Hobbies WEEKLY

January 3rd. 1951 Price Fourpence Vol. III No. 2879

CHILD'S ELECTRIC TOY IRON AND STAND

MOST small children want to be 'like mummy', and it is sometimes difficult to explain to them that some things are not safe in little fingers. Making up the little toy shown, therefore, provides a very acceptable present, that to a child, has a very realistic touch, and yet is perfectly safe. When the iron is switched on (which the toddler can do herself) it lights up in the handle, as most modern irons do. But there is no heat to do damage, nor electricity sufficient to harm the child in the event of accident.

The light is provided by a torch battery housed in the ironing stand. The construction is, therefore, made especially sturdy, to withstand a good deal of hard use before repairs become necessary—most handymen nowadays having much other work on hand besides the too-frequent repair of toys, interesting as that may sometimes be.

The Iron

For the iron, three main pieces of wood are required. One measuring 5ins. by 3ins. of ¾in. wood is needed for the face. Another the same size, but of 1in. wood is wanted for the body, and a piece 4½ins. by 2½ins. of 1in. thickness, for the handle. The face and body are both marked out, as shown at Fig. 1, whilst Fig. 2 gives the outline for the handle.

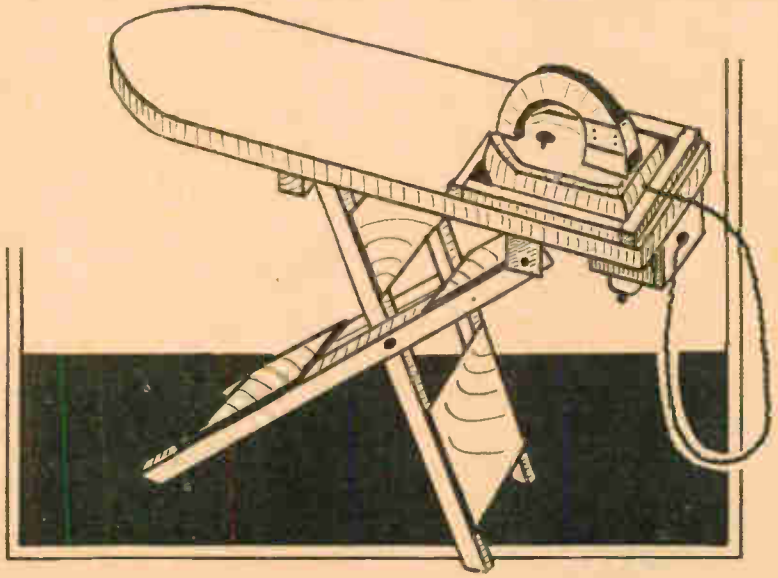
It will be seen that a piece 1in. by ¾in. is cut out of the handle, in which the bulb will be fitted. There are also two grooves, 1in. wide and ¼in. deep, cut in the top surface of the body piece, into which the handle is glued.

Two small pieces of thin plywood 1½ins. by 1in. are required, to cover the lamp opening when the wiring is done. The bulb is held in place by means of a piece of thin sheet brass or tin 1in. by ½in. This is bent to a right angle ¼in. from one end, and is bored with a hole to take a flashbulb. It is then screwed to one of these pieces that cover the lamp opening (Fig. 3), in such a position that the base of the bulb just touches the back inside edge of the cut in the iron handle.

With a fretsaw, extend the back edge of this cut about ¼in. on either side. Then cut another piece of the metal and push it in to form a contact-plate at the back of the cut-out opening, as shown at Fig. 4.

For Safety

In order that the wiring may be out of reach of inquisitive fingers, it is best to run it through the iron itself. To do this, bore a small hole from the back edge into the body of the iron, to a depth of 1in., then another vertically to meet it, as shown at Fig. 4. Fit the handle temporarily in place, and mark the position for continuing this hole up



... until it meets the ... for the bulb.

Fixing the Flex

If any difficulty is experienced in persuading the flex round the 'corner', it can be overcome by fastening a thin stiff wire to it and pushing this through first, to give the flex a lead. One of the ends of the flex is fastened to the back plate and the other to one of the screws that hold the lamp bracket in place.

If desired a further touch of reality can be added to the toy by making a heat-control knob. This is simply a long screw, put in from the bottom of the iron body-piece and countersunk flush. A large nut is then put on at the top, and the top edge of the screw burred over slightly, to prevent the nut from coming off but leaving room for it to be fingered up and down a turn or so.

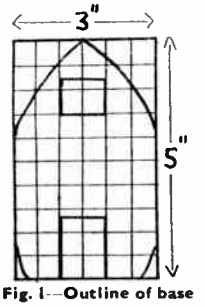


Fig. 1—Outline of base

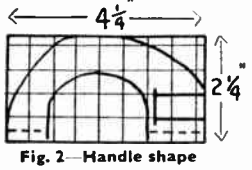


Fig. 2—Handle shape

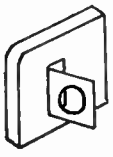


Fig. 3—Bulb holder

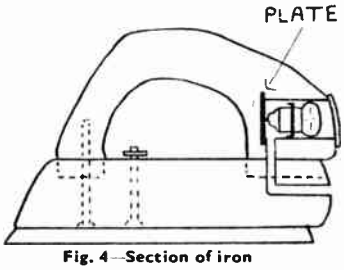


Fig. 4—Section of iron

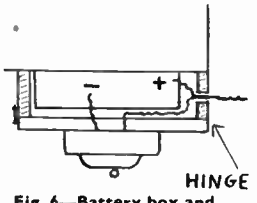


Fig. 6—Battery box and switch connections

Assembling the Iron

One of the little side pieces that cover the lamp opening should be held with screws only, to facilitate any little adjustments to the lamp that might later become necessary. The other can be glued on.

When the wiring of the bulb has been completed, the handle is glued to the body. If desired to make an even stronger job, a long screw can be put in from the bottom of the body piece into the front end of the handle, as seen at Fig. 4.

Finally the bottom piece forming the iron face is glued on, and a little carving work carried out on the corners and edges of the iron, to make the pleasing contours that are characteristic of the modern stream-lined iron. Finish off well with glasspaper, and glue over the opening where the bulb is to shine through a small piece of Perspex or similar transparent material.

The Stand

Particulars for the stand are given at Fig. 5. For the board itself a piece of 1in. deal 5ins. wide and about 16ins. long is required, the front being tapered off to a point in the usual way. Instead of the usual cross-pieces, each leg frame is held together with two pieces of plywood, as shown. This saves the work of cutting eight joints, and since we are making only a miniature stand, the extra wood required is negligible. Moreover, it is just these joints that tend to get loose or broken in the hands of a child.

One frame is made to fit within the other, held together with a nut and bolt in each, as shown. Only the back frame is hinged to the table, and this by means of two angle-pieces of stiff metal, as shown at Fig. 5.

In order that the legs may fold flat to the board (which some poorly-designed full-size boards do not!), the return end of these metal brackets is made 2ins. long. By making the hole for the bolts near the edge of the metal, it allows the corresponding hole in the legs to be set in 1in. or so from the ends. This lessens the risk of the bolts splitting out of the wood with use.

A block of 1in. square wood is glued further along the underneath side of the board, to act as a stop for the other frame, in the manner of full-size stands. It is as well to leave the final cutting of the legs at the bottom until last. The stand can then easily be stood upon its feet, with the movable frame lodged behind its block, and the exact position and angle for the feet necessary to make the board horizontal can then easily be seen

To make a stop for the iron, glue four little pieces ½in. thick to the top of the board, in the shape of a right angle, in which the iron can stand.

The Battery Holder and Switch

The dimensions given in the cutting list allow for a battery of the 2-cell cycle lamp type being used, although, of course, any similar type will do. It will be seen from Fig. 6 that the case consists simply of four strips 1½ins. wide, glued to the underneath side of the board, with a base hinged on to form a lid.

Put the hinges on the outer edge, so the little fastener comes on the inside where it will be less likely to be tampered with. On the lid is screwed a small tumbler switch. The flex passes through a hole in the side of the battery box, and a knot should be tied in it on the inside, to prevent the pull of the flex weakening the connections.

The flex is then split, one strand passing direct to one terminal of the battery and one through the switch to the other. Between the knot and the battery there must, of course, be sufficient spare flex to allow the lid to be opened without breaking the connections.

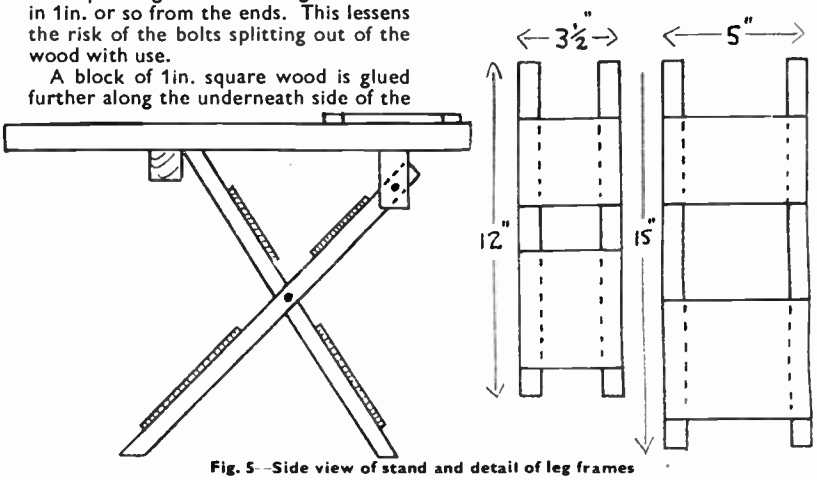


Fig. 5—Side view of stand and detail of leg frames

The board is covered with a piece of white cloth, with a little padding if available, the cloth being held down on the underneath side of the board with large-headed screws. (317)

CUTTING LIST

No. of pieces	Description	Size
	Iron	
1	Base Plate	5" × 3" of plywood
1	Body	5" × 3" × 1"
1	Handle	4½" × 2½" × 1"
2	Lamp Opening Covers	1⅝" × 1" of plywood
	Stand	
1	Board	16" × 5" × 1"
2	Short Legs	12" × 1" × ½"
2	Longer Legs	15" × 1" × ½"
1	Short Leg Stay	3½" × 3" of plywood
1	Short Leg Stay	3½" × 4" of plywood
1	Longer Leg Stay	5" × 3" of plywood
1	Longer Leg Stay	5" × 4" of plywood
1	Leg Stop Block	5" × 1" × 1"
2	Iron Holder	5" × ½" × ⅛"
2	Iron Holder	4" × ½" × ⅛"

By careful selection of materials the author made

A £6 TEA TROLLEY

EVER since domestic help became expensive and difficult to get, the tea trolley has increased in popularity. Many families now only use the dining room when they have guests to lunch or supper. The normal pattern of meals among such families who have a breakfast room leading off the scullery is to take breakfast and lunch in the breakfast room, and tea and supper in the sitting room.

This arrangement means less trouble in every way—laying and clearing of tables, carrying each course from the kitchen to the dining room, and so on. When there are no guests, how much more simple it is to eat the food where it is cooked, or to wheel a tea trolley into the sitting room!

The Ideal Trolley

Now a tea trolley is not a fixture of the sitting room, or any other room for that matter. It is not a work of art designed to blend with the furniture, but a purely functional article. It should, therefore, be judged solely by its efficiency, and yet it is true to say that almost every trolley suffers from one or more serious snags.

Sometimes the wheels do not run smoothly. The trolley bumps heavily on

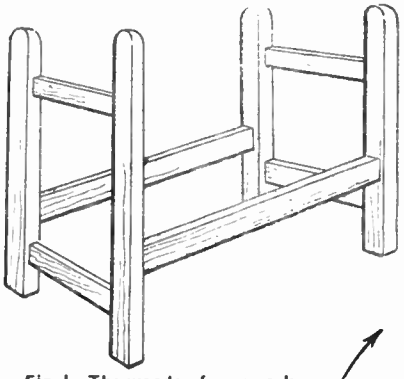


Fig. 1—The wooden framework

and off the carpet, spilling the tea or the milk. It is very difficult to clean, the crumbs getting lodged firmly in the corners, so the trays have to be scrubbed or an irate man has to turn the trolley upside down and shake it vigorously, mostly without success.

Finally, once in the sitting room, the trolley has to be unloaded on to an occasional table—and then loaded again after the meal.

Of course, not all trolleys suffer from these snags, but those that have been carefully thought out cost about £25 in the shops, and yet even they do not compare in efficiency with our home-made £6 trolley.

Wheels are Important

The trolley made by the author boasts four strong wheels that do run smoothly, and there is not any bumping on and off carpets, because the wheels not only have rubber tyres, but shock-absorbing springs on either side as well! It is, therefore, the springs and tyres that take the shock and not the trolley itself, with the result that nothing is spilled.

It need never be cleaned—just polished occasionally—because the trays are not part of the trolley frame. They simply rest on two wood frames and are instantaneously detachable. What is more, the trays themselves are not made of wood but metal anodised with gold, which is heatproof and stainproof.

These trays have no sharp edges—the corners are all gracefully rounded, so there is nowhere for crumbs and dirt to lodge—and they have handles by which to lift them off the frames.

Finally, the trolley need never be unloaded in the sitting room. Two places are set on the trays in the kitchen, and on arrival in the sitting room they join up to form a table jutting out from either side of the trolley.

It sounds complicated, but like all such gadgets that are successful, it is really the essence of simplicity and by no means difficult to make, even for one who cannot even aspire to the title of amateur carpenter. You do not even have to know how to dovetail—screws are just as satisfactory for this purpose, and can easily be disguised behind plastic wood and a spot of varnish.

List of Materials

First, here is a list of the materials needed and their prices at the time the writer purchased them. The two anodised gold trays described cost 35/- each and can be bought almost anywhere nowadays. A set of the best quality wheels with rubber tyres and springs together with sockets cost 18/-, which leaves 12/- for a few nuts, bolts, metal washers, screws and glue—and 20/- for the surprisingly small quantity of wood necessary. If you look around the attic or the garden shed you will probably find you already have all the wood you need.

Now here is a brief description of how to make the trolley. If you do have to buy the wood, ask the timber yard to cut it to the lengths and thicknesses required. This will only cost a few extra pence, if any extra at all, and it will save a lot of sawing and planing.

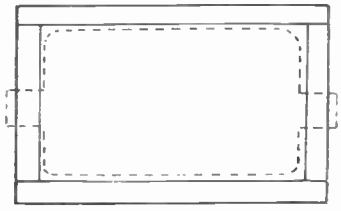


Fig. 2—The framework for the tray

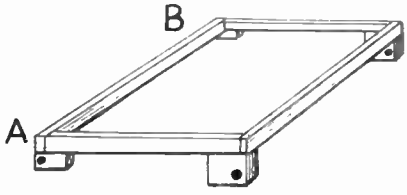


Fig. 3—Corner blocks to frame

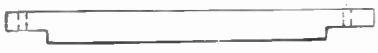


Fig. 4—The side connecting rods

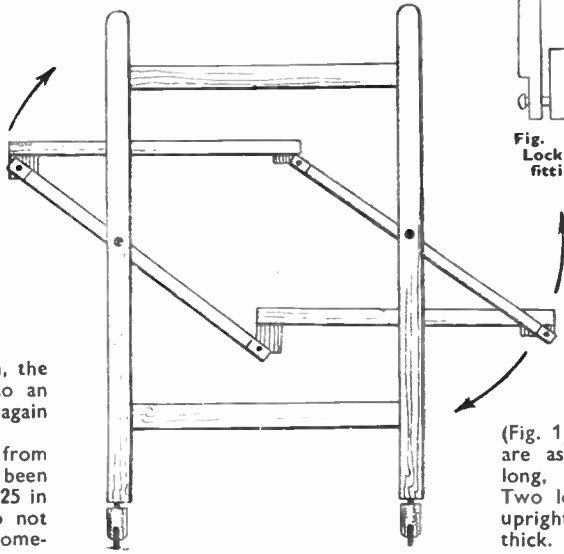


Fig. 6 End view of frames in place, swinging

Fig. 5—Locknut fitting

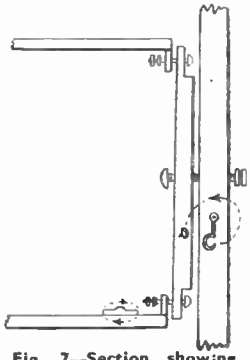


Fig. 7—Section showing fixing details

The first thing to do is to construct the basic frame (Fig. 1), the measurements for which are as follows. Four uprights 36ins. long, 1¼ins. wide and 1¼ins. thick. Two long side pieces to connect the uprights 23ins. long, 1¾ins. wide and ¾in. thick. Four short connecting pieces for top and bottom at each end 12ins. long,

1¼ins. wide and ¾in. thick. Screw and glue these together to form the basic frame as in Fig. 1. Round off the tops of the uprights as shown, and smooth with glasspaper—these will be the handles with which to push the trolley.

Next, fit the wheels. To do this drill a hole in the base of each upright, and into each hole hammer one of the sockets provided with the set of wheels. The wheels themselves then slip into the sockets.

Assembly

Now comes the point where great care is needed—the construction of the two wooden frames that are to hold the trays. Remember that the handles of the trays resting on the ends of these frames form the sole support of the trays. In the detail at Fig. 2 the solid lines represent the frame and the dotted line the tray. The moral here is that you must first buy the trays which should measure 21ins. from the tip of one handle to the tip of the other, and then build the wooden frames round them.

In the author's trolley each frame consists of two side pieces 20ins. long and ¾in. square, and two end pieces 12½ins. long, ¾in. wide and ½in. thick. Use screws and glue as for the basic trolley frame.

Mechanism

Having built the tray frames, there is only one more operation to complete—the mechanism that joins the trays to form a table. Incidentally this operation causes a good deal of amusement and interest to guests. The process took quite a lot of thought and experiment to devise, but if you follow these instructions you will not find any difficulty. At least you will be saved the whole process of trial and error.

First of all cut four blocks of wood 2ins. by 2ins. by ¾in., and four more 2ins. by 1in. by ¾in. Fix them to the bottom of the frames as shown in Fig. 3. You will see that the larger blocks are at each end and on the same side in both frames. Now beware!

Drill a hole in the right hand bottom corner of the large block at end (A) of each frame and at the left hand top corner of the small block at end (A) of each frame. Next, drill a hole at the left hand bottom corner of the large block at end (B) of each frame, looking at the frames from the further end, and a hole at the right hand top corner of the small block at end (B).

Connecting Rods

The last things to make before assembly are four connecting rods, two for each side. Their measurements are 15½ins. by ¾in. by ¾in., the last 2ins. of each end being only half as thick (Fig. 4). Drill a hole through the narrower ends as shown. As you will have seen already, the bolts pass through first the connecting rods and then the blocks on the frames.

It is best to place a metal washer between the bolt head and the rod, between the rod and the block, and between the block and the nut. It is also advisable to use a lock nut in addition to the ordinary nut (Fig. 5). Make sure at this stage that the rods do not foul any of the bolts.

The two frames are now joined loosely together at each end by the connecting rods (Fig. 6) which in turn must be fixed to the basic trolley frame. To do this, first decide at what height you wish the 'table' to be formed, then swivel round the frames until they are level one above the other and until the connecting rods disappear behind the trolley uprights. Make a mark half-way down each connecting rod and another mark next to it on its respective upright.

Fouling

Holes must now be drilled at these heights through the uprights, and also through the rods. You may need, in addition, to reduce the thickness of two of the rods at these points to avoid subsequent fouling of the mechanism once assembled on to the trolley frame. All that needs to be done now is to bolt together fairly loosely each rod and upright.

It is also worth while to incorporate two more small refinements. One is a hook and eye at one side to keep the frames in their vertical position (Fig. 7), and butterfly nuts at top and bottom of one side of one of the frames to retain them in their horizontal position. And there you have the complete article.

The construction of such a trolley sounds far more complicated and difficult than it really is. Certainly nothing could be more rewarding. It is a boon to any housewife—one has the satisfaction of seeing it in daily use—and the writer's is an object of envy to all his friends. (281)

If you require duplication of copies you can

MAKE BLUE-PRINT PAPER

BLUE-printing paper is used by engineers to make a number of identical copies from a tracing. It can also be used to make copies from ordinary photographic negatives, and so can give hours of inexpensive amusement. The paper is easily made and the necessary chemicals can be bought from most chemists or from any firm dealing in scientific equipment.

Make up two solutions as follows and mix in subdued light. Solution A—1oz. of Ammonia citrate of iron in ½th of a pint of water. Solution B—1oz. of Potassium ferricyanide in ½th of a pint of water. If beakers are not available the solutions can be made up in 1lb. jam jars. Make sure all the chemical is dissolved in each jar and keep them quite separate—do not use the same stirrer for each solution, as even this will cause a slight amount of mixing.

Take the two jars into a room where the light has been subdued with fairly heavy curtains, and pour them into one bottle. This bottle must now be kept in the dark as the mixed solution is sensitive to light.

Choose a sheet of paper that has a smooth surface and pin it to a drawing board. Use a soft brush and paint the solution on to the paper as evenly as possible, first of all working the brush up and down and finally across the paper. Hang the sheet up in the dark to dry.

From the dried sheet of paper cut off a piece a little larger than the negative that is to be used. If no printing frame is available, put the piece of printing paper on to a flat board, put the negative on top of this and keep it in place with a clean sheet of glass (Fig. 1). Expose to direct sunlight for four or five minutes. To fix the picture simply wash it under the cold water tap. When the water runs clear remove the picture and hang it up to dry.

A strip of printing paper can be partly inserted in a book (Fig. 2) and used as a test strip for timing the exposure. Take the strip from the book at short intervals and when the two halves are quite distinct (Fig. 3) the picture can be taken from the frame for fixing. (268)

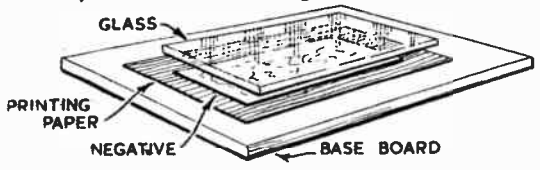


Fig. 1—Process of holding the paper

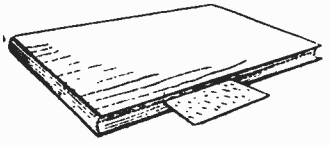
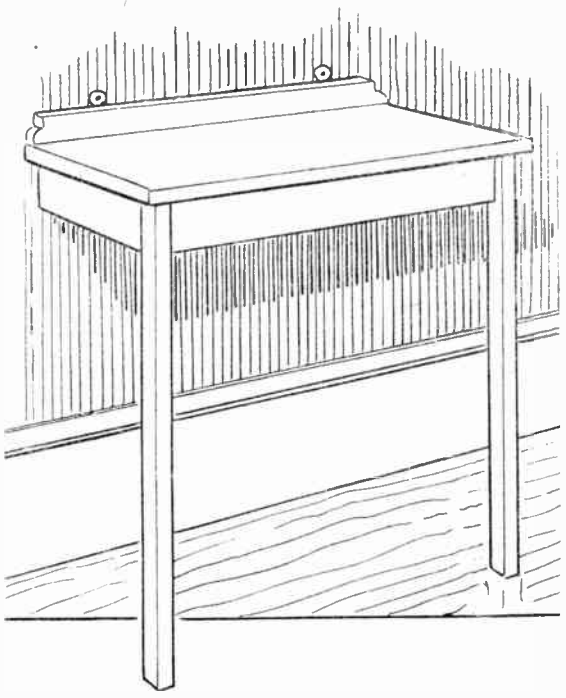


Fig. 2—Test strip in place


Fig. 3—Distinct halves

For economy in space the handyman can make a

SIMPLE WALL TABLE



THIS pattern of table is most easy on the wood, as only one pair of legs are required, and there is also a saving on the length of rails. For a side table for writing and other purposes, a lavatory table, or dressing one, the design is equally applicable. Construction is quite simple, no difficult joints being involved, and any timber available can be used.

No dimensions are given, as it is obvious that these will depend upon the purposes the table is to serve. The height of the legs is given, and this will probably be found suitable to all cases. Having decided on the table dimensions, make a three-sided underframe, as in Fig. 1, which should be 2ins. less in length and 1in. less in width. Wood of ⅝in. thickness and 3ins. width will do here nicely.

The front corner joints are rebated, as in inset, and the frame nailed and glued together, with a temporary strip of wood, nailed across the open ends to keep them the correct distance apart until the glue is set hard.

At seven points on the inside of the frame, seen in the drawing, blocks of wood are to be nailed and glued for screwing the frame to the table top afterwards. These blocks can be cut from 1in. square section wood, 2ins. long. In the centre bore a screw hole which will just admit a 1½in. screw. The fixing nails are driven in each side of this hole, so as not to interfere with the passage of the screw. The inset will make this point quite clear.

The Legs

Cut the two legs needed from 1½in. square wood or stouter, if the table exceeds 2ft. in length. The part of the legs contacting the frame, in this case the upper 3ins. of them, is to be cut away at the rear to fit over the corners of the frame.

Quite an easy job this if set about correctly. First mark out the portion to be removed with pencil lines at the top, and extend these down the sides to the necessary 3ins. With a tenon saw, cut down these lines, then across the bottom of them, as in detail (A) in Fig. 2.

With a sharp chisel remove the wood to the bottom of the saw cuts, as at (B), then the remainder can be easily removed with chisel and mallet. The legs are then screwed over the corner frames, two screws to each side. Glue can be added to the joints before the screws are driven right home. A strong joint should result.

Plain Legs

With certain types of table, quite plain legs will suffice, as shown in the general view, but with those intended for superior use, writing, say, a more artistic pattern of legs may be preferred.

Two alternative designs are shown at (C). In one half-round grooves are filed round the four sides at about 4ins. down from the top and 3ins. up from the bottom. Below the latter, the legs are tapered to the floor. Quite a neat shape this. The other design employs a stop chamfer at each corner edge, with a bevel at floor level, and would specially suit when the table is made of oak or stained to imitate that timber.

Table Top

The table top can be made up from ⅝in. thick boards or stouter wood, according to size.

The boards should either be glued and dowelled together, or tongued and grooved, as convenience dictates. Plywood is not particularly suitable to this design, unless thickened at the edges all round with 2in. wide strips of wood, glued on. The top, when levelled off, should be placed surface downwards on the bench, and the frame, also reversed, laid on top. See the table extends beyond the frame just 1in. at front and sides, then screw the frame to it through the blocks.

A strip of wood 2ins. wide is glued and screwed along the top, level with the back edge of the table. This can be quite a plain strip, with a simple trim up at the ends as a finish. The screwed and glued joint, however, must be strong, as some strain comes on this strip when the table is fixed to the wall.

The best way is to see the under edges of the strip bed down flat on the table all along, as it should do if both are level. Then screw from underneath, but not quite home. Have the glue pot ready, unscrew the strip, apply the glue, and rescrew the strip up tightly at once.

Wall Fixing

For attachment to the wall a pair of wall plates are required, usually sold as glass plates. Get a pair of the slotted type, as in Fig. 3, and screw to the back of the strip a few inches in from the ends. Place the table in position against the wall and screw, driving the screw through at the top of the slot. Use round-headed brass screws for this job. Then the table can be easily removed at any time by just lifting it up until the screw heads come opposite the holes in the plates, and pulling the table away.

If attachment has to be made to a brick and plaster wall, as will be the case in most houses, the holes should be

(*Continued foot of page 215*)

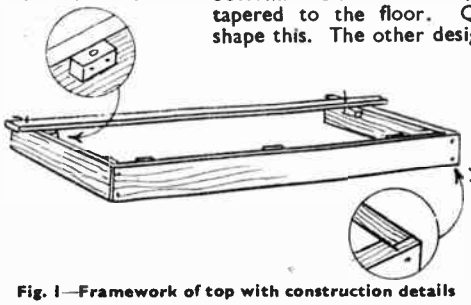


Fig. 1—Framework of top with construction details

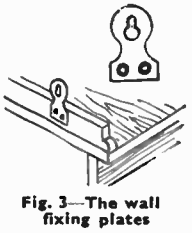


Fig. 3—The wall fixing plates

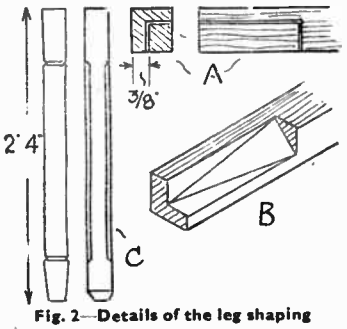


Fig. 2—Details of the leg shaping

Add to your model railway scenic effects by

MAKING MODEL TREES

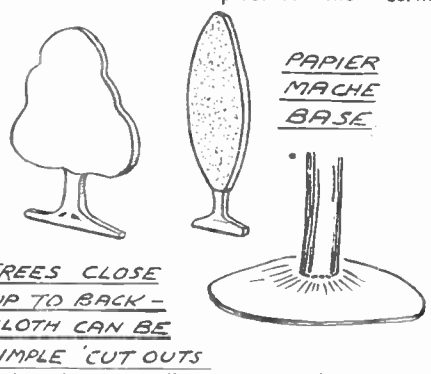
NO model railway scenic effects which portray the countryside look really completed without a few near 'scale-model' trees dotted around. Trees painted on a back picture are all very well, but they do not give the realism and finish that a few actual models about the baseboard impart.

Now model trees are not hard to make and moreover with a little care they can be shaped to look like poplars, elms, oaks and other of our woodland friends that have a distinctive contour.

Required for the making are a bath loofah or bath sponge (to be cut up), green dye or ink, some small twigs and glue. The size of any tree attempted will vary according to the distance it is supposed to be from the track. Trees tight up against the line should be near scale, but further back they can be smaller and right against the back cloth must agree with any trees depicted on it.

Many small trees are about 30ft. high and scaled down for gauge O, by multiplying by 5/226, work out to a model height of over 8ins. high. This would be rather overpowering, so we can reduce a little and make our close-in trees about 6ins. high without offending the eye.

The framework of model trees is suitable-sized and shaped twigs cut from hedgerows, bushes or full-sized trees. There must be a main piece for the trunk with several offshoots to look like boughs. With care an outline can be got in the one piece by trimming off a twig already having a few 'branches'.



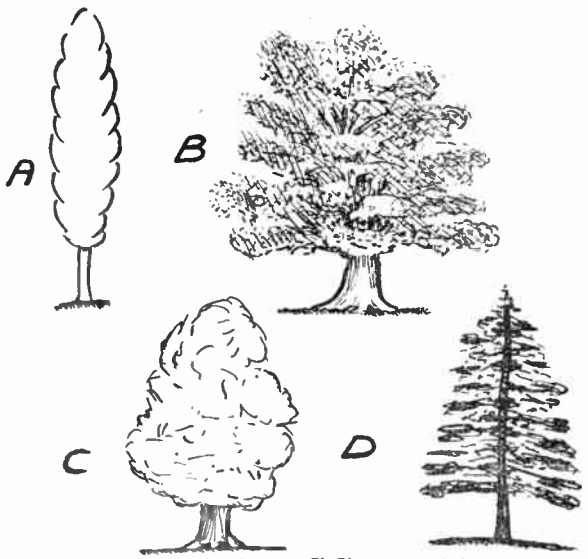
If the desired shape cannot be achieved in one piece, then a main stem should be procured as near as possible in model diameter, etc., to the trunk of the tree that is being copied and on to this other, twigs are glued, till the required outline of boughs is brought about.

Now comes putting on the foliage. It is done with the loofah or sponge, which is just coloured to a suitable shade of green—'Bastik' or an aniline dye being best for the purpose.

After seeing that the material has been dyed thoroughly throughout, it is hung up to dry and pieces of appropriate shape to fit the boughs are cut away and teased out with the aid of tweezers or a wire brush. These are then glued in position along and around the 'twig boughs', finally being trimmed to agree with the general contour of the tree in question.

With care the most perfect-looking foliage can be thus fitted to the twig base and a finished model tree produced that leaves nothing to be desired in the way of realism.

Looking at the sketches, it will be noted that the poplar is virtually straight with tight foliage covering practically the whole trunk, while the oak has a more squat and scattered appearance. The trunk, too, is much stouter. The chestnut tree has also a good-sized trunk and the same big 'head' of the oak, but is more compact as far as its covering is concerned.



(A) Poplar, (B) Oak, (C) Chestnut, (D) Fir

There are several kinds of fir tree that can be copied, but the standard is as indicated, with the boughs coming out regularly and at right angles all round the main stem, these growing smaller towards the top. Indeed, following the good old Christmas tree shape.

To get all these points right, the modeller should go in the country and study various types of trees there are about and if possible get photographs of these taken from a good distance, so that the broad outline can be well appreciated.

While dyeing the foliage to one tint of green will give quite good effects, the best results are obtained by using various shades of green, from the light tones of the new leaf to the darker of the more ancient.

As suggested, except when there are very large spaces to be filled, the trees can, with advantage, be less than scale size and if always to be viewed from one direction, they can be slightly oval in plan, that is full size across the vision of the observer, but not necessarily so in a line at right angles to him.

Where trees apparently come forward from a back scene which includes trees, those on the base board but right up against the cloth can be either cut outs of thin wood or built up with the twig method just described, but in such a way that only a flat cross section of tree is produced, in the same way that pear trees are trained to cover a wall—with a plenteous front show of branches but no depth back to front.

Model trees should be securely fastened to the track where possible. But where a movable tree is desired, this can be effected by making a base, as shown, with papier mâché. The trunk is well set in a mass of this which is sloped off in all directions to meet the surrounding ground.

Before this base is quite dry it should be covered with sand that has been dyed green. This is strewn over the surface and pressed down with, say, the back of a spoon, so that the area does not become too flat and even. When dry, the sand will stick firmly to the papier mâché, which in its turn will become as hard as rock. A base of this sort should be built out to diameter almost as big as that made by the branches and foliage.

The above notes all refer to the popular gauge O, but where trees are being supplied for an OO layout, these should be true scale-model size, as there will not be the limitation of space, and furthermore as OO layouts are seen to a greater extent as a whole, the fact that the trees are too small, becomes noticeable to a marked degree. Owing to its bigger size one never gets quite the same comprehensive view of a gauge O layout and so the smaller size of the tree is not noted.

On the other hand, in a garden gauge O system where there is plenty of room round about, the trees again should be full scale size to look well, as here the observer standing well over the tracks gets almost the same comprehensive view accorded to OO layouts indoors.

Home-made conversion of an ordinary clock into AN ELECTRIC ALARM

ARE you one of those unfortunate persons who find it difficult to get out of bed in the mornings? Do you sleep so heavily that an ordinary alarm clock fails to get you out? If your answer is yes to either or both questions it is time you got an electric alarm. You can make one yourself quite easily and cheaply.

Type of Clock

You will need a mantel-type clock—an ordinary alarm clock will be best—an electric door-bell, a bicycle lamp battery, and about 3ft. of bell wire. The outfit will be quite compact if you mount it on a board 12ins. by 6ins.

The idea is to make a circuit, using the hour hand of your clock as a switch to set the bell ringing. First, remove the clock from the case and make a pin-hole in the cardboard face at a point in line with the hour at which you want the bell to ring and the centre of clock. The hole will be made about ¼in. inside the circumference traversed by the hour hand.

For example, for 7.30 your hole will be at a point halfway between figures 7 and 8 and near enough to the centre for the hour hand to strike a wire protruding from it. Now, take a length of bell-wire (this is single core, by the way, and fairly stiff) and strip off the insulating cotton for about ½in. Leave this bare, but around the next 2ins. wrap some sticking plaster or insulating tape to further stiffen the wire.

Fixing the Wire

From the back of clock push the bare end of wire through pin-hole in the clock face till enough goes through to foul the hour hand's circular progress at that point. Make sure the wire does not protrude far enough for the minutes hand also to foul it. Secure this position by winding the wire for a few coils around any projection that is not a part of the working mechanism.

Take care that no bare wire is touching any metal part of clock or your bell will be ringing when you do not want it.

Now replace the clock in the case and thread the loose end of wire through one of the holes in the back of the clock case before replacing. The hole for the hands-setter is usually suitable. If there is no suitable hole in the back of your particular clock you can easily punch one with a nail.

Wiring Completed

All that remains is to complete your wiring and this is easy. Do it in this order. Secure your loose end from the clock to one of the battery connections. Secure another piece of wire to the other battery connection and take the other end to either of the bell connections. Secure a third piece of wire to the other bell connection and take the other end and fasten to the leg on your clock or the ring at the top—the leg is the better place.

Testing

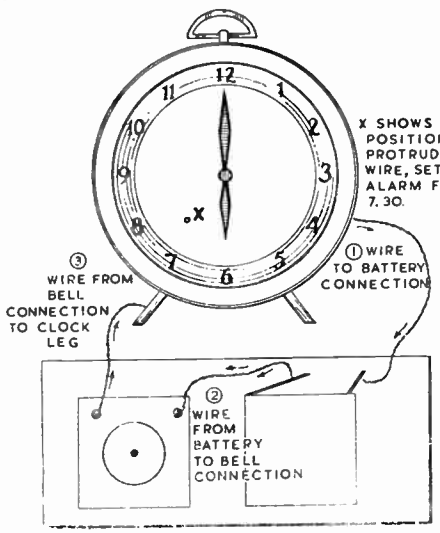
The job is now complete and ready for testing. Turn the hands of the clock till the hour hand comes against the wire sticking through the clock face. This will set the bell ringing (if it does not, check your connections). Turn the hands back to the correct time and wind the clock.

You can sleep now and forget about it. In the morning your bell will ring till you switch it off, or the battery runs out—in which case you are not just sleeping. To switch off, turn the hands back till the hour hand nearly touches the wire at the other side. This allows your clock hour-hand a full circle of 12 hours before the wire interrupts again, by which time it will have run down and stopped.

As an extra measure—to safeguard your battery—remove one of the connections, e.g., the wire from the clock-leg. To set your mind completely at rest each night test your circuit—in the manner described—before setting and winding your clock.

Time Alteration

Should you wish at any time to rise at any other hour you can do so by either advancing or retarding the clock time when setting, e.g., if you want to rise an hour later on Sunday make your clock time one hour slow of the actual. If an hour earlier, make your clock time one hour fast. This arrangement can be varied to any time you desire. If in any doubt, count the number of hours you have for sleep from time of retiring to rising and set your clock time the same number of hours back from the projecting wire.



Check over all your connections carefully and of course you will remember that the battery will run down after, depending on how much it is put to use.

The writer has been using this home-made alarm for over seven years with a five-shilling clock and the only occasion for it to fail was when he forgot to wind the clock. (310)

Wall Table—(*Continued from page* 213)

plugged for the screws first. With the use of patented plugs, Rawlplugs, for example, this job is quite simple now. Most readers will, most likely, have a few of such plugs, with the drill, in their possession, but if not, a small outfit can be purchased cheaply, and be found most essential in the home.

With the table in position, and a kindly help keeping it so, start making the holes for the plugs by inserting the drilling tool in the slot, at the top, and giving it a few blows with the hammer.

When sufficiently marked, the table can be removed, and the holes drilled to a finish by hammering the drill, rotating it between each blow, with the fingers. See the holes are deep enough to sink the plugs level, then push them in. Replace the table, and finish the screwing, pushing them in the centre of the plugs and driving in as in the normal practice.

The finish of the table will depend somewhat on its surroundings and the use it is intended for. For instance, if it is to hold a lavatory basin or for other uses in kitchen or scullery, a coating with white paint of the hard glossy type, would be a suitable method. With the application of this paint, however, a suitable undercoat is desirable, to give a solid effect.

As a drawing or dining room side table, probably a stain and varnish would suit as well as any, the colour to match existing furniture. Before either are applied a good rubbing over with glasspaper to satin smoothness is needful for a nice surface afterwards. Another finish worth consideration, if the wood used is deal, is to coat with a suitable undercoat and finish with Japlac.

Handyman improvements for comfort and use in these
NOVEL HOME IDEAS

HAVE you one of those tall windows on the stairs which always looks so forlorn and uninteresting? Why not brighten it up in some way. Have an inside window box as follows. Make a light plywood box to fit in on the sill, inside, not outside.

If you can find a strong cardboard one this will do. Paint it in some gay colour with a neat beading. You can now fill it with sand, cotton-wool or moss. Florists sometimes sell types of moss specially for such a job. Now you can arrange the artificial flowers which you buy in the stores and you have a result as shown at Fig. 1.

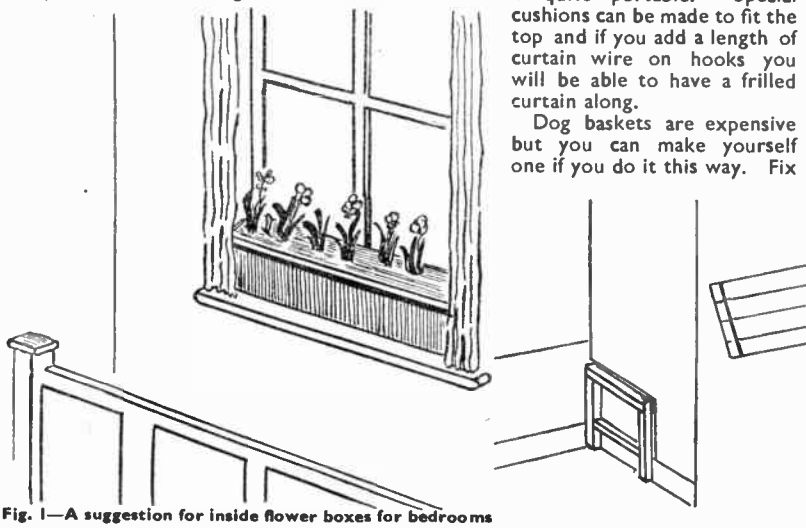


Fig. 1—A suggestion for inside flower boxes for bedrooms

Many modern homes have recessed windows and these are ideal for a window seat and you can store quite a bit underneath. The only trouble is that you may not always want it in use. During the summer with extra company and

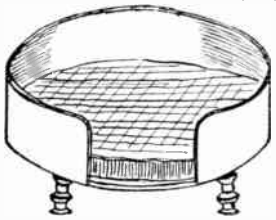


Fig. 3—A home-made dog basket

guests, it may be very useful, so it can be made portable.

First of all prepare two strong frames, as shown in Fig. 2, to fit firmly against the wall allowing for the skirting at the back. Make it 20ins. from the ground and about 19ins. deep. Check up that the side fixtures are firm and stand level.

The main covering is now made with three or four floor-boards or the best wood you can get for the job. Have these to fit in with a neat margin so that they do not move about but can be taken down without damaging the wall. Bring them flush to the front so they should now rest squarely on the fitments.

Carefully measure and fit two pieces of 1in. square wood as shown across the boards and just so the side fittings are held. The seat is now rigid and at the same time quite portable. Special cushions can be made to fit the top and if you add a length of curtain wire on hooks you will be able to have a frilled curtain along.

Dog baskets are expensive but you can make yourself one if you do it this way. Fix some thin board together about 2ft. square. Now cut round with a pad-saw so you have a 'floor' for the bed. Thin sheet plywood is available and will bend if steamed.

Fix underneath two cross-pieces of 1½in. square wood to keep the boards together and on which to set the feet. Drill into this at each end a piece of ¼in. dowel rod about 5ins. long. This will allow you to fix legs from two cotton reels apiece and so keep the bed well up off the ground, as you see in the picture of the finished job in Fig. 3.

A worn-out or damaged ironing board is a danger but it can be repaired quite easily. Probably the 'padding' has gone and this can be replaced with a piece of old blanket. This must be free from holes where the iron is used most; otherwise it will cause a bump and the surface will tear. You must have a flat surface for ironing. If it is a thin blanket use two layers and if thick one layer will do. Remove all old material and see that all tacks are out.

Start right from scratch and lay out the blanket so you can cut round the board with an all round allowance of 2ins. Then lay the material on the table, place the board on it, turn over the edge on one side and tack all the way down that side first, using small tacks and placing them 2ins. apart. Stretch the material tight across the board and tack all down the other side in the same way. Keep well tightened as you tack.

At the top and the bottom, cut the overlap to the exact width of the board. This will save turning a double lot of thicknesses at the corners. Now tack down at each end. See that it is very smooth all the time and not stretched crossways.

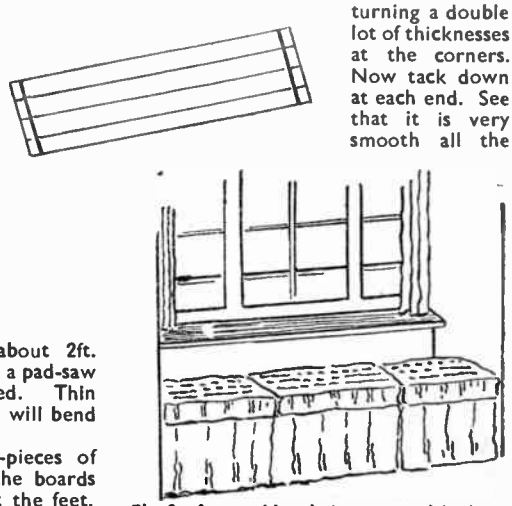


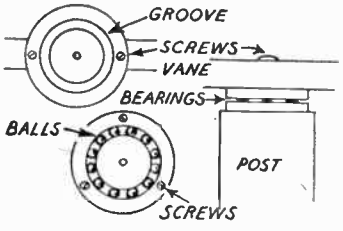
Fig. 2—A movable window seat, with above support and framework

You can follow this off with a new ironing sheet which should be thinner. The idea of fixing is the same as the blanket but you will require about 2½ins. for overlap but this you must judge for yourself.

If not fixing this sheet, it can be made to fasten with tapes underneath. A similar bag shape can also be made and can fix over the board when not in use to save it from dust and dirt. (303)

Ball-bearing Weathervane

THE drawing illustrates a practical and accurate weathervane. The two circular pieces of wood shown in the detail are cut from oak 3ins. in diameter and ½in. thick. A groove is cut in both pieces, deep enough to take nearly half a ball-bearing, about ¾in. from the centre. Both pieces are now well glasspapered. Any design may be used for the vane which should be about 18ins. long and the whole is screwed to a suitable post. The part above the ball-bearings should be made to revolve round the screw.



A useful addition to any home is this simple

MAGAZINE & BOOKSTAND

WE have received a number of requests from our workers for details and instructions for making a simple magazine and bookstand. From the fact that the word 'simple' is mentioned, it may be inferred that the joints must be easy to cut and assemble and simple in character and the whole simple in make-up.

The light magazine and bookstand shown in Fig. 1 should fulfill the requirements of all workers desirous of making up such a piece for the winter collection of books, etc. The stand should fit comfortably into a side recess, but if required longer than that shown, then the general construction given here can still be adapted, with, of course, wider and stouter wood to compensate for the greater weight of books.

Mahogany would look well for such a stand as this, but a commoner wood such as American whitewood or even plain deal would answer.

General Construction

Fig. 2 gives a front and side view with measurements for setting out the various parts. The construction is shown in the enlarged details in Fig. 3. The top (A) of the stand is a plain piece, made up, perhaps, by jointing two pieces of 6in. wood edge to edge, and putting underneath a couple of cross battens glued and screwed to assist the glued joint. This top is later screwed to the two rails (B) at front and back after they have been cut and fitted to the four uprights (C).

The uprights or legs as they might be called, are quite plain pieces about 3ft. 5½ins. long and 2½ins. by ½in. in section. Open mortises are cut in these at the lower ends to take the cross rails (G), and open slots cut at the tops to receive the ends of rails (B). Fig. 3 gives two methods of shaping the ends of the top rails.

Joints

At (A) the rails (B) are simply let into the tops of (C) their whole width, while at (B), in the same figure, a shoulder is formed on the rail (B) which comes hard up against the uprights, making for a good tight joint when the wedges are inserted and knocked in. The lower mortises are cut 2½ins. up from the extreme ends of the uprights, and are 2ins. long by, of course, ½in. wide. The slots at the top of the uprights are 2ins. deep by ½in. wide, excepting those shown in method (B), Fig. 3, which are 1½ins. deep.

Wedges

The rails (G) have rounded ends as shown, cut carefully to a semi-circle with the fretsaw at a centre distance of 1½ins. in from each end. There are small openings cut, as seen in Fig. 3, to take the shallow-cut wedges which pull the joints well together after they are glued up. The openings for the wedges in rail (G) are clearly seen in Fig. 1—front view. In Fig. 3, at method (A) the wedge is seen just before entering its cut-out hole.

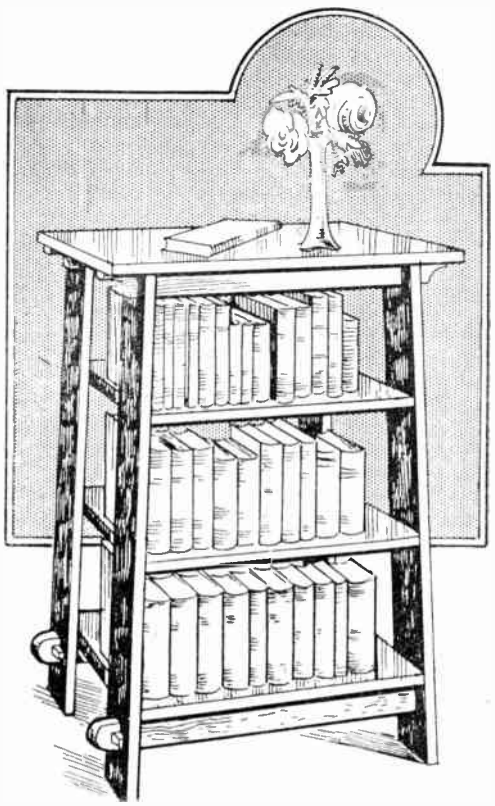


Fig 1—An attractive and useful piece of furniture

The shelves (D), (E) and (F) are all made up in a similar manner to the top (A), excepting that the edges of the shelves must be bevelled to fit properly against the four uprights. They will afterwards be screwed through to the uprights, and further strengthened by adding shelf bearers (H), which are 10ins. long by 1in. wide by ½in. thick, as seen in position in Fig. 2.

Taper Sides

The correct slope for the uprights is gained by plotting the two measurements of 18ins. at the top, and 21ins. at the bottom. By putting these dimensions on the rails (B) and (G) the correct slope is easily got. Small blocks of wood may be added and glued between the shelves and the uprights at the ends where the rails (B) and (G) occur.

The wood should be thoroughly cleaned before being stained and polished. The following cutting list of wood will be found most useful by those who contemplate making the bookstand.

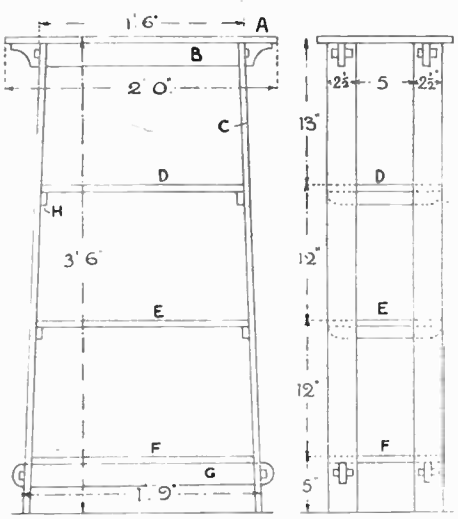


Fig. 2—Front and side elevation

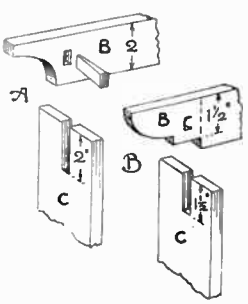


Fig. 3—Details of joints

CUTTING LIST

A—one piece, 24ins. by 12ins. by ½in.
B—two pieces, 23ins. by 2ins. by ½in.
C—four pieces, 42ins. by 2½ins. by ½in.
D—one piece, 18ins. by 10ins. by ½in.
E—one piece, 19ins. by 10ins. by ½in.
F—one piece, 20ins. by 10ins. by ½in.
G—two pieces, 24ins. by 2ins. by ½in.
H—four pieces, 10ins. by 1in. by ½in.

You may not think so, but a suprising number of greasy and dirty finger and tool marks will be found on the wood to require cleaning away. Unless they are glasspapered off, you cannot obtain a really good surface to take the stain and polish, and so provide that excellent finish worthy of a good piece of work.

Hints for the fisherman who undertakes

WINTER ANGLING

DO NOT hang up your fishing-rod on the wall and leave it there until summer comes again; it is a big mistake to do so. Some of the best sport by the river and lake is obtained in winter-time. At this period fish, as roach, chub, perch, dace, pike and grayling, are in the 'pink' of condition, providing hard battles when hooked.

The well-fed winter fish is the fellow to make the line rattle in the rings of the rod. Real rod-benders are winter chub and roach, to say nothing of the perch, never in finer fettle than now.

Of course, there are days in winter when inclement weather prevents us from visiting the waterside. Even if we braved the elements, there are other considerations. Fish seldom 'bite' well during severe frosts; likewise heavy floodings will put them off. But there are many days in winter when it is a treat to be by one's favourite roach swim—those bright sun-warmed days when it is quite pleasant out-of-doors at mid-day.

Equipment

If the water in the river is flowing at normal winter level and is slightly coloured, then we anticipate some fun. The number of really hopeless days during the colder months is surprisingly few.

Naturally, at this season, the angler who is wise, sees to it that he is well equipped for the conditions prevailing. It is imperative to go forth well clad, wearing your warmest overcoat, and a woollen pull-over. Undergarments should be of wool, too, and good thick wool stockings should be worn.

