

HOBBIES WEEKLY

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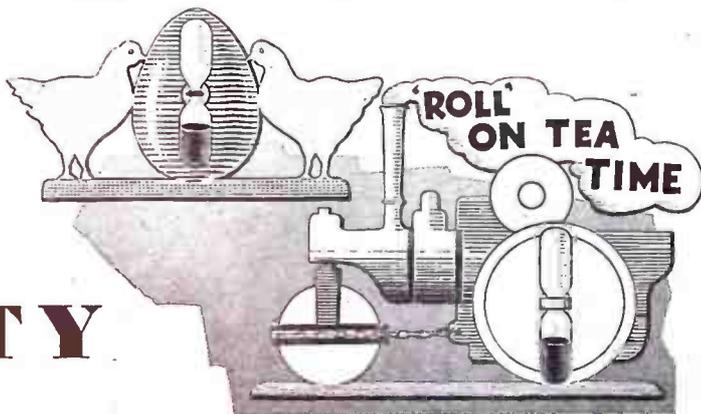
NUMBER 3176

A Wonderful Opportunity for all Fretworkers!

Prizes worth over
£200 in our free
competition

Design inside for

NOVELTY



FOR Hobbies 1957 Fretwork Competition, in which prizes worth over £200 will again be awarded, it has been decided to give two designs on the same theme, which is for novel egg timers.

For the Open Section competitors will work on Design 'A', and the Juniors on Design 'B'. It will be appreciated that Design 'A' needs much more expert fret-cutting, while Design 'B' could easily be accomplished by any of our younger fretworkers. It has been thought on previous occasions that probably the design was a bit too complicated for youngsters just starting out on this rewarding hobby, and it is for this reason

EGG TIMERS

that they have been given an easier design. So on this occasion we look forward to receiving numerous entries from them, particularly as the cost of the kit which applies in their case has been made so reasonable.

All have a chance to win some of the excellent prizes which are offered by Hobbies Ltd. Vouchers will be awarded ranging from 15 guineas downwards, and with these the winners can obtain

any of Hobbies' goods listed in their catalogue. By this means, any success should enable fretworkers to increase their store of tools, etc. and enable them to enjoy much more their favourite hobby. Designs and kits are also available under this scheme.

The Open Section and the Junior Section for those under 16 years of age, will, of course, be judged independently.

All correspondence should be addressed to The Editor, Hobbies Weekly, Dereham, Norfolk

For Modellers, Fretworkers
and Home Craftsmen

4½^D

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It must be specifically understood, however, that entries in the Junior Section must have been made by those under 16 years of age, and the receipt of an entry will be taken as a guarantee that this is so.

The project chosen for this competition should be a very popular one as it involves something which is needed in every kitchen. For the seniors the motif for the egg timer is a steam roller, and the juniors have to cut out a design including chickens and an egg. These we suggest, would make excellent gifts at



J. Burbeck, winner, 1955 and 1956

any time of the year. The timers have a strut at the back and it is intended that they should be stood on a shelf, etc. Kit No. 3176 which is obtainable from Hobbies Ltd., Dereham, Norfolk, contains all the requirements for making up the two designs detailed on the design sheet — that is, all the wood, two sand-glasses and thonging, etc., for the two designs.

DOUBLE KIT 5/10

Kit No. 3176 contains all wood, sand-glasses and fittings for making the TWO DESIGNS. Obtainable from branches &c., or post free from Hobbies Ltd, Dereham, Norfolk

However, to make it cheaper for juniors to enter this competition, one G4 panel, thonging and a sand-glass can be supplied at a cost of only 2/-. Similarly, if seniors require only the kit for their section of the competition, the items as detailed on the design sheet can be obtained separately.

Competitors will realise that the main accent in the judging of this competition will be on the fretcutting. Clean and symmetrical lines will be particularly looked for. These are projects which will probably lend themselves better to painting as a finish, and it must be

Who will be the Champion?

MR. J. BURBECK of Bromyard, Herefordshire has won the Hobbies Fretwork Competition for the past two years. With these successes have gone prizes worth 15 guineas, a Silver Challenge Cup and replica.

This new competition gives fretworkers the chance to knock Mr. Burbeck 'off his perch' and claim for themselves the title of 'champion fretcutter'. Mr. Burbeck has entered immaculate subjects in the two previous years, but we have no doubt that even his efforts can be surpassed by others.

So go to it and try to have your name engraved on the Silver Challenge Cup for 1957. Entry is free and there is such a lot to be gained.



R. M. Edwards, 2nd 1956

emphasized that in doing this the fretcutting must not be obscured in any way. In cases where fretcutting is of

equal merit, the choice will be given to the entry with the better finish.

In previous years, entries have been damaged because the packing has not been done too carefully. In this instance no special cartons will be provided, but competitors should ensure that their entry is securely packed. We suggest that newspapers should be crumpled up and packed tightly round and over the sand-glasses and then the whole assembly covered in thick card to ensure its safe arrival at the competition headquarters. To facilitate packing, an



Sherrard Hamilton, 3rd 1956

amendment is also permissible in the making of the strut. The instructions state that this should be glued on to the back of the egg timer, but for competition purposes this can be hinged to enable the parcel to be packed flat. A piece of tape or metal hinges can be used as desired.

Read the rules carefully on page 371, and make sure that all details as given in Rule 5 are complied with.

Instructions for making

The make up of the two designs is detailed separately.

SENIOR DESIGN 'A'

Trace the parts on to their appropriate thicknesses of wood and cut out with a fretsaw. To the main back, piece 1, glue pieces 2 to 7 inclusive in their positions shown by the dotted lines on the design sheet. Pieces 7 should be rounded before fixing to suggest the contour of the boiler. The wording, cut from 1/4 in. wood and thoroughly cleaned up, can now be glued in place.

The main wheel on which the egg timer rotates is made up by gluing together pieces 8 and 9. It will be seen from the diagram on the design sheet that the sand-glass is held in place by piece 10, which is later glued on to the slots provided on the wheel.

Before fixing this wheel section, how-

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ever, it is necessary to glue the strut on the back immediately behind the wheel and paint the assembly thus far, according to taste.

When dry, screw the wheel in position. The egg timer is inserted into piece 10, which can now be glued into the wheel slots. The sand-glass is, of course, set in position by a turn of the wheel.

JUNIOR DESIGN 'B'

Trace and cut out pieces 13, 14, 15 and 16. Glue piece 16 to piece 15 as indicated by the dotted lines on the design sheet. Piece 16 should be small enough to revolve freely in the main piece 13.

The strut piece 14 can now be added and the assembly painted according to taste, before adding the sand-glass. This is attached to the stand by a piece of plastic thonging, as shown on the design sheet.

1957 COMPETITION PRIZES

OPEN SECTION	
1st Prize	Voucher for £15 15 0
2nd Prize	" £12 12 0
3rd Prize	" £10 10 0
4th Prize	" £7 7 0
5th Prize	" £5 5 0
6th Prize	" £4 4 0
7th Prize	" £3 3 0
8th, 9th and 10th Prizes	" £2 2 0
11th and 12th Prizes	" £1 10 6

JUNIOR SECTION (Open to those under 16 years of age)	
1st Prize	Voucher for £12 12 0
2nd Prize	" £7 7 0
3rd Prize	" £5 5 0
4th Prize	" £3 3 0
5th, 6th and 7th Prizes	" £2 2 0
8th, 9th and 10th Prizes	" £1 10 6

Vouchers for £1 will be awarded for the next 48 best entries

In addition, dozens of other valuable prizes and Certificates of Merit will be awarded. Winners of the vouchers may choose any Hobbies goods to the value of the prizes won

RULES

- All entries must be made from Hobbies Design No. 3176, presented free with this issue of *Hobbies Weekly*.
- Points will be awarded for the quality of the fretcutting, plus the excellence of the finish (painting, staining, etc.)
- An entry must be the unaided effort of the competitor. This rule must be strictly adhered to.
- Entries must be sent to the Competition Dept., Hobbies Ltd., Dereham, Norfolk, to reach there not later than April 30th, 1957.
- A label bearing the name and address of the competitor, age, and Section of the Competition for which the entry is to be judged, must be firmly stuck behind the entry. Competitors who wish their entries returned must include a 1/- P.O. to cover cost of repacking and postage.
- Because of Customs restrictions, etc., entries are confined to those from Great Britain and Northern Ireland.
- Prizewinners will be notified by June 30th, 1957, and details will also be given in *Hobbies Weekly*.
- Hobbies Ltd. cannot accept responsibility for any loss or damage to entries, but all reasonable care will be taken with them.
- The judges' decisions are final, and no correspondence can be entered into.

