low keyshelf enables the operator to use an ordinary chair.

Drops and jacks are mounted five to a bank, making a compact, easily replaced unit. The drops are plug restored —when the operator plugs in to the jack the drop shutter is automatically restored. On an incoming call, instead of just releasing the shutter, the armature trigger kicks it down, to doubly insure perfect operation. All parts are easily replaced. The simple, positive action of Leich drops is an important part of the dependable, trouble-free operation of these Leich magneto switchboards.

Double drop supervision has proved to be the most simple and reliable for magneto switchboards. The same type drop signals as are used for line signals are used to indicate when a subscriber rings off. Double drops mean that one drop is associated with the calling party and the other one with the called party. This indicates to the operator which party has rung off, and is non-ring-through—the party ringing off signals only the operator, and not the party he was talking to.

Cabinets are made of high quality materials. Oak, woodwork is standard. Walnut or mahogany available if desired. The keyshelf is hinged for easy access to the key equipment. The key table cannot warp as it has bakelite cemented under pressure to both top and bottom.

The standard night alarm equipment consists of a night bell and key. Operation of the night key causes the bell to ring continuously as long as the drop shutter is open on an incoming call.

The switchboard may be equipped with either a suspended or breastplate type transmitter. With both there is a lightweight headband receiver.

Equipment consists of 50 plug restoring drops; 10 cord pairs with ringing, listening and ring back key, with repeating coils; 1 operator's set with heavy duty hand generator and generator switching key; 1 night bell and key; and 12 feet of 50 pair cable extending from either top or bottom of cabinet.

NOTE.—Any part of the maximum equipment may be installed and more added as required.

Leich Magneto Telephones

No. 86 Magneto Handsets

For Wall Mounting

This No. 86 Wall Mounting Magneto Telephone is ideal for both town and country use. From the operating standpoint, it will serve long and well with a minimum of maintenance. It has a powerful Alnico generator, provides excellent transmission, has anti-side tone circuit, two-toned ringer and an attractive bakelite case.

This wall mounting telephone can be quickly and easily converted into a desk handset with separate generator box, thus enabling standardization on one type telephone.

The No. 86 contains the standard Leich handset transmitter, receiver and induction coil which have been proved so well in operation. The Alnico generator is more powerful than the average 5-bar generator, and will render excellent service on heavily loaded lines. Can be used to replace all standard 3, 4 and 5 bar generator models.

No.	*86-A-1000	*86-A-1600	*86-A-2500
Ringer ohms	1000	1600	2500

Accessories to Convert No. 86 Wall Set Into No. 70-A Desk Set and No. 26 Generator Box

No.	Description
9683	Bakelite Top for Generator Box
3344	Felt Covered Base for Desk Set
36	63-Inch 3-Conductor Handset Stand Cord

*For Sure-Ring Condenser, change "A" to "C". Can also be furnished with ground ringing pushbutton and pulsating generator.

No. 70 Magneto Handsets

For Desk or Table

With No. 26 Generator Box

When business or residence subscribers desire a modern desk telephone, the No. 70-A Magneto Desk Handset and No. 26 Generator Box is the answer. This is an ideal combination with its bakelite case, attractive appearance and excellent transmission and reception.

The two units are furnished complete, and require only the usual two No. 6 dry cells for operation. The dry cells are usually installed in some out-of-the-way location.

This desk handset combination can be quickly converted into the No. 86 Wall Mounting Magneto Handset.

No.	Description
*70-A	Magneto Desk Handset
*26-A-1000	Bakelite Generator Box with 1000-Ohm Ringer
*26-A-1600	Bakelite Generator Box with 1600-Ohm Ringer
*26-A-2500	Bakelite Generator Box with 2500-Ohm Ringer

To Convert No. 70-A Desk Set and No. 26 Generator Into No. 86 Wall Set:

Remove base from desk set and top from generator box—replace cord with No. 6 wire group.

To order generator box without top, specify desired ringer and mark "without top".

*For Sure-Ring Condenser, change "A" to "C". These telephones are also furnished with ground ringing pushbutton or pushbutton and pulsating generator.

One Type Telephone to Meet Every Service Requirement

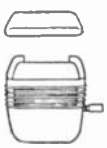
Start

With the No. 86 Wall Type

1

Remove desk set from generator box.

2



Attach cover to generator box.

3

Attach felt base to desk set.

4

Attach 3-conductor hand-set cord. FINISH with a streamlined desk telephone for country use, city homes and offices.

and—It's Just as Simple to Convert the Desk Type to the Wall Type

U.S.I. Sound Powered Intercommunicating Telephones

The sound powered handsets used in these telephones require no external power for operation. They transmit and reproduce speech without distortion or noise over circuits many miles in length.

Sound powered telephones must be used with other telephones of the same kind, they do not operate satisfactorily with battery operated telephones.

Telephones with Magneto Howler Signals

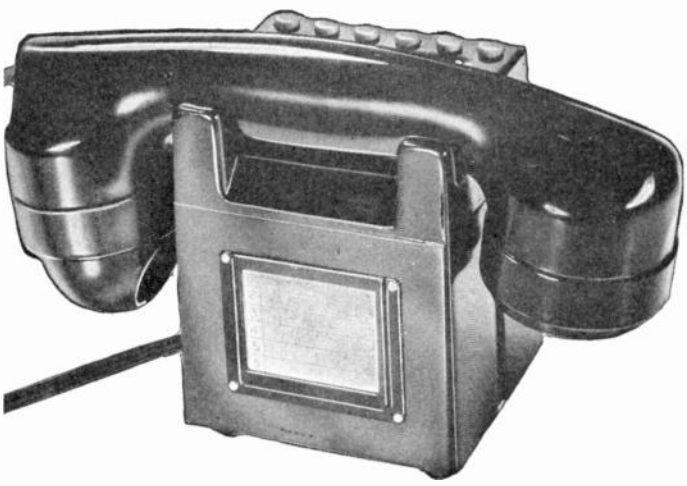
No. A-295

Recommended for use wherever a rugged, reliable telephone that is independent of any external power supply is required. The telephones listed below have a sound-powered handset mounted on a weatherproof, cast aluminum box containing a 1200 cycle magneto generator, a howler unit with horn, terminal blocks, and if selective signaling is required, a rotary selector switch. A protective metal hood is optional. The warble-tone supplied by the howler is distinctive and penetrating and carries better over high noise levels than the sound of a bell.

No.	Each	Description
A-293	.....	Without Selector Switch
A-294	.....	With 8-Point Selector Switch
A-295	.....	With 16-Point Selector Switch
A-296	.....	With 24-Point Selector Switch

Other similar types of telephones are available that are suitable for use in explosive atmospheres.

Telephones for Indoor Use



No. A-291

May be used on a desk or mounted on the wall by means of an integral bracket. Signaling is by means of an interrupter, which produces a distinctive ringing tone, and which requires so little current it is energized by two flashlight cells.

Common Talking, Code Ringing System

No.	Each	Description
A-290	.....	Telephone Set, with 1 Ringing Button
A-300	.....	Battery Box
A-298	.....	Junction Box
1868-1	.....	*Desk Set Cord 6 Feet Long

Common Talking, Selective Ringing System

A-291	.....	Telephone Set, with 6 Ringing Buttons
A-300	.....	Battery Box
A-299	.....	Junction Box
1868-2	.....	*Desk Set Cord 6 Feet Long

Sound Powered Handsets

Mounting hooks in two styles are available for use with these handsets.

No.	Each	Description
A-257-2	.....	Has Press-To Operate Switch in Handle and 4½ Feet Rubber Covered Cord
A-276	.....	Has No Switch. Equipped with 4 Feet Braided Cord.
A-277	.....	Has No Switch. Equipped with 4½ Feet Rubber Covered Cord.
A-277-1	.....	Test Set. Same as No. A-277 except Cord Has Free Ends 1-Foot Long Equipped with Test Clips.
A-278	.....	Single Sound Power Unit in a Watch-Case Housing and Equipped with 3½ Feet Rubber Covered Cord.

*These cords should be ordered when telephone set is to be used on desk.

Further Information Sent On Request

Inter-Communication Phone Systems

Without Exchange Trunks

This system has gained universal recognition for providing reliable telephone communication in installations requiring limited local service and not requiring outside or city connections.

Ideal for offices, factories, stores, schools, apartments, institutions.

No. 1-A Systems

Features selective ringing and selective talking service and provides as many separate simultaneous conversations as there are pairs of phones installed. The total number of stations which may be connected is 25

No. 6240-C Telephones

Desk and Wall

The No. 6240-C comes in two styles, desk and wall. When ordering, specify the style of instrument desired.

No. 6240-C 12

Code No.	No. of Buttons	Station Capacity	Description
6240-C6	6	7	Sel. Ring, Sel. Talk
6240-C12	12	13	Sel. Ring, Sel. Talk
6240-C16	16	17	Sel. Ring, Sel. Talk
6240-C24	24	25	Sel. Ring, Sel. Talk

No. 6240-C 24

Accessories

The No. 1-A system requires the following material for completing an installation:

Cable. With suitable conductors, (2 pairs No. 18 gage for battery supply, and 1 pair No. 22 gage, for each station in the system). Lead covered cable is recommended for all locations where moisture is present or where cable may be exposed to mechanical injury.

Stranded Flexible Cable. Used where it is necessary to move the desk telephone about upon a desk. Conductors required depend upon number of buttons in the key box.

Cable Terminals. Cable terminals should be provided wherever there is a junction between cables, and, usually, at desk mountings.

Rectifilter. Recommended in place of dry cells wherever reliable 110 volt a.c. is available.

No. 11 Systems

Provides selective ringing and common talking operation. Adaptable to establishments where conversations can be limited to one at a time. Used extensively in residences, banks, warehouses, and stores.

No. 2527 Telephones

No. 2527-C 8

Selective ringing and common talking type.

Suitable for surface wall mounting.

No. 2539-C is a flush type wall telephone which is combined with a metal outlet box and a set of outlet box hangers.

Code No.	Code No.	No. of Buttons	Station Capacity
2527-C2	2539-C2	2	3
2527-C3	2539-C3	3	4
2527-C4	2539-C4	4	5
2527-C6	2539-C6	6	7
2527-C8	2539-C8	8	9

No. 6347-C Telephones

No. 6347-C 8

A surface mounting wall type instrument.

The housing is of molded phenol compound with the push button unit mounted at the top. The transmitter and receiver are made up in the form of a handset.

Code No.	No. of Buttons	Station Capacity	Description
6347-C4	4	5	Sel. Ring, Com. Talk
6347-C8	8	9	Sel. Ring, Com. Talk

Inter-Communication Phone Systems

Without Exchange Trunks

No. 11 Systems (Continued)

No. 6345-C Telephones

No. 6345-C8 Handset

Consists of a handset telephone desk set with push buttons mounted in the base together with an apparatus box containing a bell and connecting block.

Code No.	No. of Buttons	Station Capacity	Description
6345–C4	4	5	Sel. Ring, Com. Talk
6345–C8	8	9	Sel. Ring, Com. Talk

Accessories

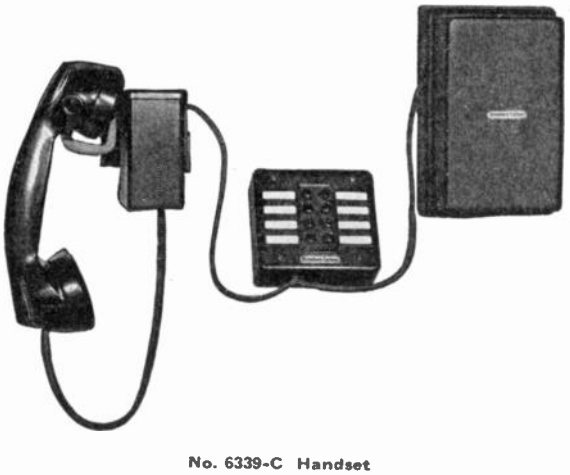
The following material is necessary to complete the installation of a No. 11 System:

One No. 51-H Retardation Coil. Installed near battery.

Cable. Three common wires, No. 18 gage, and one individual wire, No. 22 gage, for each station.

Dry Cells. Five cells required. If 110 volt a.c. current is available, a 6-volt rectifier may be used.

No. 6339-C Telephones



No. 6339-C Handset

Consists of a handset hook switch box, push button bloc and apparatus box.

The hook switch box can be mounted at the side of a desk on a wall or any vertical surface.

Code No.	No. of Buttons	Station Capacity	Description
6339-C4	4	5	Sel. Ring, Com. Tal
6339-C8	8	9	Sel. Ring, Com. Tal

No. 12 System

Master Station—Common Talking

This system provides for communication from a central point, master station, to several outlying stations.

The master station is equipped with push buttons, one for each outlying station. By operating these buttons, each outlying station may be rung separately.

The outlying stations are each equipped with one ringing button only, by which they are able to signal the master station.

Only one conversation can be carried on at one time.

The capacity of this system permits the operation of one master station and from 2 to 16 outlying stations.

Instruments

Master Stations. Any of the instruments described under system No. 11 may be used as master stations in system No. 12 up to the capacities indicated. The No. 2527-C type telephone may be furnished with 10 to 16 push buttons to secure greater capacity.

Outlying Stations. The same type of instruments described in system No. 11 may be provided for outlying stations. These single button instruments are indicated by the following codes:

Code No.	Type	Code No.	Type
2527-C1	Surface Wall	6345-C1	Cradle
2527-C1	Flush Wall	6339-C1	Suspended
6347-C1	Surface Handset		

Accessories

The following material is required for completing a No 12 system:

One No. 51-H Retardation Coil. Installed near battery

Wire. Three common wires are required throughout the system, No. 18 or No. 19 gage. In addition, one individual wire between each outlying station and the master station No. 22 gage. It will be found economical to use cable when there are long runs or a large number of wires.

Cable Terminals. Terminals are desirable at junction points and distribution centers.

Dry Cells. Five cells are required when the more distant outlying station is 750 feet or less distant from the master station.

Inter-Phone Systems

Without Exchange Trunks

No. 14 and No. 14C Systems

Two-Station—Private Line

No. 2527-C1
Wall Telephone

No. 6339-B1
Suspended Wall Telephone

Two-station private line telephones are used extensively for communication between rooms in a residence, between offices, between shipping room and warehouse, and to fill other similar requirements.

The No. 14 system requires two wires for connecting the two telephone instruments and one set of three or four dry cells at each telephone.

The No. 14C system requires three wires for connecting the two telephones and one set of five dry cells connected at one station only. Requires retard coil.

In either system, one station can ring the other by simply depressing the button on the set. Wall or desk sets may be used interchangeably.

Code No.....	2527-C1	2539-C1	6345-B1	6339-B1	6347-C1
No. of Buttons	1	1	1	1	1
Description..	Surface Wall	Flush Wall	Handset Desk	Suspended Wall	Wall Handset

No. 15 System

Code Ringing—Common Talking

No. 6345-B1
Handset Desk Telephone

Each station is equipped with one push button, which, when depressed, signals every other station.

The various stations are called by signalling each one with a different code ring. Thus two rings signals station No. 2, three rings signals station No. 3, etc.

Capacity of system, 2 to 6 stations.

The No. 15 system may be used to advantage where telephone service is limited and where code ringing is not extensive enough to cause annoyance. Stockroom and associated warehouses, grouped green houses, guard stations, and similiar installations are well served by No. 15 system.

The instruments used have the same general appearance as those shown under system No. 14. They are indicated in the following table:

Code No.....	2527-C1	2539-C1	6345-B1	6339-D1	6347-C1
No. of Buttons	1	1	1	1	1
Description..	Surface Wall	Flush Wall	Handset Desk	Suspended Wall	Wall Handset

Accessories

Installing material as follows is required for the No. 15 system:

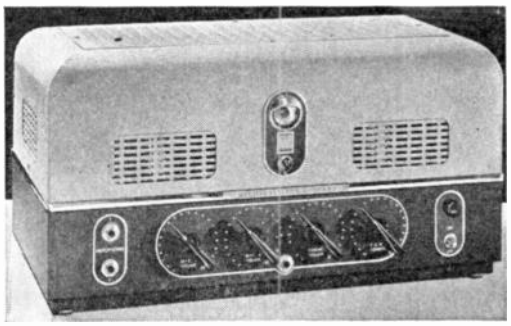
One No. 51-H Retardation Coil. Installed near battery.

Wires. Four wires are needed for connecting the phones.

Dry Cells. No more than 5 dry cells connected in series are used for this system.

Webster Electric Teletalk Public Address Equipment

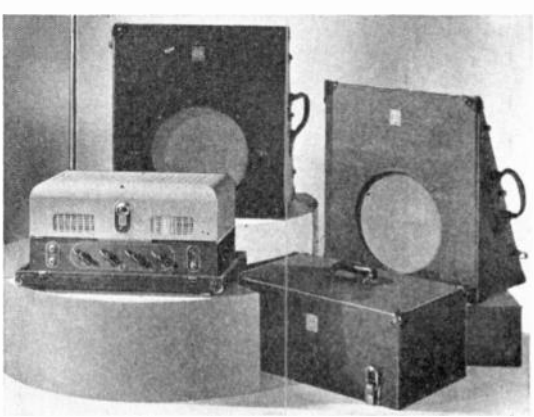
Model 18-50 50-Watt Amplifiers



Specifically designed for use in a sound system requiring high volume levels. It has all of the features necessary to provide maximum efficiency and value. A full selection of output impedances is available on four speaker plug receptacles. It has the further advantage of allowing booster amplifiers to be added to make up a sound system of 500 watts total power output. A maximum of nine Model 19-50 booster amplifiers may be connected, with interconnecting cables furnished.

All necessary amplifier connectors are furnished and are plainly marked. A minimum of controls are employed to simplify operation. All components are operated well below their ratings. Separate volume and mixing controls are provided for each of two high impedance microphone inputs and one dual tone control provides attenuation of bass or treble response. Inverse feedback is incorporated to provide maximum power output with minimum distortion. A cathode ray "eye" tube is used as an amplifier overload indicator to permit the amplifier to be operated up to its full power output without danger of overload distortion.

Model 50 TN 50-Watt Portable Sound Systems



Consists of:

1—Model 18-50 amplifier,
1—Model S4659 carrying case for Model 18-50 amplifier,
1—Model S4546-1 crystal microphone with 20 feet of shielded cable and plug,
1—Model S4549 microphone floor stand,
2—Model S4368 heavy duty 12-inch permanent magnet dynamic loudspeakers, each equipped with 50 feet of rubber covered flexible cord and plug,
1—Model S4637 speaker carrying case.

All of this equipment except the microphone and stand is contained within two portable carrying cases, one hinged top type for the amplifier and one split type which forms the loudspeaker baffles when open. Cases are of heavy plywood construction with metal braced corners and are finished in black Fabricoid.

Catalog Information on Other Models Available on Request

Webster Electric Teletalk Amplified Intercommunication Systems

Speaker-Microphones

No. 5A-45B

Many buyers who install a Teletalk Intercommunication System—particularly an M series system—find there are some locations at which complete intercommunication service is not necessary.

To meet this requirement and reduce expense for the purchaser, we recommend the use of Speaker-Microphones. However, where paging only is required, Speaker-Microphones will be used at all stations except where the paging originates.

Model 5A-45 will prove highly satisfactory wherever the noise level is low and the room or department is small. This unit can be used with all models in M series for two-way communication; in the S series, for one-way communication and with all paging models.

Model 5A-45B is intended for use only with annunciator models.

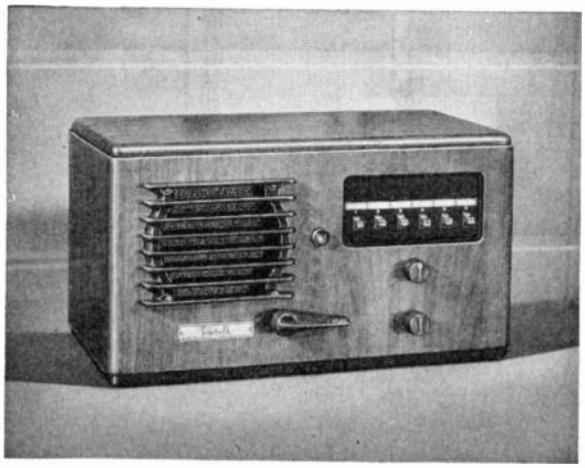
Model 10B-45 is a large, powerful unit which can be used in both M and S series. It is primarily intended for use where the area to be covered by either intercommunication or paging is large or where the noise level is higher than can be overcome by the power of the No. 5A-45 unit.

Model 8C-45 serves the same purposes as the No. 10B-45 except that it is required where the air has a high moisture content, or where the speaker must be located out-of-doors.

Equipped with button to call in to master station.

Webster Electric Paging Systems

Models 1006 and 1012



It is an established fact that in paging, an individual responds much quicker to a voice calling his name than he does to a signal which has been assigned to him.

Many people whose places of business are now equipped with Teletalk Intercommunication Systems find that they are not getting maximum benefit from them because of the tendency to use the system to too great an extent for paging. These two models—for paging only—are the answer. They are particularly designed for office paging.

Operation is simple and the scope of service is broad.

Model 1006 has a capacity of six stations. Each station may be paged individually, or by the use of the all-call feature, all stations can be paged at one time.

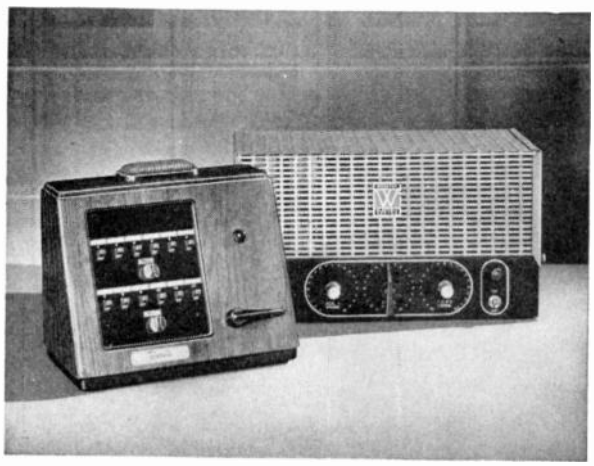
Model 1012 has a capacity of twelve stations. It also has the all-call feature

Cabinet is two-tone solid walnut, with hand-rubbed finish and bronzed speaker grille.

Size, 13⅛ inches wide, 7⅛ inches high, 6¾ inches deep. Power supply, 110–125 volts a.c., 50–60 cycles.

Models 10112, 10212, 10124 and 10224

With Amplifier



Designed to bring Teletalk's fine design and excellent tone as an answer to the many requests for a satisfactory system for paging for factories, warehouses and in other locations where the noise level is high.

Features are the inbuilt microphone in the instrument panel, all-call or group-call provisions, a separate, remotely located, beam power amplifier of either 12 or 50 watts output with tamperproof adjustments for tone and volume. The control cabinet, which can be placed on the operator's desk is the only part of the system that need be visible.

Any of the Teletalk speakers or special speakers, if required, can be used with these models.

Cabinet is two-tone solid walnut with hand-rubbed finish. Amplifier is metal enclosed with three-tone, modernistic finish

Cabinet size, 9⅜ inches wide, 7½ inches high, 5¼ inches deep; 12-watt amplifier size, 13¾ inches wide, 8 inches high, 7 inches deep. Power supply, 110–120 volts a.c., 50–60 cycles. Station capacity, Model 10112, 12 stations with all-call switch; Model 10212, 12 stations with 2 group-call switches; Model 10124, 24 stations with all-call switch; Model 10224, 24 stations with 2 group-call switches.

Send for catalog containing complete information on Teletalk Amplified Intercommunication and Paging Systems.

Webster Electric Teletalk Amplified Intercommunication Systems

Teletalk is amplified voice intercommunication. It is adaptable to every size and type of business. It is available in six basic models, each obtainable with special features to suit specific conditions. Capacities of individual models range from 5 to 24 stations. Systems based on any one model may be used for departmental operations or they can be combined to provide complete intercommunication for an entire office, plant or building operation.

Teletalk eliminates the countless, unnecessary and time-wasting steps and time consuming conferences that are inherent in any organization activity.

Three series available are M or Master, S or selective and SS or super selective.

Models 105 and 110

Particularly suited for use in small offices, service organizations, retail stores or factory groups, where intercommunication between a small group of executives or employees is desired.

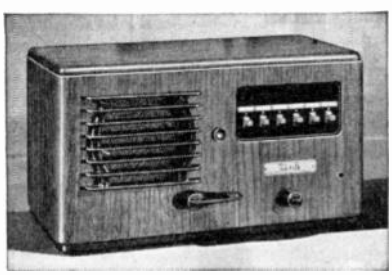
Used for the purpose of securing information quickly, handling will-calls and alteration requests; information regarding credits, shipments and for similar purposes. Also used in large homes and apartments and on large estates for convenient and instant communication with servants.

Available in the M series in which the basic unit has complete control of the intercommunication and is not secretive, but speaker microphones can be used for two-way conversation. Also available in the SS series which is secretive and in which each station uses a basic Teletalk unit, each can select stations, call any other station or reply to calls with full secrecy. Available with earphones.

Cabinet is two-tone, solid walnut, hand-rubbed finish.

Size, 11⅛ inches wide, 8⅛ inches high, 6¼ inches deep. Power supply, 110–125 volts a.c. or d.c., 50–60 cycles. Station capacity, Model 105, 5 stations, Model 110, 10 stations. Power consumption, approximately 35 watts.

Models 206 and 206-A



Ideal for executives of small businesses; advertising agencies, lawyers' offices, architects and consulting engineers, and others, where appearance as well as the utmost operating convenience are the dominating factors.

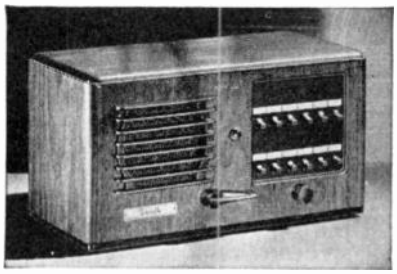
For in a system made up of these models it is easy to select a station. Simply trip up the key of the station for instant communication. Has a telephone handset for confidential use. A broader service is supplied in the Model 206-A through the annunciator system, which identifies the station that has called in the event the person called was not at his desk at the time of the call.

Available in the M and S series. (See Model 105.)

Cabinet is two-tone solid walnut, with hand-rubbed finish and bronzed speaker grill. Model 206-A has bronzed annunciator panel with indicators of contrasting aluminum finish.

Size, 13⅛ inches wide, 7⅛ inches high, 6¾ inches deep. Power supply, 110–125 volts a.c., 50–60 cycles. Station capacity, 6 stations.

Models 212, 212-A and 224



Ideal for professional and service organizations, Models 212, 212-A and 224 offer a wide range of service for executive and inter-department communication in the larger types of business.

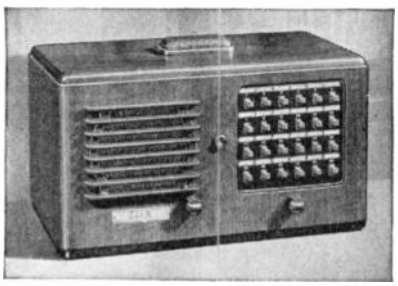
Provide just the type of service demanded in larger organizations. For example, the conducting of conferences without any executive leaving his desk. This is particularly desirable. It means that a conference can be called by simply tripping the Teletalk selector keys bearing the name or number of each executive. As each one trips up the keys of those who are to be a part of the conference, every man listens to the words of the speaker and each one can speak as thoughts occur to him. All the time consumed in going to one office or waiting for the group to gather is eliminated. Has a telephone handset for confidential use.

Available in the M and S series. (See model 105.)

Cabinet is two-tone solid walnut, with hand-rubbed finish and bronzed speaker grills.

Size, 13⅛ inches wide, 7⅛ inches high, 6¾ inches deep. Power supply, 110–125 volts a.c., 50–60 cycles. Station capacity, 12 stations with or without annunciators, 24 stations without annunciators.

Models 512, 512-A and 524



Designed for the business executive who desires the utmost in convenience, appearance, simplified operation, maximum secrecy and the widest possible range of service.

With separate microphone on top of the cabinet. The speaker is for reception only. Has a telephone handset for confidential use. No manual operation of a Talk-Listen switch is required. The user need only trip the keys in the panel to talk with one or a number of stations. If any one of these stations is busy, the amber pilot light goes out. The light will go on again as soon as the line is clear. Then proceed to talk. In the event the station with which you wish to communicate is located in a noisy location, the volume can be greatly increased by pushing the extra-volume knob located under the speaker.

Available only in S series.

Cabinet is two-tone burled walnut with hand-rubbed finish and bronzed speaker grill and inbuilt microphone.

Size, 13⅛ inches wide, 7⅛ inches high, 6¾ inches deep. Power supply, 110–125 volts a.c., 50–60 cycles. Station capacity, 12 stations with and without annunciators, 24 stations without annunciators.

Send for catalog containing complete information on Teletalk Amplified Intercommunication Systems

Webster Electric Telespatch Systems

For Railroads and Other Industries

Quick, convenient, dependable intercommunication is often the measure of industrial efficiency.

Provides instant voice-to-voice contact from a central point with individuals in the most remote sections of large railroad yards, ship yards, steel mills, or other widespread industrial operations. Their use makes possible the ready transmission of orders and reports, the coordination of processes and complete control of operations at all times.

Model S6357 Master Control Stations

Extremely rugged construction, housed in a gray metal cabinet and so designed as to allow the control operator an unimpeded view of the traffic area.

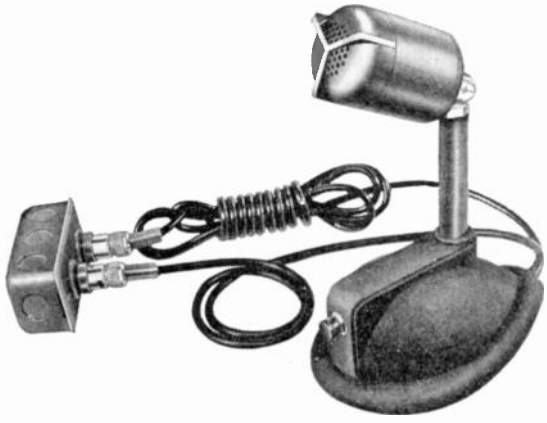
The standard system provides a maximum of 20 intercommunicating circuits, ten paging circuits and one paging "all-call" circuit.

Keys are of the sturdy telephone type and designed for rough service. Indicating lamps are of special design developed for intercommunication units supplied the U. S. Navy for shipboard use under actual battle conditions.

Upper Keys. Twenty individual speaker stations are contacted by switching these ten keys to an up or down position. The annunciator lights operate to indicate that contact button has been pushed at speaker station. An annunciator buzzer also gives warning of such a call. Ten of these speakers may be paged simultaneously by switching the ten keys to the "on" position.

Lower Keys. The ten paging areas are contacted by the three keys at the left and the two left-hand keys at the right. The key at the far right is the "all-call" key in both up (locking) or down (momentary) positions. The meter (center) is a gauge of outgoing volume and indicates when voice is at most effective speech level. Volume is controlled by knob below meter. Selector switch (left) provides for shifting from No. 1 to No. 2 amplifiers if necessary.

Model S6280-1 Microphone Units



Consists of a dynamic microphone mounted on a heavy steel desk stand. A push button is provided for operation of the talk-listen relay circuit.

Where desired a foot switch may be used in conjunction with this circuit.

The microphone is plugged into the small steel box and shielded wires are run to the amplifier unit.

Railroads find these systems ideal to speed up loading, unloading and handling freight, the making up of trains, and control of switching operations in large classification yards.

To meet rugged requirements of severe industrial service, many special features are incorporated in this equipment. Metal, weatherproofed housings are provided, and all parts are carefully selected for sturdy construction and long life operation.

Model S6358 Intercommunicating Speakers

Voice-to-voice contact between the master control station and individuals is carried on by means of these intercommunicating speakers. A maximum of 20 of these speakers may be connected to a standard control station. The speakers have a threaded pipe coupling for mounting on a pipe standard. A weatherproof push button, supplied by the user, is mounted on the pipe standard to actuate a buzzer and light at the control station when a call is initiated.

Model S6471-PM Paging Loudspeakers

Model S6437 Matching Transformers

Model S6471-PM

Model S6437 With Cover

Model S6437 Cover Removed

Ten paging speaker circuits are provided for connecting to any combination of speakers within the limits of the power handling capacity of the paging amplifiers.

Designed for operation with high power amplifiers. Made with an anodized aluminum diaphragm and special weatherproofing for long life under severe weather conditions.

Model S6375 Amplifier and Relay Cabinets

Provided to deliver 50, 100, or 300 watts of audio power.

A driver amplifier feeds the output amplifier from the 20-ohm dynamic microphone.

