

Hobbies

WEEKLY

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Miniature floating models of TUG AND BARGES

WHAT fun could be got from the miniature Steam Tug and Barges shown here. All can be made from a few odd pieces of fretwood or salvaged timber, and when painted in bright colours, they would be suitable for sailing in the bath or in the yacht pond.

It will be noted from the plan, Fig. 1, that the tug is made broad of beam so it will sail well and not easily turn over in the water. There is a simple little cabin block fitted to the deck, and a realistic bridge. These two parts can be painted with windows to look like the real thing.

Additional Fittings

Behind the cabin there is the hawser support, the rope which is used for towing the barge passing over this and connecting to a screw

eye in the rear of the cabin. If desired a number of fittings and details may be added, and, of course, both the tug and the barge could be made larger, keeping to the main proportions shown in the plans, Figs. 1 and 5.

To make the boats float well, and sufficiently high out of the water, each is made of three distinct pieces as Figs. 2 and 3 show. In the tug there is piece, A, of $\frac{1}{4}$ in. wood, then piece, B, $\frac{1}{4}$ in. in thickness and having a square cut from its middle to the measurements given in plan, Fig. 1.

Note in this plan that the sides are carried out square to the stern of the boat for simplicity sake. In Fig. 3 the sides are carried to a gradual curve. On the top of B there is the deck, C, forming the third layer, also $\frac{1}{4}$ in. thick, as piece A. The shape of

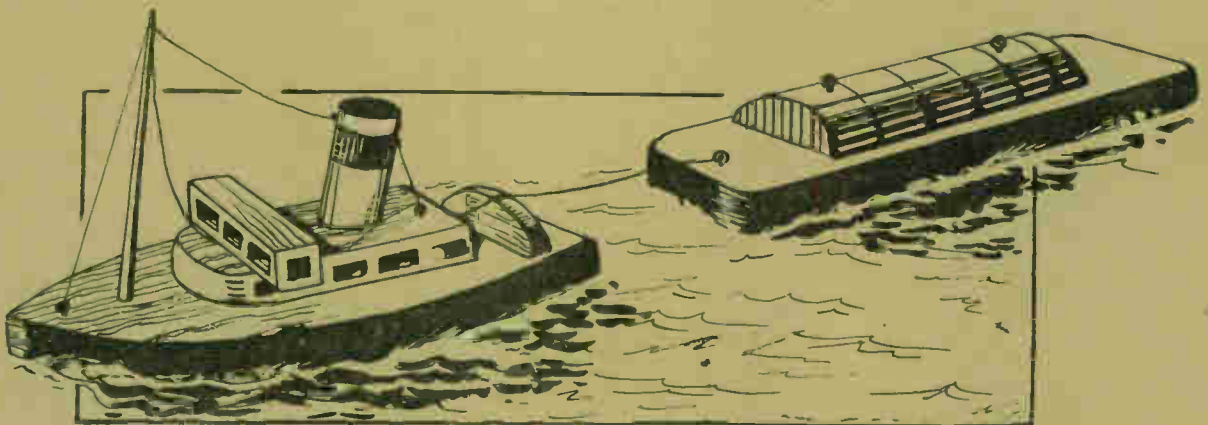
the hull can easily be plotted from Fig. 1.

Even Sides

Having cut this out with the fretsaw, the other two pieces can be obtained by drawing round direct on the wood. Before gluing the three pieces together see the surfaces are perfectly level and clean, so that when the glue is brushed on, it will spread evenly and thus hold firmly.

The piece, D, bearing the funnel and the bridge, is shown in Fig. 4 and it is $\frac{1}{4}$ in. thick. The bridge is also $\frac{1}{4}$ in. thick, $2\frac{1}{2}$ ins. long and $\frac{1}{4}$ in. wide. The funnel should be about $\frac{1}{4}$ in. in diameter and cut at an angle to slope as in the detail.

The hawser support is shown in detail in Fig. 4 and may be fastened to the deck with two fret-pins.



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The plan of the barge is given in Fig. 5. Proceed in the same way as for making the hull of the tug, except that the opening is made in the two top layers of wood as, F and G, in Fig. 2. The top opening is afterwards

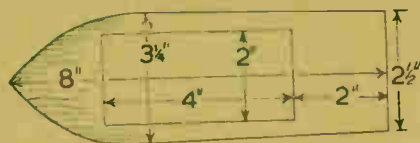


Fig. 1—Plan of tug deck

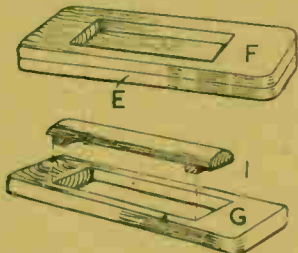


Fig. 2—Parts forming the tug

covered with a loose block, I, which is intended to represent the hatchway covers.

Two narrow strips of wood cut to the same width as the opening and nailed on the underside of the block will hold this in place.

It should be noted now that as the

three pieces of both tug and barge are glued together, they will need some extra holding before they are to become watertight. A number of brass fret pins or small screws should, therefore, be driven in near

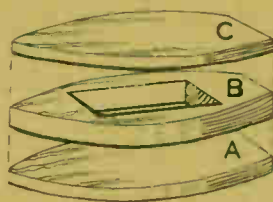


Fig. 3—The curved sides



Fig. 5—Plan of barge piece

the edges of the hulls and at close intervals to hold the layers well together.

It only remains now to give both boats a thorough glasspapering, first with coarse paper and finishing with a fine grade.

The sides and bottoms of each

craft will require at least three coats of paint to make them watertight, but the decks, cabins, etc., need only have two coats, one a finishing coat of enamel. The inside or hold of the barge as well as the decks should be painted brown, as should the cabin and bridge of the tug.

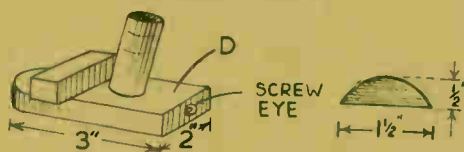


Fig. 4—Bridge deck, funnel and hawser holder

The outer sides of the tug and the barge should be painted black, while the funnel could be cream with a red banding. The mast should be of 1/4 in. round rod tapered towards the top. It should be painted brown, as also would the hawser support.

If there is sufficient area of water to sail them, two or even three barges might be made and held by "cables" to the tug, just as one sees them, almost in clusters, on the river Thames and canals about the country.

Painted in bright coloured enamel they are always a popular toy with kiddies and prove an ideal plaything for the bath. A present for your brother or friend.

How the amateur wireless mechanic can undertake TUNING DIAL CALIBRATION

WITH most home-built receivers the user does not know at all accurately what wavelengths he is tuning. This is particularly so with home-wound coils and although, of course, it will be known that certain dial-readings correspond to certain stations, the intermediate settings will not be known.

This trouble (which makes the location of foreign stations difficult) can easily be overcome by making a tuning graph.

If desired, the tuning-dial may afterwards be calibrated directly in wavelengths from the graph. Even if this is not done, tuning will be greatly simplified, particularly on the medium and short wave bands.

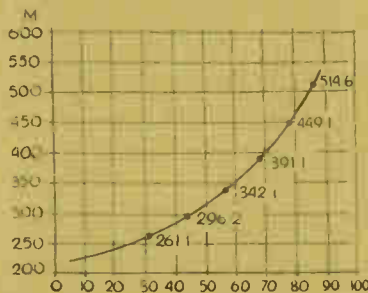
A Medium Wave Graph

The idea is to plot a curve showing the relationship between wavelengths and dial-readings on a few known stations. From this curve all the other wavelengths may then be accurately found.

If a piece of graph paper about 12 ins. square is used, very accurate results will be obtained. In the

diagram the tenths of each division are not shown for clarity.

Having marked in the wavelengths in metres and dial-readings (some dials read from 0—180), B.B.C. stations should be tuned in and the dial-readings for each station written



The curve on dial readings

down. Dots are then put on the graph where the dial-reading lines and wavelength lines cross. Wavelengths of the main B.B.C. stations are as follows:—

Third programme, 203.5 and 514.6 metres. Light programme, 261.1 metres. Northern Ireland,

285.7 metres. Midland, 296.2 metres. West, 307.1 metres. Wales, 373.1 metres. Scottish, 391.1 metres. Northern, 449.1 metres.

After inserting a number of dots they should all be joined up by a smooth curve. The shape of this curve depends upon the shape of the tuning condenser plates. With some it may bow upwards. "Straight law" condensers will give a straight line.

From this curve wavelengths and readings are determined. For example (taking the graph illustrated): What wavelength is 70 degrees on the dial?—Answer: 400 metres. Or, Where should the dial be set to tune to 250 metres?—Answer: 24 degrees.

Other Graphs

The same procedure is used for other wave ranges. The curve obtained on each range may be entered on the same graph, using a differently coloured ink. For example, Long Waves (from 2,000 to 1,000 metres) could be marked down the right of the graph.

The stations actually shown here are: Light Programme, Midland, London (342.1 metres), Scottish, Northern, and Third Programme.

Patterns are provided for these ANNIVERSARY STANDS



OBVIOUSLY, nobody would have a cake and all the surrounding wording shown in the accompanying illustration! It would certainly be impossible to have a 21st birthday, and a Diamond and Silver Wedding all on the same date. The suggestion, however, is a collective one indicating how novelties for those occasions can be made and utilised.

They are cut out in wood with the fretsaw and complete full-size drawings are given on page 223. The original suggestion for such an occasion came from a reader, Mr. A. G. Vidler of Chedworth Road, Liverpool, who sent an illustration of one of the birthday keys and said he had made several of them for his friends. The suggestion he makes with regard to the key is now shown and enlarged upon for other similar happy occasions.

Full Size Patterns

The various patterns on the page provide a wide range of suggestions. By linking certain of the parts together you can complete novelties for Golden Weddings, Silver Weddings, Diamond Weddings, coupling the appropriate number of years with each.

In addition, you have a key containing the 21 to indicate the coming of age, whilst the word at the opposite end is made up of the recipient's initials. This key, of course, is typical of a 21st birthday present, and the actual letters of the recipient can be altered to suit whoever you are cutting it out for.

If you can obtain plywood for any of these parts, so much the better, because there is thus less likelihood of breakage across some of the narrow portions. In any case, you want a hardwood with a smooth grain, which will withstand handling.

Wooden Cut-outs

The use of these figures and words is shown by the heading above, whilst the method of making the actual wording stand is indicated by the two alternatives in the details on the pattern page. The lettering can be cut from thin wood, with the grain running upwards to provide the greatest strength. Cut out the

interior openings first, then go round the outside with the fretsaw.

Take care to hold the wood down with the fingers, close to the blade to prevent a sudden upward movement of the material, with a resulting breakage.

Take care also to keep the lettering all the same height and, of course, the outline clean and to the right shape. When the paper pattern has been glasspapered off, a final rubbing on the reverse side and possibly to the edge of the letters, should be given to see the whole thing is smooth and clean.

Base Supports

Then you can form a base, to make the whole thing stand. A small triangular fillet of wood can be glued along to provide a flat-bottomed surface, or you can add just a plain base piece, the edges of which are rounded. The triangular fillet can be done with a penknife, and the rounded carving with glasspaper.

For the key, it is suggested that wood a little thicker be used, say, 3/16 in. or 1/4 in. thick. Here again, the interior work of the letters and round the figures should be done before the outline is cut. You can afterwards round off the shank with glasspaper to make it more realistic.

If you cannot draw the outline for the initials yourself, probably you can get some friend to do it for you, or keep out the letters from an advertisement or poster.

Appropriate Painting

The finished woodwork in all cases should be painted an appropriate colour, after having first been given a coat of grey to fill in the grain. The Key, Silver and Diamond Wedding wording can all be given an aluminium coat as suitable, but the Golden Wedding and the "60 years" should be given a coat of gold paint if you can obtain it.

Care must be taken in applying this paint. Use a fine paint brush and hold the work on the end of a sharp knitting needle or awl so that you do not have to handle it with the fingers. Be patient in the painting to get a good result.

The completed work should be quite a striking novelty attractive to the recipient. A large bow of fancy ribbon or a suitable tie-on label can be added to provide the finishing touch.

If cutting and finish are up to a high standard then there should be no difficulty in selling them to friends or even to booksellers, stationers or fancy stores.

Some Replies of General Interest

Clock Movement as Boat Motor

HOW could I alter the works of an alarm clock, to make it for driving a model boat? (R.T.—Stockport).

THE average type of alarm clock mechanism, used under the best conditions can only be expected to drive a small boat for a distance of about 80 to 100 feet. To use such a clock mechanism, remove the escapement (so that the clock runs free) and also remove the alarm mechanism, also the hour and minute hands, etc.

Connect the "seconds" hand to the propeller shaft by any simple form of flexible coupling. Great care must be taken to eliminate every bit of friction as in any case the available energy is very small.

Chemical Weather Forecaster

LET me have the correct method of using "Cobalt-Chloride" as a weather forecaster. (W.B.—Scaton).

COBALT chloride has the property of turning red when it is wet, and blue when it is quite dry. It may be used in many ways for weather forecasting.

For example, embodied in plaster of paris and made into a plaque or a statuette, or dried flowers or the like, can be saturated with a strong solution and left to dry.

Table Top Photography

IWOULD like to take up table top photography as a hobby, but have no idea what type of camera to buy. (W.C.W.—Dagenham).

THE camera which you require for table top photography is one which has a "double-extension" which will enable you to focus on an object very near to the camera.

A 2 1/2 in. by 3 1/2 in. or 1/4 plate camera would be suitable, and it should be possible to obtain one second-hand. The price will depend largely on the type of lens and shutter which you require, but if you only intend to use the camera for this kind of work, a fairly cheap lens with an aperture of f.6.3 or even f.8 and a simple shutter or just a lens cap, should be quite suitable.

Anderson Shelter Ventilation

IHAVE made a shed from two Anderson shelters, but in the summer it is unbearably hot inside. Could you inform me how to make it cooler? (B.H.—Bradwell).

ONE or two ventilators, or plain pieces of stove pipe with a cone cap to exclude rain water, fitted to the roof of the shelter will be helpful in keeping it cooler, but probably the best solution if it can be adopted, is to fit a canvas awning or sun screen, raised a few inches above the roof, to shelter the shed from the direct rays of the sun.

Be modern with "double decks" in making your MODEL RAIL COACHES

READERS who keep an eye on railway news will have seen that the new British Railways Transport Commission is experimenting with double-decker coaches for rush-hour suburban traffic. Double-deckers are already in use on the Continent and in the U.S.A. and some idea of their efficiency is given by the fact that such coaches running on Long Island can each accommodate 132 passengers against the 75 of single deckers of the same general dimensions.

Why not be right up to date, therefore, and make a double-decker for your model railway? The two storeys in the actual coaches are made possible by dropping the floor between the bogies to almost rail level and this characteristic can be well copied in a model. A study of the sketch will give the idea.

For O Gauge

Dimensions given in the diagrams are for gauge O, but it would not be hard to make the coach in other sizes.

First cut the two sides (A) as shown from $\frac{1}{4}$ in. wood (plywood if possible), taking out the window and door positions, and then make the two end blocks (B). The tops of these are curved and the extensions (a) are to represent the gangways which go between vehicles.

The sides are fastened to the blocks as (C) by small sprigs and glue, thus building up the body.

The top edges of the sides are bevelled, and when attached to the

blocks should be glasspapered flush with the curve of the top to take the roof neatly. This latter is a rectangle of suitable card which is bent over and secured by a series of small sprigs and glue. If the sprigs are carefully put in a good appearance of rivets can be obtained.

Before attaching the sides to the end blocks a thin sheet of celluloid (or thick Cellophane will do) is placed behind. This must cover the whole side and is held by glue close behind the window openings and also by the fact that it comes between the side and the blocks at both ends.

If a not-too-clear material is used a fine effect of glass can be obtained. Should you not find it possible to get either celluloid or Cellophane, use white card with shading lines put in.

To complete the body a strip of thin card is put along the bottom of the "well" and up both sides to floor level. It is fixed again with glue and a row of model makers' sprigs.

The buffers are made of an oval piece of card (d) and a short shank (e) made of rolled paper. This way of making buffer shanks is very good. A strip of paper is glued on one side and then rolled into a tight cylinder. When hard, this is cut into lengths. The advantage over wood is that a pin can be forced safely down the centre—



level, which always looks very bad in a model.

A small screw hook is used for the coupling hook and as this unfortunately has to be inserted in the end blocks very near the bottom great care must be taken to insert without splitting. A little drilling beforehand will, however, prevent this trouble.

Colouring

Colouring of any model coach is rather important. The roof can be left white but the sides should be maroon or chocolate, while the buffer shanks and gangways should be picked out in black.

Although we are to have certain colour changes on our railways it will be some time before the present colours fade from our minds. If the Southern Railway is your favourite you might like to finish the whole coach in green.

If you are clever at this sort of thing a few gold lines would improve the appearance greatly, but if colouring is not a special gift of yours, leave the vehicle plain.

We now come to the most important point—which, because it is important, has been left to the last—the question of wheels.

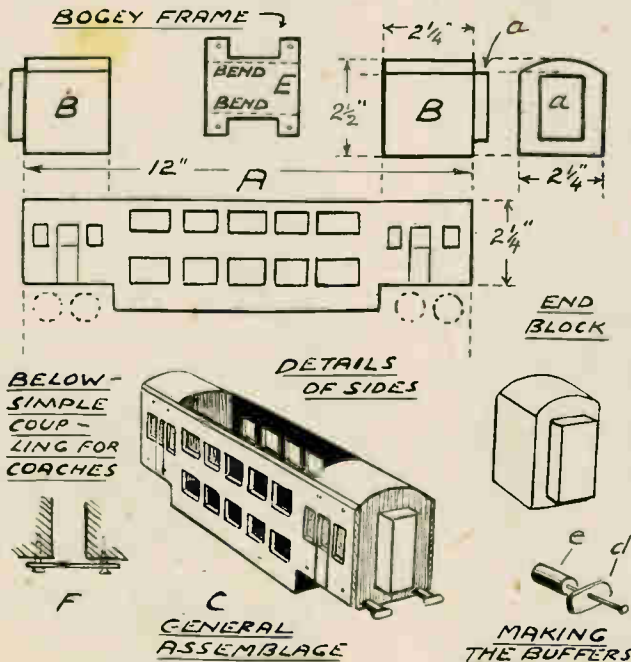
Wheels

The best thing is to obtain a couple of 4-wheeled commercially-made bogies; all the main model outfitters supply these at quite a reasonable figure. If you do not want to go to the expense or like to make as much as possible of any model yourself, the next best thing is to secure four sets of wheels complete with axles and cut two bogie frames as (E) from tin.

Bending along the lines as shown, the axle ends fit in the holes in the four extensions. Great care has to be taken however to get all four wheels riding perfectly level—this generally being the great trouble with non-machine-made bogie frames. However, many model-makers can construct really good running bogies. Like other things, it is just a matter of careful work.

In all cases the bogies are freely pivoted to the under side of the end blocks with suitably sized screws.

Should you decide to make a complete double-decker train, a three coach unit would look well.



Before winter sets in you should undertake these handyman FENCE REPAIRS

IN the old days when wood was cheap and plentiful it was an easy matter, for a garden fence had rotted beyond repair, to order as much wood as one needed from the local timber merchant, and get to work with hammer and nails.

Nowadays timber is, unfortunately, scarce and expensive, some sections, such as boards used for fencing, not being on sale. Consequently all over

A hole about a foot square and 2ft. deep is dug in the ground. A piece of brick, etc., is placed at the bottom, and the post put in, care being taken to see that it is upright. Use a plumb line. Cement is then poured in. Mix (dry) one pailful of cement with two of sand. When thoroughly mixed, add three pailful of clean stone rubble. Mix well. Then add water (through a rose spray). Avoid a sloppy mix.

present purpose) better colour and texture.

An attractive "uncoursed rubble" wall can be built from odd-shaped lumps of concrete, brick, etc., which are, unfortunately, only too common, still, on our partially cleared "blitz" sites. Always get permission from the local Town Hall before carting away any rubble; it is someone's property. The wall need be only about 2ft. high. (Fig. 2).

Brick Posts

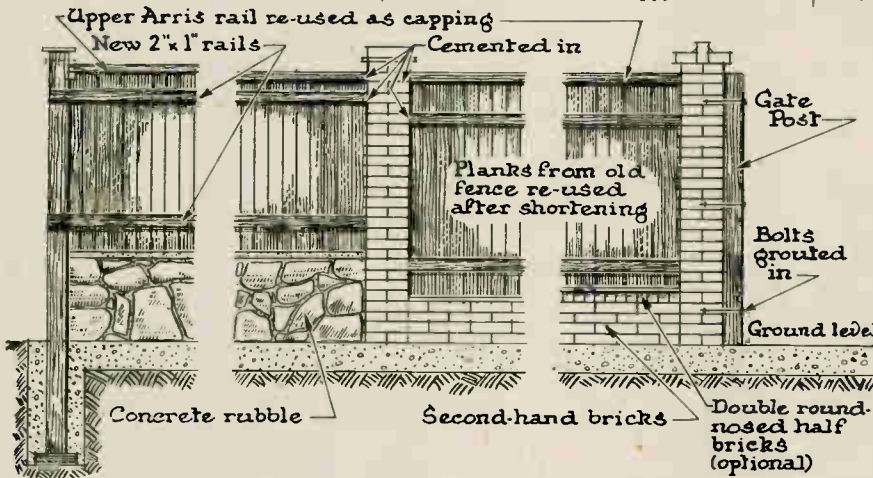
If brick posts are preferred, these can be 9ins. square, i.e., one brick each way. The gap for the mortar will have to be a bit wider than is usually the case. The rails can easily be cemented into the walls as building proceeds. (a) Where a gate is to come it is best to fix wooden posts to the pillars.

This is easily done by means of long bolts with two or three nuts at the end. These are fitted in advance into the wooden post, and embedded in the mortar as work proceeds (c).

If one has a choice of concrete lumps, a selection can be made of those which are reasonably well "squared". This is not always possible, however, and especially if the wall is over 2ft. high, some trouble may be had in supporting the blocks until the mortar has set.

A simple way is shown at (b) . . . just a flat wooden surface propped up straight. The present writer, in dismantling the fence around his house, unhinged a plain gate and this temporarily served for the purpose shown in (b).

(Continued foot of page 219)



Composite drawing showing the various styles mentioned in the article

the country one sees either rotting fences or such fences replaced by hideous brick or concrete block constructions (which cost a lot of money).

For suburban houses, especially, a creosoted wooden fence (which tones to a nice brown) is far better than a brick wall.

If a rotted fence is examined it will be found that most of the rotting is confined to the ground level. The bottom rail (usually of triangular section) is often quite rotted (as earth has been piled against it) but the upper rail is in good condition. The bottom 18ins. or so of the planks are rotted, but the rest is usually quite sound.

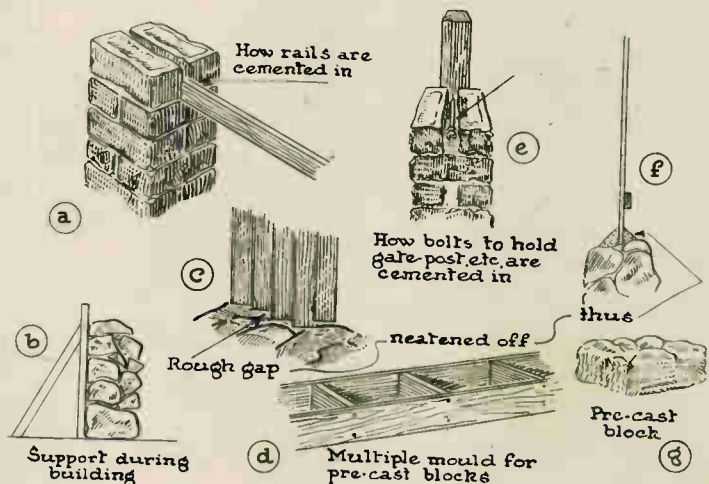
The lesson is obvious. We can make a new fence by making it half brick (stone or concrete), with the upper half in timber, salvaged from the old fence.

Wooden Posts

The first job is to rip the old planks off the arriis rails, taking care not to split them unduly. New posts will have to be made. These can be in brick or timber, the latter preferred. This can be of at least 3ins. square section. It has to go quite 2ft. in the ground. The end that goes in the ground must be well treated with wood preservative.

For a really good job, the rails should be mortised into the posts, but this is a hefty job so new rails (of 2in. by 1in. section unplanned wood) can be screwed on with brass screws. The original upper arriis rail can be used to form a capping. It can rest on blocks nailed to the posts.

A dwarf wall can be made from bricks. Second-hand bricks are not only cheaper but they have (for our



How to make an attractive, handy and lightweight MODERN BEDSIDE TABLE

THIS design of table, somewhat futurist in appearance, is intended for use at the bedside, but would serve equally as well for a drawing room fancy table, holding plants or light articles. For the bedside it will be a convenient stand for books, light, and smoking materials. It is very light in weight and so easy to move about, and needs very little wood to construct.

Fig. 1 shows a side view, and Fig. 2 an end view of the completed article. Any wood can be used for building, even deal. It should be sawn and planed into strips, 1 in. or $\frac{1}{2}$ in. square section. Take some care to get the stripe even, and uniform in section, as the finished appearance depends a lot on the jointed framework looking as though bent to shape from long strips of wood, without joints.

Dowelled Angles

The dimensions are all given in the two elevational drawings. Cut the pieces to the lengths given and be careful that all cuts are at true right angles and square with the face sides. These pieces are to be joined together at right angles with a dowel, as at A in Fig. 3. Centre the holes for these dowels accurately, they need not be more than $\frac{1}{4}$ in. deep. Make them a close and tight fit, but do not glue them at present.

At the foot of the framework two cross rails are to be fixed, to add a little stability to the table, which is rather narrow. These are jointed across with a halved, or notched joint, as at C, in Fig. 4.

All the interior angles of the framework must be strengthened with mild steel furniture brackets, as shown in detail sketch, D, in Fig. 4. These are 4 in. brackets, and obtainable from any hardware stores. They should be recessed into the wood, to lie level with the surface.

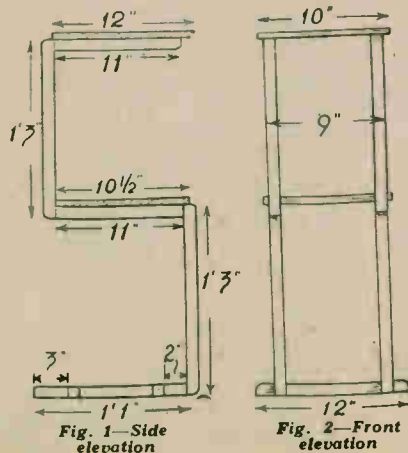
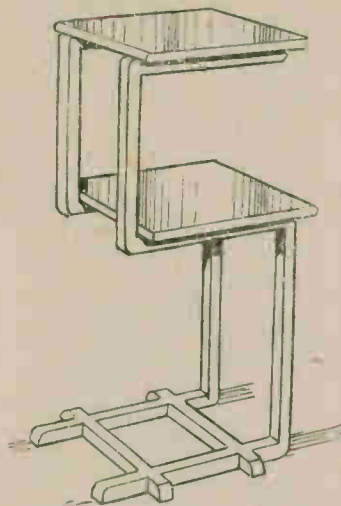


Fig. 1—Side elevation

Fig. 2—Front elevation



The brackets are not cut from any heavy metal, so the recesses necessary can be quite shallow. Mark their position with the brackets in position, by running a pencil round the brackets, but marking in the length of the arms. Measure the distance on the inside of the brackets, not the outside, so the thickness of the metal, which is of course sunk in the wood, is not included. Cut along the lines of the pencil marks with a chisel and cut the recesses out carefully.

No Twisting

As the brackets are fitted in, partly screw them in place, until all are done. It will be wise, when fitting these brackets, to lay the framework flat on the table to ensure each frame being quite flat, and not twisted.

All being satisfactory, glue the bottom rails across, then remove each bracket in turn, glue the joints, and rescrew tightly together again. When the glue is hard, and not before, round off all the outside corners, as shown at B, Fig. 3; in fact all the corners except those bracketed.

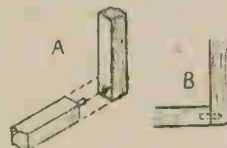


Fig. 3—Dowel joints

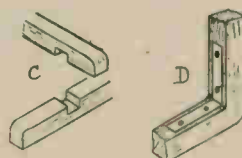


Fig. 4—Angle joints

The table top and shelf can be cut from any moderately thin wood available, $\frac{3}{4}$ in. to $\frac{1}{2}$ in. thick, would serve nicely. The grain of the wood should run across the table, not lengthwise, so it may be necessary to glue two or more pieces of wood together, edge to edge, to make the width. This will not be necessary if a piece of plywood, of the thickness suggested, is available.

It would be quite feasible to use matchboarding for these tops, glued together, with the beaded edges underneath. Well glasspaper them both and slightly round off the edges. It will be seen from the diagrams that the table top extends over the end 1 in., both extend over the sides $\frac{1}{2}$ in.

Fit these parts in position with screws, driven in through the framework, underneath of course, and countersink the screws well so they are not visible from the side at all.

Suitable Finishes

The whole work should now be glasspapered to smoothness, any unevenness in the framework being previously planed off. The table can be stained and varnished; many like such a finish, but if deal has to be employed a finish of art enamel, or Japanese lacquer might be preferred.

If either is adopted, a base should be built up of several coats of paint first. This should be allowed time to harden, then it should be rubbed over lightly with pumice powder until the surface feels glass smooth on passing the hands over it.

The finishing coat of enamel, or Japanese lacquer, can then be applied with a soft brush, preferably in a warm room, and should present a most pleasing and artistic effect. Should you have the material handy, the top and shelf could be enamelled in contrasting colours to heighten the general effect.

Lacquer Hints

Japanese lacquer, by the way, is a superior kind of enamel, and shows no brushmarks. It should not be confused with the finish generally known as Japanese lacquering—a much longer and more intricate process, and not particularly suitable to the work in question.

A cheaper finish, and less troublesome, is to coat the work with flat paint, that is paint mixed with turpentine to dry matt and not glossy, and then finish off with copal or oak varnish to give a gloss.

Those able to do a little simple oak graining, explained in a previous article, and wishing, perhaps, to match some existing oak furniture, might prefer to finish off the table by that method.

Save time and money in the home by reading these ELECTRICAL HINTS

READERS who dabble in electricity and radio will, no doubt, be interested in the following hints and tips. All are practical and worth knowing. They will save time, money and get one out of a difficulty.

A Mechanical Wire Winder

If you do much wire winding in respect to coils, transformers, etc., it is possible to make use of the "works" of a gramophone motor as a mechanical winder. The spool, drum, or coil former, is merely arranged on the turn-table spindle, following which the gramophone spring is wound up fully and the speed adjusted by the regulator to suit the worker.

This is a particularly good suggestion when one has to wind on hundreds of turns of extremely fine gauge wire, this being the case in regard to the secondary windings of step-up transformers of high ratio. The method is quick and non-back-breaking, reducing "sittings" almost by half. And the same tension is maintained throughout, seeing that both hands are free to "feed" it adequately to the revolving spool.

If necessary, the turn-table could be removed from the spindle so the coil formers, drums, etc., can be fitted better. They must be fixed on truly vertical and fairly tightly, and the reader will, doubtless, devise some suitable means towards that end.

Innovating Crystal Detectors

After a time in use, crystal detectors become less sensitive. Regarding the semi-permanent type, the stony form of "cat's whisker" can be scraped with a penknife, whereas the face of the crystal itself could be "pricked" with the same implement to expose fresh spots.

This tip, carefully tried out, will freshen up the detector by about 70 per cent. Take care, however, not to "finger" the crystal, as slight traces of oil or grease spoil the contact between both stone and crystal.

Fence Repairs—(Continued from page 217)

Another method is to make pre-cast blocks. At (d) we see a mould; just two planks with partitions across making divisions measuring about 18ins. by 12ins. by 9ins. The mould (which has no bottom) is stood on paved ground. Large stones are placed in the bottom, with their best sides down. With the aid of more stones and some mortar (three parts of sand and one of cement), the boxes are filled. When the mortar has set, the blocks will look like (g). These

If making a small crystal set and using the type of crystal detector mentioned above, you will need mounting fittings for it, if brackets are not supplied. Rather than make the fittings from strips of brass, two spade-end plugs (as used for accumulators) can be utilized.

Simply remove the erinoid grips from the spade-ends and bore suitable holes for the threaded part of the plugs in the panel of the case of the set, keeping the holes apart according to the end-to-end length of the glass tubing.

When the spades are screwed into the wood, the glass tube is set between them, the end screw (going into the crystal cut holder) being partly unscrewed so it rests in the U-shaped cut in the spade.

An elongated eyelet will be found at the opposite end and this must be prised out a trifle so it, like the aforementioned screw, engages between the other spade end, following which the screw is tightened against its spade end, the eyelet being pressed tightly against the second spade end. Wires are run from the spade ends for connecting purposes.

Testing Coils

It is often necessary to test the windings on coils. An ohm-meter is generally used, but if not available, a simple tester can be made from a bulb holder, a 100 m/a fuse bulb and a grid bias battery. Attach two flexible wires to the arms of the bulb holder and fix a wireless plug to one of them.

Fix another plug on a separate length of wire. The end of this wire is bared, including the end of the wire attached to the bulb holder. One then merely pushes the plugs into the battery sockets (at not more than 1½ volts) and touches the ends of a coil with the bared ends.