A PUZZLE BOX

YOU can show this little box to your friends, explaining that it is your 'pocket safe'. Unless they know the trick, they will be completely foxed as to how it can be opened. Swinging the lid to one side merely exposes a solid second lid. In one position of the top lid, however, the second lid is freed so that it can be slid back away from the key and then turned sideways to open the box.

The three basic parts are shown in the diagram. The base (C) should be about 1/4 in. thick, hollowed out. The second lid (B) and the top lid (A) can be made from 1/4 in. thick material. All are cut to the same size — e.g., 5 in. by 2 1/2 in.

The base is fitted with a small hardwood key, glued into a slot. The (B) lid is notched to fit over this key and rest flush against the base. The top lid (A) is quite plain. Make and clamp all three parts together and drill for the fixing screw which hinges them together in the final assembly.

Piece (B) now needs some further treatment. A circular arc cut-out is made about 1/4 in. radius from the pivot hole. Cut this out accurately with a fretsaw to just take a 1/4 in. dowel. About half way to one side of the cut-out, open up a horizontal slot the same

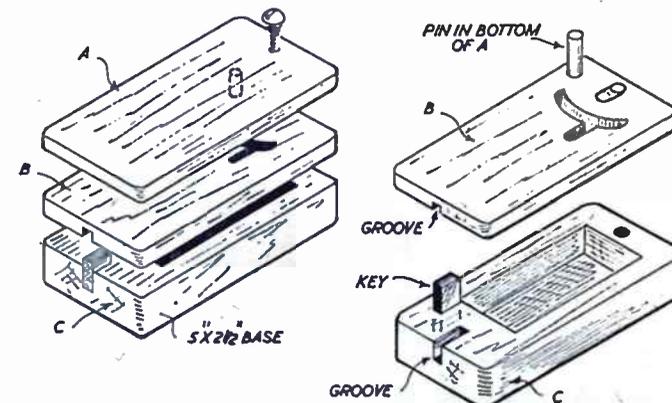
length as the key. Now open up the pivot hole into a slot of similar length.

Assemble (B) and (C) temporarily with the pivot screw and check that by holding a dowel centrally in the cut-out, rotating (B) so that the dowel comes opposite the straight slot enables (B) to be slid back just sufficiently for the groove in (B) to disengage the key in (C).

Take (B) and (C) apart and clamp (A) and (B) together. Mark the cut-out

position on to (A), remove (A) and drill with a blind hole just under 1/4 in. diameter in the centre of the marked arc. Into this hole glue a short length of 1/4 in. dowel, leaving just 1/4 in. protruding. Now assemble all three parts permanently with the pivot screw and check that the action works smoothly.

To make the puzzle box 'foolproof' it is necessary to limit the opening movement of the top lid (A) so that the cut-out is never visible. This is simply a matter of arranging the length of the cut-out to suit. Make it as long as you can without exposing the end. (R.H.W.)



Potassium Chromate Experiments

LIKE most chromates, potassium chromate is brilliantly coloured. Its intense yellow crystals are one of chemistry's beauty spots. This strength of colour is remarkably confirmed by its solution. Whereas many coloured solutions quickly pale on dilution, potassium chromate retains its colour to extreme dilution. Even one part in 400,000 parts of water still gives a distinct yellow shade. Drop a tiny speck in a large bottle of water and shake it. The water is brightly yellowed. In its tinctorial strength it rivals dyes, though it is not a dye.

7.77 grams of potassium chromate, then 15 c.c. of cold water and shake until the salt has dissolved. Clamp the flask so that it is partially immersed in cold water — which can be contained in a large tin. Over the flask mouth clamp a burette containing some strong sulphuric acid (Fig. 2).

Take great care when pouring the acid into the burette. Pour the acid into it by means of a funnel. To pour it straight into the narrow burette mouth might cause some to run down the outside on to your hands. Any acid coming in contact with the skin should

to prepare. Dissolve 5.55 grams of calcium chloride in 10 c.c. of water and 11.64 grams of potassium chromate in 25 c.c. of water. Mix the solutions in a 100 c.c. beaker and let the whole stand undisturbed. Magnificent small golden prisms separate, grouping together in rosettes. This is a lovely sight and the experiment is well worth doing just to see this phenomenon. After standing overnight pour out the mother liquor, rinse the crystals with a few c.c. of water and then dry them on a porous brick.

Golden prisms

If you vary this experiment by dissolving the calcium chloride in 20 c.c. of water and the potassium chromate in 35 c.c., mixing and allowing to evaporate spontaneously in an evaporating basin you will obtain long golden prisms, many as long as 1 in.

A curious reaction is that between potassium chromate and copper sulphate solutions. Different new compounds result according to whether the solutions are hot or cold. First try out the experiment cold. Dissolve 15 grams of copper sulphate in 50 c.c. of hot water and let it grow cold. Stir this into a solution of 12 grams of potassium chromate in 50 c.c. of cold water. A golden brown precipitate forms. Filter this off and purify it by washing it on the filter with cold water until one wash-water gives no turbidity with strontium nitrate. Open out the filter paper on a porous brick, so that the substance may dry. It is basic copper potassium chromate.

Another experiment

Now repeat the experiment, but boil the solutions of copper sulphate and potassium chromate before you mix them. Again there is a precipitate, but this time it is darker. Filter it off, purify it and dry it as in the last experiment. This brown powder is basic copper chromate. Note the absence of potassium.

These two compounds deserve a place in your specimen collection as an example of how identical quantities of two substances may give very different results when the conditions of the experiment are varied.

We have seen that chromium is amphoteric. Now what happens when we mix solutions containing chromium acting as a base and as an acid. In other words, a chromium salt and a chromate. In potassium chromate we have three elements, potassium acting as a base, and chromium and oxygen acting as an acid radical. Curious as it may seem, a

Continued on page 373

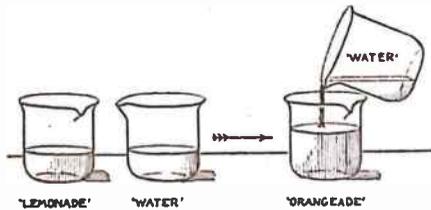


Fig. 1—Changing 'lemonade' to 'orangeade'

As its name indicates, it contains chromium, not as a salt-forming base as one would expect of a metal, but in an acid capacity. Such a metal which can act both as acid and base is called amphoteric. Aluminium, zinc and tin have this property, too.

When chromium acts as a base its salts are usually green, but when we find it acting an acid role its compounds are mainly yellow, orange or red.

A conjuring trick

For our first experiment with potassium chromate we can see how its close relation and important laboratory reagent potassium dichromate may be prepared from it. This lends itself to a good conjuring trick, too, so let us start with that. You are going to change 'lemonade' into 'orangeade' simply by adding 'water' to it!

Take two beakers. Into one pour some potassium chromate solution. Into the second some dilute hydrochloric or sulphuric acid. The first looks like lemonade and the second like water. Now add the acid to the potassium chromate solution (Fig. 1). The yellow at once gives place to a full orange. Needless to say, none must be tasted.

What has happened here is that the acid has removed part of the potassium from the chromate and formed the dichromate, whose solution is orange. By working to definite proportions, potassium dichromate can easily be isolated. Into a small conical flask put

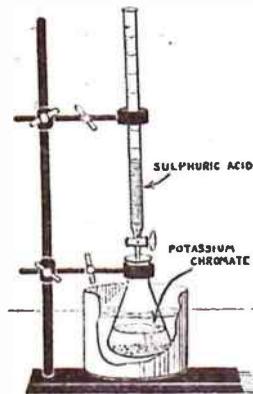


Fig. 2—Making potassium dichromate

be flushed off with plenty of water and a thin paste of sodium bicarbonate (baking soda) and water rubbed on.

A few drops at a time, run 2.5 c.c. of the acid into the potassium chromate solution. Feel the flask between each addition. If it grows warm, leave it until it has cooled again by contact with the external water. A brilliant orange microcrystalline precipitate of potassium dichromate appears in the liquid.

