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THE ORIGINAL
'DO-IT-YOURSELF'
MAGAZINE

HOBBIES *weekly*

FOR ALL
HOME CRAFTSMEN

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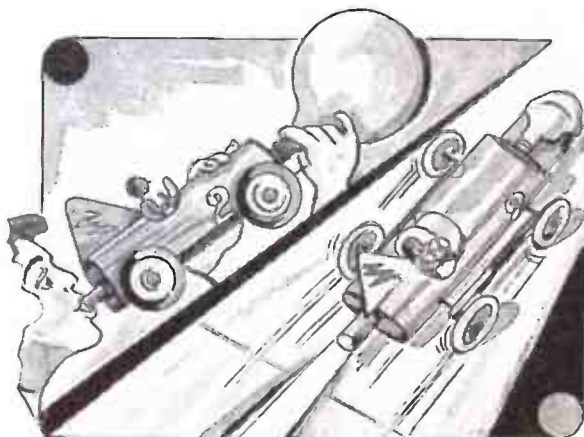
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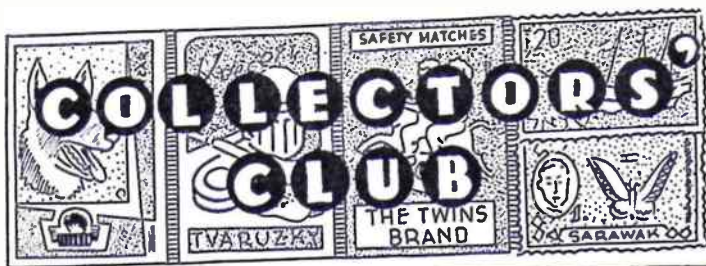


Up-to-the-minute ideas

Practical designs

Pleasant and profitable things to make

5^p



THE story of Ansell's Brewery is one of industrial enterprise and reflects in all its forms the changing pattern of the onward-rushing twentieth century.

It all began in 1857 when Joseph Ansell, a typical early Victorian with a family of four sons, commenced modest production as a maltster. It is unlikely he visualized that his endeavours would

ANSELLS LABELS

result in the Ansell's Brewery of today with a £20,000,000 balance sheet and control of 1,500 houses.

In 1857 the stagecoach was giving way to the 'iron horse', the railway age was in full cry and already the country was served by over 5,000 miles of the new 'iron road'.

Joseph Ansell died in 1885 and was



The Theme of Work

PARENTS whose children collect stamps will find the thematic album an excellent pictorial aid to Christian teaching. For example: many forms of employment are depicted on a Hungarian set of 1950. The following talk could be given in conjunction with these stamps:

The man who is able to, but unwilling, to work leads an aimless life and usually becomes ill or a useless parasite.

The happy man with a 'healthy mind in a healthy body' has no time for idleness. There is no dull monotony for

him whose time and mind are occupied in honest productive work. For him 'life is real, life is earnest'; he applies the same zest and enthusiasm to his work as he does to his play and life in general.

No honest labour, however menial it may seem, is degrading. A doctor's work can be most unpleasant, yet he takes a great pride in it.

Should his work go wrong, the industrious man is not nettled or discouraged. He takes heart and instruction from past errors, and when improvements are made he is proud.

succeeded by his eldest son William, who guided the fortunes of the company for 40 years.

At this time England was strong, confident and at peace, apart from Colonial skirmishes and the South African War — an England of 'Rule, Britannia' and 'Goodbye Dolly Grey'. Public houses with their ornate back fittings, screens and beer pulls, bar tables with legs of heavily scrolled cast-iron

portrayed the progress in licensed premises. The Licensing (Consolidation) Act 1910 was a few years off, but already the progressive brewer had assumed responsibilities not envisaged in the Alehouse Act of 1828 or the abortive and quickly repealed provisions of the Beerhouse Act 1830.

In 1904 Edward Ansell became Chairman of the Company. He resigned in 1919 in favour of his eldest son, Mr. H. C. Ansell, only to resume office again in 1920 on the death of 'Mr. Harry'. He resigned again in 1923 and his death in 1929 at the age of 80 years broke the last link with the original founders of this now great brewery. (R.L.C.)

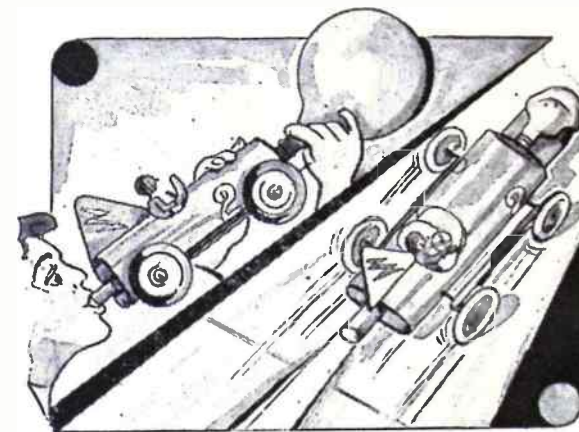


Instructions for making

JET-POWERED RACING CAR

YOUNG modellers can easily build this 'Balloonmobile' racer, which has super acceleration from a jet of air, powered by a rubber balloon!

The car body consists of (B) formed into 'tube'. About 1/4 in. inside the ends are glued formers (F), and at the 'bonnet' end of oval-shaped body the balloon support (C) is fixed. This protrudes about 2 1/2 ins. Through holes in formers is slotted the blower tube (J)



Described by T. S. Richmond

YOU WILL NEED

(B) Thin card, 5 1/2 in. by 6 1/2 in. 1 1/2 in. by 1 in. aperture cut 1 1/2 in. from end, and 1/2 in. slot cut 1/2 in. from end of 5 1/2 in. length of card.

(C) Stiff cardboard, 1 1/2 in. by 5 in. Corners rounded one end.

(F) (2) 2 1/2 in. diameter circle on 1/2 in. thick cardboard. Top and bottom reduced to form oval shape. Cut out, including hole (T) to accept tube (J).

(J) Plastic or cardboard blower tube 7 in. long 1/2 in. diameter.

(T.P.) 1/2 in. thick cardboard, 2 in. by 1 1/2 in. Cut to fin shape, 1/2 in. long slot for jointing into slot in (B).

(A) (2) 4 in. length, 1/2 in. thick wire rod.

(S) (2) 2 1/2 in. diameter 1/2 in. width rubber-band.

(W) (4) 1 1/2 in. diameter light-weight wheel of balsa, plastic or rubber.

(D) 3 1/2 in. length wire. (D2). Bead, approx. 1/2 in. diameter, centre hole for threading on to wire. (D3) 1 1/2 in. by 2 1/2 in. thin card. Fold and cut to shape of figure.

which passes through inside of body with the 'jet' protruding 1/2 in. at the rear end. Elastic bands will hold the assembly together whilst the glued parts are setting.

Holes for inserting two axle rods (A)

should be correctly positioned in alignment, so that when pushed through body they run clear of the blower tube. The light-weight wheels (W) should replace freely on the axles and are kept in place by bending up ends of axle rods with pliers. A rubber-band stretched from front to rear axles at each side of car prevents 'play' of wheels against car sides, as well as giving appearance of 'chassis springs'.