If dealing with a long-medium-short wave coil, the bulb will glow when the switch is on the medium-wave position. When at the long-

wave position, the light should become dim or go out completely. If the bulb does not light, increase the voltage by gradual stages as a test to see if it will light up, which it should do if the windings are correct.

If the bulb glows when the wave-change switch is at the medium-wave position and cannot be made to do so when you switch to the long-wave position, this indicates that there is a disconnection of the winding at the terminal or an actual break in the coil wire.

An Earthing Tip

Sometimes it is not convenient to "plant" an earthing conductor in the ground or even solder a wire to a cold water tap pipe (hot water tap pipes, incidentally, make a bad earthing connection, because the pipes seldom travel underground the same as cold water pipes).

A piece of ½ in. thick iron plate about the size of the wireless set base makes a simple earth, it only being necessary to solder a wire to it, otherwise one may merely fix a wire to the handle of a smoothing iron, or again, fix it to a piece of fine wire netting or mesh, and keep it under a mat. The wire netting or mesh should be roughly the size of the mat.

If preferred, a wire could be attached to a spring mattress. However, if requiring an earth for mains-operated sets, a proper earth is essential. A proper earth is also a necessity with crystal sets. The other forms of earth mentioned, however, serve for small battery-operated valve sets.

Tubular Rod Columns

Brass curtain rod, about 1 in. in diameter, makes a good column or standard for electric floor lamps. It is only necessary to fit a lamp holder and a heavy base. The flexible wire goes up the inside of the tubing, of course. However, when metal rod is used, it is a regulation that such rod should be earthed to prevent the likelihood of shocks.

are then laid like bricks.

However, the methods shown at (b) and (d) are not always necessary.

Creosote all woodwork well, preferably before assembling, to avoid splashes on the stonework. Wooden posts should have a capping at the top to prevent rain entering the end grain. There are many methods of capping the brick columns, two being shown in the diagrams.

The usual form of junction between fence and wall is shown at (f). If one

can afford it, however, a line of double-round-rosed half-bricks can be laid at the top of the wall. But this is a luxury.

Such a fence will not only be cheaper than one remade entirely in new brick or depot-purchased slabs, but will be very much more attractive, a combination of mellowed wood, colourful old brick and random blocks toning well with any garden.

Be sure to get all your material before you commence work.



The Stamps of GT. BRITAIN

EVERY stamp collector worthy of the name should at least have the stamps of his own country well represented in numbers and also in quantity, particularly the current issues. Yet how often does one find that the specimens are almost obliterated by heavy black cancellations?

What about your own collection? Are the specimens that you have the best possible? By all means keep those you have until you can get better, but always be on the look out to improve them. A good collection should also be arranged properly.

had letters at the bottom, the top corners being filled with two stars which sometimes looked more like Maltese crosses. Remember that at the same time, the twopenny blue appeared which is worth more than the 'penny black'. Naturally, the wording would be altered to this value. The watermark of both those was a small crown, the stamp shown has a large crown.

Black to Red

In 1841 the black stamp was changed to a red one. This was because the postmarking ink that

tion by all means

Now follows a number of changes in watermark and perforation. It is quite impossible to neglect these if you hope to obtain a good collection of the stamps from your own country. The first change was from small to a large crown watermark, and the perforation from 14 to 16.

Then came the introduction of the letters in all four corners, as in the illustration. There is also the plate number to be considered. This is a small number but if you look with a magnifying glass at the side of the Queen's head you will see it in the



Fig. 1—The 1858 Red
Fig. 2—Note corner letters in 4d. 1862
Fig. 3—Large corner letters of 3d. 1870



Fig. 4—Large coloured letters of 1881 2½d.
Fig. 5—Corner dots (16) in 1881 1d.
Fig. 7—I.R. Official Inland Revenue

Those stamps which were issued first should be placed first; the stamps of King George VI will be at the end.

Now we all know that stamp catalogues are very difficult to get, so this week we hope to help you to arrange the British stamps as they should be. If you have an album with the squares already ruled for you, then you fill the squares.

You should leave a few blanks here and there so you will be able to add any you obtain later in nearly the right place without having to take out all those which have to come after it. If you have a loose-leaf album, then you are lucky, as you can add a leaf at any time.

We do not mean to illustrate all the stamps that have been issued, nor yet to mention them, but to indicate those that you could hope to get and try to tell you where to place them.

A Typical First

The first illustration (Fig. 1) is of a stamp issued in 1858, and we shall use it to describe many others. As you all know by now, the first stamp issued was the famous Penny black. It was very like this one, but it had no perforations. The stamps had to be cut with a pair of scissors from the sheet and that is the reason why we find so many of those stamps with poor margins.

Again look at the illustration and you will notice there are letters in all four corners. The penny black only

best obliterated the stamp was black and did not show very well on a black stamp.

The twopenny blue did not have a colour change but two white lines were added, one just under the word 'Postage' and the other just above the words 'two pence'.

Next, various ways of separating the stamps were tried. For example—rouletting; that is a series of cuts were made along the edges of the stamps. The early forms of perforating provide us with some quite scarce stamps being worth many pounds each. There are many shades of colour and readers should keep them, but do not make a mistake and keep faded stamps, because they are not worth having. Sometimes if a stamp



Fig. 6—Unshaded lion with control number

has been soaked in water in order to get paper off the back, it is quite ruined.

One interesting variety is sometimes found by looking at the back of these red stamps. That is an 'Ivory head' where the paper looks blue and the Queen's head stands out white. If you find one of these then mount it in your collec-

tion. The numbers go from 71 to 225 except for 75, 126 and 128.

Now we will mention three rather peculiar stamps, so far as Great Britain is concerned. They were issued in 1847 and they are the embossed 6d., 10d. and 1/- The two last are on Dickenson paper; that is to say that it has a silk thread running through it. If you hold a pound note up to the light you will see what is meant.

These embossed stamps had gum on the back so they are not like the embossed stamps which you see on the printed envelopes that you can buy at the post office. It is not usual to include specimens of the stamps off these, nor those off postcards, in a collection.

Watermarks are Important

Now, unfortunately you must, if you are going to arrange your British stamps correctly, pay great attention to the watermarks. The designs of our stamps have not varied very much but there have been many changes in the watermarks, the perforations, and dates of issue. Naturally the value of the stamp will depend on these important factors.

The illustration at Fig. 2 will serve for describing a number of stamps. If you look at this specimen you will see it has small white letters in all four corners AK—KA. The date of that stamp was 1862. Before that, in 1855—1857, three fourpenny stamps

were issued without any corner letters.

The colour was carmine in each case, but the watermarks were a small, medium or large garter. The difference between the small garter and the others is quite easy to see, but the large and medium are not so easy. It is best to look at the buckle. The medium one has a dot in it and the shape is straighter than the large.

Watermark Emblems

There were also 6d. and 1/- values with the design similar to the fourpenny, having no corner letters. The watermark, however, was four emblems, one in each corner—two roses at the top, a thistle and a shamrock at the bottom.

Now we come to the set of which the illustration is the fourpenny. This has as a watermark the large garter, while the other values 3d., 6d., 9d. and 1/- have emblems.

The next major change was in the corner letters. In 1865 a set came out which had large white letters in all four corners. A tenpenny stamp was also introduced. You will find that all the stamps of this set had small figures. Generally they were placed in a circle, the shilling value being an exception, having the figures in a square.

Number and Date

If you look at the illustration (Fig. 3) of the threepenny stamp you will see the large white letters and also the small figure six in the circle. That is the plate number as it is called and enables one to say the exact date of issue—this was in 1870.

The large garter watermark was still used for the fourpenny value but all the others had a rose spray. This consists of five small circles round a dot, a stalk having two small leaves at the bottom.

A two shilling stamp was added to this set and new values 5/-, 10/-, £1 and £5 were introduced, having either a Maltese cross or an anchor as a watermark, the stamps being quite large ones.

In 1870 there was the small ½d. stamp, the Queen's head having the figures of value on either side. These are quite common and probably you have one of them. The 1½d. value which came out in the same year had the Queen's head in a triangle formed of three curved lines. 'Postage' was on the left, 'Three' on the top and 'Halfpence' on the right.

Colour Change

Three years after this the letters were changed from white to coloured on a white background. A twopenny halfpenny was issued in the same design as that shown here (Fig. 4). The plate number 23 shows that that specimen came out in 1881.

The next illustration (Fig. 5) is of a quite common stamp. Most of you will have a specimen in your album,

but there are some interesting varieties to look out for. First there is a stamp which has only 14 dots in the corners—the illustration has 16. Also there are some of these stamps which have the words 'Pear's soap' printed on the back. Perhaps you did not know that advertising on the back of stamps had been tried in Gt. Britain? You may find the same on the ½d. vermilion, too.

The 1887 or Jubilee set is fairly well known and should present no problems, but there are some quite definite colour varieties and these should be kept.

The issue for King Edward VII was very similar to that just mentioned. The ½d. and 2½d. were different in design, there was no 4½d. but a 7d. stamp was introduced quite late in the reign.

Worth Studying

King George V stamps repay quite a lot of study and for this collectors will be rewarded with the extra specimens that will be found. The first issues may have either a 'Crown' or a 'G v R' watermark. The former has two types, either a shaded or unshaded lino. Then we have the issue commencing in 1912 with a number of different shades for each value.

Notice that the long high value stamps show a difference in shading behind the King's head, the earlier types having horizontal lines only, while the later issues of 1934 have horizontal and diagonal lines. The 1925 stamps for the British Empire Exhibition are worth much more than those dated 1924.

The Postal Union Congress stamps of 1929 are quite good if unused, the

£1 particularly so. These were followed by the photogravure stamps of 1934, the Silver Jubilee of 1935 and the four for King Edward VIII. The Coronation stamps of 1937 have differences well worth looking for. Such as the colon between the 12 and May, a hyphen between May and 1937 and a thick prong to the top right hand ornament.

Note the difference in colour between the ½d. to 3d. values of the present stamps and the same values of the 1937 issue. Unused specimens of the 1937 type have gone up in price quite a lot. The same remark applies also to the unused stamps of the Centenary of the First Adhesive Stamp issue of 1940.

Special Sets

Lately we have had a lot—the Victory Commemoratives, the Silver Wedding stamps, the Channel Islands Liberation stamps and the Olympic Games issue.

Finally do not forget to look out for stamps which have been overprinted with certain initials such as appear on the last illustration (Fig. 7). Official Stamps as they are called have markings such as I.R. Official (Inland Revenue)—O.W. Official (Office of Works)—R.H. Official (Royal Household)—Govt. Parcels—Board of Education—Army Official and also Admiralty Official.

If you are prepared to take the trouble to remount your stamps and take notice of the order in which the various stamps have appeared, then you should make your pages of British stamps much more attractive.

A Reader's 3ft. Fire Pump

WHAT a real toy this makes for any youngster! It was made by A. B. Grundy of Portman Drive, Woodford Green, Essex, who with 5 years to his credit in the N.F.S. naturally took a big interest in making this 3ft. Pump Escape. And it works! The ladder extended reaches 5ft. 6ins., the headlamps, flashing light rear lamp and bell are connected to batteries. Whilst the model is of plywood the motor wheels are metal, the radiator of tin and gauze. Upholstered seating is in red, silver and chromium, whilst pump and hoses are provided at the back. What a toy for a boy!



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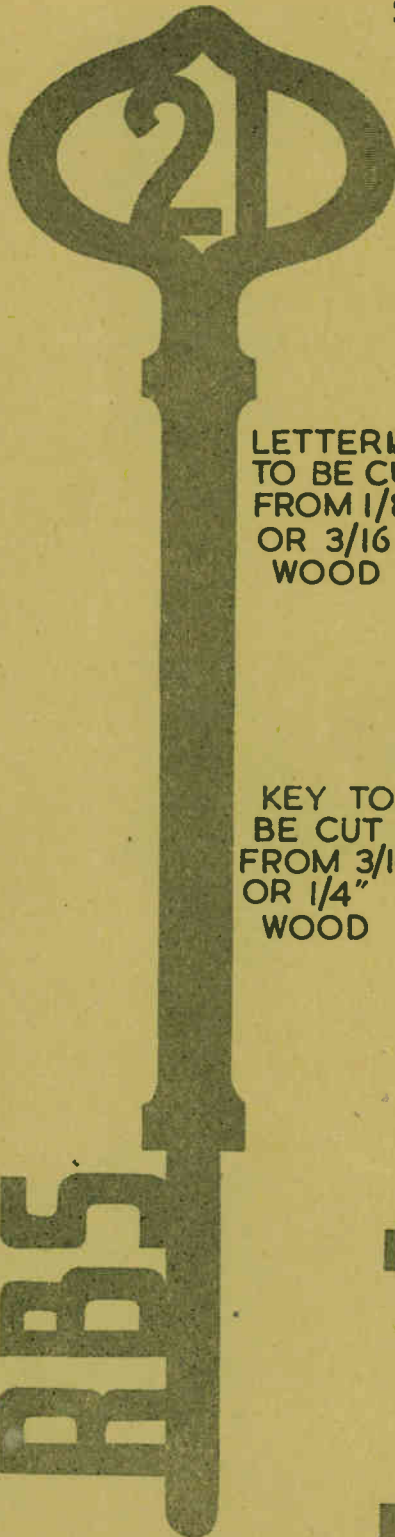
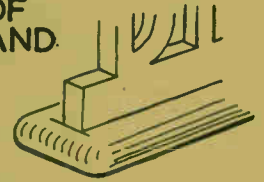
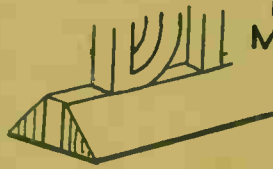
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See page 215

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Hobbies

WEEKLY

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September 8th, 1948

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Vol. 106 No. 2758

A small modern streamlined SCOOTER

WE show a small type of scooter, designed for the toddlers. It is a "streamlined" model, made up from odds and ends of wood and a 6in. diameter and 5in. diameter rubber-tyred disc wheel. These wheels, of course, are getting back into the shops again, and the reader should be able to buy locally a pair of the size needed. If not, the address of a firm will be sent on request to The Editor.

A lot depends on the hub length of these wheels and before the constructional work is commenced, a pair of the wheels require to be obtained, to find the length of the hubs. You see, unlike ordinary scooters, the streamlined model has its wheels partly enclosed. The wheel aperture must be made to suit the hubs, this being done by cutting the streamlining parts from various thicknesses of wood.

Wood Detail

For example, the steering column is cut from $\frac{3}{4}$ in. wood. To both sides of this, at the wheel end, are two thickening parts, cut to shape from, say, $\frac{1}{2}$ in. wood. The thickening pieces are then fitted with the cover pieces, these being the parts to which the wheels are fixed by means of bolts. Thus, taking the thickness of $\frac{3}{4}$ in., plus $\frac{1}{2}$ in. for the two thickening pieces, we get a space of $1\frac{1}{4}$ ins.

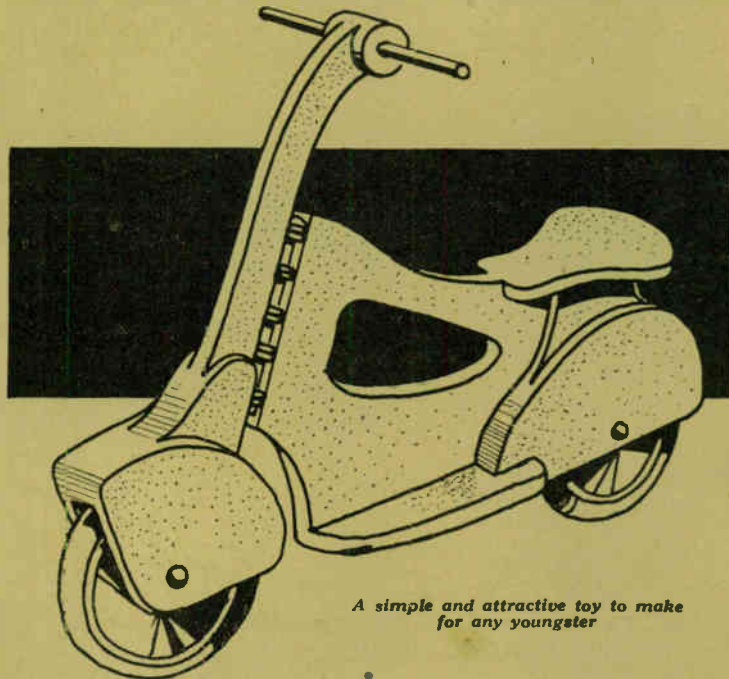
This may be insufficient for your particular wheel hubs, in which case, to obtain a slightly larger aperture,

the thickening pieces could be cut from $\frac{5}{8}$ in. stuff, thereby adding an extra $\frac{1}{4}$ in. to the aperture. If this should not be sufficient, the thickening pieces could be cut from $\frac{1}{2}$ in. material which, with a $\frac{3}{4}$ in. thick steering column, gives a space of $1\frac{3}{4}$ ins.

Assuming you have obtained a

pair of wheels and know just what to do, cut out the scooter framing outlined in 2in. squares at Fig. 1. The squares can be ruled out on a piece of $\frac{3}{4}$ in. deal shelving board, which is usually about $10\frac{1}{2}$ ins. wide.

You need a piece 18ins. by $10\frac{1}{2}$ ins. by $\frac{3}{4}$ in. If desired, to save wood, the frame could be cut from a piece



A simple and attractive toy to make
for any youngster

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

measuring 14ins. long, the "tail" portion being joined on by dowelling.

When you have the framing cut out, make two thickening shapes as shown and glue and nail these to the framing, one at each side. The wheel covers are then cut out and attached. These covers are shown at Fig. 2.

Complete the rear framework by adding the running board shape, this being cut from $\frac{1}{4}$ in. wood to the shape at Fig. 2. It should be glued and screwed into position. On no account

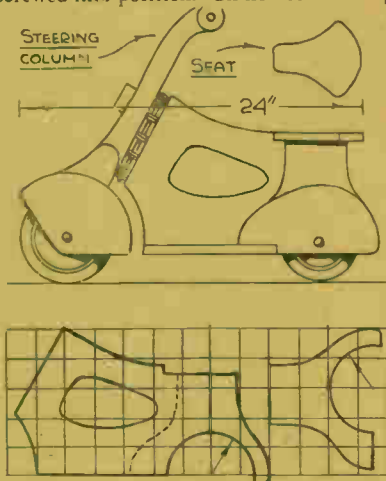


Fig. 1—Side elevation with parts outlined in 2in. squares

use wire nails, as the screws are needed to give a stronger grip.

The Steering Column Pieces

The steering column is cut to the shape at Fig. 2 from $\frac{1}{4}$ in. wood. The mudguard piece could be added separately, cutting it from scrap wood, thus saving wood. It is largely a matter of cutting out two thickening shapes and wheel covers, using the thickness of wood needed.

The handle is formed with a length of $\frac{1}{4}$ in. dowelling and two "washers" cut from $\frac{1}{4}$ in. wood. The handle is glued into the head of the steering column, then the washers glued on to make a firm fixture of the handle. The ends of the handle should be rounded over by glasspapering.

When the glue sets, all joints should be levelled with spokeshave, rasp and glasspaper so there are no sharp edges to chafe tender skins. The seat edges should be smoothly rounded over.

Fixing the Wheels

The wheels are affixed in position by means of suitable iron or mild steel bolts. These bolts must suit the "bore" of the wheel axle holes, of course. Holes for the bolts are bored in the wheel covers. The wheels are set in place and the bolts passed through, to be held by fixing nuts.

A spot of lubricating oil applied to the bolt axles will remove any slight stiffness or squeakiness in turning. It

is imperative that the bolt holes are bored in the exact position required so the wheels are clear of the woodwork. If you have used compasses in marking out the cover shapes, as indicated by the arrows, the exact centre position will be found easily, as the pointed leg of the compasses will have marked the wood.

Attaching Column to Framing

The steering column is attached to the rear framing to have a pivoting

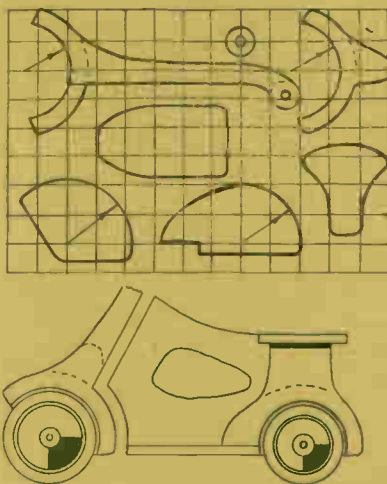


Fig. 2—Other parts in 2in. squares and side view with covers removed

action. One of the simplest dodges is to buy a dozen strong screw-eyes. Six of these are screwed into the front of the rear framing. The remaining six, at a corresponding distance, are screwed into the steering column. Thus, by allowing the screw-eyes to mesh together and inserting a thin pivot bolt down through them and fixing on a nut, a novel form of "hinge" is obtained.

Position of Screw Eyes

In the elevation at Fig. 1, ten screw-eyes are used. Now, whether you use ten or twelve, it is essential that each screw-eye rests upon the other so that all of them bear the weight of the rider. The screw-eyes and pivoting bolt makes a strong

pivot joint between the column and rear frame. A spot of oil will do much to free the moving action.

Completing the Toy

To complete the work, apply a coat of bright enamel paint. When dry, rub down lightly, dust off, then apply a second coat. This should dry with a good gloss. The scooter may be done in a single bright colour, such as light green or bright red; if desired, the entire scooter could be painted green. When dry, the seat, handle and wheel covering parts could be painted red.

A disc of wood, or an empty circular tin, with lid could be affixed to the front of the steering column to act as a lamp. A shoe polish tin, or typewriter ribbon tin, would serve. The latter will be enamelled red and will only require to be screwed on, removing the lid for the purpose, then putting the lid back on again.

The scooter, please note, is quite small. As stated at the beginning, it is only suitable for young toddlers. If properly made, it will run freely and steer easily, and should provide any toddler with lots of fun.

Home-made wooden disc wheels could be used, but the trouble with wooden wheels is that the axle holes wear large in diameter, with the ultimate result that the wheels will rub in their apertures, which is not wanted at all.

Rubber-tyred Wheels

The rubber-tyred wheels will run smoothly and quietly. Some of these wheels are cast in metal, with holes in place of spokes. The disc type, of course, consist of two thin metal plates, compressed to shape and jointed together to have a hub and rim. A rubber tyre is then added to the rim. Toy pram wheels could be used, if available.

These wheels, however, are usually spoked and have a fairly long hub. The longer the hub, the greater the thickness of the wheel apertures, or rather, the width. So, if possible, try to pick up wheels having hubs which are not more than 1 $\frac{1}{2}$ ins. long, or 1 $\frac{1}{4}$ ins. long.

Our Presentation Design for a MODEL OLD-TIME LOCOMOTIVE



This exhibition model, 12 $\frac{1}{2}$ ins. long, of the famous locomotive North Star can be made from full size patterns and complete instructions on this week's plan sheet. Necessary wood and wire

for making is supplied in Kit No. 2758, for 4/- at any Hobbies Branch, or for 4/9 post free from Hobbies Ltd., Dereham Norfolk.

Patterns given for this simple waterline model HIGH-SPEED LAUNCH

THE little waterline model shown in the accompanying illustration is quite easy to make, has a very realistic appearance, and uses only odd scraps of material which can be found in any home workshop. Full size patterns for the various parts are printed on page 235. If nicely finished and carefully painted, an attractive model is the result.

The hull is cut from $\frac{1}{4}$ in. timber. Any wood may be used, but if you have a piece of mahogany or satin walnut, use that. The hull is cut to outline shape with the fretsaw, and then the well for the cabin is cut out. This, too, is fretted, for the floor of the cabin is formed by cutting a piece of card to the shape of the bottom of the hull, and gluing it in position.

The foredeck is next cut to shape from $\frac{3}{16}$ in. timber, and glued in position on the hull. The hull is now glasspapered off, and a flare is given to the bows with a rasp and glasspaper, to the shape shown in the picture.

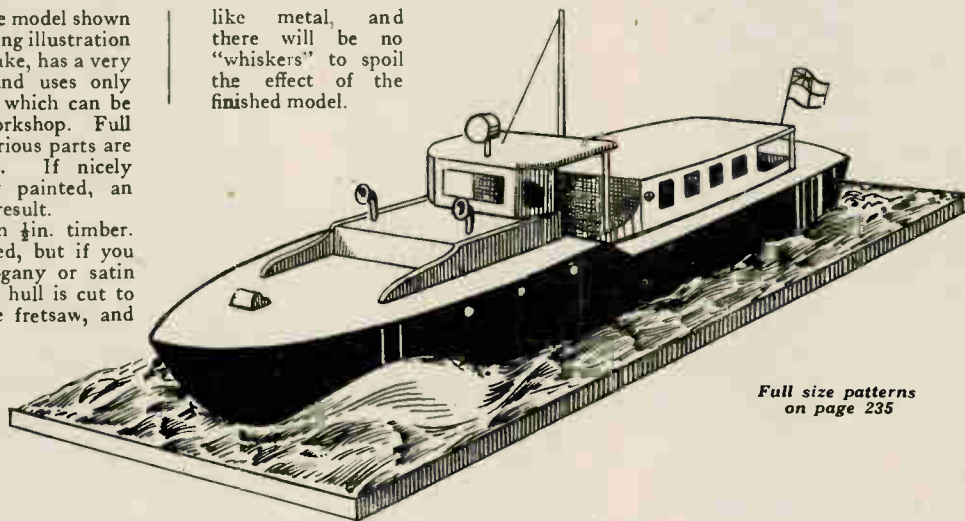
At this stage of the proceedings, the hull is given several coats of thin shellac, made by dissolving shellac in methylated spirits.

Each coat should be left to dry hard, and should be cleaned down before the next coat is applied. This ensures that you obtain a really professional appearance when you paint the model.

The engine cover is now cut from $\frac{3}{16}$ in. wood. Engine cover side pieces, cut from thin card, are glued to the sides of the engine cover. Ventilators, made from small large-headed nails, are added, and the completed engine cover is glued to the foredeck.

It is worth mentioning here, that if those parts made from card are given a coat of shellac and smoothed with a fine glasspaper, they will take enamel

like metal, and there will be no "whiskers" to spoil the effect of the finished model.



Full size patterns
on page 235

The cabin is now made. The side walls are cut from thin card, and glued to the inner walls of the cabin well. A piece of card is cut to size to form the front wall of the cabin, and two short lengths of wire are glued in the aft corners of the cabin well, to act as stanchions to support the aft end of the cabin roof.

Cabin Interior

The interior of the cabin should now be painted light green.

The seats are made from $\frac{1}{4}$ in. wood, the backs for the bucket seats being cut from stiff paper, and glued in position. The seats are all painted dark green, and are glued in the cabin in the positions shown on the hull plan.

The cabin roof is cut from thin card the same shape as the cabin, but extends only as far as the dotted line shown on the plan drawing of the hull. The under surface is painted light green, and the roof is glued to the top of the cabin walls, the aft end resting on the wire stanchions (A-A).

The bridge is also cut from thin

card. It is folded at the dotted lines, and glued to the recessed bulkhead formed by the hull, foredeck, and engine cover. The inside of the bridge should be painted light green.

Two lengths of wire (B-B) are glued to the front wall of the cabin, to act as stanchions to support the aft end of the bridge roof. That part is now cut from $\frac{1}{4}$ in. wood, shaped as shown in the cross section, and glued in position, after the underside has been painted light green.

A length of wire, glued into a small hole in the cabin roof acts as a wireless mast, and thread is used for the aerial. The winch is glued to the foredeck.

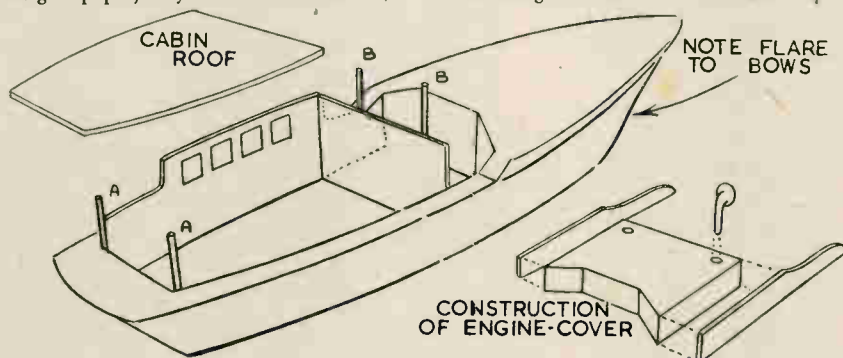
Colouring the Model

The model is now ready for the finishing touches. The cabin, outside, and the front of the bridge, are painted white. The roofs of the cabin and bridge are also painted white.

If you have made your model from either mahogany or satin walnut, a coat of clear varnish applied to the hull, foredeck, and engine cover will give a very realistic appearance. The engine cover side pieces and the winch should be painted green.

If the model has been made from whitewood, then it should be painted or stained as near as possible to match mahogany. A small onion on a pin is fitted to the stern.

The model is now complete, but you can, if you like, mount it on a wooden base on which an imitation sea is modelled, either in self-hardening modelling clay or plaster of Paris. Do not forget to give the model a sweeping bow wave, and you will have a little replica of a high-speed passenger launch of which you will be truly proud.



Details of hull, showing cabin walls and roof, with engine cover shape

What you need as container, fish, and feeding for THE HOME AQUARIUM

OF never-ceasing interest, a well-kept home aquarium takes some beating. You need not have a large one. We do not however, recommend the glass globe aquaria; they admit too much light and the curved sides focus the heat rays towards the water.

The rectangular aquarium is better, such as is sold by dealers. Or you can make one from a suitable stout wooden box with one of the larger sides knocked out, and the interior lined with sheet zinc. The place of the wooden side removed is filled by a sheet of glass. See that the glass is held in position by nailing a wooden groove round the three edges, and make the joints water-tight with cement.

Waterplants

To keep your fish in good health place a few waterplants in the aquarium. One of the best plants is *Vallisneria spiralis*, which you can buy from dealers. Buy one plant at least. You can add a root of starwort, and water-crowfoot. Failing such plants, get duckweed, ivy-leaved and round.

To root the plants, cover the bottom of the aquarium with an inch or two of clean sand and some small pebbles and stone. If you cannot obtain sand try garden mould, but give it time to settle.

Take a flower-pot, knock or saw a piece out of the side, and stand it upside down on the bottom of the aquarium, to form a place of retreat for the fish that you introduce later. Fill tank up with soft water or water carried from a nearby pond, provided it is uncontaminated, allowing the top of the flower-pot to protrude just above the water.

Do not overcrowd the tank; allow about six cubic inches of water for each fish. If you cannot obtain goldfish—which are rather expensive nowadays—get a few small roach, minnows, or rudd, which you may catch yourself if you live near a pond or river containing those species of fish.

Suitable Fish

There are many different kinds of fishes suitable for the home aquarium, if you can afford to buy them. A visit to a shop dealing with aquaria and supplying fish will doubtless be very revealing. You may bring back some most delightful and interesting creatures.

Many of the lovely foreign species, however, require special treatment, and unless you have the proper equipment it is much better to stick

to the hardy kinds. Especially those which can be easily replaced if they die.

Feeding Hints

Do not overfeed your fish and remove any uneaten food that collects on the bottom of your tank. Feed your fish on ants' eggs, small garden worms, and occasionally tiny scraps of liver. Have a few water-snails in the aquarium, they help to keep it clean, acting as scavengers.

If you have provided the tank with the needful weeds the water will not need changing very often, but it may be necessary to add water from time to time, as it evaporates. It is a good idea to aerate the water periodically, by ladling out a jugful and pouring it back from a height. This will force bubbles of oxygen into the aquarium. Keep dust out of the tank as much as possible.

Suffocation

If your fish begin to congregate near the surface, swimming on the surface tail downwards, it is a sign they are in danger of "suffocating". Change the water immediately. Best

remedy is not to overcrowd the tank.

Should fungus disease attack a fish—denoted by patches of whitish-grey fungus growths on the body—it should be removed and destroyed. All dead or infected fish must be dealt with in this way and the tank emptied, disinfected, and well washed with clean water before using it again.

If you keep your aquarium clean and remove regularly all decaying matter you will have little trouble. Fungus disease can be caused by an injury, so if you have to handle a fish, do it very gently.

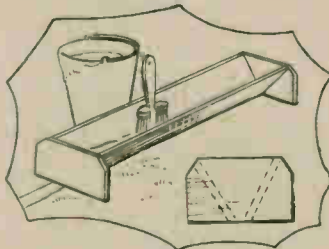
A Good Position

Keep your aquarium in a place where it gets the light, but is not in the direct rays of the sun.

Cleanliness, the right kind of weeds, and the right type of fish, proper feeding, and keeping the tank in a suitable place; these are the simple rules for success with the home aquarium. (Aquarium water is stagnant, so it is best to stock it with fish suited to such waters by nature, as roach, carp, rudd, tench and others of the carp family).

Marking Football Courses

HERE is an idea for a trough for marking out a football ground or tennis court. By passing a white-wash brush along the opening in the bottom of the trough, a straight



clean line can be made. The sides of the trough will prevent spots and splashes outside the line. The trough, of course, can be made of any size to suit individual requirements.

Tapering Masts

HERE is a little tip when tapering dowels for masts and yards for model ships. Fasten a hand drill by the handle firmly in a vice. The dowel to be tapered is now placed in the "chuck" instead of the drill. Turn drill handle on the disc with one hand and apply glasspaper to the rotating dowel with the other hand,

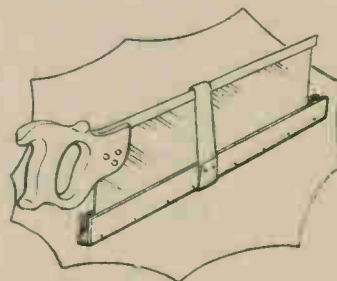
sliding the paper up and down to obtain desired effect.