Standard master control units, with 20 intercommunicating speakers, require three relay panels with a total of 21 sensitive telephone type relays. These are used in the operation of annunciator lights and buzzers. A talk-listen relay switches circuits from "listen" to "talk" by means of the microphone push switch, or an added foot switch.

A load resistor panel contains mounts for standard 10-watt wire wound resistors. These provide proper loading of amplifiers regardless of the number of selector keys used. A 24-volt d.c. power supply is provided to operate talk-listen relay, annunciator relays, and "B" supply cutoff relays in the amplifiers. The steel cabinet in which these are housed is 74 inches high, 22 inches wide, and 16 inches deep.

Edwards Flushcall Signaling Devices


Flushcall Device


Buzacall


Togelpush

Signaling and calling devices for residence, apartment, or any place old-fashioned bells, buzzers, and transformers were heretofore used. Each device fits standard gang boxes and takes standard switch or receptacle plates. Can be ganged together with 110-volt receptacles, etc., in standard box and finished with standard plate.

Each device is designed and built for a.c. operation only on 8 to 12 volts—with absolutely no adjustment before, during, or even after installation. The uncertainty as to proper resistance, voltage, etc., for various uses has been eliminated.

CONSTRUCTION DETAILS: Large, accessible binding posts, frame and louvre front plate combine to completely surround and protect gong and mechanism from wires in box. Inclined construction of frame and shallow design leaves ample room for lock nuts and wires. Elliptical hole permits a plumb adjustment. Mechanism completely insulated from frame. Rust-proof metals or finish throughout.

Ringcall

No.	Each	Schedule	A.C. Volts	Cycles	Std. Pkg.	Approx. Wt. Lb.
660	$1.06	S	8–10	60	6	2
760	1.20	C	24	60	6	..
1060	5.45	C	115	60	6	1

Melocall

663	$1.25	S	8–10	60	1	..
763	1.48	C	24	60	1	..

Buzacall

661	$1.02	S	8–10	60	6	2
761	1.15	C	24	60	6	..
1061	5.30	C	115	60	6	1

Togelpush

664	$.25	S	...	..	6	..

Tucall

662	$1.52	S	8–10	60	6	2
762	1.75	C	24	60	6	..

Powacall

Underwriters' approved. Fits any standard box or outlet box with cover, 2⅜ inches deep if placed in second gang of any combination, taking 110 volts from same line as receptacle, switch, etc., in first gang. Binding posts for easy installation.

666	$1.30	S	10V.–5W.	..	6	12

Push, Bell, Buzzer Combination

For walk-up apartments, a two-gang box is used with the Tucall for front door and rear door or dumbwaiter signals, and the Togelpush for door opener operation, using a standard two-gang toggle plate. For narrow spaces, however, several different combinations for this type installation can be furnished to fit a single gang box. A special brushed brass plate is included.

Standard package.

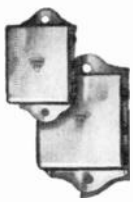
Approximate weight per standard package, pounds.

No.	Each	Description	Use	A.C. Volts
770	$2.60	Ring and Push.....	General	8–10
771	2.60	Buzz and Push.....	General	8–10
772	2.75	Ring, Buzz and Push...	General	8–10

Complete engineering data on application.

No. 115 Edwards A.C. Lungen Buzzers

Schedule S



Volume of sound increases and pitch of tone lowers in each size from Size No. 1 and up. Sound volume may be adjusted over a 100 per cent range.

Completely insulated with internal binding posts, bug and dust proof. Wire entrances provided for concealed or surface wiring. Polished chrome finish. Standard package, 100 assorted.

Size No.	1	2	3	4
Std., 8–12 V., A.C. ..each	$2.20	$2.35	$2.50	$3.40
24 Volts, A.C.....each	2.35	2.50	2.60	3.50
Other Voltages to 48V., 60 Cycles.....each	3.90	4.00	4.15	5.00
Size.....inches	2⅛x1 5/16	2 9/16x1¾	3x2	3½x2¼
Weight.....pounds	1 5/16	2 7/16	3¼	4⅜

No. 15 Edwards Lungen Buzzers

Schedule S

Designed for use in offices, residences, hospitals, etc., where a device for harder service than the ordinary iron box type is desired. Covers fit tightly making them bug and dust proof.

Phosphor bronze springs and double adjustment, pure hard-drawn silver contacts. All types available in five sizes varying in tone and volume to meet all conditions.

Rust-proof, polished chrome finish.

Standard package, 10 assorted sizes.

Size No.	0	1	2	3
Std. 8-10 V. A.C., 6-8 V. D.C.....each	$2.50	$2.35	$2.50	$2.60
24 V., 60 Cycles or D.C. .....each	2.90	2.70	2.90	3.00
Other Voltages to 48 V. .....each	4.20	4.00	4.20	4.30
Size.....inches	1 5/8x1⅛	2⅛x1 5/16	2 9/16x1¾	3x2

Specify voltage when ordering.

No. 17 Edwards Economy Bells

Schedule S

A covered two-magnet bell for low cost burglar alarm and similar work.

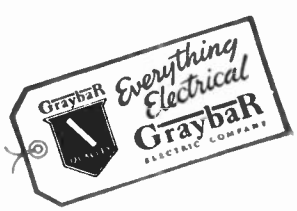
Adjustable.

Bakelite insulation.

Black finish.

Standard package, 5. May be assorted.

Size.....inches	4	6
No. 17, Std. 8–10 V. A.C., 6–8 V. D.C....each	$8.60	$10.20
Other Voltage to 48 V.....each	10.30	12.50
Approximate Weight.....pounds	3	5



Edwards Doorbells and Buzzers

Standard 8-10 Volts 60 Cycle A.C., 6-8 Volts D.C.

Schedule S

Bell movement has straight hammer rod and solid hammer ball, giving more power and smoother action on battery or transformer.

No. 730

Arranged for surface or concealed wiring.

The Dixie doorbell and the Buzabel combined bell and buzzer are enclosed. Cover snaps on with a slight pressure, with no screws necessary. These models are only 1 inch deep to allow for mounting in out-of-the-way places where other models will not fit. The Nubel has enclosed binding posts and the snap-on type cover and exposed gong.

Large magnet, correctly designed phosphor-bronze springs, silver contacts, and fine workmanship.

Buzzer case is 1¾x2¾ inches, fully insulated.

Dixie Bell

No.	Each	Description	Std. Pkg.	Approx. Wt., Lb. Std. Pkg.
720	$.75	Aluminized, Covered, Non-Adjustable	12	6

Buzabel

730	$1.20	Aluminized, Covered, Non-Adjustable Combination Bell and Buzzer.....	12	6

Nubel

740	$.67	Aluminized, Enclosed Binding Posts, Non-Adjustable, 2½-Inch Gong....	12	5

Dixie Buzzer

725	$.63	Aluminized, Covered, Non-Adjustable	12	3

Large and Fancy Type Bells

Standard 8-10 Volts 60 Cycles A.C., 6-8 Volts D.C.

744	$1.20	4-Inch Type, Non-Adjustable.....	1	1

No. 55 Edwards Bells

Schedule S

Designed for burglar alarm and other work of that character.

Has a single magnet bell.

Adjustable, non-weatherproof.

Finished in black with nickel gong.

Standard package, 5. May be assorted.

Size.....inches	4	6
Std. 8-10 V. A.C., 6-8 V. D.C.....each	$4.10	$5.20
Other Voltage to 48 Volts, Specify When Ordering.....each	5.80	7.50
Approximate Weight.....pounds	2	4

No. 13 Edwards Lungen Bells

Schedule S

Designed for use in offices, residences, hospitals, etc., where a device for harder service than the ordinary iron box type is desired. Covers fit tightly making them bug and dust proof. Phosphor bronze springs and double adjustment, pure hard-drawn silver contacts. Surface types available in five sizes varying in tone and volume to meet all conditions.

Rust-proof, polished chrome finish.

Standard package, 10 assorted sizes.

Size.....inches	1	1¾	2½	3
Std. 8-10 V. A.C., 6-8 V. D.C. each	$3.10	$2.85	$3.00	$3.10
24 V., 60 Cycles or D.C.....each	3.50	3.25	3.40	3.50
Other Voltages up to 48 V....each	4.80	4.50	4.70	4.80
Approx. Wt. Std. Pkg.....lb.	3/16	¼	½	11/16

Specify voltage when ordering.

Edwards Vibrating Adaptabels

For All A.C. and D.C. Voltages

Schedule S

This is a compact bell of the Underdome, Turtle or Monitor type.

As the electrical connections are made to the mounting plate only, the whole electrical installation can be made, tested and completed before painting and finishing.

The maintenance problem in hard service work, like traffic signals, railroads, etc. is simplified with a few spare Adaptabels. The Adaptabel is easily detached and a new one attached—instead of repairing on the job or installing a new bell.

The movement is completely enclosed in a cast aluminum housing. Protected against dirt, bugs, etc. When weatherproof is specified, it is protected with gaskets.

The a.c. vibrating mechanism is the polarized, no contact type. The d.c. vibrating mechanism is also of the straight line plunger type. Gongs are hot pressed steel, Parkerized to prevent rust.

All 6- and 10-inch Adaptabels mount directly on wall, 4-inch square box, standard switch box or any outlet box with single gang condulet or Wiremold type fitting.

All 4-inch Adaptabels have separable plate for mounting same as above and will also fit 3¼-inch octagon boxes.

In ordering, specify voltage desired.

For A.C. Operation

Size Inches	24 Volts No. 560 Each	24 Volts No. 562 Each	115 Volts No. 560 Each	115 Volts No. 562 Each	For Other Voltages Up to 250 Volts No. 560 Each	For Other Voltages Up to 250 Volts No. 562 Each
4	$15.00	$13.60	$20.00	$18.00	$23.00	$21.00
6	20.00	18.00	25.00	22.75	28.00	25.45
10	30.00	27.25	35.00	31.80	38.00	34.50

For D.C. Operation

Size Inches	9 Volts No. 561 Each	9 Volts No. 563 Each	24 Volts No. 561 Each	24 Volts No. 563 Each	115 Volts No. 561 Each	115 Volts No. 563 Each	For Other Voltages Up to 250 Volts No. 561 Each	For Other Voltages Up to 250 Volts No. 563 Each
4	$15.00	$15.00	$17.50	$17.50	$20.00	$20.00	$23.00	$23.00
6	20.00	20.00	22.50	22.50	25.00	25.00	28.00	28.00
10	30.00	30.00	32.50	32.50	35.00	35.00	38.00	38.00

Edwards Single Stroke Bells

For Approved Coded Fire Alarm Systems

No. 23 for D.C., No. 24 for A.C.

Schedule C

Solenoid construction approved by State, Insurance and Underwriters' Boards for closed circuit fire alarm systems. Mounts on wall or 4-inch square box, or standard switch box, or any outlet box with single gang switch cover, or on any single gang condulet or wire-mold type fitting. Prices for series operation on 110 volts from control panel.

Size.....inches	4	6	10
Each.....	$20.00	25.00	35.00
Approximate Weight.....pounds	3	6	9

No. 2251 Eveready Automatic Spotlights

Two-cell automatic spotlight. Seambrass tube, chromium finish with rolled-on black decoration. Uses two Eveready No. 950 batteries and pre-focused lamp No. PR-2. Size 6¾x1¾ inches.

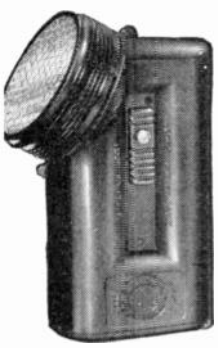
No. 2251, Less Batteries.....each **$1.35**

No. 210 Eveready Penlights

A seamless chromium brass tube pocket flashlight, used by mechanics, doctors and dentists. Size: 5⅛x⅝ inches. Uses two No. 915 Eveready batteries and No. 222 Eveready Lamp.

No. 210, Less Batteries.....each **$.64**

No. 17S Justrite Safety Service Flashlights



Approved by Underwriters' Laboratories, U.S. Bureau of Mines, Bureau of Marine Inspection.

Uses 3 regular flashlight cells.

Case is made of plastic reinforced with metal inserts to prevent warping or shrinkage.

Stands on base.

Furnished with a belt clip and a 2½-inch polished reflector.

Height, 5¾ inches.

Weight, ½ pound.

No. 17S, Clear Lens, less Batteries.....each **$3.85**
No. 1717SH, Honeycomb Lens, less Batteries...each **4.00**

Flashlight Lamps

Packed 10 in a carton.

Nos. 233, 13, 14 / No. 222	No.	Each	No. Cells and Size	Bulb	Volts	Ampere Rating
	13	$.09	3D	G-3½	3.8	.30
	14	.09	2D	G-3½	2.5	.30
	222	.09	2A-AA	TL-3	2.2	.25
	233	.09	2C	G-3½	2.3	.27
	*PR-2	.13	2D	B-3½	2.4	.50
	*RP-3	.13	3D	B-3½	3.6	.50
	*PR-6	.13	2D	B-3½	2.5	.30
	*PR-7	.13	3D	B-3½	3.8	.30

*Miniature flanged base.

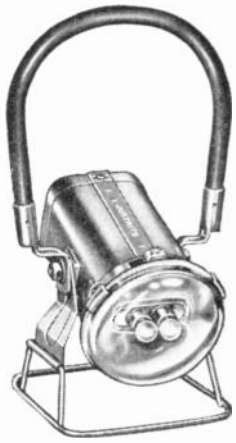
No. 102 Eveready Flashlight Lens Assortments

Contains 32 No. 53394 lenses and 4 No. 53390 searchlight lenses.

Packed 1 assortment in a unit package.

No. 102.....per asst. **$1.37**

No. 42W Justrite Twin-Bulb Hand Lantern



Has two bulbs to give either powerful spot beam and direct light to all sides. Alternate bulb gives brighter beam.

Uses standard lantern battery.

Furnished with 3½-inch chrome reflector; movable, aluminum tubing handle; and glass globe to cover reflector and bulb.

Tilts to any angle on guard-base.

Weight, 2½ pounds.

No. 42W, less Battery.....each **$5.50**

Justrite All-Purpose Safety Hand Lanterns

No. 44S

No. 44S is approved by Underwriters' Laboratories, Bureau of Mines and Bureau of Marine Inspection. Uses standard 6-volt battery. Has two bulbs to give either spot or diffused light, and a movable handle. Tilts on base to any angle. Furnished with 3½-inch chrome reflector and glass globe, and globe (lens) guard.

No. 42S has the same features as No. 44S except does not have inner guard for globe (lens).

Battery is not included in prices.

No. 44S, Weight, 3 Pounds.....each **$6.60**
No. 42S, Weight, 2¾ Pounds.....each **6.00**

No. 1904 Justrite Headlight-Lanterns

4-Cell Type

Has powerful spot beam. Uses 4 flashlight cells.
Headpiece straps around cap. Battery case clips on belt.
Furnished with 2½-inch polished reflector, 5-volt bulb and spare bulb.
Weight, 1 pound.

No. 1904, less Battery.....each **$5.00**

Justrite Flexible-Light Lanterns

Used as headlight, or with light housing on wrist, leg, shoulder strap, or belt. Leaves both hands free.

Uses standard lantern battery.

Battery case is carried on shoulder strap and waist belt. Rubber connecting cord.

Weight, 2 pounds.

No. **1955**, With Spot Lens, less Battery.....each **$8.00**
No. **19H55**, With Honeycomb Lens, less Battery.each **8.20**

Justrite Utility Lanterns

No. 2101. Light housing turns any direction horizontally or vertically.

Has spread-beam honeycomb lens, 2½-inch reflector, and folding handles.

Uses standard lantern battery.

Also furnished with plain lens for "spot" light.

Height, 7¾ inches.

Weight, 1¼ pounds.

No. 2107 has same features as No. 2101 except bracket for belt instead of handle. Furnished with adjustable belt.

No. **2101**, less Battery....each **$5.00**
No. **2107**, less Battery....each **6.00**

No. 700 Big Beam Portable Electric Hand Lamps

No. 700

Projects powerful ray over 2000 feet.

Can be floodlighted.

Power: 4 No. 6 dry cells.

Finish: black japanned head and rim with red baked enamel container.

Has 6-inch silvered reflector and 6-inch heavy convex lens. Prefocused bulb.

Net weight 4 pounds.

No. 700A is the same as No. 700 except that it is equipped with 2 bulbs: dim and bright.

No. E700H is the same as No. 700 except that it is equipped with 3 bulbs: main bulb, small auxiliary bulb, and bulb on extension cord.

No. **700**, without Batteries.....each **$15.00**
No. **700A**, without Batteries, with Aux. Bulb...each **17.00**
No. **700EH**, with Ext., without Batteries.....each **22.50**

Accessories

No. **6**, Batteries, 4 per Set.....per set **$1.96**
No. **720**, Wire Guard.....each **1.25**
No. **725**, Hold-Down Bracket.....each **3.50**
No. **726**, Hold-Down Bracket, Lock Type.....each **4.75**
No. **750**, Snap-On Lens, Complete Unit.....each **3.25**
No. **760**, Main Bulb, 4½ Volts.....each **.65**
No. **755**, Auxiliary Bulb, for No. 700A.....each **.13**
No. **729**, Clear Lens.....each **1.00**
No. **731**, Red, Blue, or Green Lens.....each **1.55**
No. **730**, Floodlight Lens.....each **1.40**

No. 211 Big Beam Portable Electric Hand Lamps

Projects powerful ray over 1500 feet.

Power: 2 standard dry cell lantern batteries.

Finish: black enameled head; brass reflector, silver-plated; baked red enamel steel container.

Packed individually, 12 to a case.

Net weight each 3¼ pounds.

No. **211**, without Batteries.....each **$12.50**

Accessories

No. **200**, Battery, Lantern Type, 6 Volts.....each **$.70**
No. **225**, Hold-Down Bracket.....each **2.00**
No. **229**, Clear Lens.....each **.60**
No. **215**, Carrying Strap.....each **1.00**
No. **220**, Wire Guard.....each **.75**
No. **250**, Snap-On Lens, Red, Green, or Flood..each **1.50**
No. **260**, Main Bulb.....each **.45**
No. **255**, Small or Auxiliary Bulb.....each **.15**

No. 411 Big Beam Portable Electric Hand Lamps

Projects powerful ray over 2500 feet. Can be floodlighted, if desired.

Power: No. 26AH heavy duty battery.

Finish: black enameled head; brass reflector, red enameled container.

Rubber reservoir prevents acid spillage; direct lamp-to-battery contacts; acid protected case.

No. **411**, with Battery.....each **$39.25**

Accessories

No. **611**, Rechargeable Storage Battery.....each **$15.00**
No. **510**, Hold-Down Swivel Fitting.....each **8.75**
No. **515**, Leather Shoulder Strap.....each **2.75**
No. **520**, Wire Guard.....each **1.25**
No. **529**, Clear Lens.....each **1.40**
No. **531**, Red, Blue, or Green Lens.....each **1.80**
No. **530**, Floodlight Lens.....each **1.70**
No. **550**, Snap-On Lens, Complete Unit.....each **3.25**
No. **500**, Hold-Down Bracket.....each **4.25**
No. **525**, 15-Foot Extension, Complete with 6-Volt, 25-Watt Bulb and Adapter.....each **3.00**
No. **540**, Resistance Switch, 6 Volts D.C.....each **4.00**
No. **1280**, Charger, 115 Volts, 60 Cycles A.C....each **20.00**
No. **900**, Main Bulb, 6 Volts.....each **.65**
No. **955**, Auxiliary Bulb, 6 Volts.....each **.13**

No. 1000 Big Beam Portable Electric Hand Lamps

Projects powerful ray over 2500 feet. Can be floodlighted, if desired.

Power: No. 4F6H Burgess dry cell battery.

Finish: black enameled head; brass reflector, silver plated; and baked red enamel steel container.

Has direct lamp to battery contacts; no wires.

Net weight 3½ pounds.

No. **1000**, without Battery.....each **$23.00**

Accessories

No. **466**, Battery, Dry Cell, 9 Volts.....each **$3.23**
No. **510**, Hold-Down Swivel Fitting.....each **8.75**
No. **515**, Leather Shoulder Strap.....each **2.75**
No. **520**, Wire Guard.....each **1.25**
No. **529**, Clear Lens.....each **1.40**
No. **531**, Red, Blue, or Green Lens.....each **1.80**
No. **530**, Floodlight Lens.....each **1.70**
No. **550**, Snap-On Lens, Complete Unit.....each **3.25**
No. **510**, Hold-Down Bracket.....each **4.25**
No. **900**, Main Bulb, 6 Volts.....each **.65**
No. **955**, Auxiliary Bulb.....each **.13**

No. 950

Eveready Flashlight Batteries
Unit Cells

Standard package 12, for No. 950, 24 per package.

No. Each	Description	Size In.	Cell Size	Weight Lb.	Oz.
915	$.075	Penlight Cell...	$1\frac{31}{32}$ x $\frac{35}{64}$	AA	..	$7\frac{1}{2}$
935	.10	Baby Tubular...	2 x $1\frac{1}{32}$	C	1	4
950	.10	Regular.....	$2\frac{27}{64}$ x $1\frac{21}{64}$	D	9	12

No. 409 Eveready Lantern Batteries

6 Volts

Cell size, F.

Number of cells, 4.

Dimensions, $2\frac{5}{8}$x$2\frac{5}{8}$x$3\frac{27}{64}$ inches.

Packed 1 in a unit package.

Weight per unit package, $1\frac{1}{2}$ pounds.

No. 409.....each **$.70**

No. 6 Eveready Columbia Gray Label Telephone Dry Cells

This battery is especially design for telephone work and light-drain service.

Round Jackets only.

Fahnestock spring terminals are furnished unless screw connections are specified.

Voltage, $1\frac{1}{2}$.

Diameter, $2\frac{5}{8}$ inches.

Height, $6\frac{5}{8}$ inches.

Quantity in std. pkg., 25. Approx. wt. of standard package, 58 pounds.

Prices for west coast somewhat higher.

No. 6.....each **$.60**

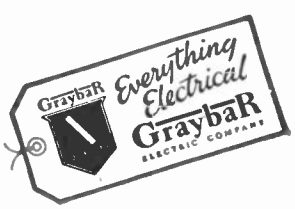
No. 6 Eveready Ignitor Dry Cells

For heavy service in all dry cell applications. Recommended for ignition, radio, bells, buzzers, electric games, toys, lanterns and other battery operated devices. Has patented metal top construction. Protects against leakage and breakage.

Carefully packed from fresh stock and guaranteed to reach destination in perfect condition. Round Jackets, equipped with screw terminals unless Fahnestock spring terminals are specified.

Voltage $1\frac{1}{2}$.
Width $2\frac{5}{8}$ inches.
Height $6\frac{5}{8}$ inches.
Packed 12 in a standard package.
Weight per standard package, 27 pounds.
Prices for west coast somewhat higher.

No. 6.....each **$.65**



Paragon Battery Boxes

For Telephone and Electric Bell Work

Provides a convenient and practical method of keeping batteries clean, dry and protected, and connections to those batteries firm.

Equipped with cover fastened to the box itself with chain. May be hung on a hook or nail. Has wire lead-in holes both in bottom and cover.

Made of sheet steel finished in black crackle lacquer and completely lined with heavy insulating fiber.

Available in sizes for two, three or four Standard No. 6 dry cells.

No	2	3	4
Each	$1.20	1.40	2.20

Eveready Air Cell Batteries

No. T-1600

No. T-2600

For railroad, telephone and industrial use. The low ampere hour cost, long life and sustained voltage make these batteries desirable for telephone and signal work.

Available in two conservatively rated capacities—300 ampere hours and 600 ampere-hours.

Made in single cell units, also in batteries consisting of two cells in series. The average voltage per cell is 1.25 volts, falling to 1.0 volts per cell at the end of their capacity. Uses a liquid electrolyte.

Shipped dry. In the dry state it undergoes no shelf depreciation. Packed one in a standard package.

No.	T-1300	T-2300	T-1600	T-2600
Each	$3.50	6.00	4.75	8.00
Volts	$1\frac{1}{4}$	$2\frac{1}{2}$	$1\frac{1}{4}$	$2\frac{1}{2}$
Capacity.....amp.-hr.	300	300	600	600
Length.....inches	$5\frac{5}{16}$	$8\frac{1}{4}$	$5\frac{11}{32}$	$9\frac{29}{32}$
Width.....inches	$4\frac{11}{32}$	$5\frac{5}{16}$	$6\frac{19}{32}$	$6\frac{19}{32}$
Height.....inches	$8\frac{5}{8}$	$8\frac{5}{8}$	$11\frac{3}{16}$	$11\frac{3}{16}$
Weight per Standard Package.....pounds	7	$12\frac{1}{2}$	13	24

No. KS-8089 Dry Battery Gauges

A well made instrument for quickly testing battery life. It is compact, easy to carry and use and is reliable.

Designed by Bell Telephone Laboratories for use in testing No. 6 dry batteries used in telephone sets. It is manufactured to the specifications of and inspected by Western Electric Company. Has scale markings to show 0, 5, and 50% life remaining in dry batteries with separate scales for 2-cell and 3-cell batteries. Not arranged for testing single cells.

Pocket type, with cloth carrying bag with snap fasteners and equipped with Western Electric W2BM cord. Moving element has jeweled adjustable bearings and also has adjustable stops.

It will be necessary to allow a time interval of at least three minutes between consecutive readings in order to permit the winding to return to approximate room temperature. This instrument will be capable of withstanding a breakdown potential of 110 volts, a.c. applied between the cord clips and the case.

No. KS-8089.....each **$4.25**

Exide Thermometers and Hydrometers

For battery conditioning.

Insures long life and consistent operation.

No. 19396—Type V-2-F Hydrometer Syringe

Specific gravity, 1.170 to 1.230.

Single point scale divisions.

No. **19396**, Complete.....each .....

Parts

No. **7202**, Glass Barrel.....each .....
No. **7203**, Rubber Bulb.....each .....
No. **7199**, Perforated Rubber Stopper (For Upper End of Glass Barrel).....each .....
No. **20554**, Air Lock Rubber Cushion and Tube (For Lower End of Glass Barrel).....each .....
No. **19047**, Hydrometer Only.....each .....
No. **24555**, Rubber Carrying Case.....each .....

Vent Hole Thermometer with Hard Rubber Vent Plug

Scale 30° to 120°F.

No. **22783**, with 2 Soft Rubber Bushings for No. DMGO-7 and 9, EM and FM Cells.....each ....
No. **21154**, Complete with 1 Soft Rubber Bushing for CTMH, CTMP and PTMH Cells.....each ....
No. **24186**, with 2 Soft Rubber Bushings for ETMH and DMGO—5 Cells.....each ....

Exide Storage Batteries

Type LXGH 3-Cell Unit

Made in a wide variety of sizes and types to meet requirements of various kinds of power applications.

Made in three types.

The chloride type battery is built primarily for durability. Where long life and freedom from care and attention, together with dependability, are the deciding factors, this type of battery invariably receives the first call.

The flat plate type battery furnishes greater capacity in a given space than the chloride type.

The ironclad type battery has a positive plate which is totally different in construction from that of any other positive plate. In performance and longevity, this type of battery is second only to that of the chloride.

Types EB and FB are standard telephone cells which are assembled with heavy positive plates in thick walled moulded hard rubber jars featured by explosion-proof construction. Maximum capacity per unit of space is obtainable by the use of these cells.

Types BTMH, CTMH, PTMH, and ETMH are furnished in painted wooden crates, all but the first two types being equipped with carrying handles.

Type	Type	No. Cells	*Cap. per Cell Amp. Hr.	Overall Dimensions Length	Width	Height	Approx. Ship. Wt. Lb.
BTMH-2	Chloride	11	6	26 5/16	4 15/16	10 1/16	81
CTMH-2	Chloride	11	12	29 7/16	7 1/2	12 3/16	156
PTMH-2	Chloride	11	24	34 5/8	8	16 7/8	249
ETMH-2	Chloride	11	36	21 15/16	20 1/2	16 5/8	368
BTER-5	Flat Plate	3	14.4	9 1/4	5 9/32	8 11/16	37
KZHGR-7	Flat Plate	3	25	9 1/4	5 9/32	8 11/16	41
BI-5	Ironclad	2	15	8 19/32	3 1/8	7 15/16	22
BI-9	Ironclad	2	30	8 19/32	4 7/8	7 15/16	30
LXGH-7	Flat Plate	2	50	6 3/8	7 1/2	10 1/4	40
LXGH-7	Flat Plate	3	50	9 7/32	7 1/2	10 1/4	58
LXGH-13	Flat Plate	2	100	9 3/4	7 1/2	10 1/4	68
LXGH-13	Flat Plate	3	100	14 13/32	7 1/2	10 1/4	102
DMGO-5	Chloride	1	40	4 11/16	8 1/16	14 5/8	40
DMGO-7	Chloride	1	60	5 15/16	8 1/16	14 5/8	50
DMGO-9	Chloride	1	80	7	8 1/16	14 5/8	62
EM-5	Chloride	1	80	5 3/4	10 3/4	17 5/8	72
EM-7	Chloride	1	120	6 5/8	10 3/4	17 5/8	91
EM-9	Chloride	1	160	8 1/8	10 3/4	17 5/8	119
FM-9	Chloride	1	320	9 1/4	14 7/32	22	220
FM-11	Chloride	1	400	10 11/16	14 7/32	22	250
FM-13	Chloride	1	480	12 5/16	14 7/32	22	291
FM-15	Chloride	1	560	13 3/4	14 7/32	22	324
FM-17	Chloride	1	640	14 5/8	14 7/32	22	356
EOT-5	Flat Plate	1	105	5 1/8	10 3/4	17 3/8	62
EOT-7	Flat Plate	1	158	5 3/4	10 3/4	17 3/8	75
EOT-9	Flat Plate	1	210	7 1/4	10 3/4	17 3/8	97
EOT-11	Flat Plate	1	263	8 1/8	10 3/4	17 3/8	118
EOT-13	Flat Plate	1	315	8 7/8	10 3/4	17 3/8	129
EOT-15	Flat Plate	1	368	10 3/8	10 3/4	17 3/8	151
EOT-17	Flat Plate	1	420	11	10 3/4	17 3/8	163
EOT-19	Flat Plate	1	473	11 7/8	10 3/4	17 3/8	175
FOT-11	Flat Plate	1	525	9 1/4	14 7/32	22	214
FOT-13	Flat Plate	1	630	9 13/16	14 7/32	22	237
FOT-15	Flat Plate	1	735	11 1/2	14 7/32	22	273
FOT-17	Flat Plate	1	840	12 5/16	14 7/32	22	295
FOT-19	Flat Plate	1	945	13	14 7/32	22	318
FOT-21	Flat Plate	1	1050	14 5/8	14 7/32	22	354
FOT-23	Flat Plate	1	1155	15 1/16	14 7/32	22	377
EB-7	Flat Plate	2	180	7 5/8	10 7/16	19 1/8	130
EB-7	Flat Plate	3	180	11	10 7/16	19 1/8	190
EB-9	Flat Plate	1	240	5 3/16	10 3/4	19 1/8	82
EB-11	Flat Plate	1	300	6 1/16	10 3/4	19 1/8	100
EB-15	Flat Plate	1	420	8 1/8	10 3/4	19 1/8	135
EB-19	Flat Plate	1	540	10 1/16	10 7/8	19 1/8	166
EB-23	Flat Plate	1	660	12 1/16	10 7/8	19 1/8	204
FB-15	Flat Plate	1	840	8 7/16	14 5/8	23 3/4	255
FB-19	Flat Plate	1	1080	10 7/16	14 5/8	23 3/4	313
FB-23	Flat Plate	1	1320	12 7/16	14 5/8	23 3/4	371
FB-29	Flat Plate	1	1680	15 1/4	14 5/8	23 3/4	461

*Based on 8-hour discharge rate to 1.75 final volts average.

Battery shipments include necessary standard intercell connectors and lugs for two or more cells. Inter-tier, inter-row or inter-rack connectors must be ordered separately. Strap cell lifters are supplied with ten or more cells with a shipping weight in excess of 125 pounds per cell. Mounting pads are furnished for F types of glass jar cells. On shipments of 60 or more cells a hydrometer syringe, a thermometer and two bolt connector wrenches are provided.

BTMH-2 CTMH-2, and PTMH-2 are assembled in one row. ETMH-2 is assembled in two rows.

Step-type racks are available for mounting the cells listed. Full information is obtainable on request.

Edison Primary Batteries

Edison Primary Batteries are applicable anywhere; require no battery charging facilities; deliver rated ampere-hour capacities continuously or intermittently at satisfactory voltage; do not lose capacity on open circuit even over long periods; have very low and constant internal resistance; give accurate visual indications of approaching and complete exhaustion; do not freeze; require no attention or maintenance excepting occasional visual inspections between renewals; are easily installed and renewed without expert help.