Stout boots well-dubbined, ensure warm and dry feet, and really are better than rubber Wellingtons, which strike cold to one's feet. A soft felt or other waterproof hat with a brim that you can turn down when at the waterside if there is a cold wind blowing or it is inclined to be showery. Take with you a Thermos flask containing hot tea or Bovril, which will be found more stimulating than anything else you can carry.

The Tackle

With winter conditions favourable you can fish with much the same kind of tackle as at other times of the year. After a period of rain, when the water is tinted ale-colour, excellent sport is often had with the roach, fishing with light float-tackle, selecting a swim that is fairly deep and of slow current, angling in what is known as the 'Nottingham' style and swimming or 'trotting' your baited hook down the swim.

Ground-bait is scattered sparingly into the swim at intervals. Too heavy a ground-baiting feeds the fish too much; just sufficient dribbled in the water to keep the roach and dace 'scrounging round' for more is the ticket. For this sort of fishing a quiet, windless November or December day is right.

In Flooded Waters

In winter there are times when the river is in flood. Roach—and other fish likely to be found in a roach swim—often 'bite' well on a rising water. When the river is 'bang up' you should fish the bank-holes and quieter slacks and lay-byes. Dyke-mouths are likely spots, corners, backwaters, and bush 'pockets', provide shelter from the galloping main current.

For fishing in a flood-water a different method from the foregoing is adopted; you must fish with leger tackle, baiting your hook with a lobworm—the tail-end of a lob frequently kills well at such a time.

Grayling frequently sport well to small red worms as bait, fished on free running float tackle when a river is falling back to normal level again after a flood. Or a maggot or bunch of maggots, fished on light tackle with a No. 12 crystal hook on a 3x Nylon cast one yard in length, in the quieter spots and eddies, will occasionally bring handsome rewards to those anglers having access to a grayling water. Frosty weather, coming in the wake of a flood, is often a likely time to seek these lovely fish.

Bait for Dace

Dace, in winter floods, are often met with by roach-fishers, and the same leger tackle and baits are advised. After a lot of winter dace fishing the following wrinkles were picked up.

Under normal winter water level try red worms or maggots. In and after flood-time, the lob worm—either head or tail end is recommended. Fish with fine tackle—say 3x or 4x cast and No. 12 or 14 hooks, even in winter. Devote attention to all slacks, eddies, deep swirly holes, and bank swims when the water is high. Keep tempting the fish by throwing in, from time to time, a few scraps of worms or maggots.

When the stream is fast or in flood use the leger tackle, or practise 'laying-on'. But when possible at all, stick to the method of 'swimming the stream'. This keeps you on the go more then when fishing static, and so warms you up on a coldish day. Chub, too, respond to similar angling tactics, in winter.

When 'trotting' the bait a long distance down a swim, first of all make sure that you have thoroughly rubbed down your line with Vaseline or Floatant or other suitable preparation that will keep it on the surface. Do not apply too much grease or your rod-rings may get clogged. Give lines a good dressing at home, and this saves valuable time when one reaches the river-side.

Use a centre-pin reel, paying out line so that the float travels without any 'drag'. You can check it slightly now and again to keep the bait travelling a little ahead of the float. Quill floats are best for trotting, carrying sufficient shot to weight the 'tell-tale' so the tip shows nicely above the surface.

Rough Weather Fishing

In rough weather it pays on some waters to allow the line to sink. Chub in winter are very fine 'scrappers', but this fish needs an article devoted to itself and its value as a sporting fish in winter.

In early winter the perch is at its best; a grand sporting fellow he is, and can be fished for in several ways—with float and worm or other bait, with paternoster tackle, used in the 'sink-and-draw' method, live-baiting with minnow or, another interesting method at this time of year—spinning with a gold, silver or red spoon or a gold Devon.

Roving for these dark-striped fish at this season is a grand idea if you desire to keep your circulation going. You tramp quietly along the river bank, working the bait or lure down the holes under the bank, and by camp sheathing, expecting a 'bite, and unlucky you are if you fail to hook a few fish during the day.

Where to Hunt

During late autumn and winter—November is often a good month—when the river is swollen by rains, try out the bank 'push pockets' fishing, either with worm or minnow. A 'bush pocket' by the way, is a deepish hole lying under the bank between two bushes, where the water is steadied.

Perch collect in such spots and if 'at home' when you pass by and drop them a sample of your wares, they will give same a hearty welcome. By old timbers and wood-baulks good perch often lurk. By the walls of a sluice is another likely haunt. After winter floods, perch will occasionally be found packed in schools in some deep eddy or slack.

Weir pools in winter offer a variety of entertainment, with pike, perch, chub, roach and dace to provide possibilities of pretty sport. Unless in very heavy flood, do not neglect these fishful spots.

For Wrist Ache

WHEN cutting with a hand-frame for long periods your wrist may begin to ache. To prevent this, place the lower arm of fretsaw in a vice; take hold of the handle and bend it back towards the back of the frame about 1in. out of alignment. Replace the blade and you will notice a great difference in the cutting, also the ease in which you work.

The second article on making container for having

FUN WITH PEG PUZZLES

THIS is an 'interchanging' peg puzzle. The board is marked out into two 'fields' or 'dens', each containing eight holes—a ninth hole in the middle is common to both. All the holes bar the centre are supplied with pegs, those in the one den being coloured red and the other green. The game is to transfer all the red pegs to the green den and all the green pegs to the red den by 'jumping' the pieces as in draughts, that is in an upward or horizontal direction. There can be no diagonal jumping. The peg that is jumped over is removed from the board.

The transfer while not impossibly difficult is not quite as easy as you might at first think, and the aim is to make the complete change in fifty moves or less. Actually it can be done in forty, but you will be lucky to start with if you attain the fifty-move record.

Construction

To make the puzzle, first mark out a 5in. square on some not too soft material having a fairly close grain and ¼in. thick (see A, Fig. 1). Inside this the centres of the hole positions are located by drawing in the horizontal and vertical lines, as shown. It greatly helps positioning five of the holes—the centre, mid ones of the dens and those at the outer corners by putting in the diagonals of the square. The centres throughout are 1in. apart and a ½in. from the edges.

Mark in also the rectangles (a) and (b). These are 1⅛ins. by 1¼ins. and when cut out, form the pockets used for storing the pegs when the game is put away. Note that the outer corners of these rectangles fall also on a diagonal.

Before cutting the 5in. block away from the rest of the material, drill a hole at each peg position, of ¼in. diameter. Also take out the rectangles (a) and (b). Now smooth off the upper surface and cover the area with bright yellow enamel. When this is dry, surround each den with a line about ⅛in. from the outer holes, as indicated in (B) and then paint the squares so formed different colours.

Upon the yellow background, red and green make two good contrasting hues, but any colours really will do as long as they are bright. Note how the line at the centre cuts diagonally across the mid hole. When the dens are dry, finish by putting in a white line between the holes (in the same direction as the original scribed lines) which help players to keep to the necessary 'square' jump.

To get these lines with dead straight edges, make a small cut along each edge with a sharp razor blade and using a steel rule for guidance. It will be found possible then with the finest of brushes to paint up to these cuts and not beyond, thus giving the desired accurate outline. This, incidentally, is a dodge often used by model-makers when painting their models to get dead straight lines in the most cramped of locations.

Lid and Base

Next required is a lid and base. Both of these are from ⅛in. plywood and are the same size as the main block. The base is secured by one or two short pins and glue, while the lid is attached by a cloth hinge glued (Fig. 2) along one edge on the outside, so that the lid can fall right back and down while the game is being played. Perfect gluing is the secret of a satisfactory cloth hinge.

The front end of the lid is held when in the closed position by means of a strip of cloth or soft and thin leather which goes over a pin in the front of the main block. For colouring, the lid and base can, with advantage, be the same yellow as the top of the block, the sides and ends of which also being finished this way, after the lid and base have been glasspapered quite flush.

Pegs

The pegs are 1¼ins. long and a shade less than the ¼in. diameter, so that they fit easily into the holes, but are not too slack. There are sixteen pegs in all and half of them are painted or dyed red and the other half green (or whatever colour you have used for the dens). Dyeing is really better than paint, as it will not interfere with the fit of the pegs in the holes—as a coat of paint may easily do.

For packing away, eight of these pegs go in one pocket and eight in the other, where it will be found that they just nicely fill the available space.

Finally, as with the triangle puzzle, a neat rectangle of paper pasted on the inside of the lid, giving clearly what the aim of the puzzle is, will be found good, especially when the puzzle, with others, is intended for handing round at parties. Also the words 'PEG PUZZLE' on the lid, in easily outlined letters, helps to give a nice finish to the puzzle as a whole. The picking out of the hinge and fastening tab at the front, in the same colour as the letters makes things look better still.

Instructions

The instructions on the inside of the lid which are nicely written in indian ink with, say, a mapping pen, may read—

> **THE AIM.** To transfer by jumping as in draughts all the red pieces to the green den and vice versa in fifty moves or less. All jumping must be up or across. No diagonal jumping is allowed and no piece is taken from the board.

These should be printed as neatly as possible or you may even be able to get them typewritten. Set out the wording nicely and surround it with a plain or fancy border, so the whole thing looks attractive when you open the lid.

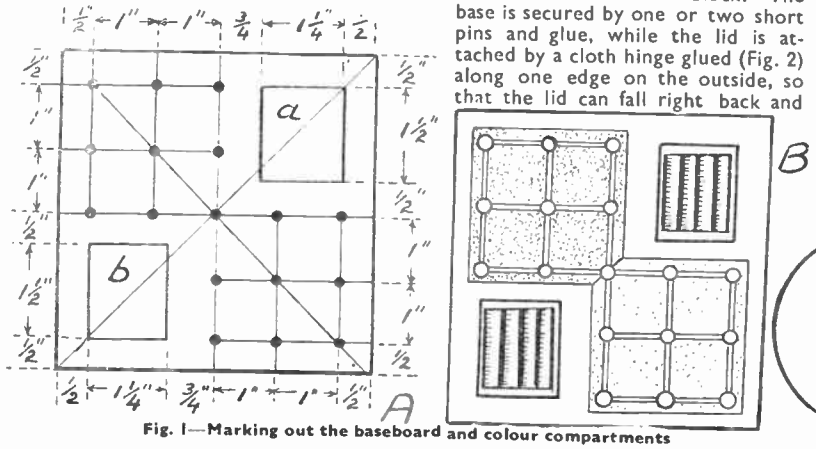


Fig. 1—Marking out the baseboard and colour compartments

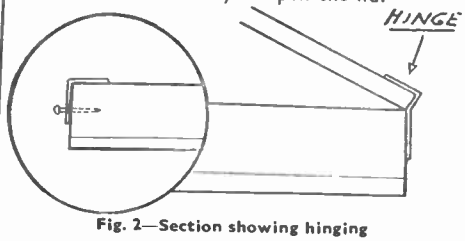


Fig. 2—Section showing hinging

Activities of bees and ants can be studied in this OBSERVATION CASE

READERS who have paid visits to museums will, no doubt, have been fascinated by the glass cases seen there which contain bees' or ants' nests. Being thus encased the little creatures can be easily seen, and their activities are always most interesting.

It is proposed to show how a simple case may be constructed at home, and how a colony of the common meadow ant is introduced to its new home.

Construction of the Glass Case

The sides of the case are of two pieces of plain glass about 1ft. square. When obtaining these from the glazier procure a few other strips ½in. wide, not more than ⅛in. thick, and 10ins. and 12ins. long.

These thin strips are glued flatly on to the two large pieces at the edges so that the space between the two large sheets is only ¼in. If this space were more the ants would tunnel into the earth of the nest, and could not then be watched.

Making the Nest

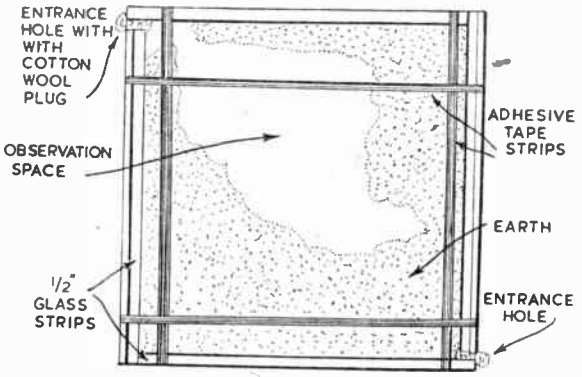
Before commencing the gluing of the glass a little earth should be placed in suitable positions on the one large plate of glass. The best earth for this purpose is some taken from a nest of meadow ants from which it is proposed to start the new colony. Sprinkle it around the edge of the glass, leaving a space in the middle for clear observation. It may be moistened with a few drops of water so that it remains in place.

Next place the four strips of glass in position for gluing. These must be staggered according to their lengths so that at two opposite corners there is a little entrance left to the interior of the case. Glue them into position and the other sheet on to the top. The case is now complete, and ready for the introduction of the ants.

Obtaining the Colony

Use a spade to tackle the nest of meadow ants, digging deeply. The queen, which is a necessity for the new nest, can be easily picked out by her size in relation to the other ants. Put the queen in a bottle, together with a few dozen of the common worker ants, some larvae and pupae, and some of the little pale scavengers which will be found in the nest.

To get the creatures to enter the new nest presents a small problem, and, perhaps, the best way is to place the newly-constructed case on a piece of flat wood floating on water. Place a little earth near one entrance, plugging the other with cotton wool which is a barrier to ants. Now place the queen at the entrance, and put the workers on the flat wood around the case.



Surface view of case for ant colony

When they find themselves surrounded by water they will soon investigate the earth and make for the entrance, and set about making new quarters for the queen and themselves. Within a few hours they will have constructed tunnels and completely settled in the new quarters.

Feeding

The meadow ant does not bite, but the larger black wood ant does. If it is desired to make a nest of these the depth of the case may be about 1in., and the nest of the pine needles and other small twigs of which the natural nest is constructed. Instead of having the sides of thin strips of glass use lengths of wood, plugging the entrance with wooden plugs.

Feeding is very simple. A drop or two of honey placed on one of the cotton wool plugs once or twice a week is sufficient for the meadow ants. Also a tea-spoonful of water may be poured in through one of the holes at the same time to keep the earth moist.

Wood ants require a little water to drink, but care should be taken not to wet the twigs forming the nest. They will also need a few drops of honey, and an occasional fly or earwig can be introduced.

Care and Attention

These artificial nests should not be exposed for long periods to daylight. They are best watched by artificial light which the ants do not appear to mind. If they are left in direct daylight for some time they form a layer of earth over the open spaces of the glass sheets, thus preventing observation. In winter evenings they may thus be watched for a long time by artificial lighting.

It may be necessary to clean the foul earth at the entrance holes occasionally, and it can be scraped away with a hairpin or small fine paint brush.

If it is desired to remove the top of one of the glass sheets for closer observation from time to time, the top sheet may be kept in place with a strip of adhesive tape around the whole case instead of being glued on. This strip can be severed and the glass removed when necessary, and renewed when it is replaced.

These home-made colonies will live and thrive for years with these bare necessities of attention, and occasionally it may be necessary to remove some of the inhabitants to prevent overcrowding.

Stamp Collecting—(*Continued from page 221*)

illustrated here. It shows native seamen on the bridge of a boat. The one on the left is using a sextant, while the one on the right is at the wheel, but does not seem to be paying attention to his job.

On the 3d. we see a picture of the parrot fish. This is a most remarkable fish, as the teeth are so numerous and small, but as they are joined together they form two sharp edged plates rather like the beak of a parrot. Hence the name. Many of them attain quite a size and are valued for food.

Two other new issues must be recorded here. One from Australia, or really it should be three from Australia, an 8½d. which shows a portrait of an Australian Aborigine. Australia uses some rather strange postage rates—3½d., 5½d. and now 8½d. The other two stamps are in commemoration of the centenary of its first adhesive postage stamps. Both are the same value, 2½d., and one is a reproduction of the well known 'Sydney View'. The other is a reproduction of Victoria's first stamp.

Then Southern Rhodesia has a very attractive commemorative 2d. stamp—This stamp bears the portraits of Queen Victoria and King George VI.

Lastly we give an illustration of the late King Gustav V of Sweden. The specimen shown is that issued in 1935.

NOTES ON NEW ISSUES

EVERY year Mr. Donaldson of Wellington, New Zealand remembers to send us, by air-mail, specimens of the health stamps which are issued every Christmas for the purpose of raising funds to send the children to camps. We must, of course, remember that the Southern Hemisphere is having their summer just when we are shivering over a fire and thinking of Father Christmas.

A glance at the illustration is quite sufficient for readers to recognise all that can be said. If any comment is to be made, it is that it is a pity that the post- mark and the special cancellation "First day of Issue" has not been placed at the base of the stamp. When stamps of this kind are being issued and a special cancellation applied, then post office officials should be told to do their best not to spoil the effort.

Cover from Canada

Another cover comes from Canada, this from Mr. Reg Gibbs who has also been most good to readers in assisting with the illustrations of interesting stamps. This one is to commemorate the issue of the new 10c. stamp in honour of the Canadian Fur Trade.

There are two covers available, both of which Mr. Gibbs sent. The one shown here with the picture of the beavers at work and the other which shows a trapper arriving at a fur trading station with a load of skins on his sledge.

Two interesting First Day Covers from readers

Careful Marking

Note that in this case the obliteration 'First day of Issue' does not obscure the stamp design. It may be a little difficult to understand the design of the stamp, especially as the illustration of it is somewhat small. The three curious objects on the left are skins stretched on frames to dry, hanging up on the trees, with the trappers tent on the right. If you have a specimen of this stamp, then see if you can find the date 1950. You will certainly require a good magnifying glass and then look just to the right of the tent.

We have already mentioned the Health stamps of New Zealand, and from a region which is situated very close comes a set of 10 stamps—Niue. You may not be able to find this on the map, but if not, then look for Savage Islands—to the north of New Zealand.

Two of the stamps of this set should appeal to those who are advocating that Great Britain should have pictorial stamps. The 4d. value has a picture of the Arch at Hikutavake, and any readers who know the coast of Dorset, will immediately recall Durdle Door, which is a mass of Portland stone with an arch, through which a rowing boat could pass.

Then, on the 1/- value, there is a picture of a cave at Makefu. Well, Cheddar or Wookey in Somerset and Castleton in Derbyshire could also give pictures like this.

The 9d. is the most striking of the other values. On this there is a picture of a man spearing fish. A map of the region is on the ½d., Capt. Cook's boat, the 'Resolution', appears on the 1d., and Alofi Landing is shown on the 2d. A native hut is on the 3d., Alofi Bay on the 6d. and bananas form the theme of the 2/-. A view of Matafa Chasm is reserved for the highest value, which is the 3/-. This is a very interesting set.

Sudan Air Mail

For Air Mail postage there is a set of eight stamps from the Sudan. Buildings of a very prosaic nature are shown on three, including the Gordon Memorial College which was shown on one of the stamps of the 1935 Gordon set. There is a picture of the Blue Nile Bridge at Khartoum, a Nile Post Boat and Port Sudan, while the most interesting of the set is the 3 pt.

This shows a Sagia or water wheel which is used for the purpose of irrigation. Illustrations of this type are really the most useful to those living out of the country, as they bring to the notice of the foreigner the difficulties which the natives have to overcome. Most people know there is a shortage of water all along the Nile, but they do not always pause to consider how the water from the river finds its way on to the land.

Geography

The Turks and Caicós Islands—where would you expect to find these on the map?—have quite a long set of 13 stamps to recount from ½d. to 10/-. Curiously enough the lowest value has one of the best illustrations. It is that of bulk salt loading from a jetty on to a boat. Diving for sponges is shown on the 2½d. and an excellent map on the 4d., which if you want to, will answer the question at the beginning of the paragraph.

The Cayman Islands have a similar set and various native views are given. One is rather new to the usual type and is

(*Continued foot of page 220*)

New Zealand for Health

Sailors on the Bridge

Late King Gustav of Sweden

MISCELLANEOUS ADVERTISEMENTS

START making money at home, whole or spare time, making fancy leather and felt goods. Material provided. Write for rates of pay, etc.—Grange Co., 2 Curzon Street, Leicester.

40 DIFFERENT stamps free, including Silver Wedding, U.P.U., Victory, Silver Jubilee, Coronation, Pakistan, etc. Send 3d. postage and request approvals.—J. F. Smith, 39 Manor Park, London, S.E.13.

PERSONS are wanted for spare time work, making up fancy goods at home. Experience unnecessary. Write for details.—Dept. 918, Universal Products, 5 Cornhill, Lincoln.

MAKE money! Ply offcuts, 3/-, 5/- and 10/- parcels.—Mayco (D), 117 Station Rd., Sutton Coldfield.

HOME Woodwork, 50 useful things to make. A practical handbook with 188 illustrations, 2/6 posted. Modern Wood Toymaker, a new handbook with 192 effective designs and illustrations, 2/6 posted.—G. F. Rhead, 2 Waldegrave Park, Twickenham.

INTRODUCTIONS. Pen friends, companionship or marriage.—V.C.C., 34 Honeywell Road, London, S.W.11.

35 m/m. CINEMATOGRAPH films. Cowboy, comedies, drama, etc. 50ft., 2/6; 100ft., 3/6; 250ft., 7/6. Sample set, film strips of above subjects, 1/3.—Jones, 51 Cranford Drive, Hayes, Middx.

STAMPS FREE!! Twenty unused (2½d.).—G. H. Barnett, Limington, Somerset.

BE Taller. Quickly! Safely! Privately! No appliances—no tablets—no dieting. Details, 6d. stamp.—Malcolm Ross, Height Specialist, BCM/HYTE, London, W.C.1.

MODELS. You can make lasting stone-hard models with Sankey's Pyruma Plastic Cement. Supplied in tins by Ironmongers, Hardwaremen and Builders' Merchants. Ask for instruction leaflet.

WHEELS for toys, and other accessories. Full lists will be sent on application to The Joyden Toy Co., 193 Chase Side, London, N.14.

LEARN Shorthand by February 3rd (1 hour's study nightly). 1st lesson, 2½d. stamp.—Duttons (Dept. HB), 92 Gt. Russell St., London, W.C.1.

RUBBER Tyred Metal Disc Wheels finished in red, green or blue enamel. 2ins., 2/6; 3ins., 3/- per set of four. Post paid. Other sizes available up to 9ins.—The Joyden Toy Co., 193 Chase Side, London, N.14.

DOLL'S House fittings and papers; send S.A.E. for list. Doll's house plan special; send 2/6. Trade supplied.—Zimplan, 88 Ware Road, Hoddesdon.

BE Taller in 14 days or money back Details, 1d.—Stebbings System, 28 (HB) Dean Road, London, N.W.2.

LORRY Kits, 4 mm. and 7 mm. scale. Also large range of spare parts from which to build to your own design. Send for fully illustrated catalogue—price 1/-.—Wilson's Lorries Ltd., 6 Gt. Winchester Street, London, E.C.2.

TRANSFERS for decorating toys, trays, furniture, fancy goods. List and samples, 3d. Flowers, pixies, dogs, nursery rhymes.—H. Axon Harrison, Jersey.

100,000 Government surplus bargains. 20 amp. toggle switches, 9d., post 3d.; 70 ohm. variable resistances, 9d., post 3d.; 12v. drills with $\frac{6}{16}$th capacity chuck, 19/6, post 1/6; sponge rubber strip, approx. 18ft. × 1½ins. × $\frac{5}{8}$in., 2/-, post 9d.; aluminium rivets, handy boxes, approx. 1lb. assorted, 2/6, post 6d.; 12 or 24v. small electric motors, various types, for models, etc., from 9/6. Send 3d. stamp for list of other bargains. Money back guarantee. — Milligan's, 24 Harford Street, Liverpool, 3.

PLYWOOD offcuts. Birch and Gaboon in various thicknesses. Handy sized parcels for the cabinet, toy, model maker and all handicrafts. Parcels made up in £1 and 10/- lots. Carriage paid. Send P.O. to Reeves, Plywood and Timber Merchant, 33 Front Street, Monkseaton, Whitley Bay. Tel. W.B.4677. Parcels are now despatched on day of receiving order.

BLUSHING, shyness, nerves, self-consciousness, fears, ended. Details under plain cover, 1d.—Stebbing Treatment, 28 (HB) Dean Road, London, N.W.2.

£5 to £20 weekly earned at home, running your own Mail Order business. Details, 1d. — Stebbing Publications Ltd. (HB), Naphill, High Wycombe.

FASCINATING and profitable hobby, casting ornaments, toys, etc. You can easily make these yourself. Paints, brushes and all accessories. Illustrated catalogue of 700 moulds, plus latest list of Rubber Moulds, with instructions, 9d. post free.—Cock of North Moulds (H), 140 Hollings Road, Bradford.

MAKE your own Jig-saw Puzzles. Fine Art Pictures, various reproductions and sizes. Also suitable for framing. Stamp for full list.—Joyden Toy Co., 193 Chase Side, London, N.14.

PLYWOOD and Timber Offcuts for sale at very cheap prices; veneered oak plywood panels, etc. Japanese Oak. Bumper list, 1d. S.A.E.—Dept. 'W', JDD. Storage, 71 Northcross Road, S.E.22. Tel:BRIxton 7441.

USE spare time on profitable homework making fancy goods. Write for free booklet.—(Area 544), 54 Southgate Street, Leicester.

AMERICAN Magazines post free for one year. Popular Mechanics, 32/-; Popular Science, 28/6; Mechanix Illustrated, 22/6; Popular Homecraft, 18/-. Stamp for full list of others.—Willen Ltd. (Dept. 57), 101 Fleet Street, London, E.C.4.

HOMEWORKERS required, either sex, light assembly. Part or full time. S.A.E.—Esprey, Box 18, 41 Wade St., Lichfield.

HARDWOOD Ball Beads, ¾in. diameter, suitable for children's counting frames, etc. 5/3 per hundred, plus 1/9 P.T.—Joyden Toy Co., 193 Chase Side, London, N.14.

PERSPEX and acetate; cut any size from 2/6 sq. foot.—W.M. Products, 2 The Mall, Ealing, W.5. Eal. 3881.

MAGICIANS Tricks, crazy cut-outs, only 1/3. Parcels, 5/6. An evening's entertainment. Lists, 3d.—De Hempsey, 363 Sandycombe, Kew Gardens, Surrey.

SCARCE Hong Kong centenary stamp free. Stamp for pictorial approvals.—G. Smith, P.T.S., 95 Ocean Road, South Shields.

MODEL Makers and Handymen. Bumper set of lists, books, plans and samples. 2/6.—Sutton Models, Billericay.

HOME Watch and Clock Repair Outfit. Includes watchmaker's magnifying eyeglass, tweezers, screwdrivers, oilers, oil, brush, dusting powder, plus illustrated explanatory book. Watch and clock repairing simplified. In container. 12/9 inclusive.—D. Bolster (Dept. H), 5a Station Parade, Ashford Middx.

EARN £££s weekly with '114 Ways to be Your Own Boss', 5/6 only. Money back if dissatisfied.—Stebbing Publications Ltd., Naphill, High Wycombe.

9.5 Film Library, projectors, films, for sale. Stamp for lists. — Wayland, 223 Longley Road, Tooting, London.

ARTIFICIAL Marble. Entirely new plastic for casting ash trays, bookends, wall vases, statuettes, etc. Easy to use, simply mix powder with liquid; sets granite hard with scintillating crystalline structure very closely resembling marble or alabaster. Highly heat resistant, impervious to water. Any type of natural 'veining' can be simulated in any colour. Also Synthetic Rubber Moulds. Liquid preparation for making permanent elastic moulds for repetition casting plaster wall plaques, etc. Send 1/- for full details of this easy, fascinating and profitable hobby. Money refunded to bona fide enquirers.—Dept. H., Karlena Art Stone Company, 55 Deansgate Arcade, Deansgate, Manchester, 3.

500 DIFFERENT world stamps, 3/6.—H. Whitby, Godshill, Fordingbridge, Hants.

RAWLPLUG PRODUCTS

INDISPENSABLE IN THE WORKSHOP HANDY IN THE HOME

DUROFIX

The indispensable adhesive for instant use on crockery, glass, wood, metal, celluloid and the thousand and one things handled by the hobbies enthusiast. Instant drying, insulating, waterproof and heatproof. Durofix is grand for repairs to electrical, sports and leather goods. Tubes 9d. and 1/3d. Tins 2/9d. and 7/6d.

DUROGLUE

UNDILUTED ANIMAL GLUE OF INCOMPARABLE STRENGTH

Ready for instant use for the many purposes for which an extra strong glue is needed. Wood, cloth, fabric, felt, leather and any greaseless surface can be stuck with Duroglue. Tubes 6d. and 1/-. Tins 2/3d. and 3/9d.

PLASTIC WOOD

APPLIED LIKE PUTTY, DRIES LIKE WOOD

Can be cut, planed, polished & painted like wood Will take nails and screws like wood. It does not blister, crack or decay. Rawlplug Plastic Wood is actually the best quality product of its kind on the market. Tubes 10½d. Tins 2/- & 5/-

DUROLASTIC

ELASTIC SEALING COMPOUND

Forms permanently elastic waterproof joints with great adhesive qualities to any dry surface. Resists vibration or shock and will not break away with expansion or contraction. Non-crumbling, non-staining, does not exude oil. Can be painted in a few hours. Ideal for boat-builders. In easy-to-use tubes at 1/6d.

B389E

SOLDERING IRONS

MAKES SOLDERING CERTAIN AND SIMPLE

This is a guaranteed electric tool which will pay for itself many times over by repairing and giving longer life to metal household goods. In the workshop it is indispensable. Supplied with Standard bit for 25/- Hatchet or Pencil bit for 26/-. Voltages 100/110, 200/220/230/250. Universal AC/DC.

HEATLESS SOLDER

No iron is needed with Rawlplug Heatless Solder which is in paste form and dries in a few minutes. It is very useful for quick repairs to metalwork, but is not suitable for wireless or electrical connections. Tubes 9d.

IRON CEMENT

Rawlplug Iron Cement hardens very quickly and only needs mixing with water. It will repair Water and Gas pipes, Radiators, Cisterns, Buckets, Kettles, Saucepans, Stoves, Kitchen Utensils, etc., etc. 1/3 per tin.

RAWLPLUG FIXING DEVICES & TOOLS

Whatever your fixing problems, there's a Rawlplug Device that will solve it for you—easily and quickly. Rawlplugs make neat and absolutely firm fixings in any material from plaster or brick to stone or slate, with a size for every screw from No. 3 up to ⅜" coach screws. Rawlplug Tools are easy to use and ensure a perfect hole without damage to surrounding surfaces. Other Rawlplug Devices include Rawlbolts for heavy duty fixings, Rawlanchors and Toggle Bolts for thin or hollow materials and Rawlclips for instant fixing of conduits and cables to girders—a device in fact for every need.

Rawlplug fixing devices and products can be obtained from Ironmongers, Hardware Dealers, Stores or Model Makers Suppliers.

THE RAWLPLUG COMPANY LTD. LONDON. S.W.7.

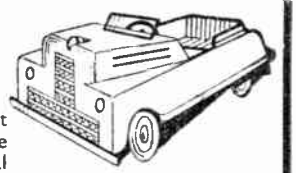
SWISS TRAIN PACKET FREE

ABSOLUTELY FREE: beautiful commemorative from **SWITZERLAND** showing latest Electric Gotthard Express Train, a superb stamp issued for the Centenary of Swiss Railroads, and which will add value and interest to Your Collection. And IN ADDITION we will include FREE FOR YOU an interesting symbolic **DENMARK, BELGIUM** (Arms of the State) and **ITALY** (Victor Emmanuel).

ABSOLUTELY FREE, and ALL FOR YOU. Just write to Windsor Stamp Co. for **Swiss Train Packet Free**, ask to see a selection of Windsor Stamps On Approval, enclose 3d. stamps for posting costs.

WINDSOR STAMP CO. (Dept. 12)
UCKFIELD, SUSSEX

PEDAL MOTOR CAR



This new simplified chart enables any amateur to make a strong smart modern Pedal Car suitable for children 2 to 5 years. Complete plan and instructions **2/6** post free

Wheels and other parts for Pedal Cars and Dolls Houses available. Send stamped addressed envelope for list

ZIMPLAN 88 WARE ROAD HODDESDON, HERTS.

Swann-Morton

CRAFT TOOL

The perfect, razor-sharp utility tool for modellers in Balsa Wood, also for Biologists, Students, Commercial Artists, Photographers, etc. 2 interchangeable blade shapes.

Handle and two blades 2/- post free. Spare blades six for 2/6 post free. Send P.O. to

FAMILY PRODUCTS
92-94 BRADFIELD RD.
SHEFFIELD 6.
Trade enquiries invited

YOU CAN BECOME A HANDICRAFTS INSTRUCTOR

Experience not essential

Men who enjoy making things in wood or metal can turn their hobby into a permanent and interesting Career. Short hours, long holidays, and security in a job you would really enjoy, can be yours if you become a Handicrafts instructor. Let us send details of the easiest and quickest way to get the necessary qualification.

We definitely guarantee
"NO PASS—NO FEE"

If you would like to know about our unique method of preparing you for one of these appointments, write to-day and we will send you our informative 176 page Handbook—free and without obligation. Mark your letters "Handicrafts Instructor."

BRITISH INSTITUTE OF ENGINEERING TECHNOLOGY
595 Shakespeare House
Stratford Place, London, W.1

BIET

Printed by BALDING & MANSELL, LTD., London and Wisbech, and Published for the Proprietors, HOBBIES LTD., by HORACE MARSHALL & SON, LTD., Temple House, Tallis Street, E.C.4. Sole Agents for Australia and New Zealand : Gordon & Gotch (A'sia) Ltd. For South Africa : Central News Agency Ltd. Registered for transmission by Canadian Magazine Post.

Hobbies WEEKLY

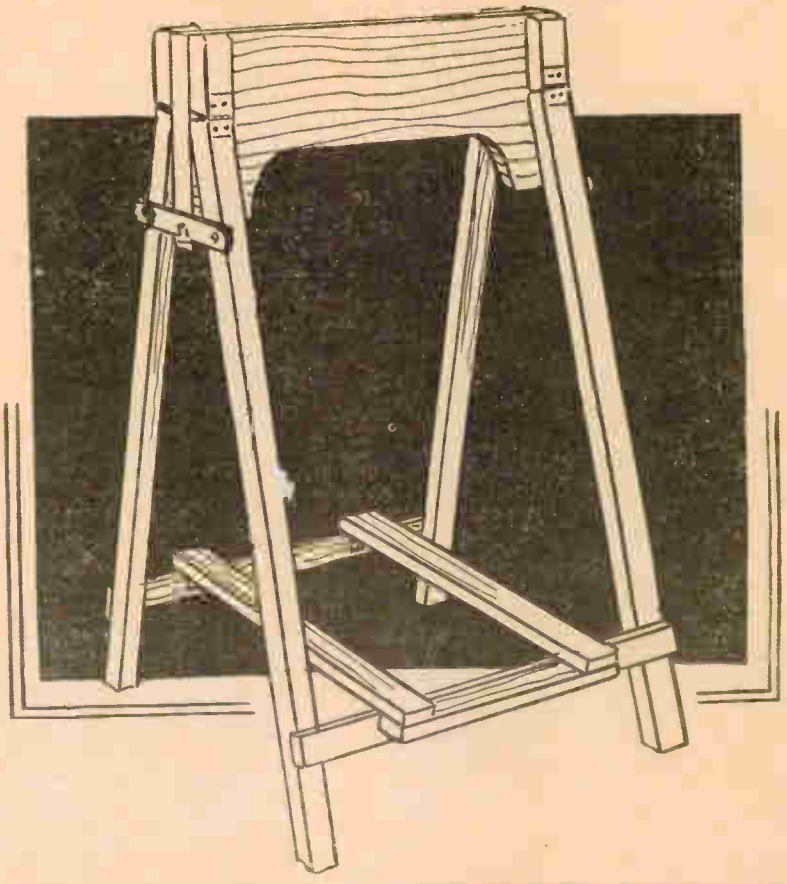
CONTENTS

January 10th, 1951 Price Fourpence Vol. III No. 2880

A HOME-MADE FOLDING WRINGER STAND

ALMOST any type of wringer can be fixed to this stand, and make it more convenient to operate. A far better arrangement than attaching the wringer to a bath, and can do no damage; it is a firmer fitting also. The stand is of the closing variety, and can be folded flat, after use, so occupying little space. The wringer can be left fixed to the stand or removed as preferred.

A side and front elevation are given in Fig. 1. The dimensions will suit, in most cases, a wringer with 12in. rollers; if the rollers are longer, make the length of board (A) longer accordingly. All parts, except the legs, are cut from $\frac{7}{8}$in. deal board.



Clamping Board

Cut the top bar (A) to length and width; this is the board the wringer is to be clamped to. A portion of the centre is reduced in width, as shown in the diagram. Cut the four legs from 1in. by $1\frac{1}{2}$in. wood to the length given and saw across each at 3ins. down from the tops. These short pieces are hinged to the rest of the legs, and then screwed to the ends of bar (A).

Across each pair, at 6ins. from floor level, a 2in. wide bar of wood is nailed, to keep the legs their correct distance apart. It would be as well to fix these crossbars to their respective pair of legs before screwing the upper part of the legs to the top board. The top edges of these, level with the board, are neatly rounded off, or can be bevelled.

Metal Ties

At the ends of board (A) at 1in. from the bottom, drive in a stout $1\frac{1}{2}$in. round-

headed screw. Do not screw right home but leave enough of the screw sticking out for the metal ties (B) Fig. 2, to slip under. These ties can be made from ⅛in. thick iron bar, about 1in. wide. At the points shown drill three holes, the left side one 3/16in. and the rest to suit the round-headed screws already mentioned.

Cut the middle and left side holes to form slots. The ties are now fitted across the ends of each pair of legs, as in detail sketch, Fig. 2, with a stout round-headed brass screw in the right hand hole.

The middle slot will pass under the screw head in board (A) and the left hand slot under a small 3/16in. bolt, driven through the leg. To this bolt fit a wing nut for quick adjustment.

With the fitting of these ties, the legs, in the open position, will be held firm enough for the wringer to be operated without the stand wobbling. It will be an improvement, however, here, if the bottoms of the legs are sawn at a suitable angle for them to bed flat to the floor. It is only necessary to loosen the nut of the bolt to allow the ties to be swung upwards, and so release the legs for folding up flat.

For the accommodation of a bath or pail to receive the waste water, two bars of wood are hinged to the rear crossbar of the legs, and rest upon the front one. They are connected together at their fore ends with an underneath bar, this dropping over the crossbar and relieving any strain imposed on the legs while operating the wringer.

Only an approximate length is given for these underbars, as some variation in the estimated stretch of the legs at floor level may be expected. Measure across the actual distance, and allow enough for the bars to extend beyond both rear and front crossbars by just 1in.

The bar that joins this pair of underbars is 12ins. long, and cut from 1in by ⅞in. wood. Fix it so that it drops over the front crossbar snugly. When closing the stand the underbars, of course, can be swung up, and it would be a good idea to prevent them falling forward, to fit a metal button which can be turned to come up against the rear legs when the stand is folded. A rather long button will be needed, or the bars can be spaced further apart so that a short cupboard button will meet the case.

As the stand will have to put up with wet conditions, it will be advisable to give it a coat or two of good paint or varnish. The metal ties should receive a coat of black enamel or something suitable to prevent rust.

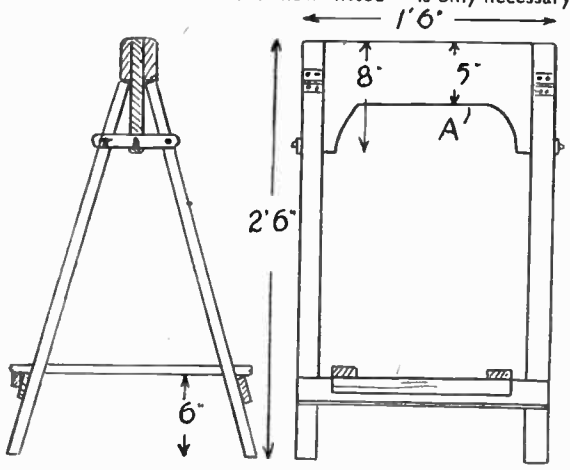


Fig. 1 End and front view of parts

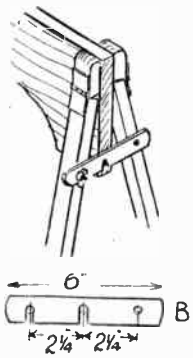


Fig. 2—Fixing details

WOOD REQUIRED

Bar (A)—1ft. 6ins. by 8ins. by ⅞in.
Legs (4)—2ft. 6ins. by 1½ins. by 1in.
Crossbars (2)—1ft. 6ins. by 2ins. by ⅞in.
Underbars (2)—1ft. 6ins. by 2ins. by ¼in.
Crossbar for above—1ft. 0ins. by 1in. by ⅞in.

Metal bar—⅛in. by 1in., 1ft.
1½in. iron butt hinges, 2 pairs.

A Craftsman's Notebook

Photo Jottings

AMATEUR photography is already well dealt with in this magazine, but there are one or two jottings from my own experience which I feel like passing on. For instance, when making time exposures without a watch I have found it a successful practice to count out the seconds by saying slowly 'Snapshots one', 'Snapshots two' and so on.

Then I find it handy to have an idea of the length of one's shoe and stride so that short distances can be ascertained fairly accurately by stepping or striding them out.

I always wind on film before closing the camera so there is no chance of the surface touching the bellows and, perhaps, getting marked as it is drawn along. And I make 'winding on' the very first job after making the exposure to make sure it is not forgotten. In case of doubt about a film having been changed, be on the safe side and turn it on, one wasted blank being preferable to a couple of exposures on the same negative.

When loading or unloading film keep it tight on the spool or light may creep in at the edges and cause fogging. I suggest finding a shaded place for this job, but if it must be done in the open, then turn your back to the sun to shield off the bright light.

Talking of sunshine, do not forget to glance at the immediate foreground of the scene to make sure your own shadow, or that of objects behind, is not thrown into the picture.

* * *

Housing the Goldfish

THE present boom in home fish keeping, which is encouraging many newcomers to the hobby, prompts me to mention the subject here. In particular I would stress the importance of providing congenial living quarters.

It is not unusual for beginners, anxious to get started with the most convenient vessel available, to crowd their pets into tall narrow jars, and one can sometimes see such jars standing in full sunshine on window sills outside.

Experience has shown that vessels like this, with small mouths and hardly any room to swim except up and down, are not ideal, and if the occupants do not thrive in such conditions it is because bright and lively fish must have air as well as room. That is why the rectangular tanks, allowing a wide expanse of surface, are the kind chosen by serious aquarists. As regards the number a tank can comfortably accommodate, a good guide is to reckon a gallon of water to each small fish.

Then there is the position of the aquarium to consider, placing it where there is ample daylight without direct sunshine. Large shells, plants, and pebbles are appreciated by the fish because when they wish they may retreat behind them. A sheet of brown paper pasted over the glass nearest the window affords protection from glaring light without excluding it completely.

* * *

A Countryman's Comments

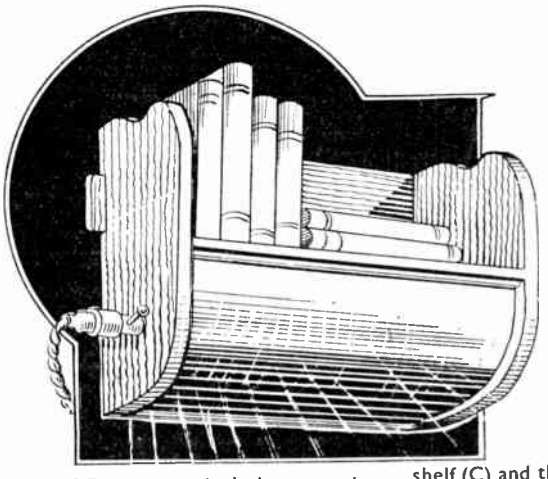
NOTICING a hedgehog in a farmer's kitchen garden I remarked on the usefulness of these creatures in getting rid of pests. Welcome though they may be among the vegetables, however, it seems they also have certain failings. I was informed that a hedgehog will go up to a cow as it lies in the field and drink its milk, leaving little for the surprised owner when he turns up with his pail at milking time.

Moles, which had started throwing up hillocks of fine brown earth in a neighbouring field they recently invaded, were another subject for discussion with the countryman.

The Craftsman

A practical suggestion in wood for a handy

BED LAMP AND SHELF



HERE is a particularly attractive fitment for the bedroom. It is a bed lamp intended to be hung on the wall just above the head of the bed to throw a light for reading. Above the lamp is a useful size shelf for a few favourite but light-weight books.

The electric light bulb is fixed to the left-hand end of the article and the light inside can be switched on and off by the small push rod which stands away just outside the end. The bulb is entirely enclosed to give a soft diffused light, sufficiently bright for reading by.

The Lighting Point

The illustration at Fig. 1 shows the completed article and how it should appear when hung on the wall. It might be mentioned here that a length of flex might be connected to the socket of the lamp and brought down over the bed-head to be finished off here with a pear push so reaching up to switch on and off will be unnecessary.

We recommend oak as being the most appropriate wood from which to make this lamp and rack, but, of course, mahogany would answer equally well; especially if mahogany is the predominant wood used for the bedroom suite.

The ends (A), Fig. 2, will be the first pieces to set out and cut. Two pieces of ⅜in. thick stuff measuring 11ins. by 5ins. will be wanted, and on one of the pieces a series of 1in. squares must be drawn. The curved outline is put in through them, as in Fig. 3. It would be well to add on the piece to the dotted lines which indicate the position of shelf (C) and the back rail (B).

Using a fretsaw, cut round the outline, not forgetting the recess or open mortise in the upper part of the straight back edge. This mortise is to take the end tenon on rail (B), which is again seen in the detail in Fig. 5. When cutting is done, clean up the edges of the wood and bore two holes between the two cross dotted lines to take the screws which hold the shelf (C) secure.

Rail and Shelf

The back rail (B) is 12ins. long, 6¼ins. wide and ⅜in. thick. From the length given, set in ⅞in. from each end to give the width of the tenons. This will leave 10¼ins. as clear width between the shaped ends when the shelf is fixed. Glue the tenons neatly into their recesses and add two countersunk screws in each.

Then cut the shelf (C)—a plain board measuring 10¼ins. by 4⅜ins. See the ends of the shelf are cut to right angles to make a neat and accurate fit with the ends.

Lower Rail

Next prepare the lower rail (D). This will be 10¼ins. long but only 1in. wide. The intervening space between this rail and rail (B) above is filled with a piece of spare thin plywood or ordinary ⅛in. wood, shown as (H) in Fig. 2. It should not be fitted and fixed until all the rest of the work is finished, as it really forms a removable panel for getting to the lamp inside. Otherwise once the curved front is fixed, this back panel will form the only means of access for the renewal of bulb or for repairs. Fix the rail (D) by driving screws through the ends into it the same as the shelf above.

The next pieces to mark out and cut will be (E) and (G). There are two each of these, and they may be of some soft wood if desired, as they really only form a fixing frame to which the curved front and the back panel are fixed. Piece (E), before being cut to shape, should measure 5¾ins. long by about 2ins. wide and ⅜in. thick.

Plastic Front

The curved front stands ⅜in. back from the face of the main end (A), so this curve can easily be set out on a piece of thin paper first with end (A) as a guide.

The back edge of piece (E) is cut away anglewise to allow for room for the electric bulb fitting which is at one end only, of course. Pieces (G) are 4¼ins. long and ½in. wide, and these and the pieces (E) are glued and screwed to the ends as shown in the sectional diagram at Fig. 4.

To form a fixing for the top edge of the curved paper front of the lamp, a strip of small section wood as ⅜in. by ¼in. must be fitted between the pieces (E) and glued to the underside of the shelf. The strip is seen as (F), in the section, Fig. 2, and again in the detail, Fig. 6. The latter diagram also shows how the paper is glued to the strip and held securely by a fixing bead nailed on underneath the shelf.

A small wood strip could also be put along and pinned to the rail (D) to hold the parchment paper here securely.

(Continued foot of page 228)

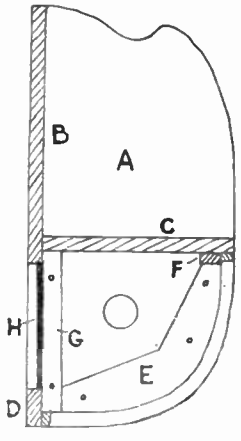


Fig. 2 End section

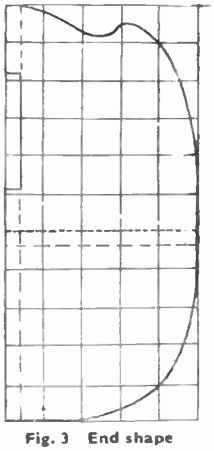


Fig. 3 End shape

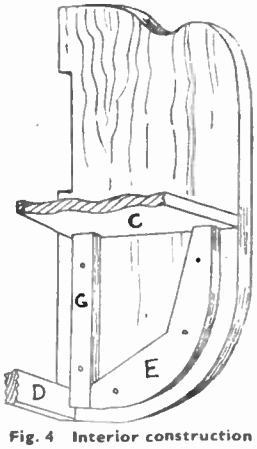


Fig. 4 Interior construction

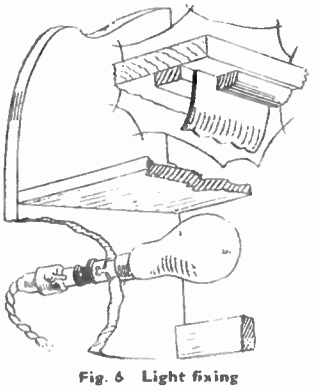


Fig. 6 Light fixing

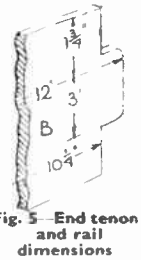


Fig. 5 End tenon and rail dimensions

First class models are obtained by the proper use of 'BRUSH-ON' CELLULOSE

RECENTLY a friend brought the writer an article that he had painted with cellulose, but alas, instead of a nice smooth finish, the surface had all gone wrinkled like a dried and shrunken apple. What had gone wrong? Actually the cause of the failure was simple.

An under-coat of paint had not been quite dry and the solvent in the cellulose had loosened this and then, as cellulose contracts when drying, it had pulled the under-coat and itself into the unsightly ridges.

Some Mistakes

This shows that there is rather more in putting on cellulose than, perhaps, meets the eye. There is no surface so perfect as one given by this kind of paint if properly put on, but it is easy to make mistakes, so let us see what the pitfalls are and how they can be avoided.

From the example of wrinkling just cited, it will be seen that cellulose must be applied to a bone hard and dry surface, for preference one that has never been painted at all. Cellulose gives an exceptionally smooth high gloss of extreme purity and specks of grit, minute hard 'bits' and other substances that should not be there, show up more clearly than they would in an ordinary coat of paint. Scrupulous cleanliness of the surface and brush used is, therefore, absolutely essential.

Frequent Cleaning

As cellulose dries quickly the brush must be cleaned at very frequent intervals, otherwise hard little particles form, and work their way down on to the surface being treated, and to this end a cleaning solution should be prepared and kept to hand. This is made up of equal parts of petrol, methylated spirits and acetone.

This solution, though a cellulose solvent, is for cleaning the brush only and not for thinning purposes. For the latter, Acetone or Amyl Acetate is used alone, Amyl Acetate for preference, as this does not evaporate quite as quickly as Acetone. Thinning *can* be effected with methylated spirits or petrol alone if a little dulling of the surface is not an objection. For the very best results, however, use Acetone or Amyl Acetate without additions.

Perfect cleanliness and smoothness of the surface being worked on is the first essential, then, for good brushing-on cellulose results. Old paint, if necessary, should be removed and the surface taken down to almost a polished finish with very fine glasspaper, completing by a careful rubbing with a soft cloth. The brush, too, should have been put through the cleaning solution and wiped out on a fluffless piece of material.

Cellulose is put on by an entirely different action to ordinary paint. With ordinary pigments only a small amount is taken up on the brush and this is worked in with several strokes over the same area. In cellulose work, however, the brush is entirely immersed in the pigment, so that the bristles are fully loaded and then the area in question is covered as far as possible with one stroke and one stroke only. The next loaded brush should be for an adjoining area.

Quick Application

Cellulose sets quickly, although about one and a half hours is taken for complete hardening. Consequently any attempt to work the surface up after the first application of the brush merely results in the pigment dragging into rolls—which it is impossible to flatten out. Should this by accident occur, it is best to clean off the surface and start again.

If plenty is put on with the first sweep of the brush any faint brush lines can be safely ignored, as these will flow out, merge and disappear before setting takes place, the manufacturers having adjusted the 'viscosity' to a nicety to ensure this.

On account of the characteristics of cellulose it is better never to try a second coat, but to get everything done with the first application.

When using cellulose it must be kept continually stirred. A good stirring should be given to start with and another less vigorous stir at each brushful—this done with the brush itself. This is necessary because the pigments are heavy compared with the solvent, and are always tending to sink towards the bottom of the container.

Incidentally, cellulose never forms a skin as do ordinary paints and this means that it can be readily stored, and, not forming bits within itself, does not at any time require straining before use.

Cellulose applies well to hard, virtually poreless surfaces such as tin, crockery and the like. Woods can be treated, but they require preparation beforehand, especially if of a soft or open-grained nature.