Stand and filter

Let it stand an hour or so. Then filter it off. Any solid dichromate remaining in the flask can be swilled out into the filter by using the filtrate. Allow the filter paper and dichromate to dry on a clean porous brick. This must now be purified by dissolving it in 10 c.c. of hot water. On cooling and standing overnight most of the potassium dichromate separates out. Dry the whole as before on a brick and then transfer the compound to a specimen tube.

A beautifully crystalline double chromate of calcium and potassium is easy

An attractive project

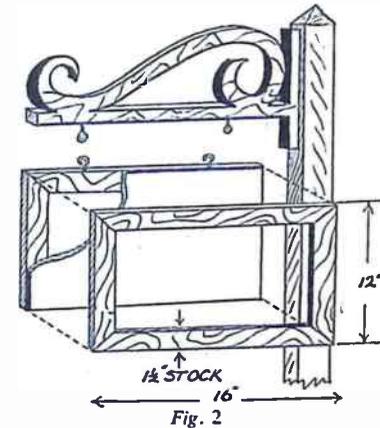
GATE-POST SIGN FOR YOUR HOME

GATE-POST signs are a rarity in towns. Country folk know the value of these rustic gate signs, and in travelling through the countryside one becomes aware of the many types of design which go to brighten up the roadside. There can be little doubt that they add a touch of charm and individuality to a home.

For the fretworker

In the illustration a simple type of construction for a gate-post sign is shown. If the reader is an expert fretworker he will have little trouble in designing a supporting cross-piece for the name board. However, for the less

gifted, a supporting cross-piece has been designed which will be easy to draw up from the squared diagram in Fig. 1.



Continued from page 372

Home Chemistry

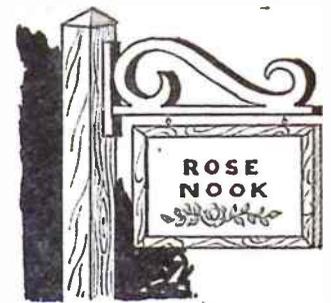
chromium salt and a chromate form chromium chromate. Thus, in the same molecule we have part of the chromium acting as a base and the rest of the chromium with the oxygen acting as an acid radical. Because only chromium and oxygen are contained in it, this chromium chromate is sometimes called chromium dioxide.

To make a specimen, dissolve 10 grams of chrome alum in 80 c.c. of cold water (the solid will dissolve easily if you grind it with portions of the water) and 10.7 grams of potassium chromate in 100 c.c. of cold water. Mix the solutions. The liquid darkens to brown and soon a brown precipitate of chromium chromate forms. After the liquid has stood overnight, filter off the substance and wash it on the filter until the wash waters, at first yellow, become nearly colourless. Then dry in the oven.

Let us finish off with a peep at the various yellow and red chromates. Into separate test tubes pour a little of solutions of silver nitrate, lead acetate, barium chloride and mercurous nitrate.

All these are poisonous in some degree, the barium and mercurous salts being particularly so. To each add some potassium chromate solution. A brilliant colour display results with the formation of precipitates of red silver chromate, yellow lead chromate, pale yellow barium chromate and orange-red mercurous chromate.

If you want another conjuring trick for your repertoire, you can turn 'lemonade' into 'mustard' by adding 'water'! Simply add lead acetate solution ('water') to potassium chromate solution ('lemonade'). The 'mustard' is poisonous, so wash it down the sink when you have done the trick. (L.A.F.)



By J. MacIntyre

Choice of lettering

The post is made from 3 in. square timber and the length should be cut to individual requirements. As will be seen from Fig. 2 the nameplate board is sandwiched between two frames, these having been made first. If you do not possess the ability to letter your own nameplate it might be worth spending a few shillings to have a professional job done. Any sign-writer will be glad to oblige, and you will have the choice of different types of lettering.

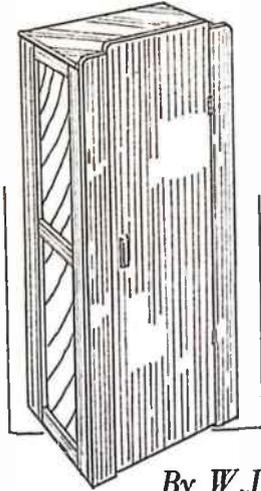
When all parts have been made, rub well down with glasspaper and assemble. The completed sign should be treated with two coats of wood preservative before fixing in position.



Fig. 1



A JUNIOR WARDROBE



By W.J.E.

THIS is an article of furniture which will please the youngsters. The construction is specially simplified to suit the home woodworker and can be undertaken with confidence.

The sides of the wardrobe, Fig. 1, are made up of frames of wood, jointed at the corners with a common halved joint familiar to all woodworkers. The cross rail is notched in 1/2 in. deep, as in inset, and there nailed. Take pains to get the frames square at the corners, it will save trouble later. Glue and nail the joints, then, when the glue is set hard make the whole surface level all over, and cover with 1/2 in. plywood, glued and nailed on with panel pins with the plywood a shade on the full size. Trim all surplus level with the edges of the frames afterwards.

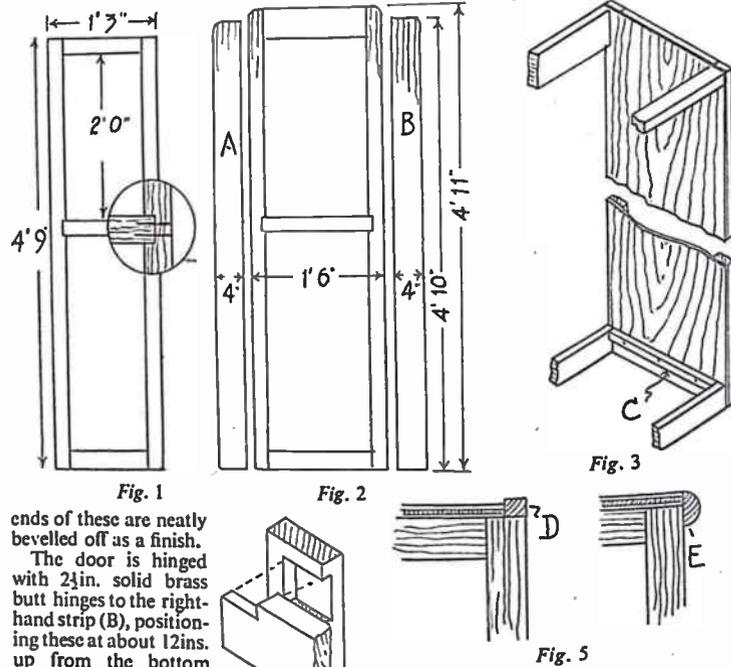
Fig. 2 shows the door, and side strips (A) and (B). These latter strips are cut from 1/2 in. wood to the length given, the outer top corners being neatly rounded off. Frame up the door, as the sides, but use a stop half lap joint as in detail Fig. 4, to avoid the cut end edges showing when the door is opened. Note that the top cross rail is 4 ins. wide, not the 2 ins. employed for the rest of the framing. Level off as before, and cover with 1/2 in. plywood. This should be glued to the outer face of the framing, not the inner face as done for the sides.

Fig. 3 shows the construction of the carcass. Join the sides of the wardrobe with cross bars, the top back one of 4 in. wood, the remainder of 2 in. wide stuff. Note that the top front bar is positioned

across with its broad side horizontal, the remainder vertically. Use 2 1/2 in. oval nails for nailing, and punch the heads down just below the surface. At the bottom, between the bars, nail a 1 in. square fillet across each side, as at (C), the top edges of these being level with those of the rails. Now nail a bottom of plywood to these, and on top of the carcass a cover, also of plywood, this extending beyond the back a distance of 1/2 in. to hide the plywood back of the wardrobe.