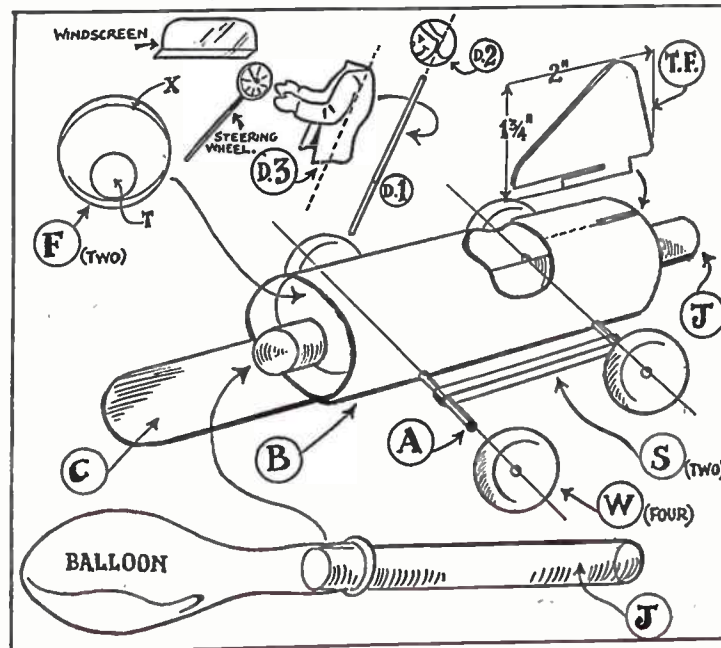
Make the little driver figure as shown and push wire into hole bored at bottom of body, so that the figure sits at either side of central blower tube: depending on whether 'left-hand' or 'right-hand' drive is preferred! Add driving wheel and windscreen, fashioned from bits of film, card and wire.

To provide the driving-power to your completed model, attach neck of small round balloon to blower tube in front of 'bonnet'. Support (C) prevents deflated balloon touching floor when car is in motion.

Inflate balloon by blowing into rear end mouth-piece of tube. Nip the neck of balloon whilst setting car down on smooth-surface floor or prepared 'track'. Release pressure and the sudden thrust of air from 'jet' tube will propel your racer along at great speed.

Plastic material is preferable to cardboard for blower tube, owing to moisture collecting within. Tube may be removed as required, and cheap toy balloons are easily replaced after a burst!

Finish model with poster paints. Build a team of these little balloon racing cars for exciting racing contests.



MARQUETRY IN JEWELLERY

MARQUETRY is used for decoration in many ways and, as such, it may vary from simple geometric designs for the reliefs of cigarette and trinket boxes to more complicated compositions in pictorial subjects. There is no reason why this art should not be used for personal adornment, the most obvious subject for this purpose being ear-rings.

By A. E. Haylock

In considering such tasks, one must either select a very simple design or condition oneself to some very intricate work in small areas. It may also be desirable to produce surfaces which are highly curved in two directions and, for these reasons, it is necessary to abandon the normal technique of applying the veneers flat upon a baseboard.

Use simple designs

The method described here can be used without regard to the size of the finished object and, within reason, there is no limit to the amount of detail which can be employed. One must bear in mind, however, that ear-rings will be viewed only from a distance and will be more or less constantly under movement. It is practical, therefore, to restrict one's activities to simple designs which will be all the more effective for their simplicity. The principle recommended is similar to that employed in rock making, wherein the letters 'go right through the stick.' This means, however, that the picture will be entirely produced from end and edge grain woods and must depend for its effectiveness upon colour rather than figuring.

Designs for this process are best prepared upon sectional or graph paper,



ruled sixteen squares to the inch. The thickness of veneers varies and must be taken into account in preparing the design or you may find the result distorted in one direction if they are much thicker or thinner than estimated.

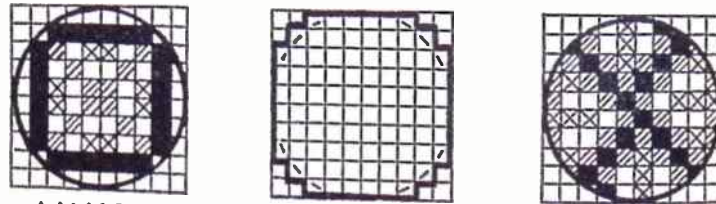
The simplest form of ear-ring is the button type, consisting of a circular disc

about half to one inch in diameter, one face being flat and the other domed. For your first efforts, confine yourself to simple geometric designs as shown in Fig. 1. When you have mastered the technique, you can advance to monograms and, finally, develop simple motifs such as the sea-horse shown in Fig. 2.

Assemble by columns

Draw a circle on the graph paper approximately the size of the button you wish to make. This presumes that your veneers are all about $\frac{1}{8}$ in. thick. Should they be appreciably thinner or thicker, you must adjust your design accordingly. If for example they should prove to be $\frac{1}{2}$ in. thick only, the design should be twice the size of the finished product and so on. Within this circle, set out your design — you will find this easier if you use coloured pencils or crayons. Around the periphery of the circle, shade in the whole of each square cut by the circle. The excesses will be trimmed off in the finishing process.

When your design is complete, assemble it, column by column, from



- ▨ MAHOG.
- WALNUT.
- ⊠ OAK.
- SYC.

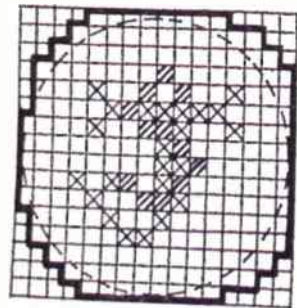
CROSS SECTION BEFORE FINISHING

ALTERNATIVE PATTERN

Fig. 1

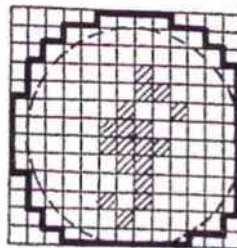
left to right. Taking the left hand column of the left hand design in Fig. 1, you will note from the key that it is to be executed entirely in sycamore and contains 6 squares: Cut from your bulk veneers a strip of sycamore 2in. wide, with the grain running across it. From this strip cut a narrow one $\frac{1}{8}$ in. wide, cutting along the grain this time.

In the second column you will see a length of walnut the same size as the sycamore already cut. Prepare this and cement the two together with rapid setting marquetry cement, holding them firmly together with the fingers until set. A narrow strip of sycamore $\frac{1}{8}$ in. wide, on each end of the walnut, completes this column. Proceed in this manner,



TYPICAL MONOGRAM

Fig. 2



SIMPLE MOTIF

assembling each column as you go and gluing it in place, until the whole is complete. It is advisable to put it aside now for 24 hours so that it may thoroughly harden.

Clip attachment

The rough cylinder (Fig. 1) should now be cleaned up with fine glasspaper and each end domed to taste (Fig. 3). A disc about $\frac{1}{8}$ in. thick can then be cut from each end with a fine tenon saw and given a coat of white french polish or clear lacquer and, apart from the attachment, the job is done. You should be able to cut two or three pairs of discs from the original cylinder.

This type of ear-ring is best fitted to a clip which has a small metal tongue to be pressed into the back of the disc and further secured with a liberal application of jewellery cement (Fig. 4).