Coin Cleaning

THIS method of cleaning old coins and medals is more efficient and quicker than using vinegar. Rub them well with a damp cloth on which is sprinkled some cleaning powder such as Vim. This quickly makes them shiny and clean.

A Tenon Saw Protector

CUT two pieces of lath the length of the saw and a similar piece of wood about $\frac{1}{2}$ in. wide. Insert the



latter between the other two pieces and glue or screw them together. Fasten a strip of elastic over, as shown, and you have completed a device which will protect the teeth of the saw.

Two everyday articles which can be economically MADE FROM TINS

BY means of an old tin jar, such as the type in which oil, turpentine, etc., is usually sold, a simple form of filter for paint, distemper, etc., can be made up, as shown in the drawing. No sizes are given, as size depends on the tin you may have which can be utilized.

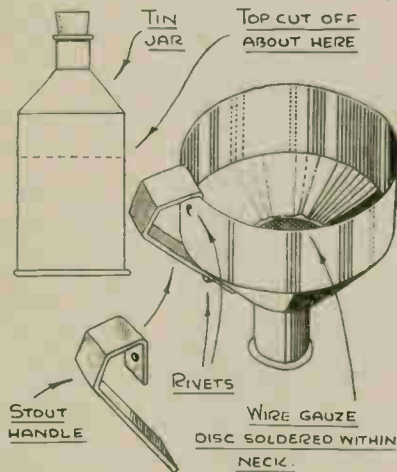
It will be seen that, by removing the bottom portion of the tin jar, and inverting the upper part, the chief

A handy small Filter Funnel

parts of a filter are provided, i.e., a rim, funnel, and spout. It is then largely a matter of attaching a stout tin handle to the work, as shown, using small rivets.

In fact, some of the tin jars have small handles. In such a case, there will be no necessity to fit a second handle. The handle is provided more or less as a means of hanging the filter after use.

In order that the funnel will filter paints, distempers and so on, the inside, near the cork neck, needs to be covered with a disc of fine wire gauze, the same as all other filters. Wire gauze is obtainable fine, medium and coarse meshed. You should be able to obtain a scrap cutting from a tinsmith.



Much will depend on the fluids you wish to filter. Buttermilk, for example, requires a fairly fine gauze—something between fine and medium. Medium gauze would serve for straining paint, distemper, etc. If you have any difficulty in obtaining a piece of gauze, remember that an old tea-strainer would make an excellent filter. The gauze could be removed and be soldered within the tin jar, where indicated. If a ring of wire

encircles the gauze, keep the wire on it intact. This will simplify the job of soldering the gauze to the tin.

You will note that no "bead" is given to the rim of the tin jar filter. However, if you prefer a reinforced rim, it would be easy to make a cut $\frac{1}{4}$ in. by $\frac{1}{4}$ in. in the tin edge, bend over the tabs, encircle the rim with a length of wire, then proceed to bend the tabs around the wire, using pliers, or tapping with the cross-peen of a hammer. Solder could then be applied around the lip to fill in any cavities.

A tinsmith could make a really first-class job of it, since he has the experience and facilities. Being an amateur, it will be rather difficult trying to emulate the tinsmith, but one never knows what one can do until one tries to do it, whatever it might be. That is the only way in which one gains experience.

So, if you make the filter, try to be as workmanlike as possible. It is a rough-and-ready affair, but could be finished quite expertly, if the spirit is willing. There is no need to paint the filter, unless necessary. If for paint filtering, do not apply paint. If for filtering distemper, do not paint it, particularly the wire gauze. In fact, no paint should be applied to the inside at all.

A SIMPLE little candle holder can be made from a distemper tin lid or paint can lid, an empty adhesive tape box and a small strip of metal. A lid about 5 ins. in diameter serves the purpose admirably. The adhesive tape box forms the socket for the candle.

Assuming you have the lid and box, the latter is affixed to the centre of the lid with a small bolt and nut, it being necessary to drill a suitable hole in same with a twist drill. A handle is then bent from sheet metal and affixed with another small bolt and nut, as in the illustration.

However, a better plan is to make a handle with a longer base strip which reaches over the central hole in the tin lid. The bolt holding the socket will also serve to hold one end of the handle. A second bolt and nut is then used to attach the handle firmly to the lid. In this case, there will be no likelihood of the handle twisting from side to side.

As the nuts of the bolts will project at the underside of the lid, three small discs cut from hat felt should be attached to ensure that the lid rests level on a flat surface, such as a table top, shelf, etc. These discs of felt are spaced equally, as shown by the underside view. They could be cut

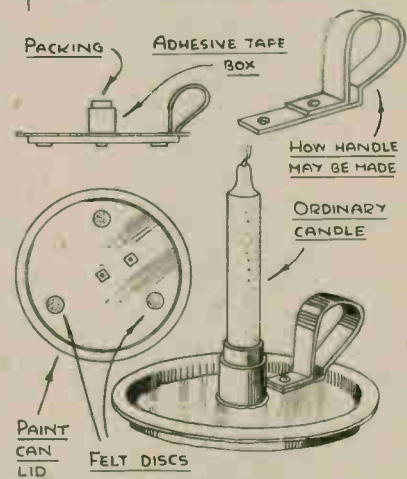
from a gentleman's felt hat which has been discarded.

The completed candle holder should be painted, applying two separate coats. Green is a usual colour. When the paint dries, it might be found necessary to have the candle packed in its socket, using a strip of cardboard. Adhesive tape boxes are about 1 in. in diameter. Normal white candles are about $\frac{3}{4}$ in. or $\frac{7}{8}$ in.

An easily made Candle Holder

in diameter, therefore, a packing is likely to be necessary.

Adhesive tape boxes, of course, are simply the tin containers for "reels" around which the tape is wound. There are not so many of these small boxes about nowadays, and if you should have difficulty in obtaining one, an alternative is to make a



cross-shaped piece of tin, drilled in the centre for the fixing bolt. The "arms" of the cross are bent up to clip on the candle.

This form of clip holder should be made neatly. The ends of the arms could be curled so that the sharp edges do not tend to cut into the candle when the candle is inserted. Although somewhat primitive, the candle holder serves its purpose and is certainly much better than no holder at all, being a measure of safety. A plain candle, stuck by its own wax to a shelf, etc., is a menace—a danger to the safety of one's surroundings.

Moreover, the lid, or rather plate, catches all drippings of molten wax from the burning candle. Therefore, in moving from one place to another with the lighted candle, no drippings can fall on carpets, etc.

How sandstone can be turned into home-made MODELLING CLAY

SANDSTONE in various forms is a very useful material in model-making where imitation paving, rocks, etc. are required, as naturally obtained, sandstone is very soft and is readily broken by tapping into lumps of any size. Continued tapping, or even steady pressure, will reduce it to a rough powder. It is of several colours, deep red, yellow and grey being the most easily found. Of these the red sandstone is the most common.

A Powdered Solution

The stone is extremely helpful with models of the fort, house and railway type, and a good way of using it is to bring a quantity of the stone down to a powder (really sand) and mix it with a very thin glue solution. When well worked up a mass of "mushy" consistency is obtained which can be dealt with like cement. The mass should not in any way be wet, and a very thin glue solution indeed is all that is necessary to bind it lightly together.

A paste so formed can be used with any model that will not receive much knocking about, as paving for paths, etc. It is laid on as cement with some handy tool, like a putty knife. By careful use of the instrument a very nice smooth surface can be obtained.

Glue for Binding

With a weak glue solution for binding pavings, etc., it will crumble rather easily if subjected to banging or bending, but for items that remain put, as say, scenic effects at the back of a permanently laid model railway, they will remain good for a long time.

For a tougher finish the strength of the glue is increased and if this is carried far enough a rock-like substance can be obtained. But for just ordinary binding the thin solution will do quite well. The paste can also be put down in lumps to give certain effects. In fact the more you work with it the more uses become obvious.

To give an appearance of "chippings" or ballast for a model railway the stone need not be reduced to powder but only to very small lumps. For this sort of work a suitably-sized sieve is very handy to get all the pieces the same size approximately. Glue is used as before.

In its powder form, the stone can

be employed to give a rock finish to woodwork, etc. To do this, the area in question is well painted with glue of a fairly strong consistency and the powder is then sprinkled on, or thrown at the surface.

An amount will fall off but a covering of the powder will remain, and when the glue is dry this will be found to be very firmly affixed. Surfaces thus finished are extremely effective, looking like solid rock. The whole process is really "pebbledashing" in miniature, and as stated, any surface horizontal or vertical can be treated.

Sandstone too, can be used in the block. That is to say, items can be shaped right away from a lump of the material by filing and general rubbing down. Miniature gate posts can be made this way, as also well troughs, stone seats, steps and similar articles. With care some really good impressions can be secured.

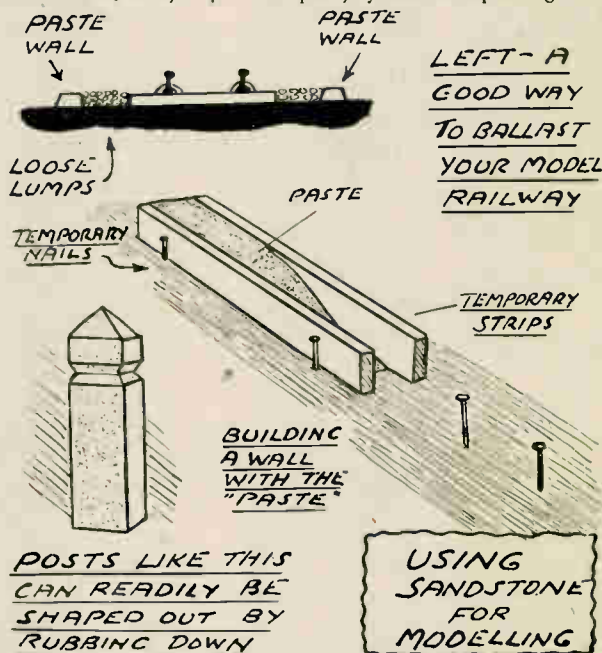
As ballast on a model track sandstone can be employed very successfully. The stone is taken down to quite a small size and if the track is permanently laid, and there is some means of retaining it either side of the track, it can be laid straight down without glue binding. If the track is to be lifted about then glue treatment is necessary.

The writer has obtained a good result by laying two "walls", one either side of the track—using the paste mentioned at first—with fairly strong glue. The walls were only brought up to sleeper level and were about half an inch wide, but they were sufficient to safely hold in position the sandstone ballast laid between. Fairly strong glue was used to both give strength to the wall and also to hold it down to the base-board.

Incidentally, quite large walls can be made this way, but where the size is at all great it is good to build around

nails driven into the base which act as reinforcers. A series of nails at suitable intervals should be put in down the whole length of the wall.

In all cases the "ramming" home of the paste helps the final strength. This is easy enough when laying a miniature path, by continual pressing with



LEFT - A
GOOD WAY
TO BALLAST
YOUR MODEL
RAILWAY

BUILDING
A WALL
WITH THE
"PASTE"

POSTS LIKE THIS
CAN READILY BE
SHAPED OUT BY
RUBBING DOWN

USING
SANDSTONE
FOR
MODELLING

the knife. But when building a wall it is best to have two parallel strips of wood fixed at the correct distance apart, and then ram the paste between, the strips being left till hardening has at least set in.

Steps made with the paste can be compacted by pressing on each with a flat piece of wood.

Colouring the Sandstone

If not the right colour sandstone items made from the paste or 'painted-on' sandstone will take oil colours very well if put on thinly. If too thick the effect is nothing but a rough painted surface, which is not nice. It is best, however, to use the stone in its natural state if possible, only resorting to a change of tint if the colour scheme absolutely demands it.

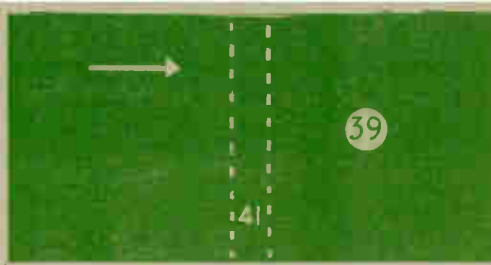
Finally, readers living near the sea shore or in sandstone regions will have no trouble in getting supplies. In other places sandstone will have to be sought for a little more diligently. But practically all over the country sandstone pebbles can be found in streams or in those areas of shingle found on the margin of all inland rivers at various places.

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MODEL OLD-TIME LOCOMOTIVE "NORTH STAR" of 1837

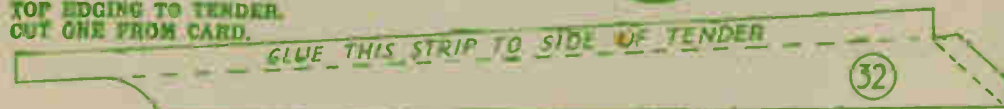


GLUE THIS STRIP TO SIDE

TOP EDGING TO TENDER. CUT ONE FROM CARD.



STEAM CHEST. CUT THREE 3/16in. AND GLUE TOGETHER.



GLUE THIS STRIP TO SIDE OF TENDER

TOP EDGING TO TENDER. CUT TWO FROM CARD.



SIDE OF TENDER. CUT TWO 1/8in.

CARD EDGING

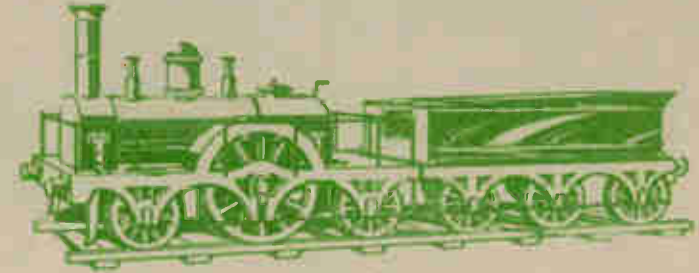
OUTSIDE EDGE BEADING



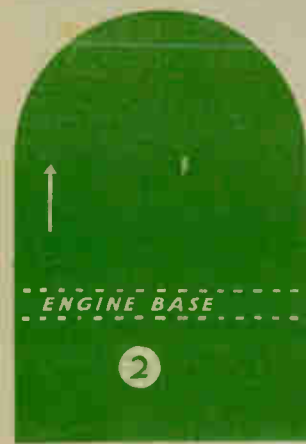
LARGE WHEEL. CUT TWO 3/16in.



CUT TWO 3/16in. AND SHAPE TO BOILER.



SIZE OF MODEL WITHOUT BASE.
LENGTH 10 1/2in.
HEIGHT 5in.

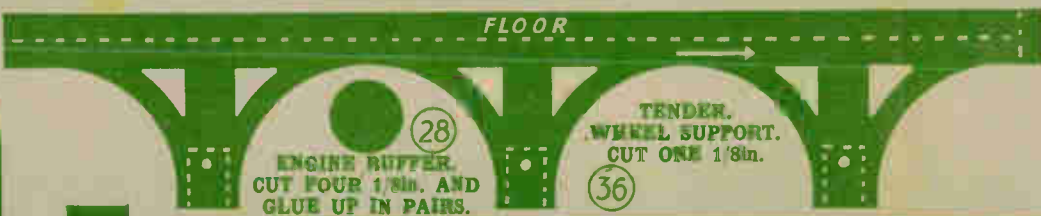


ENGINE BASE

CUT TWO 3/16in.

AXLE FOR BACK WHEEL OF ENGINE.

ENGINE FRONT UNDER FUNNEL. CUT FOUR 3/16in. AND GLUE TOGETHER.



FLOOR

ENGINE BUFFER. CUT FOUR 1/8in. AND GLUE UP IN PAIRS.

TENDER, WHEEL SUPPORT. CUT ONE 1/8in.



STEAM CHEST. CUT TWO 3/16in. AND SHAPE TO SECTION.



WHEEL GUARDS. CUT TWO 3/16in. AND BEND GARD TO SHAPE.



AXLES. CUT FIVE 3/16in.



FLOOR

TENDER, WHEEL SUPPORT. CUT ONE 1/8in.



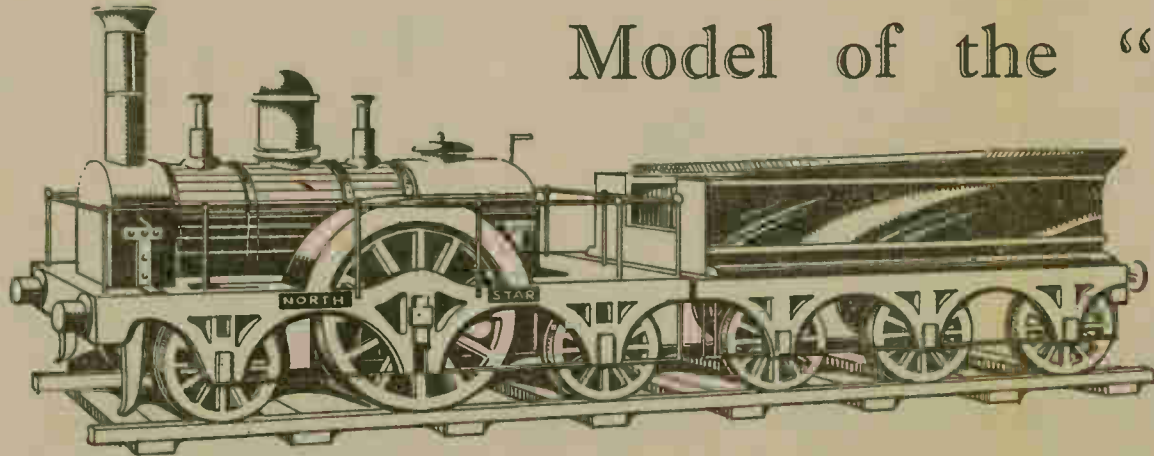
BASE

ENGINE, WHEEL SUPPORT.

PANELS OF WOOD REQUIRED FOR THIS DESIGN
ONE H3 ONE H2 TWO G2
The price is shown in Hobbies Weekly, September 8th, 1948, but is subject to revision. See the current edition of Hobbies Handbook, or write for price to Hobbies Limited, Dereham, Norfolk.

WOOD FOR BASE OF MODEL IS NOT INCLUDED, BUT SUFFICIENT 3/16in. WOOD IS ALLOWED FOR SLEEPERS AND RAILS.

Model of the "NORTH STAR"



THE model to be built from this design is not only fascinating to make, but is of historical value and, therefore, doubly interesting. It is a 12½ in. model of the famous North Star locomotive. This was built when Robert Stephenson had established himself, and was the first engine to draw a passenger train at the opening of the Great Western Railway at Paddington in 1838. It was the first successful engine to have the great 7ft. driving wheels, and ran on Brunel's 7ft. gauge.

Our model is a realistic replica built in wood, with a small amount of wire for hand rails, etc. All parts are cut with the fretsaw, cleaned, and fitted together with glue. The construction of the model cannot be hurried, and patience and ability must be used not only in cutting and finishing the parts, but in putting them together, testing them out and finally painting. The patterns should not be stuck down to the wood, but can be marked out in pencil.

Working Hints

A study should be made of the side view with its numbered parts, so you may realise where each is to be placed. These may be done before

tweezers or small pliers, and glue should be allowed to set hard as each assembly is made.

Read the whole of these instructions in connection with the illustrations, to ensure you know the correct sequence and position. The parts are not numbered entirely in rotation for building.

Locomotive Construction

Build the engine complete first, and start with the floor. The front of the boiler is made up of four 3/16 in. pieces glued together, the whole block being glued in the aperture provided. The base is fixed ½ in. upwards from the bottom of this boiler piece, shown by dotted lines on pattern 2. At the other end of the engine base is an opening to take the fire-box. Here two 3/16 in. pieces are cut, stood upon the base (No. 13) and then a piece of card folded over the whole lot to make it fairly solid. The complete fire-box is glued in position in line with the other part.

The Boiler

Now make the boiler to come between the two. This is made as a hollow cylinder with thin card wrapped round. The centre remains

fitted. The whole of this construction is plainly seen in Fig. 1, cut-away view. The funnel, steam chest, and other various additions, can be left until later.

Part 5 is the outside part forming the wheel support and covers. It is glued to the outside of the engine floor to projecting pieces of the base. Be sure to get upright. Part 6 is glued on the base itself and with part 5 is the former for the card which makes the cover (see Fig. 2). The axles are fitted below the floor, two 3/16 in. pieces are glued together, or if you happen to have ¼ in. material, use that to save the trouble. The two pieces No. 37 are glued (see Fig. 3) to the side of the fire-box in line with its back surface. Note, by the way, from this detail, how the fire-box floor is slightly chamfered at its front edge, shown by the section on the pattern of part 13.

Axle Fitting

The remaining axles are cut from 3/16 in. wood (part 3), three being for the tender and two for the engine. They are glued under the floor in the position shown by the dotted lines on the engine base. Be sure to get them all the same length, and in line with

view). The wire is let into a groove on the underside of the drop side, and the sharpened end driven into the floor of the base.

The hand-rail along the top is of short lengths of wire, with the cross rail fixed with a touch of solder. A view of the platform behind the fire-box showing the wiring there is given at Fig. 4. Various additions to the top of the boiler are made up as stated, a detail at Fig. 5 showing their construction.

The Tender

Now for the tender. To the floor, glue the sides and back. The front has an opening cut out of it. This front forms the support for the tender top (No. 30), a small strip of waste wood being glued to the back of the tender to hold it in place that end (see Fig. 6). To cover the floor opening of the wheels, the beading No. 43 is glued along three sides, mitred at the back end to make a fit.

The drop sides or wheel supports (No. 36) are glued round with the buffer plate at the end. This buffer plate is the same as the one on the front (No. 8). The buffers themselves for the tender, however, are of the capped type (No. 10), whereas on the front of the engine they are a solid block of wood (No. 28).

Flange Wheels

All the small wheels, it will be noted, have an inside flange—the driving wheel has not. Each wheel is made of ½ in. wood with a rim of cardboard cut to project beyond the edge to form the flange itself. The wheels of the tender are screwed on like the others, cover plates being put over the head. Allowance has been made in design for the addition of a thin metal washer each side of all wheels. This is most helpful in true

When finally completed, the engine and tender are joined by a footplate piece of fairly tough card. This bridges the gap between the two units and is glued in place on engine and tender (see Fig. 4).

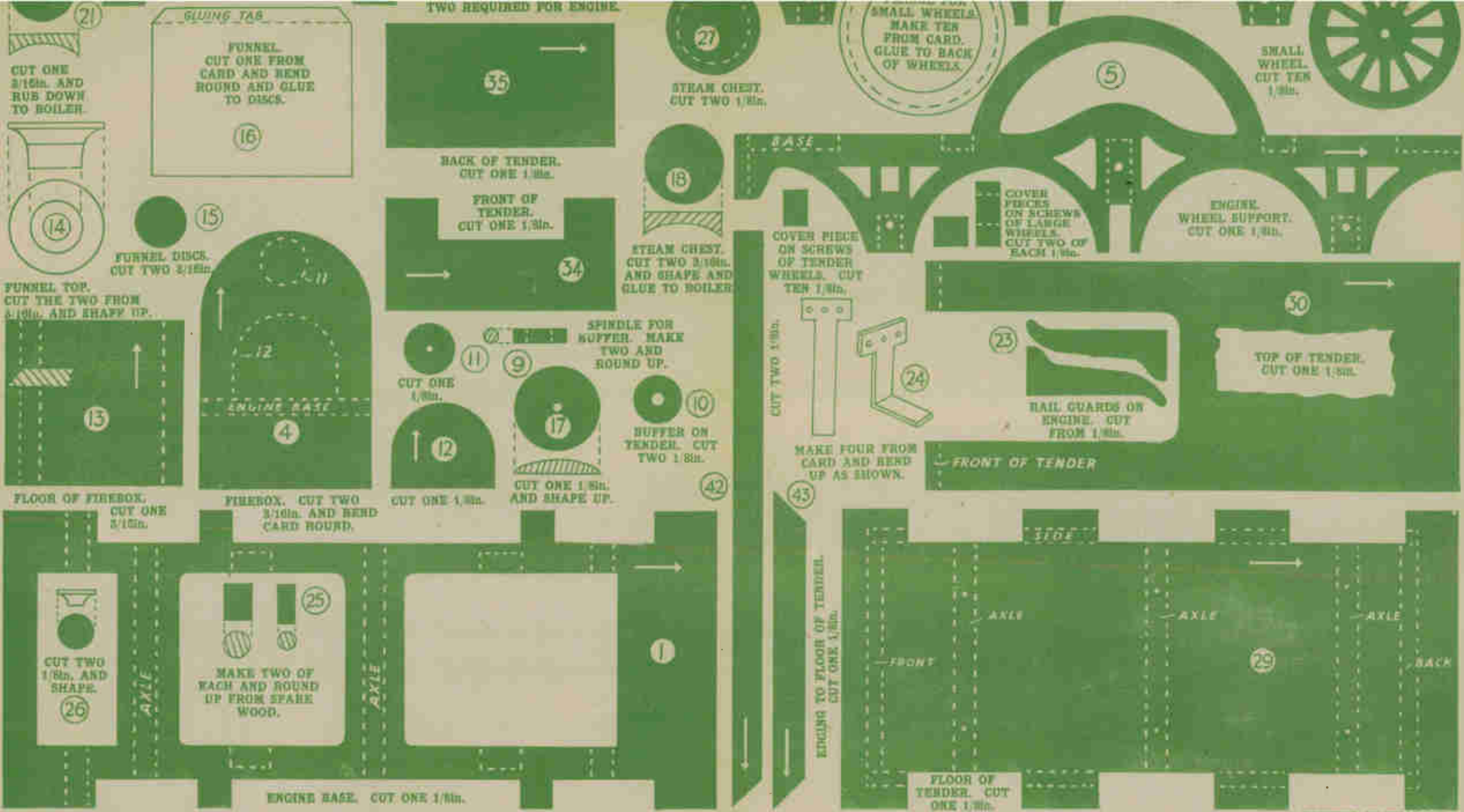
Painting the Model

Having completed the actual construction of the model, take great pains to paint it up correctly. Do not be in a hurry with this, and allow each colour to dry before adding an adjoining one. Poster paint should be used—it is obtainable in small pots in various colours from stationers, etc. Use the picture herewith as a guide, in conjunction with the colour schedule given.

COLOUR DETAILS

Frame—Chocolate brown, edged with black and red lines.
 Buffer Beam—Vermilion (no lining).
 Buffers—Of leather with vermilion bases.
 Wheels—Green centre and spokes.
 Bases of Tyres—Black.
 Boiler—Mahogany strip lagging, with brass band.
 Smoke Box and Chimney—Black, with copper top.
 Dome, Safety Valve and Whistle Casings (Fig. 5)—Brass.
 Hand Rails (Fig. 4)—Brass with steel columns.
 Name Plates—Brass lettering on black ground.
 Axle Boxes—Black edged with red lines.
 Regulating Handle, Reversing Handle and Whistle Lever (Fig. 4)—Steel.

Remember that the boiler was covered with mahogany strips bound round with the brass bands indicated. These bands can be of thin card (postcard) glued on after the pencil lines of the mahogany strips have been added. The boiler can, therefore, be mahogany colour, the card being



21
CUT ONE 2/16th. AND RUB DOWN TO BOILER.

GLUING TAB
FUNNEL. CUT ONE FROM CARD AND BEND ROUND AND GLUE TO DISCS.
16

TWO REQUIRED FOR ENGINE
35
→

27
STEAM CHEST. CUT TWO 1/8th.

SMALL WHEELS. MAKE TEN FROM CARD. GLUE TO BACK OF WHEELS.

SMALL WHEEL. CUT TEN 1/8th.

14
FUNNEL TOP. CUT THE TWO FROM 3/16th. AND SHAPE UP.

15
FUNNEL DISCS. CUT TWO 2/16th.

BACK OF TENDER. CUT ONE 1/8th.

34
FRONT OF TENDER. CUT ONE 1/8th.
→

18
STEAM CHEST. CUT TWO 3/16th. AND SHAPE AND GLUE TO BOILER.

5
COVER PIECES ON SCREWS OF TENDER WHEELS. CUT TEN 1/8th.
ENGINE WHEEL SUPPORT. CUT ONE 1/8th.

13
FLOOR OF FIREBOX. CUT ONE 3/16th.
↑

12
4
ENGINE BASE

11
9
17
10
42
SPINDLE FOR KUPPER. MAKE TWO AND ROUND UP.
CUT ONE 1/8th.
CUT ONE 1/8th. AND SHAPE UP.

10
42
BUFFER ON TENDER. CUT TWO 1/8th.

CUT TWO 1/8th.

24
MAKE FOUR FROM CARD AND BEND UP AS SHOWN.

23
RAIL GUARDS ON ENGINE. CUT FROM 1/8th.

30
TOP OF TENDER. CUT ONE 1/8th.

FLOOR OF FIREBOX. CUT ONE 3/16th.

FIREBOX. CUT TWO 3/16th. AND BEND CARD ROUND.

CUT ONE 1/8th.

26
CUT TWO 1/8th. AND SHAPE.
AXLE

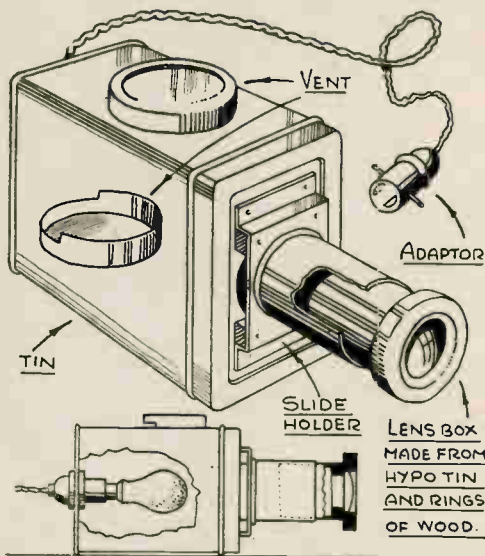
25
MAKE TWO OF EACH AND ROUND UP FROM SPAKE WOOD.
AXLE

1
ENGINE BASE. CUT ONE 1/8th.
→

43
ENDING TO FLOOR OF TENDER. CUT ONE 1/8th.

29
FLOOR OF TENDER. CUT ONE 1/8th.
FRONT
SIDE
AXLE
AXLE
AXLE
BACK

You can always find a use or a sale for A SIMPLE LANTERN



A SMALL, simple, inexpensive lantern, for transparencies, i.e., cinematographic film, slices, etc., can be made easily from old tins, a lamp holder, a small size electric lamp of about 50 watts, an adaptor, some wire flex, and, most important of all, a lens. Almost any kind of plano-convex lens may be used, but the diameter should not be less than $\frac{3}{4}$ in. The best size is $1\frac{1}{4}$ in. or $1\frac{1}{2}$ in.

As for the focal length, this should be about 3 ins. to 4 ins. To find the focal length of a lens, pin a white paper to a wall and, using a distant light, such as the sun, or even a bright sky, hold the lens in front of the paper, steadied against the leg of a rule, then work the lens downwards gradually until the sun, or the sky, is seen as a sharp image.

Thus, being sharp in focus, you know the focal length by noting the distance the lens is from the paper, thanks to the rule. That is a rough way to obtain the focus of any lens.

Lens Adjustment

The lens box, and its adjusting sleeve must be made so that the lens is about the focal length from the slide holder, with plenty of adjustment one way or the other so that the enlargement on a screen can be regulated. One cannot always shift a screen about, but one can adjust the lantern to suit the distance of the screen. Therefore, before attempting to make the lantern, obtain the lens.

Generally, of course, two plano-convex lenses are used, one being a fixture near the slide holder, the other being fitted in the adjustable sleeve. While a single plano-convex lens may

be used, a single bi-convex type would serve, if you possess one.

Bi-convex means a lens having two curved faces; a plano-convex lens is one having a flat side and a curved side. The greater the curve, the greater the magnification, but with distortion near the edges and "rainbow" colours, particularly with a single bi-convex lens.

Our tin lantern is merely a toy for a youngster and is not intended as a precision optical device. It will project good images, if properly made, and if the lens is arranged correctly according to its focal length. Unfortunately, one cannot have the light too strong.

We have mentioned a 50-watt lamp. This gives fairly good light and does not

tend to produce much heat. A 75-watt lamp gives stronger light and heat, whereas a 100-watt lamp, which gives excellent illumination, produces so much heat that the tin container will become unbearably hot to the touch.

That must be avoided by using a lamp of small wattage. Even in this case, there is some amount of heat—despite the fact that a few air vents are provided. Of course, by providing plenty of ventilation, more heat can escape, but the ventilation holes need to have a light-trap.

Tin Body

Having obtained some form of magnifying lens, the next part to find is a tin box which will form the body of the lantern. This tin, in fact, is really the lamp housing, and a good type is an empty glucose tin, this measuring $6\frac{1}{2}$ ins. by $5\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. Tins of similar size and shape would serve the purpose: if slightly larger, so much the better.

Air vents, with light-traps, will have to be arranged on the top and sides of the tin. This can be done by nailing a piece of wood to project over the bench or a box; it should be 3 ins. wide to enable the tin to go over it.

The stick is a support while cutting the air vents in the tin. These air vents are cut with a $\frac{1}{16}$ in. or $\frac{1}{8}$ in. centre bit. Set the tin over the stick, then commence to bore the hole with the bit, the scriber cutting a neat hole in the tin.