For either direct operation or as standby batteries where continuous d.c. power supply is extremely important. Standard types adequately and economically meet the low voltage power requirements for: Police, fire and burglar alarms; annunciator systems; elevator signals; stationary engine ignition; industrial, school and scientific laboratory services; marine beacons on fixed structures; program and time clock systems; mine signaling and communication; commercial and railroad telephone services (talking and ringing circuits, operators' transmitters on magneto switchboards, interrupters); telegraph main line and local sounder circuits.

A.C. or D.C. Primary Battery System. For low voltage lighting, control and other d.c. circuits normally fed from commercial power sources and requiring standby batteries to insure uninterrupted operation in emergencies. If normal supply fails, a relay instantly transfers the entire load to an independent and extremely reliable primary battery reserve until normal service is restored. Emergency operation can be maintained indefinitely from the standby battery. Visual indications show reserve capacity available. No current or apparatus needed for battery charging. Visual inspection is only battery maintenance required. This system is the ultimate in dependability, simplicity and economy.

Description. Edison Primary Batteries are zinc, copper-oxide, alkaline electrolyte type. A complete cell consists of: Factory-assembled element of positive and negative plates, can of caustic soda for mixing electrolyte, heat-resisting glass or enameled steel jar, porcelain cover, bottle of battery oil, terminal nuts and washers.

Renewing active materials restores an exhausted cell to full capacity. This simple operation requires only a new element, can of soda and bottle of oil which constitute a renewal. Other parts are permanent. Panels in zinc plates accurately indicate stage of exhaustion. All cells have liberal safety factor. Operating voltage averages 0.6 to 0.65 depending upon discharge rate. Use chart to select proper cells for load requirements.

Medium Duty Cells with 5-Plate Elements

No. M-502

No. M-504

No.	Complete Each	Renewals Each	Cap. Amp-hr.	Max. Cont. Disch. Amp.	Jar Kind	Jar Shape	Overall Dimension Inches
M-501	$5.35	$2.80	500	2.25	Glass	Round	6¾ Diam.x12¾
M-502	5.60	2.80	500	2.25	Glass	Rect.	5¾x6¾x12¼
M-504	5.20	2.80	500	2.25	Glass	Barrel	7 Diam.x 11⅝
M-1002	9.85	5.05	1000	3.50	Glass	Rect.	6½x8¼x14¾

Light Duty Cells with 3-Plate Elements

No. S-252

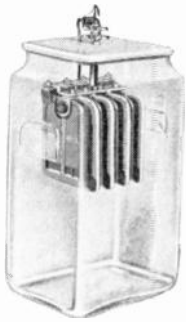
No. S-502

No. S-504

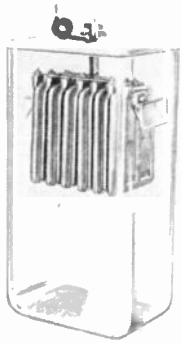
No.	Complete Each	Renewals Each	Cap. Amp-hr.	Max. Cont. Disch. Amp.	Jar Kind	Jar Shape	Overall Dimensions Inches
S-202	$4.25	$1.95	200	1.00	Glass	Rect.	3⅜x5⅞x11
S-208	4.25	1.95	200	1.00	Glass	Round	5⅝ Diam. x 9¾
S-252	4.50	2.10	250	1.00	Glass	Rect.	3⅜x5⅞x12
S-305	4.70	2.30	300	1.00	Glass	Round	6¾ Diam.x 10¼
S-501	5.25	2.65	500	1.75	Glass	Round	6¾ Diam.x 12¾
S-502	5.50	2.65	500	1.75	Glass	Rect.	5¾x6¾x12¼
S-504	5.10	2.65	500	1.75	Glass	Barrel	7 Diam.x 11⅝

Heavy Duty Cells with 9 and 11-Plate Elements

No. HA-502



No. HA-902



No. HA-1302

No.	Complete Each	Renewals Each	Cap. Amp-hr.	Max. Cont. Disch. Amp.	Jar Kind	Jar Shape	Overall Dimensions Inches
HA-502	$7.50	$4.50	500	6.50	Glass	Rect.	5¾x6¾x12¼
HA-902	9.90	5.00	500	12.00	Glass	Rect.	6½x8¼x14¾
HA-1302	16.00	9.00	1000	20.00	Glass	Rect.	6¾x8½x17¾

Type L Matthews Woodpecker Telefaults

Used on telephone, telegraph, signal and certain other cables.

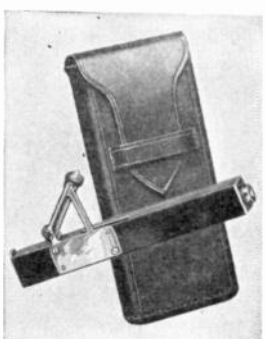
A self-contained instrument that will locate water, shorts of all kinds, crosses, grounds, split pairs—every kind of cable trouble except opens.

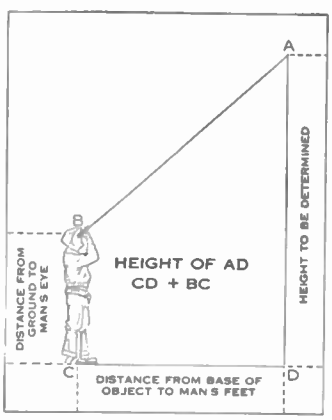
Uses one dry cell battery. Maximum voltage, under 5. No batteries furnished.

Cannot be confused with other inductive noises—has a tone like a woodpecker on a pole.

Type L, Complete with Coil, Cord, and Receiver, Weight 9 Pounds.....each **$130.00**
Extra Exploring Coils.....each **32.00**
Extra Receivers.....each **14.00**

Type CW Matthews Teleheights





Used by central stations, telephone and telegraph companies to secure height of poles, trees, etc. Used for figuring cubical contents of buildings, clearance of bridges, highlines, etc.

To find height A, stand away from A until bubble and line cross each other. Then measure off distance CD and add distance CB. The sum will equal DA.

Furnished with leather carrying case. Length, 5 inches.

Type CW.....each **$24.00**

Stewart Midget Detecto-Meters

Used to test for bad joints, shorts, and loose connections.

Has two scales, a voltage range and a resistance range, one above the other.

For use on d.c. only.

Maximum of 10,000 ohms.

Top and bottom are fitted with bakelite panels.

Uses two ordinary 1½-volt flashlight cells.

Available in 0 to 1.5-volt and 0 to 60-volt models.

Can be carried in pocket or tool kit.

0 to 1.5-Volt Model.....each **$12.50**
0 to 60-Volt Model.....each **14.75**

Dillon Model AN Dynamometers

An instrument of the traction type which is used for the determination of strain and adapted for a wide variety of uses where traction or pull is to be measured.

The force of the pull, passed through the instrument causes a deformation which is indirectly proportional to the load and which is measured by mechanical means.

Operates on the basic scientific principle of the bending of a beam from a true straight line. The beam in this case consists of a solid bar of special alloy steel, heat treated and properly aged to prevent later "growth". Drilled slightly off axial center at each end of the beam is a hole through which shackle is passed. As load is applied to these off center holes, the beam is slightly deformed. This deformation is accurately indicated by a gage movement and amounts to only forty-thousandths of an inch for a full scale 360 degree reading.

Readings are direct for the exerted force is translated directly into pounds on the face of the dial.

Dimensions: 8¼x6¼x3 inches.

Weight: with shackles, and carrying case, 11⅛ pounds; without shackles and carrying case, 5⅝ pounds; shipping weight, 14 pounds.

20,000-Pound Capacity (250-Pound Divisions).each **$175.00**
15,000-Pound Capacity (125-Pound Divisions).each **146.00**
10,000-Pound Capacity (100-Pound Divisions).each **122.00**
7500-Pound Capacity (50-Pound Divisions)..each **115.50**
5000-Pound Capacity (50-Pound Divisions)..each **109.00**
3500-Pound Capacity (50-Pound Divisions)..each **102.50**
2500-Pound Capacity (50-Pound Divisions)..each **96.00**
1000-Pound Capacity (10-Pound Divisions)..each **96.00**
500-Pound Capacity (5-Pound Divisions)...each **96.00**

Model A Dillon Cable Testers and Locators

Combined

Used to locate where a cable or pipe is buried at and to determine at which depth cable or pipe is buried.

Locates the exact path that a service pipe or cable takes to reach any building and position of a water main in street or alley.

Has a lamp circuit for checking all connections after the test has been set up.

Especially valuable for checking depth of cable at river crossings or for determining whether or not a service pipe is below frost line after a street has been lowered or regraded.

Furnished with detector coil and neutral exploring coil. Built-in level in coil enables the operator to maintain absolute level for accuracy.

Dimensions: 11¼x7½x12½ inches.

Weight, 21½ pounds.

Shipping weight, 23 pounds.

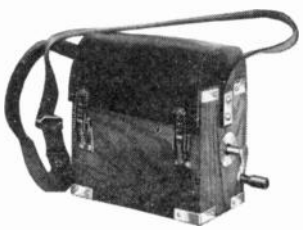
Model A.....each **$76.00**

Stewart Pipe Locators

Used to locate the exact position and depth of buried service pipe or main. Also used to locate a metal conduit system that runs from one building to another.

Each $68.00

Stewart Lineman's Test Sets



Indicates which way and how far the trouble is from the tester, without opening the line or cutting a wire.

Top is designed to hold the receiver and detector coil when they are not in use.

The receiver is equipped with a headband that makes possible the use of both hands when testing, and this headband also fits in the top when not in use.

The detector coil operates on insulated wire as well as on bare wire.

Generator in heavy duty test set is a standard telephone generator.

Furnished with all cords and clips, full length shoulder strap, leather top cover and battery.

Heavy Duty Size, Weight, 12 Pounds.....each $48.00

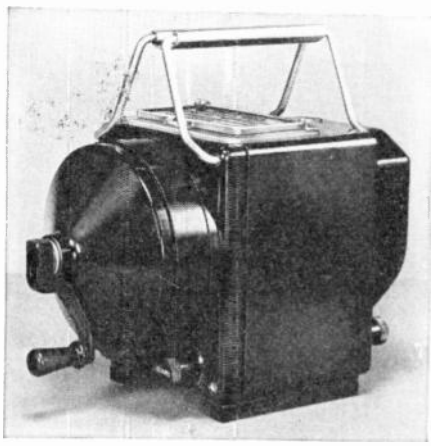
Dillon Model L Stewart Cable Testers

Locates shorts, crosses, grounds and wet spots right to the inch. Has an exploring coil which is neutral to the tone on the sheath. This feature is absolutely necessary to locate water trouble. Valuable tone test feature can be used to "tone" out cables and tag splices.

When the tester is connected to a wet wire in a cable these three fields are always set up: the larger field around the messenger; the next largest around the cable armor; and the smallest around the cable wire that is grounded or wet. In order to hear the current on the wire it is necessary to neutralize the fields around the messenger and the armor. With the coil held on the bottom of the cable, the fields around the messenger and the armor are balanced out, and the only current that can be heard is the current on the wire. The coil will center on either large or small cables.

Model L.....each $58.00

Biddle Super-Meg Type Megger Insulation Testers



For testing cable and other insulation resistance up to 1000 megohms.

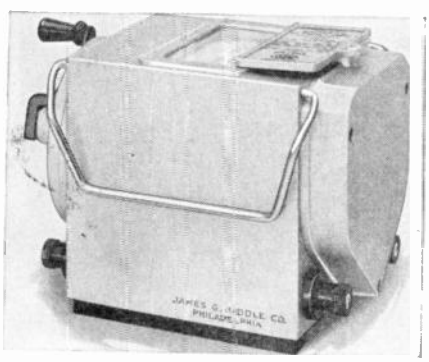
Hand-cranked constant-pressure generator rated either 400 or 500 volts d.c.

Available with built-in rectifier for plug-in operation.

Approximate weight, 8 pounds.

Prices upon application.

Biddle Meg Type Megger Ground Testers

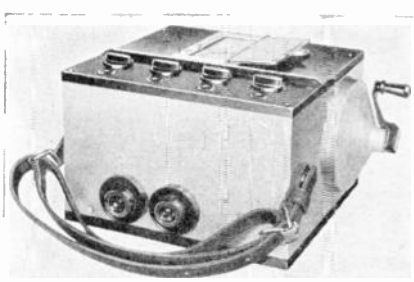


For measuring resistance to earth of central office and other ground connections. Hand-cranked generator supplies test current.

Scale reads directly in ohms, no adjustment or compensation. Ranges up to 600 ohms. Approximate weight, 9 pounds.

Prices upon application.

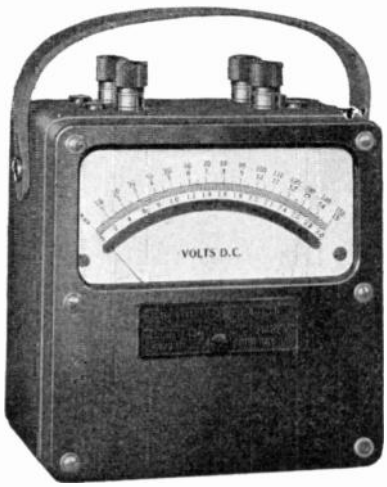
Biddle Bridge-Meg Type Insulation and Resistance Testers



An ideal portable set for central office and field use for insulation resistance, conductor resistance, and Varley Loop measurements up to 1000 megohms.

Hand-cranked generator rated either 400 or 500 volts d.c. Has a built-in Wheatstone bridge. Approximate weight, 13 pounds. Prices upon application.

Model 430 Weston Portable Test Instruments



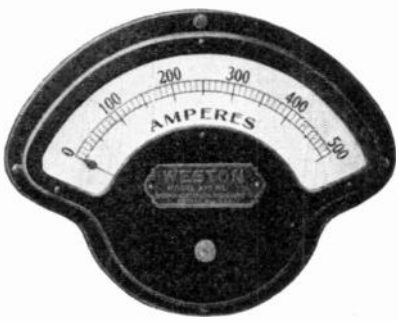
An exceptionally sturdy instrument for d.c. service, including voltmeters, millivoltmeters, ammeters, and microammeters.

Molded bakelite case. Large scale openings. Hand calibrated scales.

Accuracy within ½ of 1%.

Companion instruments available for a.c. service.

Model 273 Weston Fan Shaped Test Instruments



Equipped with exceptionally long scale (7.32 inch). Switchboard instrument. For d.c. voltage and current measurements. Hand calibrated scales. Accuracy within 1%.

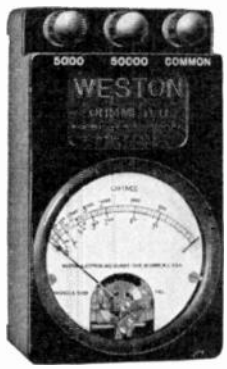
Also available in 3 smaller sizes having scale length of 5.8 inch, 4-inch and 2.6-inch.

Model 564 Type 3C Weston Pocket Size Testers

A multi-range d.c. volt-ohmmeter. Voltage ranges: 3/30/300/600 all 1000 ohms per volt. Resistance ranges: 1000/10000/100000/1000000 ohms, full scale. Rugged and dependable. Bakelite case.

Companion instruments available as Analyzer, Ohmmeter and db Meter.

Model 689 Types 1E and 1F Weston Continuity Testers



An exceptionally handy instrument for rapid checking, inspection and maintenance where resistance continuity testing is required.

Ranges: Type 1-E double range 0-5,000 and 0-50,000 ohms, full scale; Type 1-F double range 0-10 and 0-1,000 ohms, full scale.

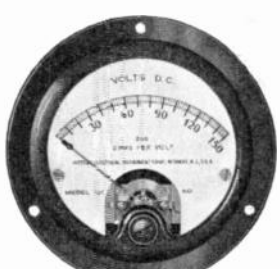
Model 301 is used as indicating instrument.

Model 280 Weston Miniature Portable Test Instruments

A complete line of precision built portable d.c. instruments. Accuracy within 1%. Extremely compact, size, 4⅖x4⅗x1½ inches. Hand calibrated mirror scales. Knife edged pointers. Magnetically shielded. Sturdy metal case.

Available as ammeters, voltmeters and volt-ammeters in single and multi-ranges.

Model 301 Weston Panel Meters



A 3½-inch panel instrument. Standard throughout the telephone and radio industries because of its dependability.

Accurate within 2%. Supplied for all range requirements. Complete line includes instruments for d.c., a.c. and high frequency service.

Complete Information and Prices upon Request

L & N Wheatstone Fault Location Bridge Test Sets

No. 5430-A—Type U

A portable Wheatstone bridge especially adapted for locating faults in communication circuits.

Ratio dial has multiplying values of 1/1000, 1/100, 1/10, 1/9, 1/4, 1/1, 10/1 and 100/1 for resistance measurements and for Varley Loop tests; also settings of M1000, M100 and M10 for ratios in Murray Loop tests.

Rheostat has 4 decades, 10 (1+10+100) + 9x1000 ohms + infinity. Limit of error of ratio resistors ±0.05%; in rheostat arm, resistance change from zero setting of dials equals dial settings ± (0.1%+0.01 ohm). Includes pointer galvanometer of 1-microampere per scale division sensitivity. 4.5-volt battery and keys for galvanometer and battery. Hilborn Loop test can be made, using internal galvanometer.

Furnished in oak case, 8⅞x7⅜x5⅞ inches, with metal protecting corners, removable lid and carrying strap.

No. 5430-A, Weight, 8 pounds.....each ....

No. 5300—Type S

For ordinary resistance testing and for locating faults in communication circuits.

Ratio dial has multiplying values of 0.001, 0.01, 0.1, 1, 10, 100 and 1000 for resistance measurements and for Varley Loop tests; also settings of M1000, M100 and M10 for ratios in Murray Loop tests.

Rheostat has 4 decades 9 (1+10+100+1000) ohms. Limit of error of ratio resistors ±0.05%; in rheostat arm, resistance change from zero setting of dials equals dial settings ± (0.1%+0.01 ohm). Includes pointer galvanometer of 1-microampere per scale division sensitivity, 4.5-volt battery, and keys for galvanometer and battery.

Furnished in oak case, 8⅞x7⅜x5⅞ inches, with hinged lid and carrying strap.

No. 5300, Weight, 8 pounds.....each ....

No. 5000 Square D Voltage Testers

This voltage tester operates on a.c. or d.c., indicating the voltage of either.

It is used for 110 to 600 volts.

Tester does not require lamps; easily carried in pocket.

Sharp points on end of long rubber covered leads permits piercing insulation without damaging it.

Insulation is armored at entrance to case to prevent breakage.

No. 5000 Voltage Tester.....each **$18.00**
No. 5002 Voltage Tester Case.....each **2.00**

Mueller Crocodile Clips and Rubber Insulators

No. 85 Clip with No. 87 Insulator

No. 85 Clips

Cadmium plated, 5-ampere clip for radio and electrical test work. Long thin nose on clip enables user to make tests in deep recesses. Teeth mesh along entire length of jaw. May be completely insulated. Jaw spread, ⅜ inch.

Packed 10 in box; 100 in carton, weight, 1½ pounds.

No. 85.....each **$.07**

No. 85-C Frequency Test Clips

Phosphor bronze spring and brass screw. Will not heat up due to hysteresis effect. Used on radio transmitting apparatus and electrotherapeutical work.

Packed 10 per box; 100 per carton, weight, 2 pounds.

No. 85-C.....each **$.10**

No. 85-T Tip Clips

Same as No. 85 except that it has a standard phone tip soldered to the front end of the lower jaw. Can be used as a combination test clip and test prod; also for making connections to binding posts having insulated, non-removable heads. Jaw spread, ⅜ inch.

Packed 10 in box; 100 in carton, weight, 1½ pounds.

No. 85-T.....each **$.14**

No. 87 Insulators

For use with both of the above clips.

Packed 10 in box, 5 red and 5 black; 100 in carton, weight, 1 pound.

No. 87.....each **$.08**

Mueller Wee-Pee-Wee Clips and Insulators

No. 88 clip with No. 93-P plastic insulator is used in fine electrical and telephone test work.

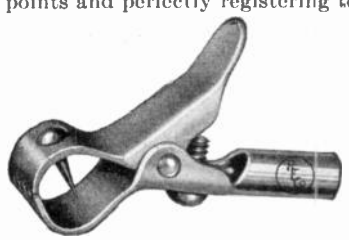
Clip is made entirely of phosphor bronze. Extremely small and flat jaws with ¼-inch spread.

Packed 10 in box; 100 in carton, weight, ¾ pound.

No. 88, Clip.....each **$.15**
No. 93-P, Insulator.....each **.05**

Reliable Testing Clips

For temporary connections to insulated wires. Made of heavy nickel silver with hard sharp insulation puncturing points and perfectly registering teeth



No. 1

Fitted with screw, nut spike, and washer for attaching to instrument cord.

No. 1.....each **$.16**

No. 2

Same as No. 1 but with screw, nut and washer omitted. Preferred where connection to cord is to be soldered.

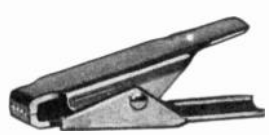
No. 2.....each **$.16**

No. 3

Same as No. 1 but without the spike

No. 3.....each **$.16**

No. 5



A light, sturdy clip with a strong spring. Convenient for temporary connections in radio, telephone and signal work.

Particularly good for congested telephone equipment.

Plenty of room for soldering flat cord terminals.

No. 5.....each **$.13**

Mueller Universal Test Clips and Insulators

No. 24-A Clip Only

No. 45 Clip with No. 47 Insulator

Tests clips save time in electrical work requiring quick temporary connections. May be used over and over again.

Flexible insulators are a convenient protection against electric shock and prevent clips from shorting on each other. Furnished half red and half black to indicate polarity.

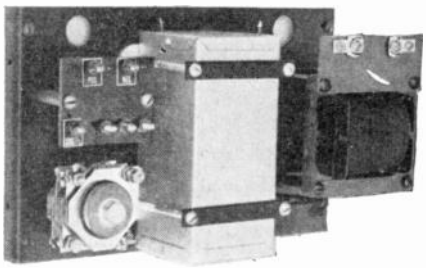
Packed 10 to a box and 10 boxes to a carton.

No.	Each	Description	Spread of Jaws In.	Wt. Lb. per 100
		Screw Connection		
45	$.06	Pee Wee Clip Only, Cadmium	3/8	1 1/4
45-C	.08	5-Amp. Pee Wee Clip Only, Solid Copper	1/4	1 1/4
47	.09	Rubber Insulator for No. 45 or 45-C Clip	...	1 3/4
48-B	.06	Clip Only, Cadmium Plated	1/2	2
48-C	.10	10-Amp. Clip Only, Solid Copper	1/2	2
82	.14	10-Amp. Needle Clip Only, Cadmium	1/2	2
49	.09	Rubber Insulator for No. 48-B, 48-C or 82 Clip	...	2
27	.10	Clip Only, Cadmium Plated	5/8	3 1/4
27-C	.17	40-Amp. Clip Only, Solid Copper	5/8	3 1/2
29	.15	Rubber Insulator for No. 27 or 27-C Clip	...	5 1/4
24-A	.12	25-Amp. Clip Only, Lead Plated	1	6 1/4
24	.20	50-Amp. Clip Only, Solid Copper	1	7
26	.19	Rubber Insulator for No. 24 or 24-A Clip	...	7
21-A	.17	50-Amp. Clip Only, Lead Plated	1 1/4	15
		Lug Connection		
21	$.50	100-Amp. Clip Only, Solid Copper	1 1/4	17
23	.33	Rubber Insulator for No. 21 or 21-A Clip	...	13
11-A	.60	100-Amp. Clip Only, Lead Plated	1 3/4	35
11	1.00	200-Amp. Clip Only, Solid Copper	1 3/4	38
13	.52	Rubber Insulator for No. 11 or 11-A Clip	...	23
33	1.80	300-Amp. Clip Only, Solid Copper	2	80
35	1.20	Rubber Insulator for No. 33 Clip	...	45

G-E Copper Oxide Battery Eliminator

For Telephone Service

No. 6RC61D4—6 Volts, 0.35 Amp. D.C. 115 Volts, 60 Cycle



Designed to deliver a noiseless d.c. of 6 volts, 0.350 amperes. There is a multitude of applications that come within this rating. A few of them are as follows:

New apartment house interphone systems; replace batteries (dry cell or storage batteries) on existing apartment house interphone systems; school interphone systems that come within rated output of this outfit; to supply power for way station telephones on railroad telephone lines; to supply power for local sounders on railroad telegraph lines—the smooth, humless d.c. obtained from this outfit (oscillograph shows no ripple) is praised by Morse code operators—any general application where d.c. not in excess of the rated output is desired.

This rectifier consists of a copper oxide rectifying unit, transformer and necessary specially constructed filter (condenser and choke coil) all mounted on a steel base plate and enclosed in a rugged casing. Casing has an attractive crystallized green finish, which will not chip or mar.

Terminals are provided to supply a small amount of a.c. at 6, 12 or 18 volts for bell ringing.

Approximate shipping weight, 21 pounds.

No. 6RC61D4 ..... each **$44.00**

G-E Full-Wave Tungars

For Charging Telephone Batteries

Form B—Insulated Transformer—Noiseless Type

No. 6RB6B17—3-24 Cells, 2-12 Amp. with Reactance—3-36 Cells, 2-12 Amp. without Reactance

115 Volts, 60 Cycles

With External Filter Reactance

This tungar when used in conjunction with No. 3126680 external filter reactance makes an excellent combination for float charging telephone batteries. The wide range of charging obtainable with this combination has made it popular for small, medium, and large size telephone exchanges.

In small and medium size exchanges where motor-generator sets are now in service, this combination tungar and reactance is often used to supplement the motor-generator set especially during low load periods. This combination is particularly desirable for this purpose during week ends in those exchanges where a charging rate of 12 amperes or less is sufficient. This enables shutting down the motor-generator set and operating during this period at the much higher efficiency obtained from the tungar.

Employs the plug type control which simplifies balancing both sides of the outfit, as a visual indication of the settings on each side is given. An ammeter is provided on each side which further simplifies operation of the outfit.

Two or more outfits are often connected in parallel to obtain charging rates above 12 amperes. The full load efficiency is approximately 74% when used in conjunction with No. 3126680 reactance.

Approximate dimensions: height, 19 7/8 inches; width, 11 1/2 inches; depth, 11 5/8 inches.

Uses two standard 6-ampere tungar bulbs, No. 189049.

Approximate shipping weight, 91 pounds.

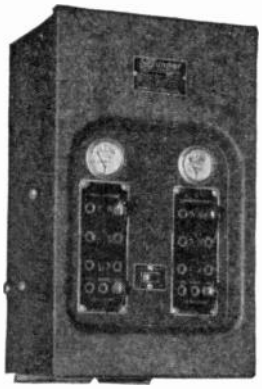
No. 6RB6B17 ..... each **$110.00**

No. 3126680 External Filter Reactance for Use with 12-Ampere Full-Wave Tungars

Used with 12-ampere full-wave tungars.
Height, 10 1/2 inches; width, 6 1/2 inches; depth, 7 3/4 inches.
Shipping weight, 73 pounds.

No. 3126680 ..... each **$42.00**

No. 6RB6B14—3-12 Cells, 2-12 Amp. with Reactance—3-18 Cells, 2-12 Amp. without Reactance



This tungar is similar to No. 6RB6B17, the only difference being in the rated output voltage. When used in combination with No. 3126680 reactance it is adaptable to charging telephone batteries of 3 to 12 cells at an adjustable rate of 2 to 12 amperes. The plug type of control is used and two ammeters are provided. Incorporates all the features of the No. 6RB6B17 outfit.

Approximate dimensions: height, 19 7/8 inches; width, 11 1/2 inches; depth, 9 5/8 inches.

Uses two No. 189048 bulbs.

Approximate shipping weight, 82 pounds.

No. 6RB6B14 ..... each **$81.00**

G-E Full-Wave Mercury Tungars

For Charging Telephone Batteries

Form B—Insulated Transformer—Noiseless Type

No. 6RB23C1—9-24 Cells, 2.0-Ampere

115 Volts, 50/60 Cycles

This mercury tungar has slightly lower ampere capacity. It will give full 2.0-ampere charging rate up to 52 battery volts, and tapers to 0.9 amperes at 65 battery volts. Adjustment of the charging rate is obtained by secondary taps brought to a terminal board, in conjunction with a rheostat. A high grade D'Arsonval ammeter is provided to indicate the charging rate. A filter reactance is incorporated as an inherent part of the outfit.

Full-load efficiency, 53%. Power-factor, 86%.

Approximate dimensions: height, 16 11/16; width, 9 1/16 inches; and depth, 10 3/8 inches.

Uses one No. 16X897 bulb.

Approximate shipping weight, 45 pounds.

No. **6RB23C1**.....each **$75.00**

No. 6RB10C5—9-24 Cells, 6 Ampere

115 Volts, 50/60 Cycles

This outfit is similar to No. 6RB23C1 except for higher current output. It will give full-rated output of 6 amperes from 19 to 52 battery volts. Adjustment of charging rate is by means of secondary taps brought to a terminal board, used in conjunction with a rheostat. An ammeter is provided to indicate charging rate. A smoothing filter reactance is incorporated.

Particularly desirable for small and medium sized exchanges and PBX's which are too large for two or three-ampere outfits and too small for twelve-ampere outfits. It is sometimes recommended for installations where a three-ampere continuous float charge is required, because of the extra capacity that a six-ampere rate allows for boost charging.

Approximate dimensions: height, 17½ inches; width, 12⅛ inches; depth, 14⅞ inches.

Uses one No. 45X674 bulb.

Approximate shipping weight, 75 pounds.

No. **6RB10C5**.....each **$110.00**

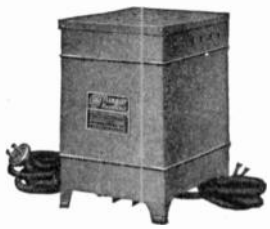
G-E Full-Wave Tungars

For Charging Telephone Batteries

Form B—Insulated Transformer—Noiseless Type

No. 244708—11-12 Cells, 0.3-0.5-Ampere

115 Volts, 60 Cycles



A small compact charger designed primarily for continuous trickle charging in a small PBX. A filter reactance is incorporated to prevent objectionable hum in the telephone circuit.

Designed to charge 11 or 12 cells an a variable resistance permits adjusting the charging rate from 0.3 to 0.5 amperes. Full load efficiency, 28%. Power-factor, 78%.

Approximate dimensions: height, 9 11/16 inches; width, 6 3/16 inches depth, 8¾ inches.

Uses one No. 199698 bulb.

Approximate shipping weight, 25 pounds.

No. **244708**.....each **$52.00**

No. 3049455—9-24 Cells, 1-3-Ampere

115 Volts, 60 Cycles

This Tungar was designed primarily to meet the requirements of intercommunicating systems and PBX's. Extreme flexibility is a feature of this outfit. It can be used wherever a full-wave filtered output is required up to 3 amperes from 19 to 52 battery volts. Six sets of secondary taps brought to a terminal board located just inside the left-hand door, in conjunction with a rheostat controlled from the front panel permit a simple and easy method of adjusting the output over the entire range.

A high grade D'Arsonval ammeter, mounted on the front panel, gives accurate indication of the charging rate. A suitable filter reactance is incorporated in the design, to give quiet operation on telephone batteries.

Will give full 3.0-ampere charging rate at 52 battery volts, and taper to 1.75 amperes at 65 battery volts. Full load efficiency, 48%. Power-factor, 92%.

Approximate dimensions: height, 17½ inches; width, 12⅛ inches; depth, 14⅜ inches.

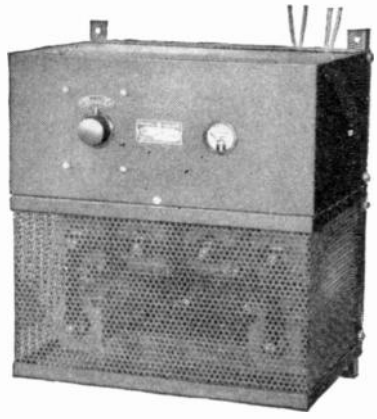
Uses 2 No. 12X825 bulbs.

Approximate shipping weight, 88 pounds.

No. **3049455**.....each **$112.00**

G-E Copper Oxide Battery Chargers

For Telephone Service



This copper oxide rectifier for telephone service obtains output adjustment over an extremely wide range in very small steps. A new type of variable transformer replaces the conventional transformer taps and resistance commonly used for adjusting. The dial mounted on the front of the cabinet gives perfectly uniform adjustment from zero to full load.

The rectifying unit is a copper oxide assembly, a permanent rectifying device of proven reliability and safety. After the charging rate is adjusted, no other attention is required.