Clean Wood

If the wood has been previously painted and the coat is perfectly hard, it can be used as a base for the new livery. Should there be any doubt, it is better to clean off entirely. This can be done by the usual method of scraper and glasspaper. Any suspicion of varnish must be removed, as varnish always crinkles under cellulose. Varnishes, however, can be softened and wiped right away with a cloth dipped in liquid ammonia.

If the pores in wood are still open, and in every case if new wood is being treated, a coat of 'filler' should be put on before the cellulose. When dry the surface is polished up with fine glasspaper and the work then carried on with.

Most fillers are basically gelatine dissolved in water, and as dampness is the worst possible enemy of cellulose it is essential that any filling coats should have dried out completely before proceeding with the real work.

The Right Atmosphere

Following on the point of cellulose and moisture, cellulose application should never be attempted in a damp atmosphere or when steam or other vapour is hanging about. Conversely, it should not be carried out in a too hot place as this causes inordinately rapid drying and so prevents even running and the flowing out of brush lines. A nice day when it is possible to do without a fire is the very best for the work, though these ideal conditions can seldom be secured.

Finally, it should be remembered that all cellulose is highly inflammable and should never be used near a naked flame.

An interesting use for clear cellulose is to paint over staircase hand rails or other stained surfaces. This has the effect of giving a high gloss finish which shows up the underlying stain in a very nice way. In this case one is just using cellulose in the place of varnish, of course. (333)

Bed Lamp—(*Continued from page 227*)

Stout parchment paper such as is used for lampshades is most suitable in this case, but being of a greasy or oily nature, a few small fret pins should be put in in case the glue does not hold firmly.

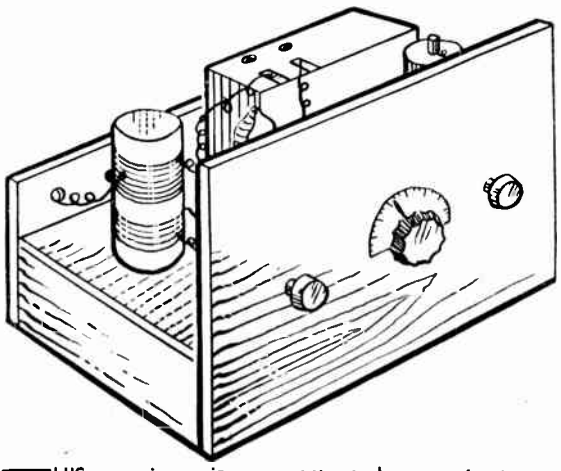
The front fixing bead, however, should greatly reinforce the fixing. In Fig. 6 we include a sectional view, showing how the electric bulb is installed. Assuming the panel (H) has not yet been fixed, the electric bulb socket is fitted to the end upright of the lamp, a hole being previously cut in this piece with the fretsaw to receive it.

Push the lampholder through the hole and screw on the milled-edged metal ring. This will hold the socket rigid and ready for the bulb to be pushed and twisted into place. The wire flex will, of course, have been connected to the lamp holder before this latter is fixed in the wood end of the article. The panel (H) screws on to the two uprights (G) at the ends.

Make all joints secure and thoroughly clean the article before finishing. A chosen art shade of matt paint would look well, or the whole thing may be french polished or wax polished and rubbed up.

The home radio expert can easily make

AN ALL-DRY ONE-VALVER



THIS receiver is compact and efficient, and very economical to run. One of the latest types of midget valves is employed, and this only requires 1·4 volts at ·05 amp. for the filament. No accumulator is required, therefore, and even quite a small dry cell will give a long period of service. This current consumption is about one-sixth of that taken by a small flashlamp bulb, so it will be seen that the drain is very small. Full details of suitable batteries will be found later.

Efficiency is fully up to one-valve standards. With a good aerial and earth, foreign stations can be received with ease. With no earth, and a few yards of flex as a 'throw out' aerial, local stations can be picked up well, so the set will prove quite useful.

Cutting Panel and Chassis

The panel, top of chassis, and strip at the rear are of 3-ply, glasspapered and varnished. The two side runners of the chassis are of ¼in. thick wood, so that the other parts can be secured with small screws or panel-pins without difficulty.

The size of the parts will depend upon the actual components to be employed, or whether size is to be kept to a minimum. If a small tuning condenser is used, a size of 4½ins. by 3½ins. high will be ample for the panel. The piece forming the top of the chassis can be 4½ins. by 3½ins. also, with the side runners 3½ins. by ¾in. The whole set, including batteries, will then be approximately 4½ins. wide by 3½ins. high by 3¾ins. deep.

If there is any doubt about the components being accommodated in this size, dimensions may be increased. If minimum size is required, however, and midget components and batteries used, a rather smaller size will be possible. By standing the parts in the positions shown in Fig. 3. the size required will soon be seen.

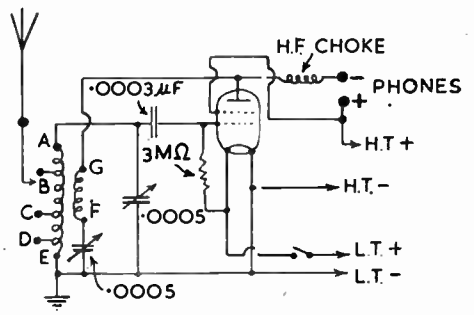


Fig. 1—The theoretical circuit

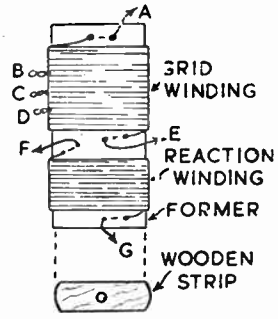


Fig. 2—Winding tuning coil

Circuit and Coil

Fig. 1 shows the circuit, the valve being a 1S5 glass button-base diode-pentode. (The diode is not used). Various aerial tappings have been provided so that best results can be obtained with a variety of aerials, and the coil is shown in Fig. 2. A 1¼in. diameter tube is used, and 32 S.W.G. enamelled wire. (If other sizes of former or wire are used, the number of turns may need slight modification).

Anchor the wire through two small holes, forming end (A). Wind on twenty turns, side by side, and form a small loop by passing the wire through two small holes, to form tapping (B). Continue for twenty more turns, then form loop (C) in the same way. Put on twenty further turns, forming loop (D). To finish off this winding, put on twenty-four turns, ending at (E).

The reaction winding is commenced ⅛in. below the grid winding, and consists of 60 turns, side by side. All turns throughout both windings must be in the same direction, as shown. The coil is mounted by pushing it on a small strip of wood which has been screwed to the chassis.

Fig. 3 shows the wiring on top of the chassis. (The batteries should be left off for the time being). A few leads pass down through the chassis. One goes from the switch to the positive filament tag of the valveholder. A second goes from the negative phone terminal to the H.F. choke. Further leads go from the moving and fixed plates terminals or tags of the tuning condenser to earth line and ·0003 mfd. fixed condenser respectively. A lead goes from (G) on the coil to the valveholder anode, and from H.T. positive to the positive phone terminal.

If the ends of the coil windings are left long enough, these can go directly to the various parts. For the other leads, thin flex can be used, or solid insulated wire.

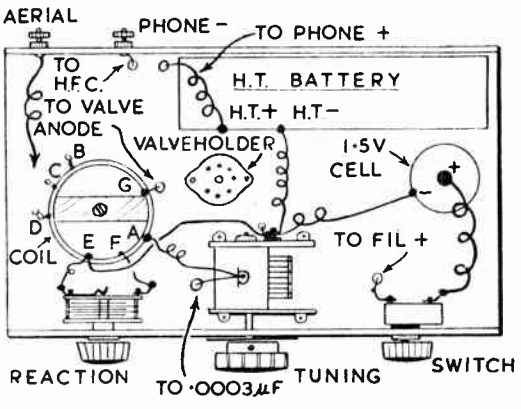


Fig. 3—Chassis lay-out of receiver

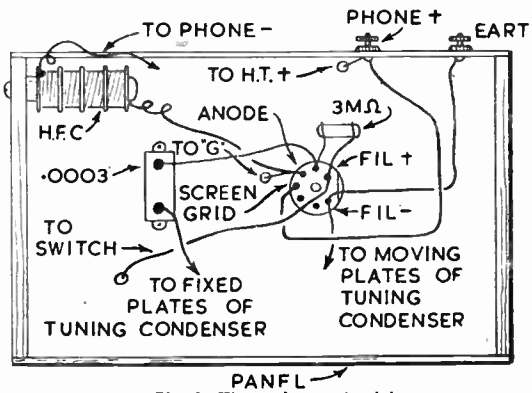


Fig. 4—The underneath wiring

Fig. 4 shows the remaining connections underneath the chassis. The valve should not be inserted until after soldering to the holder is completed; with a fairly hot iron, and cored solder, this can be accomplished with ease.

A small H.F. choke is screwed to one runner. This part can be made by taking a piece of wood 1⅜ins. long and ⅜in. in diameter and gluing five cardboard washers on it, as in Fig. 4. Wind the spaces *full* of *thin* insulated wire (about 36 S.W.G. or finer). There should be at least 150 turns in each space, if possible. The choke can be attached to the runner by means of a screw, and its ends taken to phone negative and valveholder anode tag.

The Batteries

On no account apply more than 1·5 volts to the valve filament. This can be obtained from a single dry cell, the carbon rod being positive.

For high tension, one of the small H.T. batteries (these are about 2½ins. by 1in. by 3¾ins.) can be used. Do not allow its tags to touch other leads or metal parts in the set. Alternatively, as the set will work well with a low voltage, this battery can be made up in a variety of ways. Two or three 9 volt grid bias batteries in series can be used, or it is quite feasible to solder up a small battery from small torch-lamp cells. A battery of 30 to 45 volts will do well. More than 67½ volts should not be used with this valve type. The H.T. voltage will to some extent govern volume, which will be reduced with very low voltages (say, under 20 or so).

Cardboard may be packed round the batteries to hold them in position. As only one valve is used, the H.T. battery will deteriorate more from age than because of the current taken and a new battery in good condition should be expected to last a minimum of six months. Grid bias batteries, having larger cells, may last a year or more, according to use.

The farther towards end (E) on the coil the aerial lead is taken, the sharper will tuning become. But volume will be somewhat reduced, so that, with a small aerial, points (A) or (B) will be best. With a long or outdoor aerial, points (C) and (D) can be tried.

The reaction control should build up volume until oscillation commences. If it does not, the coil has not been made correctly, or the battery voltages are too low. The reaction winding has been given for best average conditions. If a battery of 60 volts or so is used, reaction will be a trifle fierce. This can be cured by removing turns from the reaction winding. With extremely low H.T. voltages (and results can be obtained with a single 9 volt battery) reaction will be weak. This can be overcome by placing the reaction winding as near the grid winding as possible, and by increasing the number of turns up to 75.

The aerial, and tapping to which it is taken, will also influence reaction, but normally good results may be expected at once, as these points are not critical.

Full size patterns on page 239 for this comic policeman

KITCHEN REMINDER

FULL-SIZE patterns will be found in this issue on page 239 for making the amusing little kitchen accessory shown here. It is the type of work that even the beginner with the fretsaw may tackle with confidence, whilst the more expert will quickly see that a batch could be easily and cheaply made up, and find a ready sale by reason of their novelty and universal use. The policeman's moving arm is used to indicate one of the five articles printed on the bottom of his coat, or the pad, on which less-frequently required oddments can be jotted down.

Cutting Out

Paste the patterns on to a suitable piece of wood, and when the paste is dry, cut round each with the fretsaw. Drill the holes in movable arm and body. Then clean off the pattern and finish each piece with glasspaper. The letters forming the word 'Stop' should receive extra care, to ensure a neat finish to the job. If it is likely that more than one Reminder will be made, then the pattern will, of course, be traced, and the original kept for further use.

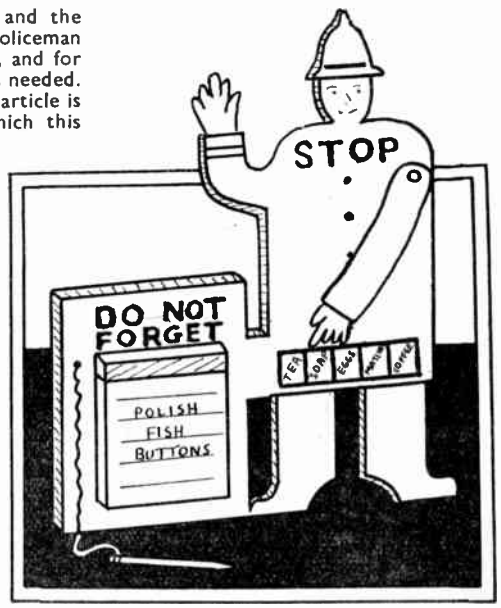
Painting

The painting is best done before assembling the parts. Any available colours may be used, but blue, white and black enamels are probably most in keeping with the subject. Enamel the letters, gloves, buttons and face white, with a white strip on one arm for the removable armlet (our policemen being always ready for duty!). The uniform and the board holding the scribbling pad can be blue, and the boots and lines of expression on the face, black.

The words 'Do not forget' and the five items in the panels on the policeman himself are best done in white, and for these a small camel hair brush is needed. A great deal of the finish of the article is determined by the way in which this lettering and the lines are done, so it is worth while to do it as carefully and neatly as possible.

When all the colours are dry, glue the 'Stop' letters into position. They need to be positioned very carefully, so that they do not restrict the movement of the arm, when this is added. The arm is fixed to the body with a nut and bolt, which should be loose enough to allow the arm to be moved, but tight enough to hold it in any position that it is wanted.

It is a good plan to screw a second nut on top of the first, when the required degree of tightness is obtained, as this prevents it from working looser with the movement of the arm. When not in use the arm can be pushed away from the five inscriptions. Choose these five names very carefully—they should be five that are frequently required, to avoid the use of the pad as much as possible.



The Pad

A small scribbling pad can be bought quite cheaply from a stationer. In order to have it of just the right size it is usually necessary to buy the nearest size above and trim it down with razor blade and straight-edge, before gluing its back card to the board.

Finishing Off

A strut for gluing on to the back of the model is given, and where there are facilities for the Reminder to stand up in a conspicuous place, this is probably best; but instead of the strut, a piece of string can be threaded through a hole drilled near the top, for hanging it up, if this is preferred.

Finish off by cutting a small piece of pencil and attaching it by string from the pad-board. (330)

The railway modeller should understand the dimensions of

O AND OO GAUGE SIZES

WHEN making model railway vehicles to run on the two popular 'table top' gauges of the present time, viz., O and OO, the point of correct dimensions invariably arises. Curiously these are not often set out and the question of just how high this van should be or how wide that truck can become quite a poser.

If taking measurements from existing tinplate toys a danger lies in the fact that

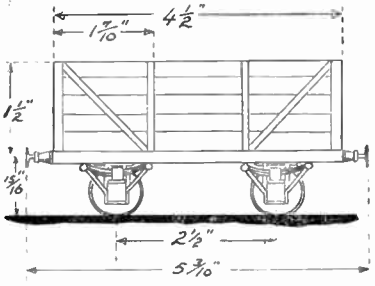
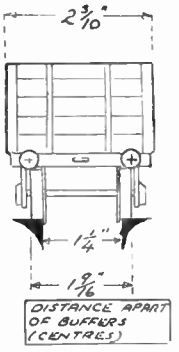


Fig. 1—Dimensions of standard O gauge truck



many of these are by no means scale or anywhere near and consequently one may start off on a series of vehicles that are much too small or equally too large.

There is, of course, some latitude both sides of what one might call standard dimensions, for in actual practice vehicles running over different routes are often of varying maximum heights and widths.

Coach Variation

Thus, coaches on some lines can touch on nearly 13ft. high, while in others 12ft. is the limit. As a compromise one of our big groups has taken 12ft. 6ins. for all its new rolling stock. Another example of variation is that the old G.W.R. on its West of England route can and does run coaches about 6ins. wider than the average in other parts of the country.

Let us deal, however, with average dimensions and see how they work out for gauge O—that is for trains with a distance between the rails of 1¼ins.

Fig. 1 shows a standard open truck. Open trucks are all of the same width, but they vary in side height, from the type shown to the coke truck in which the sides are taken up to about van height. In this respect of side height, the particular vehicle being copied must be closely studied.

If taking dimensions from a full-size drawing it should be noted that the scale is 7 millimetres to 1ft., which means that if we multiply any full-size dimension in inches by 5/226 we get at once the gauge O dimension in inches.

The most important dimensions to bear in mind are the width between the buffer heads, the height of the buffer centres from rail-level and the full width of the trucks' underframe. These should be the same in all vehicles. Other dimensions, some definitely different kind. Thus flat rail-trucks and timber trucks can be longer than usual—but for open trucks to look well, keep them to virtually the same 'wheel-base'.

Note that in the gauge O diagram (Fig. 3) the height of a van is given as 3¼ins. This works out to a shade under 12ft. 3ins. in real practice, which is the height of the average van we see about. Make this as a standard for your vans and you will not be far out.

The average 'close' bridge height incidentally, can be taken as ½in. above this, i.e., 3¾ins. But this will be dealt with later.

Standard Wheelbase

The wheelbase (i.e., the distance between where the wheels touch the rails) of our standard vehicle can be accepted as 2½ins., the overall length as 5 3/10 ins., width of body 2 3/8 ins. and that of the underframe, which is slightly less, as 2⅛ins. The height of the buffer centre-line from rail level scales out for gauge O as ⅝in. and this must be retained for all rolling stock. The axle-guard measurements are not given, as these, with the

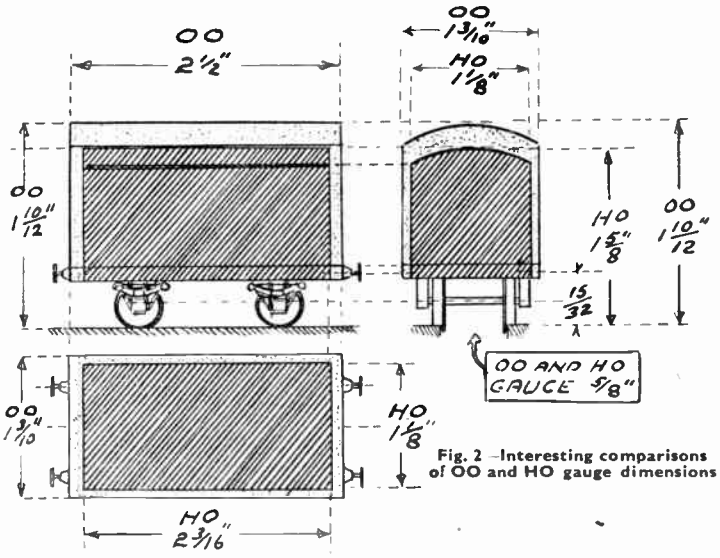


Fig. 2—Interesting comparisons of OO and HO gauge dimensions

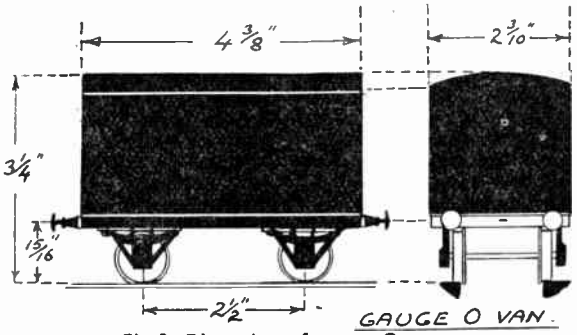


Fig. 3—Dimensions of a gauge O van

although they should tone, can to a certain extent be varied.

For appearance sake, too, the distance between the axles in various open trucks you make should be fairly standard. Differences do exist in practice, but a too short or too long truck never looks well on a model train, unless it is of

wheels, are generally bought, but the width of the dummy spring is 1 1/10 ins. and the depth ⅝in. The metal strapping on the side of a truck is spaced, as shown, and normally the planking is, as indicated.

Now when we come to ⅝in. gauge stock (Fig. 2), we run up against rather a difficulty, as here there are two standards recognised by the model fraternity, the one going by the name of OO and the other HO. In general conversation the term 'OO' often covers both, but there are two distinct scales.

HO is the true 'scale model' size and uses 3½mm. to 1ft. OO employs 4mm. to

(*Continued foot of page 232*)

The home handyman can easily make for himself

A PACKING CASE BENCH

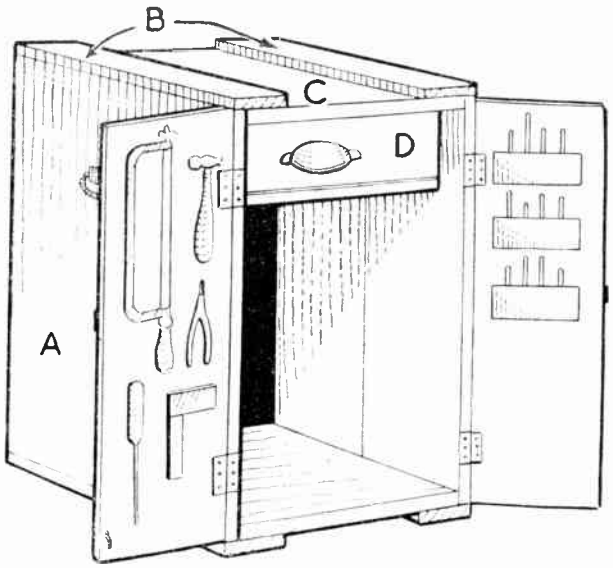
THIS is a design which should commend itself to readers living in flats or small houses where the lack of a bench makes the hobby of model engineering a difficult if not impossible proceeding.

The bench has been developed with a view to reaching a compromise between the conflicting requirements of portability, ease of storage and utility for the purpose in mind. While it is hardly suitable for use in connection with the construction of larger models, it has been found to be eminently suitable for the construction of small model locomotives and model ships of sizes ranging up to about 24ins. overall length.

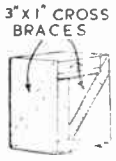
It will, of course, be necessary to have any turning work done elsewhere, as the fitting of even the smallest lathe to a bench of this type is seldom satisfactory. This is unlikely to give rise to any practical difficulty, however, as a large variety of finished or semi-finished turnings are now available at fairly reasonable prices.

As will be seen from the accompanying sketch, the bench is fashioned from a packing-case of suitable dimensions and should be provided with a pair of doors. These are best made from oak or other similar hardwood. The dimensions mentioned are those applicable to the prototype model but will, in fact, depend on the size of the packing-case chosen for the construction.

If it should be felt necessary to strengthen the packing-case, this may be done quite effectively by fitting the cross braces, as shown in the small sketch. The braces can be made from 3ins. by 1in. stuff and secured by half-a-dozen good screws on each brace.



The carcase (A) shown is 28ins. by 14ins. by 14ins., with top battens (B), space for vice (C) and a 4in. drawer (D). The detail shows the 3in. by 1in. cross braces



The 4in. deep drawer and support may be made of any suitable scrap wood and provides a useful receptacle for the storage of such items as small tools component parts, nuts, bolts and screws and so on.

It is important, however, to bear in mind that the drawer and support should be set back in the tool chest by about 2ins., so the doors may close flush when the tool-racks are fitted in position and filled with tools.

The Doors

The doors are simple enough to make and might consist of single planks, if well seasoned timber is available. If there is any doubt as to the seasoning of the timber in the wider planks, the doors are best made by battening a number of narrower planks together.

The tool-racks are made from scraps of wood and call for little description save to say that the drill and tap racks are made by drilling out the blocks to accommodate the small tools. The larger tools may be secured either with wooden supports or with the spring steel tool-clips which are obtainable from Hobbies. The precise location of the racks will depend on personal choice.

In Use

In use, the doors are opened to enable the user to sit at the front of the bench with one or both feet on the solid base of the tool-chest. This steadies the bench and makes for greater comfort when sitting at work. It may be found strange at first to sit while filing and carrying out the normal processes employed by the model maker, but the strangeness soon disappears as the bench is used.

Minor fittings such as door fastenings, hinges and carrying handles are shown in the sketch and may be modified to suit individual requirements.

Model Railway—(*Continued from page* 231)

1ft. and so is slightly outsized, giving vehicles which are just a little longer, higher and wider than scale. This variance came about in the early days of the tiny gauge when manufacturers had not the least conception of what a vast and mechanically keen following it would eventually get. 4mm. to 1ft. was convenient and rolling stock constructed to this looked scale, so this ratio was accepted.

But this miniature of miniatures caught on, and becoming the accepted standard for many really enthusiastic workers, it was not long before the 'half millimetre out' was spotted, and to meet public demand, model engineering firms had to start turning out true scale-model items.

HO is really better from the modeller's point of view, as it is exactly one half of gauge O, and with gauge O measurements to hand, we simply have to divide by two to get those of HO. If working from full-size dimensions, multiplying these (reduced to inches) by the fraction 5/452, we get at once the corresponding HO in inches.

Should your stock already be to the OO scale and you decide to construct your other equipment to this, it is really best to bring all the dimensions down from the full-size by using the 4mm. to 1ft. reduction, as there is no comfortable way of scaling from gauge O. If, however, the HO dimensions are to hand, multiplying by 1½ (i.e., 8/7) will give the OO equivalents quite readily.

The diagram with this article gives the most used dimensions for the ⅝in. gauge, and if kept to hand, will be there for continual reference. It is, however, well to keep the five main conversion rules in mind, viz.:—

(1) From gauge O to HO divide by 2.
(2) From HO to OO multiply by 1½ (i.e., 8/7).
(3) From OO to HO multiply by 7/8.
(4) From full-size to gauge O multiply by 5/226.
(5) From full-size to HO multiply by 5/452.

(to be continued)

Novel and surprising results from experiments in

HOME CHEMISTRY

Lead Acetate

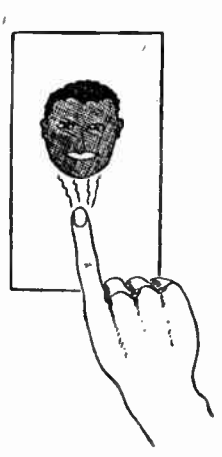
SACCHARUM plumbi quintessentiale—that was the mouthful the old alchemists had to use when they spoke of lead acetate! Before one could do much experimenting in those far-off times, one had to be pretty good at Latin!

The preparation of lead acetate was first mentioned as far back as the fifteenth century by the alchemist Basil Valentine, who (being translated!) said: 'Mark that pure distilled acetic acid poured on powdered saturnum (lead oxide) and warmed in the water-bath entirely loses its acid and becomes sweet like sugar'.

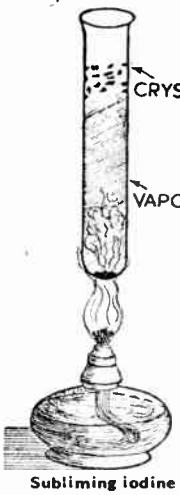
Thus it is from the old alchemical name that lead acetate is still referred to in commerce as sugar of lead. These days we take the sweetness on trust, for we know lead acetate to be very poisonous!

Useful Pigments

From lead acetate we can make two useful pigments; chrome yellow and chrome red. Add to lead acetate solution potassium chromate solution. A splendid yellow precipitate will fall. This is chrome yellow and chemically known as lead chromate. Repeat the experiment.



Turning white into black



Subliming iodine

Then add sodium hydroxide solution and boil. The yellow deepens to a fiery orange-red. This is basic lead chromate or chrome red.

Both of these make good water colour paints. Filter off the precipitates and wash them several times on the filter with the wash bottle or by adding a test tube full of water each time. Let them drain, then lift out the cones of filter paper, put them in evaporating dishes and dry the precipitates in the oven.

Then carefully powder them on watch glasses with a glass rod and mix them to a paste with glycerine. If you now get out your paint brush and use the colours in the usual way, you will find what vivid and pleasing tints they give.

We all know, of course, that other valuable pigment, white lead. It is a basic carbonate of lead and is manufactured by exposing metallic lead for some weeks to the action of vinegar fumes and fermenting spent tan bark from leather tanneries. We can make a form of it in an instant by mixing lead acetate and sodium carbonate solutions.

If you filter and wash the precipitate, dry it and grind with linseed oil and turpentine, you will find it makes a passable white paint, though its covering power is not so good as that of commercial white lead.

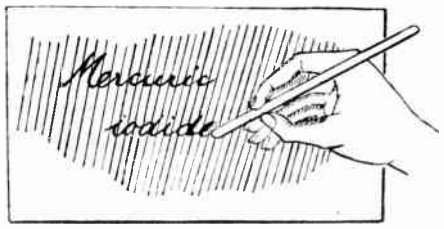
Though white lead paint is unsurpassed for covering power, it has the disadvantage of darkening in the sulphur-laden air of towns owing to the formation of lead sulphide. Smear some precipitated white lead on paper and hold under it the cork from the ammonium sulphide bottle. It instantly becomes brown.

An Amusing Trick

This reaction may be used for an amusing conjuring trick. You show a friend a drawing of a white man's face and calmly propose to turn him into a negro. On passing your finger below it, hey presto! the miracle is accomplished!

To prepare the drawing for this, make the outlines in pencil. Then mix some precipitated white lead with water containing a little glycerine to keep the final drawing slightly moist.

Paint in all the parts of the head which should become black, leaving the lips and whites of the eyes untouched. When the painting is dry, you only need to moisten the tip of your finger with ammonium sulphide to perform the trick.



Writing with a glass rod

Lead sulphate, another white salt of this metal, is also used in paint making, as well as in the pottery industry. Sulphuric acid or any soluble sulphate precipitates it when added to lead acetate. It has a curious property.

If you make a 'sandwich' of a paste of lead sulphate and water between two small sheets of zinc and immerse it in common salt solution for about ten days, the lead sulphate is converted into a mass of spongy lead. This spongy lead may be used for taking impressions. Try pressing a coin into it and you will find a perfect mould in reverse.

Crystallisation

One of the most beautiful experiments in crystallisation may be done with lead iodide. This yellow salt of lead is precipitated on mixing solutions of lead acetate and potassium iodide.

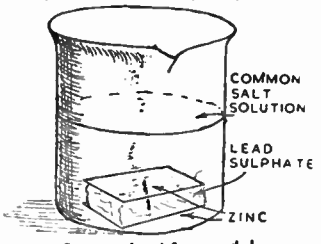
By adding water and boiling, the lead iodide dissolves to a colourless solution. As the solution cools, golden spangles scintillate in the liquid as the lead iodide crystallises out. If the cooling solution is viewed in the sunlight, the beauty is much enhanced. This experiment has been justly called 'the golden shower'.

A 'silver shower' may be produced in the same way with lead chloride, which is, of course, made by mixing solutions of sodium chloride and lead acetate.

Potassium Iodide

POTASSIUM iodide is not one of the cheapest of the home chemist's reagents, but if used in quantities of a gram or two for each of the following experiments, no serious inroad will be made on the pocket.

Our main uses for this reagent, of course, are in the testing for silver, lead and mercury in solution and for acetone and alcohol. The yellow precipitates of silver and lead iodide present little interest beyond the pretty experiment of dissolving lead iodide in hot water and watching the golden shower of the crystals as they form in the cooling solution. But mercuric iodide gives us two interesting experiments.



Spongy lead for models

Add potassium iodide to mercuric chloride. A yellow precipitate forms which quickly changes to scarlet. Wash it by decantation several times until the wash water no longer gives a white precipitate of silver chloride with silver nitrate. Filter off half of the precipitate and dry it in the oven.

Crush it finely and smear some evenly on a slip of paper. Hold the paper a few inches over a flame. It instantly changes from scarlet to yellow.

Now take a glass rod and write with it on the yellow surface. Your writing will appear in startling scarlet letters on the yellow background. As may be imagined, this makes a surprising piece of chemical magic for those no-chemist friends who visit your laboratory bench and ask you to 'do something'. It never fails to impress!

To the other half of the precipitate add potassium iodide drop by drop. The precipitate dissolves and if you evaporate the solution you will be rewarded with yellow crystals of the uncommon double salt, potassium mercuric iodide.

Potassium iodide gives us an easy source of the element iodine. Generate chlorine from bleaching powder and hydrochloric acid and bubble the gas through potassium iodide. As each bubble moves up through the solution, a cloud of iodine forms and settles to the bottom as a crystalline heavy black powder. When no more iodine forms, wash it a few times by decantation.

Purified Iodine

Iodine is further purified by sublimation, but on a small scale this is not to be recommended, as it must first be dried and drying involves considerable loss owing to the very volatile nature of the element. It is better kept in the sludgy state in a glass stoppered bottle, for iodine vapour rots cork.

You can examine the ready volatility of iodine by taking some of the sludge on the end of a wood or horn spatula, pressing it as dry as possible between filter paper and warming it gently in a dry test tube. A magnificent violet vapour arises and condenses in black scales on the cooler parts of the tube.

This iodine sludge is useful for preparing hydriodic acid, and solutions of the acid containing up to 50 per cent of the acid may be obtained by the following method.

Put some iodine sludge in a test tube. Cover it with about three times its bulk of water and pass in sulphuretted hydrogen which you can evolve from ferrous sulphide and hydrochloric or sulphuric acid. At first little happens, but when the sulphuretted hydrogen has been bubbling through for a few minutes, sulphur begins to be precipitated.

This is a sign that the sulphuretted hydrogen is beginning to give up its hydrogen to the iodine forming hydriodic acid. The hydriodic acid now dissolves iodine and the reaction proceeds more swiftly, more and more sulphur being precipitated and the iodine diminishing. When the solution loses the colour of iodine, the reaction is complete.

Now remove the sulphuretted hydrogen generator and pass a rapid stream of carbon dioxide into the solution to remove the excess sulphuretted hydrogen. When the solution has lost its putrid odour of the gas, filter it from the sulphur and bottle it.

If you test a little of it you will find it gives the usual iodide precipitates with lead, silver and mercuric salts. The acid is useful when we wish to prepare one of the uncommon insoluble iodides such as strontium iodide, for we need only dissolve strontium carbonate in the acid and evaporate the solution.

A very unusual reaction occurs if you add potassium iodide to copper sulphate, for instead of cupric iodide being formed, you get a yellow-brown mixed precipitate of cuprous iodide and iodine. Filter the solution and test it with starch paper. It becomes blue from free iodine in solution.

Cupric iodide is unknown, but to prepare pure cuprous iodide free from iodine, add sulphurous acid or ferrous sulphate to the copper sulphate before pouring in potassium iodide. A buff precipitate is now formed. Filter and wash it before drying and bottling.

Iodoform

Having roamed about in inorganic chemistry, let us finally step over into the organic field and prepare iodoform. Dissolve some iodine sludge in methylated spirit or acetone, warm it and add drop by drop sodium carbonate until the solution is decolourised.

On cooling, yellow crystals of iodoform will form, which you can purify by recrystallising from a little warm methylated spirit. Note the highly characteristic smell of iodoform. This substance is used in some surgical dressings, owing to its antiseptic properties. (283)

An Electric Door Lock

THIS lock can be fixed to any box or cupboard and it is sure that no one unaware of the secret of operation will be able to open the door. An ordinary knob or keyhole can be fixed up, but no amount of juggling with these will result in the door being opened. The bolt is on the inside, and there is only one way to withdraw it—momentarily to connect a battery to the two hinges, just visible where the door swings.

It is extremely unlikely anyone would think of this method of unlocking, if not told, and a battery from a torch or so on, can be used, contact being made with an open penknife or any other convenient means.

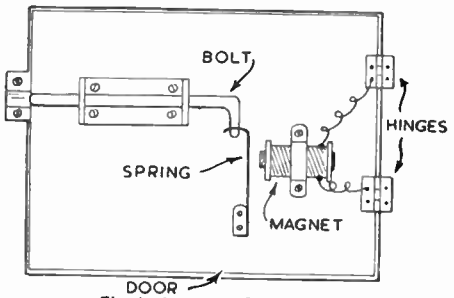


Fig. 1—Lay-out of parts

Arrangement of the Parts

Fig. 1 will make construction clear. The bolt may be an ordinary ready-made one, or can be fashioned by taking a length of very thick material (such as a very large nail) and bending the one end at an angle. The size and strength of the bolt will depend upon the size of the cupboard or box, and the importance of the materials kept inside.

The down-turned end of the bolt engages loosely in a hole in the top of the spring strip. When the magnet is energised, this strip is moved sharply to the right, withdrawing the bolt.

With most cupboards and boxes the hinges are fixed so that they are just visible on the outside when the door is shut. Two of the fixing screws are loosened and the ends of the magnet winding secured under the hinges.

Making the Parts

The detail (A) in Fig. 2 shows how the spring is cut. A piece from a tin-can is used and right-angle bends are made at the dotted lines. The large hole should provide an easy fit for the end of the bolt.

If the bolt is made up as suggested, it can slide in a guide cut out as shown at (B). The staple or loop into which the bolt passes when the door is locked, is shown at (C). Again, bends are made at the position of the dotted lines. For a small lock, all these parts can be cut from any thin metal.

For the magnet, shown at (D) (before winding) use a piece of iron or similar metal about ¼in. in diameter and 1in. to 1½ins. long. Fix two stout cardboard cheeks about ¾in. in diameter to this, and wind the bobbin thus formed full with 22 S.W.G. wire. Any kind of insulated wire is suitable. Bind the magnet with stout paper and fix it in position by means of a strip cut from tin and screwed down (see Fig. 1).

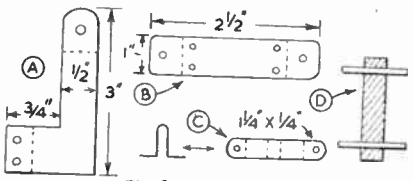


Fig. 2—Detail of parts

The space between the spring strip and end of the magnet should not be larger than necessary, so that the bolt can click back and forward sharply when the battery is connected.

The home handyman should be capable of FIXING GLAZED TILES

IT often happens that the glazed tiles surrounding a fireplace become cracked and unsightly. Likewise, tiles on the walls of the bathroom or scullery are often in need of replacement. These repairs can be carried out very cheaply and easily by the handyman. The more ambitious amateur can carry out the tiling of a room, and, if care is taken, the job can be made to look really well.

Where an odd tile is cracked it will have to be removed, and replaced with a tile of similar size and colour. The local builder's merchant or hardware store should be able to supply a replacement. To remove a tile, use an old penknife, and draw the point of it along the cement joining the tile to its neighbours.

Cleaning Up

Then, using an old wood chisel, chip the tile away from its cement bed a little at a time. Then chip away the old mortar bed or 'screed' as it is called, and renew this. Make the mortar of one part cement to three parts sand, but before applying it, be sure to wet the cavity thoroughly, or the mortar will not grip properly. Leave the new screed to dry for a day, then proceed to fix the new tile. First soak it in water for a few hours, then apply mortar, and tap it into position. Use a straight edge to ensure correct alignment with the other tiles.

Where many of the hearth tiles are cracked it is worth while replacing the whole of the tiles. In general, the instructions given here for tiling the walls of a room can be followed. Having retiled a hearth, however, do not light a fire in the grate for a week, so as to give the mortar a chance to set thoroughly.

Finding the Number

Sculleries and bathrooms are often tiled up to a height of 4ft., and the work is well within the scope of the average handyman. Tiles 6ins. square are commonly used for this purpose. To find the approximate number of tiles needed, find the total area in square feet of the wall surface you wish to tile, and multiply this figure by four. If you are using oblong tiles 6ins. by 3ins. you will need double the number. Tiles with one rounded edge are used for the topmost row, so the number of these required should be calculated.

Remove Plaster

Since mortar will not take effectively over plaster, the latter must first be removed from the area of wall which is to be tiled. First remove the skirting board by levering it away from the wall with a chisel and hammer.

Then draw a line round the walls at the required height, say, 4ft. Cut along the line with a chisel, and then chip away the plaster below the line. Remove every trace of the plaster from the wall, and brush away all debris.

The plaster must now be replaced with a layer of mortar of similar thickness. This layer is called the screed (Fig. 1). To make the mortar, thoroughly mix one part of cement to three parts sand, and add just sufficient water to make it workable, but not sloppy. Then the area of wall to be covered should be moistened by flicking water from a distemper brush. Do this carefully, paying attention to all cavities.

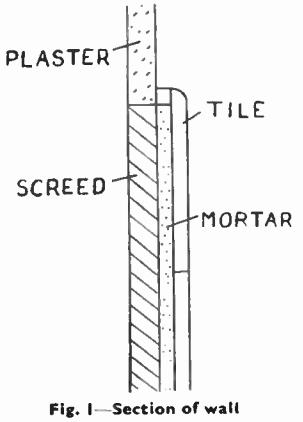


Fig. 1—Section of wall

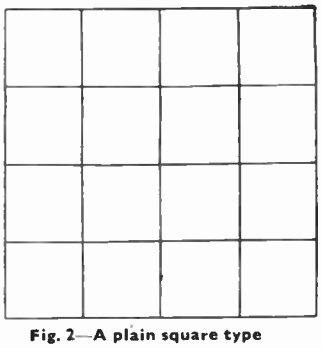


Fig. 2—A plain square type

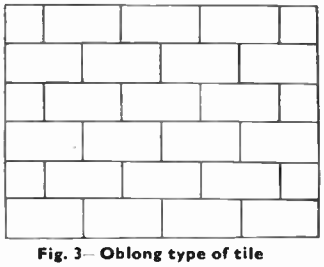


Fig. 3—Oblong type of tile

To apply the mortar you should use a square piece of board, to the back of which is nailed a wooden handle. Load this tool with mortar, and press it to the wall, spreading the mortar over the surface. Start at the bottom, and work upwards with a jerky movement. Smooth off with a trowel, checking that the surface is flat by using a long straight edge.

Key Scratches

The next stage is to cover the whole surface with a series of trowel marks—long lines, 1in. or 2ins. apart. These scratches will provide a surface for the final layer of mortar to cling to. Then leave the screed to dry for at least a day.

Fixing the tiles comes next. This job should not be rushed, as extra care spent in fixing each tile is well repaid by the better finish obtained. Soak the tiles in clean water for an hour or two before using. This will ensure that the mortar adheres to the tiles.

Start by laying the bottom row of tiles. Take the tile in the left hand, and spread it with mortar at least ¼in. thick. The mortar should be similar to that used for the screed. Press the tile into position on the wall with the aid of a trowel handle. The layer of mortar between the tiles and the screed should be ¼in. thick.

To ensure that the bottom layer of tiles is true, it is advisable to nail a thin piece of wood to the floor at a distance from the wall which is equal to the thickness of the tile and the mortar combined. Thus if the tiles are ¼in. thick, the wood should be exactly ¼in. from the wall. Another piece of wood ¼in. thick fixed above the top of the screed will enable a straight edge to be used for checking the alignment of the tiles.

Cutting Tiles

Any surplus mortar from one tile should be used for the next. Fix the tiles as close together as possible and try to get the spaces between them as nearly equal as you can. When you come to the end of the row, you will find that you only need probably half a tile.

To cut a tile, measure the length required exactly, and mark this off at the edges of the tile. Then, using a steel ruler as a guide, draw a glass cutter firmly along the glazed surface. Then break the tile along the cut by pressing it against the edge of a table.

Take special care with the fixing of this first row of tiles; if they are not satisfactory, remove them and begin again. You should plan your tiling so that the half tiles are used in an out-of-the-way position. Use the neater whole tiles at the entrance to the room, for example. Figs. 2 and 3 show the tile patterns obtained when using square and oblong tiles respectively.

Rounded Edges

As already mentioned, the topmost row of tiles should have rounded top edges. if you have used eight 6in. tiles on a 4ft. screed, the top edge will protrude a fraction of an inch above the top of the screed. A small space should be left at the top (see Fig. 1), so that alabastine filler can be inserted. This will produce a smooth, level surface.

When the tiling operation is finished, wipe the tiles clean of all mortar, then fill in the spaces between them with alabastine or plaster of paris. (328)

Get the best work by knowing the correct way of
USING A HANDSAW

AS we recently had an article on the making of a saw trestle (seen again in the accompanying photographs), a few hints on actual sawing will not come amiss, as some fellows make awfully hard work of it.

The top photograph shows how NOT to do it. The saw is almost upright and the amateur carpenter is holding it with both hands. He is unable to put any real 'push' into the work, and has not much control over it.

The photograph below shows the correct way. The arm, working like a piston, is in line with the saw, and this is held at a slope, neither too high nor too low. The teeth of the saw were designed, in fact, to cut most effectively in this position. Only one hand is being used and the forefinger lies along the handle, so as to 'steer' it.

The right attitude and angle for cutting

A man-size saw is being used for a man-size job, and as the saw is really *sharp*, work is quite easy. Saw setting requires either quite a knack if done with simple tools, or a special tool hardly likely to be found in amateurs' kits. But it does not cost a fortune to have a saw reset at a tool shop. To keep the edge in good condition, some workers have a simple device, such as illustrated in Fig. 1, or something on these lines, easily made in a few minutes. It is merely a couple of thin battens held at each end with bolts and wingnuts.

Different Saws

In theory (and in actual practice if a lot of sawing of heavy stuff is attempted), two different saws are needed, one for sawing with the grain and another for sawing across it, but in most kits of tools, a hand-saw about 26ins. long and with six teeth to the 1in., will be about right, and the teeth are usually a compromise for doing both kinds of cutting.

For a smaller boy tackling smaller stuff, a 24in. saw will be more suitable, with, say, eight teeth to the 1in. (known as a Panel Saw). It does not leave so many 'whiskers' as coarser saws. But, of course, you cannot saw up logs with it.

Whatever saw is bought, try to get the very best. It is, of course, a counsel of perfection, especially in these days of high prices. But a really good saw will literally last a life-time, whereas a cheap saw will soon blunt and lose its temper. Cheap tools are a false economy.

Points to Note

A good saw has the back thinner than the part at the teeth, i.e., it tapers off in thickness from teeth to back, thus preventing binding in the saw cut. A skew-back saw is said to be easier and lighter to handle.

In testing a saw, one grasps it by the handle (see that the handle is comfortable) and, holding the saw in a working position, test for balance. Squint along the cutting edge to test whether the teeth are in a perfectly straight line. Grasping the handle very firmly, take hold of the free end and bend it round in a wide arc. Let go of the end, and the blade, if not soft or of uneven temper, should spring back to its original position.

By letting the light fall on the blade from a certain angle, imperfections of hammering and grinding of the blade can be easily seen.

In Operation

The handle may be held in the left hand whilst the right forefinger is snapped against the thumb, so that it strikes the free end of the saw sharply. A clear ringing noise should be heard, without jarring (denoting uneven temper).

Handles that work loose after much hard wear can be excused, but some are loose when purchased. Hold the handle in both hands and waggle the blade up and down briskly. Any looseness should be apparent.

Needless to say, a five-shilling 'bargain(?)' saw is not likely to survive these tests.

When sawing, put the thumb of the free hand on the waste side of the saw line and using this as a guide, draw the saw upwards. This will make a groove large enough to guide the saw when it is pushed forward. The saw, of course, cuts properly only on the forward stroke.

A Correct Start

The secret of keeping to a line in sawing is to get the first strokes right, for if they go even a fraction astray, the error will increase with every stroke. The first few strokes should be short ones and then, when the saw is biting well, the length of the strokes are increased.

The wrong way of holding a saw

OUR FERN STAND GIFT DESIGN

Complete kit of wood and moulding for the Stand of this week's design, is obtainable from Hobbies Branches for 6/5 or sent by post from Hobbies Ltd., Dereham, Norfolk, for 7/3.

Should the saw go off the line, bring the saw to a nearly vertical cutting position and sawing more slowly, twist the blade in the required direction on the down strokes.

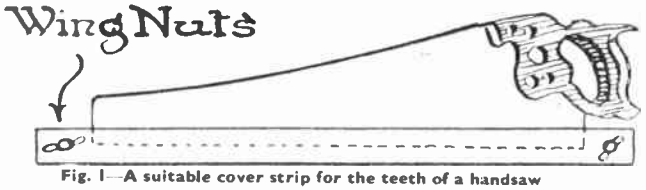


Fig. 1—A suitable cover strip for the teeth of a handsaw

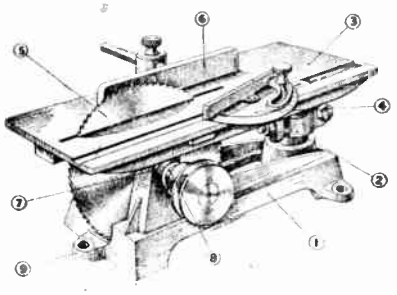
Most of the full length of the blade should be used with good full strokes rather than small jabbing ones. Be careful, however, not to let the end of the saw catch in the wood, as then the saw might be buckled, especially if of poor temper, and this would then need special treatment from a saw grinder.

Wood under 2ft. long is best sawn upright in the vice, sawing half-way down and then reversing. Keep the wood low in the vice first.

new MARK II BENCH SAW

Introducing the vastly improved Mark II version of the popular Masco Bench Saw—best of the old features retained, but note new points gained from world-wide use by purchasers.

1. Solid base to avoid distortion.
2. Improved rise, fall and tilting adjustments with strengthened fixing lug.
3. Saw table 2½in. longer, stronger ribbing.
4. Protractor Quadrant Angle Guide.
5. Thicker 6in. diameter saw blade to prevent flexing under side pressure.
6. Adjustable fence of improved design with positive locating device.
7. Phosphor bronze bearings.
8. Ground Spindle.
9. Stouter three point mounting.



Note also that direction of saw now clockwise to take advantage of greater length of table and provide greater protection as saw now working behind the pillar supporting the table instead of in front of it.

What users say: '. . . a very compact job'.
'. . . a cabinet maker . . . will do . . . a lot of work normally . . . have to do by hand'.
'. . . the saw a great help . . . will rebate grooves, cut small tenons . . .'
'. . . I am pleased with it . . . it will save a lot of time . . .'

EASY PAYMENT TERMS 25/- Deposit with order and six monthly payments of 17/6. No references or guarantors required.

IMMEDIATE DELIVERY POST FREE **£6 . 6 . 0**

MODEL ACCESSORIES SUPPLY CO. The Aerodrome, Billington Road, Stanbridge, Nr. Leighton Buzzard, Beds.

CASCO

COLD water GLUES *supersede this*

CASCO Glues are easily and quickly prepared for use, no heat being required. CASCO Glues comply with MODERN BRITISH STANDARDS SPECIFICATION requirements, ensuring outstanding strength and durability.
CASCO Glue, Grade "A" is the world-famous Casein Cold Water Glue manufactured in Great Britain, Australia, U.S.A., Argentina and Scandinavian countries.
Conforms to British Standards Specification 1444 Type A.

Stocked by Ironmongers, Builders' Merchants, Hardware Stores, etc.

DISTRIBUTORS:

Gt. Britain: *Charles Cleeve & Co. Ltd.*
45 Gt. Peter St., London, S.W.1.
Eire: *Waller & Willis Ltd.*
60 Middle Abbey St., Dublin
M. J. Galligan, 16 Oliver Plunkett St., Cork

FREE! *Send for literature and Free Sample to the manufacturers*

LEICESTER, LOVELL & CO. LTD.
(Dept. HW) NORTH BADDESLEY, SOUTHAMPTON

"Like my rabbits . . . ?

Can't see them? What do you think I'm holding? Sure, *they're* the rabbits — Service language for presents for the folks at home. When we got that big rise in pay I decided I'd do the folks proud . . . can send Mum home a bit extra, too. Not bad for a Seaman Boy, eh? I certainly landed lucky when I got into the Navy . . ."

BOYS AGED 15-16 can enter the Seaman Branch of the Royal Navy. Higher pay — better prospects than ever. The Navy needs the right Boys NOW.

Make the **ROYAL NAVY** *your career*

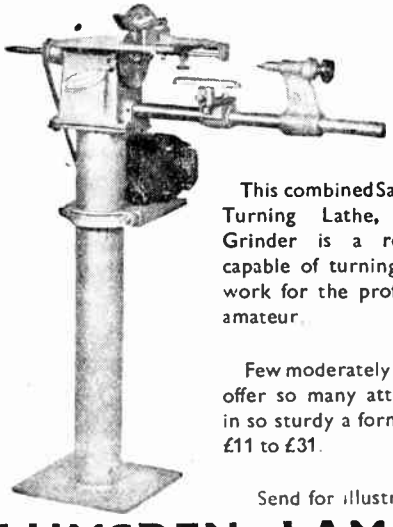
WRITE TODAY for Free booklet to: D.N.R., Dept. Y/37, Admiralty, London, S.W.1. (Applications from U.K. only.)

Name .....
Address .....
Age .....

The New

Lumsden

WOOD WORKER



This combined Sawbench, Wood-Turning Lathe, Polisher and Grinder is a robust Machine capable of turning out first class work for the professional or the amateur.

Few moderately priced machines offer so many attractive features in so sturdy a form. Models from £11 to £31.

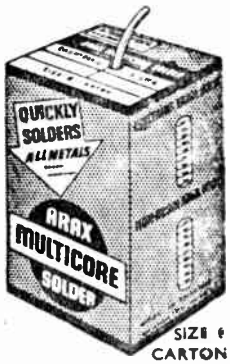
Send for illustrated leaflet.