Having cut a hole at the top and sides, you need three typewriter ribbon tin lids. These are shaped as shown and soldered over the air vent

holes so the heat escapes at the rear end of the body: some light will escape, too, but it will be towards the back of the lantern and not towards the screen.

A $\frac{1}{16}$ in. hole is cut in the back of the tin (its bottom) for a lamp holder. The lamp holder is secured to the tin bottom with its collar ring, then the lamp inserted in the holder.

So far as the lamp house is concerned, you need to cut a $\frac{1}{16}$ in. aperture, or possibly a $\frac{1}{8}$ in. aperture, much depending on the size of the slides or transparencies to be projected. A $\frac{1}{16}$ in. diameter hole with a $\frac{1}{16}$ in. diameter lens should be O.K.

The hole in the lid is covered with the slide holder which is bent to shape from a piece of flat tin. This, too, has a hole cut in it to suit the diameter of the lens box sleeve. A hypo tin such as a Johnston's $\frac{1}{16}$ lb. tin, would make the sleeve for the lens tube. Cut off what you need and solder it to the slide holder.

Lens Tube

The lens tube requires to be made from a strip of tin, being fixed to the lens discs. The latter are cut from wood, with the lens a force fit at the front. The lens hole should be chamfered slightly at the front side. The convex side should face the screen—not the flat side.

To avoid confusion respecting the construction of the lens holder, first fit a disc of $\frac{1}{16}$ in. wood in the sleeve with enough allowance for the tube to be made. This tube is bent around the disc (which has a hole about $\frac{1}{16}$ in. smaller all round so the lens fits against it) from a strip of tin, being affixed to the disc with a few gimp pins. The joint should overlap, and need not be soldered, unless preferred.

The front disc is made larger in diameter to accommodate the lens which is a force fit. The front disc is glued over the disc of wood in the tube. The latter should move freely and neatly in the sleeving, being part of the slide holder.

Nothing else to be done except to apply a coat of black (stove) enamel to the work. If you use narrow strip slides, the slide holder aperture can be packed at the top and bottom with strips of wood, as shown. A strip of standard film may be used as a slide, but the pictures will show sideways unless the projector is kept on its side.

Ordinary lantern slides are usually $2\frac{1}{2}$ ins. square—possibly more. If you wish to project these, a much larger projection lantern is needed. If you wish to project line drawings, perhaps caricatures of friends can be drawn on a strip of Cellophane paper and enclosed between two strips of glass.

How to make a practical and novel bathroom SHAVING CABINET

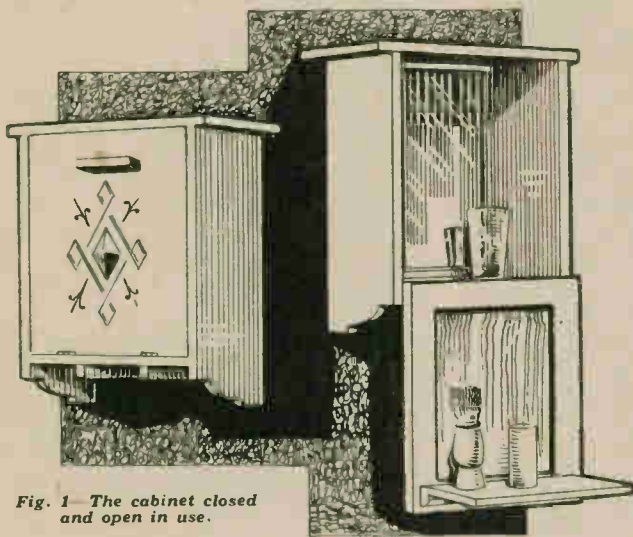


Fig. 1—The cabinet closed and open in use.

IT is some time since we gave a design for a really useful shaving cabinet to hang on the wall of the bathroom. The one we are showing here this week is indeed a novel and useful type of cabinet. Our illustrations, Fig. 1, shows the cabinet.

Mirror Size

The size of the cabinet is, width of front, on the top shelf, 11 ins., height overall 13 1/2 ins., and depth, front to back, 5 ins. This affords a space inside for a mirror measuring 9 ins. square if desired. The wood used in construction could be painted or enamelled white or cream to give an effect suitable for the bathroom.

Figs. 2 and 3 give sections with all necessary measurements and details of construction. In Fig. 3 it is shown clearly by the dotted lines how the door and its shelf fold back, as it were, inside the cabinet. The fixing of the mirror inside is also suggested, and grooved fillets of wood are screwed round to top, floor, and side of cabinet to make a secure fixing.

Start with the two sides, which measure 13 ins. by 5 ins., and are 1/2 in. or 3/4 in. thick. The simple shaping (Fig. 3), commences 2 ins. up from the bottom edges and is cut with the fretsaw. To get accuracy of both sides, first cut the one to shape and then draw round the cut edge with pencil on the second side and proceed to cut this round.

Next cut the floor of the cabinet 9 1/4 ins. long by 4 1/2 ins. wide from 1/2 in. stuff. Fix this 10 ins. down from the

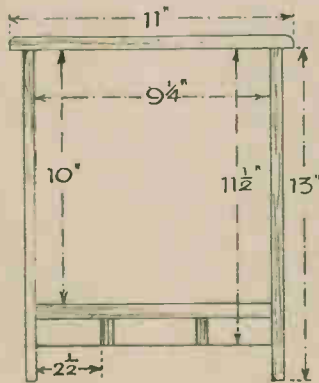


Fig. 2—Detail of framework

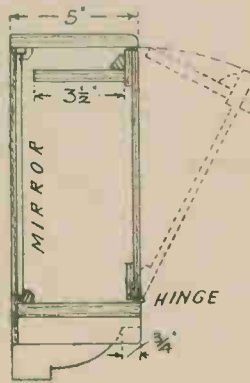


Fig. 3—Side view with door

top edge of the sides with screws. Bore the holes neatly through the sides and countersink them so the heads are below the surface, making room for the putty or other filling. Keep the front edge of the floor flush with the front edges of the sides so a depth of 1/4 in. remains along the back edge on which to screw the backing panel (see Fig. 3).

The top board of the cabinet measures 11 ins. by 5 ins. and after cutting round off or chamfer the front and two side upper edges. The top is fixed to the sides in a similar manner to the floor. Next glue a fillet of wood along on the underside of the top inside and 1/4 in. in. This is to take the back panel which may now be prepared.

The panel measures 11 1/4 ins. long, 9 1/4 ins. wide, and wood 1/4 in. thick. Lay it in position on the edge of the floor of the cabinet and close up to and underneath the top board. Run screws through the panel into the floor, and also small sprigs or screws into the fillet along the top. Next glue some pieces of 1/4 in. by 1/4 in. up inside to connect the sides with the back panel.

Two "stop" rails or blocks are now cut, glued and screwed underneath the floor and spaced as shown in Fig. 2. These pieces are 4 1/2 ins. long, 1 in. wide and 1/2 in. thick. They give the neces-

sary support to the door when this is swung down.

The door is 1/2 in. thick, measuring 10 ins. by 9 1/4 ins. with four 1/4 in. rails glued and screwed on at the back as Fig. 4 shows. Check the actual opening of the cabinet before cutting the door panel and cut full so the edges can be cleaned off to make a sound fit. When gluing, clamp the rails to the panel and leave until the glue has hardened. Then insert a few screws from the back of the door into the panel, taking care the points of the screws do not come through on the face.

The Shelf

Now prepare the shelf which is to be fixed to the door. Cut a piece of 1/2 in. or 3/4 in. wood 8 1/2 ins. long and 3 1/2 ins. wide and round off two of the corners which come to the front. Glue the piece to the rail of the door almost flush with its inner edge, as seen in Fig. 3. Plane up a 1/4 in. square fillet and glue this into the angle to give additional fixing to the shelf.

After a final clean up, the door may be fitted with a pair of hinges, shallow recesses being cut in to receive the two flaps of each hinge. The hinges are then finally screwed to the floor of the cabinet.

Fixing the Mirror

In Fig. 5 a suggestion is given for fixing the mirror. Rebated beading or moulding is glued along the back lower angle inside and the mirror placed behind it in the rebate. Then at the top similar moulding is put along and glued to the underside of the cabinet top and to the square fillet which fixes the backing panel.

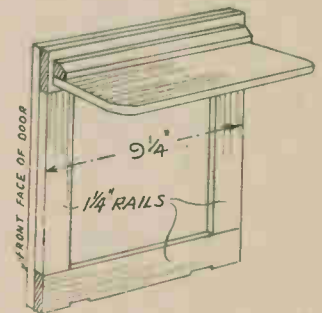


Fig. 4—Door and shelf

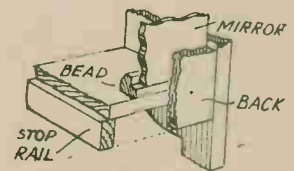


Fig. 5—Constructional detail

Another article of helpful suggestions on AUTUMN PREPARATIONS

WE mentioned in our article last month the general point of preparation necessary for those who are proposing to undertake gifts for friends at Christmas. The suggestion then was that an early start should be made—at least in preparation if not in actual operation. Do not leave the work until the last minute or you will probably find that the material you want is not then obtainable and the work will have to be held up for lack of where-with-all to do it.

It is much better to start early and gradually collect the "bits and pieces" that you are likely to need. You can only do that by making an early decision tentatively on what you are going to make. You may, of course, be proposing to make a number of the same articles either as gifts or to dispose of by sale amongst your friends.

Mass Production

This work will be easier because by repetition the cutting and assembly becomes more straightforward. Moreover, you can cut out several similar parts consecutively, so building up sufficient for several articles when you come to the stage of assembly. Small parts are particularly applicable in this way.

Suppose you are doing a simple model motor car or lorry. You can cut out all the floors, say, at once, then all the sides and then the bonnet or cab. Having cut one piece, the others can easily be marked out by using that piece as a template, laying it on the wood and marking around it with a pencil. Remember in doing this to get quite a sharp long point, marking close to the work. If you keep the pencil upright you may find that the mark is away from the actual shape and so throw the whole thing out of true.

The Use of Wheels

In the case of toys, too, you will undoubtedly want a number of wheels. Last year these were in short supply but now they are more readily obtainable. Do make sure, however, that you can purchase just the size you want, and buy them in a complete quantity, sufficient for all your needs.

All wheels are not alike even though they may be the same size. Some are nicely turned and finished in wood and others are only cheap circular discs which will probably require further shaping.

For the fixing of them, too, you will require screws—the sturdy round-headed variety, preferably in brass. In this connection, remember that the

toys must be sturdy and strong so your fixing screws should go well into the axles and take whatever weight is demanded of them.

The wheels, too, will be made to run more easily by the addition of a little metal washer each side. This considerably reduces the friction and makes a more satisfactory job. Before you start, therefore, you should ensure that you have the right type of screw and in sufficient quantity, with double the number of washers to fit.

Calendar Subjects

Those little calendar pictures which were popular before the war are again becoming obtainable for the same purpose. Keep your eyes open in the stationers' shops and the stores so you can get together a number of coloured pictures suitable for the job, and have them ready for cutting out and standing. The coloured picture is pasted on $\frac{1}{4}$ in. or $\frac{3}{16}$ in. wood and cut round with a fretsaw to a simple outline.

Do not get pictures which have delicate outlines such as branches or trees or tiny flowers—they are much more difficult to cut. Have a well marked subject which is, as far as possible, without tiny projecting pieces likely to be broken if in use.

Standing or Hanging

If you are proposing to make the cut-out picture stand, you simply have to add odd blocks of wood behind it. In which case, of course, the edge has to be quite straight, and the tiny blocks glued in line with the lower edge to make a satisfactory base.

Accommodation should be allowed for the tiny calendar pad. It can be added either in a suitable place on the picture itself or a little wood can be allowed for it by the side of the actual coloured subject.

If the picture cannot be provided with a straight bottom edge, then the whole subject should be made to hang as a wall decoration. The calendar itself can be hung by a short length of ribbon beneath the picture and a loop of fancy ribbon glued behind, near the top, so the whole thing can be hung on the wall.

When you are getting the pictures together, keep an eye, too, for the calendar pads and purchase those you require of the right size. They are usually obtainable quite small—about 1 in. square—or rectangular, about 2 ins. by 1 in. This size is most convenient with a small picture but, of course, they are not so legible as the larger ones.

You may think it an advantage to

get a larger calendar pad and to hang it with a proportionately larger subject. Keep them both balanced, however, i.e., do not have a large picture and a silly little date pad. After all, the picture is to look at but the date pad is to be used.

Doll's Houses

At the other end of the scale you may be proposing to make a really fine doll's house for a little friend. Fortunately suitable paper for covering both outside and in is again obtainable, although you may have a little delay in getting it. A rough-and-ready box will form the general carcass and can be made a very attractive piece of work by the addition of this paper.

Plain coloured material is suitable for the interior walls, but for outside, of course, you should use the special brick paper and get some tile or slate paper suitable for the roof. If you can, get a sample or see the size of the bricks and tiles on this paper. Otherwise it may look out of all proportion to the actual model.

In former days, of course, you could get the "bricks" in various sizes. Now you may have to build your house larger or smaller according to the proportion of "bricks" you can get.

Metal Window Fittings

In this connection, too, you can purchase complete metal fittings for windows. They are very realistic with tiny diamond panes and bright glossy surrounds. Holes are provided at the corners, so all one has to do is to nail them in place. Attractive metal doors complete with letter box and upper light are also obtainable.

Here again it is necessary to have these actual accessories to hand before you go too far, because the aperture of the metal window frame must be cut in the carcass of the house in order to fit the windows snugly.

Substitute for Wood

By the way, these metal windows are in various shapes suitable for different rooms. In all cases a tiny sill should be added by gluing a short length of $\frac{1}{4}$ in. strip in the appropriate place beneath.

In connection with this doll's house you may find difficulty in obtaining suitable wood if you propose building a large model. If so, turn your attention to some of the composition board which you can often purchase in quite large sheets. As the whole of the work will be finally covered with paper or paint, it does not matter very much whether this composition board is the same make throughout.

It may even be thicker or thinner for some walls and the only difference is that you must make an allowance in marking off your dimensions.

Stripwood Uses

Stripwood is again obtainable and this is a material which the craftsman should have at hand for various occasions. It can be purchased in strips about 2ft. long and $\frac{1}{4}$ in., $\frac{3}{8}$ in. or even $\frac{1}{2}$ in. square. As such, it can serve on all kinds of work.

On toys you can cut strips of it to act as block pieces to strengthen. In a doll's house you could use it as supports for the floor or for the roof. For calendar pictures short pieces of it form the strip by which the picture is made to stand.

If you can get these strips in a larger size, then you could even make little playing blocks by cutting short lengths for squares, rectangles, diamonds, etc. With these playing blocks a few pieces of dowel could be cut into 1in. or 2in. lengths, and when the whole lot are put in a box a very pleasing "block-making" toy is provided.

With the coming of winter you will find the popularity of jig-saw pictures. All sorts of subjects in a variety of sizes are useful for this purpose but the main trouble will be to purchase suitable plywood. This is really essential for jigsaw work because if you use ordinary boards the narrow linking pieces will be very apt to become broken. If you can get odd panels of plywood by all means do so.

Tea Chest Plywood

As a last resource you can use tea chest plywood. The disadvantage of the latter, however, is that whilst the outside pieces of wood may be quite satisfactory, the parts between may be very inferior. Thus when you cut the picture out into the jigsaw parts some of the "dud" plywood may fall to pieces from the outside layers. That, of course, is a point which you cannot overcome until the work has been done.

One final point about these gifts which you are proposing to make. They will look so much better if offered to the recipient in a nice

container. Keep your eyes open, therefore, for small suitable boxes in which the finished article can be placed.

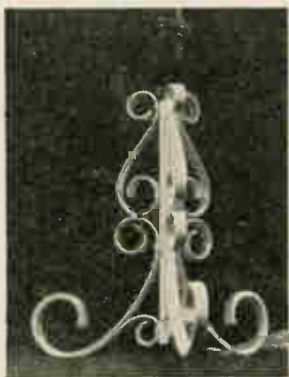
If the cardboard box obtained bears advertising or trade names on it, then you could cover these with fancy paper cut and pasted clean over the sides.

Wrapping and Label

The actual article should not, of course, be just dumped in the box, but nicely wrapped in clean tissue paper and made comfortable and snug so that it will not roll or fall about. A little fancy label on the lid will add a final touch, particularly if nicely printed with an appropriate seasonal or topical greeting. There will probably be—in this connection—coloured Christmassy labels obtainable which can be gummed and so save you the trouble.

We would, therefore, urge on our readers to take early steps in planning their autumn and winter campaign and to give some thought to the gifts they propose to make and to work to a schedule of the type suggested in our previous article.

Some Fashionable Scroll work Articles from Brass Vallance Rail



Tools Used—

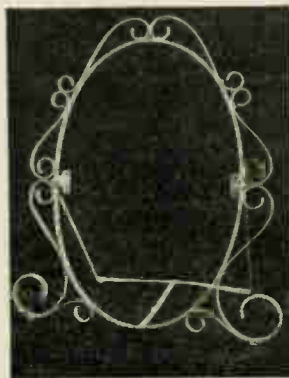
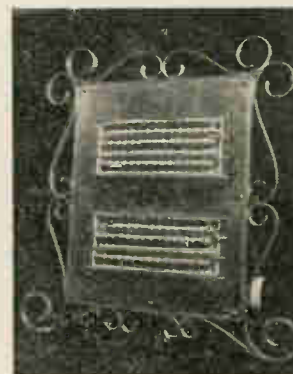
Small bench vice, pliers, hand drill and bits and taps for screws to be used. Some 4 B.A. Round Head Brass Screws were used in the articles photographed.

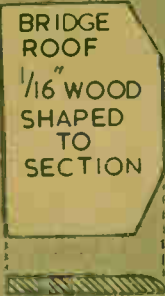
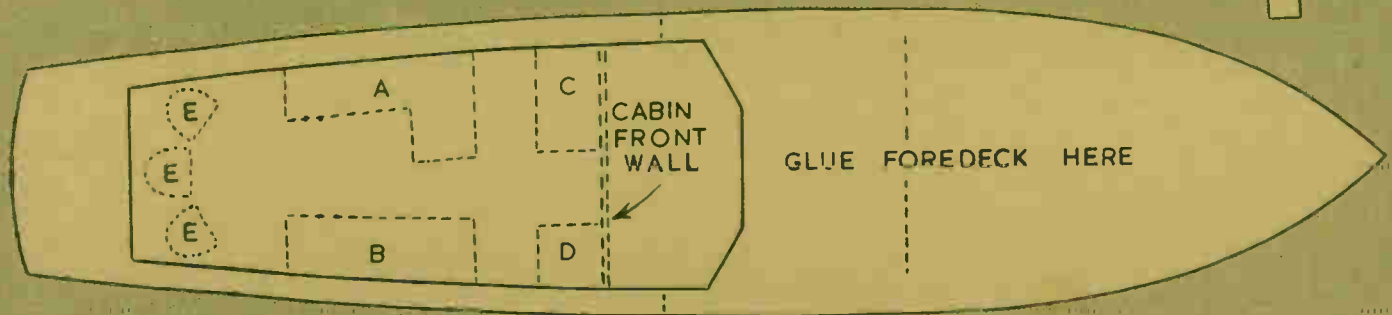
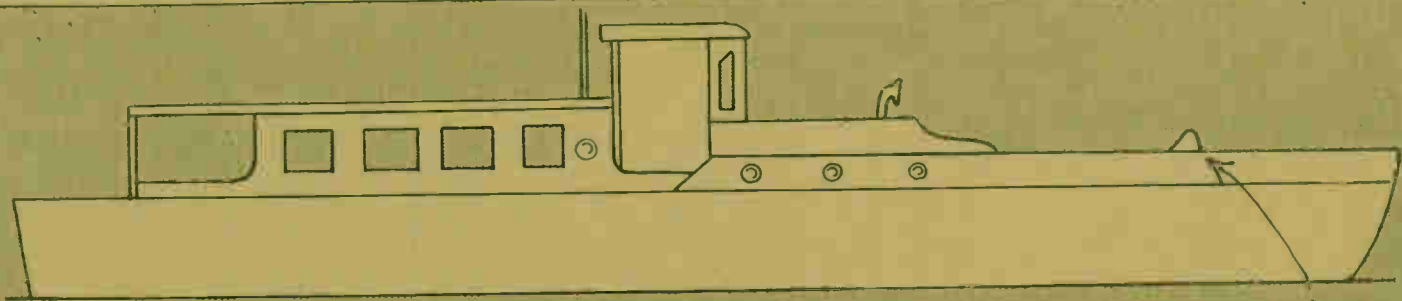
Method Adopted—

A full-sized drawing of the article was made. Length of vallance rail required for each scroll obtained with dividers. One end of the strip held in the vice and bent with fingers and pliers. Helped at times by gentle taps at the point of bend with a small hammer. Completed scroll placed over drawing and checked for correct curves. Assembled with $\frac{1}{4}$ in. by 4 B.A. screws, clearance hole through one piece into tapped hole in the other.

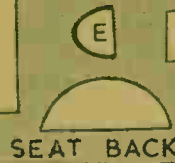
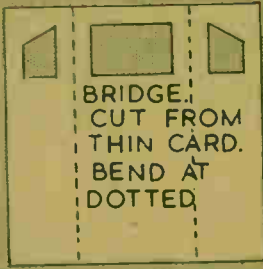
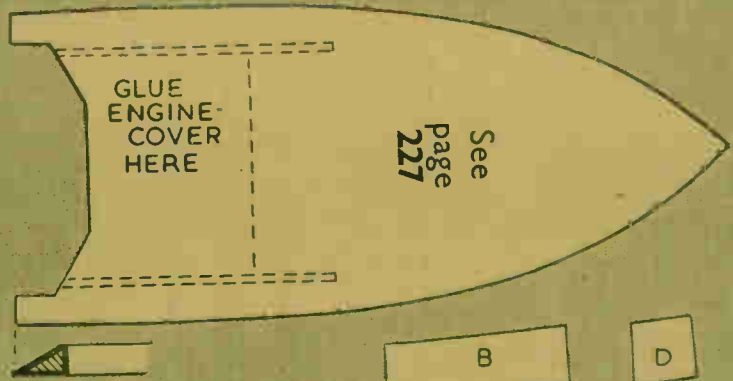
Note—

Very sharp or tight scrolls are difficult owing to brittle nature of brass strip to such a strain, but these can be made with practice.





ENGINE-COVER SIDE PIECES.
CUT FROM THIN CARD



Wot? No Lathe

by K. N. Harris

who tells you how to
build your own

There is a saying that it "takes a lathe to make a lathe." In his brilliant and lucid article K. N. Harris blows this defeatist attitude sky high. By following Mr. Harris's instructions in the current issue of Modelcraft Magazine you will find that you open up whole new fields for yourself in future modelmaking, turnery and other work as well as setting yourself a satisfying task for the autumn. This is just one article in an exceptionally interesting number with a list of plans, kits and accessories longer and more tempting than ever. Make sure of your copy now.

Modelcraft MAGAZINE & LIST
SEPTEMBER ISSUE No. 7

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Hobbies

WEEKLY

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September 15th, 1948

Price Threepence

Vol. 106 No. 2759

Another model of a ROMAN WAR MACHINE

WE are giving this week another of our series of Ancient War Machine Models, and our illustration shows a siege engine known in the Middle Ages as a catapult, and to the Romans as "Scorpio."

This machine was used for throwing huge stones long distances by means of a throwing arm, at one end of which was formed a sinking or recess for holding the "shell". The lower end of the arm was held between a twisted skein of rope stretched across the

frame of the machine. The main motive power was derived from this, a kind of spring being thus formed which carried the throwing arm swiftly upwards and forwards.

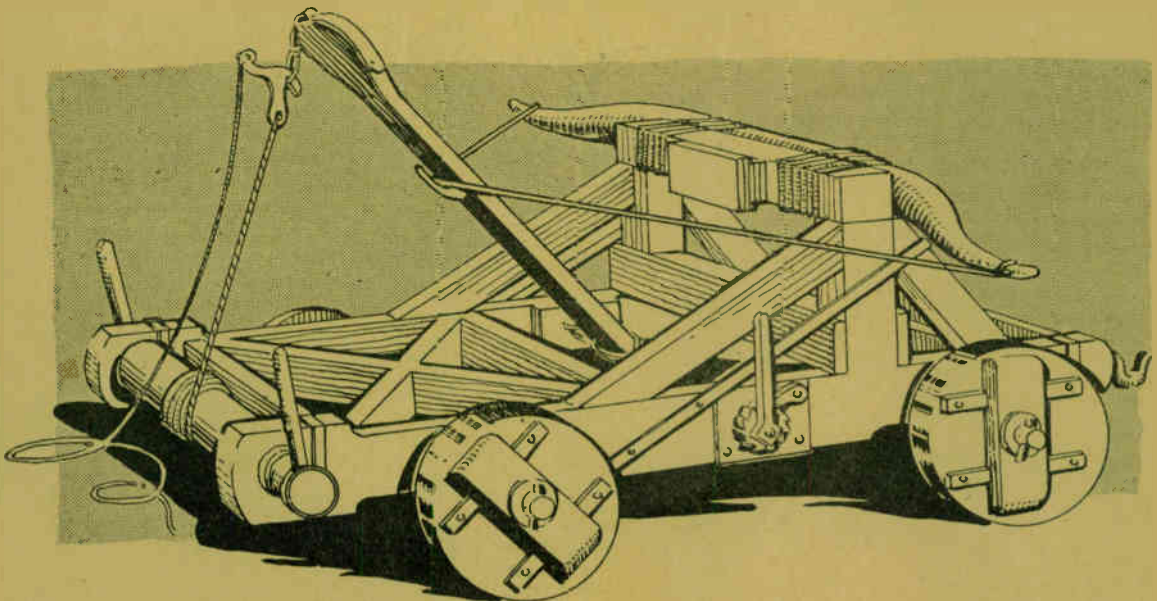
Tension Mechanism

Connected to the ends of the rope, and then directly fixed to the sides of the engine frame, were two levers, each having a ratchet and pawl for twisting the ropes periodically until the required degree of tension had been obtained. In the Roman scorpio

there was usually a sling at the end of the throwing arm, while the hollow cup arrangement was more common with the catapult of the medieval period.

At the rear of the frame was a winding spindle for bringing down the throwing arm in readiness for its upward flight. Then at each end of the winding spindle there were sockets into which handle levers fitted for the winding process, these levers being of course removable.

This model is not intended to be an



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

accurate working model in the true sense. In the first place it has only been possible to get more or less rough data. The model, however, is a very interesting piece of work to make. We hear of readers who are making a collection of these old war machines for educational purposes.

Materials Required

For the construction of the model we require some $\frac{1}{2}$ in. and $\frac{3}{4}$ in. wood, strips of brass or tin and a length or two of string and binding twine. At Fig. 1 we see all parts lettered and their positions on the model made clear. Start by making the main frame shown in Fig. 2. Wood, $\frac{1}{2}$ in. thick is used for all the parts and lengths and widths are clearly figured. All parts of the frame can be marked out and cut with the fretsaw.

The ends of the two cross braces between B and C are cut down vertically to fit into the angles, and midway in their length they must be halved together and glued. Before however, the frame can be glued and pinned together, make the winding spindle (Fig. 3). This must go between the two side rails A with the reduced ends of the spindle slotting into the holes in the rails.

In assembling, therefore, the spindle must be put between the rails first and the cross rails B, C, D and E after-

wards inserted and pinned. Then add the diagonal braces.

Continue with the upper framework to be attached to the forward part of the main frame. The uprights and side braces (Fig. 5) are the two pieces F and two pieces G glued up in pairs. The part F is $1\frac{1}{2}$ ins. and G $2\frac{1}{2}$ ins. long, and all are $\frac{1}{2}$ in. wide and $\frac{1}{2}$ in. thick. Each pair of uprights is glued to rails A $2\frac{1}{2}$ in. in from the forward end. Two pieces H are next cut and halved at their ends to fit round the uprights just dealt with. A middle or packing piece $\frac{1}{2}$ in. thick is glued between H. All are shown in Fig. 5.

The sloping braces M and N are next made, M being $1\frac{1}{2}$ ins. long and N $3\frac{1}{2}$ ins. long. The four are cut to the angles shown, from $\frac{1}{2}$ in. wood and glued to rails A. The top members J, K and L are clearly shown in Figs. 1, 5 and 6. Two pieces $3\frac{1}{2}$ ins. long and $\frac{1}{2}$ in. by $\frac{1}{2}$ in. in section are glued together to form J which is securely fixed to the top of the uprights F and G. Pieces K and L are simple blocks cut and glued on to take the thrust of the throwing arm.

Shaped Arms

The two shaped arms R (Fig. 6) are cut from the one piece of wood $\frac{1}{2}$ in. by $\frac{1}{2}$ in. wide and $5\frac{1}{2}$ ins. long. The circled diagram shows how the ends of the arms are cut and shaped. They

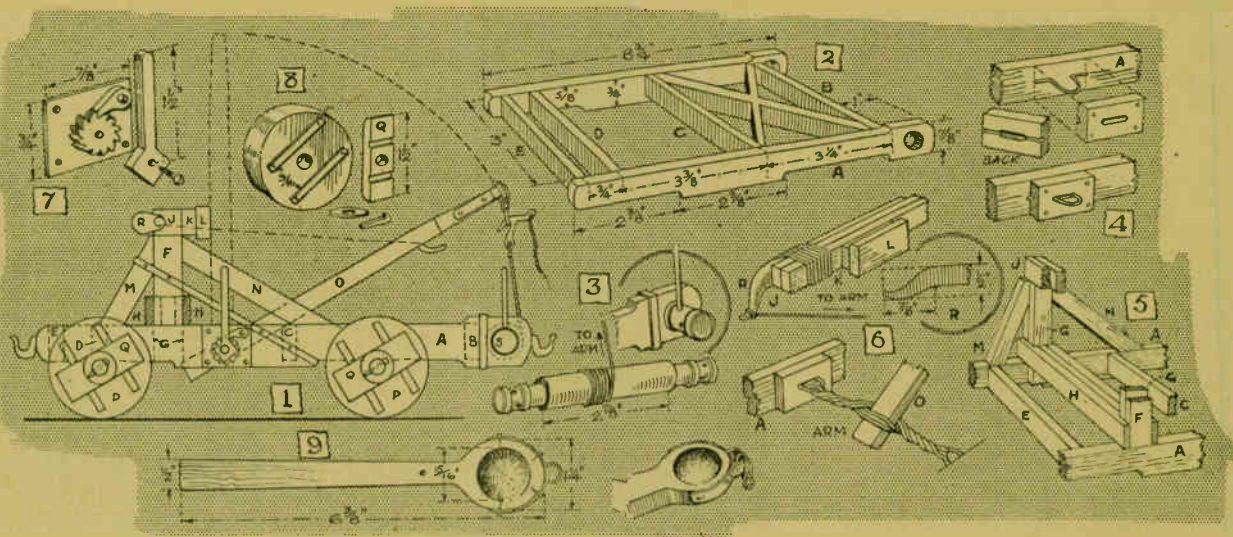
diameter. In Fig. 8 the cross bands of thin strip brass or tin are shown. These are pinned on with fine fretpins. Over these is fixed the axle piece Q which is $\frac{1}{4}$ in. thick with rounded ends as shown.

The wheels revolve on axles of $\frac{1}{4}$ in. round rod, fastened to the framing as shown. Thread them on with thin washers put over the projecting ends of the axles. Holes will be drilled through the axle bars quite near the ends to take the linchpin shown (Fig. 8).

Throwing Arm

The throwing arm is $\frac{3}{4}$ in. thick to the sizes given in Fig. 9. This is cut with the fretsaw and the hollow spoon-like sinking made with knife or gouge and smoothed with glasspaper. The top end of the arm has a stirrup of thin metal which forms the link to which the working cable is attached.

The lower end of the arm passes through three loops of stout strong string after this has been twisted into a number of coils by a shorter length of wood. This is necessary as the arm is too long to work between the cross rails C and H. A note of warning. Do not attempt to get a powerful throw of the arm by twisting the coiled "rope" too much. Bear in mind it is only a model, and must be treated with caution.



wards inserted and pinned. Then add the diagonal braces.

Now make the two side connections for the twisted skeins of cord (Figs. 4 and 5). Two blocks of wood each measuring $1\frac{1}{2}$ in. by $\frac{1}{2}$ in. and $\frac{1}{2}$ in. thick have narrow slots cut in them and a shallow groove leading away each side from those slots (see back view in Fig. 4). Bend two pieces of wire into the shape shown, and push through the slots. The turned ends of the wire fit into the grooves at the back. Finally glue and pin the block inside rails A ready to receive the twisted "rope". The position for fixing the

are then lashed to the framework with cord neatly bound round after being wiped with the glue.

For the ratchet and pawl and lever, Fig. 7, cut two plates as shown from metal or thin wood and fix them to the rails A (Fig. 1). Next cut the two ratchet wheels from hardwood, and also the pawls and levers. All are pivoted to the plate by round-headed screws. As previously mentioned, this ratchet and lever arrangement does not connect with the twisted "rope" as it would do of course in the actual full-size machine.

The wheels are $\frac{3}{4}$ in. thick, $1\frac{1}{2}$ ins. in

The rope with release hook attached (Fig. 1) is made from stiff brass. The holding iron on the underside of the arm may consist of a wire nail run through and bent up as in Fig. 1. The connection between the front projecting arms and the throwing arm should be made by elastic of one single strand stretched taut.

