

HOBBIES WEEKLY

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Instructions for making A GARDEN GATE WITH SIDE FENCING

AN attractive design for dividing the kitchen garden from the lawn and flower garden is shown here. The idea is to run the wall and fencing across the plot, and to have a simple to make but attractive gate midway.

Fig. 1 shows the fencing and gate as they would appear when completed, and in Figs. 2 and 3 are suggested measurements for both these items, while details of construction are given in Figs. 4 to 7.

A low dwarf wall of four courses of brick can be laid on a concrete foundation. Old cleaned-up bricks would answer well for the purpose. The wall will be 4ins. thick. The top surface, after the fencing is in place, will have a layer of cement as seen in Fig. 3, which is a cross-section of the wall and fencing. The gate-posts are shown 5ft. 6ins. above ground and they may be 3½ins. square or a little heavier as desired. The tops are chamfered all round, and a plain

Just what
you need to
separate
the flowers
from the
vegetables

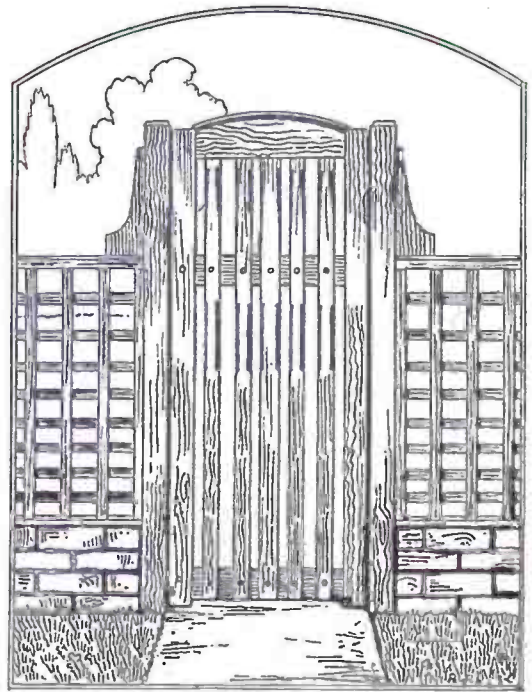


Fig. 1

square capping could be included as protection against the weather.

The ends of the posts should be put in the ground for a depth of about 2ft. and should be well creosoted or tarred, and

concrete rammed well round. Additional posts will be spaced out and set in the wall and let into the ground similarly to the gate-posts. These posts, however, need be about 4ft. only above

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For Modellers, Fretworkers
and Home Craftsmen

4^D

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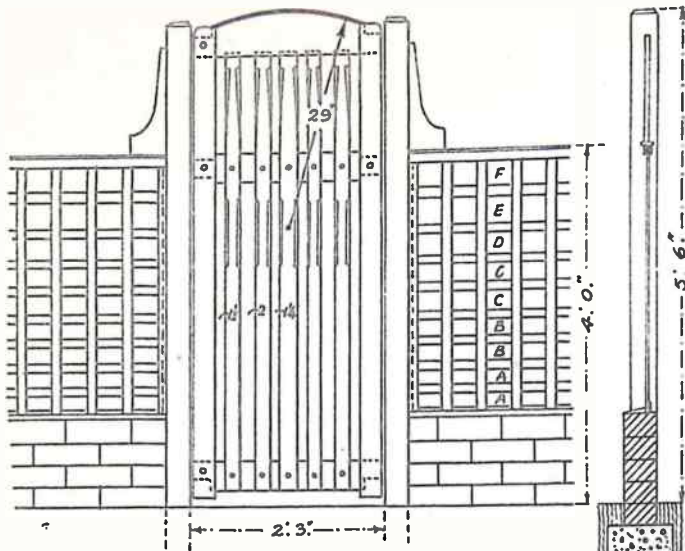


Fig. 2

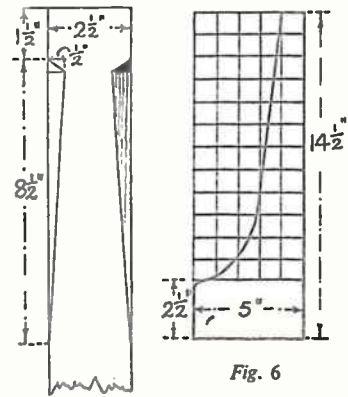


Fig. 6

Fig. 5

ground. The distance between the posts should not exceed 6ft., but much will depend on the section of the laths used.

The gate is 5ft. 6ins. high by nearly 2ft. 3ins. wide and is made up of the following members: Two uprights, or stiles, 3ft. 4ins. by 3ins. by 1 1/2ins.; top rail 2ft. 3ins. by 6ins. by 1 1/2ins.; two cross-rails, 2ft. 3ins. by 4ins. by 1 1/2ins., and five upright rails, 4ft. 11 1/2ins. long, four of these being 2ins. wide and the centre one 2 1/2ins. wide, and all 3/4in. thick.

All cross-rails are tenoned and pinned into the stiles as shown in Fig. 4 and by the dotted lines in Fig. 2. The top rail is shaped to the radius shown, the shaped portion being afterwards capped by a lath about 2 1/2ins. by 3/4in. screwed over. The underside of the rail is grooved to suit the tongues of the five upright rails, seen dotted in Fig. 2.

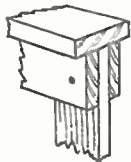


Fig. 7

If it is desired to ornament the gate in any way the simplest method is to form taper-chamfers at the upper ends, and ordinary chamfers below on the uprights. In Fig. 5 a detail of the upper chamfers is given. Hardwood pins or brass screws should be used for all the fastenings. Strength and effect is given by adding the side-shaped angle pieces shown in detail in Fig. 6.

WORKBENCH TIP

How to Re-Forge a Chisel

OCCASIONALLY it is necessary to re-forgo a chisel which has become worn and too thick at the end. Care must be taken not to overheat the metal, or it will become burnt and useless, and re-heating should be avoided if possible.

After grinding, heat the chisel for about 2ins. of its length, from the edge, to a bright red; then the point for about 1/2in. must be dipped out in water. Move it slightly up and down to avoid too sharp a contrast between the hard point and the soft part. Then raise the tool, and in a good light watch for the

changing colours extending towards the point: from blue to purple, dark straw, pale straw and yellow.

When the point of the chisel has reached a dark straw colour, quench the whole tool in water. (E.M.B.)