A few feet of 1/2 in. stripwood will now be needed. This is nailed to the rear edges of the sides, as in horizontal section at (D), in Fig. 5. Cut the plywood for the back of the wardrobe to fit between strips (D), as in detail sketch. At the top of the side nail half-round moulding to hide the edges of the plywood top, as detailed at (E). The front

CUTTING LIST			
Side frames	4	4ft. 9ins. by 2ins. by 1/2 in.	
Side frames	6	1ft. 3ins. by 2ins. by 1/2 in.	
Door frame	2	4ft. 11ins. by 2ins. by 1/2 in.	
Door frame	2	1ft. 6ins. by 2ins. by 1/2 in.	
Door frame	1	1ft. 6ins. by 4ins. by 1/2 in.	
Strips A and B	4	4ft. 10ins. by 4ins. by 1/2 in.	
Cross-bars	3	2ft. 0 1/2 in. by 2ins. by 1 in.	
Cross-bars	1	2ft. 0 1/2 in. by 4ins. by 1 in.	
Plywood Panels, 1/2 in. thick			
Top		2ft. 2ins. by 1ft. 3 1/2 ins.	
Bottom		2ft. 0 1/2 in. by 1ft. 3 ins.	
Sides	2	4ft. 9ins. by 1ft. 3 ins.	
Door		4ft. 11ins. by 1ft. 6 ins.	
Back		4ft. 9ins. by 2ft. 1 1/2 ins.	
		1/2 in. by 1/2 in. stripwood	10ft. run
		1/2 in. half-round moulding	2ft. 6ins.
FITTINGS			
1 pair 2 1/2 in. solid brass butt hinges, and door handle and catch. Several large-size cupboard books			

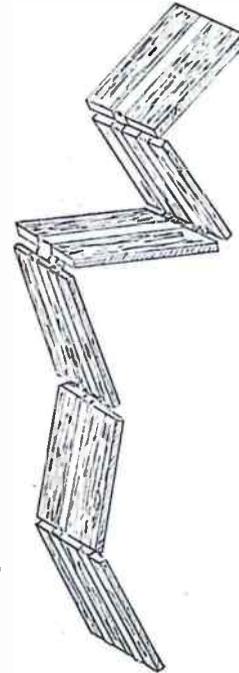


ends of these are neatly bevelled off as a finish.

The door is hinged with 2 1/2 in. solid brass butt hinges to the right-hand strip (B), positioning these at about 12 ins. up from the bottom and 13 ins. down from the top. Recess the hinges in both door and strip (B). Now nail (B) to the wardrobe front, and strip (A) to the left side, a slight gap being allowed between it and door to permit the door opening easily. Fit a suitable catch or handle to the door, and inside the wardrobe a few hooks for hanging clothes.

Give the whole a thorough glass-papering all over, inside and out, then stain and varnish as preferred. A useful addition will be four small blocks of wood underneath the wardrobe to act as feet, otherwise the door will scrape the carpet as it is opened, though this can be avoided by positioning the door 1/2 in. above the bottom of strips (A) and (B).

THE TUMBLING BLOCKS



You will need some ordinary cotton tape as used for sewing purposes, and strong glue, cutting off strips long enough to fit lengthways of the blocks and allowing for overlapping at each end. In gluing these tapes, it should be noted that the system involves two separate series, as shown in Figs. 1 and

tape joining the blocks together. Commence fixing the tapes of series 1. A piece of tape is taken, the block smeared with a little glue and the tape attached to number 1 block. Place number 2 block in position, pull the tape taut underneath, but not too tight to prevent free hinging, gluing to the lower end of the

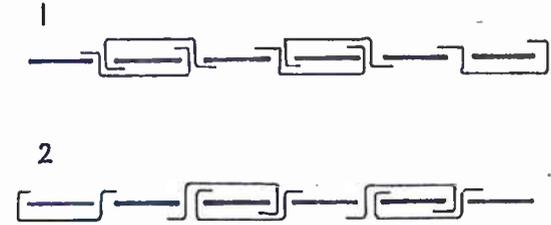


Fig. 1

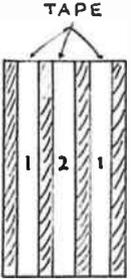


Fig. 2

second block. The first single tape of series 2 may now be fitted, noting that this takes up the central position. If the two diagrams are carefully examined, there should be no difficulty in stringing together the whole of the six blocks, but for clarification Fig. 3 may be helpful. Here the two blocks have been shown pulled apart slightly, showing how the tapes are attached. (S.H.L.)

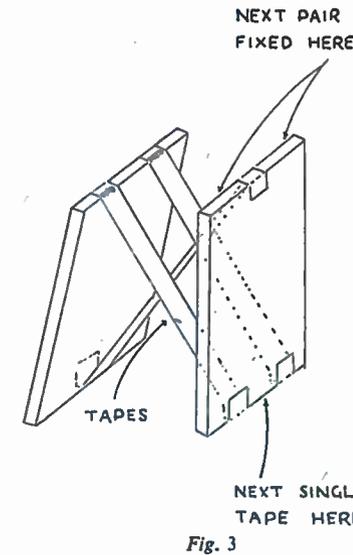


Fig. 3

THIS simple, yet fascinating toy can be made from odd pieces of plywood and a few lengths of tape. The blocks fall continually from the top when held in the hand and on coming into contact with each other, make a rhythmic clapping sound. This is due to the ingenious arrangement of fastening the blocks together, forming quite a puzzle for children. On opening the blocks in book form, there appear two tapes on one block, with one on another, but on folding again they appear reversed, although still fastened to the blocks.

Six pieces of plywood, 1/2 in. thick, are required, measuring 3 1/2 ins. by 2 1/2 ins. These can be quickly cut up, and several sets may be cut out at the same time if required. All edges must be smoothed off with glasspaper, leaving them nicely rounded. They should then be painted in bright colours, say, red, yellow, blue, green, orange and pink, using any surplus paint you may have, but preferably of the gloss variety. This completed, we may turn to the task of fastening the blocks together.

2. The first series marked 1 on the diagram is a double one, the same method of stringing being followed while using two tapes, each being attached near the outside edges of the blocks. The other series, marked as 2 involves a single tape series attached centrally. This is clearly shown in Fig. 2. The precise method of stringing together is shown for each of these two series in Fig. 1, where the thick lines represent the blocks and the thinner ones the pieces of

Tinny Tips

LARGE treacle tins if painted inside and out with enamel make pretty covers for small flower-pots. Dull red harmonises with most pot plants, and looks well on a white tablecloth. However, the choice of colour depends on the surroundings.

Treated in like manner flat-sided quarter-pound mustard tins can be used as vases to hold small flowers. First make sure they are water-tight.

For ferns or drooping foliage plants, a suitably sized tin covered with glue and rolled in chips of broken cork is recommended. A flower-holder treated similarly with whole rice adds beauty to any room.

Bottles containing oily liquids, particularly medicines, often leave unpleasant marks on shelves, etc. Tin lids make ideal trays on which to place these. The tin itself may also be used to conceal the bottle.

Discarded baby and talcum powder tins make useful hat-pin containers.

CABINET FOR A 5-VALVER

ONCE the five-valve mains set, described in previous issues has been built, there still remains the task of housing the completed chassis.

In order to conform with the emphasis on economy which distinguished the set itself, it is necessary to make the cabinet similarly cheap. Yet, despite its cheapness, the cabinet described here is quite presentable in appearance.

The average reader will almost certainly have enough wood to construct the cabinet. The main structure of the cabinet can consist of any common wood, as it is not seen, owing to the fact that it is covered by the outer facing of veneer.

Described by
A. Fraser

the narrow outer part of the front is $\frac{1}{2}$ in. wide. The bottom part is $2\frac{1}{2}$ ins. deep.

The cut out for the dial aperture should be centrally placed, slightly higher up than half-way, as seen in the illustration of the cabinet. It should be $1\frac{1}{2}$ ins. deep by $5\frac{1}{2}$ ins. long.

Both the dial cut-out and the upper loudspeaker cut-out can be executed with a fretsaw. Holes of $\frac{1}{8}$ in. diameter

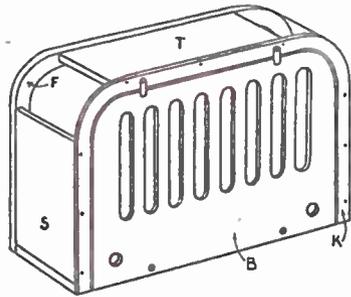


Fig. 1—Back view of cabinet

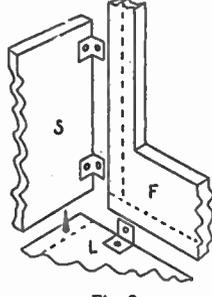


Fig. 2

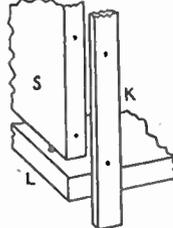


Fig. 3

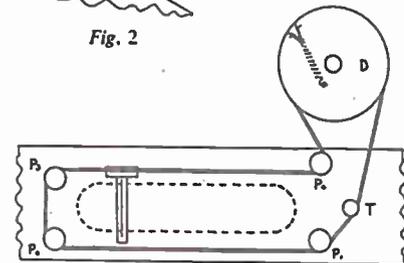


Fig. 4—Drive system

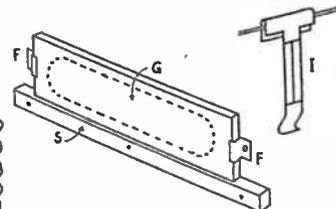


Fig. 5—Dial fixture

The bottom of the cabinet should next be sawn out to the necessary dimensions. $\frac{1}{2}$ in. to $\frac{1}{4}$ in. wood should be used, of any common kind. It should be the same length as the front, and makes a plain butt connection along the front. Glue aided with angle pieces (which can be made out of any suitable metal) will later hold the two parts together.