Earrings can be made elliptical and even spherical in section. There are two methods of attachment — with a gold wire band or by means of a small eye inserted at the top after drilling (Fig. 5).

If the gold band is preferred, slightly groove the drop along the intended path of the band and very carefully bend a short length of gold wire around it,

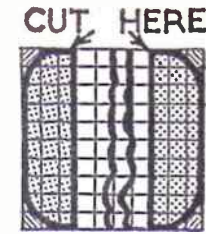


Fig. 3

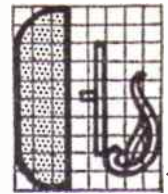


Fig. 4

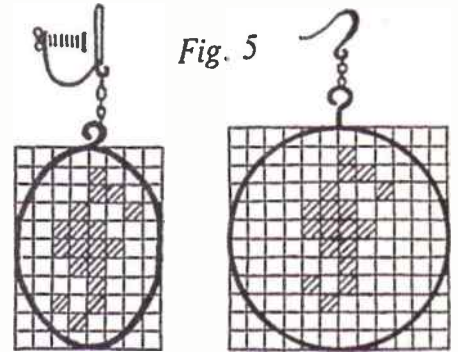


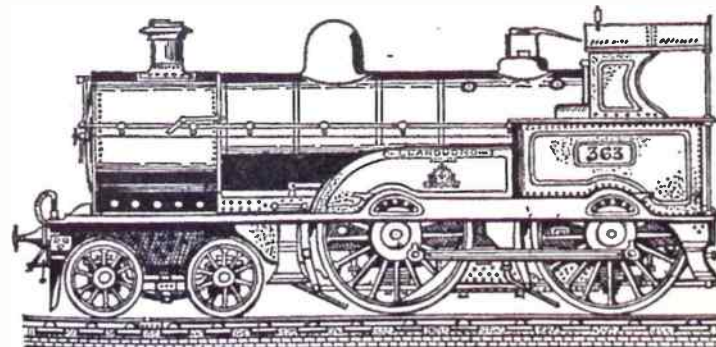
Fig. 5

securing the ends at the top by twisting them together with a pair of fine nosed pliers so that they finish in a loop. Alternatively, make a small eye of gold wire with a tail about $\frac{1}{8}$ in. long, drill the top of the drop, glue and insert the tail into it. In either case, the drop can be attached to a screw or hook earpiece by means of fine trace chain or jump rings to taste (Fig. 1).

INTERESTING LOCOS—No. 19

OUR illustration depicts one of the notable 4-4-0 express locomotives of the 'George the Fifth' class designed by Mr. C. J. Bowen Cooke the Chief Mechanical Engineer for the L. & N.W. Railway. The class originated with the first two engines Nos. 2663 'George the Fifth' and 2664 'Queen Mary', built at Crewe Works in July 1910. They were the 4970th and 4971st locomotives respectively to be erected at the famous works. They were in reality a development of Mr Whale's 4-4-0 'Precursor' class of 1904, except that the Schmidt superheater and 20in.

cylinders were adopted. Before finally deciding to adopt the Schmidt superheater for succeeding engines of the class. Mr. Bowen Cooke built ten engines of the 'Queen Mary' series without superheaters. After a series of trials however it was found that the superheated engines gave better results, both in performance and oil, coal and water consumption, and the 'Queen Marys' were later superheated, bringing them in line with the 'George the Fifth's'. A total of 90 engines of the class was built at Crewe between 1910 and 1915 and they were the most powerful 4-4-0 type to run on



the L. & N.W.R. The following were the principal dimensions. Cylinders 20in. by 26in. (some having 20 $\frac{1}{2}$ in. cylinders). Wheels diam., leading 3ft. 3ins., driving 6ft. 9ins. Heating surface = firebox 161.75 sq. ft. Tubes (1 $\frac{1}{2}$ in.) 1004.96 sq. ft. (5in.) 380.44 sq. ft. Superheater steam tubes 302.5 sq. ft. Total heating surface = 1849.65 sq. ft. Grate area 22.4 sq. ft. Working pressure 175 lbs. per sq. in. Maximum tractive force at 85% pressure = 20,066 lbs. The tenders ran on six wheels of 3ft. 9ins. diam. carrying 3000 gals. water and 6 $\frac{1}{2}$ tons coal. Weight of engine in working order was 59 tons 17 cwt, and with loaded tender attached 99 tons 2 cwt. A notable engine of the class was the 'Coronation,' 'the 5,000th engine built at the locomotive works — Crewe, — June 1911.' The illustration shows one of the last batch built in 1915 and named after holiday resorts served by the L.N.W.R. All the class were withdrawn from service in the 1940's. (A.J.R.)

Note: In describing the G.W.R. Dean Tandem Compounds in No. 18 of our series, the engines were given as built to the 4-4-0 type. This, of course, should read 2-4-0.

SAVING LIFE IN THE WATER

EVERY year a number of people, many of whom are on holiday, meet a tragic death by drowning. For those of us who have learnt to swim, a knowledge of life-saving is invaluable, for even an accomplished swimmer may find himself in difficulties if he attempts a rescue without this knowledge. Even if one is never called upon to save a person from the water, the study of life-saving adds a zest and interest to the art of swimming and greatly increases one's confidence.

By P. R. Chapman

It is assumed that anyone considering life-saving is a competent swimmer, although the popular crawl stroke is not used at all, except for the purpose of reaching a drowning person as quickly as possible. The most important stroke is, undoubtedly, the life-saving back stroke, using legs only. Since when towing a person it is not possible to close the legs completely as in the ordinary back stroke leg kick, a modification is necessary. To get the idea of this, the best way is to support yourself on the rail of the bath at the shallow end, in the upwards floating position, open your legs and get a friend to stand between them. Keeping your thighs more or less horizontal, bend the legs at the knees, making rapid cir-



A happy place like this may quickly be transformed into a scene of tragedy where a life could depend upon a prompt rescue.

cular movements with the lower part of the legs.

When you can do this quite easily, try swimming in this way, remembering to keep your legs apart the whole time. Your hands should be clasped on your chest. This stroke must be practised continuously until you can keep it up for at least 150 yards, the distance stipulated by the Royal Life Saving Society. A common fault is just bending the legs backwards and forwards without the circular movement; this wastes energy and has little propulsive power. With practice, a powerful stroke can be developed.

You should be able to swim a similar distance using the ordinary breast stroke, and unless you are proficient in this, it must be practised also.

One of the most important things to learn in life-saving is to escape from the clutch of a drowning person (the release) and to get him under control, and although in practice this must, of course, precede any 'towing' methods or rescues, the latter will be described first, so that they may be practised and that when the releases are learnt later, they may be followed in the water by the appropriate rescue. There are four main methods of rescue, the actual one used in any particular case depending upon the condition of the victim.

If the person is quite calm or unconscious, the accepted method is to turn him on his back and place the palms of the hands over his ears, fingers pointing upwards. Your elbows should be bent so that his back rests on your forearms and his head is held underneath your chin. You then swim by using the life-saving back stroke already

learnt. Since the victim's legs will hang down between your own, the reason for learning without closing your legs will be apparent. If his legs tend to sink, as is quite likely, the 'drag' will increase and you will have to labour to pull him through the water. In this case you should push up his legs from time to time with your knee. You should practise this with a friend until you are able to keep it up for a distance of 20 yards.