LUMSDEN LAMP CO.
5 MILLBURN, ALMONDBANK, PERTH

A new solder

FOR WORKSHOP AND HANDYMAN

- CONTAINS 2 CORES OF FLUX
- NO EXTRA FLUX REQUIRED
- REPLACES STICK SOLDER, FLUID AND PASTE FLUXES
- IF DESIRED FLUX RESIDUE READILY WASHES OFF WITH WATER
- SO FAST THAT IT WILL EVEN SOLDER BLUED SPRING STEEL WITHOUT PRE-CLEANING



SIZE 6 CARTON **5/-** each

No. 10 KIT **2/-** each

Available in 5/- retail cartons (4 specifications) or 2/- Multicore Solder Kit contains 2 specifications Arax Multicore Solder and 2 specifications Ersin Multicore Solder for electrical wire to tag joints. Now obtainable from many stores. In case of difficulty 5/- cartons or 2/- Multicore Solder Kits sent post free on receipt of postal order or stamps

MULTICORE SOLDERS LTD., MELLIER HOUSE, ALBEMARLE ST., LONDON, W.1

WEBLEY

AIR PISTOLS

Marvellously accurate for target practice.
No licence required to purchase.

Senior Mark 1
Junior Webley Air Rifle

Write for List. WEBLEY & SCOTT LTD.
166 WEAMAN STREET, BIRMINGHAM, ENG.

THE BOLSTER HOME WATCH AND CLOCK REPAIR OUTFIT

These precision jewellers instruments include watchmaker's magnifying eyeglass, finest watch tweezers, set watchmaker's screwdrivers, watch and clock oil, oilers, dusting powder, clock brush, plus illustrated instructional manual for the amateur. In container 12/9 post free.
Senior Outfit includes everything above, plus watch jewels luminous compounds, dial renewer, jewellers rouge, explanatory book. Price 21/- post free.

BOLSTER INSTRUCTIONS, (Dept. H.W.), 5a Station Parade, Ashford, Middx.

Hobbies LIMITED

BRANCHES

LONDON
78a New Oxford St., W.C.1
(Phone MUSeum 2975)
87 Old Broad Street, E.C.2
(LONdon Wall 4375)
117 Walworth Road, S.E.17

GLASGOW
326 Argyle Street
(Phone CENtral 5042)

MANCHESTER
10 Piccadilly
(Phone CENtral 1787)

BIRMINGHAM
14 Bull Ring

SHEFFIELD
4 St. Paul's Parade

LEEDS
10 Queen Victoria Street
(Phone 28639)

HULL
10 Paragon Square

SOUTHAMPTON
25 Bernard Street

BRISTOL
30 Narrow Wine Street
(Phone 23744)

Head Office & Factories — HOBBIES LTD., DEREHAM, NORFOLK

Develop Self-confidence—Master

JU-JITSU

Amazing new methods show you how to 'get tough' and make any attacker helpless with lightning speed—**or money back.** The Morley Rapid Ju-Jitsu Course teaches you all the **knock out blows,** shows you how to throw a stronger man helpless to the ground, gives **absolute mastery.** Develops body, gives **self confidence.** You can acquire this devastating weapon in a few weeks. For both sexes. Complete fighting system, 10/- (or $1.00 bill and 40 cents in stamps). Air Mail, 14/-. Details 2½d.

JOHN J. MORLEY (HB/90), Terry House, Naphill, High Wycombe, England *Established 1936*

YOU CAN BECOME A HANDICRAFTS INSTRUCTOR

Experience not essential

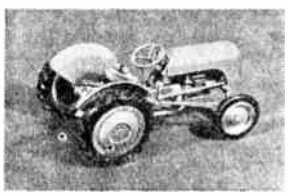
Men who enjoy making things in wood or metal can turn their hobby into a permanent and interesting Career. Short hours, long holidays, and security in a job you would really enjoy, can be yours if you become a Handicrafts instructor. Let us send details of the easiest and quickest way to get the necessary qualification.

We definitely guarantee
"NO PASS—NO FEE"

If you would like to know about our unique method of preparing you for one of these appointments, write today, and we will send you our informative 176 page Handbook—free and without obligation. Mark your letters "Handicrafts Instructor".

BRITISH INSTITUTE OF ENGINEERING TECHNOLOGY
59 Shakespeare House
Stratford Place, London, W.1

BIET



BOYS!!! BOYS!!!

With the aid of our amazing assembly outfit you can quickly and easily assemble this superb scales model of the famous 'Ferguson' Tractor. All parts supplied in finished state. All Plastic construction, real rubber trakgrip tyres. Can be dismantled and reassembled with ease. Send P.O. today for 8/- post free.
MURRAY HILL & CO. (Dept. H.), MAIL ORDER HOUSE, BEDFORD SQUARE, SIDMOUTH, DEVON

HOBBIES BRITISH

FRETSAW BLADES

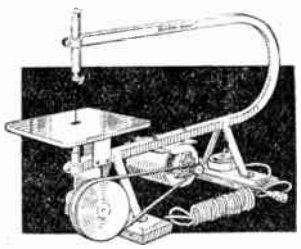
YELLOW LABEL 1/2 per doz. 13/6 gross
BLUE LABEL 11d. per doz. 10/6 gross

From Hobbies Branches or by post (2½d. extra) from Hobbies Ltd., Dereham, Norfolk

---

MOTOR-DRIVEN OR TREADLE FRETSAWS

For Wood, Card Composition Sheet Metal Plastic, etc.

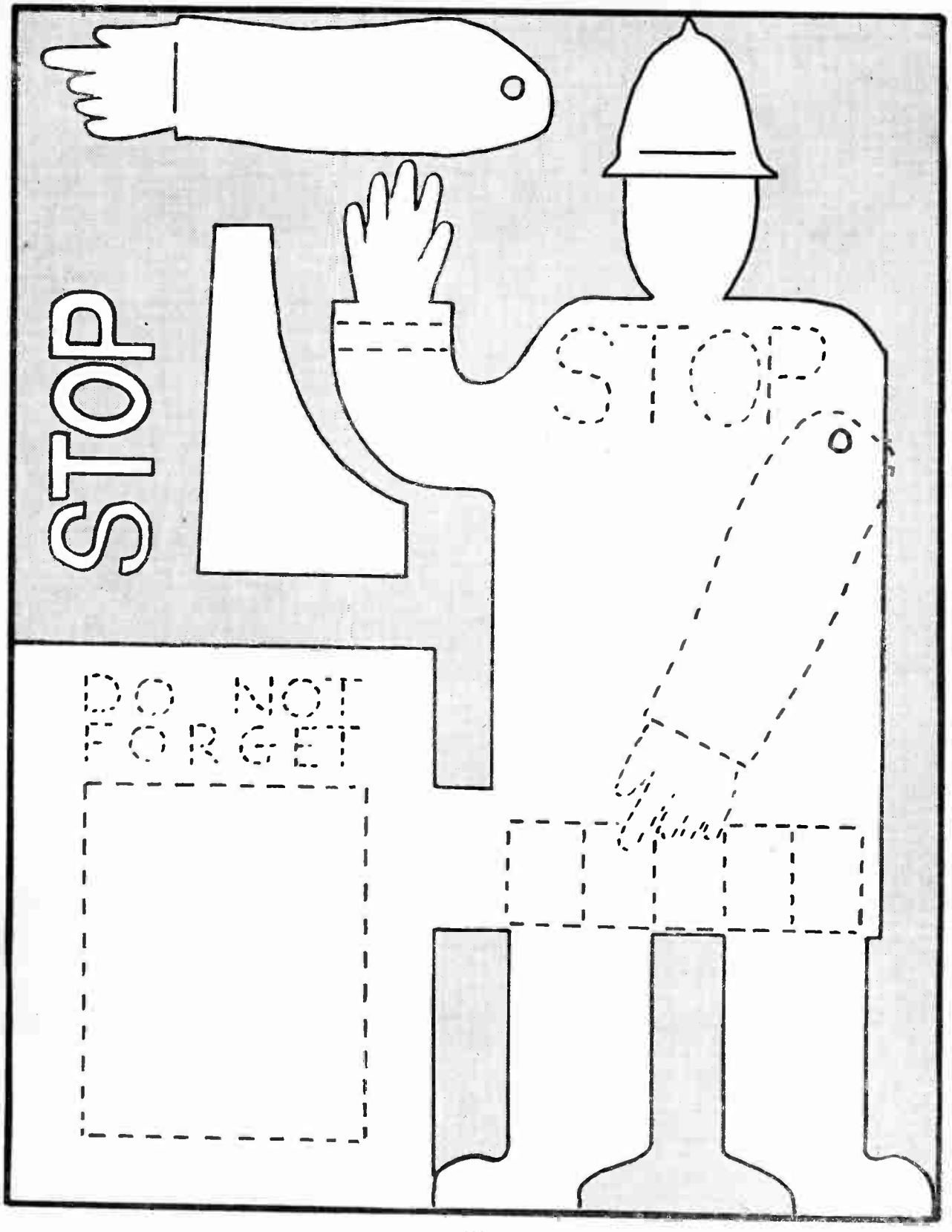


Any Hobbies Fretmachine provides a factory at home for the handyman and craftsman interested in Toymaking, Fretwork, Modelmaking, or odd jobs about the house.

From Hobbies Branches and Ironmongers everywhere, or leaflets from Hobbies Ltd., Dereham Norfolk.

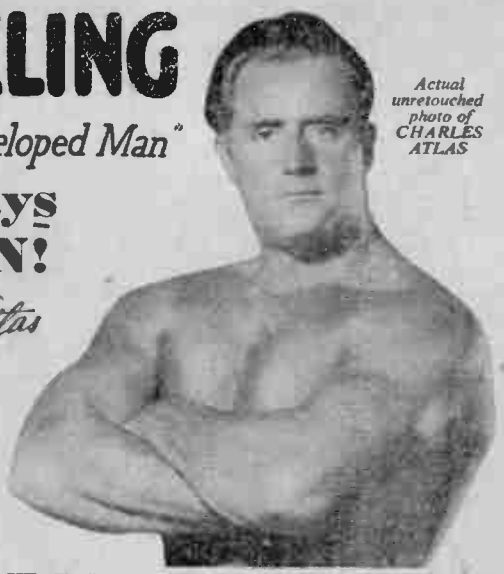
Policeman Kitchen Reminder Patterns

See page 230



The 7-STONE WEAKLING

who became "The World's Most Perfectly Developed Man"



Actual unretouched photo of CHARLES ATLAS

I'll Prove in the first 7 Days YOU Can Be This NEW MAN!

Charles Atlas

WHEN I say I can make you a New Man of giant power and energy, I know what I'm talking about. I've seen my new system, *Dynamic Tension*, transform hundreds of weaker, punier men than you into Atlas Champions. Take myself, for instance. I used to weigh only seven stone. I was a sickly scare-crow. Then I discovered *Dynamic Tension*. It gave me the body that twice won me the title. 'The World's Most Perfectly Developed Man'. It'll work just as big a change in you, too! I'm so sure of it that I make you this amazing offer. At my own risk I'll give you PROOF in even the first seven days that I can make you into a NEW MAN. I'll begin training you on approval. If you don't notice a marvellous change in yourself within a week, you don't owe me a penny.

Send for FREE 48-Page Book

Post the coupon right now for full details, and I'll send you my illustrated book, *Everlasting Health and Strength*. Tells all about my DYNAMIC TENSION method. Shows actual photos of men I've made into Atlas Champions. Supplies the facts you need to know about your condition. It's a valuable book! Send for your copy to-day. Post the coupon to CHARLES ATLAS (Dept. 102/N), 2 Dean Street, London, W.1.

CHARLES ATLAS (Dept. 102/N), 2 Dean Street, London, W.1.

I want the proof that your system of *Dynamic Tension* will make me a New Man. Send me your book *Everlasting Health and Strength*, free and details of your amazing 7-DAY TRIAL OFFER.

NAME .....

(Please print or write plainly)

ADDRESS .....

.....

So may you—one day.

If you are chosen to be an R.A.F. Apprentice you will be trained for a skilled trade, and continue your general education. You will have far more opportunities for sport than most boys. You will be well fed and cared for, and receive good pocket money. And you may end up not only with a commission—but with a flying commission.

Send the coupon. It will not commit you to anything. It may lead to great things.

TO:—AIR MINISTRY, INFORMATION BUREAU, DEPT. HS.44K, KINGSWAY, LONDON, W.C.2.

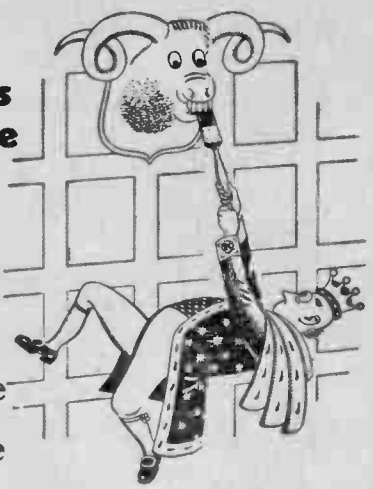
I am between 15 and 17½. Please send details of R.A.F. Apprenticeships.

NAME .....

ADDRESS .....

.....

The bristles won't come out!



Harris—the paint brush with a name to its handle

There are three ranges of Harris Brushes: "Junior" (Red tipped handle) good; "Standard" (Brown tipped handle) better; "Super" (Rosewood handle) best.

L. G. HARRIS & CO. LTD., STOKE PRIOR, WORCESTERSHIRE

CRC 25

Printed by BALDING & MANSELL, LTD., London and Wisbech, and Published for the Proprietors, HOBBIES LTD., by HORACE MARSHALL & SON, LTD., Temple House, Tallis Street, E.C.4. Sole Agents for Australia and New Zealand: Gordon & Gotch (A'sia) Ltd. For South Africa: Central News Agency Ltd. Registered for transmission by Canadian Magazine Post.

Hobbies WEEKLY

CONTENTS

January 17th, 1951 Price Fourpence Vol. III No. 2881

A NOVEL ELECTRIC

AEROPLANE GAME

ONE of the many fascinating things to be seen on some of our big airports are those little signposts that point the direction, not to our own towns and villages, but to Paris, New York, and so on. Something of the same thrill of far-away places is experienced with this electric aeroplane game. As the planes circle the tower, the destination plates light up consecutively, each player holding a ticket bearing one of the place names.

Slowly the planes come to a stop. The light flickers tantalisingly over the panels and finally comes to rest on one of the place names, and the holder of that ticket has to be 'paid for' by the other players.

Straightforward Construction

The construction is quite straightforward and provides an interesting piece of wood and metal work—the requirements in the matter of wood being quite small. Plywood, if available, is best, but anything similar may be used. The planes are spun round by a handle and a string belt, and the lighting is from six flashbulbs and a torch battery housed in the tower.

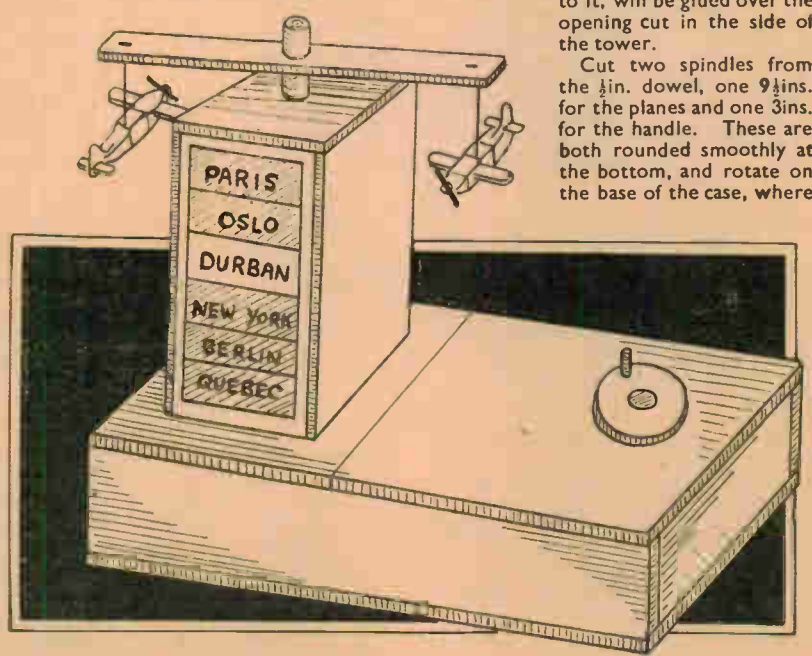
The lighting is on a rotational system, so each bulb lights up in turn as the spindles revolve. The dimensions given allow of wood of ¼in. thickness being used throughout, with two spindles of ⅜in. dowel. These measurements, however, can be varied as required, to permit the use of any wood the handyman may have to spare.

It will be seen from Figs. 1 and 2 that the body of the model consists of an oblong box 12ins. long, 7ins. wide and 2½ins. deep, and a tower 5¾ins. high, 4½ins. wide and 3½ins. deep. The base can be cut in one piece, 12ins. by 7ins., but it will be found simpler to assemble the 'works', if the top of this base portion is in two halves, one 5ins. by 7ins. (on which the tower stands) and the other 7ins. by 7ins., which carries the rotating handle parts. Cut out and fit all the various pieces before assembling any of them. Then we can start and work from the base upwards, putting in the electrical work and the belt drive as the work progresses upwards.

The Tower

One side of the tower is fretted with an opening 5ins. by 2ins. Behind this is fitted a lamp board (Fig. 2), on which are screwed five pieces each 3ins. by 1in., to divide the board into six sections. A flashbulb is screwed on each section, and a sheet of Perspex or similar transparent material, with six place-names painted on to it, will be glued over the opening cut in the side of the tower.

Cut two spindles from the ¼in. dowel, one 9½ins. for the planes and one 3ins. for the handle. These are both rounded smoothly at the bottom, and rotate on the base of the case, where



a small indentation with centre punch helps to give them a good bed. Holes are bored in the top of the base and in the top of the tower, to take these spindles.

For the plane spindle the hole is 2¾ins. from the end of the case, and it is in the centre of the piece forming the top of the tower. The hole for the handle is 2ins. from the other end of the base—in each case measuring to the centre of the hole. To hold the handle steady a small piece about 2½ins. long, with a ½in. hole bored 1⅜ins. from one end, is screwed to the inside of the case, as shown at Fig. 3.

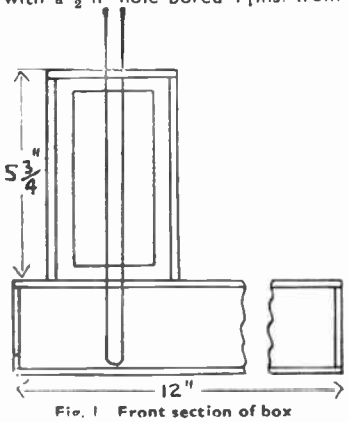


Fig. 1 Front section of box

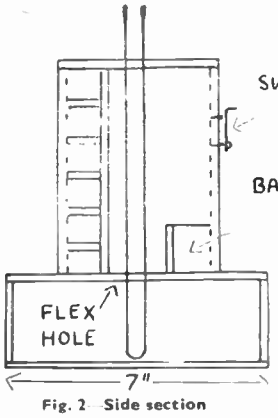


Fig. 2 Side section

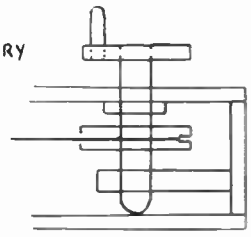


Fig. 3—Section of winding gear

Mark out on the base just where the tower will stand, then place a battery into position and mark round it. Cut three little strips (their exact size is immaterial), that can be glued on later, to form a little pocket for the battery, as shown at Fig. 2. For the handle we need, in addition to the spindle and the stay, a circular disc 2ins. in diameter bored centrally with a ½in. hole, and a 1in. oddment of thinner dowelling, for which the disc is also bored, near the edge.

Two pulley wheels are required, each 2ins. in diameter. These are best made up, each from three discs of thin wood or a sandwich of wood and cardboard with the centre piece ½in. less in diameter. When the glue is thoroughly dry, bore them also with the ½in. bit.

The Planes

For the plane bracket cut a strip 8ins. long and about 1½ins. wide, and bore it centrally to take the main spindle. Three discs of wood are required altogether, each bored with a ½in. hole, and one of them goes on the main spindle just under this bracket. The two little planes can either be plastic ones bought from any toy shop, or made up in wood if preferred, in any particular style that the handyman prefers.

They should be identical in size, and about 3ins. long with a 2in. wing span. When we come to finish off the model they are fixed to the plane bracket with wires, which should be stiff enough to prevent the planes from swinging about as they revolve.

The Lighting

We come now to the lighting. First cut two discs of tin, one 2ins. diameter and the other 3ins. Mark the smaller into six equal sections (Fig. 4) and bore two holes for screws in each, as shown. Then cut out the six segments and flatten them well so that they lay neatly together. The other metal disc is bored centrally with a ½in. hole, and is held with two small nuts and bolts to a wooden disc of the same diameter, similarly bored for the spindle.

Mark the base where the main spindle is to stand, then screw down the six segments in a circle round this point, with a little space between each segment. Make sure that the spindle will have a good bed in which to revolve, by tapping the centre of these segments with a centre punch.

To get the remainder of the electrical work in, we need the main spindle to be temporarily in position. The simplest way is to cut a temporary stay, bore it with a ½in. hole, and tack it temporarily across the case in such a position that the spindle is held in place. This need not be more than 1in. wide (it will be seen at Fig. 5) and then there is plenty of room to get round it to fit the rest of the pieces.

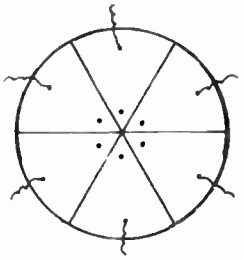


Fig. 4 Tin discs

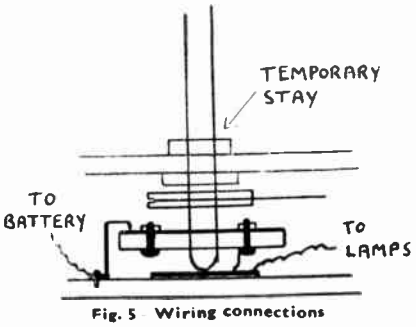


Fig. 5 Wiring connections

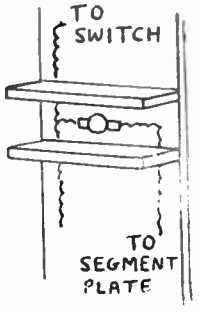


Fig. 6—The lamps

First the 3in. plate. Note that one of the bolts holding the tin to the wood also holds a little piece of metal strip which brushes over the segment plate as the disc goes round. This little piece (and a similar one that takes off the current by brushing on the 3in. metal disc), are best cut from thin springy brass, if available—the kind of material that is used for the brushes of electric motors. Tin can be used, and works quite well, but not being so resilient, it sometimes tends to bend after a time, and break the contact.

When the little brush has been fitted to the underneath side of the 3in. disc, put the disc on the spindle, near the bottom, in such a position that the brush just sweeps over the segment plate. This gives us the position for the second brush—a piece of metal strip 1½ins. long, bent to a rightangle at each end. The bottom end is bored for a screw, by which it is held to the base, and the top end is turned over again to form the tip of the brush, which has to rub gently but continuously on the 3in. disc.

Mark the position for the disc on the spindle, and also the place for the pulley wheel, which comes above it. Mark also the position for the little wooden washer which goes just under the top board of the base section. Then pull out the spindle from its temporary stay and glue these three pieces on to it in their respective positions.

We can now start some of the wiring up. Cut six lengths of covered wire, each about 10ins. long (they can be cut to exact length later) and fix one under the outside screw holding each tin segment. Fix another piece about the same length to the screw which holds the brush on the revolving contact plate.

Fig. 6 shows how the lamps are wired in. Only one is shown for clarity but the others are, of course, treated the same. The wiring is also shown for clearness on the front of the board, but actually it is easier to bore two small holes behind each lamp and run the wiring down the back, where it is clear of the partitions.

One terminal of each lamp holder is joined to a master wire which runs to a little switch on the outside of the tower (Fig. 2) and then to the battery. The other six terminals then each take one of the wires from the segment plate—these wires passing through a hole in the top of the base, as shown. The one wire connected to the brush also uses the same hole and will be joined to the other battery terminal.

The Handle

Having prepared the pieces for the handle, mark the exact position for the

pulley, parallel to the one on the main spindle, and glue this on. Mark and glue on also the little washer that comes immediately under the top piece of the base. Do not glue on the top of the handle until assembly has been completed.

Assembly

It is a good plan to assemble the main structure with screws and not glue. Then if after some time the battery needs renewing or the belt tightening, the inside of the model can be easily got at.

Screw the sides of the base to the bottom piece. Stand the two spindles in place and make a belt of string. Put the belt on the main spindle pulley, then put on that section of the base which comes under the tower, threading the six flex wires and the odd one through their hole, ready for connection to the battery and the lamps in the tower.

We can then screw the handle-spindle bracket to the side of the case, thread the spindle through the other half of the top base-board, and then, with the belt on, screw down this second half of the board. The spindle should turn freely together, when either is rotated, and a little coaxing at their points of contact is well worth while here, to ensure a good job.

Put together three sides and the top of the case, and connect the six wires to the lamp board. Then screw the board in place inside the tower, and glue these three sides of the tower to the base. Glue in also the three pieces for the battery holder and when dry, put the battery in position. Make the little switch for the fourth side of the tower (it need only be two screws as terminals with a movable piece of metal strip between) and connect up the wires.

CUTTING LIST
(for wood ¼" thick)

No. of pieces	Description	Size
1	Base bottom	12" × 7"
1	Base top, part	5" × 7"
1	Base top, part	7" × 7"
2	Base sides	12" × 2½"
2	Base sides	6½" × 2½"
2	Tower sides	5½" × 3"
2	Tower sides	5½" × 4½"
1	Tower top	4½" × 3½"
1	Plane bracket	8" × 1½"
1	Main spindle	9½" of ½" diameter
1	Handle spindle	3" of ¼" diameter
1	Lamp board	5½" × 3"
5	Lamp divisions	3" × 1"
1	Contact plate (also similar piece in tin)	3" diameter
1	Handle spindle bracket	2½" · 2
1	Handle top	2" diameter
1	Handle top	1" of ¼" dowel
2	Pulley wheels, three section	2" diameter
3	Washers	1½" diameter
1	Segment plate (in tin)	2" diameter

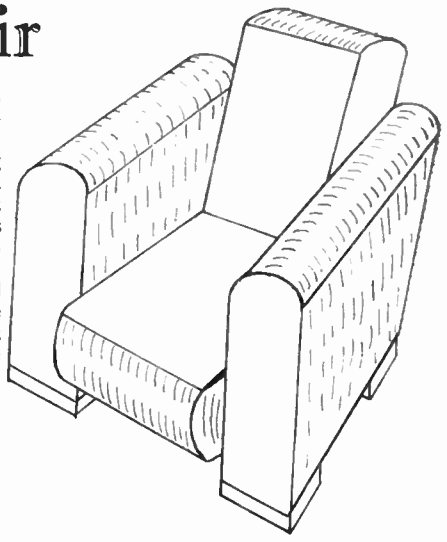
Before putting the fourth side into place try the lighting to see that all is correct. The wiring should run:—master wire from lamp to switch; switch to battery terminal. From the other battery terminal to contact maker on plate, and from each segment of the other plate, back to the six lamps.

Finishing Off

Glue on the plane bracket to the main spindle, with a little wooden washer beneath it to make a strong job. Then fix the two little planes on with wire. Cut a piece of Perspex or similar material 5½ins. by 2½ins., paint on to it six suitable place names, and then glue it into position. Oddments of the same material can be used to make six 'tickets' each painted with one of the place names. Then finish off the model with gaily-coloured paint or stain.

When playing, the handle should be turned for a suitable time and then spun and released by the hand, so that the model comes to rest entirely of its own accord and the lucky winner is left to chance. (325)

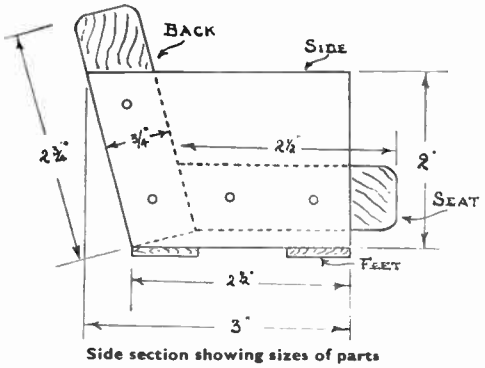
A Miniature Arm Chair



A MODEL arm chair covered in real tapestry, leatherette or similar material, will give great pleasure to any little girl, and can easily be made from a few pieces of wood, some nails and suitable material for covering.

The framework of the model is made from solid wood ¾in. thick and 2ins. wide, on to which is glued and tacked the covering.

From a strip of wood ¾in. by 2ins., cut the back piece 2¾ins. long, two side pieces each 3ins. long at the top and 2½ins. at the bottom, and the seat 2½ins. long. Round off the top edge of the back and the top edge of each side, using a plane and file. Round off the front edge of the seat and chamfer the rear edge, so that the top remains 2½ins. long but the bottom is reduced to 2¼ins.



Side section showing sizes of parts

In each side bore holes as shown to take nails 1in. long. Put chair together temporarily by first fixing the back to the sides, and then fixing the seat between the sides, leaving a space 1/16in. wide at rear of the seat between it and the back. Glass paper all edges, then take chair to pieces.

Having decided on the material to cover the model, cut pieces to the required size and stick to the front and back of the arms, the sides of the seat and the sides of the back. Leave till glue is thoroughly set and dry, then trim off. Next cut a length of material to cover the seat.

Tack this to the back of the seat on the chamfered edge and bring it over the seat, gluing to the top, front and underside, and finish off with a tack or two on the chamfered edges at the bottom.

Continue in the same way with the back of the chair, tacking underneath and behind where the seat is fixed.

Each side must now be covered, but before doing so, replace the nails with ones 1¼ins. long. Start by fixing material over these protruding nails and continue gluing material to the wood, finally making fast with a few tacks along the bottom of each side.

When all the parts are thoroughly dry they are assembled. A little glue can be added where the seat and back join the sides, and if a block of hard wood is placed over the heads, this will allow the model to be hammered together without these nails protruding through the covering.

Four small feet are now required, one at each corner. These are made from pieces of plywood ¾in. square and ⅛in. thick, and are tacked to the bottom of the chair. Before fixing, stain the feet dark brown.

Finish off the chair by gluing a very narrow fancy braid to the joined edges, and make small cushions about 1¾ins. square and stuffed with cotton wool. (336)

Readers may try their hand at this novelty

'SNOWSTORM' ORNAMENT

THE 'Snowstorm' novelty, generally in the form of a paper weight, originated, it is believed, in Germany, and was a useful desk accessory some years ago. Specimens are still to be picked up occasionally if one is lucky, but one can be made without difficulty and would add a novel ornament to the home. The whole thing consists of a glass bowl, in which is, usually, a model building or view, and when inverted, a snowstorm effect is obtained, very pretty to watch.

The exact substance used years ago seems now to be something of a mystery, but experiments in various things resulted in the choice of Christmas 'frost' being considered the best of the lot, and that substance, which can generally be bought at toy and fancy shops, is recommended here.

The stand and interior model building must be made up from some composition impervious to water, as water is used to fill the bowl. There are several compositions quite suitable nowadays, and readers may have their own choice in the matter. Perhaps Pyruma would suit as well as any, if any doubt about a suitable choice exists. The exact size of the stand will depend on that of the glass bowl available, which should be on the small size, somewhere about 4ins. to 5ins. diameter, say.

A hexagon shape for the stand will be easy to work, and its dimensions can be estimated by the following method, as depicted in Fig. 1. On a sheet of paper strike the two concentric circles shown at (A), the inner circle being a trifle less in diameter than the opening of the bowl, and the outer circle a little more than that of the rim. Outside these strike a third circle about 1in. larger all round. Step off the radius of this circle round the circumference, and join the points to make the hexagon.

The ring (A) should be cut out of ¼in. or ⅜in. thick fretwood. Glasspaper the edges of this and lay it aside. Now, on a piece of greased board, roll a layer of the cement to about ½in. thickness. Lay the paper shape on this and trim the cement to the shape.

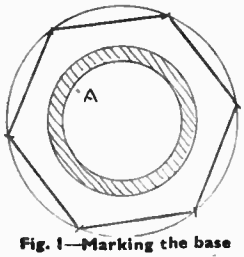
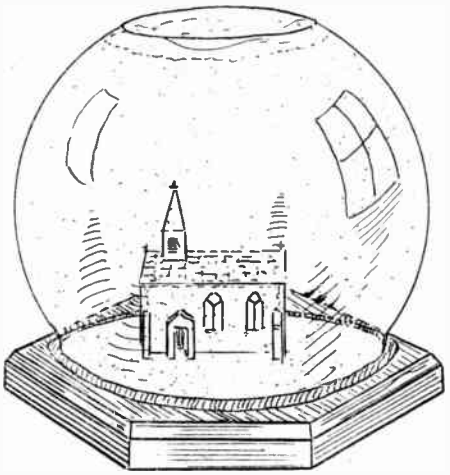


Fig. 1—Marking the base

Fig. 2—The bowl fixing

In the centre lay the fretwood ring, and fill up with the cement, lay more on the outside of the ring and level all off. Now remove the ring, and a circular groove will be left, into which the rim of the bowl will be, afterwards puttied in. Bevel off the edges of the hexagon.



This is the stand, and in the centre part the model building will be erected. Readers may well have their own ideas on this subject, the model village church, shown in the general view, and in detail Fig. 3, being but a suggestion. Pyruma cement is quite easily modelled, and even the tyro need not fear to make up something as simple as that shown, or perhaps, a small thatched country cottage.

The church is seen in Fig. 3 as a solid moulded block, with its porch and bell steeple modelled separately and stuck on while the cement is still plastic. The windows and other details are marked on the cement with a pointed stick. The size of the model should not be too large, quite a small one will allow the 'snowstorm' to be more effective.

The stand and model completed should now be baked to stone hardness in the oven. Be careful not to distort the shape during the work, and before placing it in the oven, try the bowl to see it fits quite easily in the circular groove.

When dry and hard the model should be painted or enamelled. The groove should also receive a coat of paint to make the putty adhere better. The stand can be done at the same time, or left until later when the bowl is fitted on. A paint or enamel unaffected by water must be used; best to enquire about this when purchasing the stuff.

When the paint is quite hard, partly fill the bowl with distilled water, which can be bought at any chemists, and invert the stand and place it on top. See the quantity of water is enough when the model is in it, to nearly, but not quite, fill the bowl. Now decant the water carefully and pour it into a wide mouthed bottle provided with a cork.

As purchased the 'frost' may be a little too coarse, it should be folded into a cloth and further pulverised with a rolling pin. A quantity is then introduced into the water. Cork the bottle and shake up, then invert the bottle and watch the snowstorm effect as the frost settles down again. You can then see if enough frost is present to give a satisfactory effect, or if more is required. All being well, empty the water and frost back into the bowl.

Ordinary putty would serve to fix the bowl to the stand. Knead it well between the fingers until soft, then press it into the groove. Invert the stand, etc., and press down on the bowl firmly. With the hands still pressing both together, turn the bowl right side up and without lessening the pressure, get a kindly assistant to press the putty well round the rim of the bowl and up to its side, and then level off. Be quick over the job, and invert the whole again. Place a weight on the stand and leave for some days for the putty to get hard.

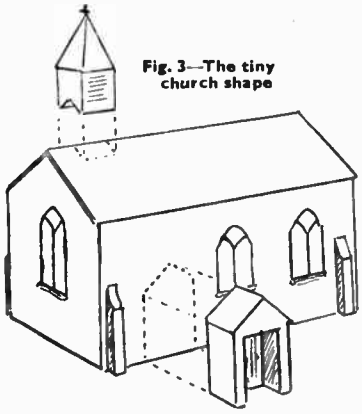


Fig. 3—The tiny church shape

A section of the stand, with the rim of the bowl puttied in the groove, is shown at Fig. 2, which will explain the business better than a written description. Obviously the puttying in must be satisfactorily done to prevent the water in the bowl from seeping through.

From Fig. 2 it will be noticed that the bottom of the stand is hollowed a little, and not quite flat all over. This is considered an improvement, preventing to a great extent, a tendency on the part of the stand to not bed down quite flat as it should do if it becomes ever so slightly distorted after modelling.

The hollow shape is formed during the modelling process by the simple expedient of laying a disc of fretwood on the modelling board, and pressing the cement round and over it.

When completed, the putty should be enamelled or painted to match the rest of the stand, and should make an interesting novel ornament.

Circuits and hints for operating and controlling
MODEL MOTORS

ELECTRIC motors are used for working all kinds of models, including trains and boats, and to get best results in all circumstances a number of points require to be kept in mind. These are set out here, together with means of reversing, speed-control, and so on.

Reversing Circuits

In many models it is a great advantage to be able to reverse the direction of rotation of the motor at will. Some of the more expensive motors are fitted with reversing switches, but many of the cheaper types are not, and it is here that a switch can be added with advantage.

Fig. 1 shows how a motor with a wound field coil (e.g., not having a permanent magnet) can be reversed. The direction of rotation of the armature depends upon the magnetic polarity of the armature and field magnets. When the double-pole double-throw switch is thrown to the right, current goes from (B) to (C), and from (E) to (F). When the switch is turned to the left, current goes from (B) to (A), and from (E) to (D).

If connections are followed it will be seen that this reverses the direction current flows through the field coil. Magnetic polarity is, therefore, reversed, and also the direction of rotation of the motor.

In a motor without means of reversing, the field coil leads will go directly to the brushes. These are accordingly detached, and new connections added, as shown, using ordinary thin flex. The switch can most conveniently be mounted on the motor.

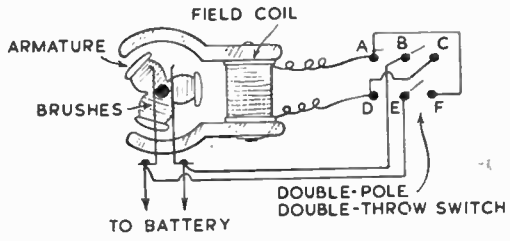


Fig. 1—Connections for reversing switch

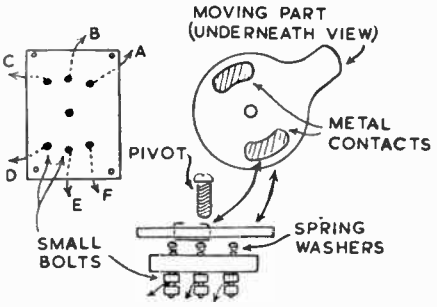


Fig. 2—Type of reversing switch

Some motors have the field winding in series with the brushes, instead of in parallel, as shown. Where this is so, do not put a lead between the one brush and (B). Instead, simply take a connection from (B) to the battery.

Permanent Mag Motors

Some small motors have no field coil, a horseshoe permanent magnet being used instead. With these, direction of rotation can be reversed by reversing the polarity of the current supplied. This can be done by employing the same type of switch anywhere in the two leads between battery and motor.

Connect (B) and (E) to the battery. Connect (A) and (D) to the motor. (D) and (C), and (A) and (F) will be wired together, on the switch, as shown in Fig. 1. If the switch has a central 'Off' position, this can be made use of, of course.

Making a Switch

Six round-headed 6 B.A. bolts can easily be obtained, and a switch made on some oddments of ebonite or wood, as shown in Fig. 2. The size may be adjusted according to the motor, but a small base 1½ins. by 2ins. will be amply large. Clearance holes for the small bolts are drilled in this.

A disc with operating lever, cut from 3-ply or similar material, is pivoted on a centre bolt. Two small pieces of metal are affixed to this, as shown. This can be done by passing the ends up through slots or small holes. When the switch is in one position these metal pieces make contact between (C) and (B), and between (E) and (F). When the switch is turned the other way, contact is made between (B) and (A), and between (E) and (D).

Small spring washers are placed under the bolt-heads to maintain good contact. The metal contacts should not be so long as to span terminals (C) and (A), or (D) and (F), when in the central position. Connections will be seen from Fig. 1. Two short leads at the back of the switch connect (A) and (F), and (D) and (C).

This switch can be used with permanent magnet motors, or with wound-field motors operated from dry battery, accumulator or mains transformer.

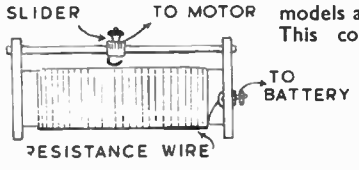


Fig. 3—A resistance speed controller

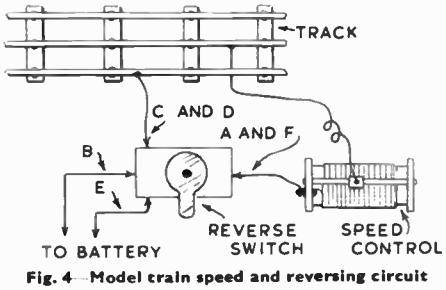


Fig. 4—Model train speed and reversing circuit

Speed Control

With boats, trains and many other models a speed-controller is very useful. This consists of a resistance which reduces the voltage for slower running. A simple type to make up is shown in Fig. 3. A piece of wood about ½in. to 1in. in diameter and 2ins. to 3ins. long forms the body of the controller. Small 3-ply ends are screwed to this, and a springy brass slider, cut from scrap metal, arranged to move on a metal rod. (Here, a large nail cut off to the required length is suitable).

The resistance wire element is wound *tightly* on the body of the controller. If the latter is varnished, and the wire wound on immediately, this will hold the turns secure when the varnish dries.

Thin iron wire such as used for binding flowers is suitable. Copper wire can be used, but rather a long length will be necessary, as it is of low resistance. The more wire brought in circuit, the slower will the motor run. It is best to make a trial with a length of wire to determine how much is required to make the motor run as slowly as possible. This length can then be cut off, and wound on the controller, the turns being spaced, if

(*Continued foot of page* 246)

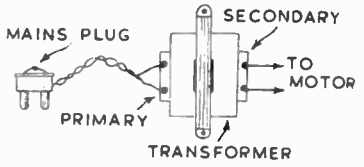


Fig. 5—Operating from A.C. mains

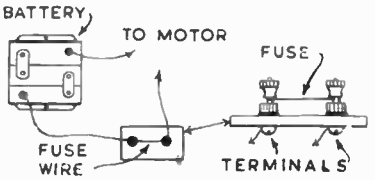
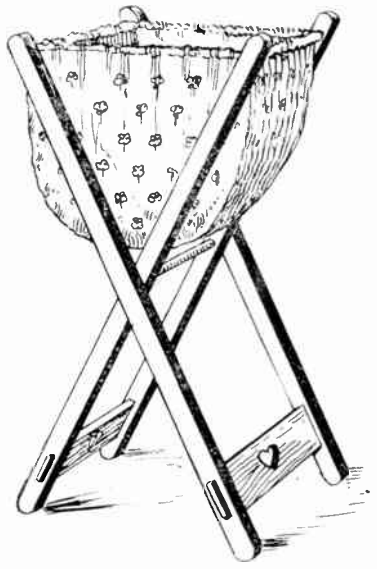


Fig. 6—Adding a fuse in circuit

Any lady would be delighted to be presented with
A FOLDING WORKSTAND



HERE is an article of real usefulness that should please the ladies. Such a workstand as that shown in our illustration would make a splendid gift, and as there is really very little in the making, it can be done quickly and the flat surfaces easily polished to give a brilliant effect.

Two Frames

The stand itself is made of two distinct frames consisting of ¾in. square wood held together by wide rails at the feet and ordinary round rod at the tops. The squared stuff, of which four pieces will be required, may be purchased from Hobbies at 11d. per length of 3ft. It is of sound knot-free stuff and planed ready for immediate use.

The ends of all the pieces should first be rounded off and glasspapered. Then place them together side by side and mark the positions of the holes for the cross rods and the mortises across all four. The mortises are to be cut 4½ins. from the ends and 1½ins. long, as the detail sketch shows.

As ¾in. thick wood is suggested for the wide rails, the mortises will, of course, be ¾in. wide and they may all be cut in with the fretsaw quite easily. Particular care must be taken in setting out the frames to see one fits inside the other.

One will, therefore, measure 14ins. inside the rails, as seen in Fig. 1, and one 12½ins. These two measurements will thus be the lengths of the wide rails without the projecting tenons, 1in. being allowed on the ends of each for them.

Rails

The rails should be 3ins. wide, and if, desired, a simple fret could be cut in the middle of each to add to their appearance. As the cross rods are ⅜in. diameter, the holes should be bored with the brace and bit. The ends of the rods are brushed with glue, pushed through and cut and cleaned off neatly on the outside.

Check the measurements carefully before cutting off, and see that the shoulders of the tenons on the wide rails fit neatly and closely to the legs. The tenons should be dowelled with ⅜in. dowelling rod, the holes for them being bored clean through with an ⅜in. twist drill. The ends of the pivot rod which passes through the centre of the frames must be glued firmly into the outer or wider of the two frames. It passes freely through the holes in the smaller frame so both will swing easily for folding and opening.

The illustration shows how the sewing bag is to be made. A stout silk cord is fastened on each side rod and the material forming the bag gathered on the cords. The strips of material forming the bottom and sides of the bag are either closely pinned to the cross rods or again gathered to cords, and the latter then fastened to the rods.

Suitable Finish

The finish to the wood must, of course, be made before the bag is attached, and we would recommend a light mahogany stain and polish.

Some may prefer to treat the wood with ebonising solution and then coat over with varnish or polish. The stand forms a simple piece of carpentry, and the amateur as well as the professional should make a note of its suitability as a gift.

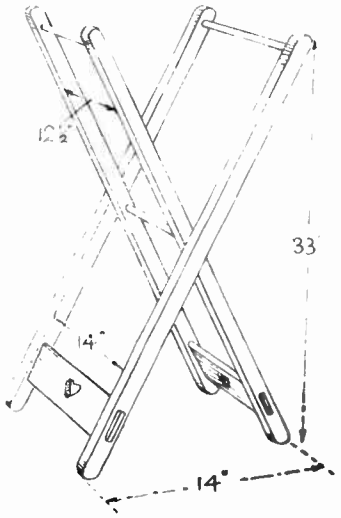


Fig. 1—Details of frames and pivot rail

Model Motors—(*Continued from page 245*)

necessary, to occupy the whole length of the latter.

Model Train Circuit

Most model train motors are of the permanent magnet type, so the circuit shown in Fig. 4 will enable the train to be started, stopped, reversed and its speed controlled, at will, without the engine itself being touched. Current is, of course, picked up from the track itself, and the insulated centre rail. By referring to Fig. 2, the connections to the switch will be seen.

Mains Operation

As it is much more economical to take current from the mains, many model-builders take advantage of this, when possible. A mains transformer is used with a primary suitable for the house voltage (usually 230 to 250 volts), and a secondary giving the output required by the motor, (6 volts, in many cases). The primary should be fed from a proper mains plug, with good quality insulated flex. If the transformer is a good one, with sound insulation, no danger of shocks will exist at the *secondary* side of the circuit.

It must be remembered that transformers cannot be used with direct current mains, only with A.C. (alternating current) supplies. In addition, permanent magnet motors require direct current, so are not suitable for operation from the mains, unless some form of rectification is employed. But if these two requirements are remembered (the supplies must be A.C., and the motor have a wound field-magnet) a transformer can be used with success. Running costs will be very low.

Circuit Safeguards

With dry batteries, an accidental short (such as may arise if a model train is de-railed) will run down the battery rapidly. With a transformer, such a heavy current may flow that, if allowed to continue for any length of time, the transformer may be damaged. With an accumulator, very heavy currents may also flow, eventually damaging the battery.

These troubles can be avoided by including a fuse, as shown in Fig. 6. It is merely connected in one lead from the transformer secondary of battery, and can be made by mounting two small terminals on a small piece of insulated material. The fuse-wire, obtainable on small cards from almost any electrical stores or shop, is placed between these terminals, which are then screwed down. When a short arises, this fuse burns through, thereby protecting the circuit.

A Novelty toy for a youngster's birthday is

THE ZIG-ZAG RUNABOUT

HERE is a toy to give great pleasure to the younger nursery-age child. As can be seen from the photograph and drawings, it consists of a framework upon which are four sloping runways. A roller—(a cotton reel suitably treated—is placed at point (A). By gravity it runs down, falls through a hole at (B), and so down, through another hole at (C) and at (D) and so down to (E).

Young children find it fascinating to watch the roller descending, and it makes a pleasant whirring noise, too. They are given exercise in manual dexterity by the replacing of the roller each time. But if this fun should temporarily pall, children can push the whole thing round, as it is mounted on wheels and gaily painted.

Sturdy and Strong

Normally, anything made for children should be light enough for them to handle but in this case a certain substantial weight would not be a disadvantage, as children are not to be encouraged to push it over or lift it. They will probably sit on the top. Fortunately, by the very nature of the model with its structural steel-like cross-bracings and 'gussets' it is very strong.

Provided the functioning of the model is perfectly understood, the dimensions as given can be altered. Even if followed exactly, a little adjustment is sure to be necessary. The whole job, however, is essentially quite simple as befits a nursery toy and does not depend on critical fitting.

Start with the uprights (1), of which two are required, 18ins. by 2½ins. by ¼in. Any kind of wood can be used, even several different kinds, as the whole job is afterwards painted. The top (3) is of 13½ins. by 2½ins. by ¼in. wood and the base (2) is of the same section but 19½ins. long. A pair of screws at each joint will hold the job firmly together. Before screwing up, however, round off the top outer edges of parts 2 and 3.

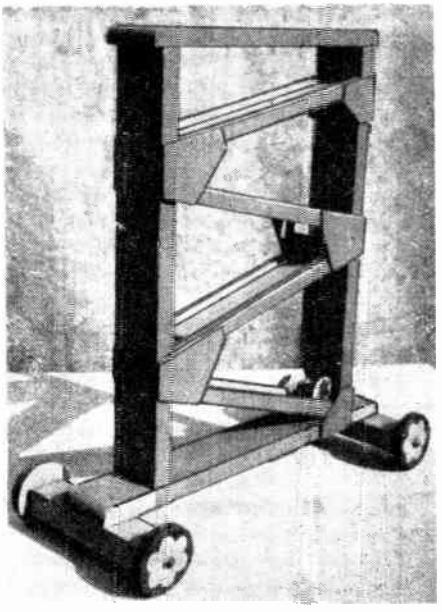
Blocks 4 may now be screwed on; they are each 6½ins. by 2ins. by 1in. They overlap 2ins. as shown. The overlaps for parts 2 and 3 can be seen dimensioned in the drawing. The inside width of the frame is 12ins. Well countersink all screw holes, and where they show, as at the top, sink deep and cover in with plastic wood.

The Runways

Each of the runways is made up of a 2½ins. wide strip of ⅜in. thick wood, the length of which varies a little, but might be cut at 12ins. and trimmed as required. On each side of these runways goes a rail, made of ⅜in. square stripwood glued and tacked on. Note, from Detail X that at one end, the stripwood comes flush with the end of the wooden runway, but at the other, each strip projects about 1¾ins.

For simplicity, the end of the runway at the end where the side strips project, is shown with a square edge in Detail X. Actually it is well rounded over as in Detail W. Each end of the sloping runway will have to be bevelled a little so as to fit snugly within the square frame (see Detail Y).

The runways are held in place by gussets of ¼in. plywood. At first, however, any small pieces of ply can be used and tacked quite lightly so that adjustments to the runways can be made quite easily. The dimensions as given should be followed as closely as possible.



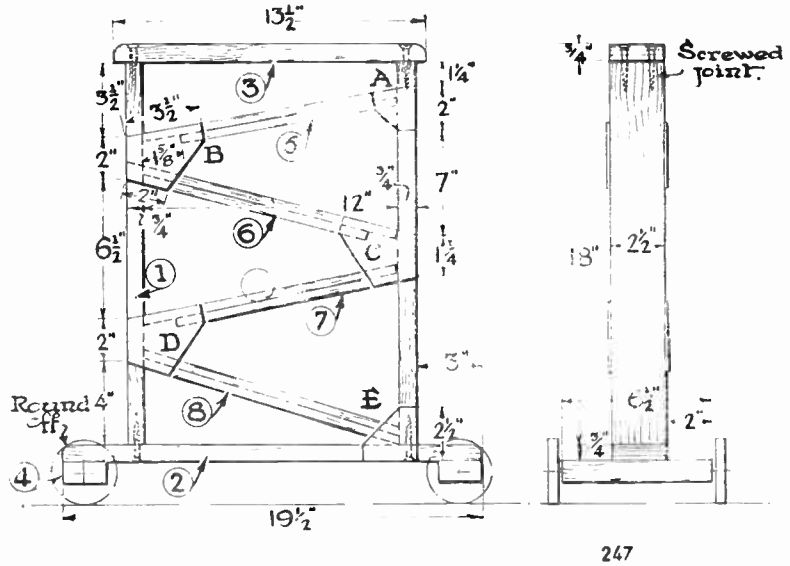
It will be appreciated that these apply to only one size of cotton reel.

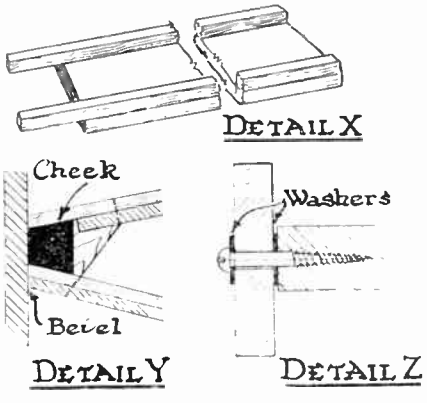
Rolling Reels

That used by the writer was exactly 1½ins. diameter and 1⅝ins. long. It must run freely down each runway without side turning and jamming, and fall easily through the hole and on to the runway below. The gap through which the reel falls is about 1⅝ins. long.