The life of this copper oxide rectifier is practically unlimited. There are no parts to replace. A large number of units have been running on test continuously since 1925.

The efficiency of the rectifier is high since all the adjustment is made with a transformer. This eliminates the losses which occur when a resistance is used to obtain output adjustment.

An internal filter prevents objectionable hum. The filter choke coil and the transformer are vacuum-impregnated with Glyptal. The properties of Glyptal provide maximum mechanical and electrical durability. The rectifier is equipped with a D'Arsonval instrument which gives an accurate indication of the output current.

An attractive black wrinkle-finish casing is designed for maximum practicability and lasting beauty. Because the lower section is perforated it allows free air circulation to cool the unit.

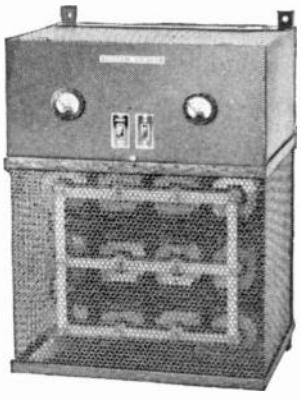
Several different ratings have been standardized so that it is possible to provide a trickle charge for large batteries or a full charge for small batteries.

Model No.	Each	Cells	Amps.	—Dimensions, Inches— Height	Width	Depth
6RC98D1	$90.00	12	1.0	19	13 3/8	14 7/8
6RC98D2	100.00	12	2.0	19	13 3/8	14 7/8
6RC98D3	112.00	12	3.0	19	13 3/8	14 7/8
6RC99D3	125.00	12	4.0	25	13 3/8	14 7/8
6RC99D2	135.00	12	5.0	25	13 3/8	14 7/8
6RC99D1	148.00	12	6.0	25	13 3/8	14 7/8
6RC95D2	190.00	12	8.0	25	20 3/8	14 7/8
6RC96D7	230.00	12	12.0	31	20 3/8	14 7/8
6RC98D4	90.00	24	0.5	19	13 3/8	14 7/8
6RC98D5	100.00	24	1.0	19	13 3/8	14 7/8
6RC98D6	112.00	24	1.5	19	13 3/8	14 7/8
6RC99D4	125.00	24	2.0	25	13 3/8	14 7/8
6RC99D6	148.00	24	3.0	25	13 3/8	14 7/8
6RC100D1	190.00	24	4.0	31	13 3/8	14 7/8
6RC96D8	210.00	24	5.0	31	20 3/8	14 7/8
6RC96D9	230.00	24	6.0	31	20 3/8	14 7/8

G-E Automatic Copper-Oxide Chargers

For Telephone and Communication Batteries

For 12 or 24-Lead Cell Batteries



Features fully automatic control which is extremely sensitive yet simple and rugged, inverse temperature compensation, conservatively rated copper-oxide units using natural air ventilation, quiet operation, switch for giving batteries soaking charge or equalizing charge, high efficiency, and no moving parts requiring attention.

Has well-ventilated steel case.

Furnished with ammeter and voltmeter to give accurate indication of charging rate and battery voltage.

No trickle charge adjustment is required.

Control entirely depends on battery voltage and is independent of line-voltage fluctuations.

Has no parts requiring periodic replacement.

No.	Each	A.C. Volts	Cycles	Cells	Amperes	—Dimensions, Inches— Height	Width	Depth
6RC94D7	$215.00	115	60	12	2.0	19	13 3/8	14 7/8
6RC94D2	215.00	115	60	12	4.0	25	13 3/8	14 7/8
6RC95D3	275.00	115	60	12	8.0	25	20 3/8	14 7/8
6RC96D4	330.00	115	60	12	12.0	31	20 3/8	14 7/8
6RC94D8	215.00	115	60	24	1.0	19	13 3/8	14 7/8
6RC94D3	215.00	115	60	24	2.0	25	13 3/8	14 7/8
6RC95D4	275.00	115	60	24	4.0	31	13 3/8	14 7/8
6RC96D5	330.00	115	60	24	6.0	31	20 3/8	14 7/8

G-E No. 6RB10Y5 60-Cell Full Wave Tungars

For 55 to 66 Cells, 3 to 6 Amperes

115 Volts, 60 Cycles

Recommended for charging 55/66-cell control batteries in central stations, sub-stations, etc.

The charging rate is adjustable from 3 to 6 amperes at 120-battery volts; 1.5 to 6 amperes at 150-battery volts; and tapers to 3 amperes at 175-battery volts.

May be mounted on switchboard, above or behind it, or in any out-of-the-way corner.

The full-wave Tungar bulb requires only a short period of time for heating the filament and then it starts rectifying as soon as the load is placed on the outfit.

Can be depended on to operate 24 hours a day with practically no attention. There are no moving parts to wear, which minimizes maintenance costs. The battery cannot discharge through the bulb in the event of power failure; and these outfits will automatically start charging again when a.c. power returns.

Battery volts, 120/150/175. Charging amperes, 6/6/3. Overall dimensions: height, 17½ inches, width, 12⅛ inches; depth, 14⅞ inches.

Renewal tungar bulb: No. 45X674.

Approximate shipping weight, 95 pounds.

No. 6RB10Y5.....each **$164.00**

Renewal Tungar Bulb, No. 45X674.....each **15.00**

Similar outfits for other voltages and frequencies are available.

G-E 60-Cell Full Wave Tungars

115 Volts, 60 Cycles

These instruments are designed specially for float charging 60-cell control batteries in central stations, sub-stations, industrial plants, etc.

Designed to meet the exacting requirements of central station engineers, making it possible to replace present charging equipment for control batteries with highly efficient, quiet operating chargers.

No. 6RB22Y2

55-66 Cells, 0.4-2 amp.

Incorporates micrometer adjustment of the charging rate, which is easily controlled from front panel.

The maximum charging rate of 2.0 amperes may be obtained at 120 or 150-battery volts, and tapers off slightly at 175-battery volts. A charging rate as low as 0.4 ampere at 120-battery volts can be obtained.

Battery volts, 120/150/175. Charging amperes, 2.0/2.0/0.75. Overall dimensions: height, 14 inches; width, 10⅞ inches; depth, 11⅞ inches. Approx. shipping weight, 58 pounds.

Renewal tungar bulb: No. 16X897.

No. **6RB22Y2**.....each **$125.00**
Renewal Tungar Bulb, Cat. No. 16X897.....each **8.00**

No. 6RB14Y1

55-66 Cells, 0.4-8 amp.

Used primarily for trickle charging where there is a very small load or no load on the battery. It is arranged for wall, panel, or bench mounting.

Where this charger is to be used, the charging rate is usually predetermined; and once the charging rate has been set, no further adjustments are necessary, consequently, the outfit is supplied without instruments. Designed to deliver a tapering charge which tapers from 0.8 ampere at 120-battery volts to 0.4 ampere at 175-battery volts. A cover on the top gives easy access to the bulb.

Battery volts, 120/150/175. Charging amperes, 0.8/0.6/0.4. Overall dimensions: height, 9 11/16; width, 6 3/16; depth, 7 3/16 inches. Approx. shipping weight, 32 pounds.

Renewal tungar bulb: No. 16X897.

No. **6RB14Y1**.....each **$42.00**
Renewal Tungar Bulb, Cat. No. **16X897**.....each **8.00**

No. 6RB10Y3

55-66 Cells, 1.75-6 amp.

Simple, sturdy construction. An outfit for applications, which do not require extra refinements or capacity.

It is usually used where there is a voltmeter available on the switchboard for indicating the battery voltage, and consequently is supplied without a voltmeter.

Although there is some adjustment of the charging rate provided, this is primarily a tapering charger. The charging rate starts at 6 amperes at 120-battery volts and tapers to 1.75 amperes at 175-battery volts.

Battery volts, 120/150/175. Charging amperes, 6.0/3.0/1.75. Overall dimensions: height, 17½ inches; width, 12⅛ inches; depth, 14⅞ inches. Approx. shipping weight, 95 pounds.

Renewal tungar bulb: No. 45X674.

No. **6RB10Y3**.....each **$120.00**
Renewal Tungar Bulb, Cat. No. **45X674**.....each **15.00**

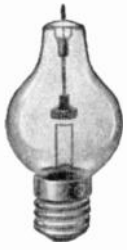
Similar outfits for other voltages and frequencies are available.

G-E Tungar Rectifier Bulbs

No. 289881

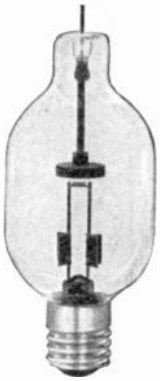
No. 12x825

No. 206501



Nos. 99x44 189048 and 189049

No. 217283



Nos. 99x45 and 76x13

No. 199698

No. 20x672

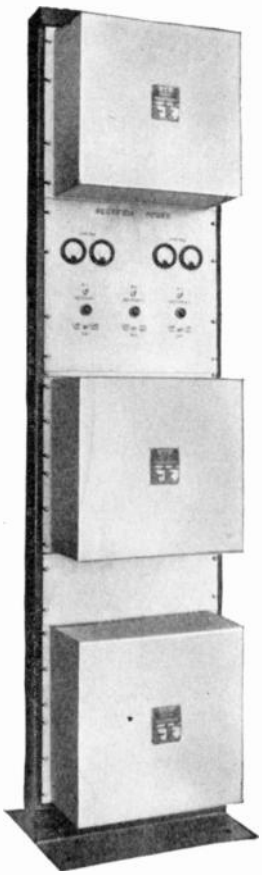
No. 45x674

These bulbs are filled with 99.8 per cent pure Argon gas. This gas undergoes five different additional treatments to remove impurities. Silver-colored magnesium coating on the inside absorbs impurities given off during operation.

No.	Each	Recommended Maximum Output, D.C. Amp.	Volts	Socket No.	Approx. Ship. Wt. Lb.
		Half Wave, Argon			
289881	**$4.00**	0.5	7.5	278768	5/16
12x825	**4.00**	2.0	75	278768	5/16
206501	**4.00**	2.0	75	Std. Edison	5/16
99x44	**5.00**	6.0	25	217967	9/16
189048	**5.00**	6.0	60	217967	9/16
189049	**5.00**	6.0	90	217967	9/16
217283	**10.00**	15.0	60	217967	13/16
99x45	**15.00**	20.0	25	217967	9/16
		Full Wave, Argon			
199698	**$5.00**	2/0.5	25/30	Std. Edison	5/16
		Half Wave Mercury, Argon			
20x672	**$5.00**	5.0	20	K3778926	3/8
76x13	**15.00**	20.0	75	217967	1¼
		Full Wave, Mercury			
16x897	**$8.00**	2.0	250	M5556072G1	1 3/16
45x674	**15.00**	6.0	250	M5556072G1	1 5/16

Fansteel Selenium Rectifiers

For Railway Communications Service



Catalog 1937 Fansteel D.C. Power System consisting of three rectifiers and power control panel for 160-volt, 5-ampere d.c. supply to two telegraph line or printer circuits.

Fansteel Selenium Rectifier power units and battery chargers are supplied in standard or custom-built models for every direct current supply requirement in railway telegraph or telephone service.

Power Units for Line Service are supplied for wall or standard 19-inch relay rack mounting to furnish filtered direct current without battery to telegraph line, printers, perforators, re-perforators or distributor transmitter machine circuits. Output voltage is adjustable.

Power Units for Local Circuits eliminate batteries, supplying filtered direct current for local or "sounder" circuits. Output voltage is adjustable.

Telephone Battery Chargers are supplied for central switchboard or P.B.X. batteries at maximum charging rates ranging from 500 milliamperes to 12 amperes. They are designed to be connected to the battery continuously, all noise being eliminated by the filter network. When properly adjusted to the average load, they will not overcharge the battery. Coarse and fine adjustment switches and d.c. ammeters are provided on all standard models, which are assembled in steel housings for wall mounting.

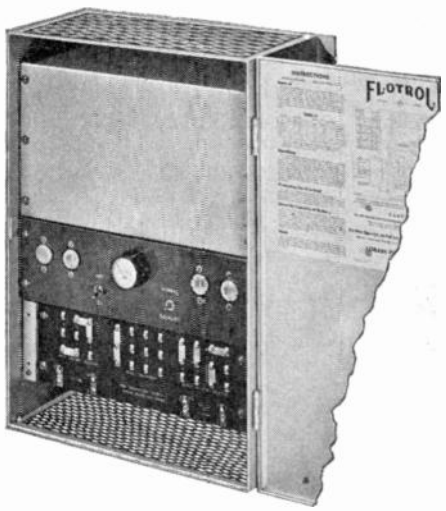
Battery-Rectifier Power Supply for dispatchers' transmitters, other local telephone circuits, alarms, annunciators and other low voltage equipment, consists of a small storage battery and full wave filtered rectifier assembled into a steel cabinet for wall mounting. In operation, the rectifier is connected into an a.c. supply, charging the battery continuously at slightly more than the average circuit load. Supplied in 4, 6 and 8-volt models, regular duty or heavy duty with batteries of sufficient rating to permit long periods of operation when the a.c. supply is off.

Dependable Performance is built into every rectifier power unit or battery charger made by Fansteel Metallurgical Corporation. Rugged, heavy duty selenium rectifier stacks, built for long years of service, are made in the Fansteel plant under high standards of scientific quality control. All other components are made or selected under equally high standards. All equipment is designed by trained engineers well versed in the requirements of railway communications service.

Catalog 1312-P Heavy Duty Battery Rectifier Power Supply Consisting of 6-volt, 10.4 ampere-hour battery and 0.75 ampere selenium rectifier with filtered output for dispatchers' transmitters and other low voltage service.

How to Order: Specify intended use, a.c. line voltage and frequency, d.c. output volts and amperes (or number and type of cells of battery). For custom-built equipment, ask for Form 247. For complete references, ask for Fansteel Bulletin RDP-109.

Lorain Flotrol Battery Chargers



A completely automatic, constant voltage battery charger which operates without moving parts and without maintenance or adjustment of any kind.

Ideal for unattended offices because no maintenance is required except to add battery water once or twice a year.

Has unusually high power factor and efficiency.

A single, fool-proof magnetic unit compensates both for variations in power supply voltage and for variations in load.

Will carry the full exchange load and maintain the exchange voltage within limits of ±1 per cent. The increase in charging current, in response to changes in load is so rapid that no current is drained from the battery except on overloads, and the maximum battery life is assured.

The a.c. from the magnetic control unit is rectified by oversized selenium elements. Each component is designed to withstand heavy overloads, such as are often experienced when power is restored after an interruption in power service.

Furnished with an ammeter to indicate the charging current, an equalizing switch to provide regulated equalizing voltage, and an oversized filter choke to eliminate charger hum from the battery voltage.

Auxiliary relays are available for use with each model. Relay allows the user to approximately double the charging capacity by using existing charging equipment connected in parallel with the Flotrol charger through the auxiliary relay.

60-Cycle—Single-Phase

No.	Each	D.C. Amps.		Volts	No. of Cells	Supply Voltage	Cabinet Dimen., In.
For Wall Mounting							
12A	$100.00	½		24	11–12	105–125	14x 6⅝x12
24A	156.00	1.0		24	11–12	105–125	14x 8 x15
For Relay Rack or Wall Mounting							
75A	$242.50	3.0		24	11–12	105–125	19x 8 x15¾
75B	242.50	1.5		48	22–23 24	105–125	19x 8 x15¾
*150D	292.50	6.0 3.0	or	24 48	11–12 22–23 24	105–125 or 210–250	19x 8¼x24½
*300D	497.00	12.0 6.0	or	24 48	11–12 22–23 24	105–125 or 210–250	19x13¼x31½
For Floor Mounting							
600B	$800.00	12.0		48	22–23 24	210–250	.....
1200B	1260.00	24.0		48	22–23 24	210–250	.....

*Dual range to shift from 24-volt to 48-volt range or vice versa.

60-Cycle—Three-Phase

Available in 25, 50, 75, and 100-ampere sizes for 48-volt offices. Prices upon request.

Schauer Electrox Battery Eliminators

For Telephone Service
Input, 110 Volts, 60 Cycles, A.C.

Type A3V

For Replacing Dry Cells In Magneto Telephones
Output, 3 Volts, 0.15 Amperes, D.C.

Supplying sufficient smooth, noiseless current for the operation of one magneto telephone transmitter, Type A3V operates directly from the lighting circuit, and is designed to replace the two dry cells usually used for this purpose.

Type A3V consists of transformer, full wave copper-oxide rectifier, filter choke and condenser, housed in tubular case, size 2½ inches in diameter by 3½ inches high. Flexible leads are provided for connection to the a.c. line. Leads from the battery terminals in the telephone are connected to clips on the rectifier cover.

Type A-05004, Less Power-Off Relay
Type PA-05004, With Power-Off Relay

For Operators' Circuits on Magneto Switchboards
Output, 4 Volts, 0.5 Amperes, D.C.

Operating direct from the lighting circuit, this rectifier delivers a constant, humless direct current to the operator's circuit on magneto switchboards.

Where the alternating current supply is subject to frequent interruptions, a power-off relay is incorporated in the battery eliminator and when the power fails, the operator's circuit is automatically transferred to stand-by dry cells. Since these cells will be used only occasionally, they will be serviceable for the shelf life of dry batteries.

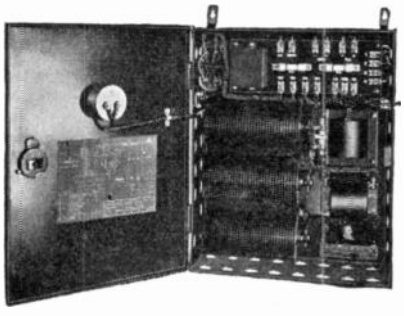
Housed in an attractively finished steel cabinet, arranged for wall mounting, this eliminator consists of a transformer, full wave copper-oxide rectifying element, filter choke and condenser. A 4-foot attachment cord with plug connects the battery eliminator to the lighting circuit. Terminals are provided for connection to the operator's circuit terminals, and to stand-by dry cells when used.

Cabinet size, 5⅝x6¼x4 inches.

To avoid cross-talk when these battery eliminators are used to supply current to two or more operators' positions, one No. 6001 Impedance Unit is required for each position.

Type RA, Constant Voltage

For Lamp Signal and Automatic Switchboard
Power-Off Relay Optional
Output, 12 48 Volts, 1.0 4.0 Amperes, D.C.



For delivering direct current of suitable smoothness for the operation of telephone equipment without the use of batteries.

Type RA delivers a practically constant output voltage irrespective of current drain up to the maximum output of the rectifier.

The constant voltage output is obtained through the use of a magnetic regulator that is automatic in action, requiring no manual adjustments. Maximum variation in output is not over 3 volts on a 24-volt eliminator and 5 volts on a 48-volt eliminator.

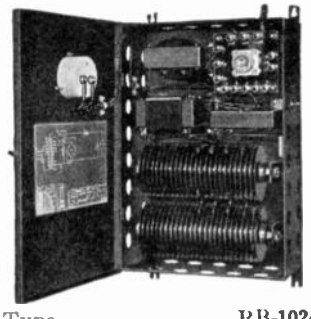
Type RA consists of a transformer; full wave copper-oxide (or Selenium) rectifying elements rated for continuous service; magnetic regulator; ample choke and condenser filtering system; precision d.c. voltmeter; rubber-covered attachment cord and plug, and a.c. cut-off switch. All parts housed in a ventilated steel cabinet arranged for wall mounting.

No.	D.C. Output Volts	Amp.	*Ringing Volts	Size Inches	No.	D.C. Output Volts	Amp.	Size Inches
RA-1012	12	1.0	6,12,18	12x14x6	RA-3024	24	3.0	16x20 6
RA-2012	12	2.0	6,12,18	12x14x6	RA-4024	24	4.0	20x21x6
RA-05024	24	0.5	12,18,24	12x14x6	RA-2048	48	2.0	21x21x6
RA-1024	24	1.0	6,12,18,24	12x18x6	RA-3048	48	3.0	20x21x6
RA-2024	24	2.0	.....	16x18x6	RA-4048	48	4.0	20x30x7

*Supplied only when specified on order.

Type RB Schauer Electrox Automatic Battery Chargers

For Telephone Service
Input, 110 Volts, 60 Cycles, A.C.
Output, 24-48 Volts, 1-12 Amperes, D.C.



Maintains a charging rate in proportion to the drain on the batteries. Operates directly from the lighting circuit.

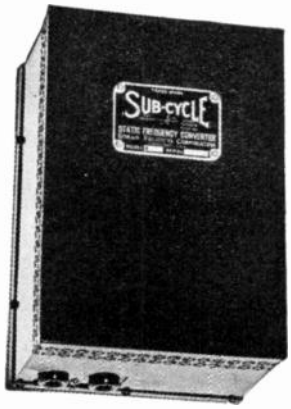
Completely automatic in operation and having no relays, vibrators, or bulbs that require attention or adjustment, Type RB is an ideal charger. Noiseless in operation, it can be floated across the batteries, continuing the charge even while the telephone system is in operation, and will cause no hum or interference.

Type RB consists of a transformer; full wave copper-oxide (or Selenium) rectifying elements rated for continuous service; magnetic regulator that automatically increases or decreases the charging rate in proportion to the drain on the batteries; ample choke filtering system, precision d.c. voltmeter, rubber-covered attachment cord and plug, a.c. cut-off switch and substantial output terminals. All parts are housed in a ventilated steel cabinet arranged for wall mounting.

*VM indicates d.c. voltmeter—supplied with all Type RB charges; AM indicates d.c. ammeter—supplied with styles shown.

Type	RB-1024	RB-2024	RB-3024	RB-4024	RB-6024	RB-12024	RB-1048	RB-2048	RB-3048	RB-4048	RB-6048
D.C. Output Volts	24	24	24	24	24	24	48	48	48	48	48
Amperes	1	2	3	4	6	12	1	2	3	4	6
*Meters	VM	VM	VM-AM	VM-AM	VM-AM	VM-AM	VM	VM	VM-AM	VM-AM	VM-AM
Size.....inches	12x14x6	12x18x6	16x21x6	20x21x6	20x21x6	15x24x8	12x14x6	20x21x6	20x21x6	18x28x6	18x34x6

Lorain Sub-Cycles



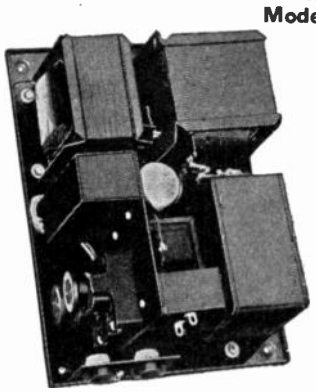
The Sub-Cycle ringing machine is a static type of frequency converter which operates without moving parts to produce 20-cycle ringing current from 105–125 volts, 60-cycle a.c. supply, or 16⅔-cycles when the input is 50 cycles. It produces a powerful ringing current, entirely independent of frequency variations in the commercial power supply.

No routine maintenance. Very close output voltage regulation from no-load to full-load. It cannot interfere with radio reception and is economical and quiet in operation.

Each machine contains a built-in tone coil for the production of reverting tone when this feature is required in offices equipped with condensers for returning tone to the calling subscriber.

Output wave-form is ideal for telephone ringing. Characteristics of the wave-form of the current produced by Sub-Cycle are continuously uniform and contain no high peaks. The output frequency is always one-third that of the input frequency, irrespective of fluctuations in the power supply. The converter automatically adjusts itself to these frequency changes.

Model S



For offices up to 1600 stations.

Produces 20-cycle a.c. ringing current.

Operates on 105–125 volts, 60-cycle a.c. supply.

Output approximately 20 watts at 90 volts.

Cabinet finished in black wrinkle lacquer.

Size, 9⅝x14⅛x5 1/16 inches.

Shipping weight, 35 pounds.

Model S.....each **$65.00**

Model SP

For offices up to 1600 stations. Produces positive and negative impulses without moving parts, for biased selective ringing in addition to 20-cycle a.c. ringing current.

Operates on 105–125 volts, 60-cycle a.c. supply.

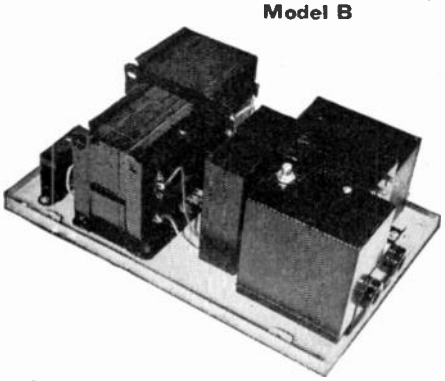
Output approximately 20 watts at 90 volts.

Cabinet finished in black wrinkle lacquer.

Size, 9⅝x14⅛x5 1/16 inches. Shipping weight 36 pounds.

Model SP.....each **$75.00**

Model B



For offices up to 1600 stations. Produces 20-cycle a.c. ringing current.

Operates on 105–125 volts, 60-cycle a.c. supply.

Output approximately 15–20 watts at 90 volts.

Equipped with a safety switch operated by cover, enclosed fuse box, and a paper condenser instead of electrolytic.

Listed as standard by Underwriters' Laboratories.

Cabinet finished in aluminum lacquer.

Size, 9½x14x5⅜ in.

Shipping weight, 37 lb.

Model B.....each **$86.00**

Model CC

For offices up to 4000 stations. Produces 20-cycle A.C. ringing current. Designed particularly for use where the ringing is abnormally heavy.

Operates on 105–125 volts, 60-cycle a.c. supply.

Output approximately 40–50 watts.

Two output voltages, 130 and 90 volts.

Cabinet finished in black wrinkle lacquer.

Size 10⅛x16⅜x6 1/16 inches.

Shipping weight, 68 pounds.

Model CC.....each **$132.00**

Model CCP

For offices up to 4000 stations.

Produces positive and negative impulses without moving parts, for biased selective ringing, in addition to 20-cycle a.c. ringing current.

Used particularly in those case where the ringing is abnormally heavy.

Operates on 105–125 volts, 60-cycle a.c. supply.

Output approximately 40–50 watts. Two output voltages, 130 and 90 volts.

Cabinet finished in black wrinkle lacquer.

Size 10⅛x16⅜x6 1/16 inches.

Shipping weight, 70 pounds.

Model CCP.....each **$152.00**

Lorain Auxiliary Transformers

No. T-2259

For use with Models S or B sub-cycles. Should be used in offices having super-imposed ringing. The transformer is connected to the output of the sub-cycle and provides a path for the direct current used in super-imposed ringing. However, the a.c. voltage on output terminals of transformer is same as voltage obtained directly from sub-cycle.

Size, 3⅞x4½x4⅛ inches. Shipping weight, 8 pounds.

No. T-2259.....each **$9.80**

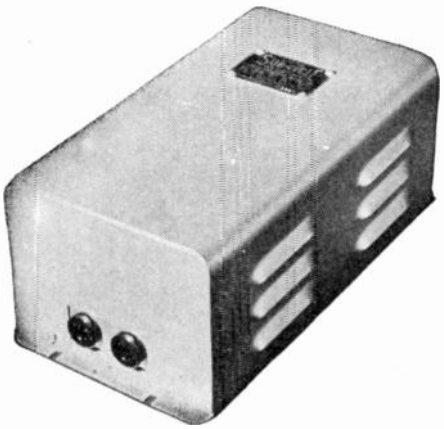
No. T-2378

For use with Model C sub-cycles. Should be used where high ringing voltages are required. By means of this transformer, it is possible to obtain any of the following ringing voltages: 90, 150, 175, 200, 250, or 300 volts. Under certain conditions, these higher ringing voltages can be used advantageously.

Size, 6x5x4¼ inches. Shipping weight, 17 pounds.

No. T-2378.....each **$22.60**

Model 30 Lorain Sub-Cycles

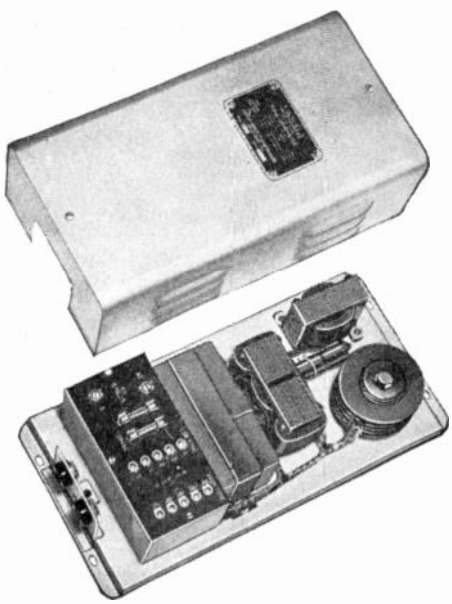


Generates 30 cycles a.c. ringing; may be used for P.B.X., straight line ringers or to supply 30-cycle ringing in offices having the synchromonic series of harmonic ringers.

Operates on 105–125 volts, 60 cycle, a.c. supply. Self-starting, no relay. Can be used on start-stop operation.

No.	Each	Size, Inches	Watts	Voltage No Load	Ship. Wt. Lb.
30M	$66.00	6⅜x12½x4¾	7.5	90	22
30S	86.00	9½x14 x5⅜	20.0	90	28
30C	136.00	9⅛x16½x6⅞	60.0	90–130	42

Model A Lorain Tone Generators Static Type



For dial type offices. Operates directly from the regular 60-cycle commercial a.c. supply, 105–125 volts.

High and low tones are produced by making use of harmonics generated when a magnetic material is saturated. Model A has an output of 100 milliwatts for low tone and 65 milliwatts for high tone, with unity power factor load. Ratings are conservative and under normal operating conditions, generator will supply 50% more power than rated capacity. Ample tone power is provided for large dial office and a reserve tone power is available for future growth of small dial office. Ample power for offices up to 5000 lines.

Seven high tone voltages; six low tone voltages.

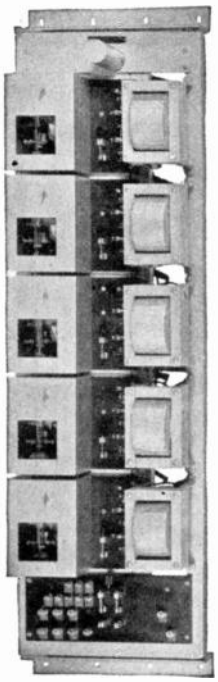
Eliminates the use of moving parts, relays, and contacts. There are no adjustments to make and no operating maintenance attention is necessary. Housed in an aluminum finished cabinet. Size, 13x7x4½ inches.

Model A, Shipping Weight, 17 Pounds.....each **$95.00**

Leich Harmonic Converters

110-115 Volts, 60 Cycles, A.C.

The operation of harmonic ringing systems depends upon the ringers having a tuned reed which will respond to impulses of a certain fixed frequency.



Harmonic ringing is essentially a voltage and frequency system depending upon the accuracy of the voltage and frequency to a fixed value for its operation.

The earlier harmonic systems consisted of a multiple frequency generator having its speed and frequency governed by a speed controlling governor.

The vibrating type converter is a much more economical means of furnishing harmonic ringing currents. It depends for its accuracy of operation on a tuned reed and a uniform battery voltage. Any great variation in battery voltage results in non-uniform operation.

Designed to be non-interfering with radio reception.

Constructed with a heavy steel frame mounted to swing from the wall or rack like a gate. This construction permits inspection of the wiring, condensers, etc., without removing the converter from service. Frame is sufficiently heavy to prevent vibration and keep the vibrators in operation whether it is open or closed. Terminals are mounted on panels of ebony asbestos making the equipment fireproof. Vibrators are mounted under individual steel, glass-faced covers. Condensers of the proper capacity and highly efficient transformers correctly proportioned assure a smooth wave form.

The transformer losses are the greater load when under no ringing load. A relay is provided to close the transformer circuits when ringing, keeping them off the battery through non-ringing periods. A contact on the ringing key or a separate key may be used to operate this relay. This feature may be shunted for continuous transformer excitation if desired.

Ringing transformers are tested at a break-down voltage of 1500 volts.

Battery volts, 24. Size, 48x15x11 inches.

Operates from exchange battery with a suitable impedance coil between this battery and a small noise absorbing battery of equal voltage.

The most satisfactory results are secured by using a separate battery for operating the harmonic converter, trickle charging this battery from a small charger.