NOW READY

Indices for Vol. 119 of Hobbies Weekly are now ready, and can be obtained for 1/- post free from the Editor

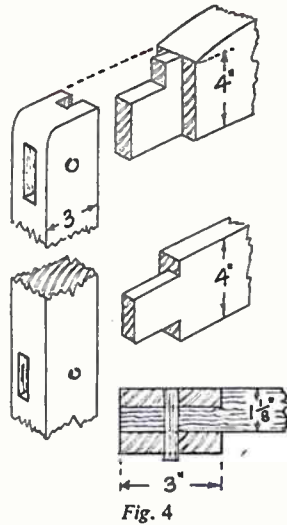


Fig. 4

The trellis work is formed from laths about 1 1/2ins. by 3/4in. made up in panels and fixed to the gate-posts and to the intermediate posts described earlier. The upright laths should be spaced about 4ins. apart, while the horizontal laths are spaced to get the best effect according to the lettering shown in Fig. 2. Those at (A) should be spaced 2ins. apart, (B) 2 1/2ins. apart, (C) 2 1/2ins. apart, (D) 3ins. apart, (E) 3 1/2ins. apart and (F) 3 1/2ins. apart. All laths must be firmly nailed at the crossings, and the top of each panel finally reinforced by an additional lath put on as a capping (See Fig. 7.) A spline, shown dotted in Fig. 2, should be nailed very firmly to the outer side of the gate-posts to take the first lath of the lattice-work panels. Strong hinges should be used for hanging the gate. All the lathwork should be well creosoted, while the gate and two posts might be painted green. (S.W.C.)

FOR THE YOUNG TODDLER

A Toy Brick Trolley

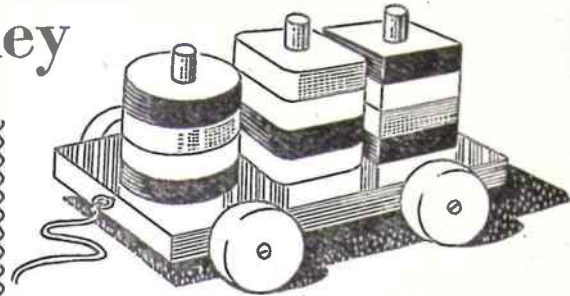
THIS is an ideal toy for the young toddler. The bright shapes are not only attractive, but help to train the mind. Although it seems only a trivial matter, the sorting of the various shapes does help in early training.

Make the trolley platform from 1/2in. thick wood and bore three 3/4in. diameter holes as shown. They should be on the centre line. Insert three dowels of the size shown on the pattern sheet.

Wheels Available

Wheels can be cut from 1/2in. wood, or you can use a set of four wooden wheels price 1/9 per set of 4, obtainable from Hobbies Ltd., Dereham, Norfolk. They are screwed direct into the sides of the platform.

Full-size patterns are on page 47



There are four shapes to choose from. Cut them from 1/2in. wood and bore the centre holes with a 3/4in. bit. The holes can easily be cut with a fretsaw.

Paint the trolley and wheels red and the shapes in other bright colours such as blue, green, yellow, white, or black. Fix a small screw-eye at one end and attach a length of string for pulling along. (M.P.)



Colouring Lamp Bulbs

PLEASE tell me how to colour electric lamp bulbs red. I have dipped lamps in dyes and get a clear red after dipping them about four times, but it shows the filament through the bulb. Is there anything I could put in the dye to make it darker? (W.H.—Newbiggin).

If you are using clear bulbs, the filament will show even when an extremely dark colour is applied. This difficulty may be overcome by using opal or sprayed opal bulbs. No filament will show with these, even with a thin coating of dye, and the light will in general be more diffused, even and powerful, for a given wattage.

Laying Concrete

I WOULD like to remove a tiled yard I and path. Would cement flags be best to lay, or concrete? Which would be easiest and cheapest to work with and how would I prepare the foundation? (P.S.—Leicester).

FOR your path, a layer 2ins. thick of concrete over a surface of broken clinker, rolled down flat, would be the simplest method.

Framing Oil Paintings

I HAVE some oil paintings which I wish to frame, and shall be pleased if you will send me instructions on how to go about this. I believe oil paintings should be stretched, varnished and then framed. (L.K.—Dagenham).

Oil paintings on canvas are generally painted while the canvas is mounted on a wooden frame, but apparently this is not so in your case. First a wooden framework of suitable size must be made. There must be four separate parts which are joined loosely at the corners by double tenon joints. Wedges are provided to insert in the inside of the frame, they will force the four parts outwards. The canvas is laid flat over the frame and folded neatly over the edges of the frame, and secured by tin-tacks at the back. The wedges are then driven to tighten the canvas in all directions. This done, the painting should be varnished with a high-grade clear varnish. When dry, the picture is inserted in a frame in the usual way. It may be added that the wedges in each corner joint operate at right-angles to each other, and thus force all four sides of the frame outwards.

Chemicals to Dissolve Soot

I UNDERSTAND there are chemicals which, when placed on the fire, give off fumes that will dissolve soot in the chimney. Can you tell me what the chemicals are, and how much to use? (R.G.—Glasgow).

MOST chemical soot destroyers consist of potassium nitrate, or sal ammoniac, salt and sulphur. Their effectiveness depends a good deal on chimney form and draught, and their function is to loosen soot, not to dissolve it. Small quantities of the following mixture occasionally thrown on to the glowing fire will usually disperse soot:—Sal-ammoniac, 1 ounce; Sulphur, 1 ounce; Salt, 2 ounces. Use about a tablespoonful at a time.

Repairing a Plastic Doll

THE head of a plastic doll has sprung apart at both sides where the two halves have been fused together. I have found glue useless for sticking it together and wonder if there is a substance which will stick or fuse the halves together again. (H.O.—Cleaton).

THERE are a large number of plastics, and the method of joining them is different in almost every case. Cellulose acetate is often used for dolls' heads. This is joined by softening the edges with a solvent and running them together. One solvent is Acetone thinned with a little benzene. If the head is celluloid, the common balsa cement may joint it. This is the adhesive with a pear-drop smell. Alternatively, a mixture of 40% amyl acetate and 60% acetone. Nail varnish may also serve.

A Fireplace Screen and Plant Box Combined

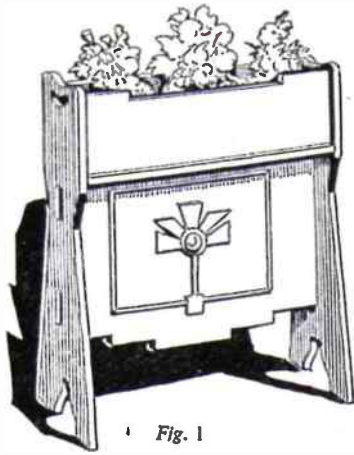


Fig. 1

somewhat coarse sawblade. A 14in. frame may be used with ease, and the finish to the edges of the wood will be smoother and cleaner than if the holes were chiselled out.

The screen panel may measure 22ins. by 14ins. and may be of plywood or two pieces of 7ins. wide plain wood butted and glue-jointed together. Set

shaped at the top edge and they are screwed through to the sides as shown in Figs. 3 and 4, the screw heads being countersunk and filled. Round off the top edges of the sides, as shown, and also the edges of the base. The general construction is clearly shown in Fig. 4.