The gussets are best marked off from the actual job, i.e., whilst one side is temporarily tacked, a shape can be pencilled off from the other. The size of the gussets is not critical. The dimensions given at point (B) can be taken as typical. At the lower right-hand corner of the frame, a square gusset with the corner cut off is used.

In testing, it will be found that 'cheeks' are needed inside the gussets at the point where the reel falls through the runways. One of these is illustrated





at Detail Y. The idea, of course, is to preserve the same width of runway even at the dropping-through places. The size and shape of these 'cheeks', is best off from the actual job. They are then glued inside the gussets. The gussets themselves are fixed to the rails and the runways with small panel pins and glue.

Detail Y represents a section through the runways at point (B). When the

DETAIL W

model has been made, the function of the cheek pieces as typified in this detail will become clear.

Four wheels are required. The writer used discs of §in. plywood, 3ins. diameter, which were being sold as offcuts and, with a little trimming, made excellent wheels. Ready-made wheels of wood or metal are, however, easily obtainable.

Before fitting the wheels, however, the whole job is well glasspapered up, taking particular care that all sharp edges are well rounded off. In normal cabinet making it looks very slovenly to have square edges dubbed over, so that one always uses a proper glasspaper block. But in the present case, give all edges a deliberate rubbing over so there is no possible chance of splintering. Where young children are concerned, one cannot be too careful.

Colouring

Go over first with a priming coat of aluminium paint, and when this is quite dry, go over with *bright* enamels. For children's toys avoid sombre browns or dark blues, etc. The model illustrated


Stages in decorating the wheel

was painted in gay tones of light green, blue and orange.

A short description of painting the decoration on the wheels might be given, as the principle applies to many other toys. A piece of scrap paper was folded first in half, then in half again and then diagonally (see sketches). It is then cut as shown. When opened out, a regular design is seen.

Paint each wheel yellow all over. When dry, place the template just made over, holding down, if necessary with a small smear of soap, and taking care that the pattern is central. Now, working always from the centre outwards, and using as little paint as possible, and as stiff as possible, paint the remaining part of the wheel in blue. A spray gun would be even better if available.

It is best to make four such patterns, one for each wheel. When the paint is dry and the patterns removed, it will appear as though one had painted the pattern with great skill in yellow on blue.

Use *long* round-headed screws for fixing the wheels. Under the head of the screw and between the wheel and its mooring (part 4) put a washer. The wheel should turn readily but not shakily on its axle (Detail Z).

The cotton reel will work better if an iron rod is forced into the central hole and neatened off by filing.

Renovating Leather

I HAVE just finished doing a leather suite, and want to renovate the material. What do I use? (H.R.—Erdington).

OLD leather is almost impossible to restore to its original state, because being a porous material it absorbs dirt and grease, and the innumerable substances which stain such a material. These stains and discolourations being deep seated, cannot be removed by any surface application or cleaner, although, of course, they do improve matters by removing a good deal of the surface grease, etc. One method which may help, is to make a paste of fullers earth and methylated spirit, apply it thickly to the surface and leave to dry, then brush off. Another plan is to use a large piece of ordinary dough (made with flour and water) and rub it thoroughly over the surfaces.

* * *

Baby's Bath

I HAVE one of the baby's baths made of papier mache. What is the best way to renovate this? (A.S.—Dagenham).

IF there are worn patches on the bath, cover these with a coat or two of good quality paint. Allow to dry and then apply two coats of good quality bath enamel. Make sure one coat dries thoroughly before applying the second. Let the enamal harden before use.

Cloudy Aquarium

I HAVE an aquarium complete with air pump, plants, etc., but keep having trouble with the water going cloudy. I have tried both rain and tap water, Is it possible to make some sort of filter to prevent this? (J.G.—Handsworth).

IS your aquarium overstocked? It is always better to understock than the other extreme. Evidently you have the necessary plants, etc., and, therefore, the trouble seems to be in the water. You could try filling the tank with 50 per cent clean rain water, plus water from the domestic boiler supply, or better still, with boiled water. To fill the aquarium you can, with beneficial effect, use a length of thin rubber tubing, and with this to siphon the water from a bucket into the tank. Specimens must not be put into the tank until the water has stood for at least 48 hours. No discarded fragments of food or other refuse should be allowed to remain in the tank. Clean it out with a siphon, one end of which can be run over the bed of the tank to suck up all waste matter. Do this periodically. Or, as another precaution, you can filter the water by allowing it to drip or drain through a flower pot sand-filter. Get a large flower pot and three parts fill with clean washed sand, for this purpose. When troubled with fouling of the water, partial or complete change of water, or filtration through activated charcoal may be tried, as the solution to the trouble. When adding to or changing the water, care should be taken to ensure that the new water is of the same temperature and is obtained from the same source as the old. Sudden changes of temperature must be avoided.

* * *

Re-Binding Books

CAN you let us have an article on re-binding books which have been badly used? We try to 'mend' books so that they may be of service to old age and hospital institutions. (R.K.—Enfield).

FOR such work as you contemplate, you cannot do better than get *Bookbinding*, published by Cassells Ltd. This deals thoroughly with all branches of the craft. For repairing, the book is taken to pieces, then the sections separated, the loose leaves gummed in and then the sections resewn together. If you can trim the edges again, all the better. A soft cover can be made with American cloth, Rexine or plastic imitation leather, lined with linen. If the book is required really strong, to stand some wear, re-bind with a linen hinge as explained in the instruction book mentioned. The material can mostly be obtained from a good-class stationer.

The SHIPMODELLER'S Corner

Elizabethan Rigging

by 'Whipstaff'

IN this article I am going to deal with the rigging of Galleons of the Elizabethan period in a simplified form, for the smaller models of our period kits. Later, in our corner, I will deal with the same subject and its application to larger and accurate scale models.

In small models it is difficult to make the necessary blocks and fittings for detailed rigging without them being overscale. It is intended that this first approach to the rigging of model ships will be an introduction to the rigging of models in an authentic manner and thus lay the foundation of a real knowledge of the subject.

Do not be satisfied with the mere placing of a few cords here and there to represent rigging, for the rigging plan is one of the beauties of a sailing ship. Indeed, the delicate tracery of the rigging against the sky when the sails were furled, especially in ships of the 18th and 19th Century, was a magnificent sight and well worth the effort of capturing in a model. Why spoil a good job of craftsmanship in your hull by poor work above deck?

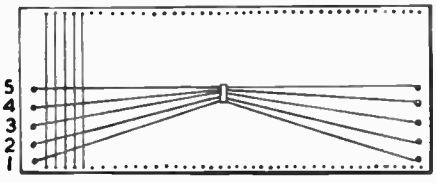


Fig. 1—A jig for shrouds

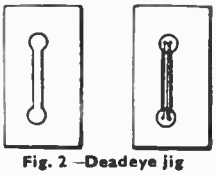


Fig. 2—Deadeye jig

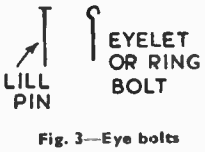


Fig. 3—Eye bolts

It is really quite simple to see that however small or simplified your model, each cord is right. On board, every rope has a definite purpose to fulfil, and for your model to look right, the rigging ropes must look as if they will fulfil their purpose. Tools for rigging can be of the simplest—a small pair of embroidery scissors, a single edged razor blade, a long pair of dental or philatelic tweezers and a pair of long nosed pliers. With these tools rigging can be accomplished and all those small knots in awkward places can be tied quite easily.

Now to material. In most kits, for reasons of simplifying the making of a model, hanks of cord are supplied all the same size in diameter. This, of course, is not correct ship practice, normally the heaviest rope is that which goes to make the standing rigging, and the higher you go upwards the lighter the rope used.

In a simplified model quite a good effect can be achieved by the use of two sizes of cord, one for the standing rigging and the lighter for the running rigging and ratlines. Experienced modellers who wish to be exactly to scale often make their own ropes on a miniature rope-making machine.

To guide the average ship modeller the following will give a good guide to the sizes to use. Shrouds, stays and topping lifts—good quality fishing line, or the cord usually supplied in Hobbies kits. Halyards and sheets—heavy linen carpet thread. Downhauls and all light lines—fine natural colour sewing thread.

Remember, all standing rigging black and all running rigging natural colour or light brown. Not white. To stain your standing rigging, use indian ink, or, better still, rub with cobbler's black wax. This will give an authentic appearance and preserve your rigging. All standing rigging was tarred.

To stain running rigging use cold tea (no sugar or milk, of course), and this will give the right shade of brown. Always stretch your cord before use to prevent any sagging after your model has been completed for a few months. This can be done by cutting into suitable lengths and hanging from a hook in your workshop with a lead weight attached to the lower ends, leaving for a couple of days to take all the stretch out of it.

One golden rule to follow if not working on a detailed scale model, is to keep your ropes light in weight. A heavily rigged model, where the ropes are too thick looks very poor. If working on a scale model, you will, of necessity, make your ropes to scale.

It is essential to use a smaller thickness of cord for your ratlines than you have used for your shrouds, if the appearance is to be correct. The ratlines must also be made to sag a little as if by the weight of the members of the crew continually running aloft. Lying in a straight line across the shrouds they look artificial. After fixing shrouds, depress rather slightly.

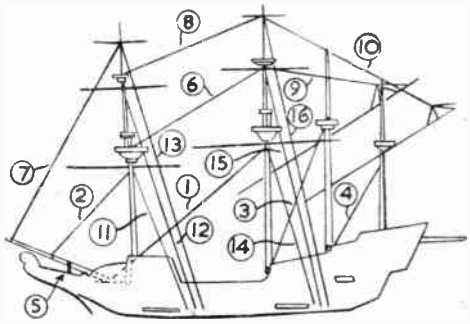
As this article is mainly to assist in rigging the smaller models in our series, I will not deal with actually tying the ratlines to the shrouds in correct ship fashion. This will come later in our series, but for our purpose we will make them on a jig.

For Hobbies smaller models space your ratlines about $\frac{5}{32}$ of an inch apart. This is very near scale and the effect is quite realistic.

To make a jig for this purpose, see Sketch 1. It consists of a piece of plywood long enough to take two sets of shrouds with a little over to allow extra length for seizing the deadeyes. In the

KEY TO SKETCH 4

(1) Mainstay.
(2) Forestay.
(3) Mizzen stay.
(4) Bonaventure stay.
(5) Gammoning.
(6) Main-topmast stay.
(7) Fore topgallant stay.
(8) Main topgallant stay.
(9) Mizzen spar stay and bridle.
(10) Bonaventure spar stay and bridle
(11) Foremast backstay.
(12) Fore-topmast backstay.
(13) Fore-topgallant backstay.
(14) Mainmast backstay.
(15) Main topmast backstay.
(16) Main-topgallant backstay.



BACKSTAYS OF PORT SIDE ONLY SHOWN

SHROUDS OMITTED FOR CLEARNESS

Backstays are two in each case, leading from mast top and finishing one on each side of ship. Fasten to eyebolt in hull aft of, and level with the channels. Only port side backstays shown in Sketch for simplicity, and shrouds left off. No backstays to mizzen or bonaventure mast.

GAMMONING SEIZED IN CENTRE

exact centre drive in a small staple from an office stapling machine, or make one from wire. The staple is about ⅜in. long and to stand about 1/16in. above the surface of the plywood.

On the face of the plywood draw your shrouds as they will be on your model and in the plywood edges at the end of each shroud drive in a fret pin. Take the size of each shroud from your model with the masts stepped, using a pair of dividers or a ruler. Along the other two edges of the jig step out your spaces for the ratlines and drive in small fret pins at these points.

Taking your heaviest cord, stretch your shrouds from fret pin 1 on one end, through the staple and fasten to fret pin 1 at the other end. Do this with each shroud.

Next stretch your finer cord, for ratlines, from pin to pin across the jig and drop a spot of cement on each point where the cords cross, leave to set and, if not already stained, paint black with a flat egg-shell black. Finally, when completely dry, cut out your finished 'ladders' with your razor blade, neatly.

While these are drying you can set up your deadeyes in the channels, attaching the strips or cords to staples or fret pins in the hull, as directed in your kit instructions.

Do not drive your staples or pins completely home until your shrouds are in place. If you drive them home after you have reeved your lanyards and tightened your shrouds in place, you will ensure that your shrouds are properly taut. Note: shrouds to bonaventure fastened to deck inside bulwarks. By using the jig in Fig. 2, made of thin plywood or fibre, you will draw your deadeyes so they finish exactly level, as they should do. Do not, for this period, fit sheerpoles; they are a fitting of a later period.

If you have any problems or difficulties send them along to 'Whipstaff'. He will be willing and able to help you.

Our next operation is to make a number of small eye bolts. Do not use brass screweyes for the purpose, as they are usually overscale and look out of place.

To make your eye bolts use bank or 'lill' pins. Cut off the head and use your long nosed pliers to turn them around a nail, as in Sketch 3.

These are to be driven into the deck where your rigging lines are to finish.

Having got our shrouds into place we take the rigging (Sketch 4), and proceed with the rest of our standing rigging.

Commence with the mainstay (1). This is double and passes each side of the foremast. It is led from the mainmast top and passes through two small holes bored through the bulkhead, sometimes through deck and bulkhead at an angle to allow it to be secured to the heel of the bowsprit.

Next fix the forestay (2), mizzen stay (3), bonaventure stay (4) and so on, until your model is completely rigged as regards standing rigging, follow the rigging plan in Sketch 4, putting your stays on in the order in which they are numbered, all stays except the mainstay, are single lines.

You will now have the satisfaction of having your model rigged so far in correct and authentic fashion and can proceed with the running rigging when you receive your copy of 'Hobbies Weekly' with the second part of our article.

The handyman will be interested in these further HOME IMPROVEMENTS

THERE are bound to be wet shoes where there are several children in the house and it is unwise to dry them by a fire. The best place to put them to dry is on a rack over the door where they can dry off slowly and are right out of the way.

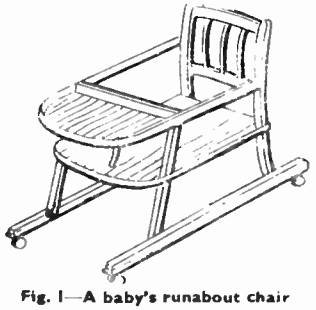


Fig. 1—A baby's runabout chair

The shelf should be open and made from 1in. by ½in. wood with three long sections to go the width of the door and about eight lengths to go crossways and make the width. Arrange to have the two short sections nearest the end one, so spaced that the brackets can be fitted to these and then down to the door surround. The underview at Fig. 2 shows the shelf and brackets in position above the door.

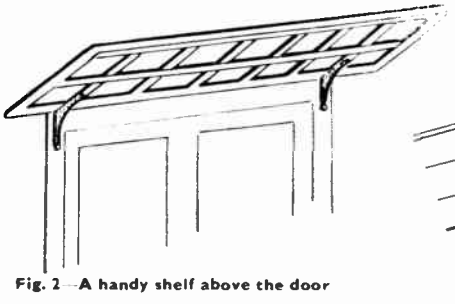


Fig. 2—A handy shelf above the door

The width of shelf only need be about 9ins. to take all shoes. Height should be so you can get on a chair and reach the shoes when wanted.

When a baby becomes a toddler, it rather spurns the usual high chair but you can improve its temper by making the old one quite mobile, as you can see in the drawing at Fig. 1.

Cut off the legs of the high chair about 4ins. below the seat or at least so he or she can get its feet on the floor. Now fix two battens about 2ft. 3ins. long by 2ins. by 1in. on the outside of the short legs. Extend these so there is no chance of the chair over balancing.

You can now add four cheap castors to the runners and some rubber buffers at the ends to save damage to the skirting. You can also add a short length of ½in. dowel rod in the centre and from the tray to the seat to protect the child from slipping through.

There may be a space where you want a small table and you have not much space. Here is a chance to use up a few boards and find a couple of old table legs from the junk shop.

The main idea is to get a wide board for the centre to which you firmly screw two table legs. These legs are in turn fitted to two wood blocks about 12ins. long. If you can bore out the holes and let the legs in so much the better, as they will be stronger. You could cut the holes right out with a heavy fretsaw but you must have heavy wood for this part.

Having fixed this up the side, dropboards can be hinged on and supported by 1in. square wood, as shown in the small sketch. When not in use it will always stand up against the wall and take up very little room. (234)

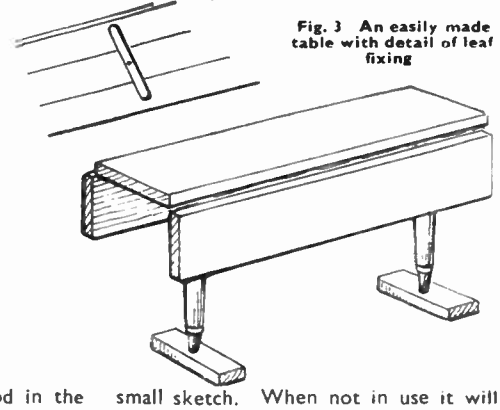


Fig. 3 An easily made table with detail of leaf fixing

A continuation of our article about surprising modern

USES OF THE CAMERA

IN our regular photographic article last month we spoke of the amazing way in which the modern commercial and high grade camera could be used in a number of inquisitive ways. Here are some more.

Yes, the camera is a true sport and is always in the forefront of any sporting event, be it football, cricket, boxing, motor racing or any item of public interest where large crowds are attracted and where those who are unable to attend will expect to see a picture o it in their usual paper.

Some years ago the author managed to get a print showing the impact of a gol club on a golf ball. It was taken by high-speed photography, one five-thousandth part of a second was the exposure time, and it showed the club just striking. It was remarkable how that side of the ball was flattened while in the process of being struck.

High-speed photography is being used in many branches of scientific research and is proving most useful and satisfactory. Records can be obtained of almost any high speed action too fast for the eye to recognise. A shell is leaving a gun or a bullet from a rifle, the impact of a bullet fired through a plate glass window, the bursting of an airball are some of the many wonders of this type of camera work.

Criminology

The inquisitive camera is doing excellent work in the tracking down of criminals. Once a man or woman has had his or her finger prints taken, that photographic record is stored and kept in the library for future reference if needs be. The forger, too, cannot get away with his illgotten money so easily as he used to, simply because the photographic plate can show very clearly and conclusively that a signature or figure has been tampered with, yet the human eye could not detect it.

The police force is well provided with cameras and have found a valuable use for them in placing the cause of road accidents to the right persons. A simple example is that of two cars colliding. Photographs, if taken soon after, should show the wheel tracks of each vehicle, proving whether one car was over the white line and whether a skid was responsible.

Educating Children

It is probable that much more will be heard of this work in the future and also in demonstrating to children how to avoid running risks where traffic is heavy. Some local authorities display some very good photographic posters of this subject.

Children, of course, need educating and the camera is one of the most efficient teachers we can possibly have. It is the medium by which the eye becomes the means of imparting information to the brain and visual training has been found to be more effective than the aural method. When the two can be combined in an interesting manner, not only does the child's mind grasp more quickly and readily, but the teacher finds considerable less fatigue in his or her work.

After a series of demonstrations were given in a number of schools and colleges extending over a period of six months, approximately 150 projectors were ordered and installed.

Medical Methods

This method of passing knowledge is also in vogue in a number of medical and other institutions where specialised training is the main feature and the demand for the apparatus is on the increase. What a boon it would be if more educational films could be shown on the screens of cinemas!

Cinemas are the places where our minds are able to relax and where we can enjoy drama, comedy, tragedy and pantomime or the beauty of nature depicted in the travel films. The wonders of the world as seen by explorers and globe trotters, the habits and customs of people in all countries. Current and events of the past, together with many other items of an entertaining and instructive character are brought home to us and all produced by that ever-inquisitive piece of apparatus, the camera.

Documentary Copies

It would be possible to dwell on many other important and useful doings which have as their beginnings the work of the camera or a photographic process. Such as the copying of documents, plans, legal papers, registers, policies, etc., all part of the routine work of banks, museums, insurance offices, government departments and similar places. Photographic records of cathedrals, churches, town halls, monuments, ancient and treasured places, and buildings of historic or national value, are being collected for the benefit of future generations.

The Postmaster General could open our eyes very wide if he published the number of letters that have been air-graphed since this scheme came into vogue. The figure must be collossal; another example of the great usefulness to mankind of the camera.

Colour Work

It is difficult to foretell what the inquisitiveness of the camera will yield. We have not mentioned its probings into the realm of colour, but it is recognised that marvellous progress has been made already and that great things are promised. But, surely, enough has been said to convince anyone that photography is no longer only a hobby for men and women to indulge in during the summer holidays or any spare few moments. No, it is something of great national and international importance. Its value to every man, woman and child of this age and of posterity is incalculable, for not a day passes without we benefit by its influence in some way or another.

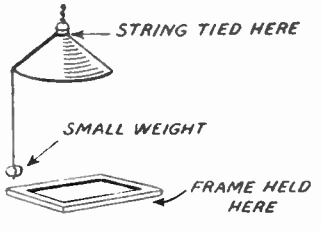
Your Own Use

In conclusion to those who possess cameras. Do try to make them more inquisitive. Use them in such a way that you cannot fail to learn something. And just a word to those who have not got a camera. It is this:—you are missing a lot of real pleasure.

If you are still young and have not started out in the world, perhaps not made up your mind as regards the future, we would remind you that the world of photography is very vast. Many thousands of men and women are employed in it and a large number have reached positions equal to many occu pying high places in the 'professions'. There are schools where the practical, technical and mechanical side of the art are being taught and there are many open doors for those who wish to make it their career.

Prints by Electric Light

WHEN taking prints by the aid of electric light, it is a good practice to tie a piece of string, say, about 2ft. long to the wire at the top of the shade. By holding printing frame level with the bottom of the string, a constant distance from the light is thus obtained, and if a number of prints from the same negative are wanted, the correct exposure having been found, the prints will be equal.



Broken Filament

IF a metal filament should burn out in your electric bulbs, do not throw them away without first giving them a few smart taps while the current is on; the parts of the broken filament might touch and weld themselves together.

Many ways in which the home mechanic can use the FLEXIBLE DRIVE SHAFT

MANY readers at some time or other require some form of mechanical contrivance to carry out jobs just outside the scope of the usual hand tools. The choice may lie between a lathe, a drilling machine or just a polishing head. The trouble with most of these machines is that they are limited in their usefulness.

A small lathe is limited for size, the scope of a drilling machine is small, so is that of a polishing head. What is needed is a universal tool that will perform any of the jobs that the home mechanic is likely to encounter, whether it be in the field of model making or jobs about the house.

Now a small electric motor with a flexible drive is about the most useful and versatile piece of equipment that the handyman can have. The number of accessories and the amount of equipment available is enormous and by making attachments and rigs, the versatility of the machine can be extended far beyond that of any other piece of workshop equipment.

The Machine

While it is possible to obtain ex-government stock in the form of small electric motors and flexible drives, which in the end may prove very useful, it is the author's experience that it is far better to spend a little more money initially and get the best and most suitable equipment.

Fig. 1 shows a suitable machine, specially made for the home mechanic and model maker. The motor is $\frac{1}{6}$ H.P., 230/250 volts, universal A.C./D.C. running at a speed of 4,000 r.p.m. There is a comprehensive list containing hundreds of tools and accessories in the way of rotary files, rasps, abrazive points, emery bobs, and polishing mops for use with this machine.

As will be seen in Fig. 1, the machine can be screwed to the bench or on to a transportation stand or it can be hung from above. The method of fixing will depend on what it is used for. When it is overslung it is more flexible in use, but if it is needed in the garage for a bit of car polishing, then the stand is the thing.

Equipment

The amount and type of equipment needed by the handyman will depend on his activities. What is considered the most useful kit to start with is shown in Fig. 2. These can be added to when it is found what extras are needed. With these tools, plus a little ingenuity in the form of home-made attachments, almost any small machining job can be carried out.

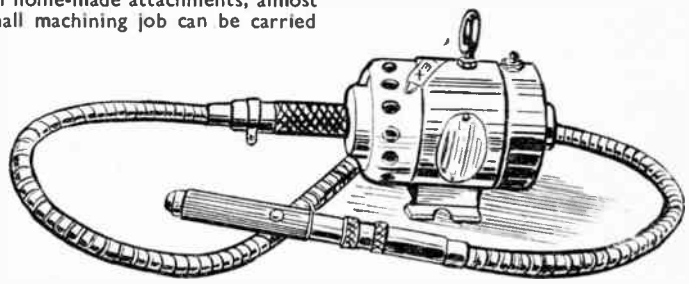


Fig. 1—The type of machine which is ideal for model maker and home mechanic

The machine is quite safe to use, providing that the usual elementary precautions are taken. Frayed and damaged lead flexes should be immediately renewed or at least taped up. The earth wire should always be connected to the machine and the plug, and although the machine is of fractional horse power, due to its high speed, the rotating cutters and files, etc., should be kept well away from long hair, loose clothes and hanging neckties.

Care and Maintenance of Machine

The machines are of a very robust nature and with normal use will last the home mechanic a lifetime, but like any other well designed tool, a certain amount of care and maintenance is necessary. The motor itself will require very little attention, as the bearings are packed with grease and will run indefinitely.

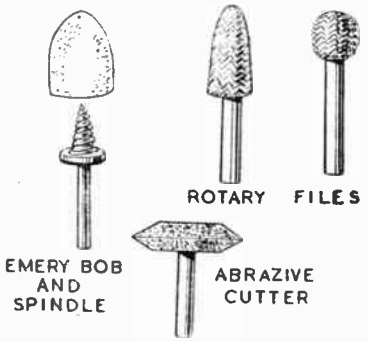
The flexible drive is more open to abuse and be really ill treated by non-mechanical people. Tugging at the lead while running and twisting it double, causing acute bends, should be avoided. Periodically the drive should be removed from the machine and a little oil poured down the inner cable. The drive should then be hung vertically to allow the oil to penetrate the whole length. If too much oil is used, it will only get flung out when the drive is running.

The machine is quite simple to use, and providing the precautions already mentioned are taken, no mishap will occur. When the machine has been secured by its two lugs, or hung by means of its slinging eye, plug in at the most convenient point and insert the cutter in the collet. Grip the handpiece firmly in both hands and offer the cutter to the workpiece. The pressure applied should be such that the r.p.m. are only slightly reduced. Much more work can be done by taking light cuts at high speeds than applying too much pressure and almost stopping the machine.

Rotary cutters are most suitable for working in wood, aluminium and most forms of plastic, but for working in steel, rotary files are best. If the teeth of the cutters or files get clogged, they can be soon cleared by striking them longitudinally with the end of a piece of copper tube. If an article is to be finally polished, the choice of the primary tools is important, as deep cuts and scratches mean a lot of hard work in creating a first class finish.

Felt 'bobs' of a conical shape, coated with emery powder are most suitable for the first stages of polishing. These 'bobs' can be re-coated by first dipping them in cold water glue, then rolling

(*Continued foot of page* 253)



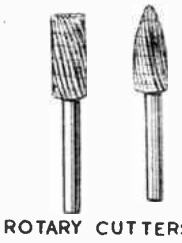


Fig. 2—A kit of tools very helpful in the home workshop

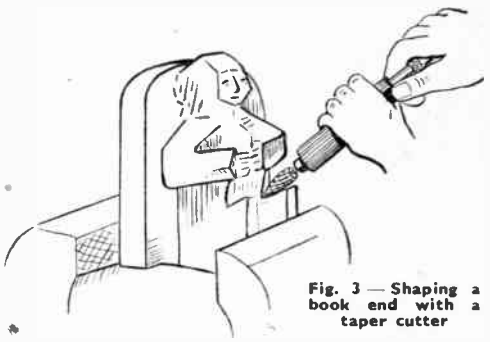


Fig. 3 — Shaping a book end with a taper cutter

Dealing with joists and heavy pendants in electric LIGHT CABLING

THE home electrician is often confronted with a job of running a length of cable under the floorboards. If the runway is in a direction parallel with the joists, the job is easily done by cutting a trap in the floorboards each end of the room, then passing a fish wire through under the boards to which the cable is attached. The cable can now easily be drawn through to the position required.

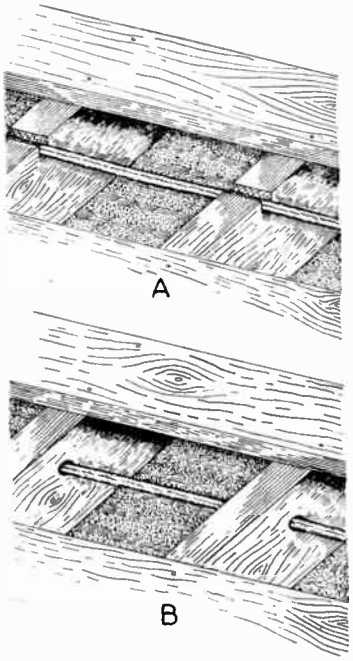


Fig. 1—How cabling runs in joists

Often, however, the cable runway is at right angles to the joists, and the job is then not quite so easy. One method of laying the cable at right angles to the joists is indicated in view (A) in Fig. 1. Here a floorboard is removed, each joist is slotted and the cable is laid in position in the slots, as clearly indicated.

If the cable is to be run in tubing, the method of slotting the joists must be adopted. If, however, the cable is lead sheathed or of the rubber insulated type, a much better method is to lay the cable as indicated in (B) Fig. 1.

Here it will be seen that holes are bored through the joists and the cable is threaded through to the required point. The holes should be bored about 2ins. from the top, and midway between the floorboard. This position will ensure that a stray nail will not be driven down into the cable. Care should be taken when laying lead sheathed cable in order not to kink it.

For Heavy Fittings

Before fixing a heavy electric light fitting, it is necessary to make quite sure that the fixing block on the ceiling is secure. Something more than just screwing the block into the laths is needed if trouble is to be avoided. Usually a trap in the floorboard above the ceiling is found, and this should be lifted and the wires leading through inspected.

If the wires run down the joist into the ceiling block which is found to be screwed up into the joist, no extra support is required. If, however, the wires pass through the ceiling midway between the joists, and the block is found to be fixed only to the laths, then extra support must be given in order to make quite secure a heavy light pendant.

Block Support

A good method of support into which the ceiling block can be screwed, is indicated in the accompanying illustrations at Fig. 2. In view (A) the wires are indicated passing through the support midway between the joists, and it will be seen the solid wooden block provides a means of screwing up the ceiling block in the room below which is to hold the heavy pendant.

Details of the block are given at (B). A suitable size is 5ins. wide by 1in. thick and just long enough, of course, to be cut a nice fit between the joists under the floorboards. A good method of fixing the block in position after drilling a hole to allow for the wires to pass through, is to screw two pieces of corner strips 1½ins. by 1½ins. on the block, as indicated in view (B).

The block is now readily fixed in position between the joists by means of screws passing through the corner pieces. The ceiling block can now be

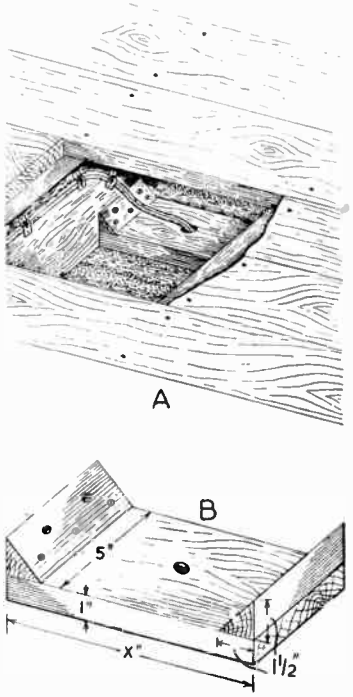


Fig. 2—Support block for heavy fittings

secured by screwing into the support from the room below. As is clearly seen, the weight of the fitting will be taken by the block supported to the joists instead of the thin laths. (320)

Driveshaft—(*Continued from page 252*)

them in emery powder of the desired grain. Final polishing is done with a linen mop or felt 'bob' on to which is rubbed buffing soap and finally chalk.

Practical Uses

The simple application of the flexible drive consists of removing, shaping and polishing metal wood and plastic. Small model boats can be hollowed out quite easily, using a suitably sized ball shaped cutter. Models of figures such as the 'three wise monkeys' can be shaped out for book ends, small vases or calendars. Images and idols to be used as ornaments can be shaped in wood, metal, or plastic, first sawing roughly to form and finishing off with various shaped cutters and files.

Small tools such as drills, taps, knives, chisels and scissors can be sharpened quite easily. To do this the drive is held in the vice (not too tight) or clamped to the bench. The tool to be sharpened is then held to an abrazive wheel fixed in the collet.

For spooning out propellers for model power boats and for giving them that 'mirror like' finish, the flexible drive is ideal. All manner of things can be polished from plastics to motor car panels, in far less time and with much less energy than it takes by hand.

When not being used for these simple applications, the machine can be fixed to drive a small saw wheel, or it can be rigged up with a countershaft and chuck and used as a drilling machine. In the absence of a lathe, the machine can be used for all kinds of small wood and plastic turning.

A complete set of chessmen can be made by first doing the necessary turning, followed by shaping with the various cutters. To the handyman and model maker the scope is unbounded and things made on a machine like this can turn out to be a very profitable sideline during the coming winter evenings. (306)

MISCELLANEOUS ADVERTISEMENTS

START making money at home, whole or spare time, making fancy leather and felt goods. Material provided. Write for rates of pay, etc.—Grange Co., 2 Curzon Street, Leicester.

INTRODUCTIONS. Pen friends, companionship or marriage.—V.C.C., 34 Honeywell Road, London, S.W.11.

500 DIFFERENT world stamps, 3/6.—H. Whitby, Godshill, Fordingbridge, Hants.

GRAND free packet including large air mail pictorials, etc. Request approvals, enclosing 2½d. postage.—Mancini (Dept. H.), 14 Wellesley Rd., Gt. Yarmouth, Norfolk.

AMAZING value! Stamp approvals, ½d. to 2d., less discount. Send postage and get ten interesting Greeks free.—Blair, 75 Heversham Road, Bexleyheath, Kent.

STAMPS FREE!! Twenty unused (2½d.).—G. H. Barnett, Limington, Somerset.

FRENCH Colonials. 100—3/6, 50—1/6, 30—1/-. Free pictorials with approvals.—Robert J. Peck, 7A Kemp Road, Bournemouth, Hants.

BARBADOS packet contains 100 different Empire stamps, including Barbados set 1C. to 24C., 3/6.—Bisson, 46 Sumatra Road, London, N.W.6.

FREE set of 5 Reunion stamps to all approval applicants. — Oxley, 36 Columbia Ave., Sutton-in-Ashfield, Notts.

STAMPS—3 different Princess Elizabeth or 3 large Swiss. Send 3d. Packets—100 British Empire, 50 Canada or 15 Cyprus, 1/9. 50 Australia, 40 South Africa or 25 Malta, 2/9. Switzerland 50, 1/6; 100, 3/6. Postage extra.—Scott, 24 King's Avenue, Skegness.

BE Taller. Quickly! Safely! Privately! No appliances—no tablets—no dieting. Details, 6d. stamp.—Malcolm Ross, Height Specialist, BCM/HYTE, London, W.C.1.

MODELS. You can make lasting stone-hard models with Sankey's Pyruma Plastic Cement. Supplied in tins by Ironmongers, Hardwaremen and Builders' Merchants. Ask for instruction leaflet.

TRANSFERS for decorating toys, trays, furniture, fancy goods. List and samples, 3d. Flowers, pixies, dogs, nursery rhymes.—H. Axon Harrison, Jersey.

PRESSED Metal Wheels. 1½ins., 1/3; 2ins., 1/9 per dozen. Or in stove-enamel finish, red, green or blue at 6d. per dozen extra. Tax included. Post paid.—The Joyden Toy Co., 193 Chase Side, London, N.14.

DOLL'S House fittings and papers; send S.A.E. for list. Doll's house plan special; send 2/6. Trade supplied.—Zimplan, 88 Ware Road, Hoddesdon.

LORRY Kits, 4 mm. and 7 mm. scale. Also large range of spare parts from which to build to your own design. Send for fully illustrated catalogue, price 1/-.—Wilson's Lorries Ltd., 6 Great Winchester Street, London, E.C.2.

HARDWOOD Wheels. 2ins., 1/-; 3ins., 2/- per set of four. Tax included. Post paid. Other sizes available.—The Joyden Toy Co., 193 Chase Side, London, N.14.

BLUSHING, shyness, nerves, self-consciousness, fears, ended. Details under plain cover, 1d.—Stebbing Treatment, 28 (HB) Dean Road, London, N.W.2.

100,000 Government surplus bargains for the Handyman and Modelmaker. 230v. A.C./D.C. motors, F.H.P., continuous rating, 20/-, post 1/6; numerous other motors from 9/6; sponge rubber strip, approx. 18ft. × 1¼ins. × ⅝in., 2/-, post 9d.; aluminium rivets, approx. 1 lb. assorted, 2/6, post 6d.; variable resistances, 70 ohm., 9d., post 3d.; 20 amp. toggle switches, 9d., post 3d.; giant rolls insulation tape, R.A.F. quality, really adhesive, 50yds. × ¾in. width, 2/6, post 6d. Send 3d. stamp for list of other useful bargains.—Milligan's, 24 Harford Street, Liverpool, 3.

PLYWOOD offcuts. Birch and Gaboon in various thicknesses. Handy sized parcels for the cabinet, toy, model maker, and all handicrafts. Parcels made up in £1 and 10/- lots. Carriage paid. Send P.O. to Reeves, Plywood and Timber Merchant, 33 Front Street, Monkseaton, Whitley Bay. Tel. W.B. 4677. Parcels are now despatched on day of receiving order.

BE Taller in 14 days or money back. Details, 1d. — Stebbings System, 28 (HB) Dean Road, London, N.W.2.

£5 to £20 weekly earned at home, running your own Mail Order business. Details, 1d. — Stebbing Publications Ltd. (HB), Naphill, High Wycombe.

FASCINATING and profitable hobby, casting ornaments, toys, etc. You can easily make these yourself. Paints, brushes and all accessories. Illustrated catalogue of 700 Moulds, plus latest list of Rubber Moulds, with instructions, 9d., post free.—Cock of North Moulds (H), 140 Hollings Road, Bradford.

AMERICAN Magazines post free for 1 year. Popular Mechanics, 32/-; Popular Science, 28/6; Mechanix Illustrated, 22/6; Popular Homecraft, 18/-. Stamp for full list of others.—Willen Ltd. (Dept. 57), 101 Fleet Street, London, E.C.4.

USE spare time on profitable home-work making fancy goods. Write for free booklet.—(Area 544), 54 Southgate Street, Leicester.

PLYWOOD and Timber Offcuts for sale at very cheap prices. Veneered Oak Plywood panels, etc., Japanese Oak. Bumper list, 1d. S.A.E.—Dept. 'W' JDD. Storage, 71 Northcross Road, S.E.22. Tel. BRIxton 7441.

MAKE your own Jig-saw Puzzles. Fine Art Pictures, various reproductions and sizes. Also suitable for framing. Stamp for full list.—Joyden Toy Co., 193 Chase Side, London, N.14.

HOMEWORKERS required, either sex, light assembly. Part or full time. S.A.E.—Esprey, Box 18, 41 Wade St., Lichfield.

HARDWOOD Ball Beads, ⅜in. diameter, suitable for children's Counting Frames, etc., 5/3 per hundred, plus 1/9 P.T.—Joyden Toy Co., 193 Chase Side, London, N.14.

PERSPEX and acetate, cut any size from 2/6 sq. foot.—W.M. Products, 2 The Mall, Ealing, W.5. Eal. 3881.

MAGICIANS Tricks, crazy cut-outs, only 1/3; parcels, 5/6. An evening's entertainment. Lists, 3d.—De Hempsey, 363 Sandycombe, Kew Gardens, Surrey.

SCARCE Hong Kong Centenary stamp free. Stamp for Pictorial approvals.—G. Smith, P.T.S., 95 Ocean Road, South Shields.

MODEL Makers and Handymen. Bumper set of lists, books, plans and samples. 2/6.—Sutton Models, Billericay.

ARTIFICIAL Marble. Entirely new plastic for casting ash trays, book-ends, wall vases, statuettes, etc. Easy to use, simply mix powder with liquid. Sets granite hard with scintillating crystalline structure very closely resembling marble or alabaster. Highly heat resistant, impervious to water. Any type of natural 'veining' can be simulated in any colour. Also Synthetic Rubber Moulds. Liquid preparation for making permanent elastic moulds for repetition casting plaster wall plaques, etc. Send 1/- for full details of this easy, fascinating and profitable hobby. Money refunded to bona fide enquirers.—Dept. H., Karlena Art Stone Company, 55 Deansgate Arcade, Deansgate, Manchester, 3.

HOME Watch and Clock Repair Outfit. Includes watchmaker's magnifying eyeglass, tweezers, screwdrivers, oilers, oil, brush, dusting powder, plus illustrated explanatory book. Watch and clock repairing simplified. In container, 12/9 inclusive.—D. Bolster (Dept. A), 5a Station Parade, Ashford, Middx.

EARN £5-£20 weekly dealing in stamps. Booklet, testimonials, 1d.—M. Stebbing, Terry, Naphill, High Wycombe.

9.5 Film Library, projectors, films, for sale. Stamp for lists. — Wayland, 223 Longley Road, Tooting, London.

FOR AMATEUR PHOTOGRAPHERS

Unitol

CONCENTRATED LIQUID
FINE GRAIN DEVELOPER

Always ready when you want it. No trouble and no waste. Dilute as instructed and use one ounce for one film and use it once only. Produces wonderful negatives. With your first bottle get the UNITOL CALCULATOR (price 4d.). Shows correct developing time for any film, in any tank, at any dilution at any temperature.

8-oz. size . .	3/6
20-oz . .	6/6

All photographic dealers sell Unitol developer

JOHNSONS OF HENDON
LONDON, N.W.4 ESTAB. 1743

BOYS!

THIS PROJECTOR IS JUST THE JOB! 3 Lens Optical System. Brilliant pictures. — HOURS OF FUN —

• EXCITING NEW FILM STRIPS •
Battle of Britain
Ships of the Navy
Britain at Sport
West Indies Tour Series
Brumas
The Royal Family

Dennis Compton's Cricketing Days British Railways
P.S. Why no. send for complete list of films from 6d. to 2/6 and details of the WONDER Home Strip Projector.

FILM STIPS EDLESBORO NR. DUNSTABLE

BE TALLER

I Guarantee to increase your height in 12 days or return your money. New gland and spinal discovery increases height 2 to 5 inches.

'I have gained 4½ inches in height and feel fresher first thing in the morning. My weight increased from 9-stone 4-lb. to 10-stone 3½-lb.' — P. D., Witham. 'Since taking your Course I have increased in stature from 5 feet 1 inch to 5 feet 4 inches, a matter of 3 inches'. H.G. Chesterfield. 'My increase is 2 inches and I really do feel ALIVE'. — E T.

Guaranteed harmless. Full Course 10/- post free, Air Mail 14 -. Details free for 1d. stamp. Sent under plain cover.

J. H. MORLEY
(H/83), TERRY HOUSE, NAPHILL, HIGH WYCOMBE, ENGLAND
Established 1936

CRAFTWORKER

THE MODERN MAGAZINE OF CRAFTS FOR ALL

- Every kind and type of tool and material is offered in *Craftworker*
- Instructions in all Crafts at Home are published in *Craftworker*
- A Market Section is included in each issue of *Craftworker*

A COMPLETE SERVICE

Specimen Copy 1/2 from the Publishers

Craftworker (DEPT. H.W.), Broadway, Broadstairs

YOU CAN BECOME A HANDICRAFTS INSTRUCTOR

Experience not essential

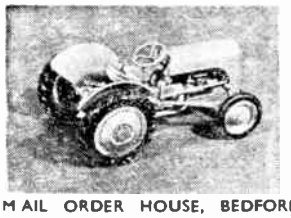
Men who enjoy making things in wood or metal can turn their hobby into a permanent and interesting Career. Short hours, long holidays, and security in a job you would really enjoy, can be yours if you become a Handicrafts instructor. Let us send details of the easiest and quickest way to get the necessary qualification.

We definitely guarantee
"NO PASS—NO FEE"

If you would like to know about our unique method of preparing you for one of these appointments, write today, and we will send you our informative 176 page Handbook—free and without obligation. Mark your letters "Handicrafts Instructor."

BRITISH INSTITUTE OF ENGINEERING TECHNOLOGY
595 Shakespeare House
Stratford Place, London, W.1

BIET



BOYS!!! BOYS!!!
With the aid of our amazing assembly outfit you can quickly and easily assemble this superb scale model of the famous 'Ferguson' Tractor. All parts supplied in finished state. All Plastic construction, real rubber trakgrip tyres. Can be dismantled and reassembled with ease. Send P.O. today for 8/- post free.

MAIL ORDER HOUSE, BEDFORD MURRAY HILL & CO. (Dept. H.) QUARE, SIDMOUTH, DEVON

KITS for OLD TIME SHIPS

Hobbies range of Ship Models includes Elizabeth Jonas, Cutty Sark, Victory, Mayflower, etc. Complete kit of wood, sail material, guns, pulleys, cord, etc., with full size pattern of parts and planed wood ready to cut out, shape and construct. A fascinating pastime.
Kits for models 12½ins. long and upwards.

Ask for free illustrated lists at Hobbies Branches or from Hobbies Limited, Dereham, Norfolk.

Hobbies LIMITED

BRANCHES

LONDON
78a New Oxford St., W.C.1
(Phone MUSeum 2975)
87 Old Broad Street, E.C.2
(LONdon Wall 4375)
117 Walworth Road, S.E.17

GLASGOW
326 Argyle Street
(Phone CENtral 5042)

MANCHESTER
10 Piccadilly
(Phone CENtral 1787)

BIRMINGHAM
14 Bull Ring

SHEFFIELD
4 St. Paul's Parade

LEEDS
10 Queen Victoria Street
(Phone 28639)

HULL
10 Paragon Square

SOUTHAMPTON
25 Bernard Street

BRISTOL
30 Narrow Wine Street
(Phone 23744)

Head Office & Factories HOBBIES LTD., DEREHAM, NORFOLK

Printed by BALDING & MANSELL, LTD., London and Wisbech, and Published for the Proprietors, HOBBIES LTD., by HORACE MARSHALL & SON, LTD., Temple House, Tallis Street, E.C.4. Sole Agents for Australia and New Zealand : Gordon & Gotch (A'sia) Ltd. For South Africa : Central News Agency Ltd. Registered for transmission by Canadian Magazine Post.

Hobbies WEEKLY

CONTENTS

January 24th, 1951 Price Fourpence Vol. III No. 2882

COMBINED WOOD AND METAL

LAMP BRACKETS

IN the two designs for electric lamps which we give here, we have introduced wood for the constructional part, with metal as an added decorative material. Although oak would, undoubtedly, be our choice of wood, there is no reason at all why mahogany or even a cheaper wood should not be used. Oak would receive a finish of stain rubbed up with oil or wax, while the mahogany should be french polished or varnished.

For the metal parts we use strips of the required shape and width cut from ordinary tin canisters or food containers. They can be painted with black matt enamel. The two designs are shown complete and finished in the sketches on this page, and we will first describe that design marked (A).

The Wall Plate

There is for this a wall plate for hanging direct on the wall measuring 14ins. long by 2ins. wide and ¼in. thick. An outstanding arm 11ins. long and the same in width as the wall plate and ¼in. thick.

The pieces should be carefully marked out and cut cleanly and evenly and glasspapered to smooth edges. These two pieces are mortised and tenoned together, as shown in Fig. 1, the outline of the whole article being given in Fig. 2.

The top and bottom edges of the wall plate are rounded neatly with the fretsaw also the outer end of the projecting arm. The bracket which fits between these two rails is shown in Fig. 3. Also in this diagram is shown the bracket piece for our second design.

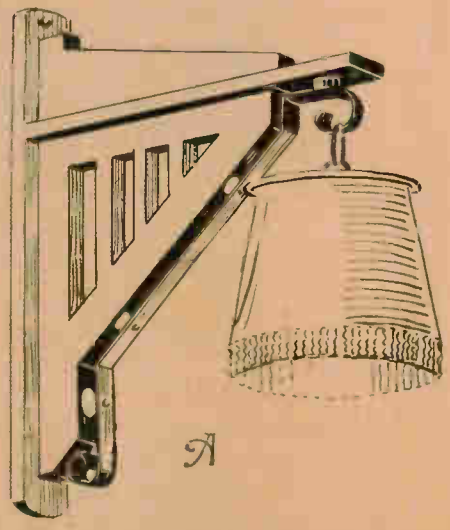
Necessary Wood

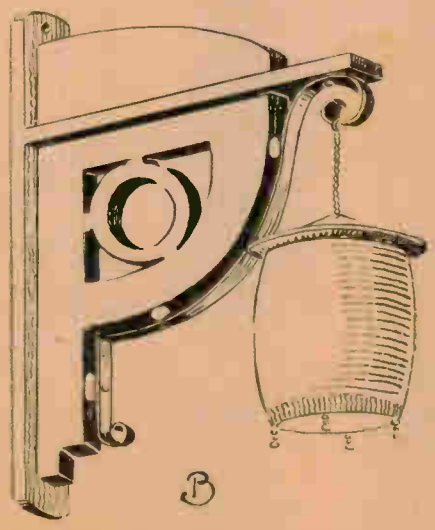
For the larger bracket we shall require a piece of wood measuring 10½ins. by 7½ins. and for the smaller one a piece 10ins. by 6ins., both are to be ¼in. thick. Make tracings on thin paper of the finished outlines of the brackets and transfer the latter to the pieces of wood by means of carbon paper and a sharp pointed hard pencil.

After cutting with the fretsaw, clean up the surfaces with glasspaper before gluing the parts together. One or two countersunk screws are run in from the back of the upright rail and also one down through the top shaped rail glued above the projecting arm rail. This rail is 7ins. long by 1½ins. wide by ¼in. thick.

Metal Parts

The metal parts are about ⅛in. wide stuff, and if the main piece cannot be obtained in one length, a junction may easily be made at one of the screwed button connections, the pieces being made to overlap a little, with the end of the outer one, perhaps, curved up to give effect.





The buttons consist of small washer-like discs pierced, of course, for the screws and shaped round to fit the bracket. Should the metal not be stout enough to adequately support the lamp at the top, an additional strip of stouter metal may be fixed within the outer scroll and screwed through with the other strip. If it is found awkward to insert a screw at this point, a small bolt and nut with washer above may be substituted for the ordinary screw.

The Alternative Bracket

In considering design (B), the woodwork is very similar to that bracket just dealt with. The bracket may, if desired, be just screwed to the outstanding arm

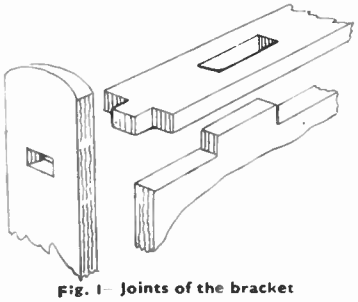


Fig. 1—Joints of the bracket

and the mortise and tenon here be omitted. see the squared-up diagram Fig. 2.

The simple shaped piece above the arm can be glued to the arm centrally and a screw run down in the forward end of the piece to run into the arm. The hole should be countersunk and afterwards filled in with some kind of stopping, such as glue and sawdust or even putty.

This work, however, is not really essential, as the screw will not be seen when the bracket is in place on the wall, the arm being above the eye line. A screw should also be put through the wall plate into the top shaped rail to bind it well together at this point.

The metal work is plainly shown in the outline Fig. 4. Here again a ½in. or ¾in. wide strip of metal is bent to follow the outline of the bracket to finish under the outer end of the arm in a scroll. Three hardwood shaped buttons are again in use here, and holes must be drilled in the metal strip, or they may be punched, in which case the burr left at the back of the metal must be filed off and made neat before the screws are run in.

The shaping of the metal in both cases of design (A) and (B) may be made with the aid of round-nose pliers. The scroll under the end of the arm may be reinforced in a similar manner to our first design with an additional layer of strip metal and a bolt and nut again used to make a firm fixing between the metal and the wood arm.

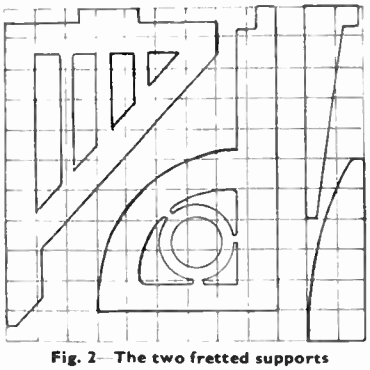


Fig. 2—The two fretted supports

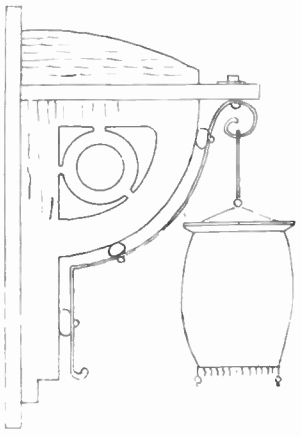


Fig. 4—The metal work in place

Fixing Links

The choice of link between the bracket and the lamp itself may be left to the individual worker, and made to suit the pattern of shade adopted. In wiring the lamp the flex should be brought down the wall and led along the top arm of the bracket.