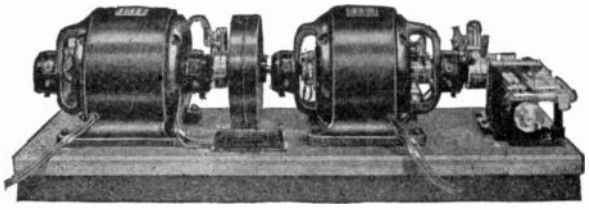
Cat. No.	Each	Frequencies
328	$300.00	16, 20 or 25, 30, 42, 54, 66
329	300.00	16⅔, 20 or 25, 33⅓, 50, 66⅔

For Use with Automatic Switchboards

Cat. No.	Each	Frequencies
428	$400.00	16, 20 or 25, 30, 42, 54, 66
429	400.00	16⅔, 20 or 25, 33⅓, 50, 66⅔

Holtzer-Cabot Ringing Motor-Generator Sets

For Telephone Exchanges



Ringing Currents: For the purpose of ringing subscribers' telephones, single phase alternating current of from 75 to 110 volts at 16 to 25 cycles is ordinarily used, except on selective party lines. For selective party lines there are two systems in general use, one system utilizing pulsating direct current and the other single phase alternating current of from two to five frequencies, depending upon the number of parties to be selected on a line. As the particular types of ringing currents required are not obtainable direct from commercial lighting and power circuits it is necessary to use some kind of converting apparatus.

Types of Ringing Equipment: For obtaining single frequency ringing current the converting apparatus may be a motor-generator, magneto motor-generator, dynamotor, or rotary converter. A motor-generator consists of two machines, a motor and a generator direct-connected; a magneto motor-generator is a motor-generator having a generator of the magneto type; a dynamotor is a single machine with two windings; a rotary converter is a single machine with a single winding.

When the source of power is alternating current, a motor-generator or magneto motor-generator is used; when the source of power is a direct current power circuit or a storage battery, a motor-generator, dynamotor, or rotary converter may be used.

The further choice of the type of equipment depends upon the number of subscribers to be served, the source of power available, the cost and space requirements, and the existing equipment in service.

To obtain multi-frequencies, motor-generators embodying several machines are required.

Interrupter Equipment: In connection with ringing equipment, various interrupting devices are required for such signals as: Busy-Back, Howler, Don't Answer, Flashing Recall, and automatic ringing. These may be part of the motor-generator or dynamotor or may be driven separately by means of a small motor.

Alternating Current Supply

Motor: 110 or 220 volts, 60 cycles, single phase, 1150 rpm.
Generator: 19 cycles, 80 volts, range 80 to 115 volts.

Item No.	Watt Output	Motor Frame No.	Generator Frame No.	Floor Space Inches	Shipping Weight Pounds
1	20	RWS-7022	HD-1420	30x12	200
2	30	RWS-7022	HD-1430	30x12	200
3	45	RWS-7022	HD-1445	30x12	200
4	65	RWS-7022	HD-13	30x12	200
5	100	RWS-7022	HD-12	35x13	250
6	200	COT-8030	HD-1	35-x13	350
7	400	COT-8030	HD-2	36x14½	400

Direct Current Supply

Motor: 24, 48, 115 or 230 volts d.c., 1150 rpm.
Generator: 19 cycles, 80 volts, range 80 to 115 volts.

Item No.	Watt Output	Motor Frame No.	Generator Frame No.	Floor Space Inches	Shipping Weight Pounds
1	20	HD-14	HD-1420	26x10½	160
2	35	HD-14	HD-1435	26x10½	160
3	50	HD-14	HD-1450	26x10½	160
4	75	HD-14	HD-1375	26x10½	160
5	100	HD-13	HD-13	27x10½	180
6	125	HD-12	HD-12	35x13	300
7	250	HD-1	HD-1	36x13	500
8	400	HD-2	HD-2	44x13½	650

Holtzer-Cabot Ringing Dynamotors or Rotary Converters

For Telephone Exchanges

Ringing Dynamotors

On systems having a direct current supply where the voltage variations are not excessive and where space or cost is important, a dynamotor may be used in preference to a motor-generator set. The use of a dynamotor reduces the space by eliminating one machine and the base and coupling. These dynamotors have the same general construction and the same reliability as the motor-generator sets and can likewise be furnished with pulsating current and signaling attachments.

Sizes HD-12 to HD-2 are supplied with time limit starters.

Primary: 24, 48, 115 or 230 volts, d.c.
Secondary: 19 cycles, 80 volts, range 80 to 115 volts.

Item No.	Watt Output	Frame No.	Floor Space Inches	Shipping Weight Pounds
1	15	HD-1415	11½x 8	70
2	20	HD-1420	11½x 8	70
3	30	HD-1430	11½x 8	70
4	50	HD-13	16 x 9	150
5	75	HD-12	18½x 9¾	175
6	150	HD-1	20 x10½	225
7	300	HD-2	24 x14	300

Ringing Rotary Converters

A rotary converter being a single machine has the same space advantage as the dynamotor. In fact, for a given size machine the rotary converter has more output than either a motor-generator set or a dynamotor. A rotary converter requires a transformer, however, as the secondary voltage is about seven-tenths of the primary voltage. In mechanical construction the rotary converters are the same as the dynamotors and they may also be supplied with pulsating current and signaling attachments.

Sizes HD-12 to HD-2 are supplied with time limit starters.

Machine primary: 24, 48, 115 or 230 volts. d.c. Transformer secondary: 19 cycles, 80 volts, range 80 to 115 volts.

Item No.	Watt Output	Frame No.	Floor Space, Inches		*Ship. Wt. Lb.
			Rotary	Transformer	
1	25	HD-1425	11½x 8	4 x4	95
2	45	HD-1445	11½x 8	6½x4	95
3	65	HD-1465	11½x 8	6½x4	95
4	100	HD-13	16 x 9	6½x4	175
4	125	HD-12	18½x 9¾	6¼x4⅜	205
6	250	HD-1	20 x10½	7⅛x5⅜	270
7	500	HD-2	24 x14	9⅛x6¼	360

*Weight for both rotary and transformer.

MG-125 Holtzer-Cabot Magneto Ringing Sets

For Telephone Exchanges

A quiet operating ringing set which causes no interference with radio reception, and has close voltage regulation.

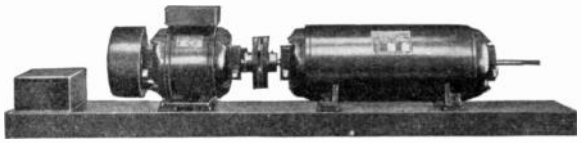
Consists of a two-bearing frame with stationary windings for both motor and generator. This design eliminates the use of slip rings, brushes, circuit closing devices, and relays.

Floor space, 11⅝x7½ inches.
Approximate shipping weight, 62 pounds.

Item No.		1	2	3	4
Motor	volts	110	220	110	220
	cycles	60	60	50	50
	rpm.	1140	1140	1400	1400
Generator	watts	15	15	15	15
	volts	80	80	110	110
	cycles	19	19	23	23

Holtzer-Cabot 25-Watt Four Frequency Ringing Magneto Motor-Generators

For Telephone Exchanges



These machines were developed to meet the demand for a source of ringing current supply for harmonic party line installations, requiring the minimum of attention at the exchange and at subscribers' telephones.

Operates at 1000 rpm., and is designed to deliver 25 watts at four frequencies, 16⅔, 33⅓, 50 and 66⅔ cycles, at 75, 100, 135, and 175 volts, no load respectively.

Length, 62 inches, width, 10 inches, height, 12⅝ inches.

Shipping weight, 375 pounds.

Item No. 1.....110 volts, 60 cycles, single phase.
Item No. 2.....d.c. 24, 48, 115 or 230 volts.

Holtzer-Cabot 50 and 150-Watt Multi-Frequency Motor-Generator Sets

For Telephone Exchanges

Four-Frequency 50-Watt Ringing Motor-Generator Set for A.C. Supply

Embodies a unique arrangement of driving motors and governor so that regulation within plus or minus 1% is maintained.

Four-Frequency Generators: output, 16⅔, 33⅓, 50, 66⅔ cycles at 75, 100, 135 and 175 volts, no load, respectively.

Five Frequency Generators: Same as the four-frequency, with addition of 25 cycles.

Sets with d.c. drive are equipped with time limit starters and are held to close frequency by centrifugal governors which operate in the motor field circuit. Sets with a.c. drive require no starters and are held to close frequency by magnetic governors.

220 Volts, 60 Cycles, 1 or 3 Phases

Item No.	Watt Output	Motor Frame No.	Generators No.	Generators Frame No.	No. of Rheostats	Frequencies	Approx. Floor Space Inches	Approx. Ship. Wt. Lb.
	50	RWR-7022 / RWT-7022	1	HD-14				
			1	*SP-28	5	4	79x14	675
			2	†MR-75				
	50	RWR-7022 / RWT-7022	1	HD-14				
			1	*SP-28	7	5	104x14	1150
			2	†MR-75				
5	150	CWH-8030 / CWT-8022	1	HD-14				
			4	†MR-150	7	4	84x16	900
6	150	CWH-8030 / CWT-8022	4	†MR-150	7	5	92x14	1250
			1	HD-12				

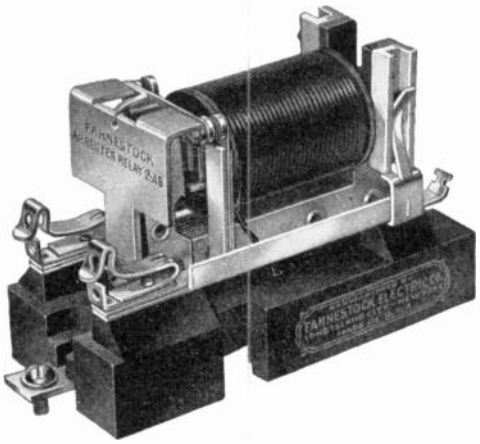
24, 48, 115, 230 Volts, D.C.

3	50	HD-1	1	HD-14				
			1	*SP-28	5	4	68x14	550
			2	†MR-75				
4	50	HD-1	1	HD-14				
			1	*SP-28	6	5	96x14	1100
			2	†MR-75				
			1	HD-13				
7	150	M-1	4	†MR-150	5	4	75x15	850
8	150	M-1	4	†MR-150	6	5	86x14	1200
			1	HD-12				

*Double current generator used as generator and exciter.

†These generators are arranged in pairs, each pair having one set of bearings.

No. 3-A Fahnestock Arrester Relays



Used to replace standard cable or office protectors where the latter operate too often due to induction. Relay may be located within a cable box or in a switchboard cabinet.

Carries continuously, currents in excess of 10 amperes, and unfailingly restores itself when inductive discharge or cross is over. Each relay provides for the protection of a pair. Consists of a fast a.c. relay fitted with large electrolytic silver contacts which short circuit both arresters when armature is pulled up. Relay will operate within a half cycle of the beginning of a discharge passing over an ampere through either arrester. Unless otherwise instructed the arresters furnished are Nos. 26 and 27 Western Electric Protector Blocks. The coil has a low impedance; never exceeds 1 ohm at 60 cycles.

Bronze and stainless steel armature bearing. All metal parts are phosphor bronze, with the exception of the magnetic portion. Parts plated to prevent rust and corrosion.

Bakelite base, 4½ inches long, 2 inches wide.

Type RTC-2 Vincent Rare Gas Relays

For Noise Elimination on Telephone Lines

In metallic telephone circuits the use of divided ringing to ground in order to simplify code or harmonic ringing on party lines has often resulted in noisy transmission. When a RTC-2 Vincent Rare Gas Relay is connected in series with each grounded bell circuit the line is automatically freed from ground during voice transmission and ground current noises are eliminated. The higher ringing voltages, however, pass through the relays and ring the bells. The relay is also applicable to the central office drop ground connection.

Furnished with an ingenious clip requiring a single bolt to mount it within the bell box or at any other convenient location.

The relay has no moving parts and is unaffected by atmospheric or temperature changes. Lines equipped with the relay are free from grounds in normal operation and therefore free from noises which would ordinarily be picked up through ground connections. Can be used on magneto or common battery lines with either harmonic or code ringing. Ringer load is removed from voice circuit, improving transmission.

This relay also can be used in circuits which normally require high insulation. When the voltage rises above 55 volts a.c., the relay passes a current of 6 milliamperes.

Length, 2½ inches.

Height, when mounted, 1½ inches.

Type 112XAX Struthers-Dunn Sensitive Relays

Low inertia and balanced moving parts result in high sensitivity, long life, fast operating, and vibration-resistant relays.

Available with interconnected coil and contact circuits for use with thermoregulators.

Sensitivity, 0.015 watts, d.c., 0.19 volt-amperes at 60 cycles.

Single pole, double throw contacts on non-inductive loads rated 2 amperes at 115 volts a.c.; ¼ amperes at 115 volts d.c.

Base size, front connected relays, 2½x2⅜ inches.

Coils wound with wire up to and including 44 gage. Prices vary with wire gage.

Also available with double pole, double throw contacts.

For more complete information, request complete bulletin data.

Type PSY1 Struthers-Dunn Time Delay Relays

Many types of time delay relays are available including motor driven, both repeating and recycling, thermal, and inertia types.

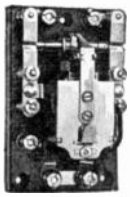
This motor driven timer consists of a small synchronous motor driving a single cam at one rpm. The contacts close once per minute and the closure time is adjustable from 0 to 30 seconds. Contacts rated 10 amperes at 115 volts, a.c.

Motor for operation on 115 volts, 60 cycles, but may be furnished for other ratings at an increased price.

Size, 3¾x2¼ inches front connected.

Type PSY1 ..... each **$11.50**

Struthers-Dunn Ratchet Type Sequence Relays



Ratchet type sequence relays move their contacts when the coil is energized and then remain in this position until the coil is de-energized and again energized.

Contacts rated 115 volts, a.c., 20 amperes; 115 volts, d.c., 1 ampere.

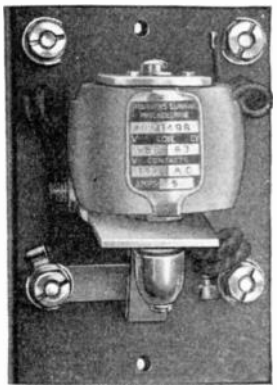
Coils approximate 8 watts, a.c.; 4 watts, d.c.

Base size, 5x3 inches.

85AXA S.P., D.T., Separate Circuit **$18.40**
85BXX D.P., S.T. **18.40**

Similar relays, except using midget construction are available at $11.50.

Struthers-Dunn Emergency Lamp Relays



Type 20XXA5

Designed to automatically cut in a standby or emergency lamp should the main lamp burn out.

If an auxiliary source of power (such as a storage battery) is available the relays may be connected to switch the emergency lamp into the auxiliary circuit should the main line voltage fail or the main lamp burn out.

The relay is equipped with coils of minimum voltage drop to operate in series with the main lamp, upon the failure of which the relay armature opens, closing a set of contacts and completing the circuit to the standby lamp.

Contacts are fine silver with low resistance which practically eliminates voltage drop at the contacts.

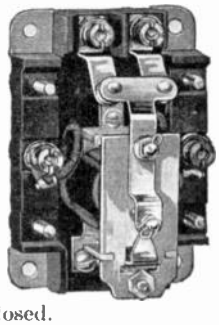
Contacts: 115–230 volts a.c., 800 watts; 115–230 volts d.c., 100 watts.

Base size, 4x2¾ inches front connected.

Type	Description	Each
20XXA5	S.P., S.T., S.B.	$6.30
20XXH5	S.P., S.T., D.B.	6.30

Type 1HXX Dunco Telephone Auxiliary Signaling Relays

For Use with D.C. Telephone Ringers



Relay is not enclosed.

Coil, approximately 2 watts, d.c.

Contacts: 115 volts a.c., 6 amperes; 230 volts a.c., 3 amperes; 115 volts d.c., 1 ampere.

Base, 2¾x1⅞ inches.

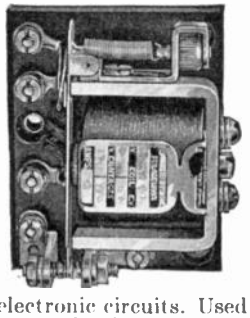
Always specify voltage and frequency.

Add $3.60 for relay enclosed in a Type H17metal knockout box; add $3.80 for relay enclosed in Type H4 weatherproof housing.

Type 1HXX ..... each **$4.30**

Type 29XAX102 Dunco Telephone Auxiliary Signaling Relays

For Use with Long Telephone Lines



For low power, electronic circuits. Used where telephone lines are so long as to make the use of a sensitive type relay necessary due to high line resistance. Suitable for use with Western Electric No. 48A, 5-bar hand ringer.

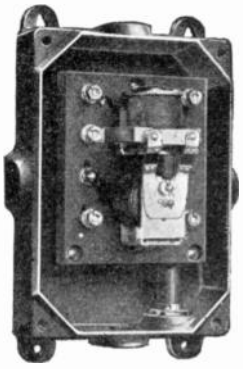
Contacts: 115 volts a.c., 2 amperes; d.c., ¼ ampere.

Specify voltage, cycles, and total line resistance on which relay must operate.

Add $3.60 for sheet metal hinged cover enclosure.

Type 29XAX102, less Condenser ..... each **$9.20**

Struthers-Dunn Telephone Auxiliary Signaling Relays



Type 5XXH501W6

Type 4HXX56H3. Relay and condenser in H3 sheet metal, hinged cover housing. Signal remains on as long as circuit is closed.

Each **$14.60**

Type 4HXX56W6. Same as above type except in W6 cast aluminum housing.

Each **$25.90**

Type 5XXH501W6. Relay, condenser, and push button in W6 cast aluminum housing, weatherproof. After telephone circuit once energizes relay the signal remains on until relay is released.

Each **$35.70**

Calculagraphs

For Timing Telephone Messages

Model 6

Model 30

Model 33

All round models of Calculagraphs can be furnished in either the Type A or Type C case. When a Calculagraph is to be sunk in a switchboard shelf, the Type C case should be specified. The Type C case is 8¾ inches in diameter under the flange and 4 inches deep from bottom of flange.

If the Calculagraph is to be mounted on a pedestal, the Type A case should be specified.

Shipping weight, except Model 33, 20 pounds; Model 33, 11½ pounds.

Electric Models

Model 30. Records time of day in hours and minutes, and elapsed time in minutes and seconds for maximum periods of 30 minutes. Equipped with self-starting, synchronous motor for 60 cycles, 20 volts, regulated a.c.

Model 30X. Same as Model 30 except has date printing device.

Model 33. Records time of day in hours, minutes, and elapsed time in minutes and seconds for maximum periods of 30 minutes. Size: Length, 7½ inches; width, 3⅜ inches; depth, 3¾ inches. It occupies the space of four Type A keys in a switchboard. Equipped with self-starting, synchronous motor for 60 cycles, 20 volts regulated a.c. Can also be furnished for 25 or 50 cycles.

Model 33 Accessories

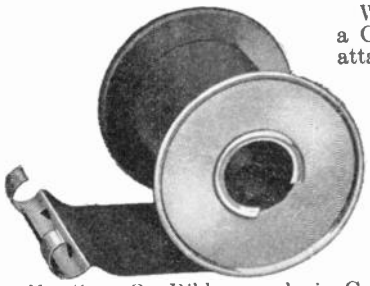
Brackets for attaching to universal type key bars, 2 required. Key for winding ribbon on roller when installing new ribbon. Key for setting hands on face.

Spring Drive Models

Model 6. Records time of day in hours and minutes and elapsed time in minutes and quarter minutes with 5 second indicator after each minute. Maximum period one hour.

Model 6X. Same as Model 6 except has date printing device.

Calculagraph Snap-On Ink Ribbons



When fitting a ribbon to a Calculagraph, hooks are attached to ribbon spools. Feel on which ribbon is wound may be held in one hand while ribbon is unwinding from this reel and being wound on one of the spools on Calculagraph, thus avoiding smearing of ink on hands.

Use Snap-On Ribbons only in Calculagraphs. Typewriter and time stamp ribbons are not suitable. Standard color recommended is blue record but other colors can be furnished.

Calculagraph Pedestals

Pedestal is adjustable from 26 to 40 inches, from floor to ticket plate. Calculagraphs to be mounted on a pedestal are furnished in a Type A case.

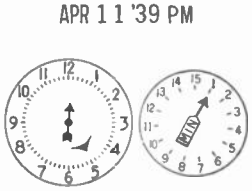
Dorson Jr. Toll Timers

The Dorson Jr. Toll Timer is designed to give an accurate and permanent record of all toll calls.

This time stamp records a legible impression, showing date and time of day. Toll dial records minutes only.

Shock-proof; built for hard and constant usage.

Mounted on a rigid cushioned spring base which will not slip or scratch. A slight pressure on the base inks printing type when impression is to be made.



Showing Impression

Has 40-hour lever clock movement.

A simple turn of the wheel sets date, month, year, A.M. or P.M.

In two-piece aluminum case; triple chromium-plated finish.

Style H, Hand Set.....each **$30.00**
Style K, Key Set.....each **30.00**

Type 150 Gray Coin Collectors

No. 150G

No. 150GJ

No. 150K

No. 150KJ

Nos. 150G and 150H are 3-coin prepayment collectors, adaptable for either manual or dial service. The circuit arrangement is suitable for antisidetone service when used with a subscribers set, equipped with a 3-winding induction coil; and it is also suitable for sidetone service with a 2-winding induction coil. For sidetone disconnect the BK terminal from the coin collector.

Nos. 150K and 150L correspond to the G and H in all particulars except that they are of the post payment manual type in which the coins sound signals audible to the operator and pass directly to the coin box. Convertible to the prepayment type by adding a coin relay and hopper.

Nos. 150G and 150K collectors are arranged for U. S. coins only; Nos. 150H and 150L will accept the Canadian quarter as well, making them suitable for Canadian border service.

The letter "J" following the code number of any of the above numbers, indicates that it is arranged for handset service. A coin signal transmitter mounted within the box is used to pick up the signals sounded by the falling coins.

Arranged for wall mounting; but the No. 153A corner bracket, for mounting in corner, or the No. 139A shelf bracket, for mounting on shelf may be used.

When ordering, specify the code numbers of the subscribers set, dial and handset (E or F) to be used. Also give the type of service for which it will be used and list coin collector accessories required.

Accessories Are Not furnished as Part of the collector. Must Be Ordered Separately as per Accessory List

Prices upon Request

Accessories for Type 150 Gray Coin Collectors

To Be Ordered Separately from Gray Mfg. Co.

No.	Description
10L	Lock (Required on All Types)
*2A	Coin Receptacle, Non-Locking
*6001A	Coin Receptacle, Locking
*6001B	Coin Receptacle, Locking, Large Capacity
50C	Apparatus Blanks (Required on All Manual Service Types and on All J, Handset Types)
1B	Card Holder (Required on All Machine Switching Service Types with exception of J, Handset Types)
LD-72	Signal Transmitter (Required on All J, Handset Types)
153A	Corner Bracket (Required for Corner Mounting)
139A	Shelf Bracket (Required for Shelf Mounting)

To Be Ordered Separately from Western Electric Co.

635A	Transmitter	Required for All Collectors Other Than J Type
706A	Receiver	
R2DW	Cord	
F1AW3	Handset for J Type Only	
5HA3	Dial	Required for Dial Use
D4Y	Cord	
5HH3	Dial	Required When Dial with Extended Number Plate is Wanted
56A	Dial Adapter	
147A	Number Plate	
D4Y	Cord	
684A3	Antiside Tone Subscriber Set	

*Only 1 required.

Prices upon request.

No. 23D Gray 3-Slot Compact Type Pay Stations

Compact and neat in appearance. Includes complete mounting for transmitter, switch-hook and hook-switch springs, and dispenses entirely with the regular telephone set. Universal mounting plate, allows for either wall or shelf mounting. Money drawer is of extra large capacity.

Height, 10½ inches; width, 6 inches; and depth, 4¼ in.

For operation of this station, it is necessary to have a subscribers set, No. 635A transmitter, No. 706A receiver, and No. R2DW cord. The transmitter, receiver and cord are not included with the pay station. Specify the type and make of subscribers set to be used so that the proper circuit arrangement will be supplied.

Approximate shipping weight, 20 pounds.

Accessories Ordered Separately

No. 23J Compact Handset Type

Similar to the No. 23D, but arranged for a handset. Includes the switch-hook and hook-switch springs and requires only the addition of a subscribers set and handset with associated cords. The LD-72 signal transmitter is included as part of the standard equipment.

The universal mounting plate allows for either shelf or wall mounting.

Height, 10½ inches; width, 6 inches; and depth, 4¼ inches.

In ordering state the type and make of handset and subscribers set to be used.

Approximate shipping weight, 20 pounds.

Prices upon Request

Accessories Ordered Separately

No. 11 Gray 3-Slot Side Mounting Pay Stations

Designed to attach to any wall type telephone set in present use.

It is connected to the telephone by means of a mounting plate, which is included with the station.

Height, 9 inches; width, 4½ inches; and depth, 3 inches.

Approximate shipping weight, 16 lb.

Telephone Set Ordered Separately

No. 11J Handset Type

Same as No. 11, but arranged for use with a wall type or desk type handset telephone set.

The universal mounting plate is arranged for either wall or shelf mounting and a signal transmitter is mounted within the box to pick up the coin signals. Not necessary to mechanically connect the pay station to the telephone set, but the signal transmitter must be cut into the handset transmitter circuit. A 2-conductor cord is required for this purpose. LD-72 signal transmitter included in equipment. Height, 9¾ inches, width, 4⅛ inches; and depth, 3⅜ inches. Approximate shipping weight, 16 pounds.

No. 14 Gray 3-Slot Portable Type Pay Stations

By attaching this station to the regular desk telephone, it affords portable pay station service.

It is so arranged that by unlocking the back, inspection and repairs can be made without unlocking the cash drawer. Each compartment requires a different key.

Equipped with a spiral chute, which will operate satisfactorily when tipped at an angle.

Height, 11 in.; width, 4½ in.; depth, 3¼ in.

When ordering, state the type and make of desk stand to be used. Desk stand is not a part of the collector.

Approximate shipping weight, 16 pounds.

No. 14J Portable Handset Type

Same as No. 14, but arranged for use with a handset telephone set. Furnished in aluminum; light weight.

Furnished complete with LD-72 coin signal transmitter, switch-hook and hook-switch springs; and requires a handset and subscribers set, which are ordered separately.

When ordering, state type and make of handset and subscribers set to be used.

Approximate shipping weight, 16 pounds.

Desk Stand Is Not Part of Collector. Must Be Ordered Separately.

Prices upon Request

Burgess Acousti-Booths

Acoustic Doorless Telephone Booths

No. 601 Scout Shelf Type

A wall or shelf type booth for use in bus terminals, hotels, hospitals, stores, railway stations, banks, institutions and offices. Ideal for busy public places where available space is limited. Users can enjoy a comparative zone of quiet regardless of the noise and confusion nearby. Conversations are clearer, understandable and private. Thick walls of sound-absorbent material soak up both direct and reflected noises.

Made of reinforced plywood; walnut finish.

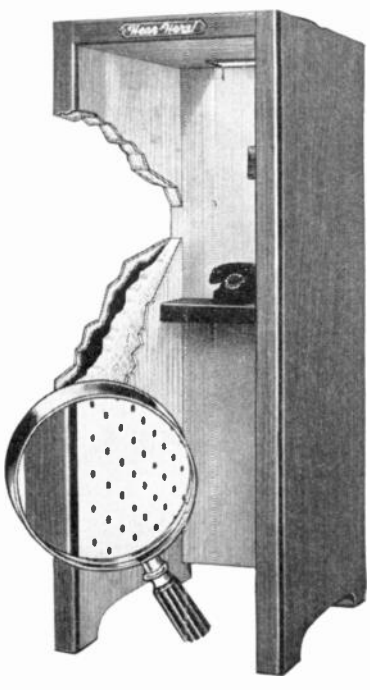
Has instrument shelf, 23½x17 inches.

Outside dimensions: width, 28 inches; height, 32 inches; depth, 26 inches.

Shipping weight, 80 pounds.

No. **601** ..... each **$90.00**

No. 201 Floor Type



Because this booth is doorless, there is ample circulation of air to relieve the stuffiness which is common to the conventional door type telephone booth.

The acoustic walls absorb disturbing noises so that the voice is heard without reverberation or echo.

Made of a thick layer of acoustic material sandwiched between plywood panels. The interior panels are perforated to allow the sound to soak into the acoustic filler.

Has rich brown walnut stain finish. An electric fixture in the ceiling provides illumination. Clean and sanitary—the pedestal foundation makes sweeping easy.

Outside dimensions: width, 30 inches; height, 79½ inches; depth, 38 inches.

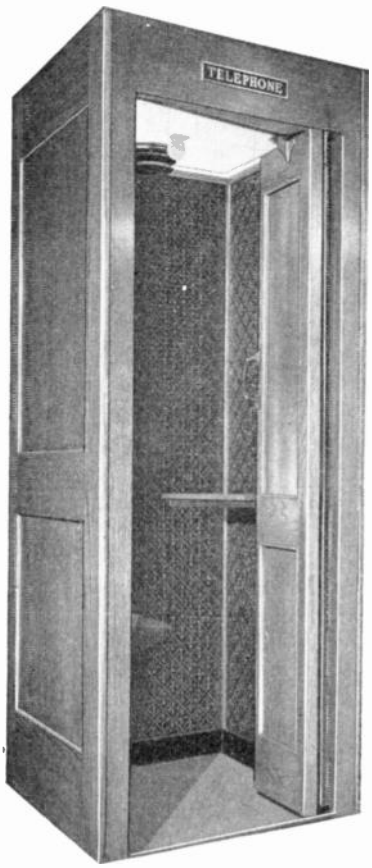
Inside dimensions: width, 24 inches, height, 76½ inches; depth, 35 inches.

Wood instrument shelf, 24x8¼ inches, provides a convenient support for taking notes.

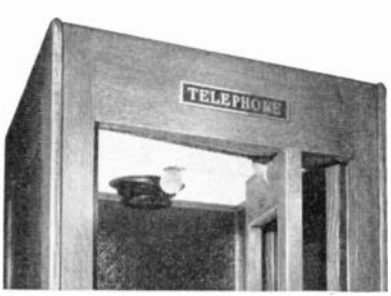
Approximate shipping weight, 225 pounds.

No. 210 ..... each **$175.00**

No. 100 Churchill Telephone Booths



No. 100 Booth



Showing Light and Ventilator

A self-contained booth designed to meet the need of a booth without a floor. Acoustically designed; every effort is made to make this booth as sound-proof as possible.

For single or multiple installation.

Equipped with a reinforced back panel for mounting a wall telephone or coin collector.

Available in selected white oak, finished medium golden oak and selected birch, finished medium mahogany.

Has folding door with glass in door only.

The following equipment is furnished as standard: automatic door switch for lights and electric ventilator; silent electric ventilator; and complete metal lining.

Seats are also available in either type of lumber, as extras.

Overall dimensions: height, 84¾ inches; width, 30½ inches; depth, 30¾ inches.

Shipped knocked down and crated.

Cordley Electric Water Coolers

Equipped with non-rusting water system. Non-ferrous storage tanks and tubing are used throughout.

Complies with the requirements of U.S. National Bureau of Standards, CS127-45.

Has durable satiny neutral-tone, gray finish on heavy sheet furniture steel.

All cabinet panels are removable for easy access to mechanism.

Model HCS-10

A single-bubbler cooler with a hermetically sealed compressor unit.

Gooseneck filler is optional.

Cools up to 17 gallons per hour depending upon room and inlet water temperatures.

Precooling system uses waste water to cool incoming water to save electric current.

Available for 115-volt, 60 cycle power supply only.

Model CS-10 is identical except equipped with open-type compressor unit and is available for any a.c. or d.c. power supply.

Model CS-20

A two-bubbler cooler with extra (11½-gallon) storage reserve capable of handling heavy traffic or peak loads.

Gooseneck filler is optional.

Cools up to 33 gallons per hour.

Has open-type compressor unit and is available for any a.c. or d.c. power supply.

Model RCS-20 is similar except is equipped with two push-back glass fillers for restaurant or cafeteria service.

Model FCS-3

A bottled water cooler for moderate or small groups in offices, stores and other installations where traffic is relatively light.

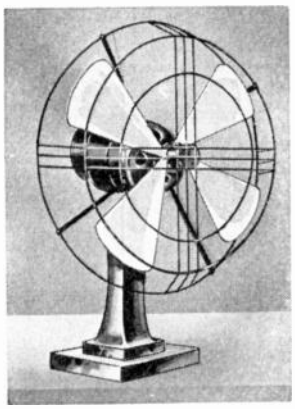
No plumbing connections are required.

Accommodates any standard 3 or 5-gallon water bottle.

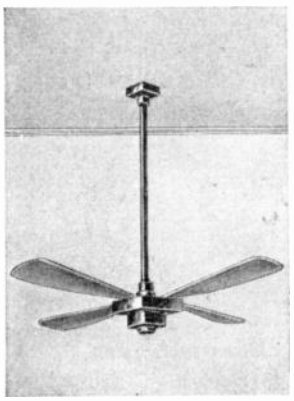
Has open-type compressor unit and is available for any a.c. or d.c. power supply.