Next, the two sides can be sawn. These are shown as (S) in Figs. 1, 2 and 3, and are held to the front, similar to the bottom, with glue and angle-pieces. Glue and screw through the bottom, fix the sides to the base. The actual arrangement can be understood by reference to Figs. 1, 2, 3. Figs. 2 and 3 show the structure in an exploded form.

The top (T) can next be sawn out. This, again, is later fixed with glue and brackets. The position of this is shown in Fig. 1, which shows the cabinet as it looks before the application of the veneer to top and sides.

As far as the veneer is concerned, this should not be bought until the main structure of the cabinet has been cut out and temporarily assembled. Measurements can then be made on this to give the amount of veneer required.

The actual dimensions of the cabinet will depend on whether the chassis dimensions have been followed, or whether a smaller chassis has been contrived. Then, again, the size of the loudspeaker will determine the top to bottom measurements of the cabinet. In view of this, the reader must determine his own measurements.

If the stated chassis is used with a 6 in. or $6\frac{1}{2}$ in. loudspeaker, then the cabinet will measure approximately $13\frac{1}{2}$ ins. long by $9\frac{1}{2}$ ins. high by $6\frac{1}{2}$ ins. wide.

In building the cabinet it is, perhaps, best to start with the front. This should be cut from one whole piece of wood, preferably $\frac{1}{2}$ in. thick. The shape should be drawn out first on the wood, using compasses for the curved corners. A radius of 3 ins. will provide a suitable curve, with $2\frac{1}{2}$ ins. for the inside of the curve. As will be seen from these figures,

should be bored for the control spindles. The exact positions of these should be ascertained by reference to the chassis. In so doing, do not forget to stand the chassis on the wood to be used for the baseboard of the cabinet. The bottom of the front must stand on the ground, for this measurement.

Plywood board already surfaced with walnut or other veneer could be bought and used for the front, but it is far cheaper to do your own veneering. Naturally, this should be done before cutting out the front shape.

After cutting out, the front can be cleaned and the cut-outs straightened up with a glasspaper block.

The back should now be made. This should be done from one piece, and thinner wood can be used, preferably $5/32$ in. plywood or hard-board. The front can be used as a template for marking off the back shape. A fretsaw can be used for cutting out. The inner cut is $\frac{1}{2}$ in. to $\frac{1}{4}$ in. from the outside edge (K). The inner part (B) which is thus cut out becomes the detachable back of the cabinet. Ventilation slits are sawn out of this with a fretsaw, and must not be omitted, for mains sets generate considerable heat.

Holes should be bored also for the aerial and mains attachments. Determine the position of these by placing the

chassis on the baseboard and putting the back-board up against them.

All the parts should now be assembled temporarily by means of the angle pieces, and by screws through bottom and back.

One can now measure off the actual size of veneer sheet needed. A piece of stiff brown paper or drawing paper can be of service here. Allow about $\frac{1}{8}$ in. extra both ways with which to work.

Trim the veneer

Proceed with the top first, then each side. Weights applied on top of the veneer to keep it flat will help. When the veneer is permanently fixed, trim off all projecting edges with a razor blade and finish with glasspaper block.

Now turn to the inside of the cabinet. For the dial a piece of glass is needed to cover the aperture cut in the front. This is very thinly painted on one side with glue size or Durofix. When dry, Indian ink can be used to draw a suitable dial of regular divisions. Special stations, to be ascertained later, can be marked with a large dot or ring. However, readers can improve their set by purchasing an excellent factory made coloured dial (Superex 55 dial) for 2/6 from Superior Radio Supplies, 37 Hillside, Stone-

bridge, London, N.W.10. (Postage extra).

5-VALVER FOR 3 gns.
Making a 5-Valve T.R.F. for £3-3s. was described in two previous issues. Converting this to a superhet has also been detailed. Copies of these three issues can be obtained from the Editor, 6d. each, post free.

The dial should be supported on a strip of wood glued or pinned beneath the dial as shown in Fig. 5 (S). Metal clips (E) can easily be cut out and bent to hold the dial firmly.

The cabinet back is held in place by screws along the bottom, and at the top by slip catches simply made from aluminium or brass.

Now turn to the radio chassis. Fix four pulley wheels (P) in the positions shown in diagram 4. The dotted shape indicates the relative position of the dial cut-out. (T) is the tuning control spindle. (D) is the drive drum.

From the spring on the drum, the cord goes clockwise round the drum to spindle (T), loops once round this

spindle and proceeds round (P) and so on to (P4), whence it goes round the drum to the spring again.

Metal pointer
The pointer is made from thin aluminium or tin as shown in Fig. 5 (I). Gummed white paper is stuck round the stem and a vertical line is drawn with Indian ink. The top of the pointer is nipped with pliers to fix it to the cord.

The chassis must eventually be fixed to the baseboard by bolts or screws, so the next task is to bore the holes in the bottom of the cabinet in the correct positions, allowing them to coincide with the holes in the chassis or angle pieces attached to the chassis.

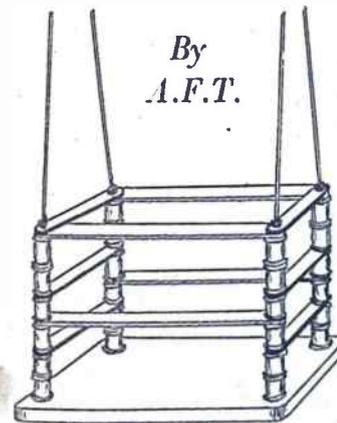
Clean up the cabinet, and then finish as desired.

The front of the cabinet can be filled in best with loudspeaker mesh of the expanded metal kind. This should be fixed in the inside with short screws. It will cost about 2/-.

Pulley wheels cost 3d. each and can be obtained from the firm which supplies the dial.

Four rubber feet screwed into the bottom of the baseboard complete the cabinet.

A SAFE SWING FOR CHILDREN



CHILDREN of all ages love a swing, and will spend many happy hours in the fresh air either alone or being pushed to and fro by a chum. The ordinary type of swing is quite all right for older children, but if toddlers are to enjoy themselves and we are not going to worry about them falling off, then we need something safer.

Here we have the ideal toy, which is suitable for the very youngest child and

is perfectly safe to use either indoors or out in the garden.

The cost of the swing is very low as few materials are required. A piece of stout plywood for the seat, and stripwood for the supporting bars—these are held in the correct position on the ropes by using empty cotton reels as spacers.

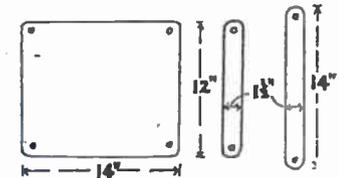
Make the seat from stout plywood 14 ins. by 12 ins. and from $\frac{1}{2}$ in. to $\frac{3}{4}$ in. thick, or you may use two or three planks of ordinary wood held together with supporting struts fixed near either end. Round off the corners so that there are no sharp edges and well smooth with glasspaper.

Drill the four holes about 1 in. in from each corner and large enough to take the rope you intend using — about $\frac{1}{2}$ in. should be plenty.

The stripwood supporting bars are $1\frac{1}{2}$ ins. wide and $\frac{1}{2}$ in. thick, preferably a hardwood, but this is not too important. You will need four for the back and front 14 ins. long and six pieces for the sides 12 ins. long. Drill holes in either end of these to correspond with the seat holes and well smooth as before.