The decoration on the panel may consist of half-round beading mitred at

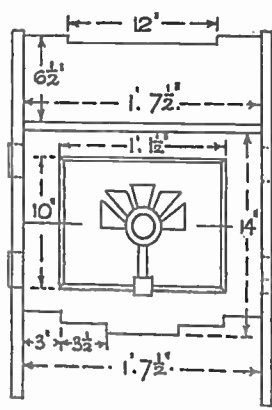


Fig. 2

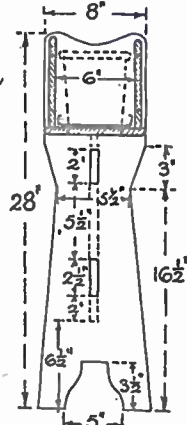


Fig. 3

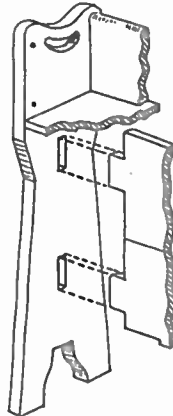


Fig. 4

out the tenons carefully on the ends of the piece to fit the mortises. The tenons, it will be seen, project slightly beyond the face of the uprights. They may however, be cut flush and cleaned off to the face of the uprights.

Rounded Edges

Glue the three sections together, and then make the floor and sides of the box. Wood 1/4in. thick may be used here, the base being glued and screwed to the ends and to the top edge of the screen panel. The sides of the box may be

the ends as shown, and enclosing some simple form of overlay decoration. A raised wood button may be added centrally on an 1/4in. base, with five shaped pieces spaced and glued on round it. A plain oblong strip and a square, both of 1/4in. wood, will make a suitable tailpiece.

Wood for the screen should be chosen to match up with the furnishings of the room. If oak is used, it should be stained light and wax polished. If mahogany, this should be stained to a desired depth of tone and french polished.

FREE DESIGN FOR A MODEL YACHT

In next week's issue, we are publishing full details for making a grand 14" semi-scale model yacht. Easy to build, and very fast, this model will be just the thing for the summer.

MAKE SURE OF YOUR COPY

Some facts about

HOME GENERATING PLANTS

By F. G. Rayer

MANY country districts are without mains electricity, and cannot hope for it for many years. This need may be solved by using a home generating plant of engine or wind-driven type. Many plants of this kind exist, both new and ex-service, and information on the advantages and limitations of such plants may be welcomed by readers who may be considering their installation.

If the plant is not chosen with forethought, it may later prove to be unsuitable. In addition to ordinary domestic purposes, a plant may sometimes be used for portable equipment, or for power in a workshop, etc.

Wind-Driven Plants

These are attractive in many ways, can give many years of service, and cost almost nothing to operate. Against this are the disadvantages that the power is rather limited, and that they are not successful in sheltered spots. They do, however, lend themselves fairly easily to

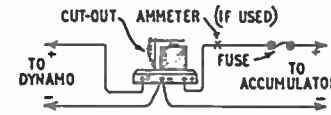


Fig. 1—Cut-out for accumulator charging.

home construction. There are also ready-made plants of this type, such as the Lucas 'Freelite'.

Wind-driven plants usually employ an efficient, weather-sealed 12 V dynamo. The propeller is often of high speed type, of wood or aluminium, and about 4ins. wide and 5ft. long. It is of slight pitch, and, therefore, revolves with such speed that it may be fitted directly to the dynamo spindle, no step-up gearing being used. The whole unit is fitted to the top of a mast, and pivoted so that the propeller will always face the wind, a tail on the rotating head helping this.

In breezy localities the dynamo will usually run for some hours each day, thereby charging accumulators. The latter are necessary to assure power is available when required, for lights, etc.

In very strong winds it may be necessary to stop the propeller, or turn the head out of the wind. Some ready-made units have automatic devices to do this.

It is also possible to use a larger propeller of slow moving type, driving the dynamo through a cycle chain or gear step-up drive. This helps to secure

sufficient speed, without which the dynamo will not charge.

Old car generators may be used for this purpose. If a 12 V generator is used with a 6 V accumulator, charging will begin at a relatively low speed. For 12 V accumulators, a 24 V to 32 V type of generator may be used, for this reason.

Low-Voltage Plants

Engine-driven plants are broadly of two types. One has an output of about 24 V to 30 V and will charge accumulators, while the other has a 'mains' output voltage (110 V or 250 V). The

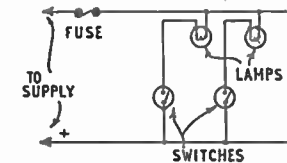


Fig. 2—Circuit for wiring lamps.

low-voltage plant is cheapest, and frequently driven by petrol, an engine of about 1 H.P. being used.

Accumulators are used with low-voltage plants, the generator being used to keep them in proper condition. This has the advantage that lights may be switched on without the engine needing to be running (e.g., in the night). Against this is the disadvantage that all equipment will have to be of low-voltage type. As a result, such plants are primarily intended for lighting only. Fires, cookers, etc., cannot be operated from them. A standard mains type radio or television receiver may, however, be operated. This is done by using a rotary converter—a unit which has an input of 24 V to 30 V and delivers an output of 200 V to 250 V. (These cannot be used with fires, etc., because the current is not sufficient.)

Such plants are started by hand. They are best run when the lights are in use—as during the evening. If the accumulators tend to become discharged, the periods of running may be lengthened. If a measured quantity of petrol is placed in the tank on starting, the engine may be left to stop on its own. Such plants provide reasonable illumination for small houses. Lamps of unnecessarily large wattage should not be used or the current drain will become too heavy.

High-Voltage Plants

Some of these produce mains-voltage current, and can be used to operate irons, motors, etc., of mains-voltage type, in addition to lamps. It becomes impracticable to use accumulators, as one hundred 2 V cells would be required for 200 V. As a result, equipment can only be used when the engine is actually running. This means that no light will be obtained unless the engine is started, and that it must run if only a single lamp is wanted.

The disadvantage of having to start the engine by hand is overcome in some plants of this kind by means of a self-starter, usually with 12 V battery. When any switch in the house is turned on, the starter brings the engine into operation. A further device stops the engine when all switches are off. This is the nearest approach to mains working possible, but more expensive than simpler plants.

Some makers overcome these difficulties by having 100 V generators, so that only fifty 2 V cells are required. Lights, etc., can then be operated at any time from the accumulators, even if the generator is not running. However, most such 100 V/110 V equipment will be totally unsuitable for 200 V/250 V and the outlay is not justified if mains may be obtained in a few years.

Other Points

The more expensive plants, especially if of diesel type, are relatively quiet. This is not so with the small, fast-running engines on many plants, which are very noisy. The generator should thus be situated in a brick building some distance from the house, or the noise will become very troublesome.

If mains will eventually be available, the house is best wired up exactly as for mains operation, even if a 24 V to 30 V system is to be used (see Fig. 2). The wiring, etc., can then remain unchanged. If wiring is done for 24 V to 30 V only, it may be unsuitable for mains, when available, so that the work has to be done again. There is no danger of serious shocks from low-voltage plants, but with high-voltage plants the same precautions must be taken as for mains equipment. The installation, in the latter case, is best left in the hands of a skilled electrician.