When struggling

If the victim is not quiet but inclined to panic and struggle, in spite of reassurances, the second method of rescue is used. After turning him on his back as before, you should grasp his arms just above the elbows, your thumbs being uppermost, and pull back his arms so that his upper arms are at about right angles to his body. You should keep your own elbows tucked into your sides whilst towing and your partner's head should rest just below your chin or slightly on one shoulder. When held in this manner, struggling is much easier to control.

If the arms are injured, or are difficult to control or grasp, the third method of rescue is appropriate. Your arms should be passed under the victim's armpits and your hands spread apart and placed on his chest, with your thumbs in the hollow just above the collar-bone. Your arms should then be raised sideways so that the victim's arms are pulled out at right angles, and you should hold him firmly against your chest, swimming the back stroke as before.

Next: The Tired Swimmer and Releases.

Suitable for Beginners

2-TRANSISTOR RADIO

THIS receiver is particularly suitable for beginners, because it can be built without soldering. This point can be quite important with transistors, which may be permanently damaged if the soldering iron is kept in contact with their leads for any length of time. Bolt connections increase the size of the receiver a little, but this extra space makes wiring up much easier. The completed set, with battery, is 2½in. by 5½in. by 1in. deep (plus the projecting tuning knob and switch) so it is small enough to be carried in the pocket.

By F. G. Rayer

The circuit is shown in Fig. 1, and uses two transistors after the diode detector. This type of circuit is one of the most straightforward which can be relied upon to give good results with cheap surplus transistors. It is also easy to build the receiver with one transistor only, if a simpler circuit is wanted.

Reception conditions vary considerably, but some idea of the kind of results to expect will probably be of interest. The circuit is suitable for use with a ferrite rod aerial, a frame aerial, or an indoor or other extended aerial wire, and

the method which is most suitable for the purpose in view can be adopted, without any changes to the receiver circuit itself.

A ferrite rod aerial is some 5ins. to 7ins. or so long, about ½in. to ¾in. in diameter, and has a coil winding on it. Such rods may be purchased ready wound, or for winding. One, with winding, may be seen in the illustration of the panel of the receiver. The ferrite rod aerial has the advantage that the set is very compact. If it is no longer than the panel, the whole receiver will fit in a case 5½ins. long.

Ferrite rod aerials do not provide much signal pick-up, but with this circuit reasonable headphone reception may be expected up to a distance of some thirty miles or so. In areas of good signal strength, the set is then completely portable, for listening to the local station. An indoor or outdoor aerial wire can be joined to the ferrite rod aerial winding, to increase volume or range.

COMPONENTS LIST

- 1 megohm resistor (brown-black-green).
- 6.7K (6,700 ohms) resistor (blue-violet-red).
- 200K (200,000 ohm) resistor (red-black-yellow)
- All ½-watt or similar.
- 0.003µF or 0.005µF solid dielectric tunlag condenser with knob.
- On/off switch with terminals.
- Crystal diode detector.
- One doz. ½in. 8 B.A. bolts, with nuts.
- All above available from Coventry Radio, 189 Dunstable Road, Luton, Beds.
- Two red spot transistors: or one white spot and one red spot.
- Two 8µF or similar transistor coupling condensers.
- Ready-wound ferrite rod (if wanted).
- Henry's Radio, Ltd., 5 Harrow Road, Paddington, W.2.
- Wire for home-wound coil or frame: Post Radio Supplies, 33 Bourne Gardens, London E.4.
- Miniature medium-wave or long-wave dust-cored coils (if wanted):
- Osmer Radio Products Ltd., 418 Brighton Road, South Croydon, Surrey.

A frame aerial gives more volume than the ferrite rod aerial, but needs to

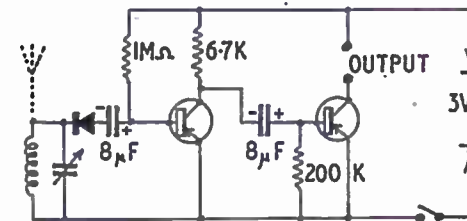


Fig. 1—Receiver circuit

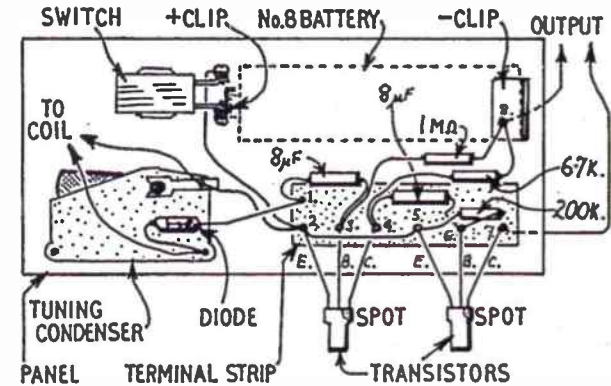


Fig. 2—Receiver wiring plan



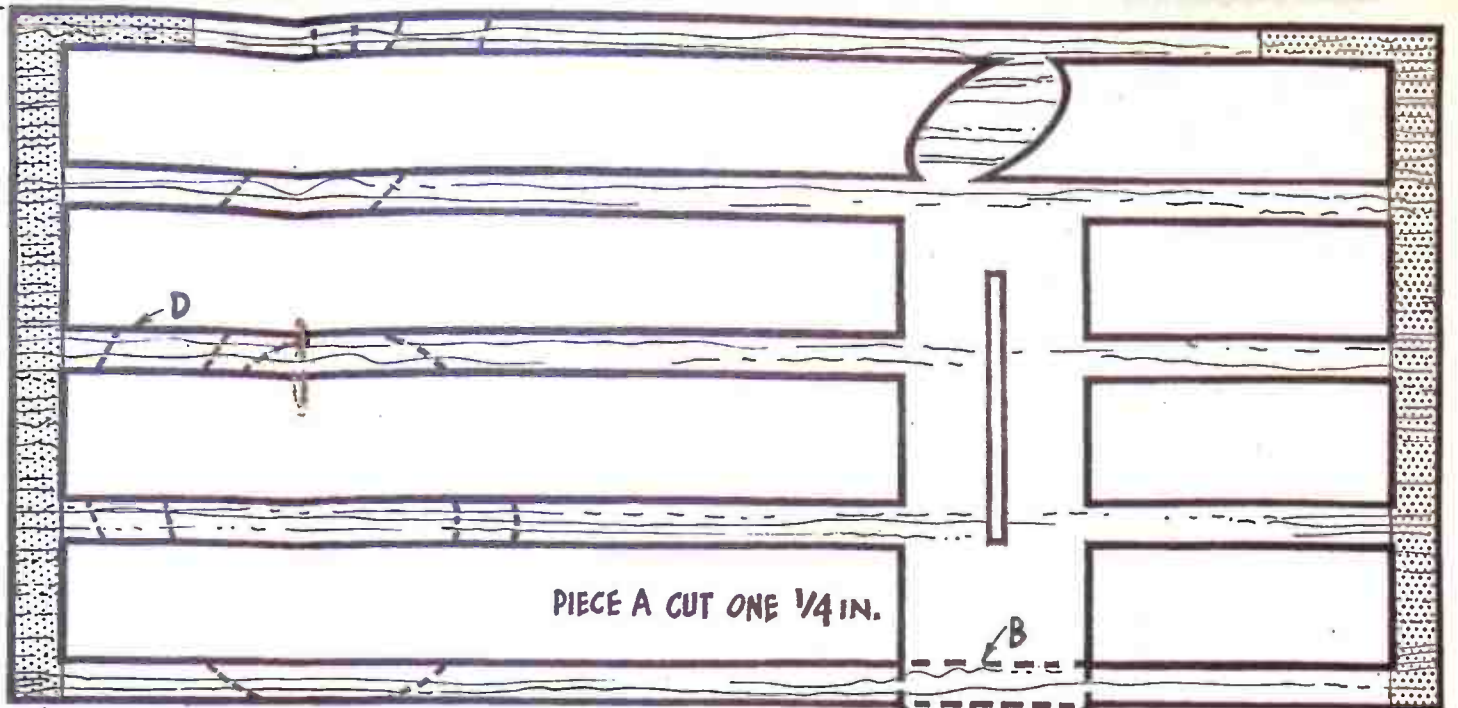
2-Transistor set with ferrite rod aerial