The number of cotton reels needed will depend to a certain extent on the size of the reels used and also the size of the child for whom the swing is being made, and this can be adjusted to suit your par-

ticular requirements. For a small child you may use small reels, and the size of the seat can also be reduced. It is, however, best not to make the swing too



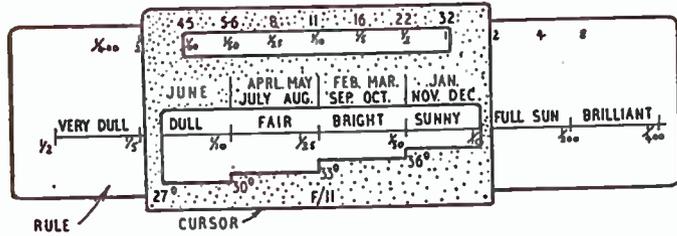
small, and the size quoted will be found suitable for most purposes.

Before assembling the swing it is advisable to give all the parts two coats of good quality paint or enamel in order to preserve the wood, especially if it is used and left outdoors. Gay paint will make it more attractive. Any child will be delighted if the reels are done in different colours, or if the supporting bars are of one colour and the reels in a contrasting tone.

Use good quality rope and well knot the ends under the seat. It is a good idea to bind the ends with string and keep it tight so as to prevent fraying. Instead of rope you can use stranded galvanized iron wire but you must be careful to tuck the sharp ends out of harm's way.

Handy for photographers

RULE EXPOSURE CALCULATOR



SEVERAL methods of determining photographic exposure exist, the simplest being a kind of list, or table, from which numbers are taken, corresponding to lighting, etc., the total giving a suitable exposure. These are a little troublesome. An electric exposure meter is probably best of all, but costly. Between these two extremes come various automatic calculating devices, and that described here is particularly easy to construct, and has been developed to give satisfactory exposures for out-door shots all the year round.

At first glance the calculator may appear complicated, but in actual fact it is very easy to operate. Only one movement is necessary to obtain the correct exposure for an aperture of $f/11$. If another aperture is to be used, then the correct exposure for this is obtained by a second movement.

$f/11$ has been chosen in the first instance because almost without exception box and simple folding cameras of cheap type have an aperture of $f/11$ or $f/16$. The shutter of such cameras is set to about $1/25$ th to $1/30$ th second. If the calculator shows that a longer exposure than this is wanted, under particular conditions, then it is best not to make the exposure with this type of camera, as the snap would be a failure due to insufficient light.

The possessor of a more advanced camera can, of course, set his shutter and aperture to suit, and take the snap in accordance with the exposure indicated by the calculator. The film speed is also allowed for by the calculator, which can be used with confidence anywhere out-of-doors.

Cursor and Rule

The calculator is in two pieces, the cursor sliding along the rule. It is feasible to cut the pieces from thin wood, glasspaper smooth, and mark the numbers, etc., with a hard pencil, giving the parts a final coating with clear varnish. A cardboard model would work exactly the same, but be less robust.

The cursor has three scales. Beginning from the top, lens apertures are marked from $f/4.5$ to $f/32$, as shown. Next come four degrees of general lighting, beginning with June, when light is best, and finishing with January, November and December, when light is poor. Finally, film speeds in Degrees Scheiner are marked, for films from 27° to 36° , with $f/11$ to remind the user that the first movement shows the exposure for this aperture.

The rule also has three scales. From left to right, the first gives shutter speeds in the following sequence: $1/400$ th, $1/200$ th, $1/100$ th, $1/50$ th, $1/25$ th, $1/10$ th, $\frac{1}{2}$, 1, 2, 4 and 8 seconds. The next scale lists the appearance of the subject, from very dull to brilliant. Below this are shutter speeds of $\frac{1}{2}$, $1/5$ th, $1/10$ th, $1/25$ th, $1/50$ th, $1/100$ th, $1/200$ th, and $1/400$ th second.

It will be convenient to space the aperture markings $\frac{1}{2}$ in. apart, and the top shutter speeds are similarly spaced, so that they can be read off against the apertures. The cursor can be $\frac{3}{16}$ ins. long, allowing $\frac{1}{16}$ in. for each section of the other scales. The rule will need to be $\frac{6}{16}$ ins. long, to allow a little clear space each end, and if it is $1\frac{1}{2}$ ins. wide, this will give plenty of space for the markings. The cursor is a trifle wider, so that narrow strips underneath guide it along the rule, these strips being grooved, so that cursor and rule cannot come apart.

Appearance of Subject

When the calculator is used it must be remembered that this scale (Very Dull to Brilliant) does *not* refer to the weather. It is, instead, a description of how the object to be photographed looks to the photographer.

Very Dull indicates heavily shaded subjects, in doorways obscured by buildings, under heavy trees, etc.

Dull indicates subject quite heavily shaded. These settings may need using when heavy thick clouds obscure the sky, especially in winter.

Fair refers to subjects quite well lit,

and all situations where good strong daylight reaches the subject.

Bright means that the sun is shining, or not much obscured, and that the subject is well illuminated by reflected light, and by the bright conditions generally.

Sunny is an indication that sunshine is actually falling on the subject, though the sun is not particularly strong, and may be obscured by thin mist or cloud.

Full Sun shows that the subject is in strong sunlight, directly illuminated by it, while *Brilliant* refers to conditions of exceptionally bright light, such as arise during midsummer, and near the sea.

It will be realised that this scale is the only one where some measure of judgment has to be used, since the others are of a definite nature. However, it is unlikely that an error greater than one step in either direction will be made, and the latitude of modern films will make this relatively unimportant. No one, for example, is likely to go so far astray as to classify Bright subjects or illumination as Dull or Brilliant.

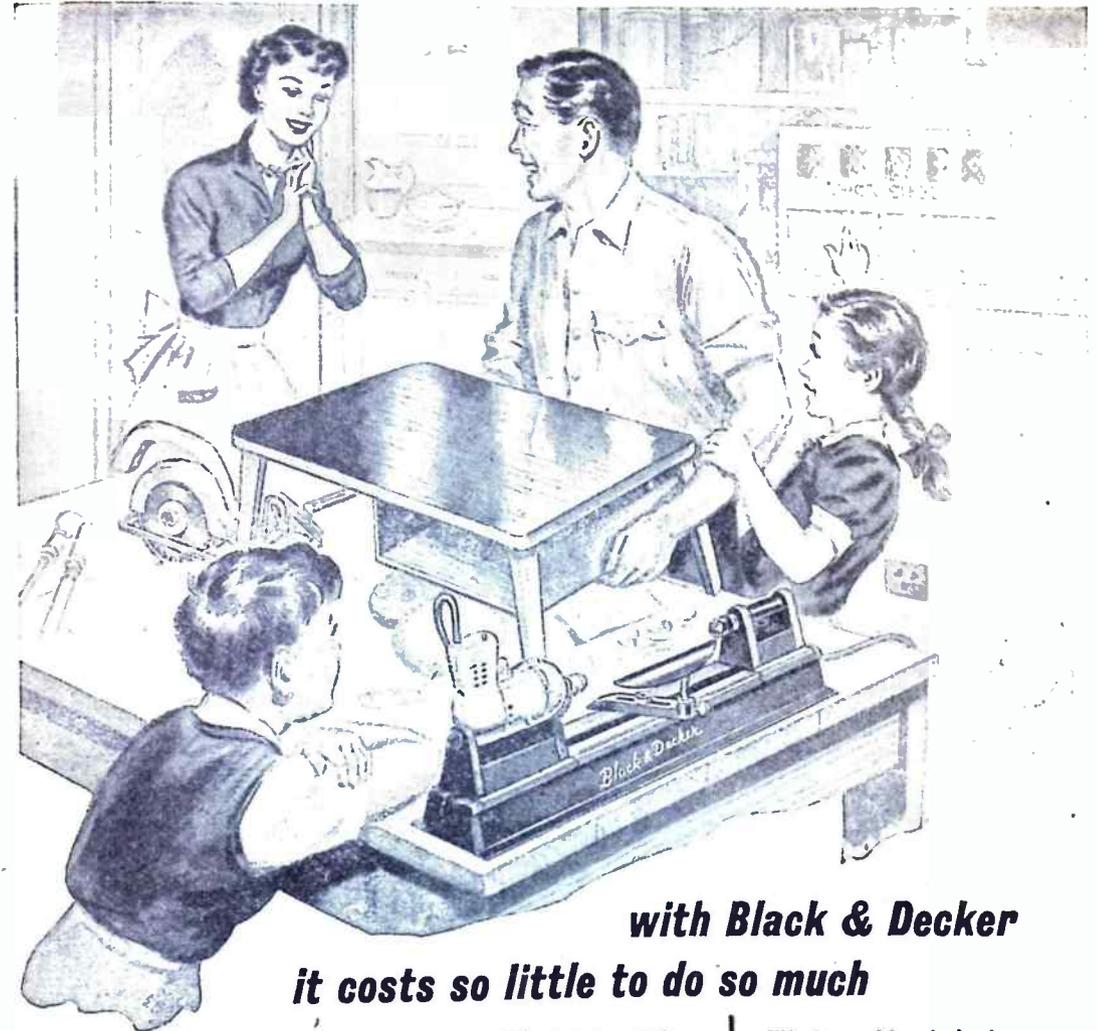
Using the Calculator

The appearance of the subject is set opposite the correct month. In the diagram, this could be Dull, in June, etc., right along to Sunny in January, November or December. If the subject were Fair, in June, the cursor would be moved one position to the right, and so on.