Standard fittings can be used for low-voltage installations, and bulbs of the usual household type fitting, but for 12 V upwards, can be obtained. If a

A. F. Taylor explains

How to Make a Mystery Clock

MANY of you, no doubt, have seen one of those 'Mystery Clocks' which are usually fixed to the glass of a shop window, and are used to draw attention to the passers by. This is really an excellent form of advertising as it catches the eye of most people who are intrigued and stop to inspect it from all angles. Many theories have been put forward regarding the 'works', most of them being very far from correct, but it makes people talk and as such has achieved its object as an advertisement.

Some people think that the hands are geared up to the pin which attaches them to the window, others have suggested that it is electricity or magnetism which causes them to turn.

from its centre (A). In order to turn accurately it must be perfectly balanced, and this is achieved by the counterpoise (B), exactly opposite to the pointer.

A Brass Weight

The counterpoise consists of a small tin with a lid which conceals the 'works'. In Fig. 2 the lid is removed to show a small watch movement in the centre of the counterpoise (B). On the centre pinion of the watch (called the canon pinion), instead of the minute hand is fixed a brass weight (C). It is this weight which determines the position of the mystery clock hand.

Owing to the force of gravity this weight always points downwards; you will, therefore, see that as the watch

ment for the counterpoise, and the first job, therefore, is to obtain the watch. The works of a wrist watch about 1in. diameter would probably be the best for the purpose, but others may be used. Slightly larger than this is the old-fashioned ladies pocket watch, which would be very suitable.

Perhaps you already possess an old movement which still ticks and which could be adapted for the purpose, or a friend may have just the thing. Watchmakers often buy up old watches for the gold cases and many of the works from these are in good condition. You might be able to buy one quite cheaply.

The watch must have the centre or canon pinion friction tight on the centre spindle, and not loose as in some

From a piece of sheet brass cut the hand similar to the shape shown in Fig. 2, and with the counterpoise end just large enough to fit the tin, the base of which is soldered to it.

As mentioned before, and this is a very important point, the success of the clock depends on perfect balance and a minimum of friction at the point on which it revolves. Fig. 4 is the side view of the hand showing the tin soldered to one end, and with the centre bush projecting on either side.

To keep the friction here as small as possible this bush is quite thin and not more than $\frac{3}{16}$ in. long. A piece of bush wire obtainable from a watchmaker or a length of brass tube with a small centre hole is securely soldered in to the hand. Particular care is needed for this operation in order to get the bush fixed exactly at right angles to the hand. The hole in the bush should just fit a thin needle on which it will turn.

The best way to fasten the needle to the glass is shown in Fig. 5. Solder the needle into a short length of brass tube, the top end of which is rounded to further reduce friction. A good brand of liquid glue can be used to fix the tube into a small washer of leather about $\frac{3}{16}$ in. diameter and $\frac{1}{8}$ in. thick. The washer can be glued to the glass and kept under pressure until dry.

Making the counterweight and fixing the watch movement in the tin must be

done very carefully. In Fig. 6 (A) is the type of canon pinion usually found in wrist watches, and this is soldered into the counterweight as at (B) and (C).

A piece of brass is the best material for the counterweight, and it should be about $\frac{3}{16}$ in. thick. When fixing the pinion, see that the brass weight does not foul any part of the watch movement as it revolves.

No Extra Measurements

A little experimenting with the size of the counterweight may be necessary. No exact measurements can be given, as these will depend on the length and weight of the hand, and also of the counterpoise.

The next job is to fix the watch movement into the tin and this must be done so that the dial side with the canon pinion is at the back next to the lid. This side is shown in Fig. 7.

Most watches are fixed into their cases with two screws, one on either side of the movement similar to (AA) in Fig. 8. Now if a strip of brass (Fig. 9) is made to fit across and project a little on either side of the movement, the case screws (AA) will hold it secure. It is then a simple matter to fix this into the tin with two screws through the holes in the ends of the strip.

It will probably be necessary to drill a hole in the strip to clear the centre wheel pivot, but this will depend upon

the type of watch movement used. You may also have to fit two thin washers under the strip to lift it off the winding wheel.

With some types of watch movement there may be a little difficulty in turning the winding button when it is fixed in the tin, but you should be able to do it slowly with a pair of tweezers.

Having got the 'works' fixed in the tin we must balance the hand. Do not forget to place the lid on the tin before attempting to do this. You will most probably find that the counterpoise end is much too heavy, and it is for this reason that the blob has been introduced near the point of the hand.

It is a good idea to make this side too big when cutting out the hand and to reduce it later when you come to balancing. To add weight the hand can have extra metal soldered on to make it thicker, and then cut and filed up until you have obtained correct balance.

To keep the hand from falling off the needle, a tiny chunk of rubber can be fitted on the end and this makes removal very easy at winding time.

Finish off the hand by giving it a coat of enamel and make a neat wooden picture frame to hold the glass, and put two small screw eyes in the top to enable it to be hung up. The figures and minute spaces may be painted on the glass or they can be cut from paper and gummed in position.

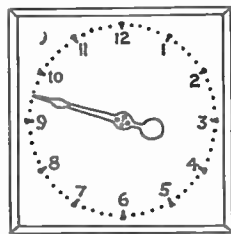


FIG. 1.



FIG. 3.

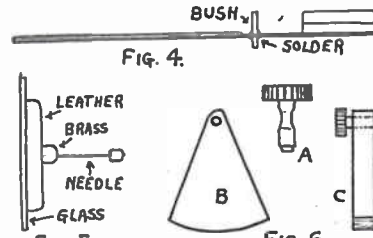


FIG. 4.

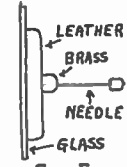


FIG. 5.

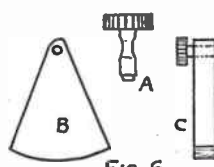


FIG. 6.



FIG. 7.



FIG. 8.



FIG. 9.

These diagrams will make construction quite clear

None of these, however, is correct, and the answer to the mystery is really very simple and will, no doubt, surprise most people when they know how it is done.

Most of these mystery clocks usually have both a minute and an hour hand, but sometimes they possess only the minute hand, and being much simpler, it is this type which is described in this article.

Glass Dial

The hand, which has a small hole in the centre rotates once an hour on a fine pin fixed on to the glass dial. The dial in our model is a sheet of glass about 12ins. square and is fastened in to a picture frame to protect it from breakage and also to enable it to be hung up. Fig. 1 shows the front view of the finished article.

Before attempting to make the clock we must understand the mystery and how it works. Fig. 2 shows the back view of the minute hand which rotates

ticks it is trying to turn this weight. Now, as gravity keeps it pointing downward, something must give way, and it is the hand that obliges by turning round. Fig. 3 shows what has happened when the watch has been ticking for a quarter of an hour from position Fig. 2. The weight is still in a downward position.