A groove could be made in that part of

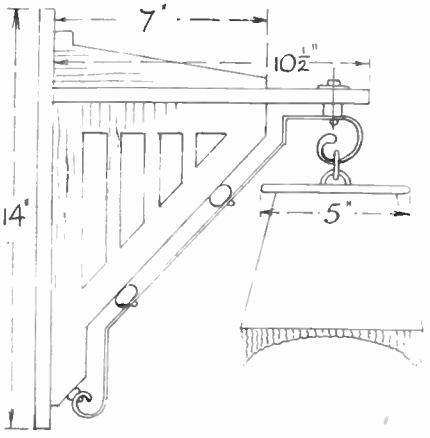


Fig. 3—Side view of bracket and lamp

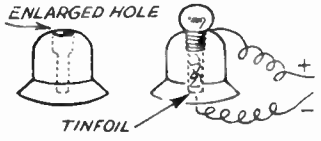
the wall plate above the arm and in the back surface in which to carry the flex. It could then be taken through a hole and led direct along the arm and down to the lamp. Do this, of course, before finally fixing the bracket.

Neat Buttons

The wood fixing buttons should be carefully finished off and made neat in appearance before adding the varnish, stain or wax polish. The insides of the frets in the brackets must be carefully coated with the stain, etc., using a small brush. (340)

A Bulb Holder

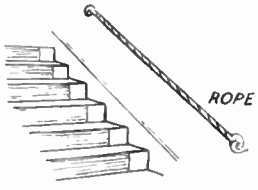
HERE is a simple tip for a bulb holder, which anyone can make. Take an ordinary cotton reel and saw the end off. Next with a penknife or chisel, round off the sawn end and finish it with



glasspaper. Make the hole in the shaped end slightly larger and screw the bulb in. On the other end, place some tinfoil so that it touches the bulb. Attach some wire to the tinfoil and lead it to the battery. Wind the other wire around the bulb and lead it to the battery. You can screw this on your bed rail, and you have an efficient bedlight.

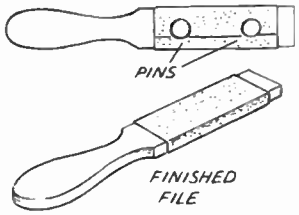
Simple Handrail

MANY houses and old cottages in the country have staircases without handrails. This very useful and attractive idea illustrated, solves the problem of an expensive banister. Get a piece of good thick rope which can be obtained in any length and any width and ask the man in the shop to splice rings on to both ends. Have large brass ornamental hooks fixed at each end of the staircase to hold the rope and you can, if you like, paint the rope to match the stair carpet.



A Glasspaper File

THIS tool is useful for cleaning butt joints or other straight cuts. It consists of a piece of wood 9ins. long, 2ins. wide by ¼in. thick. A piece of



glasspaper is fastened on the wood which is cut to a convenient shape. The paper is fastened on to the wood with drawing pins or glue, and can be taken off when another grade is required.

A real gift to any golfer or Club is this

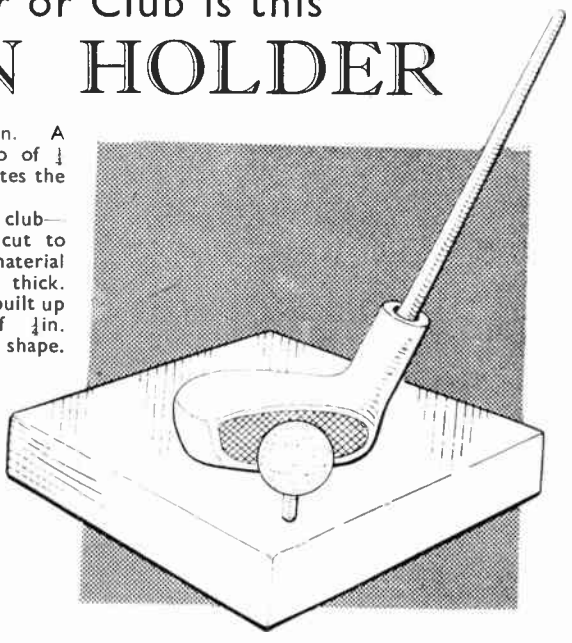
NOVELTY PEN HOLDER

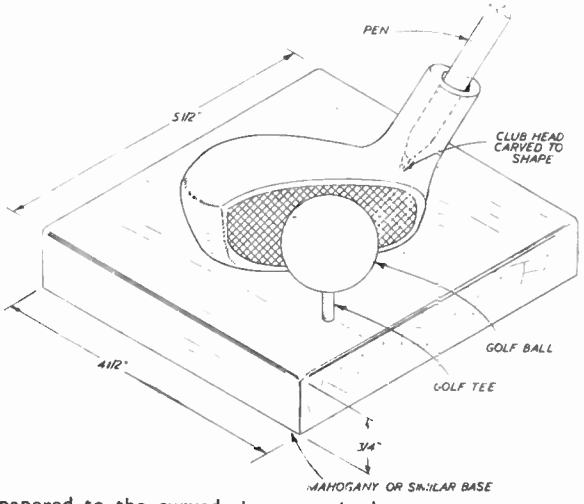
THIS simple, but extremely attractive desk-type pen holder is very easy to make—and an ideal gift for a golfing friend. It consists simply of a golf club head screwed to a polished wooden base. The shaft portion of the club head is hollow to take any of the popular ball-point pens now so greatly favoured. A golf ball mounted on a tee immediately in front of the face of the club provides an appropriate finishing detail.

The club head itself is made up of separate laminations, securely glued together and then carved and glass-papered to the curved shape required. Two identical parts are required—(A) and (B)—fretted out from ¼in. thick material, preferably one of the lighter woods rather than ply. The intermediate piece—(part D)—is of similar shape and thickness without the shaft portion.

When these three are glued together the hollow shaft is completed with two pieces of ¼in. square material, leaving a square hole exactly ½in. square to accommodate the pen. A small fillet block, also of ¼ sheet material, completes the basic club assembly.

The rear face of the club—(part E)—should be cut to profile shape from material approximately 1in. thick. Alternatively it can be built up from four layers of ¼in. material, cut to similar shape. The whole is then glued and clamped together and left to set. The material can be the same throughout, or alternative layers of dark and light wood can be used which, when polished and finished, will give a particularly pleasing appearance.



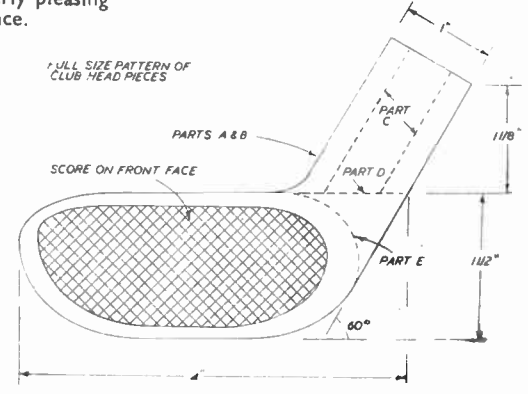


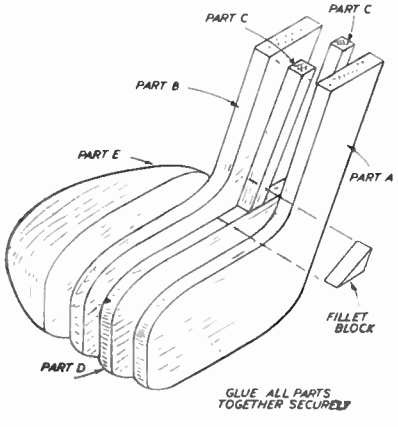
When thoroughly set, the club head must be carved and glasspapered to shape. The actual contours are not all important. If you have a golf club available you can use that as a visual guide. Otherwise simply carve to a reasonable looking shape and glasspaper down quite smooth. Mark off the contact area on the face of the club and score this with criss-cross lines, using a scribe or similar sharp instrument and a straight edge.

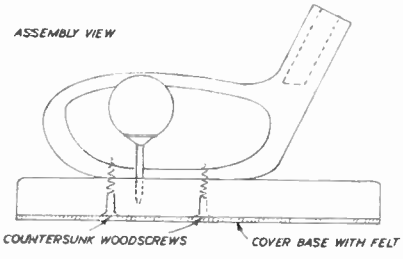
For the base, select a piece of ¾in. or ½in. mahogany or similar material. The finished club head is then attached roughly to the centre of this, set diagonally across it. But first it would be advisable to glasspaper and polish the base block.

The head is held permanently in position by two woodscrews countersunk in the underside of the base. A hole should also be drilled in the top of the base roughly 1¼ins. from the front face of the club and in line with the centre of the club. This hole should be slightly smaller than the shaft diameter of a standard golf tee. The golf tee should then be a force fit in the hole, with a little glue applied to make the joint permanent.

A golf ball should be mounted on this tee, glued in place, so it will not topple off. (278)



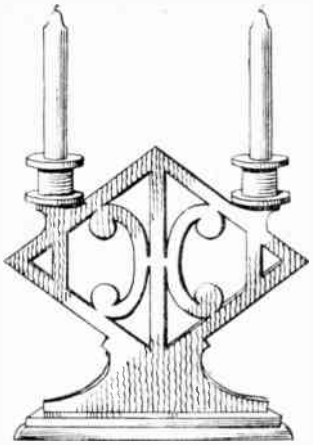




MATERIALS

Parts A, B and D—¼in. thick.
Parts C—½in. square.
Part E—1in. thick material, or four at ¼in.
Fillet block—¼in. thick.
Base—5½ins. by 4½ins. by ¾in.
Two wood screws.
One golf tee.
One golf ball (optional).
Covering material for base.

The craftsman with a fretsaw can make these wooden ART CANDLESTICKS



IN the illustrations we give two designs for art candlesticks which may be easily and cheaply made. The fretworker, we feel sure, will be pleased with these modern designs because they give scope for his skill, first of all in some simple drawing and enlarging, and then, of course, with the handling of the fretsaw. Light and brittle wood is not suitable, as certain projections in the design would be liable to be knocked off, and the slender parts would split through.

Two-part Base

The first parts to make will be the bases. Each design shown is made with a two-layer base, as the detail Fig. 1 shows. The three-candle design needs a lower piece measuring 9ins. by 3ins., with an upper layer 8½ins. by 2¾ins., while that design bearing the two candles need a lower piece 8½ins. by 2½ins. and an upper layer 7½ins. by 2ins. Both layers in each case may be of ¼in. wood, but it would be a good plan to have the lower piece of, say, ⅜in. thick wood to give weight and so insure the candlesticks standing firmly.

The upper layer in each case should have a mortise cut in it 1½ins. long by ¼in. wide. When cutting these mortises with the fretsaw, keep to the inside of the lines, so when the tenon of the upright comes to be fitted, there will be a neat and tight fit. If a too tight fit has been made, then do not try enlarging the mortise with the saw or the file; but rather glasspaper down the upright slightly and tenon until it just makes an easy fit.

All four edges of the lower members of the bases are rounded to a 'thumb' moulding with file and glasspaper.

Margin Equality

In gluing up the base pieces see that an equal margin is left all round each one. A very good method to adopt is to lay each piece in position one on top of the other before the operation of moulding or shaping the edges is done.

Then gauge off the margins carefully with a rule or a pair of dividers. Prick in a small hole at each of the four corners.

The work of rounding the edges can then be proceeded with and the top surfaces lightly cleaned off with fine glasspaper. The pricked holes are easily seen and form a direct guide to the gluing down of the two pieces.

Uprights

The sizes of the main uprights are 8¼ins. by 7ins. for the three-candle light, and 9ins. by 8¼ins. for the two-candle light. Both are ¼in. thick. To get the correct outlines we give plain diagrams, Figs. 2 and 3, half of each of which are squared over with ½in. squares ready for enlargement.

Draw the squares full-size on a sheet of thin paper, using a common centre line as shown. Then draw in the design through the squares, following each carefully. Now crease the paper to the centre line and trace the second half of the design. The completed outline can now be transferred to the wood by means of carbon paper.

It only remains now to cut the whole with the fretsaw, keeping carefully to the drawn lines during the process. Clean off the edges where necessary and glue the uprights into their respective bases, cleaning off immediately any superfluous glue that may be squeezed over.

Fig. 1—The simple two-piece base

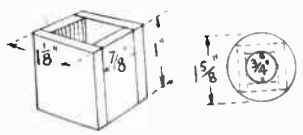


Fig. 4 The candle socket

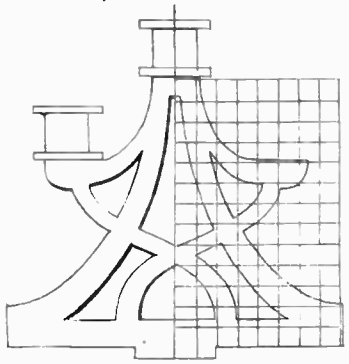
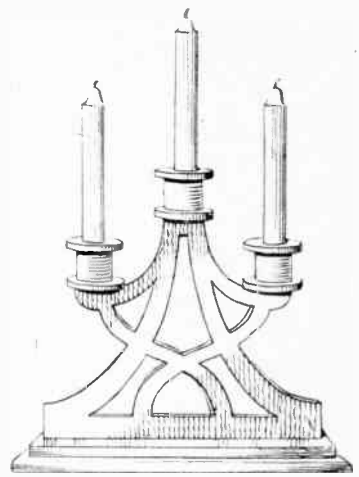


Fig. 2—Marking out the pattern



Next make the candle cups or sockets. Their simple construction is shown in Fig. 4. Cut two discs ⅜in. thick, each 1¾ins. diameter. One of the discs will have a hole cut ¾in. in diameter, into which the candle will fit. The actual candle socket will be formed from four pieces ⅛in. thick, and all 1in. long and in widths as shown in Fig. 4. Glue them together in the square shown, making firm butt joints and with all the edges flush.

Finish

When the glue has hardened, rub the top and bottom end-grain surfaces down on glasspaper until perfectly level and also rub all four outer surfaces down to clean away any glue that might show on the face. Glue the sockets to the discs, as shown in the detail on Fig. 4.

The finished work may be stained dark and rubbed up with wax. If a painted finish is desired, a good enamel could be carefully brushed on. A variation could be made by painting the sockets and the rims with gold paint. A square of green baize might be glued to the underside of the bases.

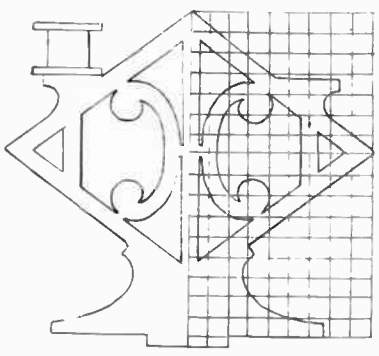


Fig. 3—An alternative design squared

The expert and the beginner will learn from these
FRETWORK TOOL HINTS

THERE are probably many new readers who have, during the Christmas season, been presented with or obtained a Hobbies Fretwork set of tools, and have already become delighted with the use of them in many ways. As usual, the beginner may have found little problems which will automatically disappear as they become more experienced. Most beginners have the usual fault of attempting too much too soon.

Having seen the delightful pieces of work which can be made by the expert craftsman, they imagine they will be able to do the same within a very short while. This, of course, is a fallacy which they must bear in mind, and proceed to improve their work gradually by learning all they can from their actual experience, and also by studying the pages of *Hobbies Weekly* in order to incorporate the various hints which appear regularly.

Saw Tension

For instance, the beginner is usually afraid to have the saw too tight in his handframe or machine, but he should realise right away that there must be a high tension on the sawblade to obtain the best work. About ⅛in. of each end of metal is put into the clamps, and these are tightened right up. Very often the nut is not screwed far enough, and the sawblade end pulls out whilst the work is in progress, either binding the saw or breaking it completely.

The sawblade, then, must be held very firmly in both ends. The steel used in the construction of the handframe, is of a special type, and the length of the arm provides a certain springiness which creates the tension. The top arm should, therefore, be pressed inwards towards the bottom to allow the sawblade to be put in, so that when the blade is tightened up, the strength of the arm itself pulling outwards, provides the necessary hold on the blade and keeps it quite taut.

Testing a Blade

At the beginning, too, the new operator is slightly afraid of the work, feeling that the saw may break and make him jump at the same time. This is only due to inexperience and lack of control on the actual frame. Even so, the beginner is apt to break a few blades and feel that he is constantly having to replace them. This, however, does not occur later when, as suggested, proper control of the handframe and of the work, reduces the trouble considerably.

Always, therefore, get your sawblade very tight and test it before use by a simple trial. Take the middle of the blade between the finger and thumb, and stretch it slightly sideways. When you release it, it should twang very much like a violin string. If it merely sounds dead, then your tension is not enough, and you can put a longer amount of the blade into the frame to overcome this.

Work that Jumps

A second common trouble with the beginner, and also one which leads to saw breakage, is the failure to hold the work firmly down to the table. Here again, the operator is often afraid of his fingers becoming damaged, and so at first keeps them well away from the cutting blade. In consequence, the wood is much more apt to jump from the table, and in turn, likely to break the saw.

On the other hand, if the work is held firmly down with the fingers reasonably close to the blade itself, then a greater control is provided and there is little likelihood of the wood jumping, with the subsequent damage.

A third common cause of breakages is, particularly with newcomers, that they attempt to work too fast. The sawblade should not be forced into the wood forward by too much pressure. You will remember in carpentry that a handsaw is used its whole length, and cuts its own way through the wood without undue pressure.

Steady Even Pressure

The same applies to the ordinary fretsaw. It is not the forceful forward movement which does the trick. By pressing it too fast, instead, you have every likelihood of the saw binding in its inability to operate quickly enough. Later, perhaps, when you become more efficient, the speed of the saw up and down can be increased considerably.

First, however, take the operation slowly but with a steady up and down motion, gradually putting the saw forward into the wood. You will find it cuts just as easily, and much more efficiently, with a steady forward pressure, rather than with a definite push which will probably only cause trouble. Trial can be made on any ordinary waste wood by drawing a few pencil lines, and

A Simple Woolwinder

HERE are details for making a useful and very easy-to-make revolving frame for holding knitting wool for winding.

MATERIAL

2 pieces of wood (preferably oak) size 23ins. by ⅛in. by ⅜in. approx.
1 circle of wood or wheel—2ins. by ⅛in.
4 dowels—3ins. by ¼in.
1 nut and bolt—2ins. by ¼in.
1 small screw clamp.
2 washers, screws, etc.

The method of construction is really quite simple. First halve the two cross members, and screw to centre wheel, as illustrated. Now, at 1½ins. from each end of both crossbars, drill a ¼in. hole at a slight angle, so the four pegs to be inserted will slant outwards. Now an additional hole at 3ins. from each end for adjustment.

Next drill a ¼in. hole through the centre of crossbars and wheel. Insert the four dowels to complete the construction of the frame.

Clamp Assembly

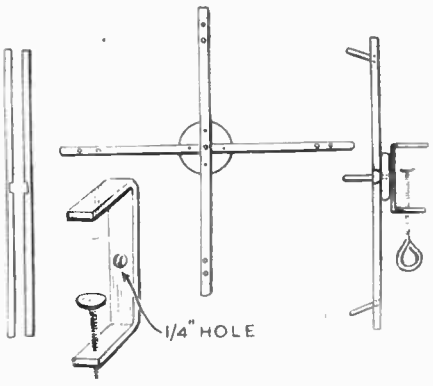
We now come to the assembly of the clamp and spindle.

First drill a ¼in. hole in centre of clamp, as seen in the diagram. Next cut off the head of the bolt and force the shaft into hole, thread outwards. Secure by burring the end and a few heavy blows on edge of the clamp.

The two parts are now ready to put together. First place one washer on the spindle, then the frame with the centre wheel or the disc nearest to the clamp. Next another washer and finally secure with a nut, allowing the frame to revolve freely. Secure the nut in position by burring the thread or by adding a lock-nut.

Thoroughly glasspaper all edges and surfaces, round off ends of dowels and crossbars, and the winder is ready for use.

The winder may be clamped to the edge of a table vertically or to the back of



a chair in a horizontal position. The four pegs should not be fixed, except by their tightness, as they should be removed for adjustment or storage. They should also be only at a very slight angle to the frame. (311)

endeavouring to keep to them. From these you can proceed to a more intricate curve or angle, and so having obtained complete control, be able to operate almost any work.

Upright Saw

Another fault which is usually found in the beginner, is the failure to keep his saw upright. Here again it is only a matter of use, and general experience, but it is an essential point to watch at the beginning, otherwise one gets into the habit of a sloping blade and consequently bad work.

Having this blade at an angle will upset any constructional undertaking, particularly where butt joints are concerned—that is, where the end of one piece of wood has to butt up against the flat surface of another. Imagine, for instance, the four sides of a box where the end of one side has been cut at an angle. This angle will not bed down as it should on to the other side, and the whole shape of the box is spoiled.

In fretted portions, too, a sloping saw will make a very bad pattern. One side of the wood may be all right, but if you look at the reverse you will see that the pattern is quite different because of the incorrect angle of cutting.

Drilling Holes

Then there is the matter of drill holes. You can save yourself considerable time very often by studying the best position in which to make them. Some workers make the drill holes as they proceed, and as each one is required. This has the advantage that having cut one part, you may realise a better position for the drill hole when the next piece is put down.

On the other hand, if you make all drill holes at one operation, it certainly does save the time of picking the drill up and laying it down more frequently. In any case, of course, you must have a piece of waste wood under the actual work to prevent the drill making holes in the workbench or table.

A Matter of Pressure

There is also a right and wrong way of using these small drills. By putting too much pressure on the top, the tiny bit is forced into the wood, and may bind itself there and refuse to go through, or it may sink into the wood too rapidly and pass through too far into the waste wood beneath, thus involving a considerable amount of work in extraction. The bobbin of the drill should be moved up and down rapidly, whilst the bit is being held lightly in place. Pressure on the top gradually increases whilst the bobbin is still moving and the bit allowed to bite its way into the wood as required.

You should also get used to judging how far the actual bit has to go to pass through a piece of wood in use. If it is ¼in. thick there is no need to go on drilling until the bit has passed through another ½in. into the waste wood beneath.

Careful Extraction

Some breakages, too, occur with the beginner in the extraction of the drill bit and breaking it in the process. This is very often because he fails to pull it out straight, and also to turn it slightly as he is pulling. These two points should be watched.

If the wood is of a close character, then the drill wants turning as it comes away, to prevent the bit head binding in the tiny hole. You can, of course, replace these bits quite easily, and there is a range of sizes in them for holes of various diameters.

A drill hole should be made fairly near an actual cutting line, but not actually on it. If near the cutting line, then the saw can be used to go up to its proper position and turn along the line required. If you make the drill hole actually on the line itself, then a portion of the hole will probably be seen when the piece is cut out, particularly if you are using a fairly large sized bit.

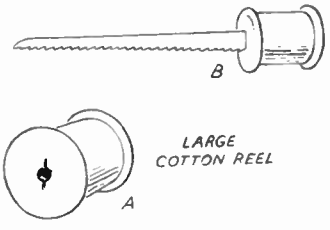
Glasspapering

Then take the operation of glasspapering your work after completion. This may sound quite straightforward, but here again, the worker can save himself much time and labour by using the proper method and materials. It is quite wrong, for instance, to have just one grade of glasspaper and use it for everything. There are, as you know, various grades ranging from a very fine to quite coarse.

Normally a medium grade is satisfactory for most work. A coarse grade tears the wood, and actually scratches its surface so that if you use it you have to do the operation again with a finer grade, to take away the scratches previously produced.

Handle for Pad-saw

A TEMPORARY handle for a pad-saw is made from a cotton reel. With a chisel or a strong sharp screwdriver, make a slot through the middle of the hole as in (A). Next the pad-saw should be put in, driven tight and



wedged as you see at (B). The reel makes quite a comfortable handle providing it is not too large.

On the other hand, a very fine grade takes a long time to make any impression on the wood, and undue labour is involved in consequence. The fine grade is principally used for small work, and for getting the final perfectly smooth, semi-glossy surface prior to staining or polishing, or whatever finish is being applied.

Progressive Cleaning

It is a good plan, too, to clean each part as it is cut, rather than leave all the cleaning to be done at the end. The work of cutting is certainly more interesting than glasspapering, but you must realise if you do all this cutting you will only find the job of cleaning all the parts more monotonous, when they have piled up at the end. If, therefore, you clean each one as completed you vary the work with a consequent lack of monotony.

Fit Bench Stops

The parts being glasspapered should be put flat on the bench, and the glasspapering done with a circular movement so the whole of the surface is covered evenly and quickly. The wood should be held against a stop, which can be a couple of nails driven almost into the bench but left projecting so that the head just holds into the edge of the fretwood. Round-headed screws are even better, as they are less likely to mark the edge of the wood.

Do not forget, too, that these edges should also be given a rubbing with glasspaper, not, however, by holding the work in the hand and running the glasspaper along the narrow edge. If you do that, you are apt to curve the edge or make it irregular. In such cases, pin the sheet of glasspaper to the bench and hold the work upright upon it so that the edge is maintained flat and true. Here again, you must be careful not to move the upright wood sideways, or you will find one end or one edge of the board becomes more papered down than the others.

A Useful Block

In every case, when you are using the glasspaper on the wood, it should be held round a flat surface such as a block of wood or, better still, the special glasspaper holder provided by Hobbies Ltd. This holder has a spring handle which holds the strips of glasspaper firmly in place. The strips can easily be replaced as they become worn. The packets of refills provided contain varying grades, and these can be altered as needed.

For small work you can use small pieces of glasspaper, and a model maker frequently provides his own filing strips of varying grades. These consist of pieces of wood about 1in. wide, ¼in. thick and 9ins. long. One end can be left and even shaped to make a suitable hand hold, and on the surface of the other end—about 6ins. of it—a strip of glasspaper can be glued down, one grade on one side and one on the other. This forms a very useful little hand file for small pieces such as used in model making. (341)

How the home handyman can make a

HANDY GAMES TABLE

IT is nice to have a small table that can be used entirely for games. The average size dining table is not at all convenient for draughts or chess, and it can also be too large for most card games.

The subject of this article—a games table—was designed to fulfil the needs of the keen player of many games. The idea was to have a compact article taking up very little room, which could be quickly adapted for the purpose of playing whatever type of game is required. When finished with, a neat top covers the table, making it into an attractive piece of furniture.

Lid Top

The top of the table is in the form of a lid, which when taken off, discloses a draughts or chess board. On either side of the squared board is a sunk portion to hold the draughts or chess men as they are captured. This will enable you to sweep the board in a tidy manner.

By reversing the squared board another game may be brought to light, and by taking the board right out we have the recessed top covered with felt, which can be used for card games or even tiddly-winks.

The making of the board is a straightforward job for the handyman, and almost any kind of wood can be used. It would be nice, however, to make it to match the existing furniture in the room.

Personal Sizes

Although the measurements given will make a most useful sized table, it is not necessary to stick too rigidly to them. You may have ideas for improvements to suit your own personal tastes regarding both size and the kind of games the table will be used for.

Fig. 1 shows the table, round the top of which is an edging of narrow wood projecting above the table top about ¾in. This forms a recess into which the chess draughts board shown in Fig. 2 is made to fit.

Plywood Top

The writer used a sheet of ½in. thick plywood for the actual table top and also for the outer cover. It is not necessary to use wood so substantial but it certainly makes a very robust job. Ply boards half this thickness would be quite satisfactory, or even three or four narrow planks of wood glued together to make up the necessary width. If this latter course is adopted, it is better for the whole to be faced with thin ply.

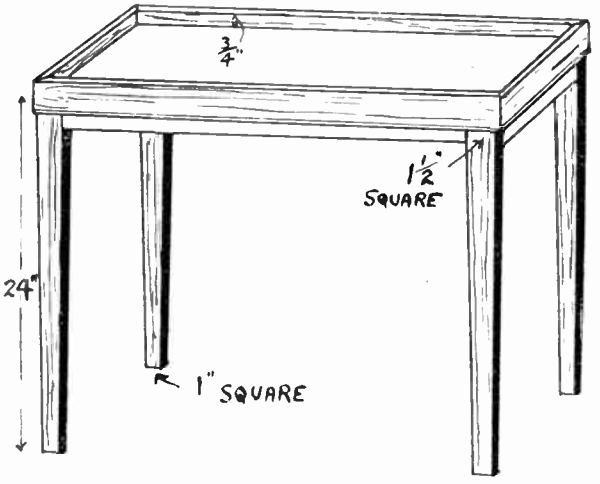


Fig. 1—The legs and top framework

Legs and Bars

Start making the table by cutting the four legs and the four spacing bars. The legs are 24ins. long and taper from 1½ins. square at the top to 1in. square at the bottom. For the spacing bars, which are 3ins. wide and 1in. thick, you will need two pieces 27ins. long and two pieces 17ins. long.

Cut a tenon about 1in. long and let into the legs, as shown in Fig. 3. Make them a good tight fit and finally glue in position. The ply top can now be glued on to this framework. Fine panel pins can be used to help secure it firmly into position.

The edging to go round the table top is cut from wood 2½ins. wide and ½in. thick. Carefully mitre the corners and give a finish to the pieces by rounding the tops and bevelling the outside bottom edges, as shown. Now glue in position and fix firmly with a few panel pins.

The table is finished off by being well glasspapered, stained to the desired shade and polished with either french polish or a wax polish. If it is decided to have the top lined with felt, this can also be done now. Green is the colour usually employed, but it is not necessary to stick to this custom—there are many very attractive colours now obtainable in the felt that could be used.

The table top, after glasspapering smooth, is coated with a thin layer of hot glue and the felt carefully laid on and smoothed out gently. A flat iron is useful for this process, but warm it slightly so as not to chill the glue too quickly.

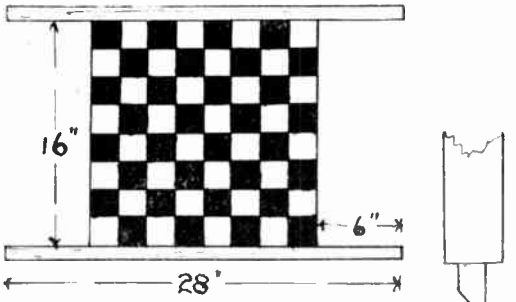


Fig. 2—The chequered centre to the top

Fig. 3—Shape of edge and the corner leg joint

The Chequer Board

The next job is to make the chess/draughts board to fit into the table top recess. Large 2in. squares make up this board, but the more usual size of about 1½ins. can be used. It is only necessary in such a case to fit a plain surround 2ins. wide all round to make the board up to a 16in. square.

The making of chess/draughts boards has been described many times in past issues of *Hobbies Weekly*, so that we need not go into details about its construction here. The alternate light and dark squares can be made either by using different colour woods or by using a light wood and staining half the squares black.

Alternate Strips

The best way of making up the board is to glue together alternate strips of light and dark wood 2ins. wide and about ⅜in. thick and when dry to cut across at 2in. intervals. By turning round every other strip and gluing these together we have the correct layout. To strengthen the board it should be glued to a 16in. square of plywood.

In order to keep the board centrally placed and to make it fit into the recess of our table two spacing bars are necessary. These are 28ins. long, 1in. wide and the same thickness as the

(Continued foot of page 264)

Practical hints on two common kinds of AWKWARD DRILLING

As anyone who uses a brace and bit or hand drill will know, hard woods bore well, allowing holes to be made with clean sharp edges. Not so soft woods, like the popular deal and pine, for here, although the bit enters quite well, it invariably splinters the edges at the lower side as it comes through. The trouble occurs equally with the spiral bit or the flat cutting-edge type.

This difficulty with soft woods can, however, be overcome by either of the following methods.

A Simple Method

In method (1) first drill what we might call a 'pilot' hole with a quite small bit of, say, $\frac{3}{16}$in. or so diameter. Now bring into play the bit that is to make the final hole, and starting from the upper face of the wood, bore down for about half to

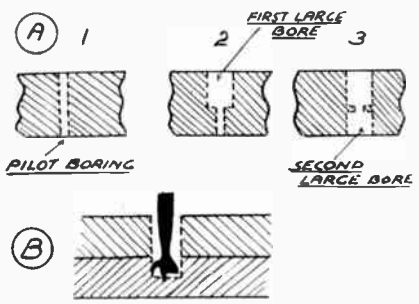


Fig. 1—Boring in soft wood

two-thirds its thickness, taking care, of course, to preserve perpendicular. Removing the bit, turn the material over, and having the lower end of the pilot hole to work from, start boring from this side, continuing till the two holes meet (see (A) Fig. 1).

Thus a side-to-side hole will be secured with perfectly clean edges at either end. As two holes in this case have to meet, it is obvious that, perhaps, rather more care than usual should be exercised in aligning, etc., as the necessity of too much cleaning out afterwards may undo the good work of the 'two-side' boring.

Method 2 has the advantage that it allows of straight through drilling. Here the material to be worked on is clamped tightly to a second piece. This, if possible, should be of the same kind of wood, but it is not absolutely essential. The main point is that the clamping must bring the adjoining surfaces into absolutely tight contact with one another.

Boring is now carried out in the usual way, work continuing, however, till the bit is well into the second piece, as (B) Fig. 1. Upon separating the pieces it will be found that the upper one has been bored with a hole having clean edges at both ends. Of course, what happens in this case is that temporarily the two pieces become in effect a single block of wood.

Holes in Glass

An almost impossible piece of drilling that sometimes falls to the lot of the handyman is making a hole in a sheet of glass. This can be done, however, as follows.

For very small holes a wheel drill or other kind of high-revolution drill must be used, but in the place of a usual bit

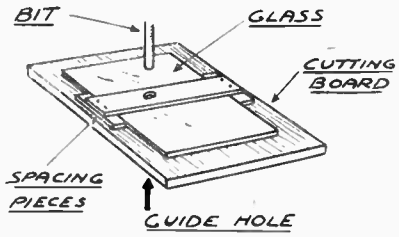


Fig. 2—Frame to guide bit

there is inserted a piece of hard cast steel or any other metal that has been given extra hardening. This is worked as the usual bit, and once a 'grip' on the glass has been obtained it travels through comfortably.

A Guide

It helps quite a lot if some sort of guide is fixed up for the drill. This can be a simple arrangement, as shown in Fig. 2. The glass is placed on a flat rectangle of wood. At either side of the sheet two packing strips are placed screwed to the base, and between these a cross piece in which a hole has been bored at the desired point. The bit is placed in this and consequently all the usual difficulty experienced in keeping it on the same spot for the initial surface-breaking is entirely eliminated.

Once started, the hole must be kept well lubricated with a paste made up of turpentine and carborundum powder. This is essential with all glass drilling.

Tubing Cutter

Larger holes can be bored in glass, as are sometimes required when making glass trays or shelves, by employing a length of brass tubing in a bigger drill, or even in the usual brace. The tube is fitted in the place of the normal bit, and its cutting power is enhanced by taking out a number of vertical slots on its lower edge, as indicated in Fig. 3.

These are best made with a hacksaw, the tubing being fixed firmly in a vice while the job is done. When the corners of the slots become dulled after a good amount of cutting, they can be sharpened

Fig. 3—A tubing cutter for glass holes

again by re-fitting the tube in the vice and filing with the file flat across the end.

Again the guiding frame is invaluable for accurate starting, as also are liberal applications of the 'grinding paste'.

It is interesting to note that as well as glass; porcelain, terra cotta and similar materials can be readily bored which can be useful when wishing to repair, say, some broken ornament, as wire can be threaded through adjoining holes on the side of an ornament not seen by people in the room.

And one final point about glass-boring. It is very important that the glass should be in tight contact with the underlying board immediately below the point being bored. Any suggestion of sagging here may well cause cracking to take place.

Games Table (*Continued from page 263*)

chess/draughts board, and are easily fixed with a spot of glue and a few panel pins.

The plain side of the chess draughts board can be marked out for some other game such as ludo. It is quite an easy matter to glue a thin ludo card board on for this purpose.

Other games boards can be made to fit into the recess of the table as the fancy demands. It could even be adopted as a work bench for certain types of jobs, and a very neat and efficient one it can be too.

The making of the actual top, or we can call it the lid of the table puts the final touch to a very useful article. This operation is probably the easiest of all and it is only necessary to cut a piece of ply to the measurements of the table, plus $\frac{1}{2}$in. all round. Four strips of beading are then glued and pinned round, taking care to make neat mitred corners.

The thickness of the top does not matter and it must be decided by the job the table and lid is expected to do. If it is merely as a cover, then quite thin ply will do, but if it is needed to carry something heavy, then anything up to $\frac{1}{4}$in. thick could be used.

Finally, make the cover to match the rest of the table and give a last polish all over. (337)

Circuits for mains and battery set to operate

ALL-WAVE SWITCHING

THE circuits given here can be used with confidence in mains and battery-operated circuits if a new receiver is under construction, or an old receiver being modified. In the latter case it may be intended to add one or more short wave ranges, or, if ex-service apparatus is concerned, provide the usual long and medium wave bands, where these are not present.

Individual Coils

Many efficient modern circuits employ a separate coil for each range, a switch with the required number of 'ways' selecting the coils required. Such a circuit, for H.F. and detector stages, is shown in Fig. 1; it has two tuned circuits. S.W., M.W. or L.W. coils being selected in pairs. Each pair of coils is wholly independent of the others and, with a 4 or 5-way switch, four or five wavebands can be used, if desired, instead of the three shown.

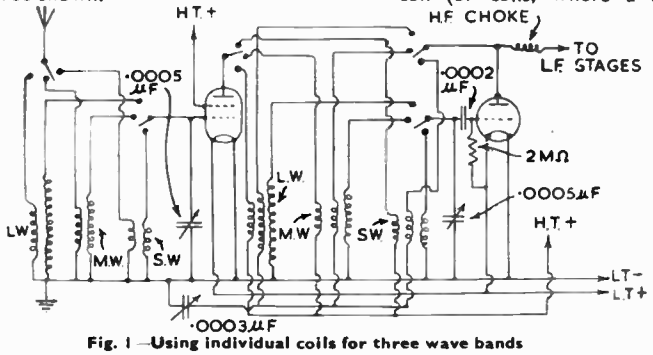


Fig. 1—Using individual coils for three wave bands

Small coils of this type can be bought to cover all wavelengths between 9 and 2,000 metres, so the constructor can provide as many wavebands as he wishes. With three wavebands, 19 to 50 metres, 200 to 550 metres, and 1,000 to 2,000 metres, are usual. If L.W. stations are not required, two S.W. bands can be provided. (Usually about 12 to 30 metres, and 30 to 80 metres or thereabouts).

If the aerial coils are mounted above the chassis, and the detector coils below, no further screening will be required. If the constructor prefers all coils out of sight, they may be below the chassis, some distance apart, with a screen between them. Any chance of stray coupling will be reduced by mounting the three aerial coils at right angles to the detector coils.

This circuit is excellent for superhet use, the aerial coils remaining as shown. Two poles on the switch, wired to oscillator anode and grid condenser of the frequency-changer, will deal with the oscillator coils. If an R.F. stage is used, wiring can follow that for the stage in Fig. 1.

With Dual-Range Coils

If a S.W. band is being added to an old-type receiver, the latter will usually have dual-range (L. and M. wave) coils. These need not be discarded if Fig. 2 is followed. Here, two switch positions are wired together, so that the dual-range coil (or coils, where a H.F. stage is present) are in circuit at both these positions. A further contact on the switch provides long/medium wave switching, as shown. In the third position the S.W. coil is connected, as in Fig. 1.

With a H.F. stage, the aerial coils will be treated in exactly the same way. That is, in two positions the dual-range aerial coil will be connected, with the S.W. coil brought in on the third position. Component values are the same as Fig. 1.

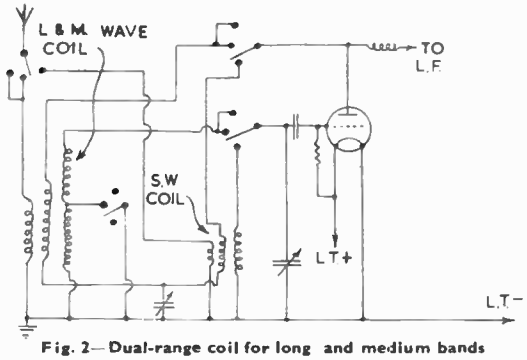


Fig. 2—Dual-range coil for long and medium bands

As with the other circuits, the low-frequency amplifying stages can follow usual lines, and are not indicated. If an existing receiver is being modified to introduce additional wavebands, the L.F. stages will not require modification.

'Earthing' Switching

This method, shown in Fig. 3, results in a great simplification of wiring. It gives good results, and in many cases will be considered satisfactory, but does not achieve quite the same standard of efficiency as the use of individual coils, as already mentioned.

In this circuit, the unrequired sections of the coils are progressively shorted out, for M.W. and S.W. reception. The S.W. coils may be entirely separate from the L. and M. Wave coils; in this case, S.W. results will be excellent, because no grid-circuit switching is involved.

On Medium Waves, however, the presence of the S.W. coils will slightly reduce selectivity and sensitivity. On Long Waves, little effect is noted, because of the lower radio-frequency.

C1 and C2 may be pre-set, and adjusted for best results. If fixed, condensers of about ·0001 mfd. are suitable. The tappings on the S.W. coils are desirable, to reduce damping. If C1 and C2 are sufficiently small for best S.W. results, with connections taken directly to the top of the S.W. coils, the capacity will be insufficient for best L and M. Wave reception.

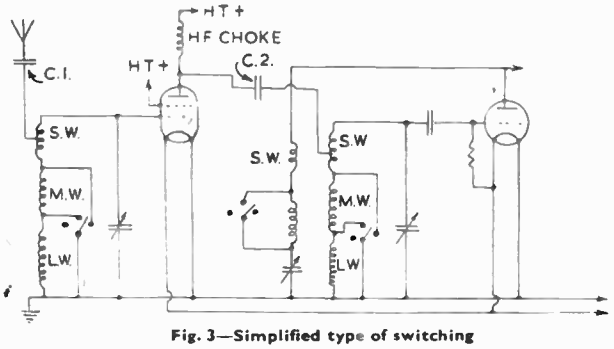


Fig. 3—Simplified type of switching

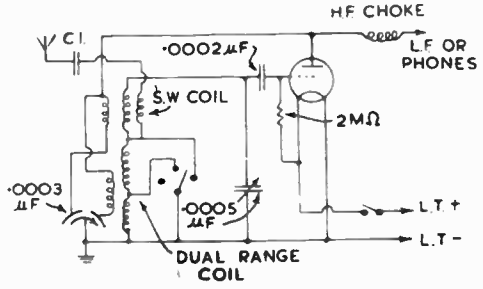


Fig. 4—A simple efficient circuit for 1 valvers

This circuit can equally well be used with frequency-changers, where it has much to recommend it, losses, here, being somewhat less important, especially in the oscillator section.

Coupling Arrangements

Switching in Fig. 3 is further simplified by coupling the R.F. stage by means of a high frequency choke, and this can be done with both the circuits in Figs. 1 and 2, thereby eliminating one set of switch contacts, and associated wiring. However, as the unit-type coils mentioned normally have coupling windings, it is best to employ these, if present.

Tuned anode coupling can be used. With this, the R.F. valve anode will be taken to the fixed plates tag of the detector tuning condenser, and the coil or coils returned to H.T. positive, with a by-pass condenser of about ·1 mfd. from this point to chassis. With such coupling, effective screening is essential, or uncontrollable oscillation will arise.

With Differential Reaction

For the constructor wishing to make a midget one-valver, or a simple detector-L.F. receiver, Fig. 4 will be of interest. This will give excellent results, and the minimum of switching is required. A 3-way single-pole switch provides L., M. and S. waves. The reaction condenser is an ordinary differential type. For S.W. purposes it is turned in the opposite direction to that necessary when employed on L. and M. Wave bands.

An aerial-coupling winding can be used on the S.W. coil, or a tapped coil employed, as in Fig. 3. Such a winding will have so few turns that on L. and M. Waves it is ignored. Lack of grid-circuit switching means that S.W. results will be excellent.

Tuning Problems

For all-wave sets a modern, low-loss ·0005 mfd. condenser is best. Very old condensers may cause inefficiency and crackling on short waves, where conditions are more critical. S.W. ex-service apparatus will normally employ condensers of ·00015 mfd. or so, and these will only enable part of the L. and M. Wave bands to be tuned. This can be overcome by replacing them by condensers of about ·0005 mfd., as mentioned.

Where two or more tuned-circuits are employed, these should gang correctly, or efficiency will be reduced. This can be achieved by wiring a ·00005 mfd. pre-set postage-stamp trimmer across each tuned winding, and adjusting these for maximum volume, treating the ranges individually.

With oscillator coils in frequency-changer circuits, padding condensers of special capacity may be required, and the manufacturer's instruction leaflet should be followed, here, so that condensers suitable for the particular coils employed can be used.

With detector-L.F. types of receiver, no ganging difficulties will arise, of course, as only one tuned circuit is present, with a single-gang condenser. Here, no difficulty will arise with the new waveband or wavebands added, provided a good condenser is used, and a reduction-drive of reasonable quality.

How the amateur fisherman can undertake

PRESERVING MINNOWS

MINNOWS for use as spinning baits can be preserved in several ways, mostly with a formalin solution. Generally speaking, the natural bait is the better, but with the pickled or preserved bait there are advantages. They are more easily carried to the riverside, and they can be handy at a time when live baits cannot be procured. Properly preserved, minnows —or bleak, small dace, and roach, etc.— will keep in good condition for months.

Minnows may be preserved for a long time in a formalin solution of 1 per cent formalin to 99 per cent water. Place in airtight bottle for ten days. If the mixture becomes discoloured, take them out, wash them, and put in fresh solution. Repeat if discolouration returns. If baits become too stiff, reduce strength of the new mixture. If not stiff enough make it a little stronger.

Another prescription is: formalin, ½oz.; glycerine, 3ozs.; water, 20ozs. Keep baits in solution for four weeks. Afterwards by keeping baits in strong salt and water the 'formalin flavour' can be removed.

In Salt

Baits only required for a week or so will keep quite well in salt. Spread a layer of salt on a suitable piece of folded linen, lay the baits on this about 1in. apart, sprinkle more salt on them, and roll them up. Before use, soak baits well in water. This process needs two dressings of salt, as the first becomes very wet after a couple of days.

In Marshall-Hardy's 'Mirror of Angling' appears the following hint for preserving small fish for bait. Wash your minnows. Take 1 fluid ounce of formalin, add 1qt. rain water and 12 drops of a strong solution of washing soda. Having placed the baits in suitable 'screw-top' jars. cover them with the liquid, and leave them in it for six days. Now dissolve 12ozs. of granulated sugar in 1qt. of water. Take the baits out of the first solution (which may be saved for future use), wash them thoroughly and place them in the syrup.

In the Londsdale Library volume entitled *Fine Angling for Coarse Fish*, page 221, the following details of ways of preserving natural baits are given: If the baits are to be mounted on a flanged spinner, they should be placed in a flat dish or tray filled to the depth of a few inches of 10 per cent solution of formalin (4 tablespoonfuls of formalin to 1pt. of water). After the baits have lain in this solution for twelve to twenty-four hours, they should be washed, transferred to a wide-mouthed bottle, and completely covered with a 5 per cent solution. The bottle should be tightly corked and they will keep indefinitely.

If the baits are intended for use with a flangeless trace, instead of using a flat tray, they should be tightly jammed in a wide-mouthed jar or bottle. They will then, more or less, assume the desired curve.

They should be covered by the 10 per cent solution for twenty-four hours, well washed in fresh water, and covered over again with fresh 5 per cent mixture. When baits are required not too tough, the solution can be made weaker, say, half above strength. To get brighter baits add 2 tablespoonfuls of glycerine to 1pt. of solution.

Kill your minnows before placing in the formalin solutions. The sooner they can be put into the liquid the better they will keep. Minnows or other small fish treated in any of the above formalin methods will last an indefinite time—or should do.

How to Kill

Minnows should be kept alive until just before they are to be introduced to the solution, and then killed by holding each fish between thumb and forefinger of left hand and giving it a sharp flick on the head with the forefinger of the right hand. Another method is by inserting the point of a baiting needle, or a strong pin, in the centre line of the back at the point where the head of the bait joins the body. Do not put live minnows direct into the solution—it is cruel. Be sure and kill them first.

To remove taint of formalin when necessary, take baits out of solution, wash well and rub down with salt until they are quite cleansed. Then put them into a solution of sugar and water (one in five) until all smell of formalin has disappeared. Replace in airtight jar until required. (327)

Dimensions you should know in gauge O and OO of MODEL RAILWAYS

A high bridge carrying the Manchester—Holywell line

IN the last article we dealt with the standard dimensions that should be used when making gauge O, OO and HO trucks and vans. As pointed out, the gauge for OO and HO trains is the same, the difference being, that while HO is true 'scale-model', OO is half a millimetre to 1ft. too big, thus making vehicles a shade too wide and high.

This is not very noticeable when all items are to the bigger size, but the mixing of HO and OO standards is not too good. These two $\frac{3}{8}$in. gauge scales often pass under the general name of OO (which was the first on the market), so if constructing some pieces of equipment as a present for a friend or for a line you have not closely studied, make a point of finding out which is the ruling scale.

Track Details

Now apart from rolling stock dimensions, there are several surrounding measurements on and about the track itself that the modeller should have clearly in mind, for they are continually cropping up.

It is pretty safe to say that two of the main 'line side' items that enthusiasts invariably make for themselves are stations and bridges, as both have usually to fit special conditions on the layout in question.

In OO and HO, stations can be true 'scale-model', but only in gauge O if the space available is especially generous. Just imagine what an area a true gauge O, scale-model, terminus of 12 or 14 platforms would take and with each long enough to accommodate ten or fourteen-coach trains. Fully worked out, a single terminus of this sort would practically cover the whole floor of a moderately-sized room.

Although length and width of platforms have normally, therefore, to be reduced in size, the *height* of the platform above rail level can and should be true scale and this is one of the 'line side' measurements the modeller should always have in mind. A too high or low platform can quite spoil the effect of a station.

Platform Height

Although there is some slight variation about the country, the standard platform height is the same as the buffer centres, which is for gauge 0, $\frac{15}{16}$in. above *rail level* (see Fig. 1). The actual height of the platform front from baseboard level will depend on what kind of rail is being used. Tinplate stands considerably higher than scale track, while in scale track itself there are variations according to type.

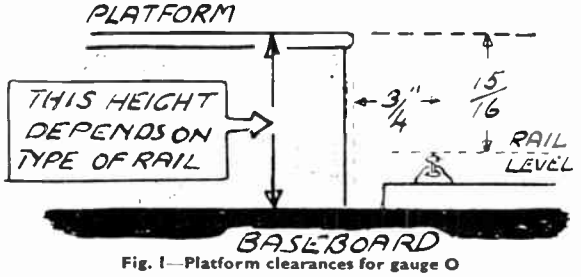


Fig. 1—Platform clearances for gauge O

So take the track height into consideration, therefore, when making the station. It is not just sufficient to raise or lower the station as a whole after construction, as this will probably throw out any doors or openings that have been made on the road side of the platform buildings.

The *distance* of the rails from the platform face also is important, as if too far away there is an ugly and unrealistic gap between the coaches and the edge, while if too near, there is always the danger of vehicles catching.

The correct distance for gauge O is $\frac{3}{4}$in. from the *inner* face of the near rail when the platform is straight, but this figure must be increased a little if the station lies on a curve, as bogie stock always tends to cut across the curvature of the rails, while the buffers at either end stand further out than when on straight track. For this reason as far as possible, stations on anything but the slightest of curves, should be avoided.

Tracks

When two sets of track lie side by side another important measurement comes in the '6ft. way', that is the distance between the two tracks. The 'true scale' for this in gauge O is 80mm. or $3\frac{1}{2}$ins., but to save space when two tracks are between platforms, the '6ft.' can be reduced to $2\frac{1}{2}$ins. (inside rail to inside rail).

This means that the platform faces in a two-track station can be $6\frac{1}{2}$ins. apart for gauge O, $3\frac{1}{4}$ins. in HO—OO having to be the HO figure multiplied by $1\frac{1}{4}$. This is one place where the difference of scale of HO and OO makes itself apparent and demonstrates the advisability of not mixing the standards.

Bridges

Bridges are rather a law unto themselves, for you will notice as you go about the country that some are really high, while others sit tight on top of the tracks. For gauge O the *minimum* height for close-fitting bridges (seen everywhere about the country) is $3\frac{7}{8}$ins., while the width between the buttresses for the standard double track is $7\frac{1}{4}$ins. (Fig. 2).