Commercial Fans

For Offices, Banks, Stores, and Institutions

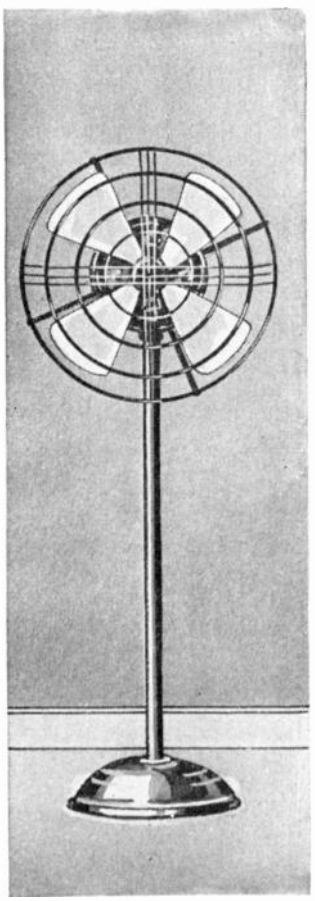


Desk Type
Available In Various Sizes and Types, Oscillating and Non-Oscillating



Ceiling Type
Available in Several Sizes and Types for Various Applications

Available in Several Sizes



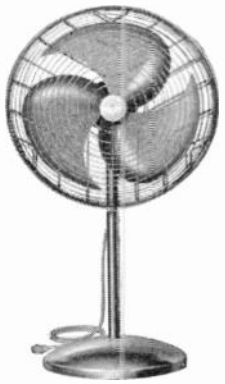
Floor Type

Graybar distributes a complete line of desk, floor, wall and ceiling fans for office, store and institutional use. At the time this catalog went to press it was impossible to get complete data on the new items available. Therefore, we are merely showing three typical fans of current style—desk, ceiling and floor—and suggesting that when you need fan information you write or call our nearest office and warehouse (see list at back of catalog). They will be glad to send you complete information, prices and delivery information.

Ask Your Nearby Graybar Office and Warehouse for the Latest Fan Information

Ilgwind Fans

For Recirculation



A portable plug-in unit used for cooling homes and apartments. Expels hot air and draws in cool air. Inside temperatures drop from 5° to 20° as an Ilgwind fan is placed at one window, and other windows and doors are opened to make possible a complete air change. For handling up to eight rooms.

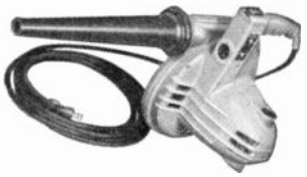
Adjustable in height. Has a fine mesh safety guard.

With 2-speed, 60-cycle, single-phase motor, 110 or 220 volts. Direct connection of motor and fan eliminates friction and noise. With 20-foot rubber-covered cord.

No.	**271**	**331**
Speed.....rpm.	**1140**	**855**
Each	**$196.56**	**244.34**
Capacity.....cfm.	7000	12000
Hp	1/4	3/8
Watts	370	450
Ht. Floor to Hub.....in.	41–65	39–63
Net Weight.....lb.	95	160
Shipping Weight.....lb.	165	260

Ideal Hand Type Cleaners

1½-Hp. Universal Motor, A.C. and D.C., 115 Volts



A powerful lightweight cleaner designed to blow, vacuum, spray, or dry better and faster. High velocity discharge blasts dust and dirt from dangerous electrical installations and inaccessible places. Blows large volumes of dry air at low pressure permitting cleaning of motor windings or delicate machinery without damage; vacuums those hard to clean places; sprays insecticides, paints, varnish, deodorants; dries paint, varnish, ink, etc. Can be used continuously for production drying. Cleaner has continuous duty universal motor with sealed precision ball bearings; no oiling or lubrication required. Has plug in for new detachable heater nozzle. Can be used with all Ideal cleaning attachments.

No.	**22–110**	**22–113**
Each	**$122.50**	**97.50**
Water Lift.....inches	52	30
Air Volume Discharge.....cfm.	78.5	58.5
Overall Size, Including Nozzle.....in.	21x12x9	19x9x7
Shipping Weight.....pounds	20	14

No. **22–109**, Set Standard Suction Attachment.....each **$19.25**

No. **22–116**, Heater Nozzle.....each **17.25**

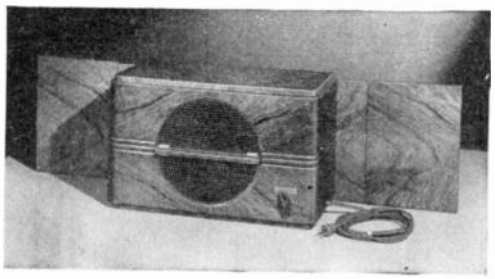
Ideal Pencil Type Resurfacers

An artificial abrasive for hand grinding of commutators and rings. A brief application of this hand type resurfacer will remove high mica, ridges, grooves, and burns, leaving a smooth, non-scratching surface.

For fans or signal motors, auto generators, locomotive headlight motors and other fractional horsepower motors.

Size, 6x5/8x3/8 Inches, No Handle.....each **$.89**

No. BM388 Ilg Filter Type Ilgairator Window Ventilators



This is an electric fan and air filter unit that can be used with any sliding sash window for supplying fresh, filtered air to a room. Dust, soot, and plant pollens are filtered out of the air with over 98% efficiency.

The air volume is controlled by a regulator on the front panel. The No-Draft grille may be revolved to deflect the air in any direction.

The attractive cabinet is made of furniture steel and finished in natural walnut grain or rich ivory. Six adjustable panel widths are furnished for various window widths. The installation does not interfere with opening, closing or locking window. Filter is replaceable; a new cartridge is easily inserted.

With all necessary accessories including rubber covered cord and plug; operates from any electric light socket.

Single phase, 60 cycles, 110 volts.

Air capacity, 250 cfm. Speed, 1550 rpm. Watts, 40.

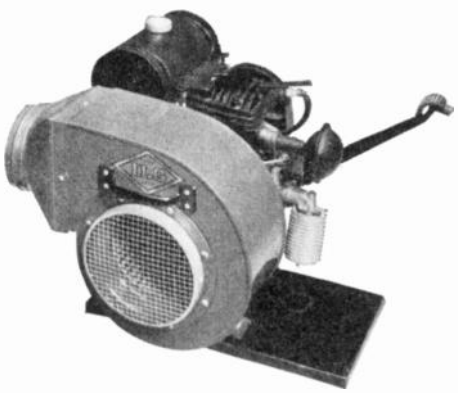
Also available for d.c. Prices on application.

Panel Adjustment.....inches	26–30	30–36	36–45
110 Volts, A.C.....each	$75.00	75.00	75.00
Shipping Weight.....pounds	35	38	42

Replacement Filters, 6 to a Package, Shipping Weight, 9 Pounds.....per Filter $2.25

Type B Ilg Volume Blowers

Gasoline Engine Driven



Driven by a direct connected 4-cycle gasoline engine, blower is for ventilating where electricity is not available. Manholes, vats, tanks and other places can be ventilated with this portable blower which is completely self-contained. Canvas hose is ordinarily used to convey the fresh air from blower to spot requiring ventilation.

The blower inlet is screened to prevent paper, leaves, etc. from entering. The outlet is fitted with a flange to accommodate a canvas hose. No batteries or other connections are required. Canvas hose not included.

No.	B12	B15
Each	$214.99	251.66
Capacity.....cfm.	630	1200
Speed.....rpm.	1750	1750
Hp.	1/6	1/2
Gas Consumption.....pints per hour	1/3	1
Tank Capacity.....gal.	1/4	1
Height Over All.....inches	14½	21
Width Over All.....inches	16	18
Depth Over All.....inches	13	23½
Shipping Weight.....pounds	95	125
Net Weight.....pounds	60	90

Ilg Self-Cooled Electric Propeller Fans

Constructed with patented Ilg enclosed self-cooled motor which affords the low operating cost of the open motor with the protection of a fully enclosed motor.

Fan action draws clean air through vent pipe in the bottom of the fan from out-of-doors, circulates it through the motor and exhausts it.

Motor stays cool and clean and uses less power.

Ratings are certified to be in accordance with the A.S.H. & V.E.

Constant Speed, S. Ph. 110 or 220 Volts, 60-Cycle

Size In.	Type	Each	Speed RPM.	CFM.	Watts Input	Motor Frame No.	Ship. Wt. Lb.
8	Ilgvent	$26.00	1550	350	35	51	10
10	Ilgette	34.13	1550	500	40	52	12
12	Ilgair	54.60	1140	800	70	33	23
16	SH	90.09	1140	1400	100	15	48
18	SH	129.00	1140	2300	170	S87	80
20	SH	156.98	1140	3200	250	S87	96
24	SH	209.53	855	4100	275	DE102	186
30	SH	315.32	685	7300	450	DE101	216
36	SH	432.71	570	9650	500	104	445
*42	SH	556.24	490	12300	800	104	550
*48	SH	687.24	490	18400	1300	105	780

†Two-Speed, S. Ph. 110 or 220 Volts, 60-Cycle

16	S	$120.12	855 1140	1000 1400	100	15	60
18	S	165.17	855 1140	1750 2300	170	D87	84
20	S	195.20	855 1140	2400 3200	250	D87	96
24	S	277.10	600 855	2880 4100	275	D102	190
30	S	361.73	500 685	5420 7300	450	D101	220
36	S	476.39	400 570	6900 9650	500	D104	450
*42	S	609.48	380 490	9800 12300	800	D104	568

For 50-cycle use same list price; speeds and capacities are 5/6 of those shown for 60-cycle.

A.C., 50-60-Cycle, 2 or 3-Phase

Size In.	Type	220 or 440 V. Each	550 V. Each	Speed RPM.	CFM.	Watts Input	Motor Frame No.	Ship. Wt. Lb.
18	M	$174.72	$210.90	1140	2300	120	87	80
20	M	195.20	242.29	1140	3200	290	87	110
24	M	225.23	270.96	855	4100	250	102	172
30	M	270.96	315.32	685	7300	400	101	228
36	ML	436.12	496.18	490	8300	460	104	450
36	M	395.85	454.55	570	9650	460	103	460
42	M	501.64	558.97	490	12300	800	104	630
48	M	587.64	659.30	490	18400	1300	105	780
54	M	951.41	1060.61	425	23200	1950	107	900

Fifty-cycle speeds and capacities are approximately 5/6 those shown for 60-cycle.

D.C.

Size In.	Type	115 or 230 V. Each	500 V. Each	Speed RPM.	CFM.	Watts Input	Motor Frame No.	Ship. Wt. Lb.
‡10	Ilgette	$34.13	.....	1550	500	70	54	12
12	Ilgair	60.75	.....	1140	800	70	10	23
16	B	104.43	.....	1140	1400	100	1/8	48
18	B	150.84	.....	1140	2300	150	1/6	80
24	A	300.99	$315.32	855	4100	300	1197	186
30	A	361.05	380.16	690	7300	440	1199	220
36	A	541.91	569.21	570	9650	600	1207	450
42	B	630.63	662.03	490	12300	800	1207	550
48	B	845.62	888.62	490	18400	1300	1211	800
54	B	1246.93	1309.04	425	23200	1800	1213	950
60	B	1719.90	1805.90	380	28400	2270	1215	1200
72	B	1920.56	2016.79	315	40500	2300	1217	1600

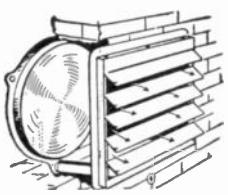
Enclosed speed controllers furnished with all d-c. fans except the Type 12 size.

*220 volts only.

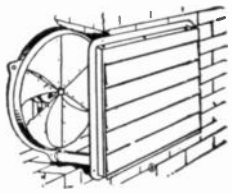
†Two speed controller included.

‡115 volts only.

IIg Automatic Shutters



Fan Running



Fan Not Running

These shutters are used on the outside of propeller fans to protect the fan when not running and also to keep out the wind, rain, snow and cold.

IIg Automatic Shutters are built of special hard rolled aluminum leaves, pressed on Whiting Alloy copper coated rods supported in cast frame.

When fan is running, the shutter is held open by the force of the air current. When fan is shut off, the shutter closes automatically by gravity.

Shutters are moisture proof and need no attention after they are installed.

Size of shutter corresponds to size of fan.

Motor operated shutters available at extra cost.

Size Inches	Approx. Shipping Wt., Lbs.	Each	Size Inches	Approx. Shipping Wt., Lbs.	Each
10	7	$10.24	36	112	$73.71
12	10	11.61	42	152	107.84
16	19	15.70	*48	188	143.32
18	30	19.11	*54	230	171.99
20	43	23.21	*60	210	243.66
24	67	27.30	*72	314	272.32
30	80	51.87	*Built in 2 sections.		

IIg Penthouses for Power Roof Ventilators

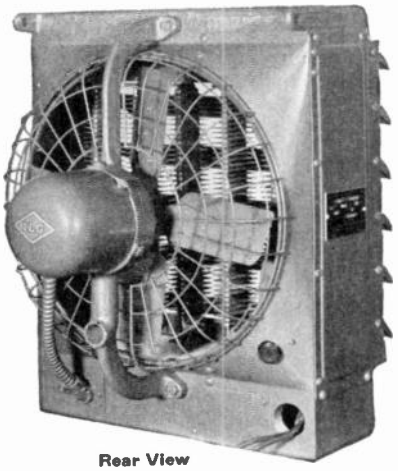
Penthouse is used with an IIg self-cooled motor propeller fan for use as a power roof ventilator. The penthouse is thoroughly weathertight in every respect. It is solidly constructed of rust resisting steel. The automatic shutter is standard equipment on the penthouse to protect the fan from the weather when it is not in operation. A door in the back of the penthouse which has provision for a lock furnishes easy access to the fan for periodic lubrication.

Available with insulated lining for use where condensation of moisture during the cold weather is a problem.

Furnished complete with shutter, no fan.

Size Ventilator In.	Standard Each	Insulated Each	Size Shutter & Fan In.	Dimensions, Inches Ht.	Width	Depth	Gage Metal	Approx. Ship. Wt. Lb.
12	$90.09	$131.73	12	28	19 7/8	15 7/8	20	90
16	90.09	135.14	16	28	19 7/8	15 7/8	20	95
18	105.11	165.17	18	35	25 7/8	17 7/8	18	105
20	121.49	187.69	20	35	25 7/8	17 7/8	18	135
24	141.96	210.90	24	41 1/4	29 7/8	21 3/8	18	170
30	203.39	285.29	30	46 3/4	35 7/8	25 1/8	18	300
36	270.96	358.32	36	54 3/4	43 7/8	27 1/8	18	400
42	401.31	501.64	42	62	50	32	18	580
48	515.97	644.97	48	72	56	36	18	740
54	788.29	645.95	54	82	63	40	16	820
60	902.95	1103.61	60	92	69	44	16	910
72	1332.93	1576.58	72	102	82	48	16	1070

IIg Electric Unit Heaters



Rear View

Unit is of the black heat type. The heating elements, individually replaceable, are enclosed in a finned metal sheath. No oxidation is possible. Self-cooled motor propeller fan unit and elements connected within the unit, single set of leads brought out.

Nos. 513 to 1517 can be furnished only for those currents for which controllers are listed, since controller is necessary to obtain operation of thermal safety switch on unit heater.

Controller equipment includes enclosed magnetic starter and remote control switch.

Frame Size		13EU	17EU
Width	inches	15½	18½
Height	inches	21	24¾
Depth	inches	18½	19¼
Width Between Hangar Bolts	inches	13¼	16¼

All Nos. except Nos. 1213 and 1513 are available for 110 or 220 volts a.c., 230 volts, d.c. The No. 513 is also available for single phase a.c. and d.c. and for 3 phase. All Nos. except Nos. 1217 and 1517 are available for 440 volts a.c., 550 volts a.c. or d.c.

No.	Cap. KW.	RPM.	CFM.	Cap. Btu.	Frame Size	Ship. Wt. Lb.
513	5	1140	335	17100	13EU	75
613	6	1140	465	20500	13EU	75
913	9	1140	600	30800	13EU	80
1213	12	1140	800	41000	13EU	85
1217	12	855	800	41000	17EU	125
1513	15	1140	1000	51200	13EU	90
1517	15	855	1000	51200	17EU	125

Prices, including automatic thermal safety switch, furnished upon application.

*Controller Equipment

KW. Cap.	†1 Phase 110 V. No.	†1 Phase 220 V. No.	†2-3 Phase 220 V. No.	†2-3 Phase 440 V. No.
5	H7879592	H6849592	H6979592	.....
6	H579592	H7889592	H6979592	H6989592
9	H579592	H7889592	H6979592	H6989592
12	H1359592	H589592	H8019592	H6989592
15	H1359592	H589592	H8019592	H6989592

KW. Cap.	†2-3 Phase 550 V. No.	Direct Current 230 V. No.	Direct Current 550 V. No.
5	.....	H566005	...‡....
6	H6999592	H566005	H576005
9	H6999592	H566005	H576005
12	H6999592	H596005	H576005
15	H6999592	H596005	‡

*No. 1025H289 pilot switch is included in the controller prices and should be specified on the order.

†Available in 25, 30, 40, 50 and 60-cycles.

‡Upon application.

Wakefield Star Luminous Indirect Luminaires

For Two 40-Watt Fluorescent Lamps

With No. 14, Single Stems

Modern artificial lighting strives for two objectives. First, an even distribution of light intensity all over the room, and, second, the elimination of spheres of brightness contrasted with intervening dark areas.

The newest approach to the twofold objective of artificial lighting efficiency is the Star, a luminous indirect lighting unit which utilizes a molded, translucent Plaskon reflector of such density that the lighted luminaire is of approximately the same brightness as the illuminated ceiling.

When Star units are used in continuous runs, spaced in accordance with Wakefield engineering specifications, an evenly lighted ceiling is achieved which provides the sky-like effect of evenly distributed light, with no deep shadows or contrasts and without distracting glare from the light source.

Each 4-foot Star section utilizes two 40-watt fluorescent lamps which are accessible from the top of the reflector.

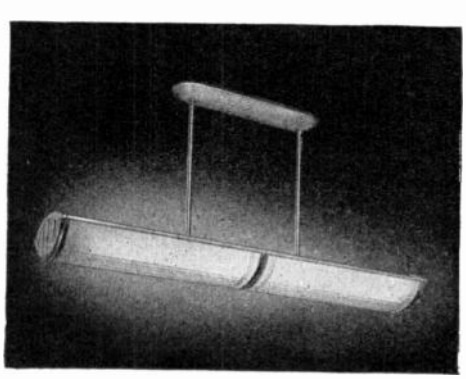
The molded reflectors and end caps are made of Plaskon, a molding compound which has been in continued use by The F. W. Wakefield Brass Company for over ten years. These Plaskon parts are light in weight, non-electrostatic, non-shatterable, uniform in appearance, and will not support combustion.

All visible metal parts are finished in satin aluminum.

The reflectors are held in place by illuminated satin aluminum supporting bands, and are easily slid in and out of place for maintenance purposes without dis-assembly of the unit.

The Star has been under development for over two years and incorporates all advances in contemporary engineering, lighting performance, and ease of maintenance.

The Star achieves a lighting efficiency high above the standard.



No. ST-248
With No. 12, Twin Stems

Single Unit—Twin Stem Suspension

Small rooms and corridors can be adequately illuminated with a single unit.

The two stem unit is 4-foot in length and is identical with the 4-foot sections used in continuous runs except that the single unit installation is equipped with twin stem suspension.

The appearance of the single unit matches those units which are used in continuous runs in every other detail.

Body and Reflectors Only

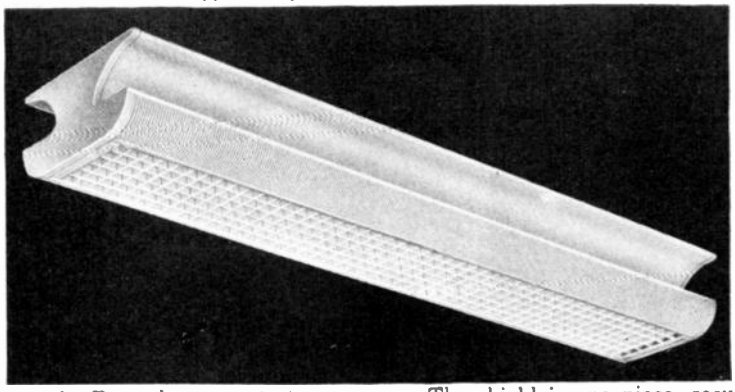
No.	Each	Suspension Inches	Number of Lamps	Lamp Watts	Std. Pkg.	Wt. Lb.	Ship. Wt. Lb.
ST-248-B	$42.00	4	2	40	1	14	17
Double Stem and Canopy Assembly							
12	$5.74	20	..	..	1	2	3
Single Stem and Canopy Assembly							
14	$2.50	20	..	..	1	1	2
End of Run Assembly (End Caps, Clamps, Etc.)							
15	$10.24	..	..	..	1	1	2

Silvrescent Fluorescent Lighting Fixtures

Ceiling Mounted

For Two and Four 40-Watt Fluorescent Lamps

Approved by Underwriters' Laboratories



Used in executive and general offices, department stores, drafting rooms, public buildings, banks, schools, and hospitals as single unit or continuous runs.

No. 80 is a two-lamp unit and No. 160 is a four-lamp unit. Identical design makes them ideal companion pieces.

Construction Features. Made of heavy gage steel which prevents breakage and deterioration. No glass, plastic, or other breakable parts. Equipped with approved ballasts and accessories.

Design Features. Compact design results in a unit which is only 5¾ inches deep and 10½ inches wide to accommodate either two or four 40-watt lamps. Effective side shielding at all normal viewing angles is accomplished by "Louveright" shielding with 50 per cent transmission. Egg-crate type steel shield, 6 inches wide with 1-inch square openings provides 45-degree shielding for the two middle lamps.

The shield is one piece, securely hinged, and is firmly fastened to the body by two "Holdsure" latches, permitting quick lowering of shield for easy access to starters and lamps. Die-formed steel parts make for tight assembly and accurate alignment.

Finished in durable, easy to clean, white gloss Polymerin. Shield may be cleaned by occasional brushing.

Furnished complete with shield.

No.	Each	No. of Lamps	Lamp Watts	Dimensions, Inches: Length	Width	Depth	Approx. Ship. Wt. Lb.
*†160	$76.20	4	40	49	10½	5¾	50
†160-E	76.20	4	40	49	10½	5¾	50
80	64.70	2	40	49	10½	5¾	45
80-E	64.70	2	40	49	10½	5¾	45

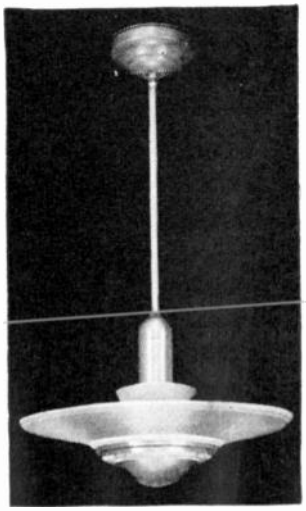
*Also furnished as a 2-lamp unit. Specify No. 80 for double stem suspension and No. 80E for single stem suspension (for continuous mounting).

†Continuous run.

Graybar Silvray Lighting Fixtures

Commercial Line

No. 207PL—Liteking



A highly efficient indirect unit with a shallow bowl of modern plastic which is lighted to a pleasing intensity by the silvered bowl lamp with which it is designed to be used.

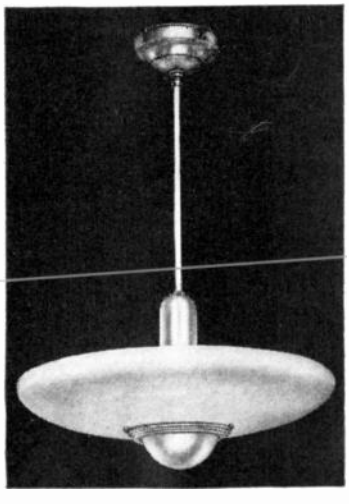
Output (E.T.L.) 89.5 per cent.

Shallow bowl lighted to a maximum brightness of only 0.3 per square inch. Lamp neck is fully concealed by shield which rests on bowl supports. Attractive, plated metal rings separate the bowl from the lamp. Relamps from below without the need to remove bowl or handle the fixture.

Furnished with deep canopy to accomodate switch.

No.	Each	Silvered Bowl Wattage	Suspension Length Inches	Diam. Inches
207PL	$23.60	300 or 500	31	18

No. 208—Crusader



An all-metal indirect unit of high efficiency. The rolled-edge treatment of the triple-plated solid steel bowl is designed to create an appearance of dense glass.

Standard finish is oyster white enamel. Also available in metallic plated bronze or cadmium.

Chrome-plated bulb ring and deep canopy are standard.

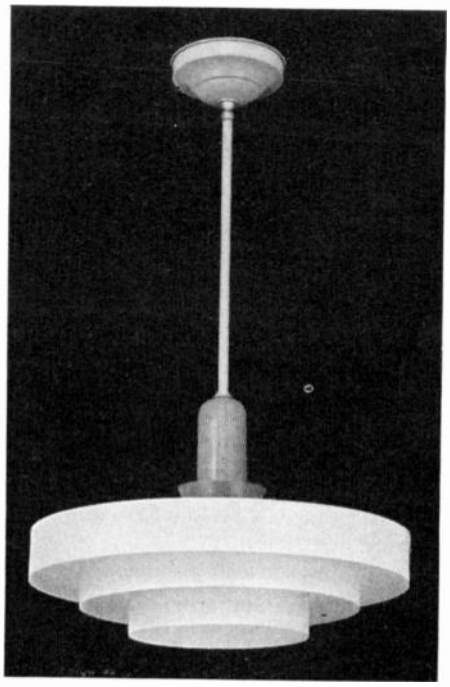
Self-aligning swivel in stem assures straight hanging.

Special bayonet assembly permits quick attachment or removal of bowl from stem.

No.	Each	Silvered Bowl Wattage	Suspension Length Inches	Diam. Inches
208-I.B.T.	$22.40	300 or 500	31	20

Graybar Silvray Lighting Fixtures

Commercial Line



No. 1500-S Coned

Made of steel and spot-welded for rigidity.

Three concentric rings provide complete shielding of the lamp. Has totally direct illumination with a high light output of 86.5 per cent. No. 1500-S/2 has two concentric rings; No. 1500-S/10 has four concentric rings.

When a semi-silvered bowl is used, the wide cone of direct downward light builds up illumination of merchandise on counters, tables, and cases. Vertical plane of rings prevents collection of dust, insects, etc. Body and canopy are finished in flat white enamel and husks are finished in aluminum.

No. 1500-S is furnished with a stem suspension to permit its use in applications that are not suited to close-to-ceiling fixtures.

No.	1500-S/2	1500-S	1500-S/10
Each	$23.40	26.20	53.40
Diameter....inches	14	19	24
Length of Overall....in.	26	38	44
*Lamp Size....watts	200	300,500	750,1000

*Silver bowl or semi-silvered bowl.

Wakefield Commodore Lighting Fixtures

Approved by Underwriters' Laboratories

No. 3483

No. 763

No. 348

Provides excellent semi-indirect or luminous indirect illumination for offices, drafting rooms, classrooms, and other interiors where high level intensities are required.

For wattages from 200 to 1000 watts.

All hangers and reflectors are similarly styled so that an installation requiring units which utilize various sizes of lamps and reflectors will have complete uniformity of appearance.

All hangers are made of aluminum with a satin aluminum finish.

Reflectors are available in either white or cream finish, and are made in diameters from 15 inches to 26 inches, varying in wall thickness to assure uniformity of brightness for the various lamp sizes.

No.	Each	Overall Length Inches	Reflector Diameter Inches	Lamp Watts	Socket	Color	Std. Pkg.	Wt., Lb. Std. Pkg.
265	$9.74	28	15	200–300	Medium	White	4	24
2653	8.68	14	15	200–300	Medium	White	4	11
3693	13.68	16½	19	300–500	Mogul	White	1	8
369	14.04	34	19	300–500	Mogul	White	1	8½
3483	13.68	18	18	300–500	Mogul	Cream	1	8
348	14.04	34	18	300–500	Mogul	Cream	1	8½
763	23.22	44	23	750	Mogul	White	4	40
106	32.22	48	26	750–1000	Mogul	White	4	55

3487 .92 Lamp Shield for Nos. 369 and 3693

Wakefield Screwless 1000 Line Hangers and Graybar Globes

Hangers and Globes Must Be Ordered Separately

No 1060AT, Hanger Only
No. 8820, Globe Only

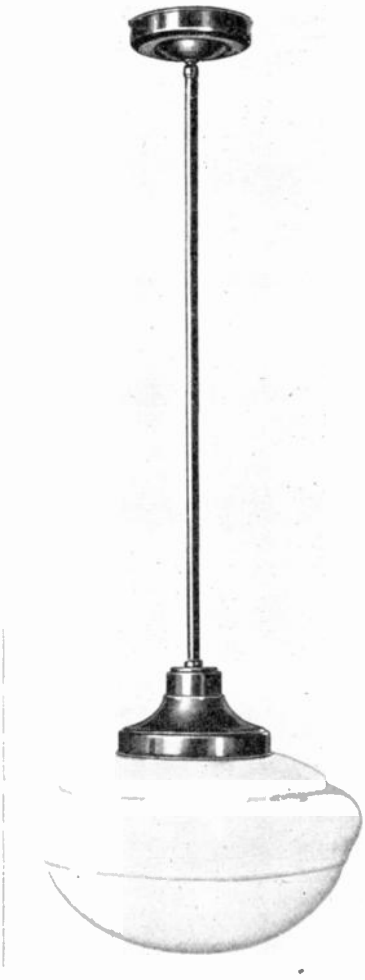
No. 1061AT, Hanger Only
No. 6620, Globe Only

Hanger is made of heavy gage steel with plated statuary bronze finish.

Canopy measures 5 inches on hanger type and 6 inches on ceiling units.

Holder is screwless toggle type.

Hangers and globes must be ordered separately.



No. 1064AT, Hanger Only
No. 9920, Globe Only

Hangers

(Hangers Must be Ordered Separately)

No.	Each	Recommended Wattage	Fitter Inches	Length Inches	Type of Socket	Description	Std. Pkg.	Wt., Lb. Std. Pkg.
1041AT	$2.30	75–100	4	5½	Medium	Ceiling Unit	12	16
1061AT	2.50	100–200	6	5⅞	Medium	Ceiling Unit	12	18
1061BT	2.80	300	6	5⅞	Mogul	Ceiling Unit	12	23
1040AT	3.10	75–100	4	24	Medium	Chain Suspension	12	18
1060AT	3.70	100–200	6	24	Medium	Chain Suspension	12	19
1060BT	4.00	300	6	24	Mogul	Chain Suspension	12	23
1044AT	4.90	75–100	4	24	Medium	Semi-Rigid	12	23
1064AT	5.20	100–200	6	24	Medium	Semi-Rigid	12	24
1064BT	5.50	300	6	24	Mogul	Semi-Rigid	12	28

Graybar Opal Globes

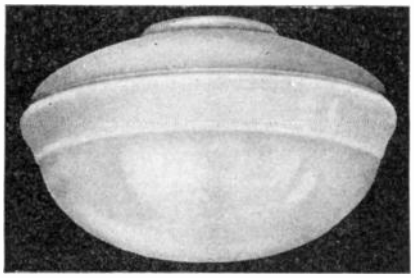
(Globes Must be Ordered Separately)

Diameter Inches	Series No. 66 No.	Each	Fitter Inches	Depth Inches	Wt. Lb. Std. Pkg.	Series No. 88 No.	Each	Fitter Inches	Depth Inches	Wt. Lb. Std. Pkg.	Series No. 99 No.	Each	Fitter Inches	Depth Inches	Wt. Lb. Std. Pkg.	Wattage	Std. Pkg.
9	6675	$1.20	4	5	21	8875	$1.20	4	6½	24	9975	$1.20	4	6¼	25	75	8
10	6680	1.80	4	6	28	8880	1.80	4	6½	27	9980	1.80	4	6½	29	75–100	8
12	6610	3.10	*4 or 6	7	16	8810	3.10	*4 or 6	8⅜	17	9910	3.10	*4 or 6	7¾	19	100–150	4
14	6620	4.00	6	8½	14	8820	4.00	6	8⅞	10	9920	4.00	6	9	14	200	2
16	6630	5.90	6	9¼	19	8830	5.90	6	10⅜	16	9930	5.90	6	10	17	200–300	2
18	....	....	.....	...	..	8850	9.10	6 or 8	11	10	9950	9.10	6 or 8	12	20	500	1

*The 4-inch size is standard; 6-inch size supplied on request only. Specify 6 or 8-inch size when ordering.