be at least 6ins. long each side for reasonable reception, so that a case 6ins. by 6ins. will be needed. If the frame aerial is larger, volume is improved. With such a frame aerial the set is portable, but not of pocket size. Using a frame aerial about 9ins. along each side, volume was found to be much greater than with the 7in. ferrite rod, and a powerful continental station such as Radio Luxembourg could be received well enough, after dark, for good headphone listening. An indoor or outdoor aerial can be added, as with the ferrite rod aerial, when available.

Best volume of all is obtained with an extended aerial wire.

"MUSICAL MOTIF"
WALL Plant POT HOLDER

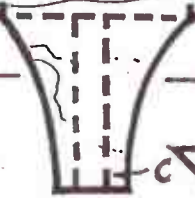
STRIKES A HAPPY
 NOTE IN ANY HOME



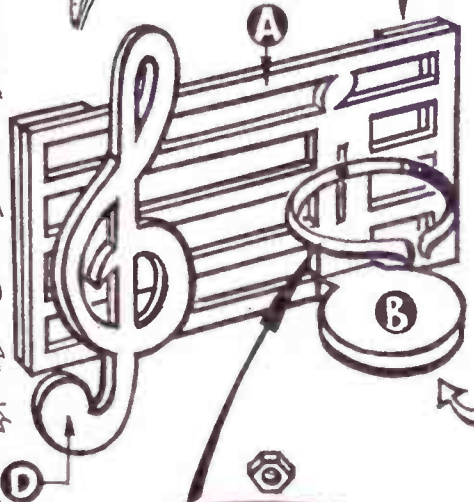
PIECE A CUT ONE 1/4 IN.



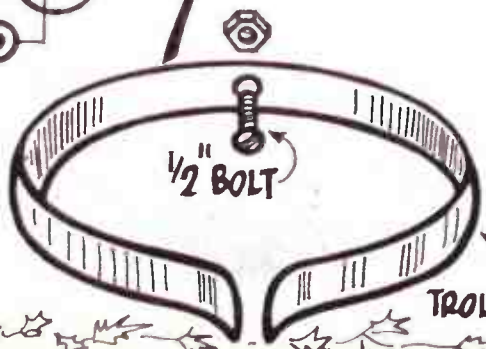
PIECES E SHOWN SHADED
 CUT FROM 1/4 IN. GLUE BEHIND A



★ 1 EVENING PROJECT



BRACKET C
 UNDERNEATH



1/2" BOLT

TROUSERS
 CLIP

CHEMISTRY AT HOME

CRACKED or broken laboratory glassware seldom need be assigned to the dustbin. A little time spent on it will result in repaired apparatus or its conversion into other useful items.

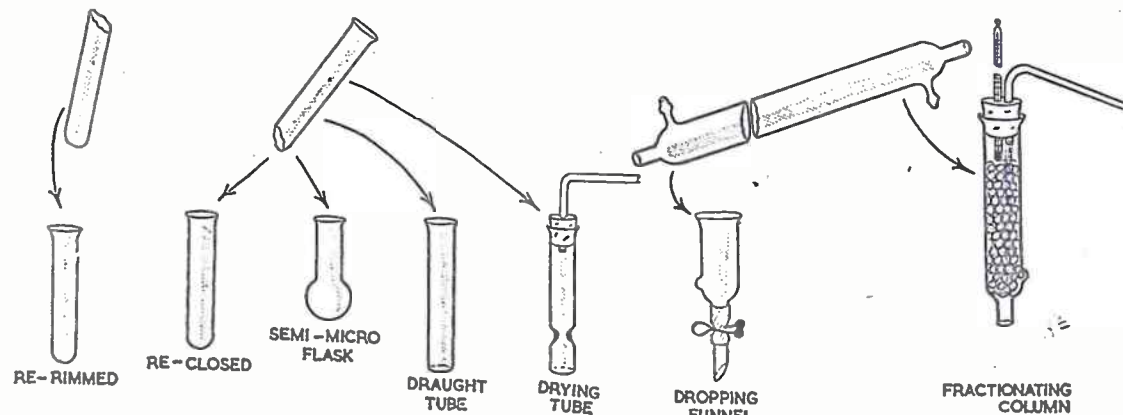
Broken test tubes, for instance, can be repaired or converted into semi-micro flasks, draught tubes or drying tubes. A broken condenser may be turned into a fractionating column or a dropping funnel.

Should a test tube have a broken rim, file a mark right round the tube just below the lowest point of the jagged edge and apply a hot glass rod. The glass will crack right round, the broken rim falling off and leaving an even end. This is now given a rim by heating in the bunsen

To repair a test tube with a broken bottom, hold the broken end in the flame until the glass softens, apply a glass rod similarly heated and continue heating until the two are well attached. Let the glass cool until it is rigid and then heat

REPAIRS TO APPARATUS

the test tube a short distance from the broken end until it is thoroughly soft. Using the glass rod as a handle pull off the end. The tail of glass left on the test tube can be gradually removed by touch-



Repairing or converting broken test tubes

Conversions for a broken condenser jacket

flame until the glass softens, pressing in a corner of a charcoal block and turning tube and block. The glass folds over nicely. Shut off the air supply to the bunsen by closing the air hole and rotate the rimmed end of the tube in the luminous flame until it is blackened by soot. Then slowly raise the tube upward through the flame and out above it until it is a few inches from the tip of the flame. This anneals the rim and renders it less liable to crack by strains in the glass. Stand the test tube to cool with its rim free from contact with any solid body. The soot may then be washed off.

This operation can also be used to re-rim broken flasks and burettes. The annealing should finish all the other operations given in this article.

ing it with the stump and rod and drawing it away a little at a time. When the now closed end of the test tube has assumed a more or less pear-shaped form, continue heating in the flame, revolving slowly and occasionally putting the test tube mouth to your lips and blowing, so as to counteract the sinking-in of the hot end. Gradually the bottom of the tube will become round and well shaped. This heating and blowing also thickens the glass and restores its strength.

If you wish to make a semi-micro flask, continue heating and blowing until a bulb appears. Heat this again so that it begins to collapse, then blow it into shape again. By repeating this several times the bulb wall will thicken

to give it the necessary strength.