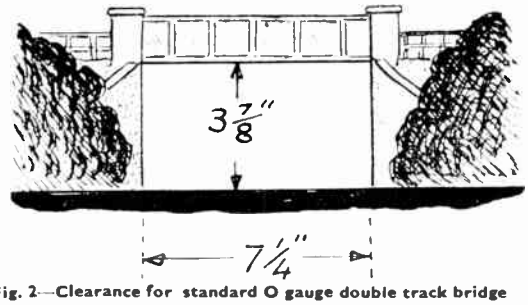
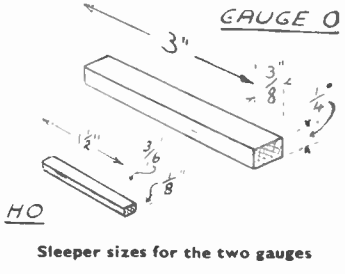


Fig. 2—Clearance for standard O gauge double track bridge

Tunnel mouths, even the smallest, are generally higher than the close-fitting bridges, an average tunnel front giving a 6in. clearance. However, as long as you know and keep the minimum heights and

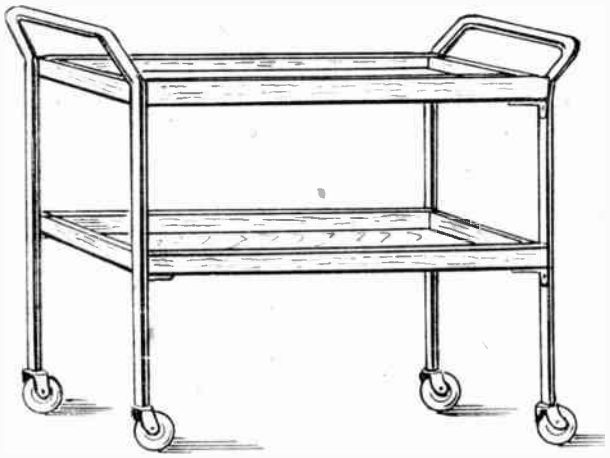
(Continued foot of page 268)



Sleeper sizes for the two gauges

How some wood and tubing combine to make a

MODERN DINNER WAGGON



A DINNER waggon is always useful. If there is no use for one in your own household, they do make valuable presents. The one shown in this article is as simple and easy to make as is possible, and as regards looks, well, it is as modern as it is simple. The material needed to make this superb waggon is shown in the list.

MATERIALS

Tubing ¾in. outside, 2 lengths 7ft. (Electric conduit tubing will do).
Plywood—2 sheets ¾in. thick, 2ft. by 1ft. 4ins.
Wood strip or moulding—½in. by 1½ins. 4 lengths 2ft.
Wood strip or moulding—½in. by 1½ins. 4 lengths 1ft. 3ins.
Wheels—1½in. diameter casters, 4 off.
Rivets or bolts—¼in. diameter, 1in. long, 8 off.
Screws—¾in. long, 16 off.
Panel pins, ½in. and cold water glue.

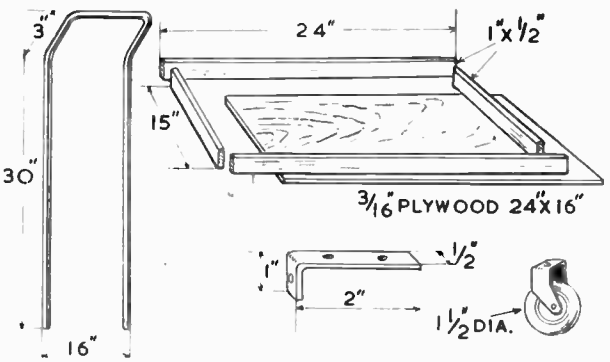
Bending the Tubing

The first job is to bend the tubing. The easiest way to do this is to first drill two holes about 1½ins. diameter, 1ft. 5ins. apart in an old railway sleeper or any other similar piece of wood. Pass a length of tubing through one of the holes until it protrudes about 2ft. 9ins. Bend the tube at right angles at this point, thus forming one of the legs.

Remove the tube from the hole and insert the other end, this time the bend should be made so the double bend is exactly the same width as the trays, which in this case will be 1ft. 4ins. The other tube is bent in precisely the same way, taking care to see that the widths of the two double bends are identical.

Next, with the two tubes bent horseshoe fashion, they should be inserted in turn into the wood bending block, this time with both legs through the two holes. The tube is passed through the block until the cross piece touches the wood, then by holding the block in a vice, or if it is large enough, by standing on it, the tube is bent as shown, thus forming the handles. It is pointed out that the holes in the block must be large enough to allow the tube to be removed after this final bend, and it is assumed that the wood is about 3ins. thick.

The tubes should now be drilled to take the tray brackets. This calls for two holes in each leg, 14ins. and 26ins. from the bottom. If the usual type of caster is used, the bottom end of each leg should be plugged with wood and the casters screwed to the wood.



The Trays

Making the trays is a simple woodworking job. The material is bought ready made, and all that is to be done is to put it together. The corners of the side edging can be butt-jointed, as the ends will be hidden by the tubular legs. Glue the side edges to the plywood and secure with panel pins driven in from underneath.

The Tray Brackets

The tray brackets are made from ½in. flat iron ⅛in. thick. They should be drilled to take the rivets or bolts, and drilled and countersunk for the screws. Very often a similar type of bracket, which can be adapted, can be bought from departmental stores for a few coppers.

Finishing and Assembling

Before the brackets are fitted to the legs, it is best to give the latter a good polish with emery cloth. When perfectly clean apply a coat of priming paint, followed by one or two coats of good enamel in colour to suit. The brackets should be treated in a similar manner, and before the last coat, they should be secured in position.

The trays can either be primed and enamelled to match, or they can be stained and polished according to taste. All that remains is to screw the trays to the brackets, taking care they are pressed well to the legs while the screws are fixed. If the instructions are followed carefully, the result will be a smart looking modern dinner waggon which would cost several pounds to buy in a shop. Apart from this economy there is the enjoyment the handyman will experience in the process of construction. (315)

Model Railways (*Continued from page 267*)

widths in mind, you can go safely ahead with the model in question.

Finally, with regard to the line itself, there should be a clear understanding about sleeper spacing and sleeper sizes. There is, no doubt, but that much good track is spoiled by sleepers that are the wrong size and too widely spaced. This latter is, of course, often a case of economy, but this excuse cannot be put forward for sleepers, that if brought up to real railway size, would be massive baulks of timber.

The true scale-model sleepers in gauge O is ⅜in. by ¼in. by 3ins. and are spaced at 1in. interval along the track. This would use an enormous number of chairs in model work and are mechanically not necessary, as model track is quite well supported with sleepers and chairs spaced 2ins. apart.

For appearance sake, however, it is better to put in the correct or near correct number of sleepers and then have chairs only on those lying 2ins. or so apart. HO sleepers being half size to gauge O are, of course, 3/16in. by ⅛in. by 1½ins. in true scale.

Well, there we have the main dimensions one has to watch when starting to build equipment in these popular sizes, so right away with your next effort.

A pleated cone centre can be converted into

A NOVEL FIRESCREEN

MANY readers will remember the pleated paper diaphragm, employed in the early days of the loud speaker. Whatever its merits as a reproducer of sound, it certainly presented an artistic appearance, and is revived again here as a panel for a fire-screen. A simply designed framework is used to show it off, and well made, it forms quite a pleasing article of furniture, when a fire is no longer needed during the warm summer months.

For the frame, plywood or plywood substitute can be employed. The pattern for it is shown in Fig. 1. The design is quite easily set out on the wood direct, if a piece of it, cut to the outside dimensions is provided first. Centre it, and from the centre strike the 12in. diameter circle shown.

The Hexagon

Ignore the second and outer circle at this stage. At 2ins. from top and bottom, strike lines across the panel, and at 4½ins. left and right, mark points on these lines, from which, to a middle cross line, the hexagon shape can be pencilled in. The remainder is easy.

Saw out the middle circle, and at the top, as shown in the drawing, bore a couple of 1in. holes, 2ins. apart. Remove the wood between these, and a slot results for lifting and carrying the screen about. Now give the whole a thorough

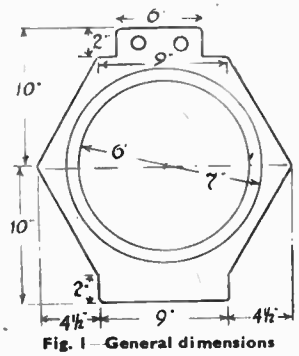


Fig. 1—General dimensions

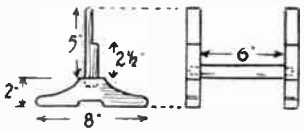
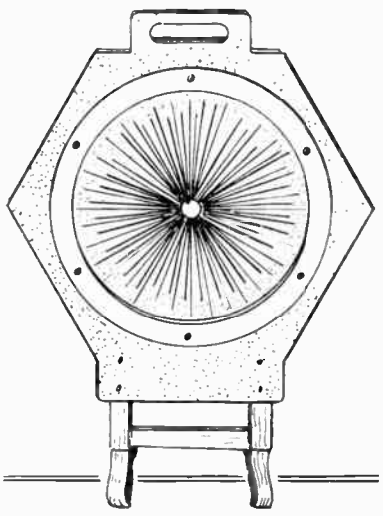


Fig. 2—Details of feet portion



doing all over with medium, and then with fine glasspaper, paying particular attention to the edges, both inside the circle and out. Make the panel glass smooth, and ready to receive its finishing treatment.

The Stand

The stand, Fig. 2, can be made up from any wood available, ⅞in. to 1in. thick. Only a small piece is needed here, obviously, and if a piece of hardwood is handy, it would be much preferable to deal. However, deal can be used if nothing better is available, but an enamel finish should be chosen then, not stain and varnish.

From the drawing it will be seen that the stand consists of two feet, shaped as shown, with short upright posts attached, to which the panel will be fixed. These are kept apart with a crossbar.

Posts and Crossbar

Cut both the posts and crossbar 1in. square, or ⅞in. by 1in. if the former thickness of wood is employed. The heights and length of these parts, as given, do not include the tenons, so add 1in. to them for that purpose, 2ins. extra, of course, to the crossbar, as a tenon here is required at each end. Cut the mortises in the feet for the uprights before shaping them up. The mortises for the crossbar are cut in the posts, at ½in. up above the tenons. Glue all together, then glasspaper.

The panel can be simply screwed to the posts, but it will be better here if a strip, equal to the thickness of the panel, is cut away from the front of the posts, into which the panel can be set, and be level. Fix with round-headed screws, temporarily.

A ring in plywood should now be set out to the dimensions shown in Fig. 1 and sawn. Clean it up with the glasspaper, then fix it to the front of the panel, as in the drawing, with six small brass round-headed screws. The pleated diaphragm will be fitted between this ring and the panel, and held securely.

Suitable Finish

The whole can now be either stained and varnished or enamelled, as preferred. For an article of this kind a bright enamel finish might be considered, paying attention to the colour of the paper used for the diaphragm, to get a harmonising or pleasing contrasting effect.

For the diaphragm, a sheet of suitable paper will be required, either coloured or gold or silver. Unless the paper is fairly stout, it should be backed with cartridge paper to give it added strength. A strip 6¾ins. wide and 43ins. long will be required, with ½in. added for sticking the ends together. A series of marks should be pencilled near the long edges, ½in. apart, then the strip should be folded backwards and forwards in pleats, along the marks, as in Fig. 3.

MATERIAL REQUIRED
Feet (2) 8ins. by 2ins. by 1in.
Posts (2) 6ins. by 1in. by 1in.
Crossbar—8ins. by 1in. by 1in.
Plywood panels—1ft. 6ins. by 1ft. 8ins. and 1ft. 2ins. by 1ft. 2ins.

Fixing the Diaphragm

Bring the ends together and stick securely. The diaphragm can now be pressed flat, the ring on the panel removed, and the diaphragm placed between ring and panel, the ring being re-screwed, to keep it there. There will probably be a tendency for the diaphragm to open out a bit at its centre, so to check this, a simple arrangement is fitted.

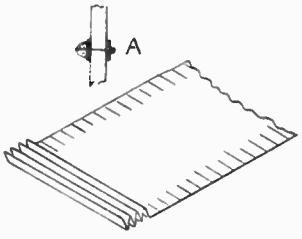


Fig. 3—The pleated centre

This consists of two 1in. discs of stout cardboard glued to the centre of the diaphragm. Cover these discs with paper to match on their outside surfaces. Glue them, and press to the diaphragm. Keep them, with a small headed hat pin, tight to the diaphragm, as in detail (A), the pin being pressed into a cork at the rear. When the glue is hard, the pin could be removed.

Such a screen is not only a pleasure to make, but novel and attractive. It will serve for the spare room where you do not always have a fire and certainly look better than a bare open grate.

MISCELLANEOUS ADVERTISEMENTS

The advertisements are inserted at the rate of 3d. per word prepaid. Name and address are counted, but initials or groups, such as E.P.S. or £1/11/6 are accepted as one word. Postal Order and Stamps must accompany the order and advertisements will be inserted in the earliest issue. Announcements of fretwork goods or those shown in Hobbies Handbook are not accepted. Orders can be sent either to Hobbies Weekly, Advert. Dept., Dereham, Norfolk, or Temple House, Temple Avenue, London, E.C.4

500 DIFFERENT world stamps, 3/6.—H. Whitby, Godshill, Fordingbridge, Hants.

FRENCH Colonials. 100, 3/6. 50, 1/6. 30, 1/-. Free pictorials with approvals.—Robert J. Peck, 7A Kemp Road, Bournemouth, Hants.

BARBADOS packet contains 100 different Empire stamps, including Barbados set 1C to 24C, 3/6.—Bisson, 46 Sumatra Road, London, N.W.6.

STAMPS. 3 different Princess Elizabeth or 3 large Swiss. Send 3d. Packets—100 British Empire, 50 Canada or 15 Cyprus, 1/9. 50 Australia, 40 South Africa or 25 Malta, 2/9. Switzerland, 50, 1/6; 100, 3/6. Postage extra.—Scott, 24 King's Avenue, Skegness.

FREE set of 5 Reunion stamps to all approval applicants.—Oxley, 36 Columbia Ave., Sutton-in-Ashfield, Notts.

STAMPS. British Empire auction lots, collectors' duplicates and small collections sent on seven days approval. Bargain prices.—Bayliss, BCM VITEG, London, W.C.1.

LONELY? Send particulars and 1/6 for lists and details.—C.C.C., 15 Bramcote Ave., Mitcham.

84 COLONIALS, Foreign, Airmails, Pictorials. C 15/-, price 3/6. Would resell 10/- easily. Smaller lot, C 6/-, 1/3.—Brown, 30 Meadow Way, Harrow Weald.

MONEY-MAKING hobbies. American book packed with 130 profitable occupations. Published by Popular Mechanics, price 14/6.—Hobson, 79 Southbrook Road, Exeter.

PRINT your own notepaper. Hand press, ink and your address in metal type, 15/6, post 1/-. Extra type available.—D. C. Powis, 74 New Street, Brightlingsea, Essex.

MAURITIUS 1950. Set of 4 pictorials free to approval applicants.—J. Watts, Linby, Notts.

POPULAR Mechanics. America's leading Science/Mechanics monthly. 300 pages, 500 photos per issue. Year's supply, 32/-. Current issue by return. American magazine catalogue free.—Hobson, 79 Southbrook Road, Exeter.

GLASS. If you require one or many sheets of fine quality glass for model making or framing, write to us. Any size to requirements.—F. C. Curtis Ltd., Fleetwood.

SEND your hobbies or work for french polishing to—Mr. Wilkie, 20 Rawson Square, Idle, Bradford, Yorks.

MAKE money in spare time. Our book Money Making Plans tells you how. 2/9, post paid.—Wallace, 5 Siddons Rd., Croydon.

OVER 150 Modern Wonders publications, 1937-1940. Good condition, sample copy on request. Offers.—Nikola, 18 Woodland Rise, London, N.10.

A MODEL Fort every boy will wish for. Special Easiplan, 2/3, post free. LAS, 59 Queen Adelaide Court, London, S.E.

FREE. 10 Br. Colonials to applicants requesting my approvals, suitable to the stamp collector of modest means.—R. G. Cook, 39 Babbacombe Gdns., Ilford, Essex.

TRIANGULARS. 6 free to all requesting approvals and sending stamp.—Townsend, 58 Capworth Street, London, E.10.

APPROVALS. Send 3d. to—D. A. Chaplin, 26 Cambridge Drive, Lee, S.E.12.

PASSE-PARTOUT framing is fascinating and useful. Complete outfit to frame 3 sizes, 6½ins. × 8½ins., 4¾ins. × 6½ins., 3½ins. × 4¼ins. 5/-, post free.—F. C. Curtis Ltd., Fleetwood.

STAMPS FREE!! Twenty unused (2½d.).—G. H. Barnett, Limington, Somerset.

HOMEWORK to suit everyone. Lists of 30 employers, jobs and details, 2/- and S.A.E.—The Temple Agency, Kelvedon, Essex.

FREE. Large airmail and 10 British Empire. Request approvals, send 4d. stamp.—Crutchfield, 11 Westcourt Street, Brompton, Chatham.

50 GOOD stamps free, mainly pictorials. Send for approvals, enclosing 2½d. Junior or medium.—Beeze, 116 Newton Rd., Mumbles, Swansea.

40 DIFFERENT stamps free, including Silver Wedding, U.P.U., Victory, Silver Jubilee, Coronation, Pakistan, etc. Send 3d. postage and request approvals.—J. F. Smith, 39 Manor Park, London, S.E.13.

PERFORATION gauge free. To all applicants for our approvals. Ideal for beginners and medium collectors. Send 2½d. stamp for trial selection.—Box 33, Hobbies Weekly, Dereham, Norfolk.

CIGARETTE cards. Mixture packets, 6d., 1/- and 2/6. Ask for lists of sets.—Verity, 193 Sandford Road, Bradford, Yorks.

PENNY Black and Sir Rowland Hill on stamp of Cuba, absolutely free. Request approvals.—Hubert Rajski, 211b Thornes Road, Wakefield.

STAMPS. 50 African Pictorials, 2/6. 75 better African Pictorials, 4/-. Postage 2½d. Send P.O. now.—Ronald F. Alborough, 212 Eastern Avenue, Ilford, Essex.

GIGANTIC stamp packet for approval applicants. Catalogue value over 5/-. Contains Roosevelt and Gandhi Memorial Commemoratives. Airmails, including jet bomber, pictorial, mint Colonials, Cayman Isles, Kenya, Dominica. Plus 50 different foreign and Colonial. Price 6d., postage 2½d.—W. O. Took, 2 Cowper St., Hove, Sussex.

MAKE money! Ply offcuts, 3/-, 5/- and 10/- parcels.—Mayco (D), 117 Station Rd., Sutton Coldfield.

FREE—stamps catalogued 5/- to applicants for ½d. approvals.—Cox, 17 Stoneleigh Park Road, Ewell.

FREE Bahawalpurs, Colonial discount approvals. Weddings. (Not abroad).—Bishop, 40 Marine Parade, Hythe, Kent.

MAKE lampshades. Clean, profitable hobby. Frames, trimmings, Crinothene, etc., supplied. Send 1/6 for catalogue, photographs and samples. Also Japanese stencils, washable paints. Half price. S.A.E. for lists. Marvellous unrepeatable offer.—L. & E. Bishop, 2 Popes Crescent, Pitsea, Essex.

GAIN confidence, personality. Be successful. Learn the secrets of hypnotism, personal magnetism and auto-suggestion. New methods enable you to develop these amazing sciences quickly and easily. Complete course by expert, 5/-, post free.—R. Hainsworth (Dept. H.), 34 Beamsley Rd., Frizinghall, Bradford, Yorks.

ATTENTION. Quality duplicating at lowest prices. No extra charge simple diagrams. Send for details, samples, price lists. Prices and service beat all competitors.—N.S.S., Gorleston.

INTRODUCTIONS. Pen friends, companionship or marriage.—V.C.C., 34 Honeywell Road, London, S.W.11.

IF you have nothing to occupy your leisure, why not try something interesting and profitable? Experience is not required in leathercraft. Send S.A.E. for our brochure, free of obligation.—Leathaweave (Dist. 37), 2 Tudor Rd., Leicester.

START earning money at home, whole or spare time, making up fancy leather and felt goods. Material provided. Write for rates of pay, etc.—Grange Co., 2 Curzon Street, Leicester.

STAMPS 25—1d., 50—2d., etc. Approval books. Free gift.—Pavely, 12 Leeder Close, Coventry.

LEARN Perspex modelling the practical way, by making the toast rack, cigarette/trinket box, brooches and bracelets featured in our latest course. (Details, 6d.). Instructional course, 29/11.—Plastics Home Products, 18 St. Mary's Road, London, N.9.

Always insist on Sellotape

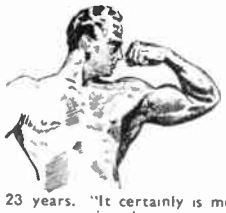
Don't be caught without your roll of Sellotape! For quick repairs, holding parts for gluing, labelling tins, binding tool-handles, and a thousand other useful jobs, Sellotape is your greatest ally. Strong and neat, it sticks at a touch without moistening. Get some today — and SEE THAT IT *IS* SELLOTAPE.

THE POPULAR 1/- INC. TAX DISPENSER

-HANDYMAN NUMBER ONE

Stocked by all good Stationers

BODY BUILDING



Thousands of testimonials from men of all ages have been received in the last 23 years praising Lionel Stebbing's 4 in 1 Muscular Development Course. Author of over 1,000 articles on Health and Strength, Sex, Personality, etc., in leading newspapers. Over 150,000 pupils. I GUARANTEE Robust Health, Doubled Strength, and 10-25 inches more muscle in 30 days or money back. My famous 4 in 1 Muscular Development Course has been recommended by "Health & Strength" for 23 years. "It certainly is more than a P.C. Course, dealing with subjects never seen in other courses. I am doing well in both Strength and Development".—**R.T., Leeds.** "Feeling stronger every day . . . put 2 inches on my chest already".—**R.V., Wrexham.** "Putting on weight fast and I feel better and fitter".—**S.P., Hounslow.** "Have increased 25½ inches all round, 5 inches on chest".—**H.L.** Details 1d. Complete Course 10/- (or $1.50). Sent under plain cover.—**STEBBING INSTITUTE, 28 (HB/100) Dean Road, London, N.W.2.**

Builder of Men for 23 years.

YOU CAN BECOME A HANDICRAFTS INSTRUCTOR

Experience not essential

Men who enjoy making things in wood or metal can turn their hobby into a permanent and interesting Career. Short hours, long holidays, and security in a job you would really enjoy, can be yours if you become a Handicrafts instructor. Let us send details of the easiest and quickest way to get the necessary qualification.

We definitely guarantee
"NO PASS—NO FEE"

If you would like to know about our unique method of preparing you for one of these appointments, write to-day and we will send you our informative 176 page Handbook—free and without obligation. Mark your letters "Handicrafts Instructor."

BRITISH INSTITUTE OF ENGINEERING TECHNOLOGY
595 Shakespeare House
Stratford Place, London, W.1

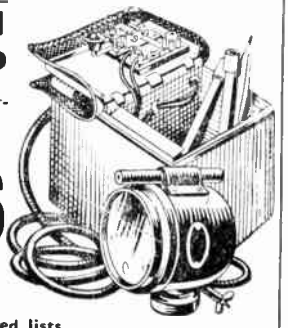
BIET

AMAZING Ex. Govt BARGAIN SIGNAL LAMP

In stout double-compartment waterproof steel case.

- 3½-inch lamp, for day or night use.
- Swivel base with metal screw-in stand.
- Viewfinder and reflector.
- Morse key-board. Fully wired fitted to folding lid.
- Adaptable as car, motor cycle or studio spot light and numerous other uses.

Spare bulbs 1/3 each.



7/6
Post 1/3

Write for illustrated lists.
PRIDE & CLARKE LTD.
Dept. P.W., STOCKWELL RD., S.W.9. Phone: BRIxton 6251

IT'S New- but ANYONE CAN DO IT!

WRITE TODAY FOR YOUR KIT

PRINT YOUR OWN PHOTOGRAPHS ON SCARVES, TIES, HANDKERCHIEFS, GREETING CARDS, ETC., ETC.

With the YANKEE PHOTO KIT it's easy to make up to 150 perfect permanent prints from your own negatives on cloth, paper, cards and almost any surface. Simple and easy. Cannot harm fabric or negative. Send today for kit, with complete instructions.

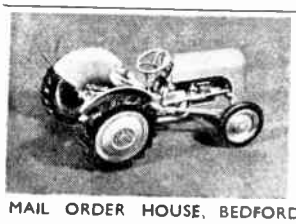
5/-

Y.P.K. PRODUCTS COMPANY (Post 4d)
Major Size 8/6
688 Christchurch Road, Boscombe 3, Hants.

THE BOLSTER HOME WATCH AND CLOCK REPAIR OUTFIT

These precision jewellers instruments include watchmaker's magnifying eyeglass, finest watch tweezers, set watchmaker's screwdrivers, watch and clock oil, oilers, dusting powder, clock brush, plus illustrated instructional manual for the amateur. In container 12/9 post free.
Senior Outfit includes everything above, plus watch jewels luminous compounds, dial renewer, jewellers rouge, explanatory book. Price 21/- post free.

BOLSTER INSTRUCTIONS, (Dept. H.W.), 5a Station Parade, Ashford, Middx.



BOYS!!! BOYS!!!

With the aid of our amazing assembly outfit you can quickly and easily assemble this superb scales model of the famous 'Ferguson' Tractor. All parts supplied in finished state. All Plastic construction, real rubber trakgrip tyres. Can be dismantled and reassembled with ease. Send P.O. today for 8/- post free.

MAIL ORDER HOUSE, BEDFORD SQUARE, SIDMOUTH, DEVON MURRAY HILL & CO. (Dept. H.),

---

BE UPRIGHT

Banish stoop with the famous **'Vigour' Shoulder Brace** or money back. Correct breathing, keep chest expanded, shoulders square. Be fit, look your best. Undetectable. Either sex. Money back guarantee. **10/-.** De Luxe Model with waistband **15/6.** Post 3d. Mention size round chest and waist. Catalogue 1d. — Stebbing Appliances, 28 (HB/8) Dean Road, London, N.W.2. *Established 1923*

A Handy Glasspaper Block

A wooden block with special handle which holds glasspaper taut and always in place. In two sizes, 3in. price 1/3 (post 2½d.); 5in. price 2/3 (post 4d.)

HOBBIES Ltd. DEREHAM
Norfolk, and all Branches

Printed by BALDING & MANSELL, LTD., London and Wisbech, and Published for the Proprietors, HOBBIES LTD., by HORACE MARSHALL & SON, LTD., Temple House, Tallis Street, E.C.4. Sole Agents for Australia and New Zealand : Gordon & Gotch (A'sia) Ltd. For South Africa : Central News Agency Ltd. Registered for transmission by Canadian Magazine Post.

Hobbies WEEKLY

CONTENTS

January 31st, 1951 Price Fourpence Vol. III No. 2883

A HAND-PROPELLED

CHILD'S CAR

HERE is a topping little self-propelled go-car that could be made up for the smaller boy or girl. The exercise gained by running this around would be of great benefit, as well as giving the youngsters a lot of fun. Of course, it is a very simple toy to make and has been designed on easy lines so that it can be made up quickly.

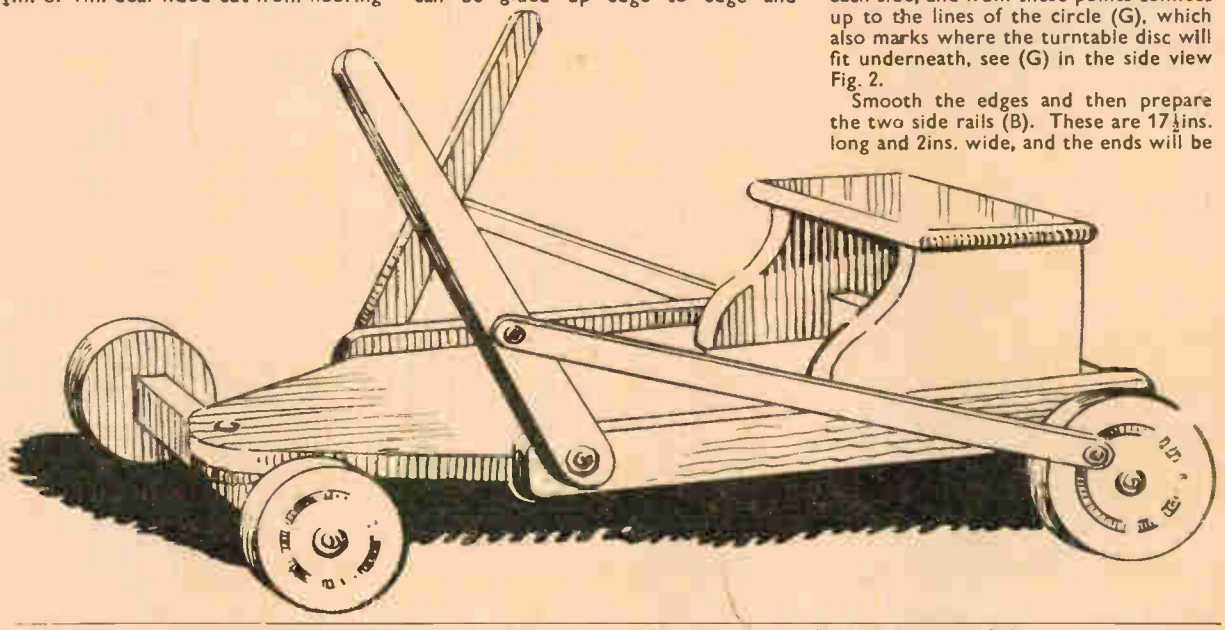
There is really not much wood required for making it, a few pieces of ¾in. or 1in. deal wood cut from flooring boards would answer quite well. In Fig. 1 we see a plan of the car, giving some useful measurements, while in Fig. 2 is a side view, showing how the various parts are assembled and the method of propelling the car along by means of two hand levers connected by rods to the two rear wheels.

The floor (A) of the car measures 27ins. long by 8ins. wide, and if a single piece of sound wood to this width cannot be procured, then two widths can be glued up edge to edge and further strengthened by gluing and screwing two cross battens to the underside.

Axle Bar

The rear axle bar should, perhaps, answer for one cross batten, as the dotted line (F) shows on the plan. Taper the front of the floor by first describing the circle to 1½ins. diameter, see dotted circle. Then set a length of 17½ins. from the back end of the piece each side, and from these points connect up to the lines of the circle (G), which also marks where the turntable disc will fit underneath, see (G) in the side view Fig. 2.

Smooth the edges and then prepare the two side rails (B). These are 17½ins. long and 2ins. wide, and the ends will be



rounded off and made smooth. Screw the rails to the floor in the manner shown in Fig. 2 with an equal margin each side.

The Seat

Now make the seat from the four pieces shown in the enlarged detail in Fig. 3. Mark out the shaping of piece on to one piece of stuff measuring 7ins. by 4ins., and after cutting this round, use it as a template for outlining the second end piece. Connect the ends by nailing on the top (E) which is 9½ins. by 6ins. Round off all four edges of piece (E), and then fit and fix the under rail (D) which should be 6ins. long by 1½ins. wide by ⅞in. thick.

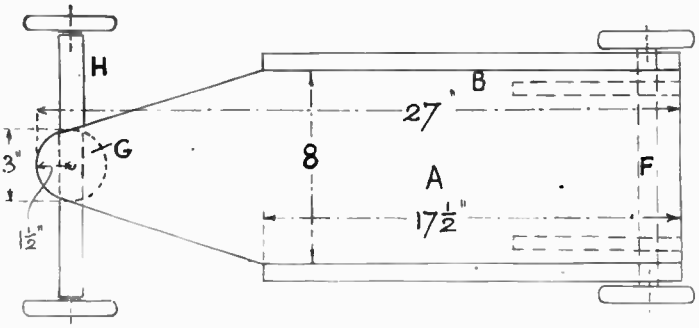


Fig. 1—Plan of main platform and front wheels

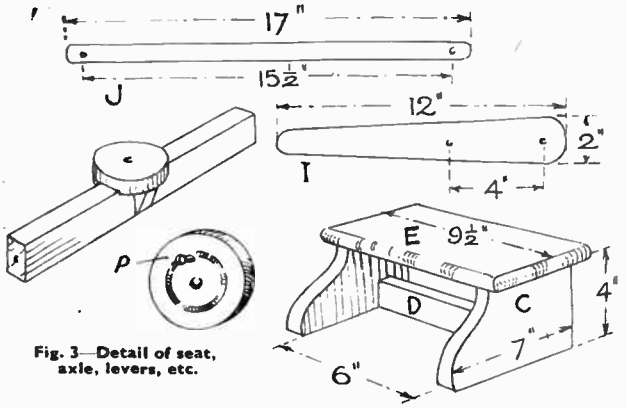


Fig. 3—Detail of seat, axle, levers, etc.

Seat Fixing

The completed seat should be held in position on the floor and screwed on from beneath. The back axle, piece (F) is 10ins. long by 1⅜ins. by ⅞in., and is screwed direct to the floor 1in. in from the rear edge of the floor. The disc (G) is of ½in. wood, and bore a hole in the centre for the pivot screw.

In the underpart of the disc, and across the middle of it, cut down and chisel out a ¼in. deep recess to fit over the axle bar. Glue it in place and see that the screw holes in both are in line.

Fix the axle into the floor by means of a long stout round-headed screw driven through the floor and through the disc into the cross axle. Slip a washer under the head of the screw and see that the axle bar swings freely on its pivot screw. If it is necessary to stiffen the connection between the disc (G) and the axle (H), a couple of angle blocks cut from thick wood may be glued and nailed on, as shown in the side view Fig. 2. The same remark applies to the back axle, as seen at (F) in the same diagram.

The wheels may be cut from ⅞in. wood and rounded on the treads with coarse and fine glasspaper. Bore holes in the centres for the axle screws on which also must be threaded washers. Ready-made wheels, 4ins. diameter, may be got from Hobbies if desired. These are well turned and painted ready for fixing direct to the axles. Round-head screws should be used for the fixing of the front pair of wheels.

For the rear pair, however, countersunk screws must be run in flush with the face of wheels, so as not to hinder the connecting bars from revolving freely. Fix the wheels with a washer behind each, and one under the heads of the screws of the fore pair of wheels. Large washers should be used behind the wheels, moderately thick ones to prevent the wheels rubbing against the sides of the floor.

The Levers

The hand levers—one is shown at (I) Fig. 3, are cut from 1in. deal and to the measurements shown. Although the length is shown as 12ins., it can be made longer if thought necessary, according to the age and size of the youngster who will use the toy. The narrow top part of the levers should be rounded off smooth to afford a safe and comfortable grip for the hand.

Fix the levers to the side rails (B) by means of round-head screws, washers being included on the outside. The connecting rods (J) in Fig. 3 are made from iron bar about ⅜in. or so wide by ⅛in. thick. Should this be difficult to get, then hardwood can be used, about 1in. wide and ⅜in. thick.

Oak or beech would be a most suitable wood here. The pivot screw for the rod is shown at (P) in Fig. 3. Drill holes in the rods, as shown, and connect them to the wheels and the levers with round-head screws. This completes the work of construction.

Clean and Paint

Give the woodwork a good rubbing up with glasspaper and then paint it two coats good oil paint. Bright colours should be used. A word as to the screws which are important, being the pins on which the propulsive motion works. Use 2in. No. 12 round-headed iron screws, except for the rods which should have 1½in. or 1in. screws.

If an even hand motion is required, meaning so that when one hand is forward, the other is drawn back, the toy should have a through rear axle bar to which the wheels are rigidly fixed, this axle running smoothly in fixed and drilled bearers.

At present in the toy given here the wheels bear no relative position one to the other, so that the hands are thereby not uniform in motion. However, the wheels could be placed in position to get the correct forward and backward motion just before having a run in the car.

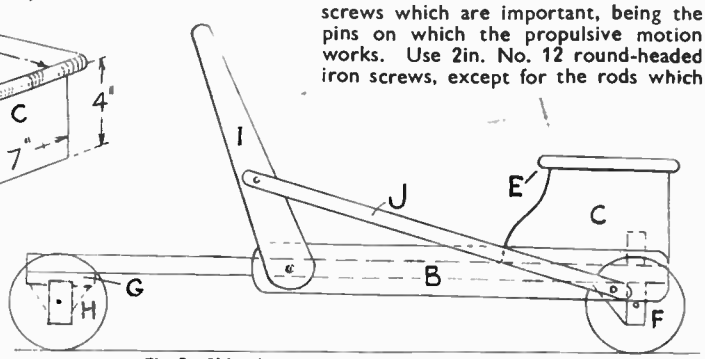


Fig. 2—Side elevation showing mechanism detail

The radio constructor can make an economical set in

THE SPARES-BOX THREE

THE radio constructor who wishes to make up a receiver using such parts as he may have to hand, or can most easily obtain, will find this circuit ideal. None of the components or valves are critical, good results being obtained even when considerable latitude is allowed in the choice of these items.

Even if all parts have to be bought, the total cost, including valves, need not exceed one pound, and this will be further reduced if some of the components are already to hand.

Tuning Coil

This is wound on an insulated tube, either bought, if not to hand, or made by rolling glued cardboard or brown paper round a suitable former. If a tube is made, allow it to dry thoroughly, then varnish it, if possible, to prevent damp being absorbed. Some household commodities are packed in cylindrical cardboard containers, and these can be used instead, though they are less strong than paxolin or ebonite formers.

To begin the coil, anchor the end of a reel of insulated wire at point (A) (Fig. 1), by passing it through two small holes. Leave the end a few inches long. The turns are then wound on fairly tightly, closely side by side, until point (B) is reached, at approximately the centre of the winding between points (A) and (C).

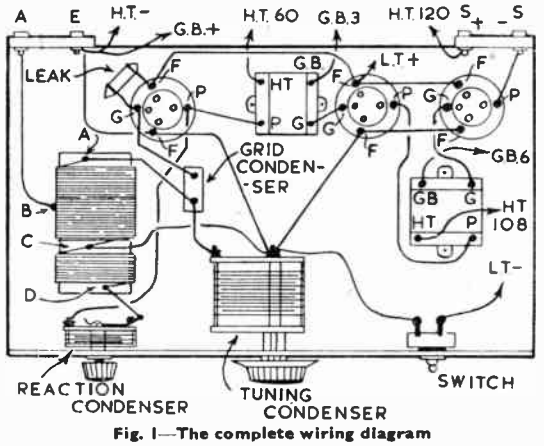


Fig. 1—The complete wiring diagram

To make this tapping, form a loop about 4ins. long in the wire, and draw it through two small holes; do not cut or fracture the wire. Then continue the winding to point (C), where another loop about 4ins. long is made, as for point (B). Leave a ¼in. space, then put on the smaller winding, ending at (D).

Turns

The number of turns and gauge of wire are not critical, but should be fairly accurate, for best results, and will depend upon the diameter of the former. The following table gives the diameter of the former, the size and type of wire, and the number of turns for the winding between points (A) and (C).

In each case point (B) is at about the centre turn of the winding, and the coil between (C) and (D) is two-thirds the number of turns between (A) and (C). In this table, 'D.C.C.' indicates Double Cotton Covered wire, and 'Enam.' Enamelled wire.

Former Diameter	Wire.	No. of Turns.
1in.	32 Enam.	90
1¼ins.	28 D.C.C.	94
1½ins.	32 Enam.	65
2ins.	28 Enam.	60
2ins.	28 D.C.C.	68
2¼ins.	24 D.C.C.	58
2½ins.	28 Enam.	40

By following this table, any tube and wire to hand should prove approximately correct.

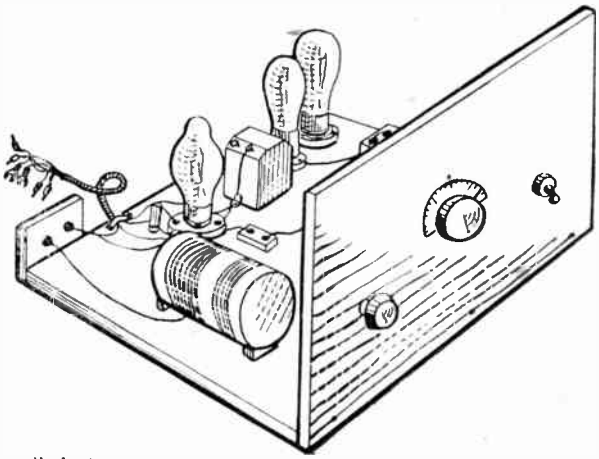
Variable Condensers

Normal values for this circuit will be ·0003 mfd. for reaction and ·0005 mfd. for tuning. The reaction condenser can be a solid-dielectric one, and the tuning condenser should, for preference, be air-spaced. However, a value of ·0002 or ·0005 will do quite well for reaction. It is also permissible to use a solid-dielectric condenser for tuning, but a capacity lower than ·0005 is not recommended, as the wavelength coverage of the set will be reduced.

A small knob is required for the reaction condenser, and a large knob with pointer or dial, for tuning. It is possible to draw up a tuning dial, marking stations on this when they are found.

Transformers

Two transformers are used for coupling, and these may have a ratio of between 1:3 and 1:5. The usual type of markings are shown in Fig. 1, but some transformers are marked (P) and (S). With these, take the two tags or terminals on the (P) side to valve plate (terminal (P)) and H.T. positive. The tags or terminals on the (S) side go to valve grid (G), and Grid Bias.



With any type of transformer, it may be desirable to try reversing over the secondary (G and GB) connections, as in some cases a slight improvement in results will arise. This should be tried if uncontrollable howling commences when the set is switched on.

Resistance Coupling

Either, or both, of the transformers may be eliminated by using the resistors and condenser shown in Fig. 2 instead. If one transformer is to hand, use it between the centre and output valves, and employ the R.C.C. circuit between detector and centre valve.

The leak shown in Fig. 2 should be, for preference, ·5 megohm. However, values between ·25 megohm and 1 megohm will work quite well. The anode resistor should be 50,000 ohms, but values between 35,000 ohms and 100,000 ohms are quite satisfactory, for the detector valve. If this type of coupling is also used between centre and output valve, do not use a value over 50,000 ohms for the anode resistor of the centre valve. Here, 30,000 ohms is most generally suitable.

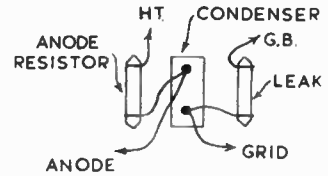


Fig. 2—Alternative coupling circuit

The best condenser value is ·01 mfd. mica type, but values between ·005 and ·1 can be used.

Resistance-capacity coupling does not provide so much volume as the use of transformers. If it is employed, comparing Fig. 2 with Fig. 1 will show how it is wired in.

Other Parts

Any small on/off switch can be used, and three 4-pin English type valve-holders. If these have terminals, no soldering will be necessary. The detector leak (see Fig. 1) should be 2 megohms, but, if to hand, values between 1 and 3 megohms can be used. The grid condenser in Fig. 1 is best of ·0003 mfd. capacity, but values between ·0001 and ·0005 can be used.

Terminals or sockets can be used for Aerial and other connections. (A) is for Aerial, and (E) for Earth. The speaker is connected to sockets (S). Moving-coil speakers *must* have the usual matching transformer. With such speakers, there is no polarity to observe. With the old type moving-iron cone speakers, however, the correct polarity should be observed, as shown in Fig. 1.

The receiver is made on a baseboard about 7ins. by 10ins., with a 3-ply panel of similar size. A cabinet can afterwards be made in the usual style. Small strips of *dry* 3-ply can be used for Aerial, Earth and Speaker sockets, but ebonite or similar material is preferable, if to hand.

Any thin insulated wire is suitable for wiring up, and flex is used for the battery leads. The latter may be twisted together, and secured by a clip at the rear of the baseboard.

Valve Types

For the left-hand holder, a detector type valve is best. A low-frequency valve is used in the centre holder, and an output valve in the right-hand holder. Suitable types are, HL2 for detector, 210LF for centre holder, and LP2 for output. However, a wide variety of valves will give good results, though very old valves may not provide very much amplification.

Any 2-volt triode valves to hand can be tried, changing them from holder to holder to find their best positions. If the receiver is insensitive, this will indicate that the valve used for detector is in rather poor condition. If distortion arises, and volume is not very good, the centre or output valve should be suspected. A detector-type valve is not suitable for output purposes.

With good valves, satisfactory results should be obtained at once. However, the grid bias voltages used will depend upon the individual valves, and considerably influence results. The effect of varying these plugs should therefore be tried. Too much bias will cause low volume and distortion; too little bias will greatly increase the high tension current consumption. So use the highest figure of bias which does not cause distortion.

With R.C. coupling, the anode current has to pass through the anode resistor. Therefore about 90 to 120 volts will need applying, instead of the 60 to 108 volts shown in Fig. 1, for transformer coupling.

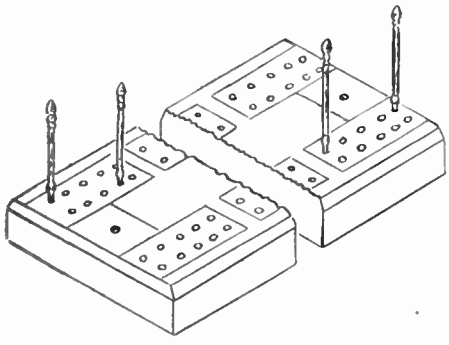
The set will, of course, work quite well with lower voltages, but those shown are most usual. If lower H.T. voltages are used, the grid bias plugs must also be inserted in lower-voltage sockets in the bias battery. Use a 2-volt accumulator for L.T. supply.

Final Notes

If it is desired to make a 2-valver, omit the second transformer and third valveholder, taking a lead from (P) on the centre holder in Fig. 1 to the negative speaker socket. No other changes are necessary.

Reaction is used to build up volume of weak stations. If a long, outdoor aerial is used, selectivity of tuning may be increased by wiring a small condenser in series with the aerial lead-in, or winding a coil with the aerial tapping (B) only a few turns from point (C). If an extremely short indoor aerial is used, take this directly to point (A) on the coil.

A PERSPEX PEG SCORE BOARD



HOW would you like to use a handsome looking plastic score board for your games of dominoes, and cribbage? This one is made from a piece of Perspex 7⅜ins. long, 2ins. wide, and 8mms. thick. To true up the edges of this, cut a piece of Perspex, place the material between two smooth surfaces of soft wood in a vice, and draw file across each edge in turn.

It is best to use a 10in. smooth parallel flat file for this purpose, and test your work frequently with the try-square.

The broken plan of the model shows six panels of ten score-holes, but in the actual article there are twelve, six on either side, with ⅛in. gap between the panels. Use a steel ruler and a metal-work scriber to mark these panels on the Perspex, but be cautious to inscribe on the surface, only the lines as shown in the plan.

Any other marks scratched on the material will spoil your model. You can 'play safe' by first setting out the panels on the work with an ordinary ruler and an indelible pencil point. Then you can mark in the permanent scriber lines and rub the other blue ones out with a wet cloth.

Make quite certain that the score-holes appear in alignment when all the columns in the panels are completed. Failure to do this will result in unsightly drilling. For this work, secure the Perspex horizontally between two stout battens of spare wood on your bench, and drill out the score-holes with a hand-drill fitted with a No. 47 B.A. clearance drill.

It is much easier to drill in this fashion than to work with the plastic in a vice. Drill the holes to about 4mms. in depth, i.e., to about half the thickness of the material.

A Glossy Surface

Now chamfer, by cross filing the upper perimeter of the Perspex to about $\frac{1}{16}$in. Smooth all filed surfaces, at first with No. 1 glasspaper, and finally No. OO glasspaper. Give your model that cut-glass appearance by rubbing it down well with a piece of old sock moistened with Silvo. Then vigorously rub off the white film of Silvo with some silk.

The marking pegs are made from discarded knitting needles of preferably sizes 9 or 10. A pair of red, and a pair of green look delightful in this transparent plastic.

These pegs are 1⅜ins. long, and can be made with fancy knob-shaped tops, which you can work with a 3in. half-round smooth file. The points of the pegs must be tapered to fit the score-holes tightly. This tapering is done by rolling the peg-points with the fingers, between two rough surfaces of a folded piece of coarse glasspaper.

This Perspex score board is one very useful plastic model which will never fail to draw admiration. To those who see and use it for the first time, the coloured pegs and the perfect transparency of the plastic are the real attractive features of the model. (334)

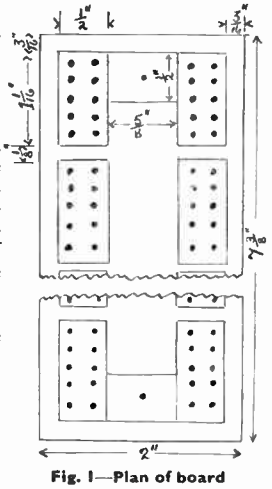


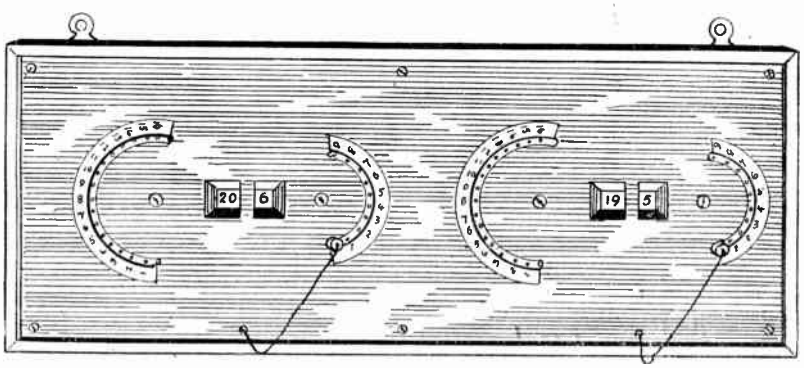
Fig. 1—Plan of board

Another useful and novel type of

AUTOMATIC DART SCORER

FOLLOWERS of this popular game may be interested in this article, which describes a moderately easy scorer, requiring no gear wheels or other difficult parts. As the title implies, the scoring is automatic, requiring no mental arithmetic on the part of the players. A half view is given in Fig. 1 only, it being understood that the second half is identical. This is how it works.

Scoring is done by rotating the discs, the rotation being effected by inserting a metal plug in one of the small holes in the discs and drawing downwards. The right disc is for units, i.e., 1 to 9. We will call this the (U) disc for subsequent reference. The left disc is numbered to 30, and will be referred to as the (T) and (H) disc (tens and hundreds). A total of 300 can be scored.



Mechanism

The automatic arrangement which rotates the (T) and (H) disc, when the score requires it, consists of an upright lever, seen in the diagram, with a small projection at its middle, which a bar across the (U) disc presses against at every tenth number, and moves the lever to the left, the pawl on it catching the teeth on the (T) and (H) disc and moving the latter one number forward.

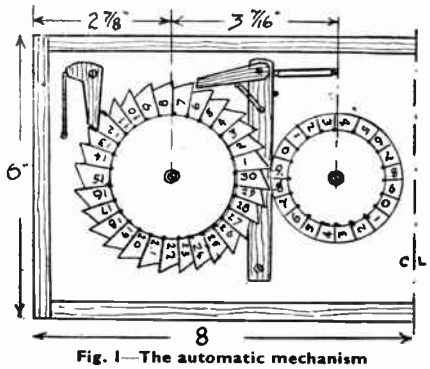


Fig. 1—The automatic mechanism

A detent, seen on the extreme left, prevents the disc moving backwards.

Cut the backboard from deal, about ½in. thick, to dimensions given, the length being, of course, doubled. Run a line along the centre, and on this mark small holes for the pivot screws of the four discs. Now cut some strips of wood ½in. thick and ⅜in. wide, and nail and glue these round the backboard, making a kind of shallow tray of the whole.

To the edges of this, some 3/16in. thick strips of wood are fixed to make a finishing rim, as in detail Fig. 2 (H). These are 1¼ins. wide, so will rise above the cover board, referred to later on, just 1/16in.

Some of the parts, the (T) and (H) discs, for example, are shown full size on the pattern page. The discs (A) are to be cut from 3/16in. wood, and should be sawn out as accurately as possible. It will be best here to sacrifice the page, and stick the patterns of the discs to the fretwood. When cut, the paper might well be left on for subsequent numbering.

The centre hole is bored to admit a ¾in. stout brass round-headed screw as a pivot pin. Exactly on the black spots, drill a circle of holes large enough for a 1in. wire nail to enter. From ¼in. wood, cut two 1in. discs of fretwood and glue these to the back of the discs. Fix the pivot screws in, with a thin brass washer under the heads. The discs should rotate quite easily, but certainly not loosely.

The upright levers (B) are cut from ¼in. wood, two being required. Bore

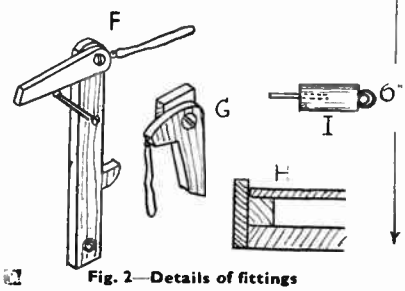


Fig. 2—Details of fittings

screw holes at top and bottom, where shown, ⅜in. flat-headed screws for the top and round-headed ones for the bottom. Cut the pawls (C) from 3/16in. wood, and underneath each drive in a pin, bending it to make a tiny hook. Fit the pawl at the top of the lever with a flat-headed screw, countersinking the latter.

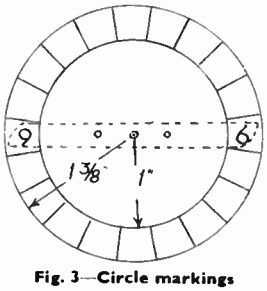


Fig. 3—Circle markings

Elastic Drive

An elastic band is hooked to the pawl and dropped over a screw, driven in the lever, where shown. On the right edge of the lever, near the top, fix a second hook, and to this slip on another elastic band. The whole will then present the appearance seen at (F) in Fig. 2.

Fix the levers, where seen in Fig. 1, with the right hand projections just over the centre line. The elastic band on the lever is stretched over a screw, driven in the backboard, and a small nail, serving as a stop, is inserted just below the elastic, to prevent the lever being drawn too far back.