Graybar Semi-Indirect Lighting Globes

Series No. 33



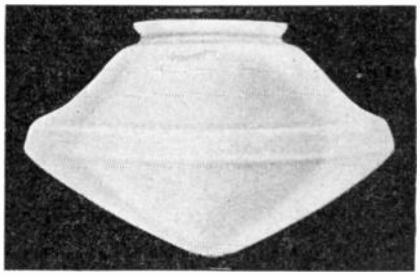
No. 3330, Plain

Made of clear crystal glass. The lower half is coated on the outside with a ceramic enamel which redirects the downward light. The upper half is etched on the inside for better diffusion.

Furnished in plain or in D-5 decorative styles; specify when ordering.

No.	Each	Fitter Inches	Diam. Inches	Depth Inches	Recommended Wattage	Estimated Std. Pkg.	Wt. Lb. per Pkg.
3375	$3.00	4	9	6¼	75	8	22
3380	3.40	4	10	6½	75–100	8	27
3310	4.50	*4 or 6	12	7¾	100–150	4	20
3320	6.90	6	14	9	200	2	14
3330	8.60	6	16	10	200–300	2	18
3350	12.30	†6 or 8	18	12	500	1	13

Series No. 77



Made of cased glass of dual opacity with light density top for diffusion and heavy density bottom for reflection. One-piece construction with two-layer diffusing alabaster top and three-layer alabaster reflecting bottom. Thus approximately two-thirds of the light is directed upward and softly diffused, without ceiling shadows, over a wide area. The remaining one-third downward transmitted light is of low brightness, free from glare.

Furnished in plain or in D-452 decorative styles; specify when ordering.

Also furnished with ground neck (neckless) for use with G type fixture only. When ordering, specify ½ after number—i.e., 7730½.

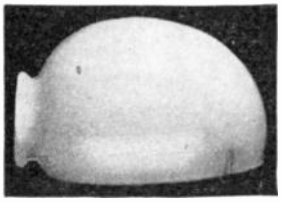
No.	Each	Fitter Inches	Diam. Inches	Depth Inches	Recommended Wattage	Estimated Std. Pkg.	Wt. Lb. per Pkg.
7775	$3.30	4	9	6½	75	8	24
7780	3.80	4	10	6½	75–100	8	27
7710	5.00	*4 or 6	12	8⅜	100–150	4	17
7720	7.60	6	14	8⅞	200	2	10
7730	9.60	6	16	10⅜	200–300	2	16
7750	13.70	†6 or 8	18	11	500	1	10

*The 4-inch size is standard; 6-inch size supplied on request only. †Specify either 6 or 8-inch size when ordering.

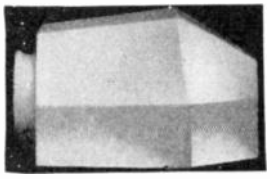
Graybar Miscellaneous Glassware

These shades are designed for use with some of the wall brackets and ceiling fixtures. They also can be used as replacements with fixtures of other makes that have standard fittings.

Made of a single layer homogeneous opal white glass of density carefully selected for diffusing qualities. This glass is light in weight and warm in color providing a more refined appearance than ordinary white commercial glass.



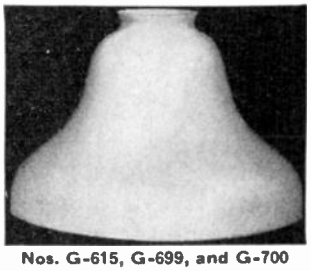
No. G-42



No. G-9504

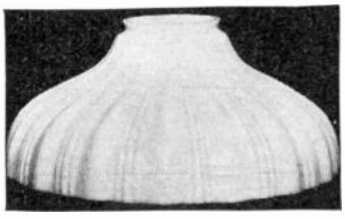
No.	Each	Diam. In.	Depth In.	Fitter In.	Std. Pkg.	Ship. Wt. Lb. per Std. Pkg.
G-42	$.80	5½	3½	2¼	36	30
G-9504	.80	5	3½	2¼	36	30

Nos. G-747 and G-975



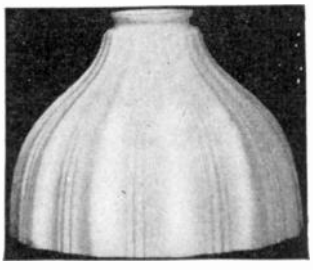
Nos. G-615, G-699, and G-700

G-747	$.54	4¾	4⅝	2¼	24	32
G-975	.66	6⅛	5	2¼	27	37
G-615	.66	6	4	2¼	36	29
G-699	.90	7	5	2¼	24	30
G-700	1.24	8	5	2¼	24	42



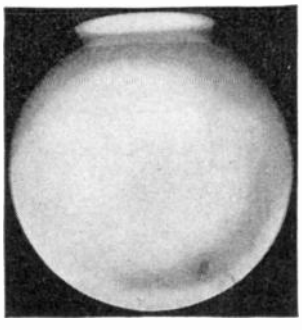
Nos. G-346, G-347, and G-348

No.	G-346	G-347	G-348
Each	$.88	1.24	1.40
Diam. in.	7	7½	9
Depth in.	2¾	3⅝	3⅞
Fitter in.	2¼	2¼	2¼
Std. Pkg.	24	24	24
Ship. Wt. lb.	33	33	34



Nos. G-340, G-341, and G-342

No.	G-340	G 341	G 342
Each	$.66	.88	1.24
Diam. in.	6	7	8
Depth in.	4½	5⅛	5⅞
Fitter in.	2¼	2¼	2¼
Std. Pkg.	24	24	24
Ship. Wt. lb.	27	33	33



Nos. G-608-6 and G-608-8

No.	G-608-6	G-608-8
Each	$.70	1.10
Diam. in.	6	8
Depth in.	6	8
Fitter in.	3¼	4
Std. Pkg.	27	12
Ship. Wt. lb.	32	30

G-E Fluorescent Lamps

Fluorescent lamps are for use only with specially designed auxiliary equipment to produce proper electrical values. Recommended for use only with equipment providing good power factor. This type of equipment assures maximum use from the wiring system. Certain counter balanced equipment provides good power factor with the added advantage of providing more constant light.

Medium Bipin Base

*Rated Average Life—2500 Hours

†Approx Lamp Watts	Bulb Length Inches	Bulb Size	Color	Lamp Ordering Abbrev.	Diam. Inches	Std. Pkg. Qty.	Each
14	15	T-12	4500 White	F14T12/45W	1½	24	$.75
14			3500° White	F14T12/W	1½	24	.75
§15	18	T- 8	4500 White	F15T 8/45W	1	24	.62
15			Daylight	F15T 8/D	1	24	.62
15			3500° White	F15T 8/W	1	24	.62
15			Soft White	F15T 8/SW	1	24	.72
15	18	T-12	4500 White	F15T12/45W	1½	24	.75
15			Daylight	F15T12/D	1½	24	.75
15			3500° White	F15T12/W	1½	24	.75
15			Soft White	F15T12/SW	1½	24	.85
‖20	24	T-12	4500 White	F20T12/45W	1½	24	.75
20			Daylight	F20T12/D	1½	24	.75
20			3500° White	F20T12/W	1½	24	.75
20			Soft White	F20T12/SW	1½	24	.85
¶30	36	T- 8	4500 White	F30T 8/45W	1	24	.75
30			Daylight	F30T 8/D	1	24	.75
30			3500° White	F30T 8/W	1	24	.75
30			Soft White	F30T 8/SW	1	24	.85
**40	48	T-12	4500 White	F40T12/45W	1½	24	1.00
40			Daylight	F40T12/D	1½	24	1.00
40			3500° White	F40T12/W	1½	24	1.00
40			Soft White	F40T12/SW	1½	24	1.15
40			4500 White	F40T12/45W/IS/H	1½	24	1.20

Mogul Bipin Base

*Rated Average Life—3000 Hours

100	60	T-17	4500 White	F100T17/45W	2⅛	12	$2.30
100			Daylight	F100T17/D	2⅛	12	2.30
100			3500° White	F100T17/W	2⅛	12	2.30
100			Soft White	F100T17/SW	2⅛	12	2.50

*Life under specified test conditions.
†For total, add auxiliary watts.
§Blue (F15T8/B), green (F15T8/G), and pink (F15T8/PK), 77 cents. Gold (F15T8/GO) and red (F15T8/R), 87 cents.
‖Blue (F20T12/B), green (F20T12/G), pink (F20T12/PK), 90 cents. Gold (F20T12/GO) and red (F20T12/R), $1.00.
¶Blue (F30T8/B), green (F30T8/G), and pink (F30T8/PK), 90 cents. Gold (F30T8/GO) and red (F30T8/R), $1.00.
**Blue (F40T12/B), green (F40T12/G), pink (F40T12/PK), $1.25. Gold (F40T12/GO) and red (F40T12/R), $1.35.

G-E Slimline Fluorescent Lamps

G-E slimline fluorescent lamps are recommended for their decorative value as well as for lighting.

For store lighting, industrial lighting, showcases, and decoration as architectural elements.

Available in diameters of ¾ or 1 inch; lamp lengths are 42, 64, 72, and 96 inches. Furnished for multiple operation.

When ordering, specify lamp ordering abbreviation.

Single Pin Base

*Rated Average Life—2500 Hours

Approx. Lamp Watts	Bulb Length Inches	Bulb Size	Color	Lamp Ordering Abbrev.	Std. Pkg. Qty.	Each
16–25	42	T-6	4500 White	F42T6/45W	24	$1.55
24–39	64	T-6	4500 White	F64T6/45W	24	1.75
22–38	72	T-8	4500 White	F72T8/45W	12	2.00
29–51	96	T-8	4500 White	F96T8/45W	12	2.70

*Life under specified test conditions.

G-E Country Home Lamps

Medium Screw Base—30 Volts

Designed for battery-generator sets as used on farms.

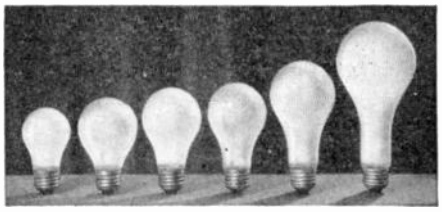
When ordering, specify Country Home.

A-19

No. of Watts	Each	Bulb	Lamp Ordering Abbrev. (Ex. Volts)	No. in Std. Pkg.
15	$.20	A-17, Inside Frosted	15A	120
25	.20	A-19, Inside Frosted	25A	120
50	.20	A-21, Inside Frosted	50A21	120
100	.33	A-23, Inside Frosted	100A	120

G-E General Lighting Service Lamps

115, 120 and 125 Volts



A-15 A-19 A-19 A-21 PS-25 PS-35

For ordinary use in homes, stores, offices, schools and factories. Light maintenance, particulary in lamps of higher wattage, is best when lamps are burned vertically, base up.

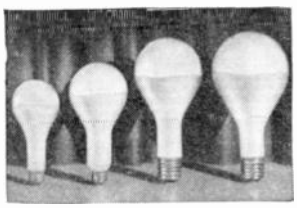
Finishes: clear, inside frosted for diffusion; white bowl for open type equipment.

Medium Screw Base

No. of Watts	Each	Bulb	Lamp Ordering Abbrev. (Ex. Volts)	No. in Std. Pkg.
15	$.11	A-15, Inside Frosted	15A15	120
25	.11	A-19, Inside Frosted	25A	120
40	.11	A-19, Inside Frosted	40A	120
50	.11	A-19, Inside Frosted	50A	120
60	.11	A-19, Inside Frosted	60A	120
75	.15	A-21, Inside Frosted	75A	120
100	.15	A-21, Inside Frosted	100A	120
150	.20	PS-25, Inside Frosted	150	60
150	.20	PS-25, Clear	150/CL	60
150	.25	PS-25, Inside White Bowl	150/WB	60
200	.27	PS-30, Clear	200	60
200	.27	PS-30, Inside Frosted	200/IF	60
200	.32	PS-30, Inside White Bowl	200/WB	60
300	.40	PS-30, Clear (750 Hours)	300M	60
300	.45	PS-30, Inside Frosted (750 Hrs.)	300M/IF	60
Mogul Screw Base				
300	$.65	PS-35, Clear (1000 Hours)	300	24
300	.70	PS-35, Inside Frosted (1000 Hours)	300/IF	24
300	.70	PS-35, Inside White Bowl (1000 Hours)	300/WB	24
500	.95	PS-40, Clear	500	24
500	1.00	PS-40, Inside Frosted	500/IF	24
500	1.00	PS-40, Inside White Bowl	500/WB	24
750	2.90	PS-52, Clear	750	6
750	3.05	PS-52, Inside Frosted	750/IF	6
1000	3.10	PS-52, Clear	1000	6
1000	3.30	PS-52, Inside Frosted	1000/IF	6
1500	4.75	PS-52, Clear	1500	6

G-E Silvered Bowl Lamps

115, 120 and 125 Volts



PS-25 PS-30 PS-35 PS-40

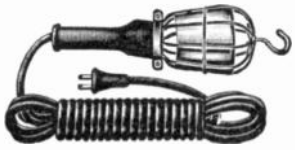
For indirect lighting applications. The permanent coating of mirror silver on the bowl is a highly efficient reflecting surface, built right into the lamp itself. The silver is protected from peeling or tarnishing by coatings of copper and aluminum.

Medium Screw Base

No. of Watts	Each	Bulb	Lamp Ordering Abbrev. (Ex. Volts)	No. in Std. Pkg.
60	$.24	A-19, Inside Frosted	60A/SB	120
100	.28	A-23, Inside Frosted	100A/SB	120
*150	.45	PS-25, Inside Frosted	150/SB	60
*200	.67	PS-30, Inside Frosted	200/SBIF	60
Mogul Screw Base				
*300	$1.20	PS-35, Inside Frosted	300/SBIF	24
*500	1.70	PS-40, Inside Frosted	500/SBIF	24

*Should be used only in porcelain sockets and in fixtures so designed that the temperatures of the lamp and fixture do not exceed limits for satisfactory operation.

Drop-Lite Portable Lamp Guards



No. 2060

Consists of a rubber handle, socket, plated wire guard with hook and half shade reflector, No. 18-2 SJ approved rubber cord and non-breakable rubber plug.

Rubber handle is made of an oil-resisting compound and will protect the user against electric shocks and burns and the lamp from breakage. Furnished with or without side outlet; also with or without switch.

Wire guard is heavily constructed. Socket is simple to wire. A strain relief is provided to prevent the wires from detaching.

Without Side Outlet

With Handle, Switchless Socket, Guard, Cord and Plug

No.	Each	Cord Lgth. Feet	Watts	No. in Carton	No. in Std. Pkg.
2060	$3.65	20	75	12	24
2560	4.15	25	75	12	24
3560	5.15	35	75	12	24
5060	6.65	50	75	12	24
With Handle, Socket with Switch, Guard, Cord and Plug					
2060S	$3.85	20	75	12	24
2560S	4.35	25	75	12	24
3560S	5.35	35	75	12	24
5060S	6.85	50	75	12	24

With Side Outlet

With Handle, Switchless Socket, Guard, Cord and Plug

2060K	$4.40	20	75	12	24
2560K	4.90	25	75	12	24
3560K	5.90	35	75	12	24
5060K	7.40	50	75	12	24
With Handle, Socket with Switch, Guard, Cord and Plug					
2060KS	$4.60	20	75	12	24
2560KS	5.10	25	75	12	24
3560KS	6.10	35	75	12	24
5060KS	7.60	50	75	12	24

Miscellaneous Parts

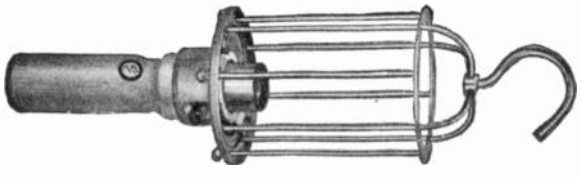
Packed 12 in a carton; 24 in a standard package.

No.	Description	Each
206	Handle, Switchless Socket and Guard	$1.45
206S	Handle, Socket with Switch and Guard	1.65
206K	Handle, Switchless Socket, Side Outlet and Guard	2.20
206KS	Handle with Switch, Side Outlet, Socket and Guard	2.40
1	Handle and Socket Only	.65
1S	Handle and Socket with Switch	.85
1K	Handle, Switchless Socket and Side Outlet	1.40
1KS	Handle with Switch, Side Outlet and Socket	1.60
260	Guard Only	.80
1420	Plug, 25 in Carton, 100 in Std. Pkg	.20

For cord of other lengths than above, add to or subtract 10 cents from price for each foot of cord.

McGill Bulldog Portable Lamp Guards

With Wood Handles

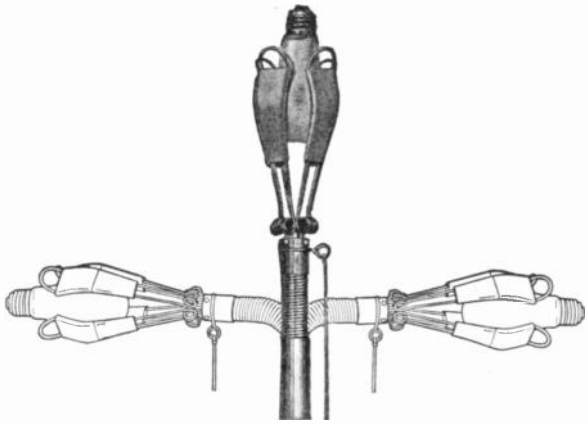


No. 4675

Made of best grade steel wire; hook and cage are zinc plated. Polished hardwood handle, furnished with McGill Levolier Socket or keyless socket for any size lamp cord.

No.	Each	Cage	Lamp Size Watts	Socket	Length In.	Wt. Lb. Each
4675	$3.00	Plain Closed	25–100	4004 Lever	15¼	1 3/16

Matthews Holdfast Lamp Changers



Removes and replaces lamps in high places, such as ceilings, side walls, electric signs, etc. Like a human hand on the end of a wooden pole. Saves time and prevents ladder accidents. To remove or replace lamps from side walls or at an angle, pull cord attached to the swivelled ring, this bends the wristlike coil spring so that the changer will work just as well at a right angle to the rotating pole as in vertical position.

No. 2

For 50-Watt Rough Service, 15 to 100-Watt Mazda, and Other Lamps up to 3 Inches in Diameter

No. 2, Shipping Weight Each, 1 Pound..... each **$11.00**

No. 3

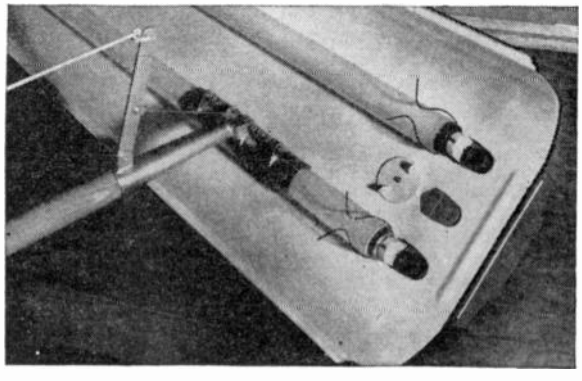
For 60 to 500-Watt Mazda Lamps and Other Large and Odd Shapes up to 5 Inches in Diameter

No. 3, Shipping Weight Each, 1 Pound..... each **$12.00**

Specially treated wood handles can be furnished in 6-foot sections at $8.00 per section, including couplings.

Prices quoted are for small quantities. Write for quotations on large quantities.

Newman Safety Fluorescent Lamp Changer and Safety Clips



Open jaws to full extent by pulling down on cord. Place open jaws on lamp, release cord and spring automatically turns lamp 90°—then lamp may be lowered. To install new lamp, have pins in lamp line up with slots in sockets from position where operator stands on floor. Insert lamp in sockets and pull operating cord which turns lamp 90°. Continue pull on cord until jaws open—then tool may be removed from lamp. Lamps cannot fall out of socket when safety clip is used. Will fit any standard socket, only one second to install. Held by spring tension. This safety wire clip does not interfere in any way with changing lamps from the floor when using the lamp changer.

No.	Each	Description	No. in Carton	Weight Pounds
6	$15.00	40-Watt Changer	1	3
7	20.00	100-Watt Changer	1	3½
8	2.75	5-Foot Extension Handle	...	2
9	*10.00	40-Watt Safety Clip	100	1
11	*15.00	100-Watt Safety Clip	100	2

*Per 100.

Appleton Portable Reelites

Rubber Handle Type

With Half Reflector

660 Watts, 250 Volts

Furnished with or without switch in handle. Also has heavy duty wire guard accommodating lamps up to 100 watts.

Light grey enameled reel-unit 7¼ inches diameter, with base for attaching to 3¼ to 4-inch outlet boxes; 25 feet No. 16-gage, 2 conductor cord, rubber handle.

No.	Each	Type Socket	Wt., Lb. per Doz.
1516	$15.00	Keyless	133
1517	15.00	Levolier	133

No. 34-005 Ideal Combination Test-Lites and Fuse Pullers

For testing, removing, or inserting fuses from 30 to 100 amperes capacity, testing circuits of from 110 to 550 volts, handling all types of live electrical parts, adjusting loose cut-out clips, etc.

Made of reinforced bakelite. Similar in design to a pair of pliers. Test pins are mounted in handle ends and are adjusted to various spans by opening or closing the handles. Test-lite is enclosed in handle to safeguard against breakage.

Length overall, 7 inches. Weight, 6 ounces.

No. 34-005.....each $3.24
No. 34-006. 18-Inch Flexible Leads.....each .65

Ideal Safe-T-Grip Fuse Pullers

Eliminates danger of pulling and replacing cartridge fuses by hand and bending of fuse clips through improper removal. Also adjusts loose cutout clips, handles laboratory test tubes, live electrical parts, etc. Laminated fiber construction. Possesses high di-electric qualities. Withstands exceptional atmospheric conditions of heat and humidity.

No. 34-001 Midget Size

For handling small fuses, grid leaks, etc., ¼ to ½ inch in diameter. Has 3 laminations, 5 inches long.
No. 34-001, Weight, 1 Ounce.....each $.35

No. 34-002 Pocket Size

A popular size for general use. For fuses 0 to 200 amperes 250 volts and 1 to 100 amperes, 600 volts. Has 5 laminations 7⅛ inches long.
No. 34-002, Weight, 3 Ounces.....each $1.00

No. 34-003 Giant Size

For fuses 100 to 600 amperes, 250 volts and 60 to 400 amperes, 600 volts. Has 7 laminations, 12 inches long.
No. 34-003, Weight, 8 Ounces.....each $3.00

No. 34-004 Jumbo Size

A large powerful tool for handling fuses 200 to 800 amperes, 250 volts and 200 to 600 amperes, 600 volts. Has 9 laminations, 20 inches long.
No. 34-004, Weight, 24 Ounces.....each $9.00

Buss Fusetrons

250 and 600 Volts

1 to 60 Amp.

70 to 600 Amp.

Fits ordinary fuse holders. A fuse and a thermal cutout. Has long time-lag and less electrical resistance.

For all types of circuits or feeders. Long time-lag prevents blowing on starting currents or other harmless overloads, yet they protect against short-circuit with speed of a fuse.

Low resistance lets switches and panelboards operate at a lower temperature. This prevents damage and wipes out needless blowing of fuses. In cases of heating from poor contact or other causes the thermal cutout in the Fusetron will open to protect panelboard or switch against damage.

On normal installations size about 100 to 125 per cent of ampere rating of motor, installed in disconnect switch or branch circuit panel gives safe and dependable motor-running protection. Motors protected by other thermal devices get double protection. If other devices fail Fusetrons will open to protect against dangerous overload or single phasing. Because Fusetrons can be used in smaller sizes than ordinary fuses, savings on original installations can be made through use of smaller size switches and panelboards.

Carries Underwriters' Laboratories label and is approved for both motor-running and circuit protection.

250 Volts				600 Volts				
Type and Amp.	Each	Lgth. In.	Wt. Lb. per 100	Type and Amp.	Each	Lgth. In.	Wt. Lb. per 100	No. in Carton
FRN 1	$.25	2	3½	FRS 1	$.65	5	14	10
FRN 1¼	.25	2	3½	FRS 1¼	.65	5	14	10
FRN 1 6/10	.25	2	3½	FRS 1 6/10	.65	5	14	10
FRN 2	.25	2	3½	FRS 2	.65	5	14	10
FRN 2½	.25	2	3½	FRS 2½	.65	5	14	10
FRN 3 2/10	.25	2	3½	FRS 3 2/10	.65	5	14	10
FRN 4	.25	2	3½	FRS 4	.65	5	14	10
FRN 5	.25	2	3½	FRS 5	.65	5	14	10
FRN 6¼	.25	2	3½	FRS 6¼	.65	5	14	10
FRN 8	.25	2	3½	FRS 8	.65	5	14	10
FRN 10	.25	2	3½	FRS 10	.65	5	14	10
FRN 12	.25	2	5	FRS 12	.65	5	16	10
FRN 15	.25	2	5	FRS 15	.65	5	16	10
FRN 17½	.25	2	5	FRN 17½	.65	5	16	10
FRN 20	.25	2	5	FRS 20	.65	5	16	10
FRN 25	.30	2	5	FRS 25	.75	5	16	10
FRN 30	.30	2	5	FRS 30	.75	5	16	10
FRN 35	.60	3	12	FRS 35	1.35	5½	26	10
FRN 40	.60	3	12	FRS 40	1.35	5½	26	10
FRN 45	.60	3	12	FRS 45	1.35	5½	26	10
FRN 50	.60	3	12	FRS 50	1.35	5½	26	10
FRN 60	.60	3	12	FRS 60	1.35	5½	26	10
FRN 70	1.45	5⅞	35	FRS 70	2.75	7⅞	56	5
FRN 80	1.45	5⅞	35	FRS 80	2.75	7⅞	56	5
FRN 90	1.45	5⅞	35	FRS 90	2.75	7⅞	56	5
FRN100	1.45	5⅞	35	FRS100	2.75	7⅞	56	5
FRN110	3.10	7⅛	88	FRS110	5.50	9⅝	125	1
FRN125	3.10	7⅛	88	FRS125	5.50	9⅝	125	1
FRN150	3.10	7⅛	88	FRS150	5.50	9⅝	125	1
FRN175	3.10	7⅛	88	FRS175	5.50	9⅝	125	1
FRN200	3.10	7⅛	88	FRS200	5.50	9⅝	125	1
FRN225	5.70	8⅝	182	FRS225	10.50	11⅝	305	1
FRN250	5.70	8⅝	182	FRS250	10.50	11⅝	305	1
FRN300	5.70	8⅝	182	FRS300	10.50	11⅝	305	1
FRN350	5.70	8⅝	182	FRS350	10.50	11⅝	305	1
FRN400	5.70	8⅝	182	FRS400	10.50	11⅝	305	1
FRN450	8.50	10⅜	304	FRS450	15.00	13⅜	480	1
FRN500	8.50	10⅜	304	FRS500	15.00	13⅜	480	1
FRN600	8.50	10⅜	304	FRS600	15.00	13⅜	480	1

Other standard dimension Fusetrons are available from 1/10 to 9 amp. and midget dimensions from 1/10 to 10 amp.

Return 35 to 60 Ampere Blown Fusetrons and Get Replacements at One-Half Price

Note on the order the items of blown Fusetrons being returned. If such Fusetrons are in good condition, except for being blown, the replacement Fusetrons, up to an amount equal in list value to those returned, will be billed at one-half price.

This applies only to 35 ampere and larger size.

15 to 30-Ampere Buss Fusetrons

For Circuit Protection on Voltages up to 125

Stops needless blowing of plug fuses. Will not blow when motors start on washing machines, refrigerators and such appliances. Has a long time-lag, because it is a fuse to which a thermal cutout has been added.

Abolishes unsafe practice of using over-size fuse to prevent needless blowing. Gives all the protection a fuse does, holds like a large fuse when safety permits, yet opens like a small fuse when safety demands.

Large clear window facilitates locating of blown Fusetron.

No installation cost; fits regular fuse receptacle.

Packed 4 in a box, 100 in a shelf package.

No.	T15	T20	T25	T30
Each	$.10	.10	.10	.10
Amperes	15	20	25	30

15 to 30-Ampere Buss Fustats

Type S Fuses

For Circuit Protection on Voltages up to 125

Fustat

Adapter

Permits addition of more appliances to present circuits. Will not blow out when motors start on washing machines, refrigerators, or other appliances. Fits all Edison base fuse holder by use of adapter which locks in place.

Has a thermal cutout combined with a fuse. Operates like a Fusetron, but has a non-tamperable base. Resists overfusing. A 20, 25, or 30-ampere size will not fit in a 15-ampere receptacle or adapter. Similar limitations apply to all other sizes.

Adapters not included with Fustats; order separately and specify size.

Packed 4 in a box; 100 in a shelf package.

Amperes	Fustats No.	Fustats Each	Adapters No.	Adapters Each
15	S15	$.10	SA15	$.07½
20	S20	.10	SA20	.07½
25	S25	.10	SA30	.07½
30	S30	.10	SA30	.07½

0 to 14-Ampere Buss Fustats

For Motor Apparatus, or Circuit Protection on Voltages up to 125

Fustat

Adapter

A fuse to which is added a thermal cutout. Has non-tamperable base to prevent anyone destroying protection. Fits all standard Edison base fuse holders by use of adapter which locks in place.

Holds starting current and harmless overloads, yet protects motor against burnout from any excessive current, even light overloads if continued. Opens like a fuse on short-circuit.

Instead of fuse, install in the same block or switch, a Fustat having the same, or slightly higher, ampere rating as the motor. It will protect motor against burnout.

Adapters not included with Fustat; order separately, and specify size Fustat for which they are intended.

Packed 4 in a box; 100 in a shelf package.

Amperes	Fustats No.	Fustats Each	Adapter No.	Adapter Each
1.	S 1	$.20	SA 1	$.07½
1.25	S 1¼	.20	SA 1¼	.07½
1.6	S 1⁶⁄₁₀	.20	SA 1⁶⁄₁₀	.07½
2.	S 2	.20	SA 2	.07½
2.5	S 2½	.20	SA 2½	.07½
3.2	S 3²⁄₁₀	.20	SA 3²⁄₁₀	.07½
4.	S 4	.20	SA 4	.07½
5.	S 5	.20	SA 5	.07½
6.25	S 6¼	.20	SA 6¼	.07½
8.	S 8	.20	SA 8	.07½
10.	S10	.20	SA10	.07½
12.	S12	.20	SA15	.07½
14.	S14	.20	SA15	.07½

Many other sizes from 3/10 to 9 amperes can be obtained.

Buss Clear Window Plug Fuses

Carries Underwriters' Laboratories inspected label.

Buss fuses have an extra large, clear window and an all white background which makes it easy to see if fuse is blown. Brass cap protects fuse against any chipping of the top. Insulated with porcelain and mica.

Packed 5 in a box. Information printed on box tells what to do when a fuse blows.

Standard package, 100. Weight per 1000, 65 pounds.

	Amperes 1	3	5	6	8	10	15	20	25	30
No.	W1	W3	W5	W6	W8	W10	W15	W20	W25	W30
Each	$.08	.08	.08	.08	.08	.C7	.07	.07	.07	.07

No. FA-12619 M.S.A. Snake Bite Outfits

Consists of a plastic suction syringe for removing venom by suction, lancet for enlarging wound, U. S. Army tourniquet, Iodine ampoule for painting wound, Ammonia inhalant, and paper cup. All contained in a sturdy plastic case.

Furnished in 1¼-unit Type D package with instructions.

No. FA-2682 M.S.A. Poison Ivy Wash

Type D package of six 4 c.c. vials.

When applied in early stages, effectively relieves irritation and dries up inflammation.

No. FA-2604 Creosote-Burn Wash

Type D package of six 4 c.c. vials for effective treatment of burns or irritations of the skin caused by contact with creosote from line poles, ties, and creosoted timber.

No. FB-12560 Foille for Burns

Modern burn treatment for emergency and hospital use.

May be applied directly to injured area at scene of accident; does not require removal when treatment is continued by physician. Provides quicker emergency aid with marked control of pain and resultant shock.

Rapidly anesthetizes injured tissues with characteristic absence of infection.

Aids rapid healing, lessens contractures, and reduces scarring.

Type D package contains two ⅝-ounce tubes with instructions on package.

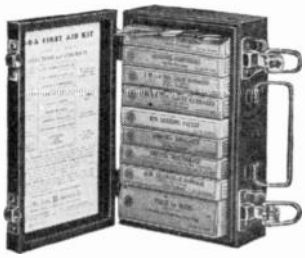
Available in emulsion or ointment. Also available in larger packages.

No. FA-2294 M.S.A. Pocket First Aid Packets

Contains a handy assortment of first aid materials for minor injuries, arranged in a metal box small enough to fit in the pocket.