The one or two bandings of metal shown in the picture of the machine consist of brass or strip tin pinned on.

The complete model should be cleaned up and the woodwork given a coat of varnish or two coatings of french polish, put on with a brush.

Serving as a useful holder in addition to being a TORCH HALL LIGHT

SOME houses are without electric light in the hall, and at night, if there is no lamp or moon light, it is often difficult to see callers at the door. In the case of a parlour house, the difficulty is worse, because with a kitchen house, there is always some amount of light from the inside hall door.

Talking to someone in twilight or total darkness seems odd and if a stranger, and the hour is late a lady or girl is apt to feel a bit nervous about opening the door. A small hall light, therefore, is something badly needed, and it need not be expensive.

If you possess a torch, such as the type taking the popular No. 8 battery, a novel form of holder for it can be

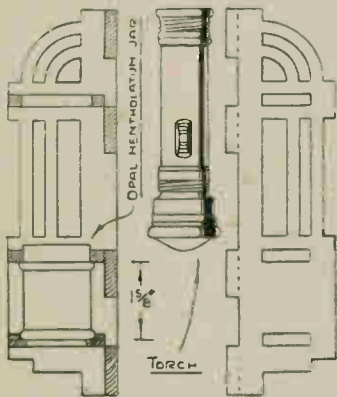


Fig. 1—Sectional view with torch and side piece

made from a few pieces of $\frac{1}{2}$ in. fretwood and an empty opal glass type jar.

The holder, as illustrated, while enabling the torch to be used in the normal manner, may be kept in its holder, with the button switched on, the light from the bulb being accentuated through shining through the opal glass jar.

Patterns Provided

Knowing, consequently, that many readers would appreciate such a simple novelty, we provide a few helpful patterns of the holder parts. These, as usual, are actual-size, on page 247, and only require to be traced on to the wood specified.

Before starting work, however, try to obtain the jar. The distance between the bottom and top rim of the jar should be $1\frac{1}{2}$ ins., as shown in the sectional view at Fig. 1. Similar jars, if of opal (white) glass, may be used, such as a pile ointment jar, face-cream jar, etc.

As a result, one requires to measure the diameter of the jar used to make

the holder suit it. An ordinary glass jar, of suitable size, could be used, but the light will not be diffused by the glass as it is with the white opal glass.

Assuming you manage to obtain a Mentholatum jar, with its screw-off metal lid, the latter is removed, as it is not needed. To make the holder, prepare the shelves. The bottom shelf consists of two shapes, A and B, cut from $\frac{1}{2}$ in. fretwood. These shapes are glued together, A below B. Two extra upper shelves, C, are cut from $\frac{1}{2}$ in. wood, these being identical.

The Side Pieces

You require two side shapes, one exactly as shown on the pattern page, and the other as shown at Fig. 1. These are almost identical, with exception of the mortises and tenons, which need to be cut so they lock neatly together. The correct manner, respecting the repeat shape—traced from the full-size pattern—and the cutting can be easily seen and worked out.

When the various parts have been prepared, test them together temporarily, with the jar in place. If the parts go together easily enough, assemble with glue. By the way, you will have to assemble the jar with the parts, as it does not drop through the shelves.

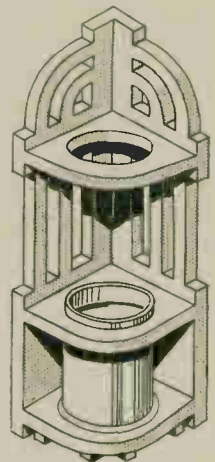
Assembly

The best way to assemble the parts is to glue the bottom shelf in place on one of the sides. Set the jar on that and add the central shelf piece, then the top shelf piece, following which the other side piece is added to complete the whole.

Now the fretwood, being $\frac{1}{2}$ in. thick, needs to be cut with the fretsaw frame, held absolutely vertical. If the cutting slants, the parts will be a poor fit, and the simple design, moreover, will have a slovenly look,

particularly at the back.

Of course, being a corner fitment, the bad cutting will not be seen in the holder. You may, perhaps, wonder why the novelty has been designed for a corner. Well, the chief reason is that there is usually just sufficient space at a corner near the front door for the fitment.



Patterns on page 247

This corner is at the opening stile of the door, and so, just before opening the door, the torch can be easily switched on without removing it from its holder. The light, although not too bright, will shine upon the caller and it will also give them a chance to see who is talking.

View of Caller

Generally, the caller has the advantage, because when you leave a brightly-lighted bedroom, or kitchen, and go out into a darkened hall and gaze out into an equally darkened street, it takes several minutes to elapse before the eyes become accustomed to the change-over from brightness to darkness.

The holder need not be finished off in any way. If desired, it could be given a coat of french polish, or enamel paint. The jar must not be touched in any way. The holder is attached to the corner of the hall with a round-head screw driven through its sides, where the jar is housed.

Constructed by a 12-year old!

THIS is a picture of but many of the 2ft. long model A.1. Pacific Locomotives made from our Design No. 234 Special. The outstanding point about it, however, is that it was built by a 12-year old boy - V. P. Smith of Wilton Road, Salisbury, and has been much admired in two Exhibitions already. Our young friend should certainly be something of an expert now, because he began when he received his first Hobbies Fretwork Outfit when 5½ years of age.



Strength and rigidity should be ensured in erecting A GARDEN SWING

A LOT of fun can be made with a garden swing, apart from its value as an exerciser. It is not a difficult job to make one, and the erection, too, is simple, bearing in mind the essentials of stability and structural strength.

There are some who think that two posts and a cross bar with rope tied on, serves as a swing. Quite simple, perhaps, but there is more to it than that. There is the safety factor to be considered, as one can get a nasty fall, leading perhaps, to broken limbs, if sufficient forethought is not given to sound and reliable construction.

For the swing suggested here, some suitable dimensions are given in Figs. 1 and 2. The upright posts and its top cross rail might be of 3in. square sound deal, while the ground sill might be of 4ins. by 2ins. or 4ins. by 3ins. stuff. The sloping struts again may consist of 3in. square wood.

The Posts

The posts should be about 8ft. 6ins. to 8ft. 9ins. high. Of this length, 12ins. or so will be below ground, as indicated in the two diagrams. At a distance of 4ins. from the top of each post, cut in a recess about 1/2 in. in depth and 3ins. wide, as in detail Fig. 3.

This will receive the end of the crossbar which may be held firmly by

a stirrup strap with screws as shown. Or, if desired, a mortise may be cut in each post with a corresponding tenon on the cross rail. This method entails a little more work in marking and chiselling out, however.

Ground Supports

Cut the ground sills and the struts next. The former should be about 3ft. 8ins. long. The struts are seen in Fig. 2, and although they stand at an angle of 60 degrees with the sills, the actual junction is cut as depicted to let into the sill.

Fig. 4 details explain the connections to be made here. The lower diagram shows the structure recessed and nailed with a long heavy nail. The detail above this shows the better connection made with bolt and washer which makes a perfectly rigid joint. Care must be taken in cutting these joints not to recess them too far into the sill, as this will thereby be weakened and the extreme ends will be liable to split off.

The joint between the struts and the post, and the latter with the sill are shown in Fig. 5. Here again each strut is recessed into the post and nailed, while the sill can be nailed through into the post from below.

Note should be made here that before the joints are actually put

together, all surfaces should be well coated with creosote, especially the end grain of the struts, sills, etc. Those portions, too, going below ground should have a very liberal application of this wood preservative or tar.

Assembly

In assembling, first nail the posts
(Continued foot of page 244)

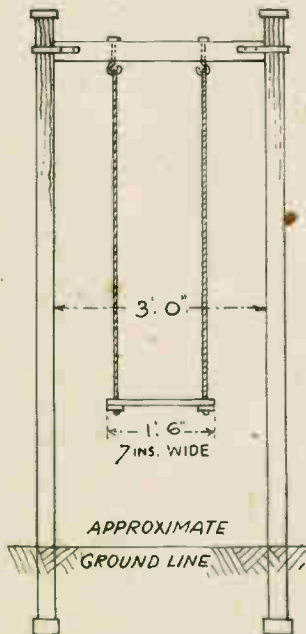
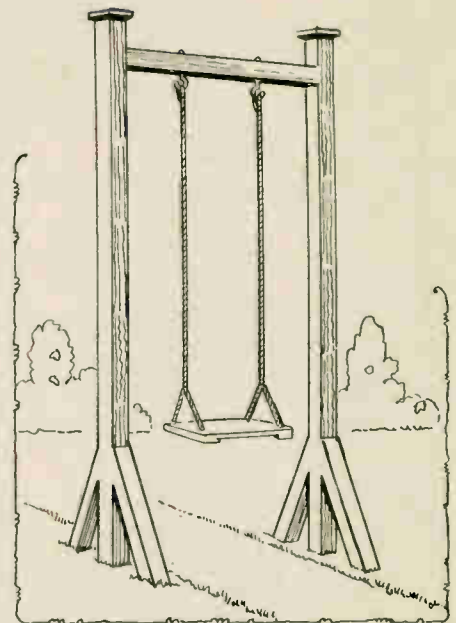


Fig. 1 - Front elevation with details

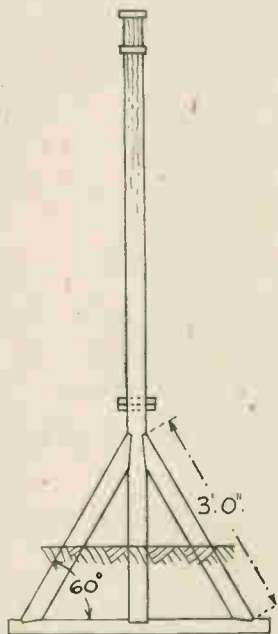


Fig. 2 - Side view showing supports

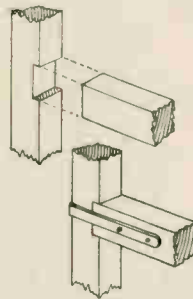


Fig. 3 - Cross rail joint

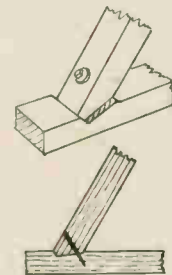


Fig. 4 - Support foot joint

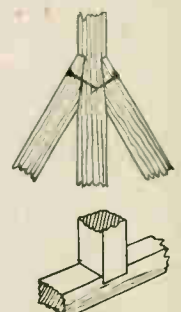


Fig. 5 - Strut and post joint



Fig. 6 - Rope fixing, hooks and seat details

Books to Read!

These are some of the most recent books published which are likely to be of particular interest to our readers. You can order them from book-stalls or newsagents or direct from the addresses given if you mention *Hobbies*

The 100-Break Target

by Victor Anton

IF you are one of those happy-go-lucky fellows content to enjoy an average game of billiards or snooker, getting an immense thrill from the very occasional "big" break of 25 or 30, this book would be an incentive and a target for your improvement. Its author was just such a chap—until he determined to build his ability to the 100-break—and did. He knows the troubles and difficulties of the ordinary player—and tells you how to overcome them—as he did with practice and knowledge of how, when and where to strike. Apart from chapters of general education, there are full-page illustrations, taken from the author's own experience, of helpful shots in awkward positions. (Published by *Vassner & Wiles, Ltd.*, 555 Lea Bridge Rd., London, E.10—Price 5/-).

Toys You Can Make of Wood

by Lawry Turpin

THIS is another of those books now available for the maker of small toys for youngsters. It confines itself entirely to wooden ones, but all can be made from odd scrap pieces. Concise instructions with detailed illustrations and as the author has made each one, there can be no mistake in their production. A helpful chapter is the early one which deals with the preparatory work. Books which say—make an enlargement—or drill and countersink 5/16in. holes at an angle are not altogether helpful to the beginner, and are apt to discourage, by uninitiated failures. Here, however, you have, quite concisely, just how to do those little things which help so much. There are 152 pages giving a range of many toys including doll's house furniture, a circus parade, a train and railroad equipment, jointed animals, a farm, all kinds of small games, etc. (Published by *Sir Isaac Pitman, Parker St., Kingsway, London, W.C.2*—Price 7/6).

Furniture Repair and Renovation

(Home Mechanic Series)

A MATTER of surprise to us is the number of slightly damaged pieces of furniture which get put away in the attic or work shop for repair and remain there for years. It is an excellent axiom—particularly for the handyman—to see a repair is

undertaken as soon as the damage is realized. New furniture is now both difficult to acquire and expensive—old furniture can often more easily be obtainable. Therefore it pays the handyman to undertake repairs as soon as and wherever he can. This is just the book to help. It deals with all those minor jobs—bad drawer runners, cracked chair legs, stained polished surfaces, etc. It tells, moreover, of simple and interesting ways in which old furniture can be modernized, by alteration of drawer knobs, or a plainer cornice fitting and so on. A chapter is devoted to making loose covers, another with enamelling, staining and polishing, and another to our old friend the woodworm. Any home handyman will find such a book a guide, as well as an incentive. (Published by *C. Arthur Pearson, Ltd.*, Tower House, Southampton St., London, W.C.2—Price 5/-).

Modern Woodwork and Furniture Making

by G. H. Barker, M.Coll.H.

THIS is a manual of woodwork in the modern style for teachers in handwork, artistic carpenters and craftsmen. An interesting first chapter is given on modern tendencies and development showing that at last we are again realizing that the correct use of and occasion for tools must be the principal teaching. The idea of creative art coming instinctively to the youngster with his first handling of a chisel has been proved a fallacy. Now we are getting back to fundamentals of good workmanship first—artistic and creative originality can follow. The pages of the book have complete details and diagrams for a wide range of practical articles to make—if wood is available! The author assumes the reader has a knowledge of correct procedure with tools, and offers much interesting work for the skilled craftsman—from a cutlery box to a cupboard, from a stool to a sideboard. (Published by *The Technical Press, Ltd.*, Gloucester Road, Kingston Hill, Surrey—Price 10/6).

Horology

by J. Eric Haswell, F.B.H.I.

TO the average person the difference between a wrist watch and Big Ben seems enormous. To those who study horology (the science of time measurement and the construction of clocks, watches and chronometers) there is the knowledge

that these and other timepieces are all embraced in the same technology. And what an interesting and enthralling study that can be is well shown by a study of such a book as this. It does not attempt the actual constructional side but presents a survey of the vast field of science relating to time measurement. The diagrams and photographic illustrations are as enlightening as the text matter, whilst the technical facts are set out lucidly and smoothly for any interested student to follow. If the price of it is beyond your means make a point of borrowing it from your municipal or county library.

(Published by *Messrs. Chapman & Hall*, 37 Essex St., London, W.C.2—Price 16/-).

Collecting Coins

by C. C. Chamberlain

THIS compact little paper-covered book for the pocket does not pretend to be a complete treatise on coins, but tells a most interesting story of the history, range and types of coins which have been and still are in use. The beginner collector can commence with small wage envelopes containing the coin and bearing written details concerned. The reference books which help to elucidate the mystic inscriptions are tabulated. There are illustrations of many coins of history of Britain and the world, to help build the interesting story of their use and some astounding reasons for their introduction. The stories of history, are indeed reflected in the coins, and those who read the book merely as a matter of interest must be impelled towards commencing their own collection. Most homes could yield a surprising number of these old coins—if they can be found! (Published by *Raven Books, Ltd.*, 226 Latymer Court, Hammersmith, London, W.6—Price 1/6).

Paperhanging Simplified

by Alfred J. Everett

A GREAT many fellows setting up a house are thinking—or will have to think—about papering the rooms. It may seem a simple job, but those of us who have tried—and you should try anything once, knows the mess you can get in, with torn paper, bad matching, and frayed tempers! Here is a book to prevent all those troubles. We can recommend it to anyone, as

(Continued foot of page 242)

How to make a novel amphibious model DUKW LAND AND WATER TOY

THIS is something new in models as it is both a land and water toy. With its wheels it can be pulled over the ground, while the boat-like build allows it to float. It is, of course, an amphibian and is fashioned on the lines of an army DUKW, but simplified for easy construction.

As things are at the present time, it is best in making the model to get the six wheels first and then build the rest of the model to suit the size.

Normally wheels of any size can be readily secured but not so at the moment, and it would be very annoying to make a nicely finished body and then find it impossible to get suitable wheels. A range is advertised in Hobbies or obtainable from Hobbies Branches.

However, although they do not run so well and will be more easily affected by water, you can cut your own wheels from any circular rod such as an old broomstick. The centre then must be very carefully formed and bored. Wheels of this type should be made to run very easily on the screws which act as axles.

Body Block

Having got the wheels, the size of the block can be judged and the recesses for the wheels (a) taken out. Room for one wheel only is necessary in front, but at the rear space for two is required.

In the case of all four recesses great care must be taken not to go any further in than need be, as the centre cut-out (d) should be made as large as possible both for the sake of appearance and floating properties. There must be no chance of a break through and consequent leakage between the recesses and inside well.

Between each pair of wheels goes a strip of wood (b) fastened across the bottom of the hull. These are to give

more depth for the insertion of the axle screws. With all the wheels, a washer should be fitted between the disc and the side to prevent any danger of binding.

Hollow Hull

Before putting on the wheels, however, the centre of the hull should be taken out with a sharp chisel and the bow and stern shaped. The former, as a wedge as shown and the latter, for a neat appearance, rounded, although this is not in accordance with army "duck" practice.

When all is complete the model must be tested for floating trim. It will probably float quite well right away, but if it tilts a little, level floating can be secured with a pellet of lead fastened at some convenient point on the high side.

The "finishing" of the model counts a lot. Colour is important. The body can be grey or green and the wheels of something contrasting, say red. The inside of the well, too, should be of a different colour to everything else.

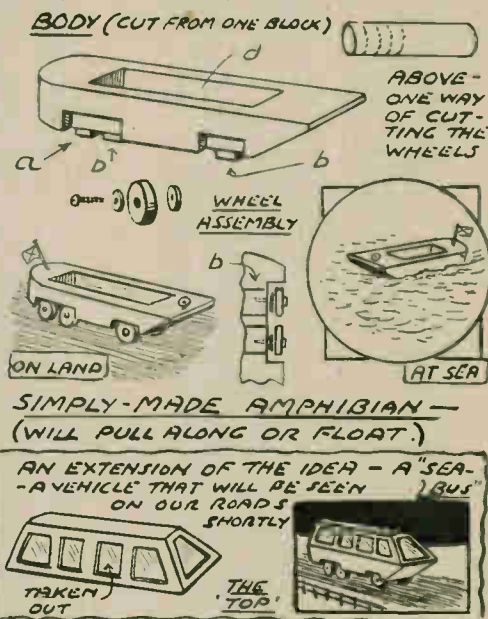
The screw hook in front is to attach a pull string, but it also gives the impression of one of the vessel's fittings. The flag at the stern helps to give "finish". It should be of something bright, say a piece of red cloth securely fastened round the wire upright.

This finishes the simple model, but an extension of the idea is to make a "water bus". Water or sea buses are vehicles that we will undoubtedly see about the country shortly, their purpose being to cross rivers, estuaries

and other strips of water where the route round the margin or to the nearest bridge is disproportionately long.

The sea bus model is made by fitting the "top" as shown to the hull already made. This is shaped out of one block, the window position being cut out with a shape chisel.

There is no attempt at glazing the windows, but if the insides of the



recesses shown are painted with aluminium paint a quite good impression of glass is given. The roof-top should then have a light-coloured coat of paint and the framework between the window a coat similar to the hull.

The "top" is fastened to the hull by two screws, the one going up from the under side of the wedge-shaped bow and the other through the stern.

Books to Read—(Continued from page 241)

being practical and straightforward, and dealing with those awkward positions and occasions, not usually covered—in books we mean! Those arch recesses by the side of the fireplace, the awkward fixtures which stand about the bathroom, the increasing lengths of the stairways—all are dealt with explicitly. Many little things help you, too—how and when to make the paste, how to fold the pasted paper, where to start, etc. all these points can save a handyman so much time and temper. Just by knowing how. And this text book certainly helps considerably!

(Published by Sir Isaac Pitman & Sons, Ltd., Parker St., Kingsway, London, W.C.2—Price 4/6).

Toys and Models

by Cyril Pearce, R.B.A.

THE author has certainly packed a great deal of practical information and illustrations within the 100 pages the book contains. A wide range of small toys and models is shown, many of enjoyment for youngsters to use, many of historical or geographical interest. A great virtue with all of them is that no special tools or materials are needed. Mr. Pearce, who is an experienced teacher at the Reading University, shows that all can be made from odds and ends of "junk" usually to be found about the home, or easily obtained. Whilst primarily compiled for edu-

cational use, there is enough entertainment value in all of them to make the book invaluable for the handyman father who wants to make practical toys for his own youngsters or those of his friends. There are all the usual mechanical, amusing and homely toys—largetongs, picking chicks, climbing monkey, boxers, etc.—and a number of others of "architectural" character—a miniature harbour, a Greek theatre, a Roman house, etc. For the more mechanical there are simple descriptions of an alternating current electric motor, air and water turbines, an astro-compass, etc.

(Published by B. T. Batsford, Ltd. 15 North Audley St., London, W.1. Price 12/6).

Hints on specializing in photography with LANDSCAPE PICTURES

THE value of specializing—perhaps it would be better to use the word ‘concentrating’—on one or two definite subjects in this most fascinating and comprehensive of hobbies is a point that has always been recognized by a very large majority of our leading and successful photographers. This can be very readily proved by a visit to two or three of the foremost exhibitions where, obviously, the best work of the competitors is submitted. One person will be showing Landscape work, another will only send in specimens of Interiors and a third Seascapes.

General Subjects

It must not be thought, however, that these exhibitors neglect all other subjects. It is just possible that if one could examine their collections, there would be found quite a number of the ordinary type. Such as records of happy little incidences of holiday picnics, beach parties and those many other little items which every amateur is urged to ‘take’, and which at later dates serve to recall to our memories the jolly times spent in the past years.

Something about these common-ordinary snaps, however, would certainly impress one and it would be the general quality of the technique. It would be noticed that care had been given in arranging the various details to get good composition. The exposure was right and the development of both negative and print correct.

Pictorial

In fact, the general effect revealed the work of an expert or, at least one who did not go about just pushing the trigger without giving a few seconds consideration with the idea of getting some pictorial quality in the result.

That is the quality which we must all aim at if we are to become success-

ful and there is no better way to this than to become specialists. To help every reader of *Hobbies Weekly* who has a camera, it is our intention to deal with a different subject every month and to give hints that should be of help to securing results that will show definite improvement in the whole of your work.

For, by specializing you will immediately set your mind on a course of study, possibly unconsciously, to make the best of every exposure. You will be concerned with details, moving a few yards to the left or right to avoid something which is unsightly or does not harmonize with the other objects. A path or fence or gate may not be in the correct position, yet by a step or two forward or back, this is avoided or placed correctly.

Lighting

Then there is the question of lighting and also the matter of contrasts. Is the foreground too heavy and are there too many straight lines?

All this may seem to be making your hobby too laborious, but this is not the case, for, after once or twice going over the points of consideration you will find that eye and mind will work automatically, and a subject which might have appealed to you before, is now seen to be lacking in pictorial technique and is passed by without further thought.

On the other hand, as a result of the little training which you have already put yourself to, you will, just as automatically, spot out more readily the right subject for taking which possibly would have escaped your notice before.

That systematic training is going to give you that experience which is so valuable, irrespective of subject, and which picks out the work of the careful amateur.

Therefore it is going to help you to get 100 per cent. good negatives on every film exposed.

At this time of the year the countryside presents many opportunities for the camerist and, fortunately, one does not have to travel long distances to find suitable spots for Landscape work. A short train journey from any of our large towns will generally bring us within

sight of open spaces, the banks of a stream, a wood or a small village.

It is sometimes useful to ask ourselves a few questions while seeking a spot on which to expose. What constitutes a Landscape picture? What are the details required in such? What lighting is best, and so on? If you go to an art gallery and make a point of studying landscapes, you will be sure to notice that trees, cottage or a church,



A fine pictorial subject by the author

pathways, water and clouds appear in nearly all and that the lighting is arranged so that the shadows also serve as a detail.

Overall Composition

Carefully gaze at the picture for a few moments and quite likely you will be surprised to note that although there are five or six different objects which attract your eye, yet not one of them overpowers another. They are all subservient and used as a means to portray what the artist had in mind and they are in perfect harmony with the whole setting. Not one attracts the eye and gives the effect of a picture of a tree, cottage, pond or path. No, it is a picture of a landscape, composed of certain details such as a tree, cottage, etc.

When taking an open landscape it is important to have some object in the foreground that will lead the eye to another in the middle distance. Otherwise the result must be simply a series of flat meadows with lines of hedges stretching away to a background of horizon and sky. A variation of this type of open country can, of course, be found in hilly or the Downland country but even there a definite object should be included.

Should you be in a district where there is a stream you can follow through meadows or fields it should enable you to make some capital shots of a pictorial character.

(Continued foot of page 245)

Genuine BRITISH NAVAL Telescopic Gun Sight **35/-** POST FREE (V.C. 10)

Government Stamped range. Made by famous instrument manufacturers. To clear at less than cost of material. 35/- ONLY, postage and packing 1/6. Two or more post free.

GENUINE EX-RAILWAY AND SHIP TARPULINS

Waterproof, Guaranteed Condition. 70 sq. ft., 20/- 140 sq. ft. £2/10/0. 280 sq. ft. £5. Approx. 360 sq. ft., £6. 720 sq. ft., £12. All incl. carr. Tents, Marquees and all sorts camping equipment in stock. Send 1d. for Bargain List. W D FELLING AXES Hardened Steel 18.6 each. Carr. 1/6 BRAND NEW WATERPROOF KNEE BOOTS, rubber soles, 2/6, post 1/-. No coupons.

WATERPROOF GAUNTLETS, 5 pairs 2/6 or 48/- gross. Post free.

HEADQUARTER & GENERAL SUPPLIES LTD. (Dept. HOB.), 196-200 COLDHARBOUR LANE, Loughborough Junction, LONDON, S.E.5.

Some of the popular plastic coloured strip can be used for A DOG HARNESS

IF you like those gaily coloured harnesses and leads which are so popular just now for dogs, here is a way to make them easily and inexpensively. For the harness you will need about one yard of narrow plastic which costs only about sixpence a yard. You can get it at any handicraft shop or Woolworth store.

You will also require nine rivets, a buckle and one D ring. The D is for the ring which will take the name tag and the swivel of the lead.

Small Dog Sizes

For a small dog, a Pekingese for instance, cut two pieces of plastic 6ins. long; two pieces 7ins. long; one piece 9ins. long and one piece 11ins. long. For a larger dog the lengths are proportionately longer and can be measured from the actual animal.

Take the 9in. and the 11in. pieces, and put them together as in Fig. 1,



Fig. 1—The first joins to make D RING

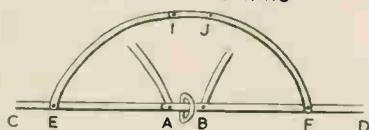


Fig. 2—Forming the loop

with the ends of the two 6in. pieces between them at A and B. Pierce a hole right through the three thicknesses. Any very sharp-pointed instrument will do, but, of course, if you have a proper leather punch, all the better.

Put the long piece of the rivet up through the three holes at A. Add the short piece of the rivet and bang hard several times with a hammer on a solid surface. Put the D ring between the two thicknesses of plastic and deal with the three punched holes at, B, exactly as you did at A.

Rivet Joint

Now take the two pieces of 7in. plastic length (see Fig. 2), join one end of one piece at, E, with punched holes and a rivet, and the other piece at F. Then let the two other ends overlap one another for about 1in. and join together at I and J, with rivets.

Next join the loose ends of A and B

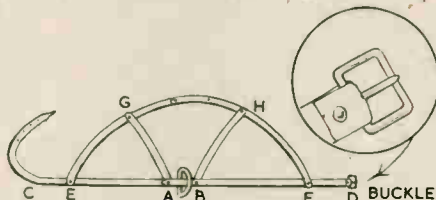
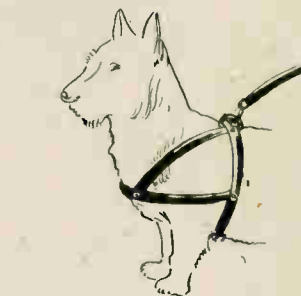


Fig. 3—The buckle fixing and detail



Fig. 4—Broken view of swivel-ended lead



at G and H, with rivets. Thread the longest end at, D, through the buckle, fixing with a rivet, then trim the remaining end to a point, punching four or five holes for the buckle pin to go through (see Fig. 3).

The Lead

For the lead you will require about 1½ yds. of plastic, two rivets and a swivel. Make a loop at one end large enough to hold your hand and fix it with a rivet. Thread the other end through the ring on the swivel and again fix with a rivet (Fig. 4).

Now you have got a really attractive harness and lead which is strong enough for dogs like Pekingese, Poodles, Pugs, etc. Terriers and larger dogs, however, are apt to bite through the plastic. You can buy various colours of plastic, so when you buy, choose one that sets off the colour of the dog to the best advantage.

Garden Swing—(Continued from page 240)

to the ground sills at the centre, and the struts to the sills and posts. Use long iron nails for all fixing.

The cross rail at the top of the posts should measure 37ins. long and be fixed as previously advised, the recess and the ends of the cross rail being creosoted before being fixed in place. The tops of the posts should have 4½ins. square capping pieces, creosoted and nailed on to protect the end grain of the posts which should also be coated and soaked with the creosote.

Nail a batten temporarily across from post to post near the foot to keep them at the right distance apart and in proper place until they are let into the ground.

The Seat

The seat is made from a single board 1in. thick, 18ins. long and 7ins. wide. Round off the front and back edges and make smooth with fine glasspaper. At the ends of the seat and on the underside, nail on two 3in. by 1in. battens ¾in. or 1in. thick.

Through the two thicknesses bore holes to take the ropes as shown in Fig. 6. The edges of the holes must be cleaned to prevent fraying the ropes which pass through the holes.

A single rope may be used each end of the seat, and at the top end is carried round a "thimble", as A in Fig. 6, and there bound with stout tarred twine. The rope is carried down and through one of the holes in the seat and up through the second hole where it is carried up for a safe distance and again bound with the tarred twine.

Top Suspension

For suspending the ropes at the top, make sure of a good sound connection. At 15in. centres bore two holes through the cross rail and put through similar hook bolts with nuts and washers to those shown at B in Fig. 6. The gap in the hook should be just sufficiently large to allow the thimble and its rope to pass through.

Erection

The swing may now be erected in

the selected part of the garden. Dig out two narrow trenches for the sill pieces, and see these lie perfectly flat along the bottom of the trenches. Give the sills and those parts of the struts which will go below ground, a second coat of creosote.

Lower the posts into the trenches without straining the joints and then test the posts with a plumb line to set them vertical and the rail horizontal. Finally fill in and ram the earth tightly round the posts. Put in brick ends and stones to make a firm and rigid upright. If you can, get a proper weighted metal ram to force the earth down tightly.

Another method is to set the posts into cement which should be strong and thick enough to provide a lasting hold.

Above ground level the woodwork may be either creosoted or painted. If painted, two coats at least must be applied. During very bad weather the seat and ropes should be taken down and kept in a dry place.

Keep an eye on the rope to see it does not rot through.

For experimental purposes you can make this SIMPLE CRYSTAL SET

A CRYSTAL cannot amplify. So if maximum volume is to be obtained with a crystal set, losses must be reduced and the coil should be efficient, having low resistance but high inductance. Accordingly the best type of coil is wound with thick wire and is fairly large.

The small coils used with valve receivers (though satisfactory in their own way) are not very suitable for crystal sets. This is because the valves can provide amplification, and size is of more importance, especially as midjet coils are easier to screen.

Crystal Set Coil

Accordingly, the constructor may care to try a coil such as the one illustrated, which is particularly intended for crystal receivers. Provided aerial, earth, phones and detector are all up to standard, quite long-distance reception is possible. After dark quite a number of foreign stations are audible, but the main purpose is to obtain maximum volume from the locals.

Selectivity and wavelengths can be varied by means of the clips, as will be explained. It is possible to use a

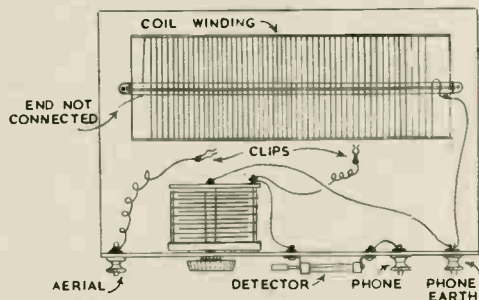


Fig. 1—The wiring diagram

tuning condenser of any capacity, or this component can be omitted altogether.

For the coil former, two pieces of wood about $\frac{3}{8}$ in. thick and 8 ins. long are cut (see A, Fig. 2). They should be from $2\frac{1}{2}$ ins. to $3\frac{1}{2}$ ins. wide; pieces

narrower than $2\frac{1}{2}$ ins. are not recommended.

Each piece has a slot, B, cut so the pieces may be slipped together. The pieces should be a tight fit and small blocks can be fixed if necessary so the former is quite firm. Two small brackets are screwed on to support the former on the baseboard.

So the wire cannot move about, it is best to make small V-shaped nicks about $\frac{1}{8}$ in. apart all along the edges of the wood. The latter is then well varnished and allowed to dry.

After securing the end of the wire by passing it through a small hole in the wood and plugging, wind the turns on as tightly as possible. Bare tinned-copper wire is best, 20 S.W.G. being convenient. The end is fixed as before, leaving enough to reach the earth terminal.