Two things are essential for the perfect working of the hand—absolutely correct balance, together with a minimum of friction at the centre and we will show how to obtain these as we proceed with the construction.

The size of the hand and dial will depend on the size of the watch move-

of the cheap models.

With a watch about 1in. diameter you can make the dial from 12ins. to 15ins. square to keep the proportions about right; the length of the hand being from 5ins. to 6ins. from the centre to the point.

Next get a tin into which the watch is to be hidden. In deciding the diameter, allowance must be made for the winding stem and button which may project about $\frac{1}{4}$ in. The depth of the tin should also be calculated and room must be left for the weight to turn easily without fouling the lid. The lid should be a good fit and not be too prominent.

USEFUL GADGET

A Grater for the Cook or Handyman

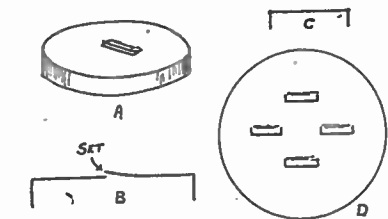
ANY gadget which lightens the work of the housewife, such as the subject of this short article—a grater for the kitchen—is always appreciated.

Many foods are made more digestible by being grated or chopped up, and this little gadget will do the job in an efficient manner. Not only will it chop and slice up many types of food, such as nuts, cheese or suet, but it is equally proficient when dealing with vegetables or fruit. Runner beans can be sliced in different thicknesses and carrots or horseradish chopped up quite fine.

There are many other substances besides food which can be chopped up with the aid of this handy article. In the handyman's workshop it will prove very useful and when 'set' correctly it is even possible to plane light wood with it.

The cutting element is made in the lid of a tin. It is thus possible to collect the chips as they are grated into the tin. By having several lids to fit the tin and making a different width of cutter on each it is possible to tackle practically any kind of grating.

It does not really matter what size tin is used to make the gadget, although it is not advisable for it to be too small. A one pound cocoa tin or something



similar is a handy size. You will need one tin and about half a dozen lids to fit.

The completed cutter in the top of the lid is shown at A, while B is a sectional view which clearly indicates the amount of 'set' of the cutter. By bending this up or down the width of the gap is altered and this governs the thickness of the slices required.

The best way to make the cutters is to drill two small holes as shown at C and with a fine metal fretsaw cut between

them. Then at each end cut up at right angles a little way, so that the cutter can be bent up slightly. Do not go too far, as this is inclined to weaken the metal—up to $\frac{1}{16}$ in. is ample.

When the cutter has been bent up the correct amount the top edge can be filed to produce a knife edge. Removing the file marks with a piece of smooth emery cloth, or better still with a fine oil stone or hone, will make this edge very keen and much more efficient.

Instead of having only one cutter on the lid the gadget can be made to do the job much quicker by making several cutters. Fig. D shows the layout for four such cutters, and this is probably the limit that should be aimed at. Cutting away more metal would weaken the lid. (A.F.T.)

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ACCURACY WITH TEMPLATES

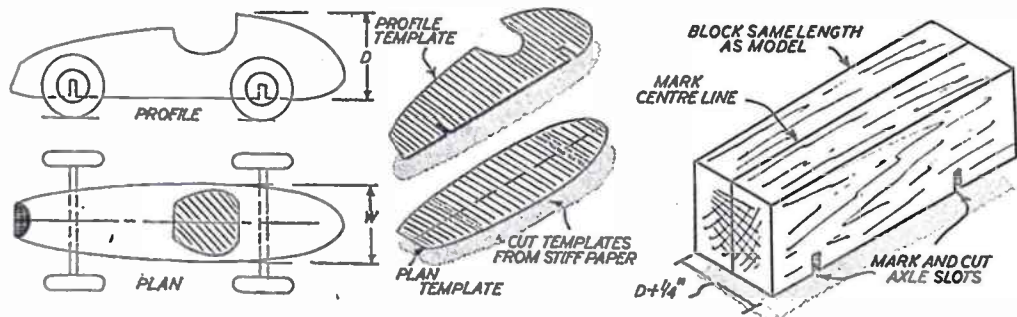
A LOT of people find it difficult to transfer outlines from a plan accurately on to wood, in making solid models. In fact, using carbon or tracing paper you cannot hope to be accurate, especially if the wood is soft or 'grainy', causing the pencil to 'run' off the required line. Further inaccuracies are frequently introduced at the carving stage, so altogether the average 'solid' model becomes something of a hit-or-miss effort. Yet there is a simple technique which can be applied to this type

By R. H. Warring

detail, but the technique is the same. The first thing to do is to make very accurate tracing of the profile and plan outlines on to stiff paper, cutting these out with scissors or a razor blade. Mark a centre line on the plan template. The bottom is the datum line for the profile template in this particular case, other-

wise we would have had to mark a suitable datum line on this also. The body block is then prepared. Any wood suitable for carving can be used. Balsa is a logical choice for small models since it is so easy to carve. The

can be made direct from the originals and similarly cemented in place. The two side pieces removed in the previous operation are now pinned back in place in their original positions. The block is now cut out to the profile



of modelling which obviates both these major faults.

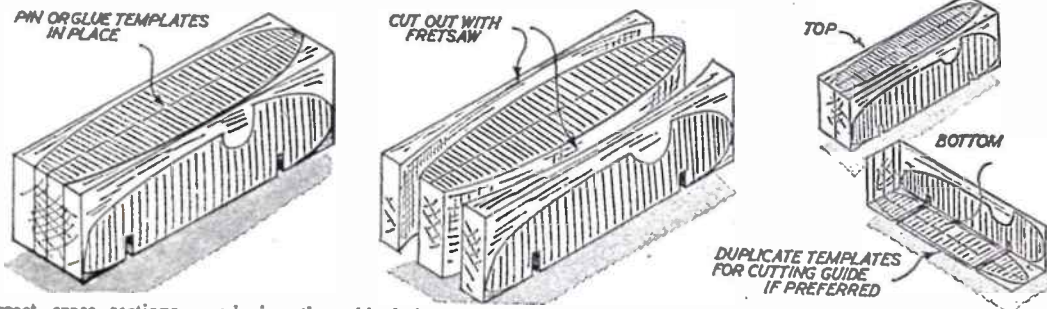
Nearly every 'solid' model has to be shaped in two directions, corresponding to side elevation or profile shape, and plan shape. It is then carved to the

wise we would have had to mark a suitable datum line on this also.

The body block is then prepared. Any wood suitable for carving can be used. Balsa is a logical choice for small models since it is so easy to carve. The

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The two side pieces removed in the previous operation are now pinned back in place in their original positions. The block is now cut out to the profile



correct cross sections, producing the final three-dimensional model. The subject may be a model race car, the fuselage of a scale-model aeroplane (wings and tail surfaces are marked out and formed in a similar manner, but simpler), the hull for a galleon, etc.