The exposure for $f/11$ is now read off opposite the speed of the film in the camera. In the diagram, this is $1/5$ th second for a 27° film, $1/10$ th for 30° film, and so on. If the shutter speed is suitable, the shot may be taken at $f/11$ at that given.

If a different speed or aperture is wanted, then the shutter speed for $f/11$ is set opposite $f/11$ on the topmost scale. In the diagram, and assuming a 30° film is in use, the exposure for $f/11$ is shown as $1/10$ th second. As $1/10$ th is already opposite $f/11$ in the upper scales, these show that $1/25$ th at $f/8$ would do, or $1/50$ th at $f/5.6$, and so on. In many cases the correct speed will not already coincide with the upper aperture scale, so that the cursor has to be moved to left or right, until this is so, before suitable exposures from $f/4.5$ to $f/32$ can be read.

In brief, then, the procedure is as follows: set appearance of subject opposite month. Read off exposure for $f/11$ opposite film speed. If other apertures are wanted, set this exposure opposite $f/11$ on topmost scale, and read off the other exposures for any aperture. (F.G.R.)



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Take the chorus:

'All things bright and beautiful,
All creatures great and small,
All things wise and wonderful,
The Lord God made them all'.

And the stamp? Italy 1923, 20 cent orange and green — Christ and His Disciples — catalogued at 1/6 mint.

'Each little flower that opens,
Each little bird that sings,
He made their glowing colours,
He made their tiny wings'.

There are hundreds of bird and floral designs to choose from. Here are two: Bulgaria 1938, 7 leva blue — Roses — 1/- mint. China 1952, \$400 claret — Dove — 4d. mint.

'The rich man in his castle,
The poor man at his gate,
God made them, high or lowly,
And ordered their estate'.

Four famous castles are shown on the current high value stamps of Great Britain. The 2/6 (used) may be had for a few pence. Hyderabad's Victory commemoratives, 1946, show a Family Reunion scene — 'Peasant outside home with wife and children' — 1 anna blue, 4d. mint.

'The purple-headed mountain,
The river running by,
The sunset and the morning,
That brightens up the sky'.

India 1953, 2 anna violet — Mount Everest — 4d. mint. Kenya, Uganda and Tanganyika 1938-54, 10 cent brown and orange — Lake Naivasha and Mountains — 1d. used. South Africa 1939, 1d. + 1d. green and carmine — Sunset — 2/- used. Argentine 1911, 1 cent brown — Sunrise — 1d. used.

'The cold wind in the winter,
The pleasant summer sun,
The ripe fruits in the garden,
He made them every one'.

Russia, 1932 Airmail, 1 rouble green — Map of Polar Regions — 7/6 used. New Zealand, 1948 Health, 1d. + 3d. blue and green — Boy sunbathing and children playing — 2d. used. Bulgaria 1941, 50 stotinki violet — Picking Apples — 2d. mint. Ditto: 1938 — Various Fruits.

'The tall trees in the greenwood,
The meadows where we play,
The rushes by the water,
We gather every day'.

Cyprus 1938, 45 piastres green and black — Forest scene — 5/- used. New Zealand, 1953 Health — Scouts and Guides; Camping Scene — set of two, 10d. mint. Ceylon, 1938-49, 15 cent green and brown — River Scene — 3d. used.

Tracing Ancient History

THE pyramids of Gizeh are often depicted on Egyptian stamps. Some people say the pyramids were built for astronomical purposes, and that the Great Pyramid was used as a standard of measurement, but it is safe to say that they were nothing more than tombs.

The Great Pyramid, on stamps of 1888, was built by King Chufu (B.C. 3733). It reaches a height of 451ft. and has a



flat roof 30ft. square. During its construction, lasting about twenty-five years, some 100,000 men were employed.

The pyramid's polished stones contain numerous inscriptions in Egyptian characters. One states that 1,600 talents of silver was spent in radishes, onions and garlic for the workmen. Another contains King Chufu's name in red.

Stamps of 1879 feature the Sphinx. This relic of antiquity, whose origin is unknown, is probably a statue of the god Harmachis. Hewn out of the living rock, the body is about 150ft. long, the paws are 50ft. long and the head 30ft. long. The face is 14ft. wide and from the top of the head to the base of the monument the distance is about 70ft.

ILLUSTRATE A HYMN

By R. Cantwell

'He gave us eyes to see them,
And lips that we might tell,
How great is God Almighty,
Who has made all things well'.

New Zealand's 8d. Coronation stamp of 1953, depicting Westminster Abbey provides a fitting finish.

The majority of our hymns lend themselves to philatelic description, and some of the authors have received postal commemoration.

Here's a topic of personal interest. Indoor games, outdoor sports, zoology, travel, etc., etc. — the stamp album represents them all. So start your collection of favourites now. It will never fail to please, will be the envy of friends and may become valuable.

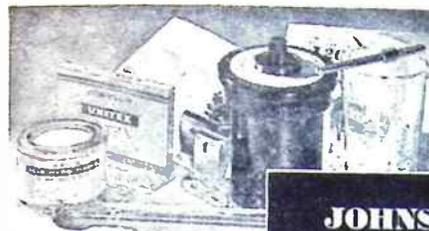
Before the invention of long range cannon, the Citadel in Cairo was an excellent fortress. It was built by Saladin, A.D. 1166, and the stones used were taken from the pyramids.

In 1805, Muhammad 'Ali, by means of a battery placed on the Mokattam heights, compelled Khurshid Pasha to surrender the citadel. This historic building appears on the 50 mils pic-

torial stamp of 1914. And Ali Pasha on the 10 mils red of 1928.

Special stamps, showing an ancient Egyptian ship, were issued in 1926, commemorating the International Navigation Congress.

Modern tombs, fortresses and ships give a different aspect from those of long ago. Egypt's pyramids and temples — the splendour of which, even in ruins, is the admiration of the world — are still veiled in mystery, superstition and legend. Most of the known facts, however, have been philatellically recorded. These stamps are obtainable at reasonable cost, so buy now before prices rise and discover for yourself the joy of tracing ancient history in stamps.