The coil is mounted on a baseboard about 9 ins. by 5 ins. A low panel is fixed to the forward edge of the baseboard. Detector, tuning condenser and terminals are placed as shown in Fig. 1, which clearly illustrates all connections.

The two small clips are on lengths of flex. They may be bent up from metal, or paper clips can be used.

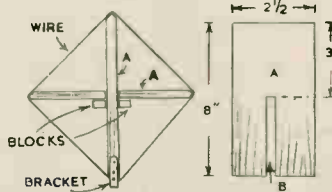
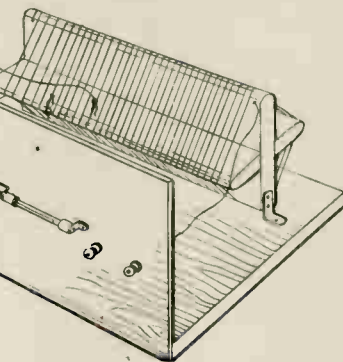


Fig. 2—End view of former

Many different types of detector are available, and any good make will be satisfactory. Normal high-resistance phones are used.

The position of the clip attached to the tuning condenser governs the wavelengths tuned, and the position



of the aerial clip the selectivity. To begin with, the first clip may be clipped on to the coil in a central position, with the aerial clip midway between it and the earthed end of the coil.

Now, if it is desired to increase selectivity, the aerial clip may be moved a few turns to the right. If a higher wavelength is to be tuned, the other clip should be moved to the left, thus bringing more turns into circuit.

Adjustment Trials

By using only a very few turns short waves will be tuned, but if conditions are bad, nothing may be heard on these wavelengths some days. After a little experimenting the user will rapidly discover how volume and sharpness of tuning can be adjusted by moving the clips along the turns of the coil.

If it is desired to avoid buying a tuning condenser, tuning may be accomplished by moving the clip connected to the detector. The position of the aerial clip will also have some effect, due to the capacity of the aerial.

Because of the lower parallel capacity with no condenser, rather more turns will be needed on the coil to reach a given station. If high wavelength stations cannot be tuned, the diameter of the coil should be increased, or more turns placed upon it.

Photography (Continued from page 243)

Especially if those meadows are used for cattle and you can spare time to wait for them to approach the water.

One of the problems, possibly the most difficult, which has to be tackled at this time of the year is exposure. Most amateurs know that a September exposure is about twice the length of one in June. But we do not always realise that the value of the light at this time of the year weakens so quickly as to require as much as three times at 4.30 as at

midday. From this it will be understood that an exposure meter is almost a necessity, if a good percentage of correct exposures are to be made.

The author uses at all seasons one make of film, H.P.3. It is very fast and is panchromatic, both qualities being of good service for this particular subject at this time of the year. Quick exposures are at times essential because movement in trees or foliage has to be avoided.

A light or medium green filter is

also an advantage in helping the pan film to give correct rendering of the tone values and to pick out any light clouds that may be just visible.

Finally watch the sun. The lighting of any landscape is a factor demanding some consideration. Absence of sunshine tends to flatness, while too strong a light will often mean extreme contrast with loss of half-tones. Shadows must not be despised, they are helpful in breaking up large patches of light and can add a great charm to the finished result.

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

ADANA printing machine and several sets type, as new. £10 or nearest.—R. L. Lambden, Dix Hill, Tadley, Basingstoke, Hants.

100 DIFFERENT Empire stamps including complete set Ceylon Constitution, 2/6 post free.—Bisson, 46 Sumatra Road, London, N.W.6.

STAMPS FREE! Twenty unused (21d.).—G. H. Barnett, Limington, Yeovil.

JUST the job!! 1,000 gummed labels printed your name and address, with coloured border, for 5/.—Gordon Holgate, 7 Hawthorn Terrace, Halifax.

R.A.F. headphones 5/6. U.S.A. throat mikes 2/6. Hand generators, 100 V. A.C. 8/-. Morse key and buzzer 4/-; all new.—Shama, 116 Burton Rd., Manchester 20.

PERSONS required to make ladies' belts and fancy goods in spare time.—Dept. 3, Somat Plastic Co., Ltd., 8 Middle Marsh, Nottingham.

LONELY? Join Friendship Circle. Details 6d.—Secretary, 34 Honeywell Road, London, S.W.11.

YOU can now emboss monograms and designs on leather, wood and lampshades, etc., in genuine 22 carat gold, colours and imitation gold and silver. New easy, cheap method. Complete kit including tools, full instructions, and good supply of each material—inc. genuine gold—only 7/6 post free. Agents wanted. Generous terms.—W. Dawson, Dept. M1, 130 Park Street, Oldham, Lancs.

MAKE up envelopes in spare time. 2/6 secures full instructions.—Chas. & Co., T.5, 3 Southfield Road, Western Boulevard, Nottingham.

STAMPS—200 World, 1/6, including pictorials and mint. British Empire 100, 1/3. Approvals on request. Write now to—W. E. G. Smith, Clarendon, Brettell Lane, Stourbridge.

AIR MAIL stamps free to applicants for my discount approvals. S.A.E. please.—Ramsey, 80 Carter Knowle Rd., Sheffield 7.

FIRST issue Tokelau free. Request approvals. Postage extra.—Postal Stamp Service, 1 Norma Rd., Liverpool 22.

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

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

MODELS: you can make lasting stoneware 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. Selection 10/-, 20/-. Flowers, pixies, dogs, nursery rhymes.—H. Axon Harrison, Jersey.

PERSONS required make fancy goods at home. Write for details.—Melton Manufacturing Co., Southgate Street, Leicester.

USE a Brook "Cub" motor in your workshop. Single-Phase Split-Phase motor, ¼ H.P. Price £5 12s. 6d. Obtainable from your local electrical contractor or small tools dealer.—Brook Motors, Ltd., Empress Works, Huddersfield.

TURN your spare time into cash. Opportunities galore. Free to all sending 1/- for C.F.A. monthly, the 30—page magazine for ambitious people.—L. Hazlehurst, 25 Melrose Avenue, Hoylake, Cheshire.

CANADIAN Silver Jubilee set free to all requesting approvals. (Without approvals 9d.). Postage please.—H. A. Smith, 13 New Road, Scole, Diss, Norfolk.

MAKE money from making models. See our new instructive book on this subject. Post 2/9.—Sutton Models, Billericay.

NEW Magic Tricks for Christmas. Crazy cut-ups, 6d.—grand party trick. Bumper lists of America's latest—3d.—De Hempsey, 363 Sandycombe, Kew Gardens, Surrey.

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

PRESSED Metal wheels. Per dozen 3in.—9d. 1in.—1/-. 1½ins.—1/3. 2ins.—1/6. 2ins. (special quality) 1/9. Per gross 3in.—6/6. 1in.—7/6. 1½ins.—9/-. 2ins.—12/-. 2ins. (special quality) 15/-. All prices inclusive of purchase tax, postage and packing. Immediate despatch. Doll's House windows, doors, fireplaces. Illustrated catalogue 3d. (Trade supplied).—Jasons, 135 Nags Head Road, Ponders End, Middlesex.

ABSOLUTELY free. Two tricks, Magic Magazine, Lists of easy to do conjuring tricks, details of Magic Club. Enclose 6d. P.O. to cover postage.—Sid Sonalli, 50 St. Mary's Row, Birmingham, 13.

SHORTHAND in one week. Test Slesson 3d.—Dutton's (H.B.), 92 Gt. Russell St., London, W.C.1.

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

HOME Movies. Projectors, films £9.5 in great variety. Sale, hire, lists, stamp.—Wayland, 223 Longley Road, Tooting Junction.

BOYS! Learn Magic. The boy who does tricks is always popular. Send stamp for illustrated catalogue of tricks specially arranged so that you can do them.—The Boys' Magic Service, Prestatyn, North Wales.

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.

SPOKE Wheels, treaded tyres 8ins., 9ins. and 12ins. overall diameter. Also rubber tyred Metal Disc Wheels ranging from 2ins. to 9ins. Small or large quantities supplied. Write requirements.—Joyden Toy Co., 193 Chase Side, London, N.14.

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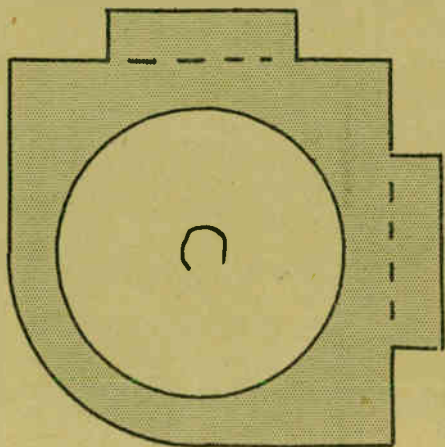
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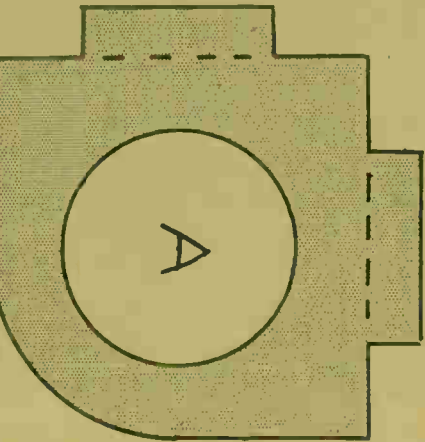
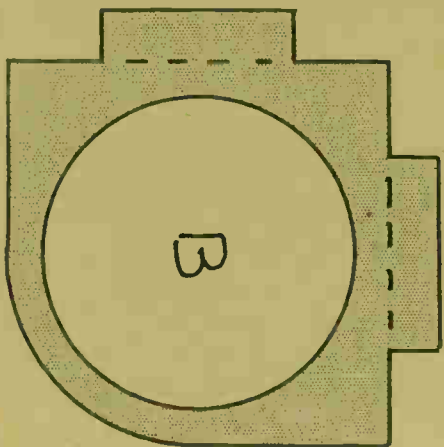
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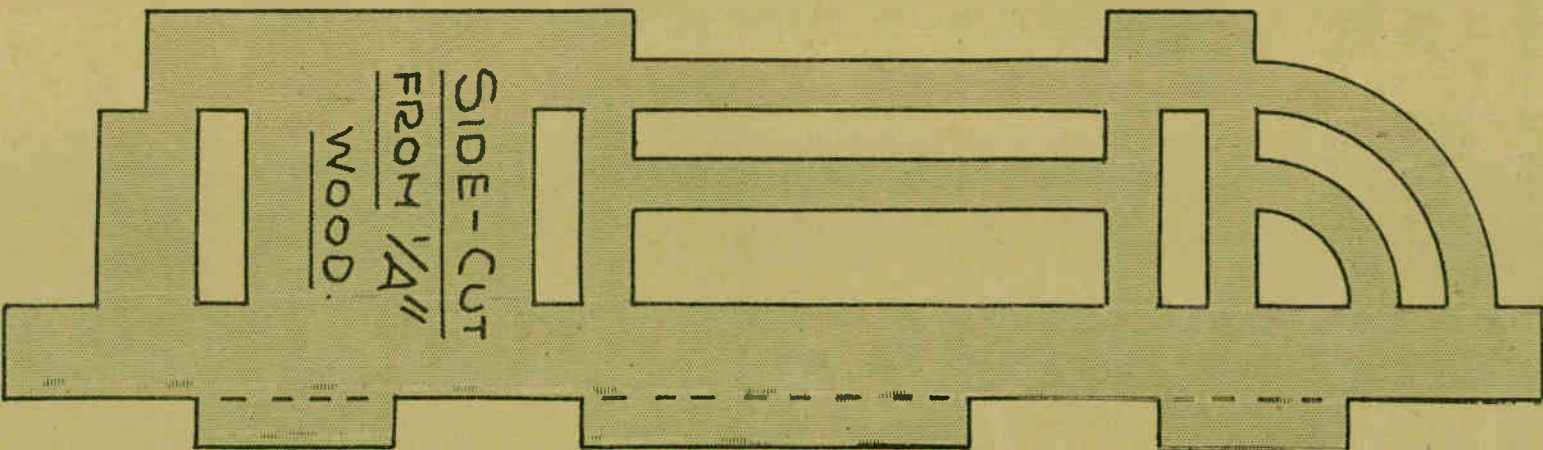
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WEEKLY

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SUPPLEMENT DESIGN
FOR A LARGE MODEL
DOLL'S HOUSE

September 22nd, 1948

Price Threepence

Vol. 106 No. 2760

Patterns provided for making a novel miniature model FLYING AEROPLANE TOY

HERE is an interesting little novelty that can be made from a few pieces of fretwood and some wire. Our illustration here gives an excellent idea of the model which consists of a tower to the interior of which is fitted two stout wire connections and a length of twisted aeroplane rubber.

When the elastic is wound up by means of the crank in the base of the tower, it forms the motive power for carrying round the little model aeroplane suspended by cord from the outstanding wire.

We devote a complete page of this issue to the full-size patterns of certain parts of the model. This is most helpful to the worker, for all he has to do is to stick the patterns down to the thin wood and cut out with the fretsaw in the usual way.

Tower Constructions

Commence with the base of the tower; we only show half of this. It is very simple in outline, consisting merely of a square with a circle cut from it. The half pattern given can be stuck down to the wood and the missing half pencilled in and completed from it.

The dotted lines on the base diagram act as guides for gluing and nailing on the sides of the tower.

The sides of the tower are given as A and B. Two each of these will be cut from 3/16in. wood. If each pair cannot be cut together in one operation, making 1/2in. wood to cut through, then one of each should be first cut, and after a preliminary

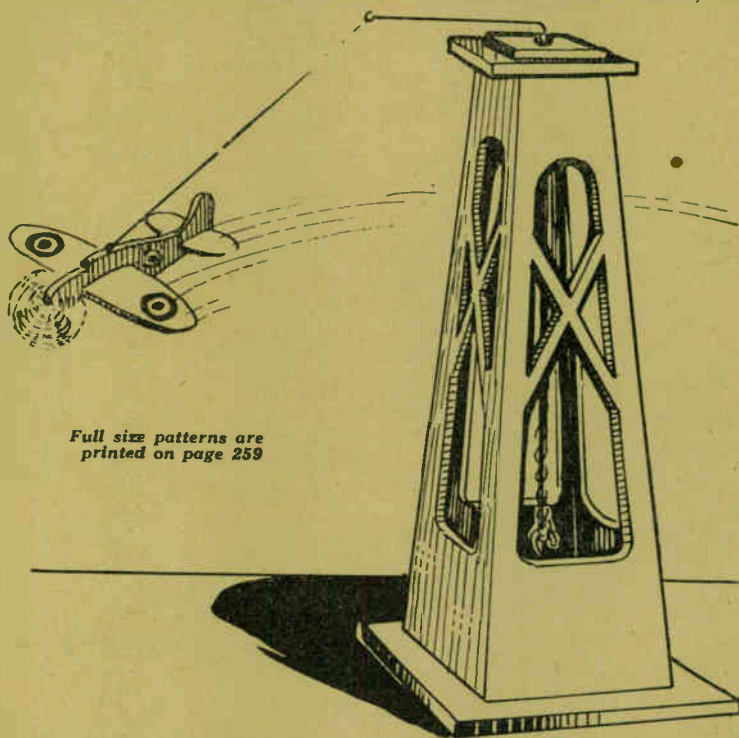
cleaning, may be drawn round to produce the second sides.

All four sides are butted together, sides B, going between sides A, as indicated by the dotted lines on A. When the four sides are glued up, the top and bottom edges may be rubbed down on a sheet of glasspaper to

bring them to a flat surface ready for the top and base to be attached.

The top of the tower consists of the two glued-up pieces, D and E, measurements for which are given in Fig. 1. Fix these on firmly to the tower.

Before the base is attached, make,



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

fit and fix the floor which goes up inside the tower according to the dotted lines on the patterns of the sides. First cut four little blocks of wood G (see Fig. 2). Glue these firmly in place in. up from the lower edges of the tower.

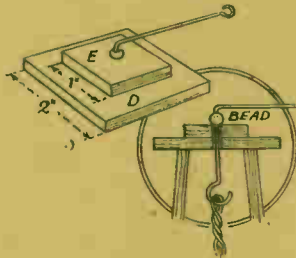


Fig. 1—Fixing at top of tower

Next cut the floor C, 2½ ins. square from 3/16 in. or ¼ in. wood. After slightly chamfering the four edges, glue the piece to the blocks and to the sides of the tower. It would be advisable also to drive in some small nails into piece C, through the sides, to make a really firm job as the tension of the elastic will be considerable on this piece.

The Crank Movement

Bore a hole in the floor, C, to take the wire crank shown in the cut-away section, Fig. 2. A full size drawing of this wire crank is given at I, on the pattern sheet. The washer F, cut from 3/16 in. wood, must be placed on the wire before the handle part of it is bent.

At this juncture the base can be

fixed on and pinned securely. Next get a piece of wire about 4½ ins. long, and at one end make the large hook, shown at H on the pattern sheet. Push the wire through the holes in the top sections of the tower and thread over an ordinary glass bead as shown in the circled diagram in Fig. 1.

This done, bend the wire over at right-angles and form a small loop at the extreme end to take the suspension cord of the little plane. Some flat elastic is now obtained and looped into several lengths. Pass over each hook of the inside wires of the tower. The quantity and manner

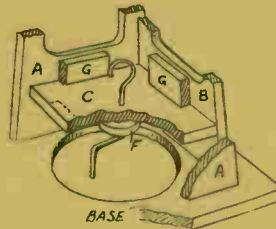


Fig. 2—Base and winding handle

of looping will depend upon trial being first carried out. A little lubricant should be wiped into the strands of the elastic occasionally to make it free running.

The pattern for the three parts which make up the aeroplane are given on the sheet. Either thin wood or stout card would answer. The body and fuselage are given at J. Note the two slots, K and L, through which the tail plane and wings respectively pass, and in which they are glued. The plane should be painted up in bright

colours with targets painted up realistically.

It will be necessary to get proper balance in connecting the plane with the revolving arm of the tower. This can only be got by trial, by inserting the screw eye or wire loop in the top edge of the plane and moving it as required until the balance is correct, as shown.

Painted Tower

The base of the tower should be painted green, while the tower itself might be red. In Fig. 3 the completed plane is shown in its characteristic flying position with a little propeller attached. The latter is made of tin with a pin as the axle.

In winding the elastic with the crank, the top wire, where it projects

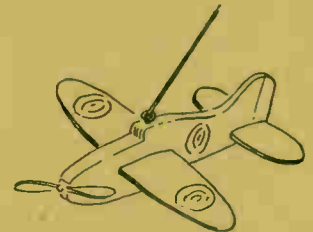


Fig. 3—The plane in running position

beyond the head of the tower, will have to be held rigid until the elastic has sufficient turns to make the plane fly round. With good adjustment and efficient elastic, the model should work for several minutes. The life of the elastic can be lengthened by occasional lubrication with soft soap.

From the Editor's Notebook

MANY of our readers are members of the Army Cadet Force, and I hope they will all send in entries for the National Handcraft Competition being run by the Association. There is £50 in cash prizes and entries can be sent in until December 1st. So you have plenty of time to make a toy or a model and carry off a prize with it. Full particulars of the contest are obtainable from the Army Cadet Force Association, Finsbury Circus House, Blomfield Street, London, E.C.2, if you mention *Hobbies Weekly*.

YOU will probably be interested to hear that the *Hobbies Handbook* for 1949 is now available. So many readers were unlucky in not being able to obtain the 1948 edition that they should make an early effort to secure the next one. Your newsgent has probably got his copies now, or you can book one from him to ensure delivery. The book contains a large gift pattern sheet of an Old Time Stage Coach, and a colour supplement

of Air Transport through the ages; in addition, of course, to the 68 pages of editorial articles and tool and material catalogue section. Your newsgent can supply one for 1/- or a copy posted on from Dereham costs 1/2.

MOST of our readers are filmgoers, and I have arranged to combine that enjoyment with an opportunity to win a prize at model-making. During the next months you will have a chance of seeing an outstanding M-G-M picture called "Green Dolphin Street" at your cinema. The story largely centres round an old-time ship called The Green Dolphin, and it is the model of this you will be delighted and able to make. I have arranged a special small design pattern sheet and parcel of wood—the Green Dolphin Kit, price 2/6) which provides all you need, complete with diagrams and instructions. Special prizes are being offered by Metro-Goldwyn-Mayer wherever the picture is shown for the best model submitted. When you see an an-

nouncement in your district regarding the picture, approach the Manager of the Cinema concerned and ask him for particulars of the competition. I am arranging to have kits available by local stockists in most towns and I am sure all readers will take the opportunity of competing. The prizes to be won, believe me, are worth having. If you want further particulars, write to me for them.

I FREQUENTLY mention the possibility of making model replicas of churches and other local buildings for interest and exhibition. Recently I learned of one worker who was doing it 40 years ago, and fashioning them in cork. This is a Somersham (Peterborough) man, Mr. Chas. Richardson, 81 years of age, who did his novel modelling with pen-knife and paste and whose enthusiasm often kept him up until 3 a.m. Personally, I think that's carrying it a bit too far!

The Editor



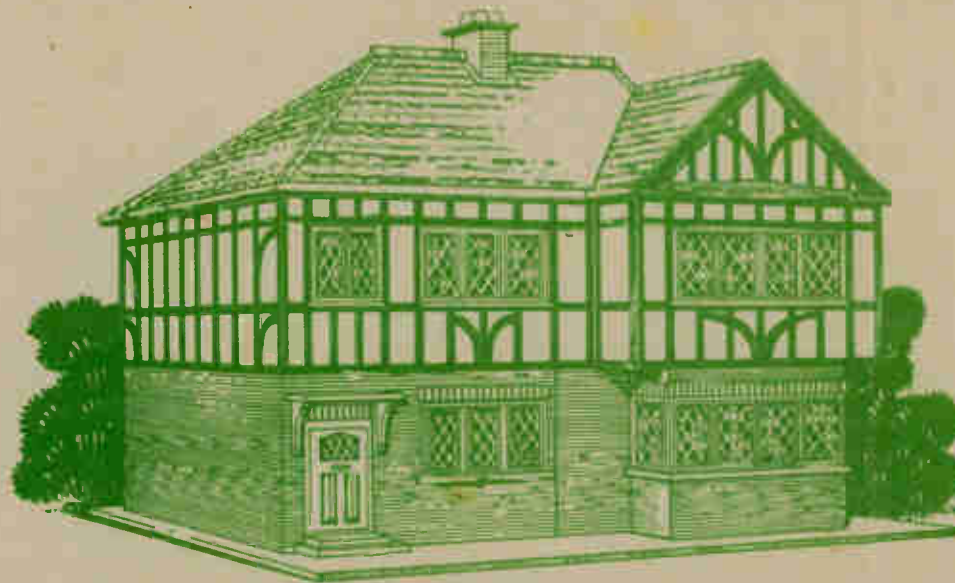
FRETWORK DESIGN

No. 237 SPECIAL

SUPPLEMENT TO HOBBIES No. 2750 SEPT. END, 1948

THE TUDOR DOLL'S HOUSE

SIZE:—24ins. LONG, 16ins. WIDE, 24ins. HIGH.



MATERIAL REQUIRED

SEVEN PANELS COMPO BOARD
AND THREE SHEETS CARDBOARD

The material specified for this design is composed of standard panels as detailed



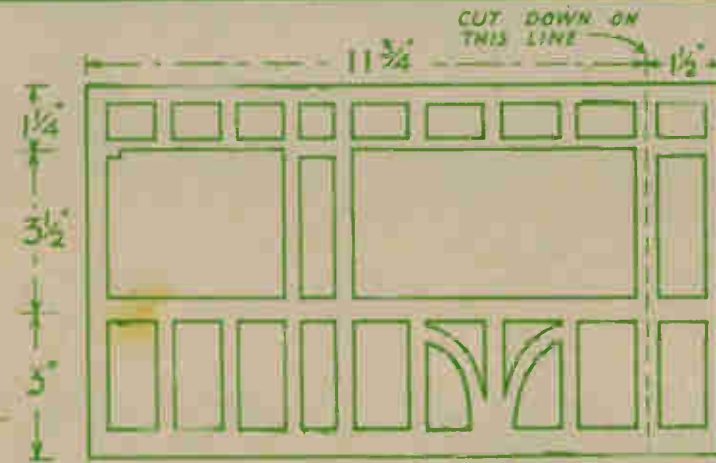
GABLE BOARD. CUT ONE OF EACH.

SILL TO TWO-LIGHT WINDOW.

BAY WINDOW. BEDROOM. SILL. FOUR-LIGHT.

SILL TO THREE-LIGHT WINDOW. MAKE TWO.

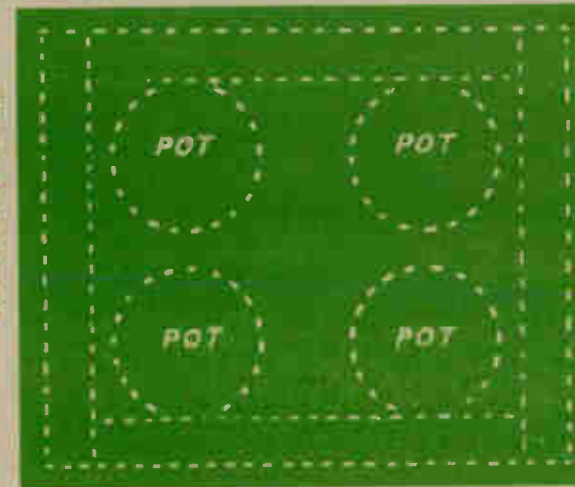
BAY WINDOW. SILL, SIDES. SINGLE LIGHT.



OVERLAY ON LEFT FRONT. MAKE ONE.



MAKE TWO.



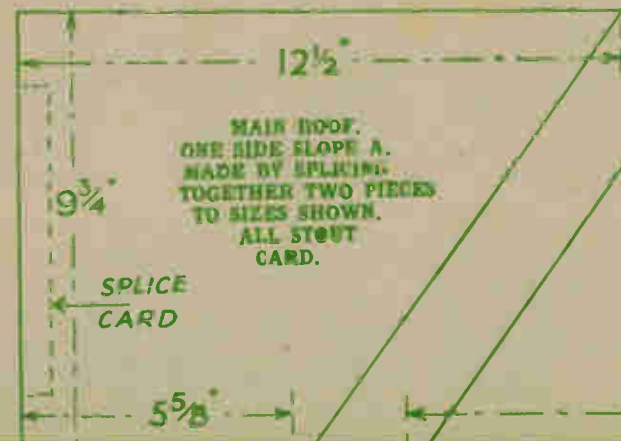
CHIMNEY STACK. THE CAPPING. CUT ONE.



CHIMNEY STACK. END. CUT TWO.



CHIMNEY STACK. FRONT AND BACK. CUT ONE OF EACH AND CHAMFER EDGES AS SECTION.



MAIN ROOF. ONE SIDE SLOPE A. MADE BY SPLICING TOGETHER TWO PIECES TO SIZES SHOWN. ALL STOUT CARD.

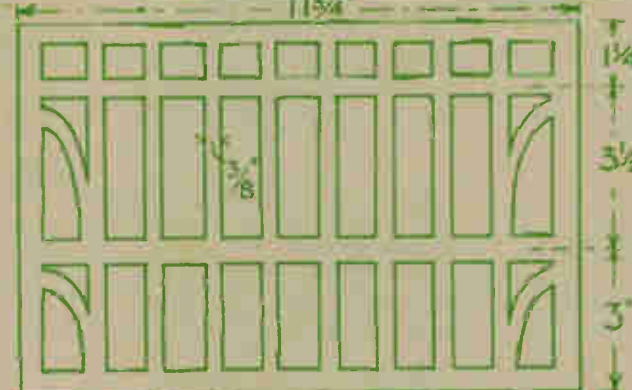
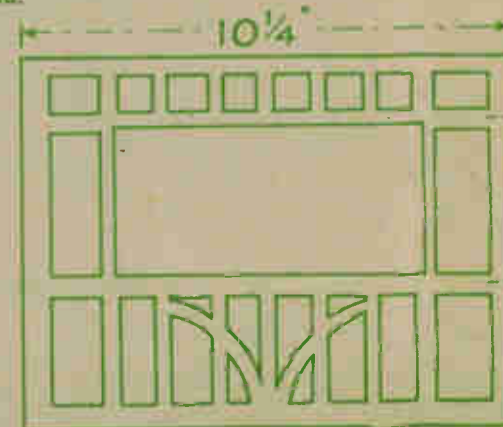
SPLICE CARD

9 3/4"

RIDGE 7 1/16"

8 5/16"

GABLE HERE



OVERLAY ON END OF HOUSE. MAKE TWO.

THE Doll's House shown is a typical half-timbered Tudor type house, and when complete is 24ins. long and 24ins. high. It is impossible to obtain suitable wood in large sheets for this, and in consequence, composition board is recommended. This is the material supplied in the kit with other material set out. It can be cut with the fretsaw and smoothed with a rasp and file, and parts can be glued together on edge if necessary.

It is, however, impossible to drive screws into the edge of the boards, so that reliance must be made on perfectly flat surfaces and glue. The actual requirements in board are shown in the panel. In addition, card is required for the roof and, of course, all the usual exterior and interior doll's house paper for finishing off. To save considerable time, the windows and doors are supplied complete, made in pressed metal nicely painted and with suitable holes for small nails to fix to the main model.

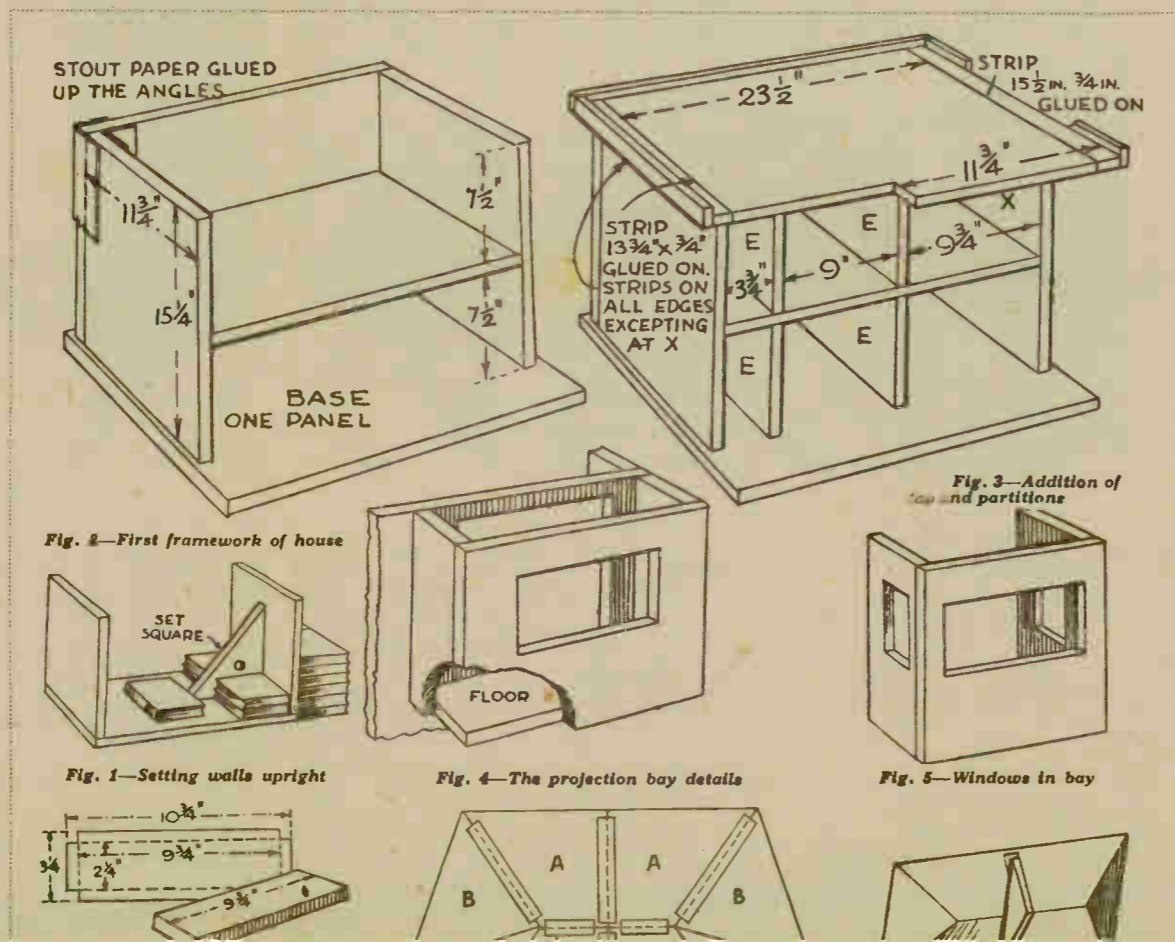
Patterns to Scale

The patterns shown are principally to scale, and these drawings must be enlarged on to the boards for cutting out. All necessary measurements are given.

The half-timbered effect round the upper walls of the house can be cut from stiff brown paper or thin card. The actual dimensions and tracery of these overlays is shown. You can paint these overlays on the model if you prefer that method to using the brown paper. Use your ruler and square frequently to ensure accuracy of measurements and upright joins. The little detail at Fig. 1 is useful in showing a method of ensuring upright partitions or walls.

Having cut the parts, the first framework is of the three walls to the base and the floor glued between (see Fig. 2). Note the touch paper

How to use the patterns in constructing A MODEL DOLL'S HOUSE



given on the sheet (parts A, B and C); how they are cut from the 20 by 15 sheets of card is shown at Fig. 7. The next stage of the roof is to glue them together (see Fig. 8) with strong gummed paper or thin card down the joints shown.