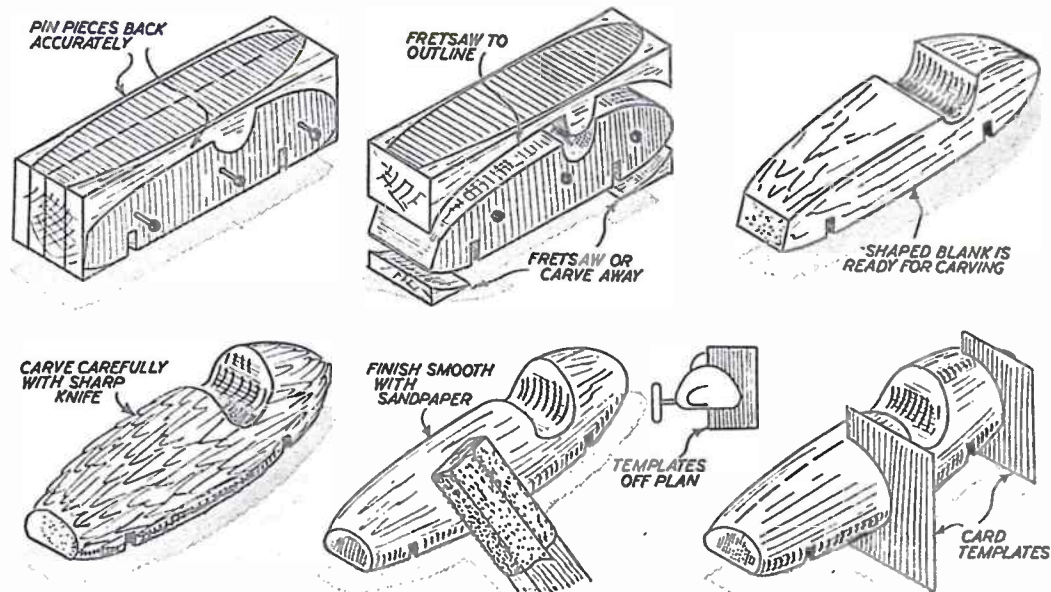
Basic requirements are a scale plan or drawing giving profile and plan outlines to the correct scale. For the purpose of illustration we will assume that a 'solid' model racing car is being made. Model aircraft, etc., will differ in

block is out to rectangular shape the same length as the model, but slightly deeper and at least 1/4 in. wider. In the case of the car model, axle slots are marked in position and then cut out. A centre line is drawn on top and bottom faces of the block.

The plan template is then glued or cemented down to the top of the block, aligning on the centre line. Similarly, the profile template is attached to one of the side faces, aligned with the bottom of the block. Using a fretsaw or coping

template shape, again using a coping saw or fretsaw, although in this case you can carve, if you prefer. Having completed this job to your satisfaction, unpin the 'spare' pieces on each side and throw away. You are left with a shaped body blank, ready for carving. If you have done the job properly, this will be accurate in outline and truly 'square' throughout its length.

The final stage consists of carving and sanding this blank down to the required cross-sections. Most of the wood is



removed by carving, using a very sharp knife and removing only small chips at a time. Avoid carving against the grain and stop carving whilst the body is still slightly oversize. Finish smooth with glasspaper which should remove all traces of knife marks and work down to the final shape with further glasspapering, if necessary.

If you want to be sure that you have got the cross-sections correct you can

use card templates prepared from body sections on the original plan. These should be half-section templates, as shown, cut from card about as stiff as a postcard. A centre line is marked on the carved body, and also the position of the various 'stations', and the correct templates offered up to their respective stations from either side of the block. It needs a little practice to get used to working with section templates in this

manner, but once familiar with the method it is easy, and accurate. The templates, of course, are not destroyed like the plan and profile templates and so can be used for further models. If you do contemplate other models of the same design, then make the plan and profile templates in thick card also and pin in place on the block. They can then be removed before carving and kept for the next model.

Continued from page 37

Home Generating Plants

shed, etc., is being wired for low voltage only, however, small bayonet cap holders are best, as car-type side and headlamp bulbs can then be used.

With low-voltage installations, the wiring must be stout, and undue length avoided. With a 12 V system, a voltage drop of 1 volt in wiring would lose 1/12th of the power. This is often overlooked, because with 200 V mains a voltage drop of 1 volt would lose only 1/200th of the power, and be of no importance.

Accumulator Care

All types of wind or engine-driven generators use a cut-out circuit such as that shown in Fig. 1. This disconnects the dynamo automatically, when it is not charging, so that the battery does not discharge through the dynamo windings. This is essential. A 12 V car cut-out can be used with home-made plants.

As accumulators are relatively expensive, proper care of them is essential. Distilled water should be added whenever any of the plates are exposed, and the batteries kept dry and clean. Short circuits must at all costs be avoided. Fuses may be wired in as shown to protect the accumulators against these.

With a 24 V supply, four 6 V accumulators can be used, in series. A 25-watt lamp would consume approximately 1 amp., while a 100 watt lamp would consume 4 amps. A rotary converter for radio, etc., would consume about 8 to 12 amps., according to the actual voltage. From this it will be seen that heavy demands will be made on the accumulators, but large car-type batteries will meet these, if the wasteful use of current is avoided. Unless the accumulators are in very good condition, it will be found that the lights grow dim, if much used without the engine running. It may also become

impossible to operate a rotary converter unless the engine is started.

Finally, then, it will be seen that a low-voltage plant offers the best means of lighting only, when moderate cost is important. Wind-driven plants can be successful in favourable circumstances. But for any kind of mains power-type appliance, a large plant is necessary, and will be very expensive, compared with small, low-voltage equipment.

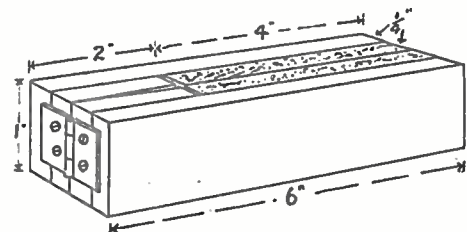
A Final Reminder!

There is only just over a week left for you to enter for Hobbies Grand Fretwork Competition. If you have not yet sent in your entry, don't forget that it must reach the Competition Dept., Hobbies Ltd., Dereham, Norfolk, by April 30th.

You can Speed up Film Drying

IT is well known that the quicker a film can be dried the better will be the result and the drying of films can be quite a problem to the photographic enthusiast and cause many a headache.

Dust is one of the worst enemies and a slow-drying film gives it plenty of time to collect and settle. Any gadget, therefore, that will speed up the process will be a welcome addition to the dark-room equipment.



The handy little gadget illustrated is very efficient, is easily made and will save much time. It consists of two pieces of soft sponge rubber clamped between two supporting strips of wood which are hinged at one end. Held in the hand, the pressure exerted on the film, which slides between the rubbers, can be easily controlled.

Cut two strips of hardwood 6ins. long, 1in. wide and 1/2in. thick, nicely smoothed and preferably with the sharp outside edges rounded off for easy handling. Two short strips of the same width are glued to the hinged end and these can, with advantage, be slightly tapered, being 1/4in. at the hinged end and 1/2in. at the other end about 2ins. away.