Contents include ammonia inhalants, iodine applicator, adhesive compresses, compress bandages, and Foille for burns.

No. 12035 M.S.A. 10-Unit All Weather First Aid Kits



Contains complete assortment of first aid materials in standard Type D packages of unit size or multiples of unit size.

Kit case is weatherproof, dustproof, and is strongly made of welded heavy gage steel.

Each dressing is complete in itself, sterilized and sealed, with sufficient material for a single treatment.

Liquids are hermetically sealed in ampules or vials to prevent leakage. Unit packages fit like blocks in case to simplify refilling.

Furnished with mounting brackets.

Contents: 1 package, 4-inch compress bandage; 1 package 2-inch compress bandage; 2 packages 1-inch adhesive bandage; 1 package Foille for burns; 1 package Iodine brushes; 1 package Ammonia inhalants; 1 package 40-inch triangular bandage; 1 package tourniquet and forceps.

No. 12037 M.S.A. 24-Unit All Weather First Aid Kits

Contains complete assortment of first aid materials in standard Type D packages in unit size or multiples of unit size.

Kit case is weatherproof, dustproof, and is strongly made of welded heavy gage steel.

Each dressing is complete in itself, sterilized and sealed, with sufficient material for a single treatment.

Liquids are hermetically sealed in ampoules or vials to prevent leakage. Unit packages fit like blocks in case to simplify refilling.

Furnished with mounting brackets.

Contents: 3 packages 4-inch compress bandage; 3 packages 2-inch compress bandage; 3 packages 1-inch adhesive compresses; 2 packages 40-inch triangular bandage; 2 packages Foille for burns; 2 packages absorbent gauze compress; 2 packages Iodine brushes; 1 package Ammonia inhalants; 1 package Ammonia ampoules; 1 package wire splint; 1 package 4-inch gauze bandage; 1 package paper cups; 1 package tourniquet and forceps.

Coffing Flag Holders and Flags

Flag Holder is designed to fit all poles. Main body casting and locking handle are made of certified malleable iron. The chain wraps around the pole and hooks into main body of clamp.

Strong coil spring between chain and main body assures tension on locking chain.

Flag is made of 6-ounce army duck. Size, 12x16 inches. Has a 1x18-inch hardwood staff.

Flag Holder	each	$2.40
Flag	each	1.15
Flag Holder and Flag	each	2.55

Oshkosh Warning Signs

This warning sign is light in weight, yet durable. Legs are of ½-inch high carbon steel. Has 1¼-inch flange around edge of lettered side.

Has two hollow handles for adjusting angle of the legs. These handles also serve as flag sockets, and each is equipped with a lantern lock.

Black letters, 5½ inches high, on traffic yellow background.

Height, 43 inches.
Width, 28 inches.
Thickness, 1¼ inches.
Size folded, 28x28x1¼ inches.
Weight, 23 pounds.

Warning Sign ..... each **$11.60**

Central Linemen's Red Flare Lights

Used for quick general illumination and as warning signal in case of highway accidents or breakdowns. Also used for parades, rallies, and outdoor celebrations.

Burns with a brilliant red light.

Equipped with spike point and friction cap ignition.

No. 2720, packed in case of 72 (Spike Point), weight, 50 pounds.

No. 2730, packed in case of 36 (Spike Point), weight, 34 pounds.

No. **2720**, Burns for 20 Minutes ..... per case **$12.25**
No. **2730**, Burns for 30 Minutes ..... per case **7.50**

Central Linemen's Yellow Flare Lights

Used as an emergency light and as a warning signal in case of truck breakdowns or when power lines are down on highway.

Burns with a brilliant silvery yellow light.

Not effected by wind, rain or snow.

Equipped with friction cap ignition, spike point, and removable handle.

No. 3020, packed in case of 72 (12 cartons), weight, 62 pounds.

No. 3030, packed in case of 36 (6 cartons), weight 45 pounds.

No. **3020**, Burns for 20 Minutes ..... per case **$13.50**
No. **3030**, Burns for 30 Minutes ..... per case **9.75**

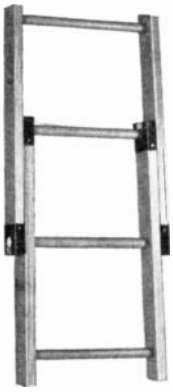
Oshkosh Sectional Ladders

Each section is 6 feet long, making a handy ladder to have around for miscellaneous uses where a long extension ladder is larger than the need requires.

For small service trucks, one or two of these sections can be hooked on and carried around all the time so that a ladder is always handy for emergency use.

The sections join together interchangeably, lapping 1 foot. One section fits into the other at either end as shown in the illustration. The joint is stiff, solid and secure.

Outside width of top, 16½ inches; inside width of bottom, 17 inches; rungs diameter, 1⅛ inches; size rails, 1⅛x2¾ inches.



Section Which Fits Into End

Side rails are selected aeroplane spruce; rungs are straight grained mountain hickory; metals, Parkerized steel.

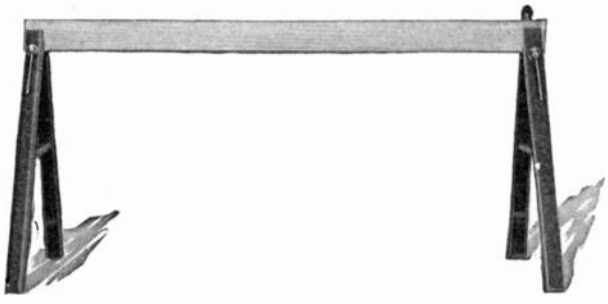
Special transparent finish.

Rubber pikes at bottom, on special order.

Weight per running foot, 2 pounds.

Per Section $9.30

Leach Portable Folding Barricade



A strong, substantial barricade, exceptionally neat in appearance and efficient in operation. Easily and quickly taken down and folded into a small, compact bundle. Stacks easily and safely and takes up only a small space in truck or warehouse.

To quickly set up, open the legs, latch the cross-piece, put in the cross-rail and turn the handle.

The cross-rail is held like a piece of wood in a vise which allows the use of various thicknesses of wood from 1 to 3 inches.

Jaws are not equipped with teeth, thus, they do not chew up the wood cross-rails.

Equipped with extension swivel which is used to erect a square barricade.

Features a flag socket in the screw handle which is 4½ inches deep to hold a danger or warning flag.

Furnished with a latern lock welded to the screw handle. Orange finish.

Height.....inches	32	42
Per pair.....	$12.30	$15.25
Extension Swivel	2.90	2.90
Width, Bottom Open.....inches	20 to 23	25 to 29
Size, Folded.....inches	3x2x35	3x2x44
Weight.....pounds	12½	16

No. 28 Babcock Platform Stepladders

Heavy Duty

A practical, safe ladder for overhead work in churches, schools, ships, sign work, stock rooms, and theaters.

Made of light, durable air dried stock. Rung tenons dipped in hot linseed oil.

All metal parts are zinc plated to prevent rust.

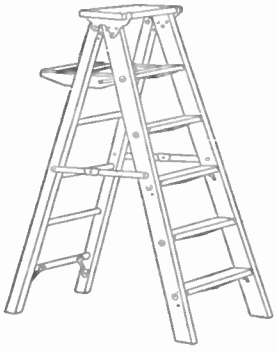
Measured from floor to platform.

Shipping weight, 3½ pounds per foot.

Ht. to Platform..ft.	4	6	8	10	12	14	16	18
No. 28 ...ea.	$16.50	20.50	25.00	29.50	32.50	35.50	38.50	41.50

Babcock Mechanics' Step Ladders

Used by mechanics, electricians, carpenters, painters and masons.



Each step is reinforced by a strong steel rod under step with block in center, forming a truss rod and equipped with strong and durable hinges or ears, securely riveted.

Made of clear stock: 1⅛-inch hickory rungs. Front, ⅞x3 inches; back legs, 1⅛x2¼ inches; steps, ⅞x3¾ inches.

Furnished with bucket shelf.

Lengths, 4, 5, 6, 7, 8, 10, 12, 14 and 16 feet.

Prices upon application.

Safety Step Ladders

Especially designed for heavy work. Made from 1¼-inch stock, well braced, every step reinforced. All parts heavily riveted. The back is equipped with oval oak bars. The hinges and spreaders are of 1¼-inch iron.

Front, 1 1/16x3¼ inches; back bars, ⅞x1¾ inches; back legs, 1 1/16x2½ inches; steps, 1x3¾ inches.

Made of air dried stock in lengths of 4 to 22 feet.

Length.....feet	4 to 14	16 to 22
Per Foot.....	$1.76	2.00

Fire Extinguishers

Approved by Underwriters' Laboratories and Factory Mutuals

Pyrene Vaporizing Liquid

1 and 1½-Quart Pump Type


C 21

Smothers all classes of incipient fire, particularly fires in flammable liquids and electrical equipment. Light, compact, and easily operated. Double acting pump. Discharges a steady 25 to 30 foot stream from any position. Vehicle type has shock absorber construction and clamp brackets for wall or steering post. Also available with chromium or painted finishes. Also approved by Good Housekeeping Institute. Liquid is a non-conductor of electricity, non-corrosive, anti-freezing to 50° below zero F. Sold with charge and bracket.

No. C21, 1-Qt. Brass, Wall Bracket.... $15.00
No. C21T, 1-Qt. Brass, Heavy Vehicle, Wall Bracket..... 16.00
No. C21TS, 1-Qt. Brass, Heavy Vehicle, Post Bracket..... 18.00
No. C31, 1½-Qt. Brass, Wall Bracket..... 18.00
No. C31T, 1½-Qt. Brass, Heavy Vehicle, Wall Bracket 19.00
No. CR2, 1-Qt. Pyrene Liquid..... 1.60
No. CR10, 2-Qt. Pyrene Liquid..... 3.20
No. CR4, 1-Gal. Pyrene Liquid..... 5.80

Pyrene Vaporizing Liquid

2-Quart and 1-Gallon Pressure Type


C 103


C 43

For industrial and vehicular protection against flammable liquid and electrical fires, and incipient fires in ordinary combustibles. Discharge 30 to 40-foot stream without pumping. Inner chamber holds air under pressure; outer contains Pyrene Liquid. Air pressure gauge and liquid level sight glass make inspection easy. Equipped with flexible metal, rubber-covered hose. Available with or without built-in air pump.

No. C103, 2-Qt. Pol. Copper, Without Pump..... $50.00
No. C103M, 2-Qt. Polished Copper, With Pump.... 54.00
No. C43, 1-Gal. Polished Copper, With Pump..... 80.00
No. C43A, 1-Gal. Polished Copper, Without Pump. 75.00
No. CR10, 2-Qts. Pyrene Liquid..... 3.20
No. CR4, 1-Gal. Pyrene Liquid..... 5.80

Pyrene Foam

2½-Gal. Seamless and Riveted Types

P 13

Discharges 22 gal. of foam that floats on flammable liquids, clings to solids and smothers the fire. The Four Star Drawn Shell type has one-piece shell and dome and solderless collar. Tested to 500 pounds pressure.

Standard riveted shell type available at lower cost. Tested to 350 pounds pressure.

Both seamless and riveted types are also available with chromium and painted finishes. Must be discharged and recharged annually, using only the specially compounded and accurately proportioned Pyrene Foam recharges.

No. P13, 4-Star Seamless Pol. Copper. $37.00
No. PX13, Riveted Shell, Std. Fin.. 33.00

If above is supplied with pressure relief valve to meet U. S. C. G. requirements, add $2.00 to price.

No. PXR1, 2½-Gallon Recharge..... $1.60

10 and 40-Gallon on Wheels

No. PD1P, 10-Gallon Indoor Type..... $390.00
No. PD2PN, 40-Gallon Indoor Type..... 550.00
No. PD3PN, 40-Gallon Outdoor Type..... 600.00
No. PD4PN, 40-Gallon Airport Type (8" Tire).... 650.00
No. PR3, 10-Gallon Recharge..... 7.00
No. PR6, 40-Gallon Recharge..... 15.00

Pyrene Soda-Acid

2½-Gal. Seamless and Riveted Types

S 13

Inverted, it discharges a 40-foot stream, effective on fires in wood, paper, textiles, etc. The Four-Star Drawn Shell type has patented press assembled collar and seamless dome and shell of one-piece copper. Strong and durable, tested to 500 pounds pressure.

The standard riveted shell type, at lower cost, has shell, dome and bottom of cold-rolled copper with seams backed with solder. Tested to 350 pounds pressure.

Chromium and painted finishes available. Must be discharged and recharged annually. High grade charges are full weight, accurately proportioned.

No. S13, 4-Star Seamless, Polished Copper..... $34.00
No. SX13, Riveted Shell, Standard Finish..... 30.00

If above supplied with relief valve, add $2.00 to price.

No. SXR1, 2½-Gallon Recharge..... $.60

40-Gallon on Wheels

Narrow and wide gage.

No. SD2L, 40-Gallon Indoor Loose Stopple..... $500.00
No. SD2M, 40-Gallon Indoor Manual Operation... 525.00
No. SD3M, 40-Gallon Outdoor Manual Operation.. 575.00
No. SR3, 40-Gallon Recharge..... 7.20

Pyrene Water-Type

2½-Gallon Cartridge-Operated

H 13

Kills fire in ordinary combustibles by discharging a 40-foot stream of plain water—without pumping or chemicals—by means of pressure from a carbon dioxide gas cartridge. Operated by inverting and striking the plunger head on the floor. Annual recharging is not required. After use, refill with water; replace cartridge.

The Pyrene Anti-Freeze type is for ordinary hazards at freezing locations. Pyrene Freeze-Proof is anti-freezing to 40° below zero Fahrenheit. Both are also available in painted and chromium finishes.

No. H13, Water-Type, Polished Copper..... $44.00
No. W13, Anti-Freeze Type, Polished Copper..... 46.00
No. HV1, Replacement Pressure Relief Valve..... 2.00
No. HC1, Extra Cartridge for Water Type..... 11.00
No. WR1, Extra Anti-Freeze Charge and Cartridge. 13.00
No. WC1, Extra Cartridge for Anti-Freeze Type.. 11.00
Recharging Cartridges..... 4.00
No. TR1, 5-Gallon Freeze-Proof Charge..... 4.00
No. TR2, 2½-Gallon Freeze-Proof Charge..... 2.00

C-O-Two Carbon Dioxide

2½ to 100-Pound Capacities


PSH-15

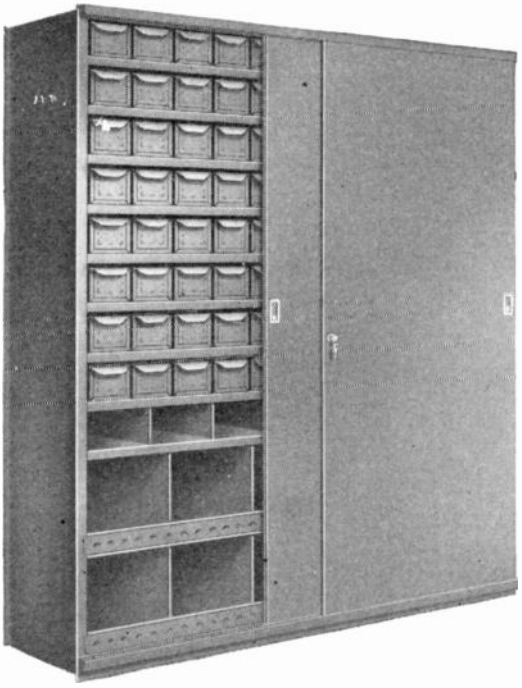
Carbon dioxide hand and wheeled types are recommended for speedy extinguishment of highly inflammable liquids, paints, oils, etc., and for protection of electrical equipment. High pressure metallic and rubber hose. Horn of fabricated non-crackable material.

No.	Each	Valve	Lb. Gas
PS-2½	$21.00	Squeez-Grip	2½
PS-5	27.50	Squeez-Grip	5
PSH-10	46.00	Squeez-Grip	10
PSH-15	52.50	Squeez-Grip	15
PSH-20	59.00	Squeez-Grip	20
WB or WVF-50	178.00	Seat or Pressure	50
WB or WVF-75	218.00	Seat or Pressure	75
WB or WVF-100	350.00	Seat or Pressure	100

Information on hose units and automatic or manual systems are also available.

Lyon Steel Equipment

No. EX-1615D Material Cabinet



Shown above are two No. EX-1615D material cabinets equipped with sliding doors.

Each cabinet contains 48 shelf boxes 5 21/32 x 17 1/2 x 4 5/8 inches, with 2 adjustable dividers per box. Eight top shelves are fitted with box guides at each end.

Two bottom shelves are fitted with 3-inch high bin fronts and each shelf is divided into 3 compartments with two 12-inch high dividers.

Each cabinet is 36 inches wide, 18 5/16 inches deep overall, and 84 inches high.

Note: Sliding doors must be used on 2 adjacent cabinets as illustrated.

Flat key lock with two keys. Finished in Lyon green baked on enamel.

No. EX-1278 Material Cabinet

The No. EX-1278 material cabinet has five shelf openings and nine drawers.

Shelves are adjustable on 2-inch centers permitting drawers to be moved to different locations and making it possible to adjust shelves to hold different types and sizes of equipment.

Cabinet features new, patented recessed handle with recessed number plate.

Door has 3-point locking device that engages at top, bottom and center.

Hinges are projection welded to frame and hinge butt is recessed so pin cannot be forced out.

Overall dimensions are 15x15x78 inches. Height includes 6-inch legs

Finished in Lyon green baked enamel.

Flat key lock (two keys and master keyed).

Shipped set up as shown.

No. EX-1278-8 Material Cabinet

The No. EX-1278-8 cabinet is equipped with seven shelves adjustable on 2-inch centers to provide storage for many sizes and types of material.

Cabinet features new, patented recessed handle with recessed number plate.

Door has three point locking device that engages at top, bottom and center.

Hinges are projection welded to frame and hinge butt is recessed so pin cannot be forced out.

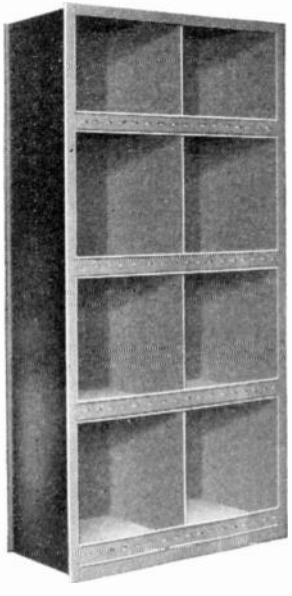
Overall dimensions are 15x15x78 inches. Height includes 6-inch legs.

Lyon green baked enamel finish.

Flat key lock (two keys and master keyed).

Shipped set up.

No. EX-1614D Hardware Rack



The No. EX-1614D hardware rack has eight compartments—two 18x18x18-inch and six 18x18x21-inch.

All bin openings are equipped with 3-inch high bin fronts with label holders. Crosswise dividers may be adjusted on 3-inch centers to revise bin opening sizes.

Size, 36 inches wide, 18 5/16 inches deep overall, and 84 inches high.

Finished in Lyon green baked on enamel.

Lyon Steel Equipment

No. 854 7-Compartment Locker

Lyon 7-compartment lockers will accommodate seven individuals in a minimum floor area.

Each small hat compartment has an individual flat key lock, the key of which will fit the lock on the large coat compartment—but no other lock in the same section or any other section. When key is inserted in lock of large compartment it cannot be removed until the door is closed and locked.

Large compartment is fitted with coat rod—no hooks.

Letter plates provided for small compartments and number plate for the section.

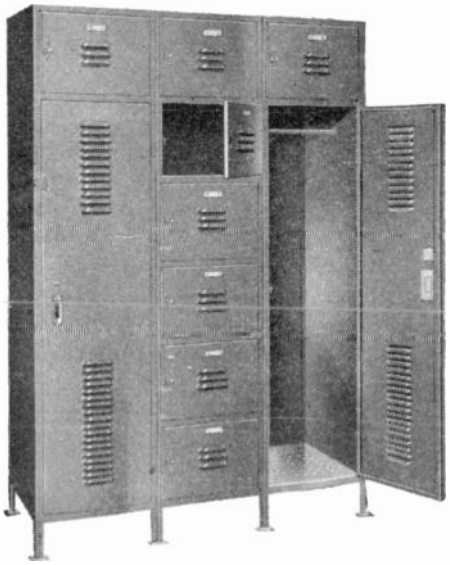
Overall size, 36x72x78 inches (height includes six inch legs).

Locker doors are made for locking with a padlock. Flat key locks with two keys and master keyed can be furnished. Flat key locks are standard on general compartment doors which also have new, patented recessed handle.

Finished in high grade green baked enamel.

Compartment lockers shipped set up.

No. 851 8-Compartment Locker



The 8-compartment locker provides 8 small compartments and 2 large coat compartments as illustrated.

Keys fit the individual small compartment and proper coat compartment but no other small compartments.

Large compartments are fitted with coat rods—no hooks.

Letter plates 1A, 2A, 3A, 4A, 1B, 2B, 3B, 4B, provided for small compartments, No. plates A and B for large compartments.

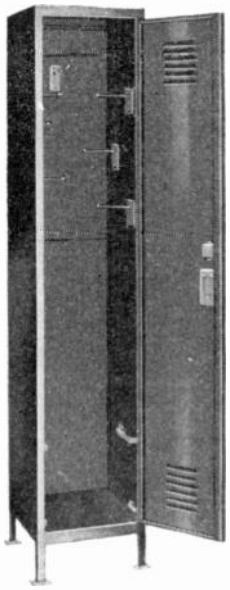
Overall size, 54x20x78 inches(height includes six inch legs).

Locker doors are made for locking with a padlock. Flat key locks with two keys and master keyed can be furnished. Flat key locks are standard on general compartment doors which also have new, patented handle.

Finished in high grade green baked enamel.

Compartment lockers shipped set up.

No. EX-1279 Cord Cabinet



The No. EX-1279 cord cabinet is equipped with seven 6-inch cord hooks and two clips on each side to hold wedge blocks.

Cabinet features new, patented recessed handle with recessed number plate.

Door has three point locking device that engages at top, bottom and center.

Hinges are projection welded to frame and hinge butt is recessed so pin cannot be forced out.

Overall dimensions are 15x15x78 inches. Height includes 6-inch legs.

Finished in Lyon green baked enamel.

Flay key lock (two keys and master keyed).

Shipped set up as shown.

No. EX-1258A Headset Cabinet

Shown here is an EX-1258A headset cabinet with base.

Cabinet shelves slant toward the rear to keep headsets from falling out. Louvre at back of each shelf permits complete circulation of air through compartments.

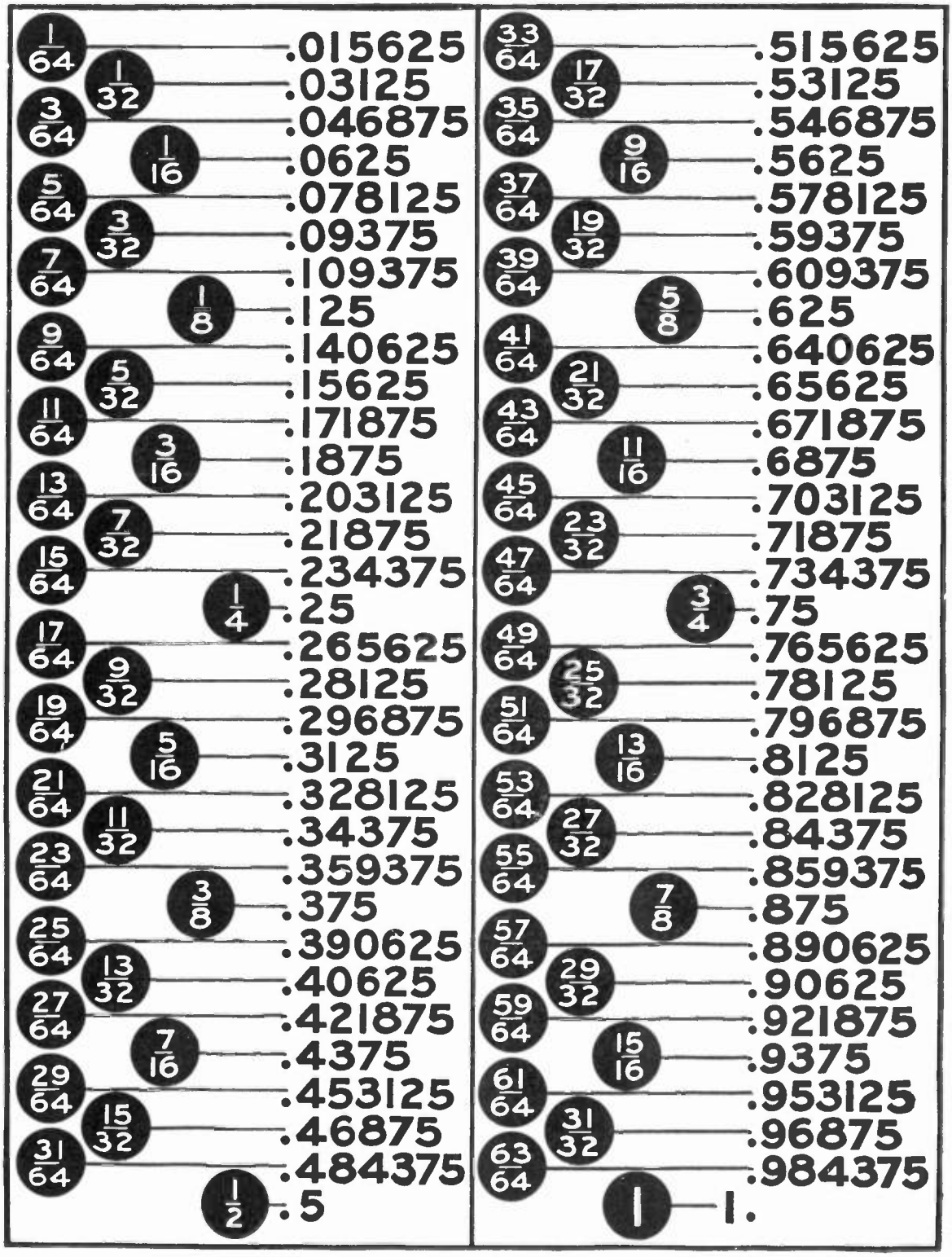
The 15-compartment unit is 35¼ inches wide, 8¾ inches deep, and 23 inches high. The base is 35¼ inches wide, 8⅞ inches deep, 8¼ inches high.

For 30-compartment cabinet use one base and place one 15-compartment on top of the other. For 45-compartment cabinet use one base and three units one above the other.

Finished in Lyon green baked on enamel.

Other styles of cabinets and a complete line of steel shelving and shop equipment also are available

Decimal Equivalents



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Western Electric **TELEPHONE SUPPLY ITEMS are not shown in this Index. See page IV.**

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97 Convenient Places

TO SECURE PROMPT SERVICE ON:

ALABAMA
Birmingham

ARIZONA
Phoenix

ARKANSAS
Little Rock

CALIFORNIA
Fresno
Los Angeles
Oakland
Sacramento
San Diego
San Francisco

COLORADO
Denver

CONNECTICUT
Hartford
New Haven

DELAWARE
Wilmington

DISTRICT OF COLUMBIA
Washington

FLORIDA
Jacksonville
Miami
Orlando
Tampa

GEORGIA
Atlanta
Savannah

IDAHO
Boise

ILLINOIS
Chicago
Peoria

INDIANA
Evansville
Hammond
Indianapolis

IOWA
Davenport
Des Moines

KANSAS
Wichita

KENTUCKY
Louisville

LOUISIANA
New Orleans

MAINE
Portland

MARYLAND
Baltimore

MASSACHUSETTS
Boston
Springfield
Worcester

MICHIGAN
Detroit
Flint
Grand Rapids
Lansing

MINNESOTA
Duluth
Minneapolis
St. Paul

MISSISSIPPI
Jackson

MISSOURI
Kansas City
St. Louis

MONTANA
Butte

NEBRASKA
Omaha

NEW HAMPSHIRE
Manchester

NEW JERSEY
Newark

NEW YORK
Albany
Binghamton
Buffalo
New York
Rochester
Syracuse

NORTH CAROLINA
Asheville
Charlotte
Durham
Winston-Salem

OHIO
Akron
Cleveland
Cincinnati
Columbus
Dayton
Toledo
Youngstown

OKLAHOMA
Oklahoma City
Tulsa

OREGON
Eugene
Portland

PENNSYLVANIA
Allentown
Harrisburg
Philadelphia
Pittsburgh
Reading

RHODE ISLAND
Providence

SOUTH CAROLINA
Columbia

TENNESSEE
Chattanooga
Knoxville
Memphis
Nashville

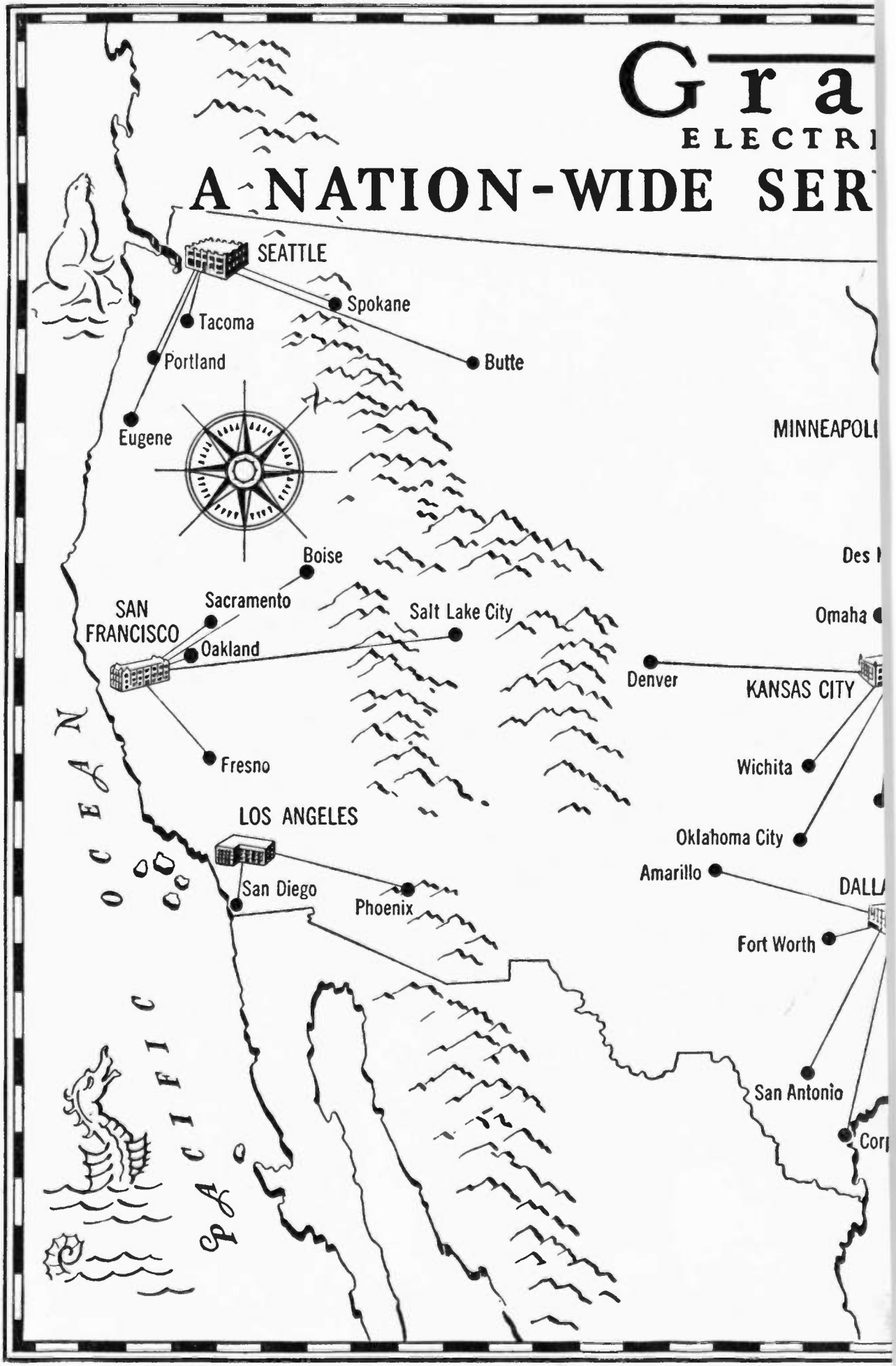
TEXAS
Amarillo
Beaumont
Corpus Christi
Dallas
Fort Worth
Houston
San Antonio

UTAH
Salt Lake City

VIRGINIA
Norfolk
Richmond
Roanoke

WASHINGTON
Seattle
Spokane
Tacoma

WISCONSIN
Milwaukee



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