A draught tube is easily made by filing a mark all round the tube just above the jagged edge and applying a hot glass rod, when the end will crack off. Fire polish the rough edge by revolving it in the flame until it is smooth. Such a draught tube can be most useful for quickly oxidising small quantities of inorganic substances or for burning off organic matter. The substance is placed in the middle of the tube and the tube clamped in a slightly inclined position. On heating the middle of the tube, hot air rises and passes out of the tube while a fresh supply of air (and hence oxygen) rushes in from the lower end and reacts with the substance. A constant circulation of air over the substance is thus assured. Consequently, the combination with oxygen proceeds more rapidly than by the usual crucible heating.

To make a drying tube for gases, first make a draught tube. Now heat the glass an inch or so from the cut end, revolving constantly. The glass gradually thickens and sinks inward to form a constriction

SHOE-CLEANING BOX

MAKE UP
THIS HANDY
FITMENT
Described
By
S.H.L.

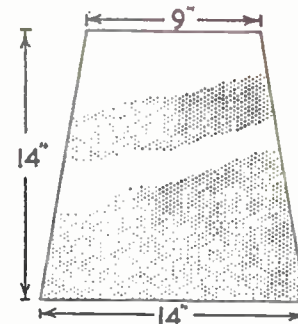
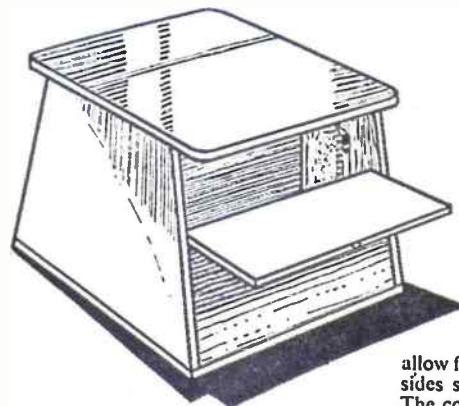


Fig. 1

A SHOE cleaning box which also takes the form of a handy stool is a useful accessory to the home. There are no difficult joints to prepare and the carcass may be constructed from ½ in. material.

You will require two side pieces made from material measuring 14 ins. by 14 ins. and shown in Fig. 1 so that the end grain is at the top and bottom. The box has a central division made from hardboard and you may either make a suitable trench down the centre of both pieces or make a slot by fitting two strips of quarter round section which is glued and pinned. Fig. 2 shows how this may be done.

The bottom, measuring 12 ins. by 14 ins. and the top, measuring 11 ins. by 14 ins., are drilled and countersunk for screwing to the sidepieces, the holes later being filled with plastic wood or putty. Note that the hardboard partition must be slotted into position before fixing on the top. The measurements of the latter

allow for a one-inch overhang on all four sides so as to make lifting quite easy. The corners are rounded and the edges should also be rounded off. The width of the box, on the door side, is 12 ins.

Both the front and rear of the box have small flap doors, and in each case the lower half is a fixture, while the other portion forms the door. Two pieces of wood are required, therefore, and the fixed half will need to be bevelled on the base edge to fit the angle where it meets the floor of the box. The upper half, composing the flap door, must be similarly treated for the top edge, where a ball catch should be fitted.

The lower half of this side should be fixed to the box by means of nails through the sidepieces, the holes being filled with plastic wood after punching in the nails. A pair of hinges fitted to both doors completes the woodwork.

You will require a small screw knob for each door. It is a good idea to furnish the top of the box with a piece of linoleum for durability.

You will find the division helpful in that brown polishes and materials may

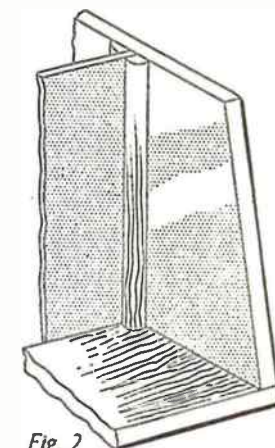


Fig. 2

be kept in a separate compartment from the black. Insert small screw-eyes into the ends of the brushes for hanging on small hooks inside the box.

• Continued from page 208

Chemistry Apparatus Repairs

a hot glass rod so as to make it crack off. Rim and anneal the cut.

The shorter of the two pieces of the jacket may be turned into a dropping funnel for use with liquids which do not affect rubber. The side tube should be sealed off as short as possible by softening the glass in the flame and drawing off with a heated glass rod. The stump of glass tube remaining should be blown slightly so as to prevent collapse by closing one end of jacket section with a finger and blowing into the other.

A short length of glass tubing, one end of which has been ground off at an angle on a well wetted grindstone, is then at-

tached to the narrow end of the jacket section by means of rubber tubing and a Mohr clip put in place.

An alternative to sealing off the side tube is to push on a short length of rubber tubing and to close this with a short glass rod.

The longer end of the broken jacket will serve to make the fractionating column. Seal off the side tube by either of the above methods, though drawing off is to be preferred since many liquids distilled through a column effect rubber. If the rubber tube and glass rod closure is adopted, this should be borne in mind when you are about to use the

column in an experiment.

A small disc of copper or brass gauze, or where the vapours attack these, a few small pieces of scrap glass, will serve to form a support on the narrowed end of the column. The column is then nearly filled with undrilled glass beads (these may be had from laboratory furnishers). Drilled beads may be used, but some loss of liquid will accrue through lodgment in the holes. A cork carrying thermometer and delivery tube is fitted in the wide end and the column is ready for use.

Finally, short 4 in. to 5 in. lengths of glass tubing cutoffs need not be thrown away. By sealing off one end, blowing into shape and rimming the other end, they can be turned into ignition tubes.

Mainly for Modellers

INVARIABLY in our first attempts, and even in some of our later models, we use ready-made materials for our rigging — cord supplied in kits or purchased from a model shop, sewing thread, carpet thread, etc. But as we progress in our ability to model ships and to study the ships themselves, we realise that if our rigging is *not* to scale, no matter how excellent the actual model work, the model looks wrong. It does not satisfy our aesthetic taste because it does not look just quite right.

For models that are intended purely as an ornament for the house, ready-made materials are quite suitable provided we remember that the ratlines and running rigging are made with smaller cords than the shrouds and standing rigging.

A MACHINE FOR MAKING ROPES

By 'Whipstaff'

For such models I use either the Hobbies' rigging cord, dyed black, or heavy carpet thread for the standing rigging and No. 36 strong sewing thread in natural colour for the running rigging.

For miniature models in Hobbies series I use strong black button thread for shrouds and standing rigging and fine sewing thread (natural colour) for the running rigging.

For *scale* miniature work — by this I mean models of under 9ins. in overall length, say of a clipper ship or full rigged ship of any type — I cannot find any more suitable ready-made material than fine nylon fishing line for the standing rigging and nylon surgical thread for the running rigging. Nylon surgical thread can be had in numerous sizes down to a few thousandths of an inch.

Rope used in ships' cordage was made on a rope walk and for scale models we can use this method for making our own cords to scale size.

The most simple rope walk is merely your hand drill. In fact, for twisting wire ropes for scale models of the vessels of the late nineteenth, and twentieth, centuries one needs no more. But when making ships' cord from thread or Sylko the ends must be sealed with a spot of talsa cement otherwise they will untwist before use. In all cases the threads making up the cord must be cut a few inches longer than the required length of finished cord as the twisting together of the threads shortens the length.