When the flat card is all in one piece, it is finally bent to the shape and gummed paper put on the outside to stiffen everything up. A card stiffener is also added underneath (see details).

The chimney stack is a box frame glued on the ridge of the roof with four little round parts added. The front and back of the stack go between the two sides, the lower edges of the former being chamfered to fit the roof slope. A top capping piece is glued on, and then four 1/4in. lengths of 1/4in. diameter dowel glued on (see Fig. 9).

Gable Roof

The front projecting gable portion to the roof is made up as a separate unit. The front gable card has the two roof slopes glued on, the three pieces being held together by corner gummed strips of stiff paper. The completed gable is then glued to the main roof, one slope coming in line with the main side slope and being fixed there with gummed paper across the join. Similar paper should be also put in the opposite side to stiffen the angle of the gable and the main roof.

To form a recess on the top of the model so the roof can stand in it, strips are fitted round the top of the walls to project above. A piece of this stripping is shown in Fig. 3.

The model can be covered now with its brick and tile paper, the upper portion of it being half-timbered on a white or cream surface. The metal windows (be sure to drill holes first) are fixed with tiny nails and a strip of board cut as a sill to be glued below. The metal door is

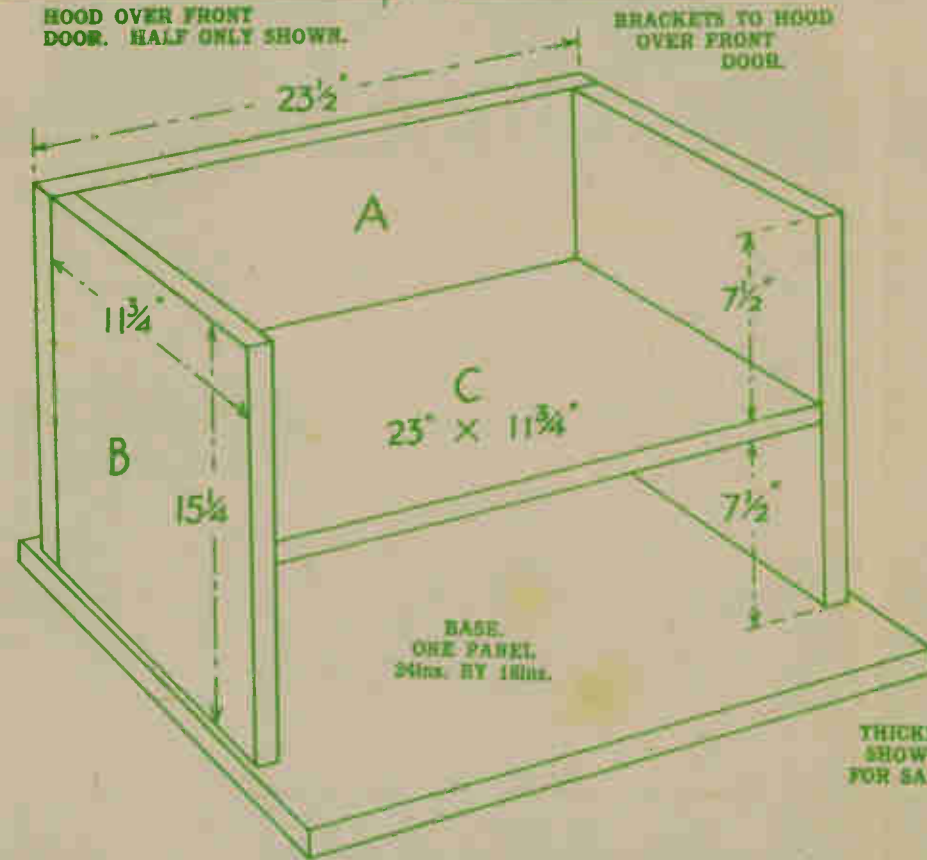
subject to revision. See the current edition of Hobbies Handbook, or write for prices to Hobbies Limited, Dereham, Norfolk.



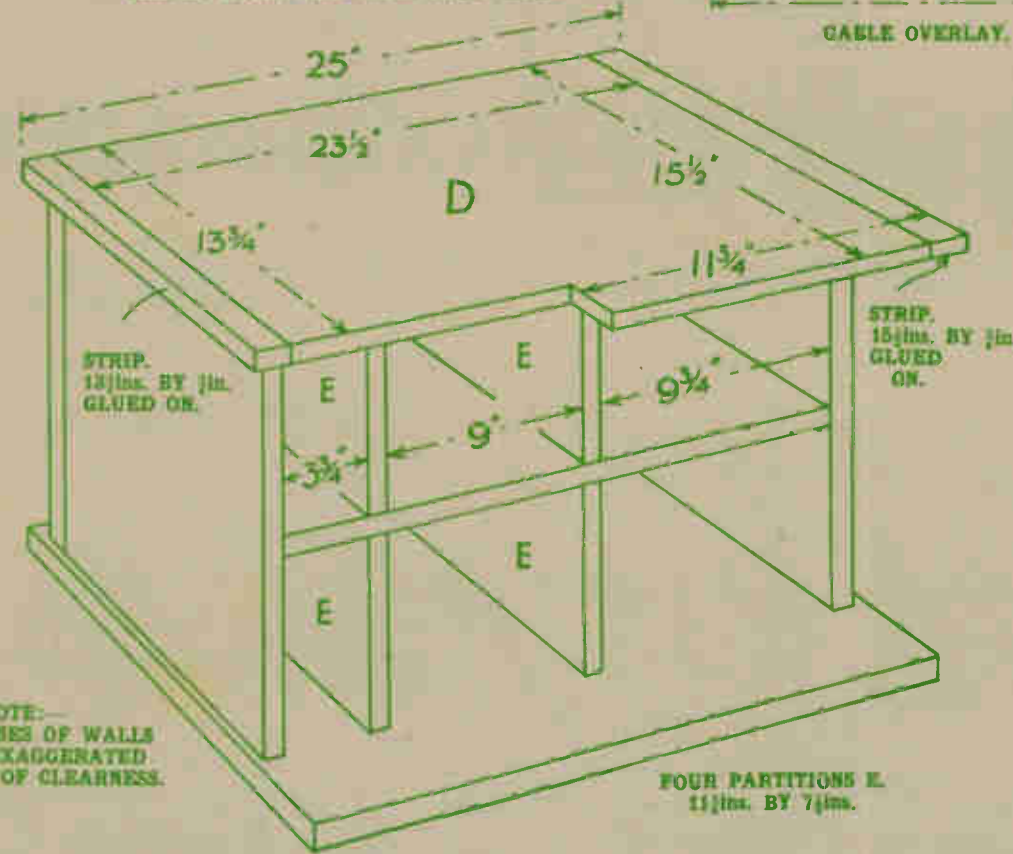
HOOD OVER FRONT DOOR. HALF ONLY SHOWN.



BRACKETS TO HOOD OVER FRONT DOOR.

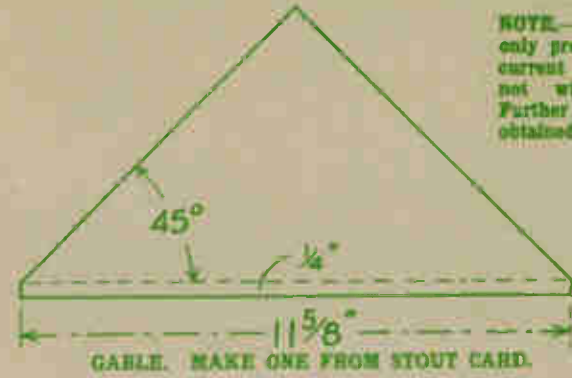


NOTE: THICKNESSES OF WALLS SHOWN EXAGGERATED FOR SAKE OF CLEARNESS.

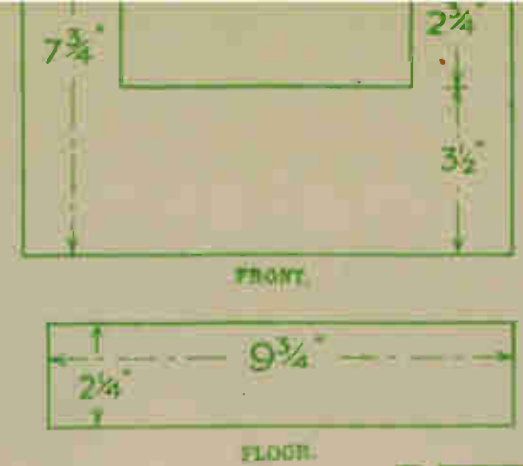
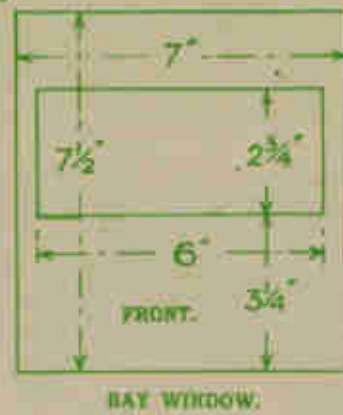


HIPPED END OF MAIN ROOF. MAKE TWO AS ABOVE FROM STOUT CARD.

NOTE.—This design sheet is only presented free with the current issue of Hobbies and not with back numbers. Further copies may be obtained.

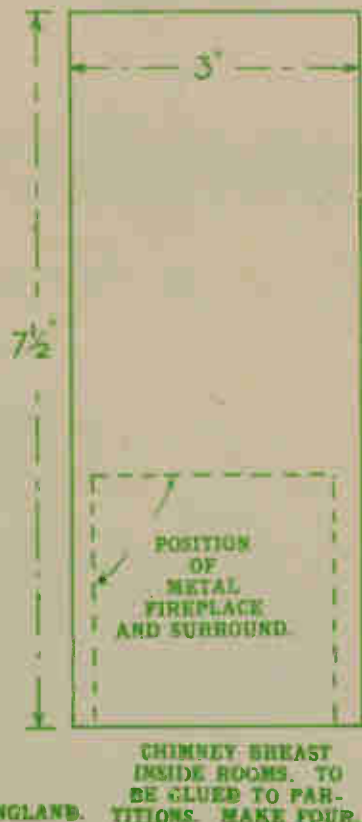
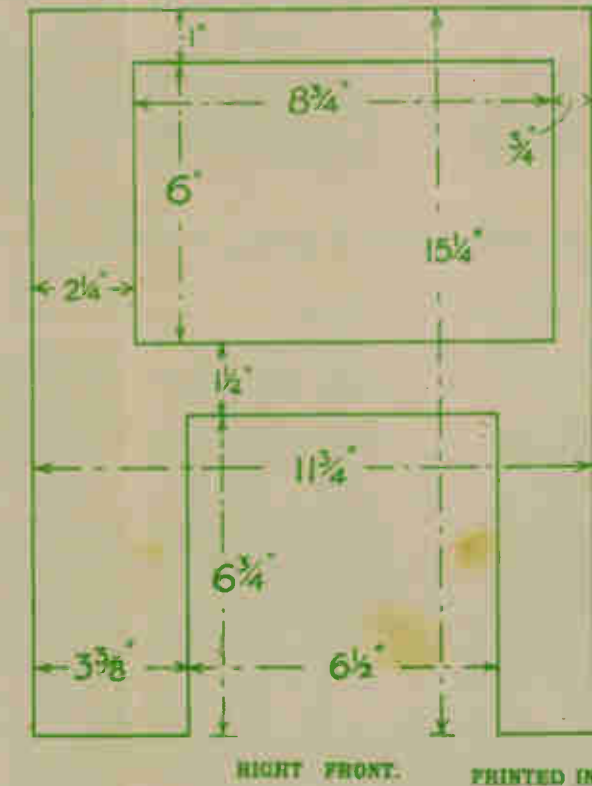
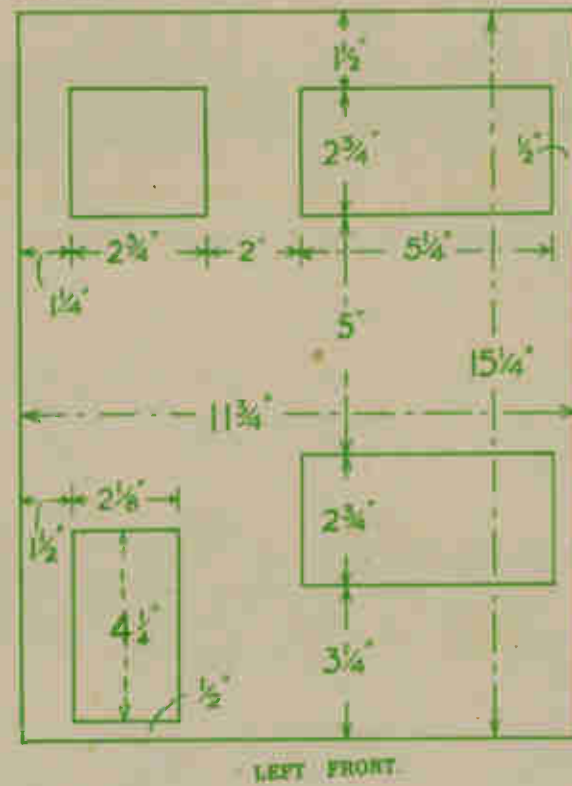


SIDE SLOPES OF GABLE. MAKE TWO FROM CARD.



SIDE. MAKE TWO.

GABLE PROJECTION ABOVE BAY WINDOW.



PRINTED IN ENGLAND.

the angle at the corners. The next stage is shown at Fig. 3 where the top is added with its projecting piece at the front. The main top is 23½ ins. wide and in consequence ¼ in. wide strips have to be glued to the edges. This will allow the cover piece to overlap the walls (see Fig. 3).

The Two Piece Front

The front of the house is in two halves, but the openings cut in them are different. Mark out as shown. To the right front, the top projecting bay is glued on as at Fig. 4. The floor is put between the ends, the front glued over all, and then the whole box frame glued to the front of the house in line with the righthand wall and the top edge.

Beneath this is the lower window portion (Fig. 5). Glue together as shown and then fit centrally to the front of the house under the upper window portion. This upper portion has to have a false floor to bring it level with the opening in the main front. Card is cut as shown at Fig. 6 with the edges bent down ¼ in. and stood into the recess of this upper portion.

The formation of the roof is made by various shapes of card glued together. The actual dimensions are

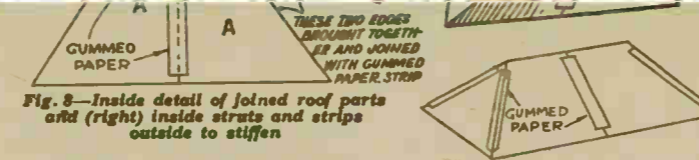
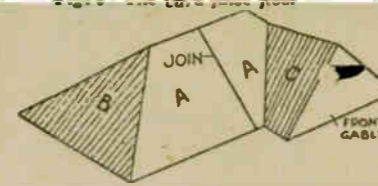


Fig. 8—Inside detail of joined roof parts and (right) inside struts and strips outside to stiffen

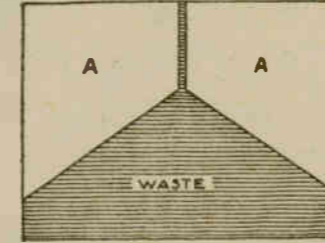
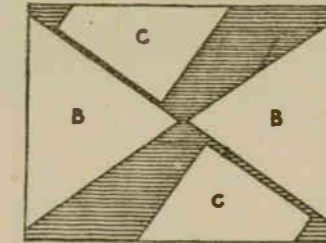
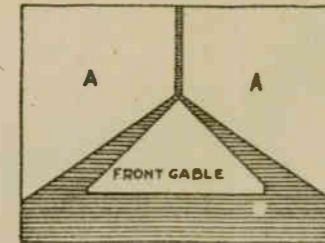


Fig. 7—The shaped roof complete, and three drawings how parts are marked out

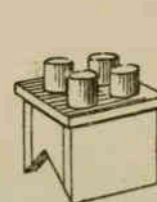


Fig. 9—The completed chimney stack



Fig. 10—Doorstep and porch cover

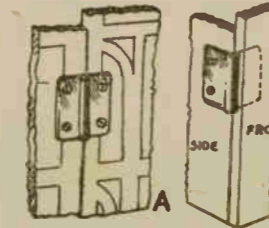


Fig. 11—Special hinged for front

MATERIALS REQUIRED

- Seven panels composition board—24 ins. by 18 ins. each.
- Three sheets card for roof—20 ins. by 18 ins. each.
- ¼ in. round rod for chimneys—3 ins. long.
- Two 4-light metal windows.
- Two 3-light metal windows.
- Two 1-light metal windows.
- One 2-light metal window.
- One front door.
- Four fireplace surrounds.
- Tiles, brick and interior paper.

on below and above. Detail of their construction is shown at Fig. 10.

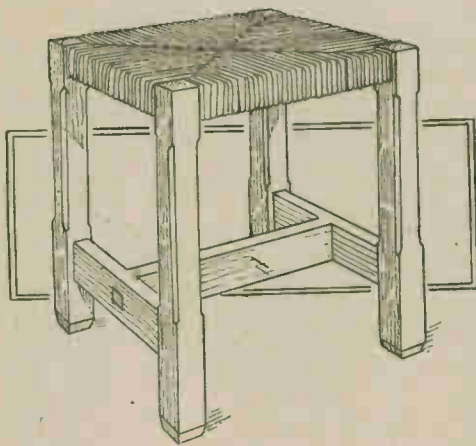
Interior Work

You will find enough board left to provide chimney breasts for four rooms. Each of these is 7½ ins. long and 3 ins. wide, and to the bottom end is nailed one of the fancy metal fireplaces. The completed chimney breast is fitted to the partition walls immediately in line with the chimney stack.

The hanging of the door fronts to the model must be done carefully. In the kit, hinges with a special wide plate are provided. The top one on the right hand door is fitted completely outside (A, Fig. 11). The other three are fixed with one plate outside the side wall and the other plate inside the door front (B, Fig. 11). Narrow hinges are no use because screws driven in close to the edge of the board will probably break it away and fail to hold. Two pair of fairly long hinges are required for each door, and they must be fitted so the front opens easily without binding on the main base. Drill holes carefully for all screws.

Interior wallpaper can, of course, be added as desired, and chimneys, sills and other parts painted to make an attractive model.

How to perform the whole work in making a RUSH-SEATED STOOL



THERE is an attractive old world appearance about the rush-seated stool that makes it equally suitable for the living or drawing room. It is also quite easy to make one at home yourself, as the frame is a simple piece of carpentry, and there is no difficulty about the upholstery. A rush seat is provided, and this can be worked by almost anyone with sea grass.

Fig. 1 shows a front and side view of the stool, with suitable dimensions. The legs are cut from 1½ in. square wood, top rails from 1 in. by 1½ in. stuff, and bottom rails from 1 in. by 2 in. wood. Any wood can be employed, though oak or birch would be really best. A good article can be made from deal if of good quality and free from knots.

Rail Joints

The rails can be dowelled to the legs, using one dowel each end to the top rails and two dowels to each end of the bottom rails, but care should be taken to cut the ends of the rails square to the side faces to better ensure a true shape.

As far as the top rails are concerned, the meeting ends of the dowels should be mitred so that they fit together, as in the transverse section of the joint, at A. Also space these rails so that they come in the middle of the legs, as shown in the side section of the stool, leaving ½ in. each side clear. The rails should be ½ in. below the level of the legs, this hollow being afterwards filled up with the sea grass.

It will be seen from the latter diagram that one single cross bottom rail joins the two end ones, it being tenoned into the end rails, as in the detail sketch, B. Make all the joints a good fit.

The top ends of the legs are slightly—only slightly, rounded off, to remove the sharp edges which

might prove uncomfortable to sit upon. The legs are also stop chamfered where shown, and the bottom ends bevelled. Now glue the end frames together, then join together with the side top and bottom rails.

When the glue is hard, glass-paper the stool to smoothness all over. Stain the wood oak colour and finish off with a coat or two if necessary, of oak or copal varnish. A strong and pleasing article should result.

For the seat, sea grass should be obtained. This material, self colour or stained green, can be bought at most art stores or upholsterers, or any shop dealing with craft's materials. Working the seat is a simple job if the instructions below are carefully studied, no previous practise being necessary. Proceed in this way.

Plaiting the Sea Grass

The sea grass is coiled on a stick for convenience in handling, and one end tied round the back leg, at A. The grass is then passed round B, brought over and round C, then run across to D. Now pass round D, over the grass and then over B again.

Then across to E, round E, over the grass to D, round D and across to C. Pass over C, then over the grass and over E to starting point, and is so continued round and round. It sounds a little complicated to detail, but if the instructions are carefully followed, aided by a study of sketch, Fig. 2, there should be no difficulty in accomplishing the work successfully.

Finishing Loop

After a few rounds the seat will present the appearance shown in Fig. 3, a plan view of the half-finished work. When the whole is finished, the sea grass is pushed through the centre, carried across to the starting point at A, and there tied securely.

As one length of the sea grass is used up, another length must be tied to it before the work can be carried on, but each time see that you arrange for the necessary knots to be underneath, and so hidden from view. In the course of the work, too, press the grass close together to make a tight weave.

It is the practice, in some examples of this

work, to stuff the space between the top and bottom layers of the sea grass to make a soft but solid seat. It wears better so, and is more comfortable to sit upon. Anything suitable can be used for stuffing—flock, kapok—whatever you can get, and it is introduced between the layers as the work proceeds.

Points to Watch

It will, of course, be understood, that during the weaving the sea grass is pulled reasonably taut, and not allowed to sag. The edge where the grass passes over can also, if desired, be hidden by nailing thin battens of wood across, stained to match the stool.

A point omitted in the foregoing, is the necessity to round off with a rasp the sharp edges of the top rails. Unless this is done, such edges will cause hard wear on the sea grass as the weight of the body presses on it, and it will not last so well.

After rasping, smooth the edges with a rubbing with glasspaper. Sea grass can be supplied, or at least used to be, dyed blue, green, orange and black, as well as in natural colours. If green can be obtained it would suit the oak colour of the stool well. It can usually be bought in 1 lb. hanks, and is light in weight.

A common failing with these stools is that they are not made rigid and strong. Once they start to "wobble" the joints loosen and there is danger of the whole thing falling apart. Metal angle plates in corners can prevent this.

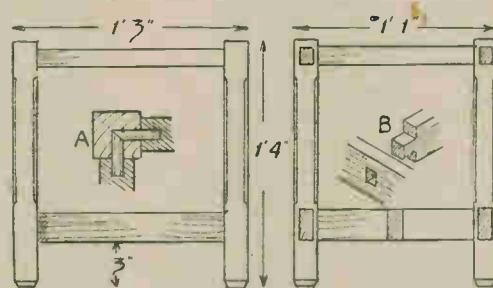


Fig. 1—Side and end view with joint details

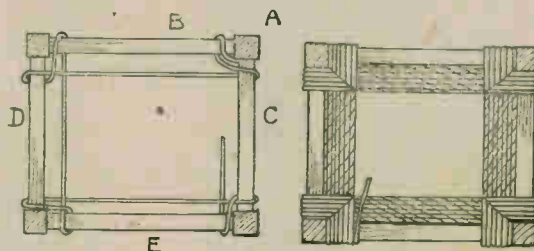


Fig. 2—Commencing the seat weaving

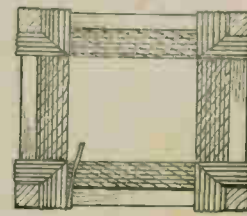


Fig. 3—The sea grass strands in place

Our answers to readers' enquiries contain many general REPLIES OF INTEREST

WHAT is a trammel, please? and for what purpose is it used?

IT is a woodworker's appliance, made from two bars of wood, grooved along the surface and half-checked together at the centre at right angles in the form of a cross, with bracings of wood to hold the bars true. This wooden device is used in conjunction with a beam compass having two sliders and a third slider which holds a pencil, to mark out elliptical curves on wood.

I HAVE some cellulose paint and I desire to thin it. Can you advise me what to do? I tried using ordinary paint thinners, with a small quantity of the cellulose paint, but I found this spoiled the paint.

THE thinners of most paints is generally the main solvent. Turpentine will thin out paint which has thickened, meaning ordinary paint, but paint thinners is the proper stuff to use. Cellulose paint is really a form of lacquer. It has a base consisting of celluloid, and the main solvent is amyl-acetate. Therefore, this chemical must be used to thin the lacquer, or alternatively, acetone may be used. The best plan is to use the thinners recommended by the manufacturers of the lacquer. Plastic wood softening fluid can be tried as thinners, since the chief difference between cellulose paint and plastic wood is that the latter contains powdered wood. In other words, by adding powdered wood to cellulose paint one obtains a form of plastic wood.

WHAT are cutting needles, please, and what are they used for? I believe they have something to do with recording.

A CUTTING needle is a special type used for cutting the sound grooves on cellulose coated record discs. It is made from toughened steel and has a sharp, vee-shaped point which scrapes a neat groove on the surface of the record, producing a swarf (trimmings) which is like a fine thread. The needle is held in a cutter-head (a form of pick-up) and as the record revolves, the cutter-head slowly moves towards the centre of the turntable, thereby cutting the continuous sound groove; the cutter-head is connected to an amplifier which, in turn, is wired to a microphone. The latter sets up sound impulses and these, in a magnified form, are transferred to the stylus of the cutter-head. Thus, apart from cutting a continuous spiral on the coating of cellulose, the needle also "shakes" and puts "sound" into its groove. The recording is then played back with a trailer needle, which is a bent form of steel playing needle.

HAVING made a ladies' work-box from walnut, I have been advised to oil it and apply wet-wax. What is wet-wax, and how is it made?

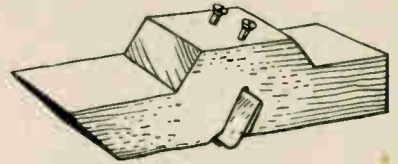
WET-WAX is simply another name for wax polish. It is made by shredding hard beeswax into turpentine. The latter acts as a solvent, and no heat is needed. However, wet-wax may be quickly prepared by melting the wax in a tin, then adding some turpentine, which is well stirred in. The mixture, when cool, should have the appearance of soft butter. A small lump of resin may be added. If colouring is necessary, oil stain may be stirred into the mixture.

I NOTICE that one of my front wheel brake blocks is wearing away

more than the other block. This is not the case with the rear brake of my bicycle. Is there any way I can equalize the wear?

IT is assumed that your machine is fitted with a calliper rim brake, the rear brake being a cantilever calliper type, as it is a common defect with these kinds of brakes, particularly the front brake. Both brake blocks actually grip the rim of the wheel, but one block—the one showing the most wear—touches the wheel first. Consequently, it wears away quicker. There is nothing you can do, unless, after a time, you change over the brake blocks. It might be that the tension spring is too strong, but we do not advise interference.

A reader's novel "MIDGET SMOOTHER"



I AM a great believer (writes S. Final, of Amersham) in improvising and economising, especially in my small workshop.

Mainly my hobby consists of producing novelty money boxes designed as miniature houses, and in the past found glasspaper the heaviest cash item in the production. But now, with the "Midget Smoother" (as I call it), the papering is cut down by at least 50 per cent.

Having first used a bit of thought, a piece of wood and one of my many old safety razor blades I can now smooth down the wood to my heart's content with ease. I have the original in constant use now and can assure you it is worth its weight in gold to me.

Saw the wood to shape as shown (Fig. 1) and saw groove on an angle so as to meet drilled screw holes. Bend strip of tin for wedge (Fig. 2), insert

screws, blade, and wedge. You can adjust the blade by a turn of the screws until only fraction of blade protrudes. The tool is now ready for use. With light pressure the blade should give considerable use; in any case, a fresh one can quickly be inserted.

The art of making the tool work well is in the tightness of the blade. Make sure the wedge is forced home really firm without it being visible at the mouth. To remove used or broken blade, withdraw wedge from side with pincers, the blade will then fall out. The groove will be wide enough if a small tenon saw is used.

Ensure wooden block to be cut has perfectly flat base. Before sawing groove, draw pencil line both sides and top with correct angle for a guide when drilling screw holes, which as shown must be in line with blade. The blade rests on the back of groove, whilst wedge goes in mouth side. Once the position of blade is ascertained for working, screws need no further adjustment. It is important the screws are perfectly square with the groove.

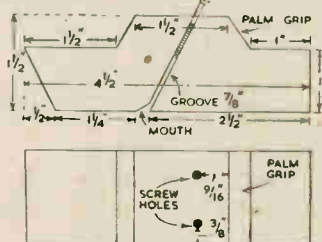


Fig. 1—Wooden block shape and size

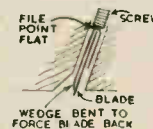


Fig. 2—Side view of blade

REQUIRED

- 1 piece hardwood, 1 1/2 ins. by 1 1/2 ins. by 4 1/2 ins.
- Two 1 in. screws.
- 1 strip of tin, 1 1/2 ins. by 2 ins.
- One 3-hole safety razor blade.

The first article of a short series telling all about HOME METAL WORKING

HOME metalworking can be a very absorbing hobby, and the manufacture of a wide range of domestic and other useful articles is quite within the scope of the enthusiastic amateur. This is the first of a short series which will show you exactly how and what to do and make.

Apart from the initial expenditure on the necessary equipment, the making of these articles entails little cost, and, when attractively finished, should find a ready market among friends and relations, putting many useful shillings in your pocket.

First of all—what you will need—and where to get it. As with other hobbies, you will require a work-bench, but the kitchen table can be an effective substitute. In addition you will need the items set out in a panel here.

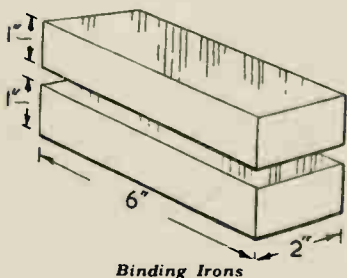
Equipment You Need

The items shown represent the minimum of equipment necessary, but can, of course, be augmented to meet with later requirements.

The mallet should have a slightly convex face—an ordinary mallet with the edges filed down will do just as well. The hammer, too should also have a convex face. On metal, the use of a flat mallet or hammer requires considerable skill and practice if unsightly dents and marks are to be avoided.

One of your most important items of equipment is your soldering outfit and care must be exercised in its selection.

A note about the iron itself. There



Binding Irons

are two main types—the straight or ordinary kind, and the hatchet. The latter is for awkward angles where the use of the straight iron would be difficult. Size and weight are very important—the ultra-light miniature irons, while suitable for wireless or delicate repair work, are practically useless for metalworking.

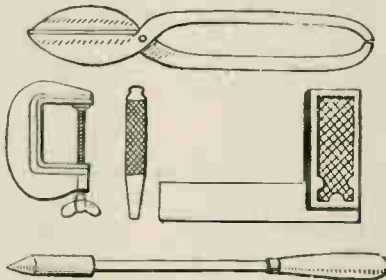
A slightly heavier iron will retain its heat for a longer period and this is necessary when soldering a joint, which must be done in one operation if a neat finish is to be attained. So,

when picking your iron, choose one of medium weight.

The solder should be as fine as possible—a mixture of 75 per cent. tin and 25 per cent. lead is ideal. Too coarse a mixture leaves a rough finish to a joint.

A good flux is essential, and a tin of Fluxite will last a considerable time. The Fluxite soldering kit is quite adequate for the requirements of the home metalworker.

If expense has to be considered, the blow-lamp can, for the time being, be omitted from the kit. One should be bought as soon as possible, as it can be used for a profitable sideline that will be outlined later.



The tools you need

Your cramps must have not less than 2in. jaws—the 3in. size is ideal, and if you can afford them, two pairs should be included, as this will save you time in the long run.

The shears should be of good quality, and about 6ins. in length. Do not get too light a pair or you will find using them is hard work.

An accurate square and rule are essential for squaring up your pieces of material and marking out patterns. When marking out, always use a fine pointed marker. This can be improvised from a piece of stout wire, or even a long nail, with the point filed. No good metalworker ever works to pencil lines.

The file and emery cloths will be needed both in preparing surfaces for soldering and in finishing off your jobs. A punch is necessary, and this should have a flat tip about 1/4in. across. A cheap one will soon turn up at the tip owing to insufficient

hardening in manufacture.

Any slab of steel or iron will do for your bench-iron, providing it has square and smooth edges—the heavier it is, the better—an ideal size would be about 1ft. square and 1in. thick. If this is not sufficiently solid it can be cramped to the bench for rigidity.

The bending irons must not be less than 6ins. in length, unless you have two pairs, when a 3in. pair would be useful on small jobs. These, like the bench-iron must be quite smooth and perfectly straight.

The bench and bending irons can be procured quite cheaply from your local scrap yard, and you should have no difficulty in finding suitable pieces.

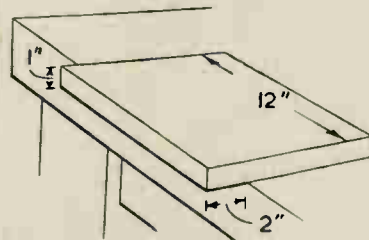
Metal Material

Now—what about material? In these days of quotas and permits it is not possible for the amateur to purchase sheets of material. This, however, need not deter you.

Most sheet-metal working firms have a scrap-heap on which can be found pieces of material that, although too small for commercial use, are ample for your requirements. A diplomatic word with the foreman may result in your being given a few useful pieces, possibly free of charge.

Another useful source of supply is to be found in the empty tins and containers one comes across. It does not matter if they are painted—this can be scraped off. Rusty material will not do. Oil drums, scrap parts of ventilating systems, can be found on many public tips, and will yield useful pieces of material. Biscuit tins are ideal.