Two strips of soft sponge rubber fill up the remainder of the centre portion. They are 4ins. long, 1in. wide and 1/2in. thick and glued firmly to the wooden

bars. Fixing must, of course, be done with waterproof glue. If you are unable to obtain 1/2in. thick sponge rubber, you can use any other thickness, provided you make the centre blocks to correspond with this different measurement.

A small brass hinge neatly screwed on to the end will complete the construction of the dryer. The woodwork can be given a coat of clear varnish to help to preserve it from the moisture removed from the films.

Very little pressure is necessary when using the gadget, otherwise the film may be damaged. It is a good idea to try it out a few times on an odd piece of film before using it on something special, so as to grasp the feel of it and know how to manipulate it.

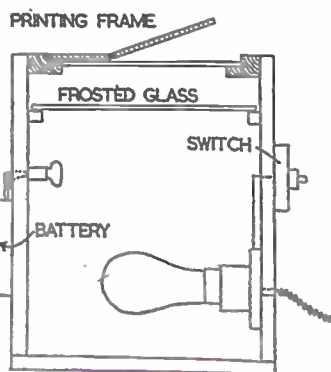
After drawing the gadget down the film once or twice, put the film to finish off in a place that is free from dust. A better plan is to have a special drying cabinet to place the film in and if you are in a hurry the process can be speeded up by using warm air. (A.F.T.)

Making a Contact Printing Box

THE basis of this contact printing box is a normal printing frame, either attached to the insides of the box or screwed to the top. The larger size of quarter plate is preferable, since this will enable prints of smaller size to be made if suitable masks are

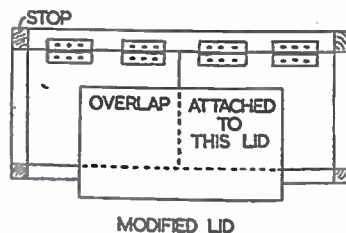
piece of glass. This should be flashed opal, or frosted and cut to fit, or failing this a piece of transparent tracing paper may be attached by means of gum to the four corners of plain glass. The purpose of this is to provide diffused and even illumination. A 15 watt lamp will be quite suitable.

A window may be cut in one end and covered with orange or red celluloid to form a useful safelight. Transparent red



employed. This size also allows the film to be used in its full length, avoiding the necessity of cutting off each negative. As each print is made, the film is drawn forward to the following negative.

Underneath the printing frame is a



paper obtained from packets of printing paper may be sandwiched between clear cover glasses used for lantern slides. These small glasses may be bought from any photographers' shop for 2d. each.

Provision is made for the inclusion of a small flashlamp bulb to remain alight during the whole operation, enabling negatives and paper to be correctly positioned. It is preferable that the bulb

Continued on page 44

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Make a Handy 'U'-Tube Holder

IN experiments involving the use of dried gases it often happens that all available clamps have to be put into use for holding the generating vessel and that part of the apparatus in which the gas is to be collected or bring about a reaction, leaving no means of holding the 'U' tube containing the drying agent.

A simple holder, such as that shown in Fig. 1, is quickly and easily constructed and will prove its worth a hundredfold over the years. It consists of two base discs in one of which is cut a slot to house the curved end of the 'U'

each disc with glasspaper gives a neat finish.

The pillar (Fig. 3) is 5½ ins. long overall. Since it begins to narrow in from its base, it emerges from the base discs with a graceful line. The Gothic top presents no difficulties in marking off if the enlarged section beside the full pillar is studied. By first marking the centre line, drawing a ½ in. diameter circle and then taking arcs through from the centres indicated by the arrows, the main outline is soon positioned. The shoulders are then drawn in from centres indicated by the lower arrows and the arcs and shoulders joined freehand.

After smoothing with glasspaper, the components can be fitted together. If screws are used for the discs they should be of brass, for this offers a

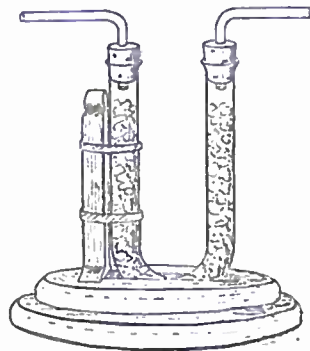


Fig. 1

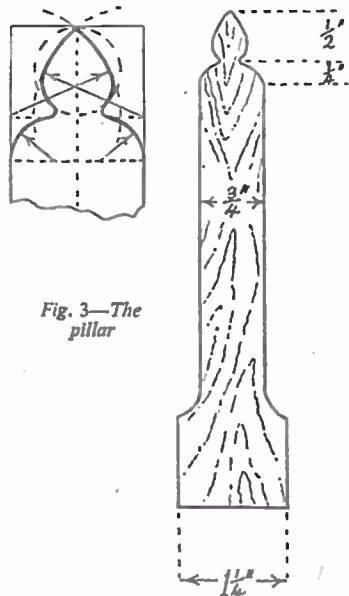


Fig. 3—The pillar

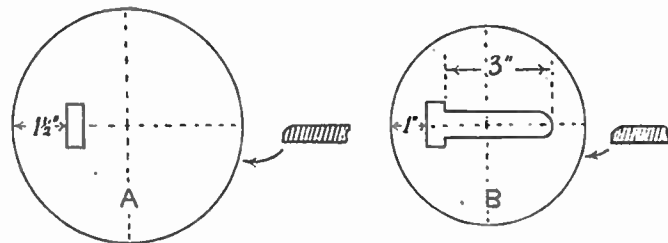


Fig. 2—Details of the base discs

greater resistance to corrosion by laboratory dampness than steel. Cellulose cement is much the best to use throughout. Several thin coats of orange shellac/meths. varnish give a nice warm finish to the holder. (L.A.F.)

● Continued from page 42

Contact Printing Box

should be coloured red to avoid fogging of the paper.

The body of the box should be at least 8 ins. deep, allowing the lamp to be approximately 4½ ins. from the printing surface. If the lamp is placed too high there is a danger of uneven printing. The width of the box depends on the size of the printing frame used. Although not really necessary, the insides may be painted white to assist in reflecting the light.

If a printing frame is not used, an alternative method is shown in Fig. 2. Lengths of rebated moulding are screwed to the top, giving a firm basis for the glass printing surface. This is essential or the glass may break under pressure or bend slightly, losing firm contact between negative and paper. Two lids of plywood are shaped, one

having an overlapping strip to give even pressure to the other when closed. At each side of the rebate fix two small stops to prevent the glass from moving. The lids must be covered with soft material like flannel or thin sponge. Rubber and attached to the top of the framework. Again, masks are prepared to cover the whole of the glass, with openings cut to the required print size. Black wrapping paper from print paper packets is useful here.