For better scale modelling a miniature rope walk can be made. This will enable you to make all your model ropes correctly. These can be made in odd moments and set aside until required. For

making the ropes, fine sewing thread, 'Sylko', artificial silk and anglers' fly silk, and fine nylon thread can all be used.

For making the rope walk we need some gear wheels. Mine came from an old gramophone motor purchased for a couple of shillings. They can also be found in old clocks, or you could purchase Trix or Meccano gear wheels. For the metal worker, the upright plates can be made of metal, for the average model maker they can be made of hardwood. Mine, in the drawings, were made from very hard oak-faced plywood $\frac{1}{2}$ in. thick for the uprights, and $\frac{1}{4}$ in. thick for the bases, the wood 'top' was turned on a Hobbies lathe and grooved with a tenon saw.

The base of the rope walk was a $\frac{1}{2}$ in. plank — an old mantel shelf from a discarded fireplace, 4ft. 6ins. long. But any solid plank of wood, planed perfectly flat, can be used.

The head of the rope-making machine is fitted with three or four hooks, according to whether you will be making the heavier shroud laid ropes in authentic style, in which case a 'top' with four equidistant grooves is required. However, I find that for general modelling to the scales I use — $\frac{1}{2}$ in. to the foot and $\frac{1}{4}$ in. to the foot — the three-hook head is ample.

The tail of the rope walk is not a fixture. It slides along the baseboard as the cord is twisted; the runners are made of brass curtain rail, drilled and pinned to the base, the wood base of the tail being made of the thickness of wood that will allow of a sliding fit.

The tail base must be weighted, in order to keep tension on the cords

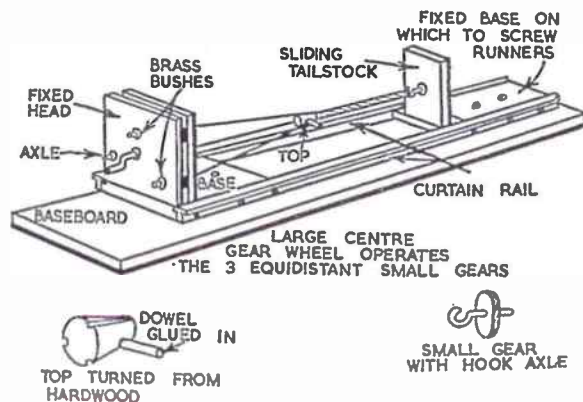
while twisting. This can be any heavy object or you could, as I did, use scrap lead melted and poured into a half-pound coffee or cocoa tin. The tin is first screwed to the base before filling with the molten lead.

The handle of the head, and the three hooks, are part of the axles of the gear wheels, and $\frac{1}{4}$ in. mild steel rod was used. This has a hook formed on the end and is cut off with sufficient shank to form the axle. The bearings are pieces of brass tube. The outside end of each axle can be pinched with pliers to flatten and prevent slip. The sketch shows the general construction of the walk.

To make the rope, fasten three strands, with the twist of each strand the same way, to the three hooks of the head and also to the single hook in the tail. Place the 'top' at the tail end with a thread in each groove. By winding the handle on the outside of the head the threads are twisted to form the rope. The 'top' ensures the thread twists evenly and slides along towards the head as the rope is formed. Again to be safe, if not using the cord immediately, secure each end with a spot of balsa cement.

The heavy ropes, cables, etc., can be made in the same way, but in this case we use not single threads, but threads we have already converted into three-strand rope.

As an example, say, on the *Ark Royal* model, we could use strong natural thread or artificial silk twisted to three-thread cord for running rigging, etc.; these in turn could be used to make our shroud and standing rigging cord, and the latter used to make up heavy anchor cables.



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Cleaning Brass

HAVE you a formula for a substance which will clean brass? It must not be an acid, as it is for cleaning old grandfather clocks. I wish just to dip the parts of the clocks in the substance and then rinse off with petrol. (K.H. — Newbury.)

An effective dip treatment for cleaning such brass parts can be made by shaking salt with vinegar in a bottle until no more will dissolve. Let the surplus salt settle and decant the clear liquid. Degrease the parts first by a petrol treatment and immerse in the cleaning fluid until they brighten. Remove, rinse with water and buff with a cloth. This method, though it is slightly acid from the vinegar, is so gentle that it eliminates the disadvantages of the customary treatment with the strong acids. You could treat badly corroded spots with another simple product. Dissolve 8 grams of soap in 80 c.c. of hot water, allow to cool, stir in 1 c.c. of ammonia of specific gravity 0.88 (obtainable from a dispensing chemist), pour into a bottle containing 16 grams of precipitated chalk and shake. Shake the mixture before use. It is used in the same way as the proprietary metal polishes and is gentle but effective.

Portable Reception

I RECENTLY constructed the 'Portable All-Dry Two' but up to now have had no success with it. I cannot get any volume at all, only a whistling sound. I have had the valves tested and O.K.'d, I retraced all the wiring from the plan, but to no avail. Could you please advise me what the trouble seems to be? (A.J. — Sheffield.)

THE circuit is in order and should be satisfactory. Possible causes of poor volume are as follows:—wrong resistor values due to wrong reading of the colour code, especially regarding the number of noughts; wrongly wired output transformer, or transformer and speaker not intended for use together. Reversed connections to reaction coil tags. Defective fixed condenser or other parts, or leaky coupling condenser. If all these points are in order, a better aerial may be required in your area. An aerial inside a building with metal fabric is not satisfactory. If you have phones, connect them from detector anode to H.T. positive. If normal

1-valve results are obtained, the tuned circuit detector and associated parts and wiring are correct, and the output stage (1S4), transformer and speaker must be suspected. With the transformer, the stout, low-resistance winding must be taken to the speaker. If, however, the above test does not give good phone reception, then coil, tuning condenser, wavechange switch and associated detector wiring should be checked.

Guitar Amplification

COULD you please send me details for making an electric pick-up for a guitar using throat microphones? (S.O. — Bedworth.)

A SINGLE microphone unit, mounted on or under the soundboard, should be satisfactory, the best position being found by trial. The microphones mentioned are usually carbon units, and require a 50:1 or similar microphone step-up transformer, and dry battery of about 3V. to 6V., the best voltage being found by trial. Connect the microphone to the primary of the transformer, with the battery in one lead. The transformer

secondary is wired to the input or pick-up sockets of a radio or amplifier. Disconnect the battery when the equipment is not in use, or fit a switch in one battery lead. Keep the microphone at some distance from the loudspeaker of the radio or amplifier, or howling may arise.

A Radio Wavetrap

I BELIEVE there is a device which can be added to a crystal set so as to tune out an unwanted station. I should be glad if you could send me details of how I can make one. (C.W. — Epping.)