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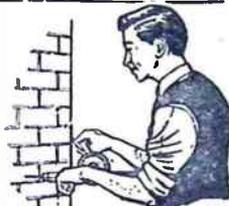
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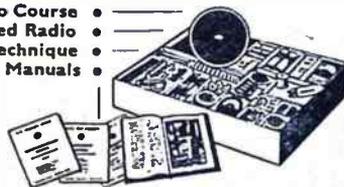
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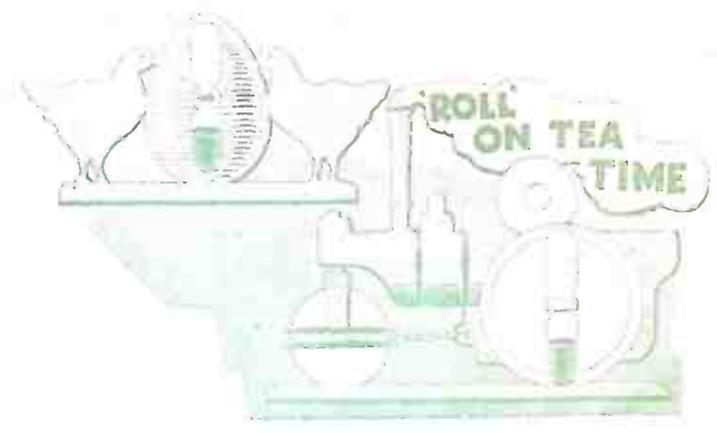
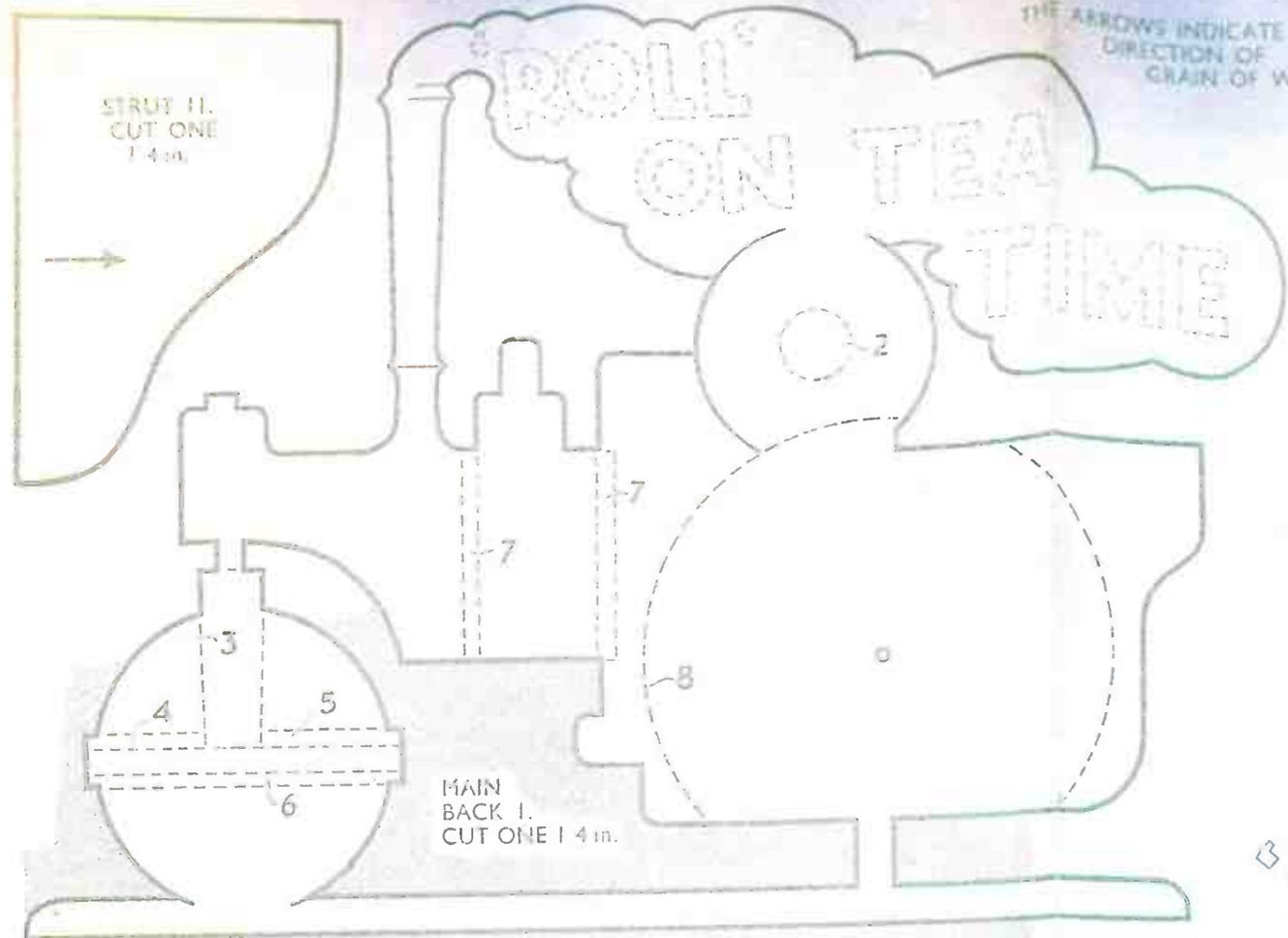
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TWO EGG TIMERS

(SEPARATE DESIGNS)



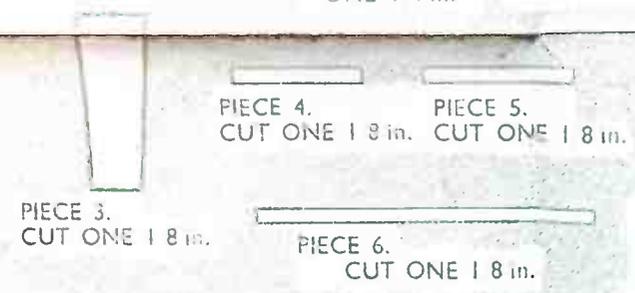
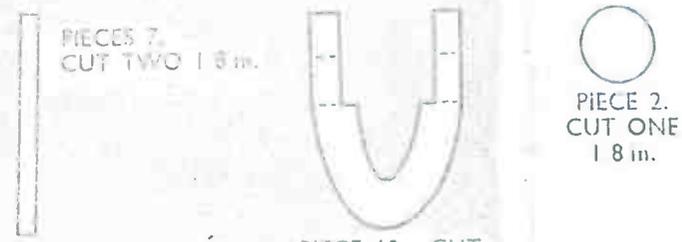
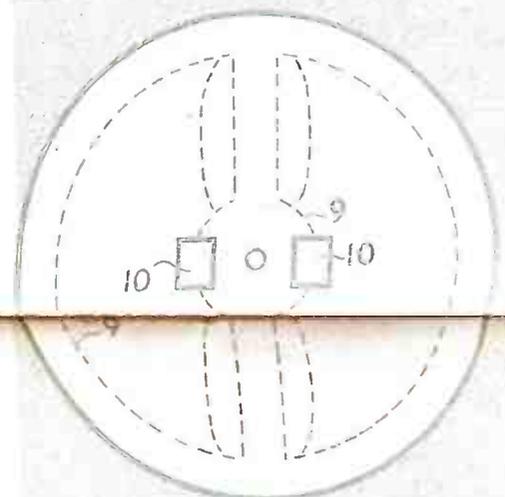
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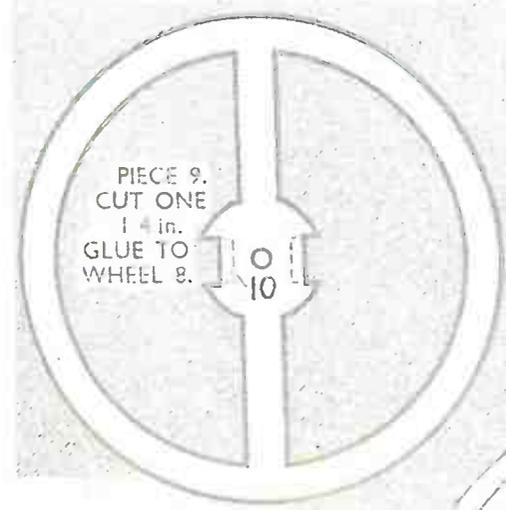
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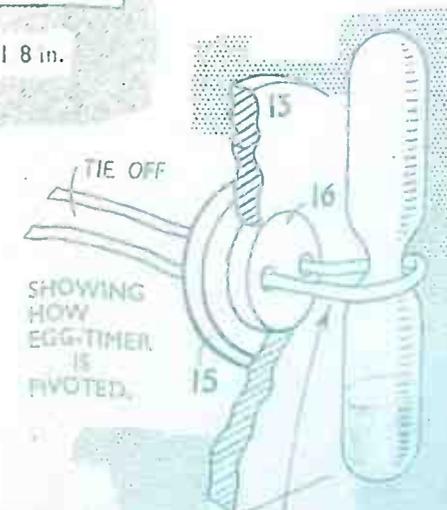
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WORDING 12. CUT ONE OF EACH LETTER 1.8 in.



DESIGN A
FOR THIS DESIGN YOU NEED
ONE Q4 PANEL
ONE G2 PANEL
ONE EGG TIMER
ONE 3/4 in. No. 4 COUNTERSUNK SCREW
4 ins. BRASS CHAIN No. 4.



DESIGN B
FOR THIS DESIGN YOU NEED
ONE G4 PANEL
ONE EGG TIMER
6 ins. OF PLASTIC THONGING.