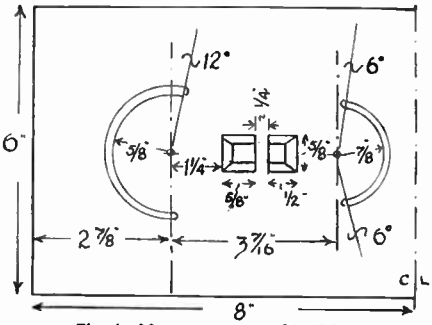


Fig. 4—Measurements of half front

Cut the detent (D) from 3/16in. wood and fix a small wire hook where shown. This part should be pivoted with a countersunk screw to a small square of ¼in. fretwood, as in detail (G) Fig. 2, the square being glued to the backboard so that the detent falls into the teeth of the disc at about the position shown in Fig. 1. Hook the elastic band, attached to the detent as in the detail, over a screw head, driven in the backboard.

Testing

Now press the lever to the left, and if all is O.K., the disc will be rotated to the left also. For discs (U) (units) cut two to the diameter in Fig. 3. It will be best here to describe the two circles on to paper and stick to the fretwood, leaving

the paper on for subsequent numbering after cutting.

Divide the circles into 20 equal parts, a job easily done with the aid of a protractor, pricking off divisions of 19 degrees each. Bore a hole for the pivot screw as before. Cut the discs from $\frac{3}{16}$in. fretwood.

Cut two of parts (E) and bore pivot holes at their exact centres. Fix these, one to each disc, to the back of the discs, in the position shown in Fig. 3, where the bar comes just behind opposite divisions. The parts, by the way, are cut from $\frac{1}{4}$in. wood. Fit these discs to the backboard, with a thin brass washer under the heads of the screws.

The Action

It will be as well here to lay a thin cloth washer also under the metal one, to exert a sort of braking effect on the discs, preventing them from moving on their own. Now rotate the discs and at each half turn the lever should rotate the (T) and (H) discs one tooth exactly. See that you get this action correct. Where the divisional lines touch the inner circles, drill holes for the metal plug as done for the (T) and (H) discs.

The discs should now be neatly numbered, as in the view shown in Fig. 1. It is important, when numbering, that the figure 9 should be just above the crossbar (E) on the (U) discs, as shown in Fig. 3. The cover board can now be made.

This is a piece of $\frac{3}{16}$in. fretwood, cut to 6ins. wide and 16ins. long. A half plan of this is shown in Fig. 4, the right half, not shown, being identical. Draw a centre line across and mark the points which coincide exactly with the pivot screws of the discs.

At these points strike the arcs, the two lines to each being $\frac{1}{8}$in. apart. Note that the left arcs extend a little over the half circles, the extension at the top being 12 degrees. The protractor comes in handy here again. The right arcs are 6 degrees short of the half circles at top and bottom.

Windows

Mark out the windows to the sizes given, and then $\frac{1}{8}$in. inside these, cut out the openings. Bevel the edges on three sides to the full dimensions. Try the cover in place and if correctly marked and cut, the arc shaped openings should embrace 17 holes on the (T) and (H) disc and 10 holes on the (U) discs. At the pivot centres bore $\frac{3}{8}$in. holes. Now fix the cover board on with screws at each corner, and in the middle.

The scoring plug, Fig. 2 (I) is a 1in. wire nail, driven about $\frac{1}{2}$in. in a small bit of wood dowelling, then the head being filed off, completes it. Drive in the opposite end a small screw eye and fix thereto a short length of thin cord. Attach these cords to eyes driven in the cover board at about the spots shown in the general view of the scorer.

For Hanging and Scoring

The completed work can be fitted with wall plates at the rear for hanging the scorer, and then be stained, if desired, and varnished. An effective addition to the finish is to blacken the edges of the arc shaped openings and windows.

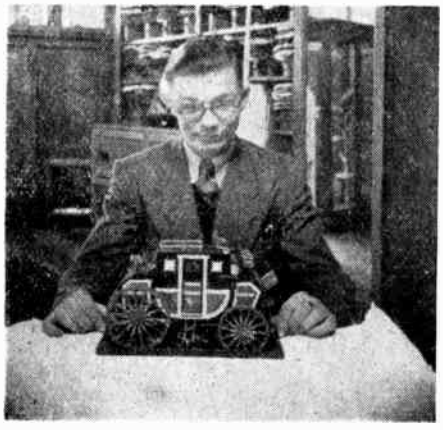
For quick scoring, paper dials should be glued against the scoring holes, as in the general view. These should be numbered from the top downwards, 16 to 1 for the (T) and (H) discs, and 9 to 1 for the (U) discs, the numbers being opposite the holes in the discs, showing through the curved openings.

In use, the discs are turned to the total of points, 301 or less. The numbers shown after scoring are those to be still gained—the usual practice. One point to be noted, after scoring, the scoring plugs can be left in the (U) discs, but never in the (T) and (H) discs.

The material required for making the article, apart from a piece of deal for the backboard and surrounding strips (the $\frac{1}{2}$in. by $\frac{3}{8}$in. ones) is the panels two K3 and one G4.

Two Unusual Pictures of Reader Interest

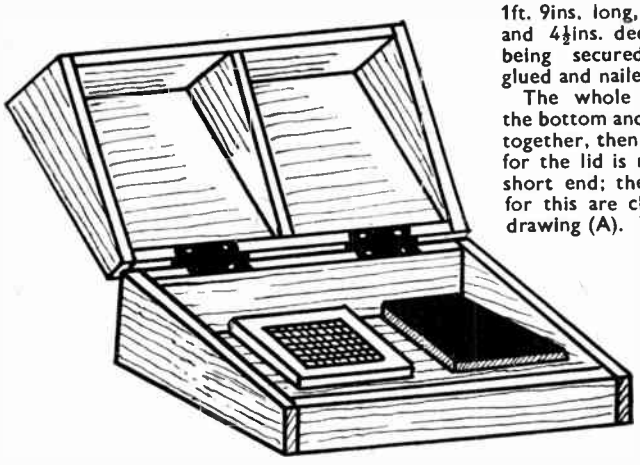
FROM the many photographs we receive, the two shown are of particular interest. The one on the right shows a pre-war Hobbies League Certificate owned by Mr. A. Faulkes of Addison Rd., Nechells, Birmingham. He writes—'My son and myself are very interested in fretwork. I have been a member of the Hobbies League before the war, and always had the books for years. I often wonder if the days will come back as the books were before the war. I have also made lots of toys with the help of my son Graham. I sent one of my models to Lewis's show for the best toys in Birmingham'.



THE other picture is of Mr. J. A. Fortune of Drayton Rd., Harlesden, N.W.10. With him is the popular model of the London-Holyhead stage coach he made. He made it when he was 16 years of age, without any woodwork training at all. In addition, he has completed the R.M.S. Britannia, The Halfpenny Galleon and a number of pieces of fretwork. Both our readers must be congratulated, and the pictures will, undoubtedly, be an encouragement to others to follow such examples.

Apparatus and all needs are contained with this

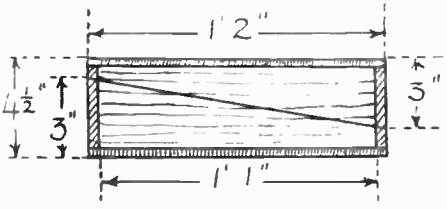
FLAT-BED DUPLICATOR



ALTHOUGH a cheap and easy method of reproducing written matter, the gelatine hectograph is not altogether satisfactory when a considerable number of copies have to be made. The flat-bed duplicator, on the other hand, gives an almost unlimited number of copies and, should the necessary stencil be cut on a typewriter, the finished work closely resembles typewritten matter. The handyman who is responsible for producing concert programmes, club magazines, and so on, will, therefore, find the duplicator an invaluable piece of equipment.

Self Contained

The model described below is self contained, being fitted into a carrying case that holds the duplicator, ink and roller, while a supply of paper can be stored in the lower half of the box under the stencil baseboard.



The first step is to prepare the case, using ½in. thick wood for the sides and three-ply for the top and bottom. Outside dimensions of this box are 1ft. 9ins. long, 1ft. 2ins. wide and 4½ins. deep, the corners being secured by ordinary glued and nailed butt joints.

The whole box (including the bottom and top) is fastened together, then the sloping line for the lid is marked on each short end; the measurements for this are clearly shown at drawing (A). This sloping line is cut across with a tenon saw at each end, then the cuts are carried down the sides of the box to separate the lid from the bottom. By making the box in this way the lid must, obviously, be a perfect fit for the bottom.

Framework

A strengthening partition of ½in. thick wood is then glued and nailed into the lid of the box, being situated exactly midway between the two short sides. A framework with outside measurements of 1ft. 8ins. by 1ft. 1in. is made up from ¾in. square wood in the manner shown at (B), and when complete, is glued and screwed inside the lower part of the box hard against the bottom of it. The corners of this framework are simply halved together while the middle rail is fitted by half-lap joints.

The baseboard that carries the stencil frame and ink slab is of three-ply and rests on the ¾in. framing. For the ink slab a piece of slate or glass measuring 8ins. long by 11ins. wide may be used, being held in place by a rebated wooden framework. A simpler method, however, is to use a clean piece of thin iron plate which may be screwed into place. The position of this slab can be seen from the sketch of the finished duplicator, the slab being shaded in black.

Plywood can also be used for the stencil frame. A panel measuring 10ins. wide by 1ft. 1in. high is needed, and from this a rectangle 8ins. wide by 11ins. high is sawn to leave a frame with 1in. wide sides. This framework is hinged along the inside of the bottom edge, so that the whole frame can either be raised or drawn down, so that it rests across the top of the baseboard.

Silk Gauze

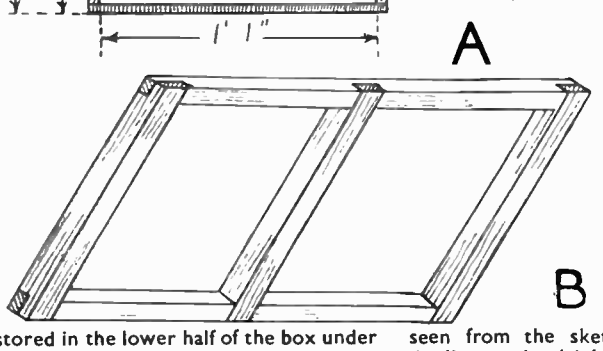
The under-side of the frame (i.e., that nearest the baseboard) has then to be covered, either with a special duplicating 'silk' that can be bought for the purpose, or with a piece of very fine-meshed gauze. This gauze must be stretched across the frame quite tightly, and is held in place by a few dabs of glue. Drawing (C) gives a view of the hinged stencil frame.

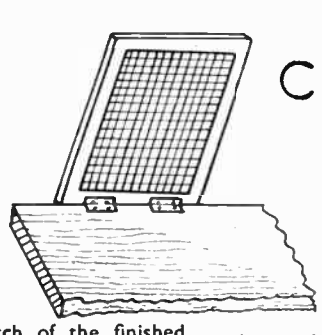
A rubber roller for spreading the ink can either be purchased or made up from dowelling. The actual roller is an 8in. long piece of 1in. diameter dowel over which a piece of old rubber hose-pipe has been fitted. A thin piece of metal ¾in. wide and 1ft. 1in. long is bent over at right-angles at each end, the two short arms measuring 1½ins. long.

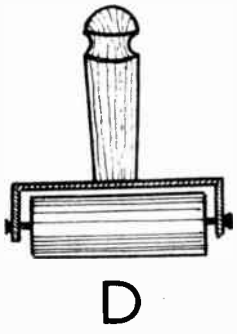
Handle Piece

A handle is shaped up from a length of dowel of suitable size, and is fastened to the centre of the metal by means of a screw. Short lengths of screwed rod (or even two stout nails) can be fastened through the arms of the metal brackets and into the end-grain of the rubber-covered dowel to enable the roller to run freely. A front view of the roller is given at (D).

The duplicator is then ready for a trial run. Waxless stencils can be purchased at almost any stationer's shop. If a typewriter is available the desired lettering can be typed (the ribbon being 'dropped' so the keys strike direct on to the stencil), or the wording may be written on the stencil with a 'stylo' pen, which is simply a piece of stout bone knitting needle sharpened to a pencil point. Illustrations may also be put in with the stylo pen.







In use the pen must be held firmly so that a clean impression is made on the stencil. When completed, all lettering

(*Continued foot of page 280*)

A few odd pieces of wood will make this novel

'DUMBO' LETTER RACK

THIS cheerful little letter rack is made from four simple fretted parts, locking together and glued for extra strength. Finish should be dark polished wood, or matt black.

The basic parts comprise one body, two legs and the ears. Both the legs and the ears can be drawn out from the dimensions given, the outlines being formed by a series of straight lines and circular arcs.

The body part is of irregular shape and is outlined with squares for easy duplication. Squares are ½in. By drawing a similar grid pattern on to the wood, the correct outline can be marked off.

Body Part

The body is cut from $\frac{3}{16}$in. material, taking care to form the three slots accurately. The leg slots, as can be followed from the grid, extend exactly 2ins. upwards above the base line or feet. The ear slot is actually at an angle of 30 degrees to the vertical. Drill a hole in the rear end of the body and into this glue a length of string for the tail, fraying out the end of the string slightly.

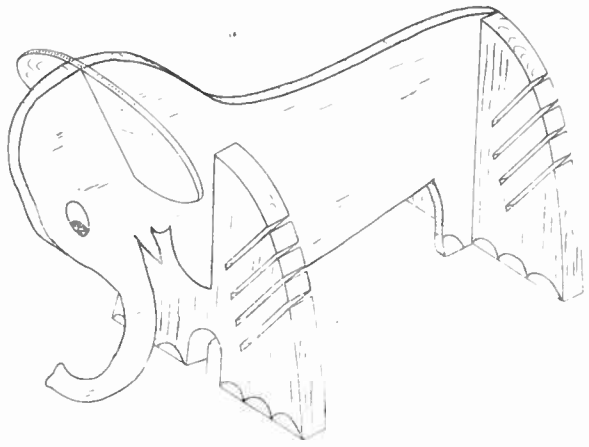
The front and rear legs are identical and cut from ¼in. material. The slots to carry the letters are sawcut carefully and filed or finished to approximately $\frac{3}{32}$in. width. They rake upwards at an angle of 60 degrees and are spaced ½in. apart.

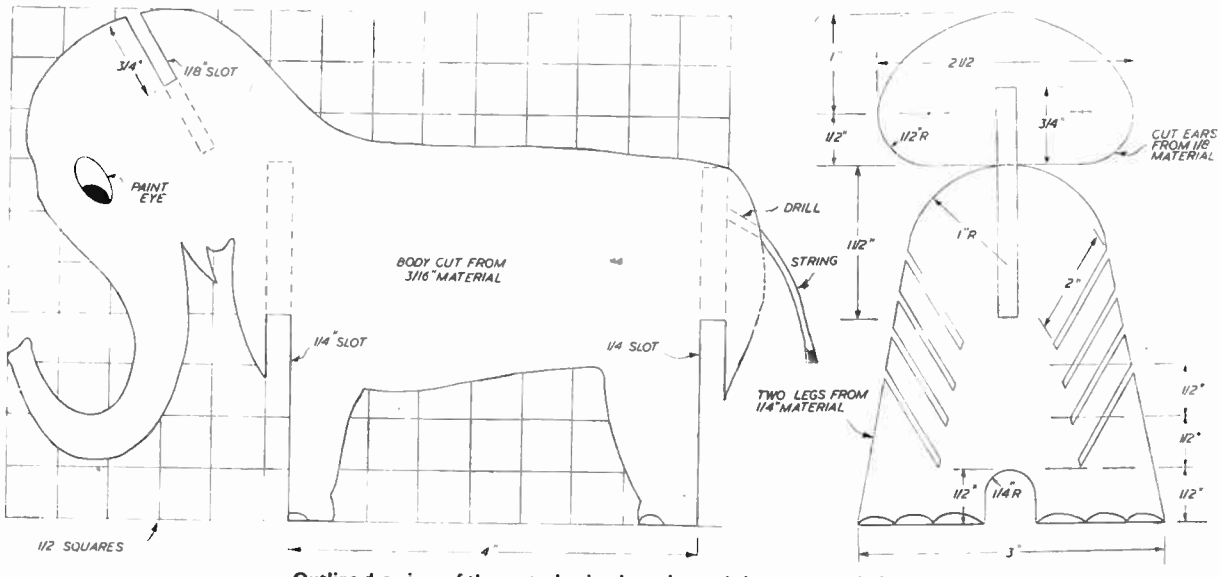
The ears are fretted out in one piece from ⅛in. material.

Assembly of the letter rack is then quite obvious. A thin coating of glue should be used to make all three joints permanent and the assembly left to dry before finishing and polishing.

It is suggested that the toe portions of the feet be scored into the wood, or painted in in white. The eye should also be painted in. Square edges can be sanded off the body, particularly around the head and trunk.

For a simple exercise in fret-working, the result is very pleasing, and the cost not more than a shilling or so. (339)





Outline drawings of the central animal portion and the cross stand pieces

---

Duplicator—(*Continued from page 279*)

and drawings should show up clearly when the stencil is held up to the light.

Some duplicating ink must be squeezed on to the ink slab and is worked round the roller until both slab and roller are evenly coated. A piece of blotting paper is laid over the stencil baseboard, the stencil is placed on it (right side upwards) and the stencil frame pulled down to cover the stencil. The inked roller is then run up and down the gauze a few times, causing the stencil to adhere to the fabric.

It may be necessary to run the roller over the gauze a considerable number of times before the ink penetrates the stencil properly, and by having some blotting paper beneath it much wastage of paper can be avoided. When the ink is flowing properly, put a small pad of duplicating paper in place beneath the stencil. Pull down the frame, draw the roller from top to bottom of the gauze, lift the frame, remove the duplicated sheet, and repeat the process as often as necessary.

When the required number of copies have been made, peel off the stencil and clean off all surplus ink on the frame with some paraffin oil. (345)

The SHIPMODELLER'S Corner

THIS week we are going to leave our sailing ship models and deal with one of the awkward jobs which we come up against when making models of the more modern types of vessel.

Our subject this week will be the making of the stanchions and rails which are used so much on modern ships.

For small models the method, which has the merit of simplicity and is at the same time effective, is to use fine cotton thread.

First make a jig as in Fig. 1. This is a strip of thin wood about 10ins. long and wide enough to take 3 or 4 rows of railings, according to the amount needed on your particular model.

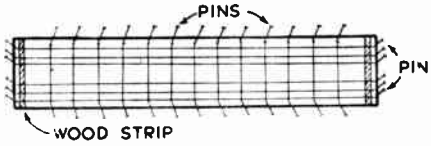


Fig. 1 A jig for thread rails

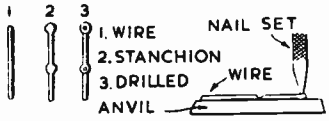


Fig. 2—Realistic stanchions

Mark off the distance apart for your rails on each end and along each side edge, the points for your stanchions; drive in at each point a 'lill' pin or fine fret pin.

Now glue a strip of thin wood across each end of the jig; this is to raise the rails off the jig. Fasten your thread from pin to pin lengthways for the rails and across from pin to pin for your stanchions. Give the whole a coat of shellac—1 part of shellac dissolved in 2 parts methylated spirit.

When dry cut out your lengths of rail with a razor blade and glue in place on your model. They can be painted before fixing if required. You will be surprised how firm rails prepared in this way can be, for small scale models.

For larger models use thread for rails and slivers of bamboo for stanchions, leaving the bamboo stanchions longer at the lower end. These can then be inserted in small holes drilled in the deck and glued there. Bamboo can be slit and scraped almost to the thickness of a hair with a single-edged razor blade.

When using bamboo for stanchions it is advisable to drop a spot of glue or cement on each point where the rails cross the stanchions, before applying the shellac.

And now to large scale models. For these fine wire can be used for stanchions, cut in lengths and flattened with a nail set where the rails are to pass through, as in Fig. 2. Drill holes for rails before fixing in position on the decks. Pass fine wire for the railings through and drop a spot of 'Solderine' cold solder on each end where the rail finishes off; this will secure them firmly.

Fine wire can be obtained by untwisting some ordinary electric light flex, or fuse wire can be used.

Experienced modellers with a precision lathe can turn correct stanchions in brass for large scale work, but few modellers possess the necessary equipment. For them, here is a simple method which is very realistic in its effect.

Obtain some small cotter pins that will suit the scale of your particular model and make a jig as in Fig. 3. This consists of two small blocks of metal. On one face of each block file a shallow vertical groove of a depth half the diameter of your cotter pin. For example, if your cotter pin is $\frac{3}{32}$in. in diameter, your groove will be $\frac{3}{64}$in. deep.

Our interesting and regular feature

by 'Whipstaff'

Another groove or grooves according to the number of rails, is filed in at right angles to your first groove. By placing a wire or fine nail between the cotter pins where the rails are to pass through and squeezing in the jig between the jaws of your vice, the cotter pins will take the correct shape for stanchions.

Never throw away any jig once made, you never know when you will need it again.

Stanchions can also be made of twisted wire, as in Fig. 4. Naval type by filing nicks in brads and soldering the wire across as in Fig. 5.

Plain wire stanchions can be inserted in position and by using two threads twisted between each stanchion a very effective set of railings can be made.

Ornamental rails and stanchions for other types will be treated in a later article.

In closing, may I thank the many readers who have written us of the appreciation of this feature and those who have sent us their problems? Do continue to send your queries and also any suggestions for any aspect of ship modelling you would like to see included in your own section of our paper.

Fig. 3 Jig and cotter pin

Figs. 4 and 5—Brads for naval type

Errata—

On page 91 of 'Hobbies Weekly', November 8th there is a small printers' error. In our review of 'The Ship Modeller's Workshop', paragraph 3, read '$\frac{1}{8}$in. scale and upwards' instead of '$\frac{1}{3}$in. scale and upwards'. It is quite practical to 'joggle' planks at $\frac{1}{8}$in. scale.

QUESTION AND ANSWER

By 'Whipstaff'

Question: *What are 'Bilge' pieces?*

Answer: Bilge pieces are long pieces of iron or wood affixed to the outside of the bottom of the ship, in a position so as to offer resistance to the water as the vessel rolls and thereby lessen the motion.

Also they decrease the diameter of the turning circle of the ship, by preventing the 'skidding' motion of the vessel as the helm is put over.

Question: *What are studding sails?*

Answer: These are sails set outside the square sails on each side of the ship. They are spread at the top upon the yards, and at the bottom by booms; they are set upon each side of the foresail, fore-topsail, fore-topgallant sail, main topsail and main-topgallant sail.

They are named by their respective masts; as—main-topmast studding sail, fore-topgallant-studding sail, etc.

How the handyman can make for himself

A MODERN PANTOGRAPH

THE design of pantograph illustrated differs somewhat from the more common pattern; it is based on the lines of a professional instrument, and efficient in use. Readers who require to reproduce, natural size, any design, as many do, will find it invaluable. It is capable, also, of enlarging or reducing designs as well, and is reasonably simple to make.

Fig. 1 shows the instrument ready to copy natural size. For making it, cut

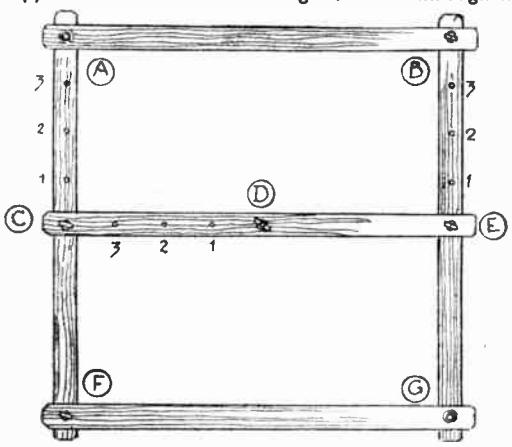


Fig. 1—The completed article

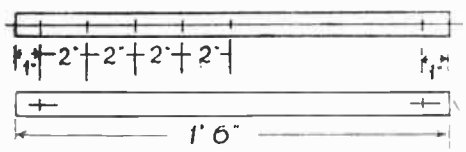


Fig. 2—Rails for marking

five strips of $\frac{3}{16}$in. fretwood to a width of 1in. and lengths given in Fig. 2. On each, at 1in. from the ends, make a mark with an awl, where the holes for the joints will come later. On three strips only, prick off the points shown in the upper illustration, and at these points bore $\frac{1}{8}$in. holes through. The end holes will be bored now to suit the particular style of joint.

The Joints

At Fig. 3 some five of these joints are drawn, and it is important to use care over the matter to ensure free running of the instrument. The joint at (D) is the centre of movement. From the hardware shop buy five screw eyes 1in. long, exclusive of the rings or eyes.

With these a few brass washers with $\frac{1}{8}$in. holes will be needed. Smooth the washers with emery cloth to remove any edge ridges or burrs, and ensure an easy motion of the joints. With joint (D) a piece of hardwood 1in. thick and 2$\frac{1}{8}$ins. long will be wanted. This is shaped as shown, the thinned ends to be afterwards screwed down to the board.

Now with a washer above and below the middle hole in one of the strips, push a screw eye through, as shown, and tighten enough to allow free motion, and no wobbling.

For the joints at points (B), (C), (E), (F) a screw eye and three washers will be required, also a 1in. disc of fretwood for each joint. It will be seen from the illustration that a washer goes between the strips, one underneath and one under the screw eye. The latter goes through the lot and is driven in the disc below.

It may be advisable here to use a piece of thicker wood for the discs, if any is to hand, as no sharp point of the screw eyes must protrude to scratch the paper underneath, when the instrument is in use.

The joints at (A), (G) are shown in Fig. 4, the left side illustration depicting a side view of the joints and next to it a detail of their construction. For each a 1$\frac{1}{4}$in. piece of brass tubing will be needed, with an internal diameter of $\frac{1}{4}$in. or $\frac{5}{16}$in. To each piece of tubing, three thin metal washers will be required,

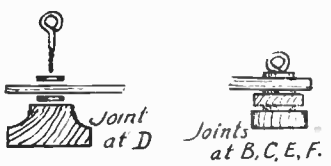


Fig. 3 Detail of the joints

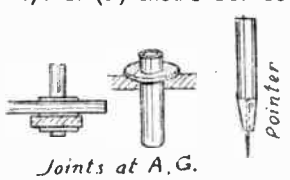


Fig. 4— Fixing joints and pointer

about $\frac{1}{8}$in. diameter, and with a hole just large enough to pass over the table.

Clean the ends of the tube, and as shown in the detail sketch, support the tube in a vertical position with $\frac{1}{8}$in. of it sticking up. A suitable hole in a piece of scrap wood will be a good support.

Press one of the washers over and solder it to the tube. Remove tube, and having previously bored suitably sized holes in the ends of the selected strips, push the tube through from beneath. Insert a washer between the strips, place another above, and solder that to the tube also. Keep all close together while soldering the top washer, then the joint should be free to move easily enough, but not to shake at all.

The Pointer

All woodwork should now be glasspapered, if not done before. There is really no need to varnish it, as it is better left plain with no danger of varnish sticking to the various joints. To complete the instrument, a pointer will be needed. This is a short piece of $\frac{1}{4}$in. dowel rod, with a thin nail driven in one end, filed to a blunt point. It is shown in Fig. 4.

Gently rub the point over fine emery cloth to prevent it scratching the design as it traces its outline. A pencil will also be wanted, obviously, and if too thick to pass through the tubes at (A) or (G) it can be easily glasspapered down a little.

Both the pointer and pencil must be a fairly tight fit in the tubes, and if these are slit down a little at the top, like a pencil protector, they will grip both pencil and pointer and hold them securely.

In Use

In use the block under joint (D) is screwed to the board; somewhere about the middle would be about the best place. The holes in the strips should be numbered, as shown in the drawing of the instrument, and the design pinned under (A) and the paper for copying it under (G). As arranged the pantograph will reproduce the design its natural size, the pointer being held between the fingers of the left hand and traced over the design, and the pencil, at (G) in the right hand, pressed lightly to the paper to copy the design.

For enlarging, shift the crossbar at the middle to any of the side holes, according to the degree of enlargement required. The screw eye at (D) should also be shifted along to a hole of the same number. Then proceed as before. For reducing, shift the pointer to (G) and the pencil to (A). A few trials will soon show the degree of reduction or enlargement possible.

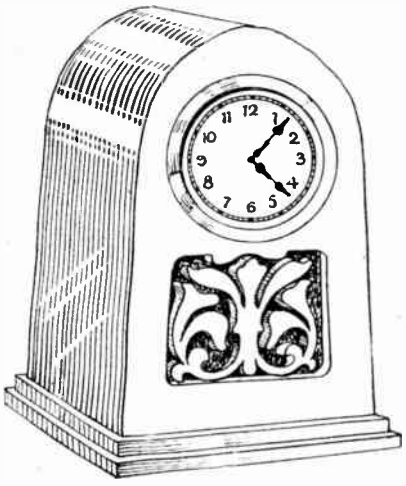
If any particular reduction or enlargement, other than that to be obtained from the existing holes is required, intermediate holes can be bored to suit.

If the instrument is to be used on a proper drawing board, it may not be considered wise to screw it to it, as the holes will injure it possibly for future and other uses. In this case, screw a strip of stout metal to the base of the block at (D), the metal extending $\frac{1}{4}$in. over each end. In these extensions drill fine holes and secure the block to the drawing board with a drawing pin, pushed through the holes in the metal strip.

For this instrument, a piece of fretwood 5$\frac{1}{4}$ins. wide and 1ft. 6ins. long will provide enough wood for making. A thickness of $\frac{3}{16}$in. will be quite enough. The discs, etc., can be cut from any scrap bits of wood available.

With a few pieces of fretwork you can easily make a

NEW CASE FOR OLD CLOCK



THERE must be quite a number of workers who would wish to undertake the job of making a new clock case for a movement which they have by them. Or for a movement the case of which has become broken or out-of-date. Now, here is a design for a case of quite modern outline, and with little added decoration. Some may even prefer the face of the case to be plain without any panel design, in which case the polishing or finishing is much simplified.

The size of the completed case here shown is, height 8½ins., width 5¾ins., and depth 3½ins. The actual case itself, however, will measure 8ins. high, 5ins. wide and 2½ins. deep, and wood ¼in. thick is used throughout. The general construction of the case is seen in Fig. 1 and a general description may be given to clear any point not quite apparent in this detail.

The Base

The base is made of two pieces, as (A) and (B), (A) being 5¾ins. by 3½ins., and (B) 5½ins. by 3ins. If needed, an economy in wood can be effected by having the lower member (A) made in 1in. strips mitred at their ends to an angle of 45 degrees and glued to the underside of piece (B).

If thicker wood, say, ⅜in. or even ½in. could be spared for the lower base (A), this would be a distinct advantage, both in appearance and for its value in giving weight to counterbalance, the weight of the clock movement.

The front (C) of the case and the back (D) are identical in outline, but the front will have the two openings made, as shown, the back only having the one circular opening for the reception of the movement. The square opening in the front will be backed later by a panel of wood about 3½ins. square, which will take the fretted overlay to be glued to it.

The front and back of the case are held together by the four pieces (E) which measure about 1½ins. by 2ins. Note here the grain of the pieces run upwards and not across, so that the glue will hold to the front and back of the case better than it would do if the grain ran from back to front of the pieces. For it is well known that glue will not bind satisfactorily to end grain.

These pieces, be it noted also, will be glued with their faces flush with the edges of front and back, in order to take the side covering pieces which consist of thin wood bent to shape at the top of the case and glued on. At the top point of the case there must be a widish rail (F) to take the meeting edges of the sides.

Top Rail

This rail is best made of two pieces of wood ½in. or so wide by, of course, ¼in. thick, and glued together and chamfered to the shape of the case at that point.

The wood for the sides of the case may be 1/16in. thick, cut rather wider than the case itself, so after gluing on, the overhanging edges may be cut away and glasspapered to the true surface of the front and back of the case.

In Fig. 2 we show a useful diagram for getting the true shape of the case and for the decorative panel on the front. On the right hand side of the diagram the squares are ¾in., and when these are drawn out either on the wood direct or on to the paper, it should be a simple matter to complete the outer shape of the case and the panel design by following these carefully. Complete the whole design of the panel and transfer this to the wood.

Decoration

Next cut the decorative work in the usual way with the fretsaw and then glue it down to the backing board.

The oak leaf design shown in Fig. 3 would look well as a piece of simple carving. Outline the leaves, etc., on 3/16in. or ¼in. wood and cut them out carefully. Then glue them to the backing board in the usual manner and make the carving complete by using a sharp penknife or small carving chisels. Note the veins of the leaves, how these are cut in and the recessing brought up to them.

Round the acorns and their cups, and make little cut-in recesses to show their roughened surface. Round the stems also and then smooth off certain places with a piece of fine glasspaper glued round a piece of 3/16in. diameter rod. The whole panel when complete and with its carved overlay attached, will be glued inside the clock case and this then will be attached to the base by means of screws and glue.

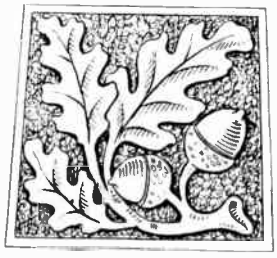


Fig. 3—Carved decoration

Polish Finish

The case and its base can now be finished in any desired way, either french polished after being suitably stained according to the kind of wood that has been used, or stained and wax polished. Care must be taken not to get any of the stain and polish or the wax on the matted background surrounding the fretted or the carved panel.

The raised surface of the fretted panel could, however, be coated and polished, if desired, to make the design stand out prominently from the background.

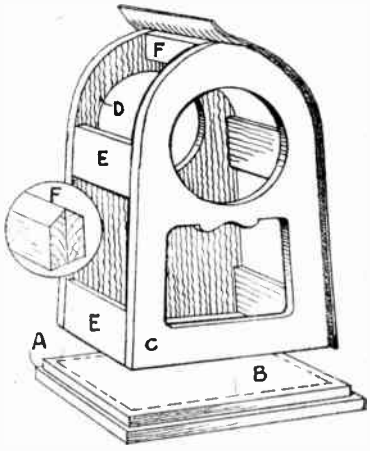


Fig. 1—General construction

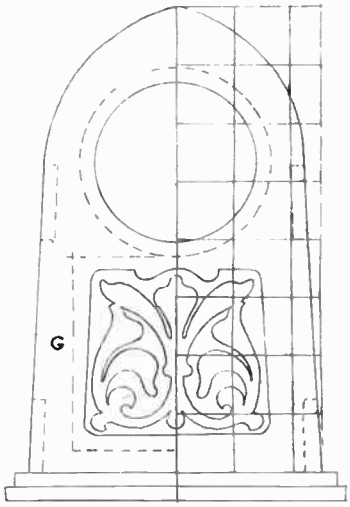


Fig. 2—Plan view of front

Experiments with less common lead compounds in HOME CHEMISTRY

THE compounds of lead stand out in the chemist's mind because of the high proportion which are insoluble or sparingly soluble in water. When thinking of this we recall the commoner ones, such as lead chromate, carbonate, sulphate, iodide and chloride. This property extends to many of the less familiar compounds with which this article deals. Notable exceptions are the two basic acetates of lead formed by dissolving lead monoxide (litharge) in boiling lead acetate solution.

Reactions

Try this in a test tube, adding the oxide in very small portions until no more dissolves. If you filter the solution you will find it still gives the reactions for lead acetate, but if you pass in carbon dioxide it gives a white precipitate of lead carbonate, which normal lead acetate does not. So avid for carbon dioxide is this solution that it quickly becomes milky by absorbing the carbon dioxide present in the atmosphere. This property gives us a useful test for carbon dioxide.

We all know the two common oxides of lead, litharge and red lead. There are, however, three others, two of which we can prepare quite easily. These are lead dioxide and lead sesquioxide.

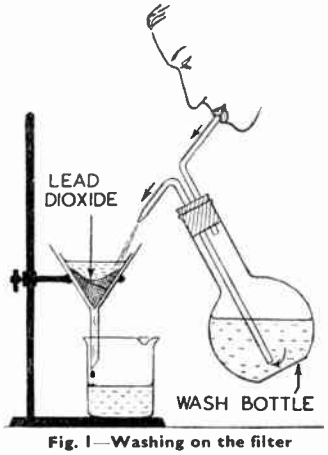


Fig. 1—Washing on the filter

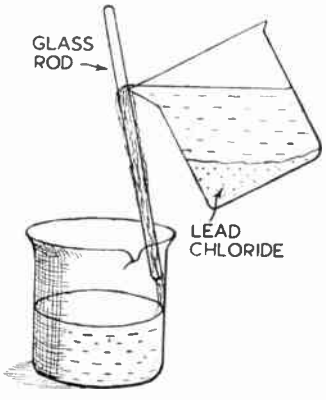


Fig. 2—Washing by decantation

Lead dioxide is brown and is the brown paste we see in accumulators. The most convenient way of preparing it is by acting on red lead with strong nitric acid in the cold, or by boiling red lead with dilute nitric acid. The red lead is converted into brown lead dioxide and lead nitrate goes into solution (if you filter and evaporate to small bulk, white crystals of lead nitrate will crystallise out). Filter off the lead dioxide, wash on the filter with water, then empty it out into an evaporating dish and dry it in the oven.

This brown oxide is a powerful oxidising agent, as you may readily see by mixing a gram or two with a fifth of its weight of sulphur and grinding the mixture in a warm mortar. The mixture becomes red hot and forms lead sulphide.

Lead sesquioxide is orange in colour. To prepare it add sodium hydroxide to lead acetate solution. This precipitates a hydroxide of lead. Warm the mixture but do not boil. Now add more sodium hydroxide a little at a time until you have a clear solution. Add sodium hypochlorite and allow to cool. The orange lead sesquioxide is gradually precipitated. If you wish to keep the specimen of this lesser known oxide, filter and wash it, then dry it in the oven.

Keep Your Chemicals

Indeed, it is good practice and sound economy to keep *all* the stable chemicals you prepare, for often it happens that you need a small quantity for a test or experiment. To have it at hand is better than having to set to work to prepare it.

It is also useful to keep an experiment book, noting down how you prepared each chemical, so that when you have used up a specimen you can make a fresh supply without having to do a lot of looking up. Number each experiment in the book and write the experiment number on the specimen tube label.

What Happens?

Here is a question for you. What happens when sulphuretted hydrogen is bubbled through a solution of a lead salt? Lead sulphide is formed? Not always. With lead chloride solution instead of the black lead sulphide we get a yellow or red precipitate of lead *chlorosulphide*. Only when you pass in an excess of sulphuretted hydrogen is it converted into lead sulphide.

Owing to this danger of overshooting the mark you will find the experiment easier to control by using sulphuretted hydrogen *water*, which you can make by bubbling the gas through water for about a quarter of an hour (do it outside, or the family will complain!).

Lead Chloride

To make the lead chloride solution mix lead acetate with sodium chloride, wash the white precipitated lead chloride by decantation and boil it with enough water to dissolve it. When the solution is cool pour off from the portion of the lead chloride which has crystallised out and add to it gradually sulphuretted hydrogen water until the liquid is opaque, filter off the precipitate and to the filtrate add more sulphuretted hydrogen water.

Repeat this process until the filtrate begins to give a black lead sulphide precipitate instead of a yellow or red. Reject this last portion, of course. Wash the lead chlorosulphide on the filter and dry in a moderate oven.

Lead Oxychloride

Another strange lead salt is lead oxychloride. Take some lead monoxide and boil it for several minutes with twice its bulk of sodium chloride which has first been dissolved in a little water. Filter it off (keep the filtrate), wash it, dry it, then heat it in a crucible. It will become brilliant yellow. This makes a good pigment and is known as Turner's yellow. If you now test the filtrate with red litmus paper you will find the paper becomes blue, thus showing an alkaline reaction. Sodium hydroxide has also been produced in the reaction. This method was once used to manufacture caustic soda.

Lead Thiosulphate

Lastly, let us examine lead thiosulphate. Add sodium thiosulphate to lead acetate. White lead thiosulphate is precipitated. Now add more sodium thiosulphate. The precipitate dissolves. On account of this solubility of lead thiosulphate in excess of the precipitant we must take care not to add too much sodium thiosulphate in preparing this lead salt.

Repeat the experiment, adding the sodium thiosulphate a little at a time, allowing the precipitate to subside after each addition. When a fresh addition to the clear supernatant liquid causes no further precipitate you may filter and wash the lead thiosulphate and dry it.

(283)

Cleaning Coins

IF you have an old coin do not emery paper it, as this rubs off the writing. The best way is to put it into a potato. Leave it for a day or two, but keep moving it in different places. In time the coin cleans. Then rub over with a soft duster and you will see the printing on it.

MISCELLANEOUS ADVERTISEMENTS

FREE set of 5 Reunion stamps to all approval applicants. — Oxley, 36 Columbia Ave., Sutton-in-Ashfield, Notts.

40 DIFFERENT stamps free, including Silver Wedding, U.P.U., Victory, Silver Jubilee, Coronation, Pakistan, etc. Send 3d. postage and request approvals. —J. F. Smith, 39 Manor Park, London, S.E.13.

PERFORATION gauge free. To all applicants for our approvals. Ideal for beginners and medium collectors. Send 2½d. stamp for trial selection.—Box No. 33, Hobbies Weekly, Dereham, Norfolk.

CIGARETTE cards. Mixture packets, 6d., 1/- and 2/6. Ask for lists of sets.—Verity, 193 Sandford Road, Bradford, Yorks.

PENNY Black and Sir Rowland Hill on stamp of Cuba, absolutely free. Request approvals. — Hubert Rajski, 211b Thornes Road, Wakefield.

GIGANTIC stamp packet for approval applicants. Catalogue value over 5/-. Contains Roosevelt and Gandhi Memorial Commemoratives. Airmails, including jet bomber, pictorial, mint Colonials, Cayman Isles, Kenya, Dominica. Plus 50 different foreign and Colonial. Price 6d., postage 2½d.—W. O. Took, 2 Cowper St., Hove, Sussex.

FREE—stamps catalogued 5/- to applicants for ½d. approvals.—Cox, 17 Stoneleigh Park Road, Ewell.

STAMPS FREE!! Twenty unused (2½d.).—G. H. Barnett, Limington, Somerset.

BE Taller. Quickly! Safely! Privately! No appliances—no tablets—no dieting. Details, 6d. stamp.—Malcolm Ross, Height Specialist, BCM/HYTE, London, W.C.1.

MODELS. You can make lasting stone-hard models with Sankey's Pyruma Plastic Cement. Supplied in tins by Ironmongers, Hardwaremen and Builders' Merchants. Ask for instruction leaflet.

TRANSFERS for decorating toys, trays, furniture, fancy goods. List and samples, 3d. Flowers, pixies, dogs, nursery rhymes.—H. Axon Harrison, Jersey.

LEARN Shorthand by February 28th (1 hour's study nightly). 1st lesson, 2½d. stamp.—Duttons (Dept. HB), 92 Gt. Russell St., London, W.C.1.

DOLL'S House fittings and papers; send S.A.E. for list. Doll's House plan special; send 2/6. Trade supplied.—Zimplan, 88 Ware Road, Hoddesdon.

WHEELS for Toys, and other accessories. Full lists will be sent on application to The Joyden Toy Co., 193 Chase Side, London, N.14.

MAKE your own Jig-saw Puzzles. Fine Art Pictures, various reproductions and sizes. Also suitable for framing. Stamp for full list.—Joyden Toy Co., 193 Chase Side, London, N.14.

RUBBER Tyred Metal Disc Wheels finished in red, green or blue enamel. 2ins., 2/6; 3ins., 3/- per set of four. Post paid. Other sizes available up to 9ins.—The Joyden Toy Co., 193 Chase Side, London, N.14.

LORRY Kits, 4 mm. and 7 mm. scale. Also large range of spare parts from which to build to your own design. Send for fully illustrated catalogue, price 1/-.—Wilson's Lorries Ltd., 6 Gt. Winchester Street, London, E.C.2.

BLUSHING, shyness, nerves, self-consciousness, fears, ended. Details under plain cover, 1d.—Stebbing Treatment, 28 (HB) Dean Road, London, N.W.2.

100,000 Government Surplus bargains. Inter-room telephone sets, ideal household (sick-room/kitchen, etc.) use, 8/6, post 6d.; single bell flex, 25 yds., 1/-, post 6d.; sponge rubber strip, approx. 18ft.× 1¼ins.× ⅝in., 2/-, post 9d.; aluminium rivets, approx. 1 lb. assorted, 2/6, post 6d.; 12 volt drills (work from car battery), 10 amps., 19/6, post 1/6; huge stocks of electrical motors, switches, resistances, etc., etc. Send 3d. stamp for full list of bargains.—Milligan's, 24 Harford Street, Liverpool, 3.

PLYWOOD offcuts. Birch and Gaboon in various thicknesses. Handy sized parcels for the cabinet, toy, model maker, and all handicrafts. Parcels made up in £1 and 10/- lots. Carriage paid. Send P.O. to Reeves, Plywood and Timber Merchant, 33 Front Street, Monkseaton, Whitley Bay. Tel. W.B. 4677. Parcels are now despatched on day of receiving order.

I MADE big money, so can you. Enclose envelope.—H. Wamsteker, Box 34, Wynberg, Cape Africa.

£5 to £20 weekly earned at home, running your own Mail Order business. Details, 1d. — Stebbing Publications Ltd. (HB), Naphill, High Wycombe.

FASCINATING and profitable hobby, casting ornaments, toys, etc. You can easily make these yourself. Paints, brushes and all accessories. Illustrated catalogue of 700 Moulds, plus latest list of Rubber Moulds, with instructions, 9d., post free.—Cock of North Moulds (H), 140 Hollings Road, Bradford.

AMERICAN Magazines post free for one year. Popular Mechanics, 32/-; Popular Science, 28/6; Mechanix Illustrated, 22/6; Popular Homecraft, 18/-. Stamp for full list of others.—Willen Ltd., (Dept. 57), 101 Fleet St., London, E.C.4.

PLYWOOD and Timber Offcuts for sale at very cheap prices. Veneered oak plywood panels, etc. Japanese Oak. Bumper list, 1d. S.A.E.—Dept. 'W' JDD. Storage, 71 Northcross Road, S.E.22. Tel. BRIxton 7441.

MAKE money! Ply offcuts, 3/-, 5/- and 10/- parcels. — Mayco (D), 117 Station Rd., Sutton Coldfield.

USE spare time on profitable home-work making fancy goods. Write for free booklet.—(Area 544), 54 Southgate Street, Leicester.

BE Taller in 14 days or money back. Details, 1d.—Stebbings System, 28 (HB) Dean Road, London, N.W.2.

HOMEWORKERS required, either sex, light assembly. Part or full time. S.A.E.—Esprey, Box 18, 41 Wade Street, Lichfield.

PERSPEX and acetate, cut any size from 2/6 sq. foot.—W.M. Products, 2 The Mall, Ealing, W.5. Eal. 3881.

MAGICIANS Tricks, crazy cut-outs, only 1/3; parcels, 5/6. An evening's entertainment. Lists, 3d.—De Hempsey, 363 Sandycombe, Kew Gardens, Surrey.

SCARCE Hong Kong Centenary stamp free. Stamp for pictorial approvals.—G. Smith, P.T.S., 95 Ocean Road, S. Shields.

ARTIFICIAL Marble. Entirely new plastic for casting ash trays, book-ends, wall vases, statuettes, etc. Easy to use, simply mix powder with liquid. Sets granite hard with scintillating crystalline structure very closely resembling marble or alabaster. Highly heat resistant, impervious to water. Any type of natural 'veining' can be simulated in any colour. Also Synthetic Rubber Moulds. Liquid preparation for making permanent elastic moulds for repetition casting plaster wall plaques, etc. Send 1/- for full details of this easy, fascinating and profitable hobby. Money refunded to bona fide enquirers.—Dept. H., Karlena Art Stone Company, 55 Deansgate Arcade, Deansgate Manchester, 3.

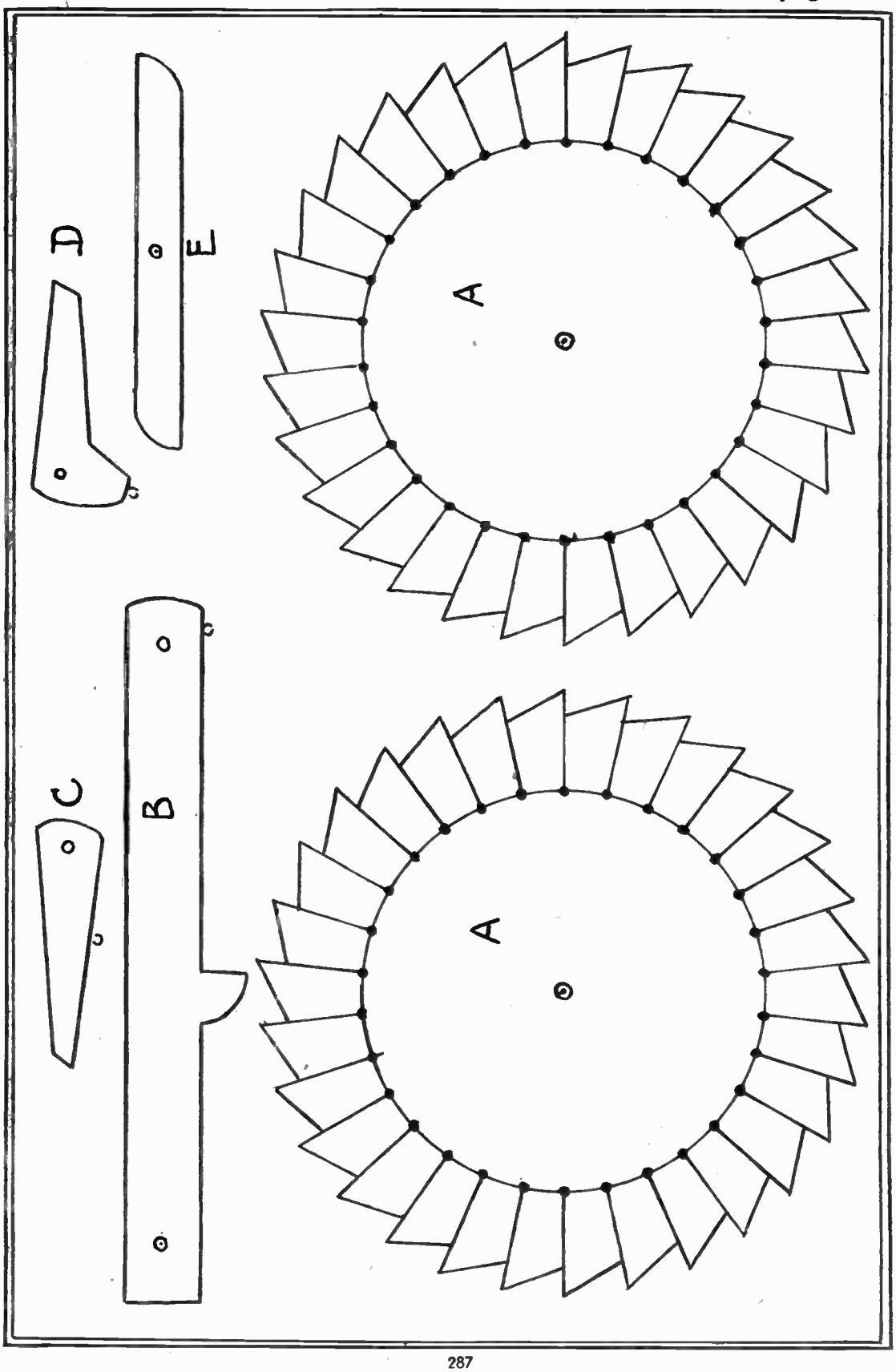
HOME Watch and Clock Repair Outfit. Includes watchmaker's magnifying eyeglass, tweezers, screwdrivers, oilers, oil, brush, dusting powder, plus illustrated explanatory book. Watch and clock repairing simplified. In container, 12/9 inclusive.—D. Bolster (Dept. H), 5a Station Parade, Ashford, Middx.

LEARN Self defence quickly or money back. Details of Wharton Course, 1d. — Stebbing Publications (H), 28 Dean Road, London, N.W.2.

9.5 Film Library, projectors, films, for sale. Stamp for lists.—Wayland, 223 Longley Road, Tooting, London.

HARDWOOD Ball Beads, ⅜in. diameter, suitable for children's counting frames, etc. 5/3 per hundred, plus 1/9 P.T.—Joyden Toy Co., 193 Chase Side, London, N.14.

CV102 Crystal diode. New, guaranteed, 3/6, postage 2½d. Fixing brackets, 3d. Recommended for 'Hobbies' crystal set; wiring instructions for reliable set. Send stamp for lists, including copper wires, enamelled, silk, cotton covered; B.A. screws, nuts, washers, headphones, radio publications, Paxolin type tubes, Ebonite and Bakelite panels, rods, etc.—P.R.S., 33 Bourne Gardens, London, E.4.



Printed by BALDING & MANSELL, LTD., London and Wisbech, and Published for the Proprietors, HOBBIES LTD., by HORACE MARSHALL & SON, LTD., Temple House, Tallis Street, E.C.4. Sole Agents for Australia and New Zealand : Gordon & Gotch (A'sia) Ltd. For South Africa : Central News Agency Ltd. Registered for transmission by Canadian Magazine Post.