To operate, the negative is positioned, paper placed and one lid closed whilst the paper is firmly held in position. The other lid with the overlap is then brought into position and the lids held down whilst the exposure takes place. Note that the overlapping piece has a lip for convenience of handling. (S.H.L.)

tube, and a pillar passing right through the discs. The 'U' tube is held rigid to the pillar by means of two rubber bands. Half inch wood is used throughout.

Fig. 2 gives details of the discs. The lower disc (A) and the upper (B) are respectively 6½ ins. and 5½ ins. in diameter. The broken lines dividing the discs into quadrants serve for accurate positioning of the slots.

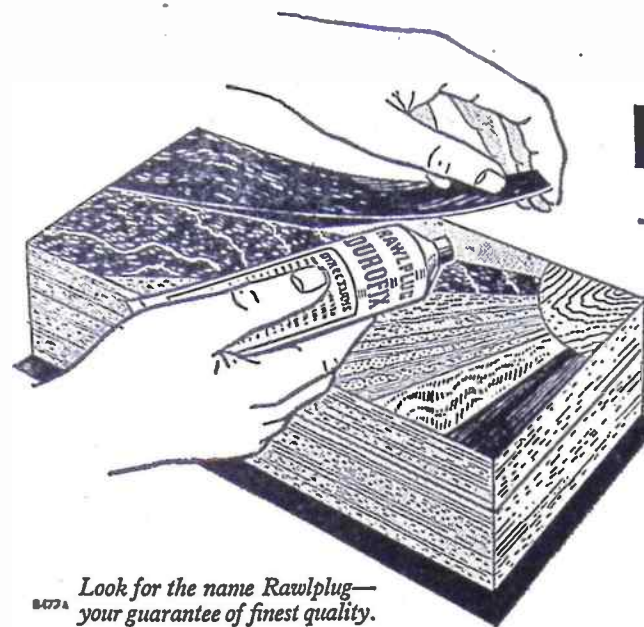
The pillar slot in (A) measures 1½ ins. by ½ in. and is best cut with the corresponding end of the 'T' slot in (B), so as to attain a good fit. By temporarily fastening the two discs together with fret nails and using a heavy fretsaw the job is soon done. The rest of the 'T' slot can then be cut separately in (B). This is ½ in. wide. Rounding the top edge of

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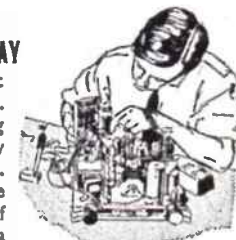
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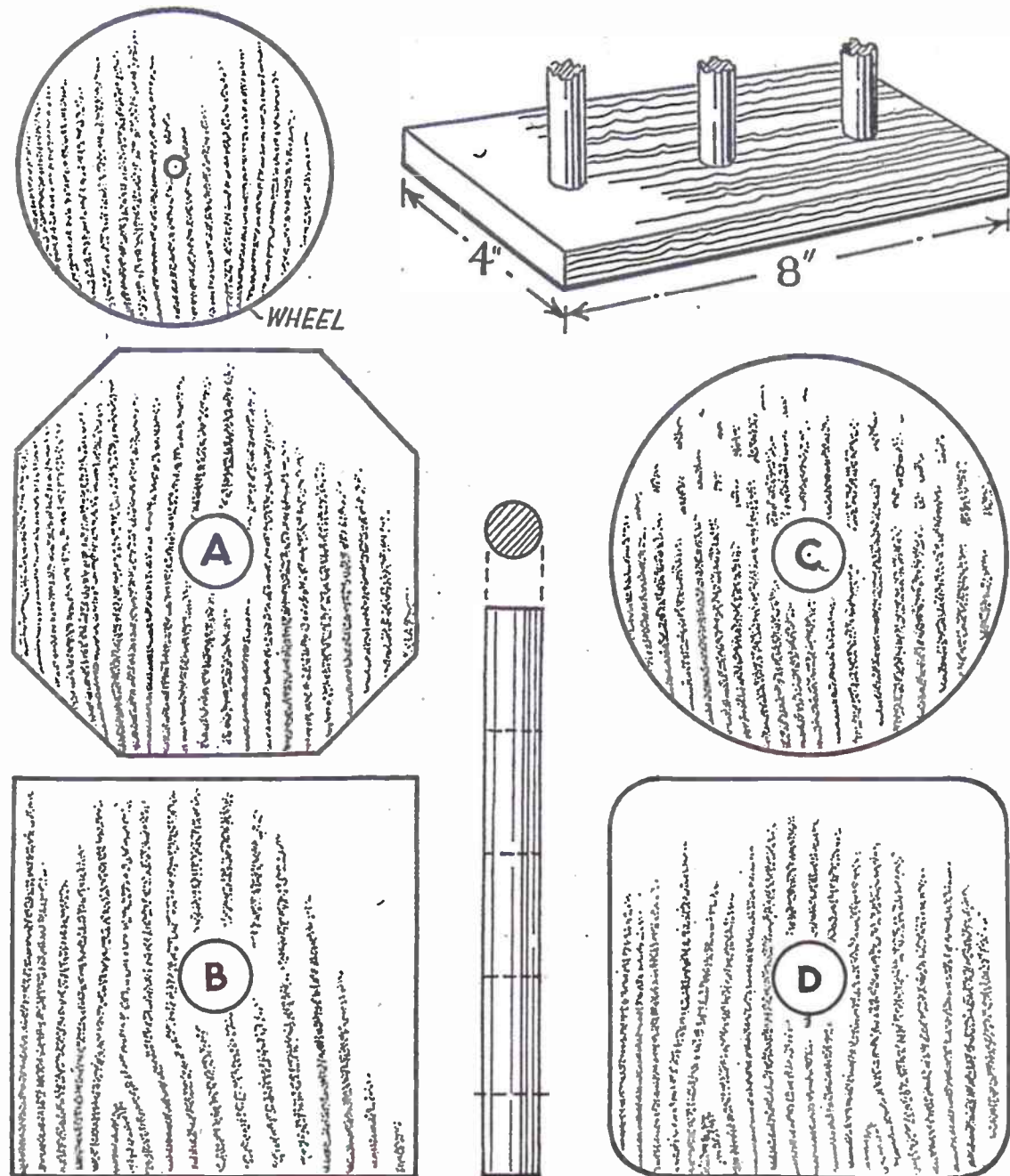
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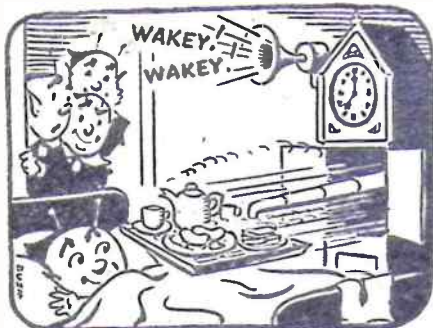
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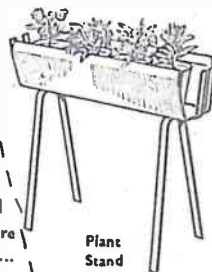
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