A TROUBLESOME local station may be reduced in volume or cut out by using a wavetrap. This consists of a coil and variable or pre-set condenser wired in parallel and connected in the aerial

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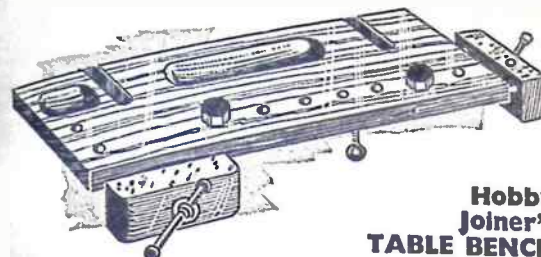
lead to the receiver. For the medium waveband use a medium wave coil; or 90 turns of 30 S.W.G. or similar wire on a 1in. diameter former will suffice. A .0005μF condenser is usual, but a smaller capacity will do for stations of low wavelength. Carefully adjust the condenser for minimum volume from the offending station.

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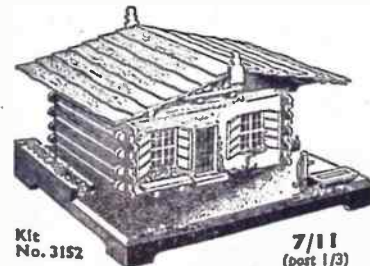


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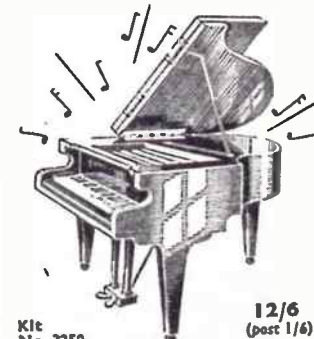
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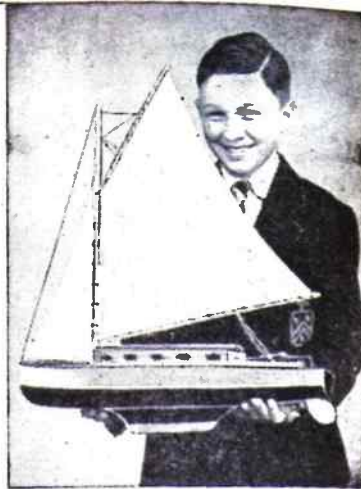
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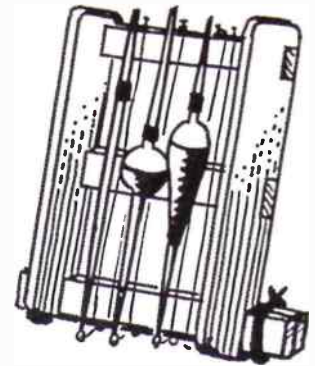
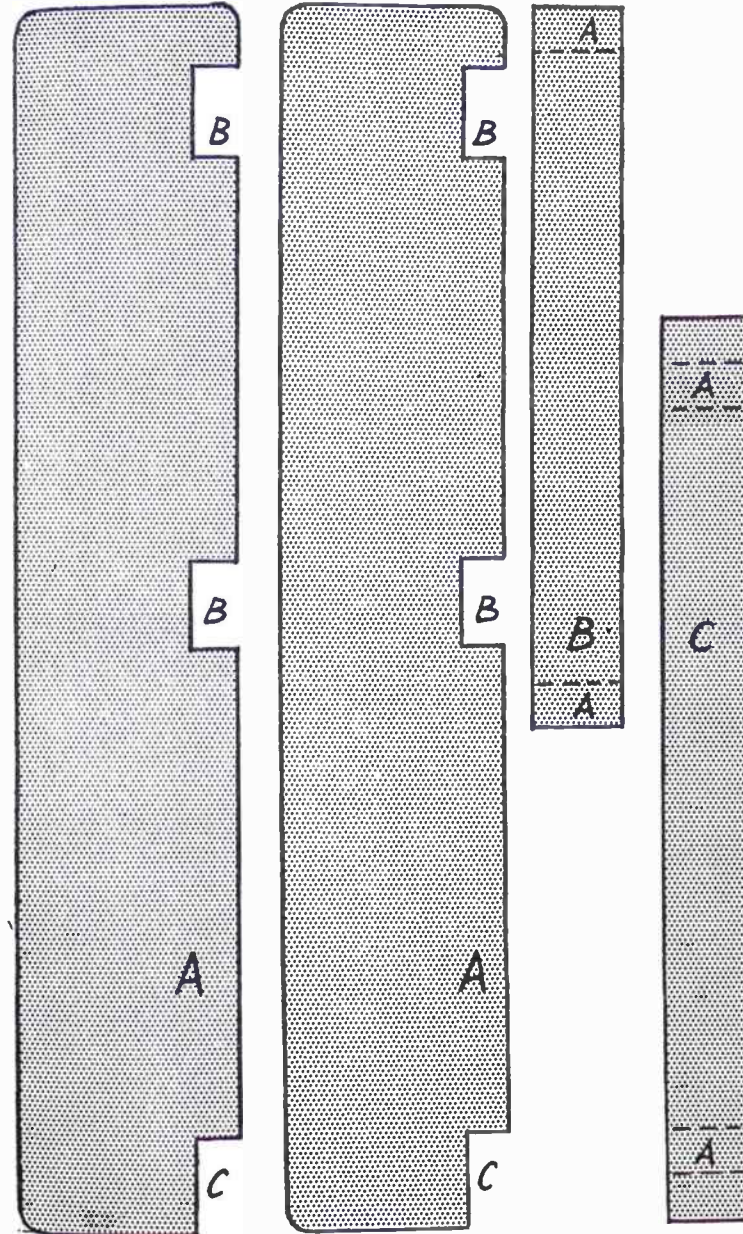
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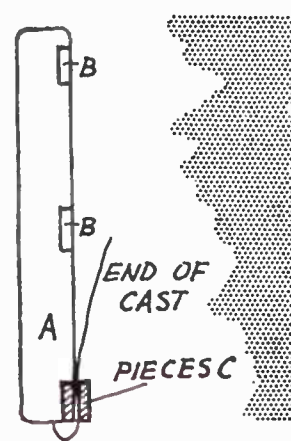
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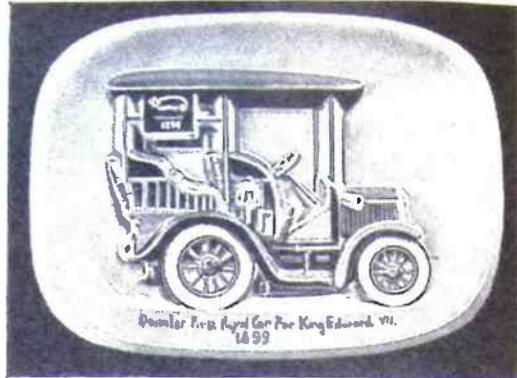
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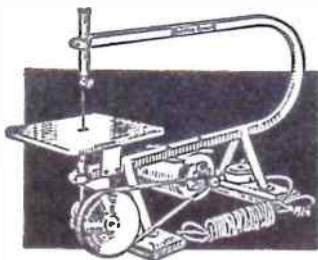
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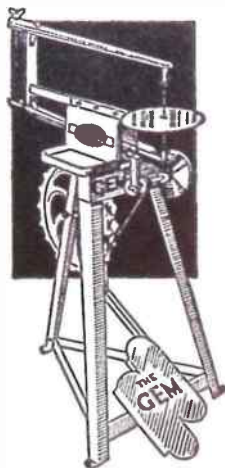


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