Whatever you get, cut it up carefully to preserve the best pieces, and



Bench iron in position

afterwards square them up and put them on one side for future use. You will be surprised how soon your stock will accumulate. Keep your pieces in a dry place to avoid rusting over.

You have a complete metalworking kit—your supply system is assured, and you are all set to commence work. But first, you must learn how to use your tools before you can tackle your first real job.

(To be continued)

TOOLS YOU NEED

- Small wood mallet and light-weight hammer.
- Soldering iron solder and flux.
- Small blowlamp.
- Pair of cramps.
- Pair of light metal shears.
- Metal punch.
- Ordinary or "T" square.
- Rule and marker.
- Half-round smooth file.
- Rough and fine emery cloth.
- Bench iron.
- Bending irons.

Looking after your tackle—and some other helpful ANGLING HINTS

HAVE you seen fellows throw their rods and tackle about thoughtlessly when they have finished their day's fishing? Well—do not do it! It pays to look after your tackle every time. Indeed, in these days when fishing goods of all kinds cost such a lot more than they did a few years ago, you simply cannot afford to neglect a single item.

There are many who are never happier than when "fiddling" about with their rods, polishing the shiny butt and renewing frayed whippings. Whether your rod happens to be a valuable split-cane with jeweled rings or a medium-priced rod of greenheart or bamboo that has seen much service, look after it.

Some time ago it was stated that fully 50 per cent of the more expensive repairs to fishing rods are traceable to trifling faults. Had they received attention promptly, they would not have given further trouble. Anyone with the hobby instinct who is useful with simple tools can usually make good in mending angling gear.

Much damage is done to a good rod by neglect. When the varnish and paint get knocked off through throwing your rod down on the ground or smacking it against trees and other objects, bare places occur and the wood shows through. Such spots are liable to suffer from wet caused by rain or temporary immersion in the water. All such bare places should be given a coat of shellac, and then varnished over. For scratches and scars, a thin coat of varnish is sufficient.

Varnishing Rods

The best kind of varnish is the waterproof non-resinous coach-maker's varnish. Sometimes it is difficult to get this nowadays, but obtain the very best you can from your tackle dealer.

Apply varnish with a small camel-hair brush or with the tip of the forefinger of your right hand. You will find that it is easier to put on a thin smooth coat evenly by the latter method, whereas with a brush, the varnish is liable to spread somewhat thickly and dry "tacky".

After the varnish has been applied, hang up the joints of the rod in a dry airy room free from dust, and leave until the coating is set hard. Before commencing to varnish a rod, see that all the ring whippings are good—any frayed ones should be renewed first. Strip the old stuff off the rod and bind on the rings with new silk wrapping which has been waxed.

A useful medium for all kinds of

silk wrappings is celluloid varnish. You can buy it, but if you must economise you can make it at home from old photographic films. Take a film and thoroughly wash it in caustic soda to remove the emulsion and gelatine. Scrape carefully until nothing is left but the celluloid sheet. Cut this into thin strips and place in a solution composed of equal quantities of acetone and amylacetate. Place a good quantity of the celluloid in the mixture.

Next day inspect the bottle—a jar with screw-stopper serves the purpose well—which must be tightly "corked", and see if there is an excess of celluloid. If so, add a few more drops of the solvent and leave it to tackle the remaining celluloid. By repeatedly adding further quantities of celluloid or solvent as may be called for, you have on hand a supply of quick-drying and effective varnish for tackle repairs, silk bindings, touching up the tyings of gut to hooks, etc.

One note of warning—celluloid varnish does not take well on ordi-

existing tackle. Your keep-net, for instance, will last twice as long if you steep it in boiled linseed oil. After the surplus oil has been drained away, hang it up until dry. Landing-nets can be similarly treated. A new net also treated in this way will last for years.

Keep away Rust

Hooks and all metal work should be greased or oiled to keep off rust when you put such stuff away during the close season. All gut casts, lines, and hook-lengths are preserved by keeping them in air-tight tins. When going fishing gut casts are best carried in a book or wallet having washleather compartments. Or obtain one of the flat tins containing a pad of soft flannel or felt, which, damped with water, keeps the gut nice and pliable and ready for instant use.

Dry gut-casts often insist on curling up in corkscrew fashion when first opened out or when very dry. This can be very annoying when fish are feeding well and you are in haste to rig up a fresh cast. When gut



This week's design for a large model DOLL'S HOUSE

FOR making this 2 ft. wide Doll's house from the gift design sheet, Hobbies Ltd. supply a kit of complete parts for building; composition wall panels, card for roof, metal window fittings, brick and tile paper, etc., for 50/-.. Sent also from Hobbies Ltd., Dereham, Norfolk, for 53/6, carriage paid.

nary wax, so, if waxing your tyings and wrappings, use wax without tallow in it.

Reels and Their Care

Good reels are expensive. Take care of them. They are best kept in either a leather reel-case, or strung up in a washleather bag. For that matter, a little bag of suitable material and size, with a draw-up string, will do nicely. You can easily make one at home. The writer always carries his reels in similar home-made bags; it is much better than carrying them loose at the bottom of your fishing basket, to get knocked and chipped.

From time to time give your reels a spot of oil. Wooden reels are preserved by rubbing them over occasionally with a soft rag soaked in linseed oil. Always wipe your reel after fishing.

Useful Tips

Here are a few tips on preserving

behaves that way, wet your finger and thumb, and draw the gut through them a few times. This will straighten the gut and remove the curls.

On returning from a day's fishing, always dry your line by winding it on a line-drier and leaving it for an hour or so. Or wind it over the back of a kitchen chair if you do not possess a proper line drier. Afterwards grease it before winding back on the reel.

Dry your landing-net and keep-net before putting away. Wipe your rod down with a soft cloth, and always keep the joints in separate partitions of your rod-bag. Some bags have no partitions, but in the case of a valuable fly-rod, it is better to have a rod-bag with compartments into which the joints are placed, each in its own compartment, with the finer end downwards, the bag then being tied lightly and hung up. Never leave a rod standing leaning against a wall. If you do, the joints are liable to warp.

Simple carpentry work for an acceptable gift in making A SMOKER'S STAND

IF you have a piece of board, not less than 8ins. wide and 3ft. long, you can make up a smoker's stand like the one illustrated. As to the thickness of the board, anything from $\frac{1}{2}$ in. to $\frac{3}{4}$ in. will do. Hardwood, like oak, is now hard to buy, but should you have a piece, of dimensions given, it is possible to make a pleasing article.

Oak is about the most popular but any other wood would do, especially American whitewood, or any similar wood which lends itself to staining and polishing so well. If nothing better is available, deal would be used, and if enamelled would look quite well.

Extension Pieces

The parts comprise a pillar, with shaped extension top and bottom, finishing with an octagonal table to hold the ash tray, etc. The shaped extension parts are shown in Fig. 1, drawn over 1in. squares. The top parts are lettered, A, and the bottom or foot parts, B.

These could be pencilled out on the wood direct, but the easiest method is to draw the parts on thin paper and either to trace them through carbon paper to the wood, or paste the paper patterns on in the same way as you would a fretwork pattern.

The slots in all, marked A and b, on the drawing, will be cut out to the same width as the thickness of the wood employed, as each pair of parts fit together at right angles.

For instance, if wood of $\frac{1}{2}$ in. thickness is used, then the slots will also be $\frac{1}{2}$ in. wide; if $\frac{3}{4}$ in. wood, then the slots will be $\frac{3}{4}$ in. as well. Owing to the straight lines of the design, cutting can mostly be done with tenon and hand saw, which is lucky, thick wood being more difficult for the fretsaw and also a strain. Cut the slots just the required width to ensure a close fit.

Now glasspaper the parts to smoothness, and round off the sharp angles. Pay special attention to these parts cut across the grain. If

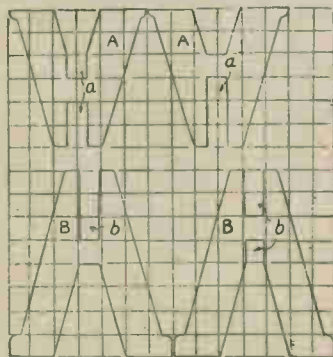
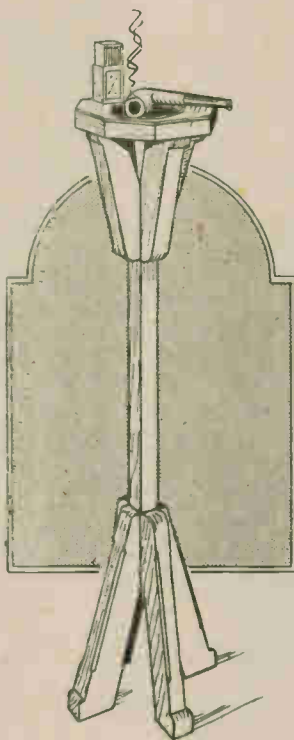


Fig. 1—Leg and top support pieces



thick wood is used, $\frac{3}{4}$ in. for example, a lighter appearance can be given to the work by working stop chamfers to the bottom members, as shown in the finished drawing.

Similar chamfers could also be worked on the top pieces, if liked. Now glue the parts together, when, if a close fit, both pairs of parts should be quite firm.

The Pillar

For the pillar. If $\frac{3}{4}$ in. wood is employed, cut a strip and plane to a $\frac{3}{4}$ in. square. No separate drawing of this pillar is given, as it is just a strip of wood 15ins. long. The pillar should fit in the top and bottom pieces to a depth of 2ins. each way. It is glued in, and for extra security, a screw might be driven through each leg and top bracket member into the pillar.

The pillar, by the way, should not be less than the $\frac{3}{4}$ in. square mentioned, so if thinner wood is used, the pillar strip should be still $\frac{3}{4}$ in. or 1in. wide, and be reduced each end to fit the slots in the top and bottom parts.

It will be necessary, however, if the pillar is to be square, as it should be, to add planed strips to the thinner sides to make it so. For instance, if $\frac{1}{2}$ in. wood is used to cut the pillar from, cut it 1in. wide, then glue $\frac{1}{4}$ in. thick strips to the thinner side, as

shown at D in Fig. 3, the added strips being lettered d.d. to distinguish.

Table Top

The top table part is shown at Fig. 2. It is a 6in. square, cut to octagonal shape. It is quite easy to mark out by the following method. First centre the square by drawing diagonal lines, then with a compass and radius from one corner to centre of the square, describe a quadrant.

Repeat this at each corner, then connect the points at the edges. Also from the centre, strike a circle the size of an ashtray. Any shape of ashtray can be utilised here, but one of the plainest description is quite suitable. The hole to be sawn out is the size of the tray, less the rim, so that the tray just drops in and can be lifted out in a moment to empty the ashes away.

The top edges of the table part can be bevelled all round to neaten the appearance. Glasspaper it all over and fix to the upper part of the stand with round-headed screws. Drive these in through the table itself, not underneath, so that if round-headed screws are used they will not appear unsightly.

The final part to make is a support for holding a box of matches. This is quite simple, being just a block of wood, cut to the dimensions given in Fig. 3, C. This is fixed to the table with glue and a single screw, about where shown by the dotted lines in the plan view of the table, Fig. 2.

The Finish

The finish, of course, will depend somewhat on the kind of wood used to make the article. Polishing or varnishing with a preliminary coat of stain where necessary, will suffice in most cases.

If the article, however, has perforce to be made of common deal, a finish of enamel is really better than stain and varnish, as somehow, no stain or varnish either ever seems to effectually disguise deal, but a coating of enamel does.

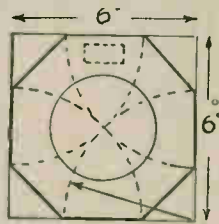


Fig. 2—Shape of top

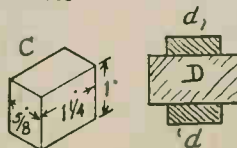
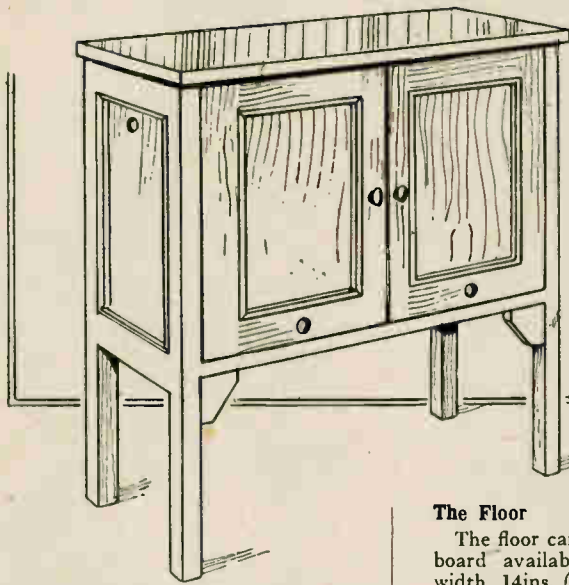


Fig. 3—Match holder block and reinforced pillar

A useful compact, dust free article for the home is this BOOT & SHOE CUPBOARD



level with the back edges of the sides, but the front rail, A, is set back $\frac{3}{4}$ in. to make room for the doors to butt up against it. Between these rails, at each side, screw fillets of wood, $\frac{3}{4}$ in. square (C).

Where the floor will come, screw similar fillets across, as at D, to which the floor can be nailed. These fillets are $\frac{3}{4}$ in. short of the front and back edges, to allow room for angle brackets to be fixed later on.

The Floor

The floor can be cut from any deal board available, but owing to its width, 14 ins. (the same as the width of the sides) two or more boards may have to be glued together. You could use matchboarding here, with the beaded edges underneath, so long as it is, at least, $\frac{3}{4}$ in. thickness.

Nail, or screw the floor across and complete the carcass by nailing and gluing a 3 in. by 4 in. angle block in each corner, beneath the floor, at back and front. These are necessary to stiffen the structure.

For the panels of the sides plywood is the best, but as this material is in very short supply, some other thin wood, or composition material, may have to be substituted. Matchboarding, $\frac{3}{4}$ in. thick, would do nicely, or even cardboard, if sized and varnished. The panels should be cut to fit the openings and are fitted in by gluing and nailing to a bead fixed round the opening, as at F in Fig. 4. Beading, $\frac{1}{2}$ in. by $\frac{3}{4}$ in. would do, or strips of wood planed up to these dimensions.

The top, like the floor, can be cut from any deal board available. It overhangs the sides and front by $\frac{3}{4}$ in. and enough over the back to cover the edge of the backboard of the cupboard. This, again, is really a job for plywood, but matchboarding, or varnished cardboard, may have to suffice. We have to adopt a good many substitutes nowadays. The back is screwed, or nailed on.

WOOD

Sides—Posts: (4) 2ft. 6ins. by 2ins. by $\frac{1}{2}$ in.; **Rails** (4) 1ft. 2ins. by 2ins. by $\frac{1}{2}$ in.
Doors—Posts (4) 1ft. 5ins. by 2ins. by $\frac{1}{2}$ in.; **Rails** (4) 1ft. 2 $\frac{1}{2}$ ins. by 2ins. by $\frac{1}{2}$ in.
Rails A and B—2ft. 4 $\frac{1}{2}$ ins. by 2ins. by $\frac{1}{2}$ in. or $\frac{1}{2}$ in. by 9in. deal board for top and floor, 5ft. run. Fillets, etc. from waste. Panels from available material.

THIS is a useful article to have in the home, as it keeps the family's boots and shoes in safety and free from dust. It holds up to three pairs of men's shoes and four pairs of women's or children's. This is large enough for most families. Having regard to the scarcity of wood, economy has been effected by framing the sides and doors, so the amount of timber, deal, is not large.

A side elevation, Fig. 1, and front elevation, Fig. 2 show the dimensions advised. The cupboard sides extend below the floor so raising the article up a little, but this extension can be omitted, should the wood supply be short. The sides are framed up from $\frac{3}{4}$ in. by 2in. wood.

Joints

The joints for the framing can be the usual mortise and tenon ones, or doweled, as preferred, but if the latter, take care to get the ends of the rails sawn exactly square across or the resultant frames will be found twisted and out of winding, when glued up. The common halved joints are not advised as the cut ends of the rails will show and spoil the effect.

Fig. 3 shows a detail of the construction. From this it will be seen that the sides are joined together by rails A and B at the top, and the floor, lower down. The rails A and B can be doweled across, but take care when spacing the dowels to avoid them fouling the dowels already holding the side frames together.

The back rail is fitted across

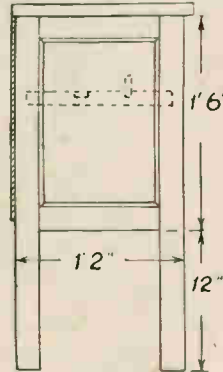


Fig. 1—End elevations

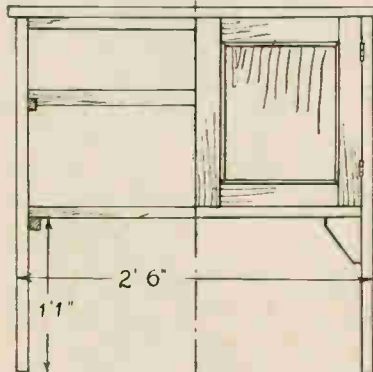


Fig. 2—Inside and half front with dimensions

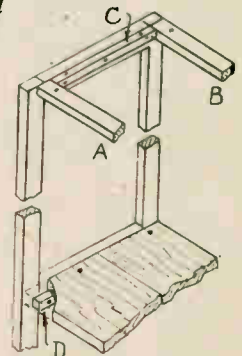


Fig. 3—Constructional details

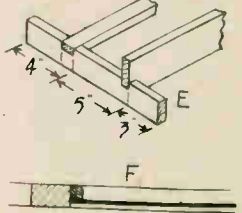


Fig. 4—Rail joints

Practical advice how the handyman can undertake JOBS ABOUT THE HOUSE

YOU never know what you can do until you try," is a rather true maxim. If the task is one which means sitting down and twiddling your thumbs until the arrival of an expert who, incidentally, has promised to be along, often as not, the waiting is long. In fact, you could probably do the thing within a few minutes and thus be obliged to no one. To be able, and thus independent, is a great asset at all times. Once started on the job, it gets easy—no difficult, as we are apt to imagine.

Shifting a Gas Oven

How often, for example, have you wanted to shift an ordinary gas oven, such as the Mains type? This cooker is used in many homes, and may be in a corner of the scullery. Quite naturally, dust and grease gathers behind the stove. The wall, in fact, is usually in a terrible state—a constant eye-sore to a cleanly housewife.

A close inspection reveals a connection pipe along the top side of the cooker. It is made of metal, the lead gas pipe being soldered to one end. The opposite end is joined to the stove with a capping nut.

Remove this nut, and the cooker is disconnected and easily trailed away. The nut is slackened with a large monkey-wrench, but before doing so, light one of the gas-rings, then turn off the gas supply at the meter tap.

By doing this, all gas in the pipes is used up and there is no gassy smell when the metal pipe is disconnected. You will find the nut hard to slacken, due mainly to paint or its packing of cotton waste. As you take off, so you put on. Just remember that, and have no fears that you are incapable of a job such as that described.

Cleaning Gas Rings

While on the subject of gas cookers, see the burners are properly regulated. You will know this is not the case if the gas burns without any great pressure. In this case, the cooker is

burning pure gas, whereas a mixture of air and gas is needed to give a hot, powerful flame. The gas, when burning, should roar slightly, or strongly.

Regulation is obtained by nuts in the gas taps on most cookers. If the gas rings, or burners, seem choked with dirt and soot, and grease, the best way to clean them is to put them on a fire and burn out the dirt—a hint which, by the way, was given to the writer by a plumber.

While this method is ineffective, however, the proper way is to steep the gas rings, toasters, etc., in a strong caustic soda solution, then scrub, rinse and allow to dry near a fire. Caustic soda, by the way, is very hard on the hands.

A Stuffed Water Drain

Assuming you have a back yard which is flooded because of a stuffed drain, and assuming you have been waiting for the arrival of a man to rectify matters, why not tackle the job yourself?

If the man came, the first thing he would probably do is to remove the grating. He would then remove most of the dirt in the drain and attempt to "plunge" it. This is what you will have to do if, as likely as not, you do not possess drainage equipment, which is rather like a chimney-sweep's outfit. Plunging, however, is often effective.

Get an old broomstick. Screw a block of wood to its end. The block should be the approximate size of the drain hole to allow for a covering of old sacking. The sacking is tied around the block (a flat block, by the way, of scrap wood) to make a rough "piston" which, dipped into the water to soak it, is plunged forcibly down the drain, thus pushing the water against the blockage and clearing this away.

Several attempts like this should produce results. Not only is it pressure of water, but also suction, as the plunger is withdrawn each time,

that helps to shift the blocking of tea leaves, dirt, etc.

We are dealing here with a scullery sink drain, of course, and not a lavatory drain, which, although connected to the same sewer pipe, is a different matter, requiring the use of the special equipment mentioned.

Sweeping a Chimney

Ever thought of sweeping your own chimney and thus saving money? Prior to the outbreak of war, chimney sweeping sets were plentiful. New sets are now rather difficult to obtain, which also applies to drainage equipment, since both sets consist of cane poles fitted with brass connectors.

It is, however, possible to make up a simple sweeping outfit. All you need is ten to twelve "rods" about 3ft. long. These rods are nothing more than lengths of 1½ in. by ½ in. plaster laths, the ends of which, by an overlap of about 4 ins. or more, are secured together with screws or small bolts and nuts.

The "brush" may consist of three old handbrushes tied around one of the laths, handles all pointing downwards. Be sure to have the brushes firmly attached.

The brush is pushed up the chimney, a lath connected, then this pushed up until another lath can be attached, continuing in this way until the brush, by careful poking, can be pushed out through the chimney pot.

The laths, although not of cane, are bendable to some extent and the makeshift equipment will, properly used, clear a chimney of an accumulation of soot. So, if you are being choked with smoke, and find it difficult to hire the services of a sweep, remember this effective tip. Never, never set fire to a chimney flue. It is an offence, and one is liable to be fined in court. Of course, we all know that, but being human, we are apt to be tempted to do things we know we should not do. Always have an alternative, or try to find one.

Boot Cupboard—(Continued from page 256)

with 2 in. butt hinges, and provide a suitable catch, with a bolt to hold one door secure.

The doors butt against the top cross rail; at the bottom it will be necessary, or at least desirable, to glue a small wood block to the floor for the doors to come up against and prevent them being forced in too much, with possible strain on the hinges.

The men's boots and shoes will rest on the floor of the cupboard, but to hold the ladies' a rack should be made and fitted across, about where shown

by the dotted lines in Fig. 1. This is quite a simple affair, as shown in the detail E in Fig. 4.

The end pieces are ½ in. by 1 in. and across these a back rod of ½ in. by 1 in. wood is sunk in level. A front rod of ½ in. by 1½ in. wood is notched across, to stand up just 1 in. above the rear rod. These are nailed and glued to the end pieces and then the whole screwed across the interior of the cupboard.

A little ventilation is perhaps desirable, as boots and shoes are sometimes damp when put away, though they really ought to be dried

first. A couple of holes can be bored through the doors, near the bottom, and another couple near the top of the sides. If at all convenient, bore these holes through the panels instead of through the rails, and nail squares of perforated zinc or wire netting, over them inside to keep out any possible wandering insects.

The cupboard can well be left in plain wood if intended for use in the kitchen or scullery, but if for the living room it would look a lot better if stained a nice oak colour, and varnished.

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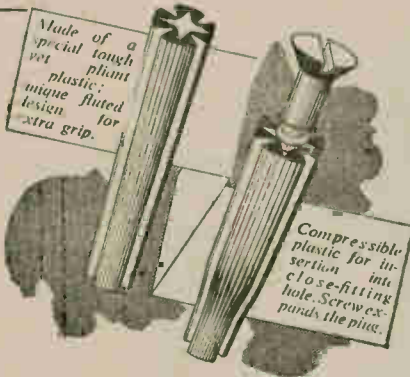
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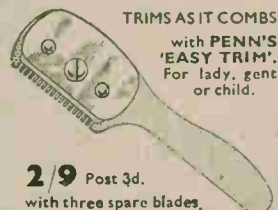
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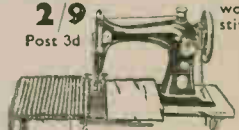
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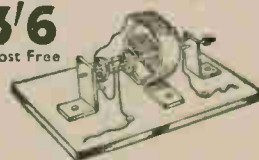


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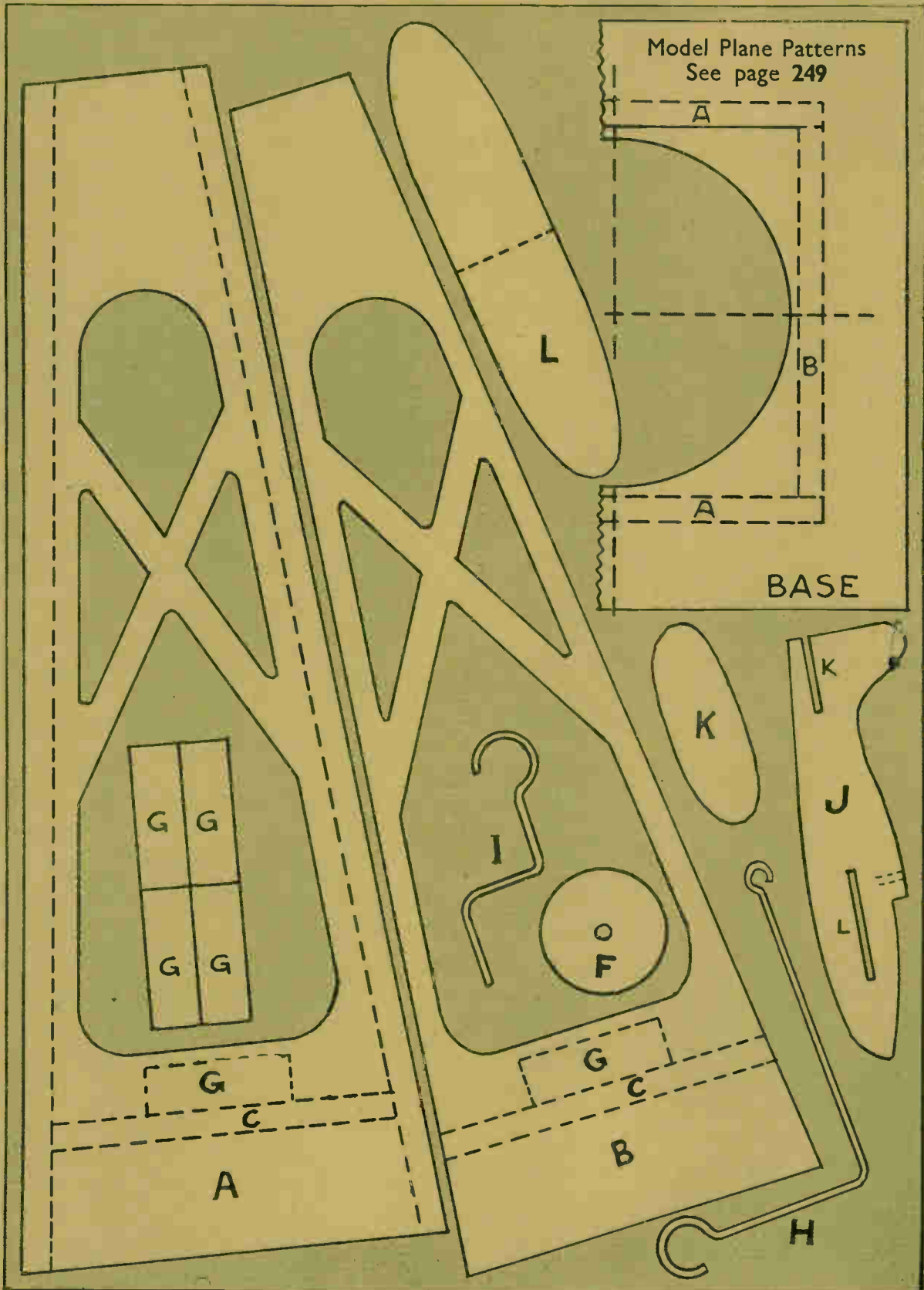
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Model Plane Patterns
See page 249



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Hobbies

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September 29th, 1948

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Vol. 106 No. 2761

A Simple Small Home-made PRINTING PRESS

PRINTING is a most interesting hobby, and also a profitable one to those who like to combine business with pleasure. For beginners, a simple flat-bed press is shown, quite capable of good work in a small size. A self-inking arrangement has been omitted, as it rather complicates the work and is not always quite satisfactory in action. This need be no serious detriment, as hand inking is easy to get into, and a speed of 200 copies per hour acquired, which is rapid enough for most.

The side pieces of the chase, A, in Fig. 1, are cut from $\frac{1}{2}$ in. by $\frac{1}{4}$ in. wood, and the end pieces, B, from $\frac{1}{2}$ in. by 1 in. wood. In the diagram, the interior dimensions are given, so cut the pieces to length to make the chase of the size given.

Flat Bed

These are to be glued and screwed down to a flat bed, C, also of wood, and cut to the outside dimensions of the chase. This bed must be dead flat, and is best made of three thicknesses of $\frac{1}{2}$ in. wood, glued together, with the middle thickness placed so its grain runs at right angles to the rest. Like plywood, in fact.

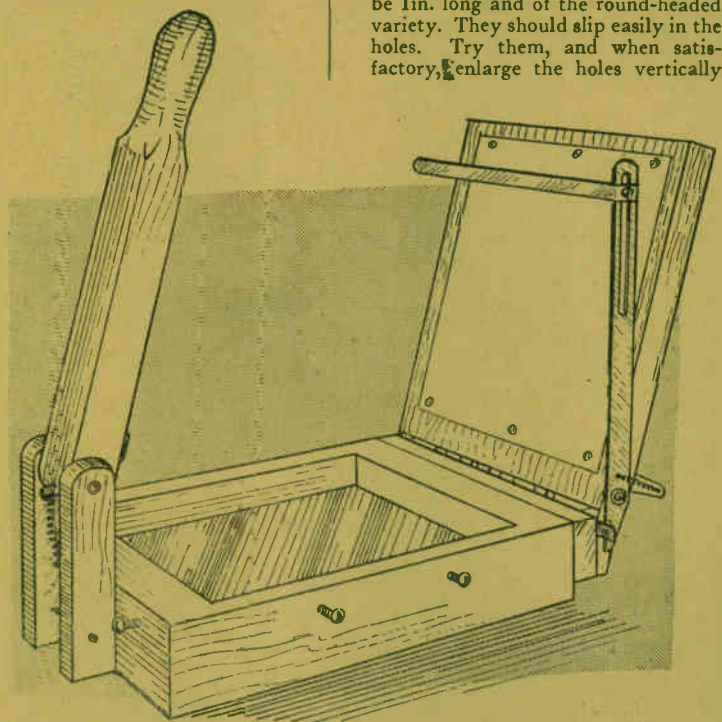
At one end, saw out two grooves $\frac{1}{2}$ in. deep and 1 in. apart, for the pair of uprights, D, to fit in. These are cut from $\frac{1}{2}$ in. by 1 in. wood, and support the lever which exercises the pressure on the platen when printing. At $\frac{1}{2}$ in. down from the top ends of these parts, bore a $\frac{1}{2}$ in. hole through, and

near the bottom a small hole to take a 2 in. wire nail. Fix the uprights in firmly with screws as some strain comes on them.

For part, E, at the opposite end, cut a strip of $\frac{1}{2}$ in. by 1 in. wood, 6 ins. long. This is to be fitted with a pair of $1\frac{1}{2}$ in. iron butt hinges, spaced $\frac{1}{2}$ in.

apart at the centre. Fix these hinges with the leaf only screwed to the wood, leaving the knuckles clear—you will see what is meant in the diagram.

In the centre, between the hinges, and just outside the hinges, bore holes for stout fixing screws. These should be 1 in. long and of the round-headed variety. They should slip easily in the holes. Try them, and when satisfactory, enlarge the holes vertically



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

to form $\frac{3}{8}$ in. slots, thus allowing for adjustment of the part, E, later on.

Now fit, E, to the end of the chase with the screws, placing a brass washer under the head of each screw. The top surface of this part should be level with the top of the chase.

For tightening the type in the chase, four screw bolts are supplied, two on one side, as shown, and two at the end where the lever supports are fixed. These are $\frac{1}{2}$ in. by $\frac{1}{4}$ in. screws, round-headed kind, and the nuts are recessed in the inner face of the chase strips, as in detail, F.

Metal Parts

To complete this part of the press it is advisable to lay a flat piece of fairly stout sheet metal, say, $\frac{1}{16}$ in. thick on the bed, to take the pressure of the type and prevent it denting the wood surface. The metal must be flat, and if nothing better can be got, a piece of stout tinplate could be used.

The platen, Fig. 2, which forces the paper down on the type, is made up of three thicknesses of $\frac{1}{4}$ in. wood, like the bed, to the dimensions given. Along the centre of it, a strip of $\frac{3}{8}$ in. by 2 in. wood is well glued and screwed down. Its end edges are slightly rounded off. At the far end a $\frac{1}{2}$ in. piece of thick metal is screwed across, on which the lever presses.

The lever is a piece of $\frac{1}{2}$ in. square hardwood, cut to the length given and shaped as shown. Near one end a $\frac{1}{4}$ in. hole is bored through for fitting it between its supports, which is done with a bolt. At the same end, drive in a strong screw hook.

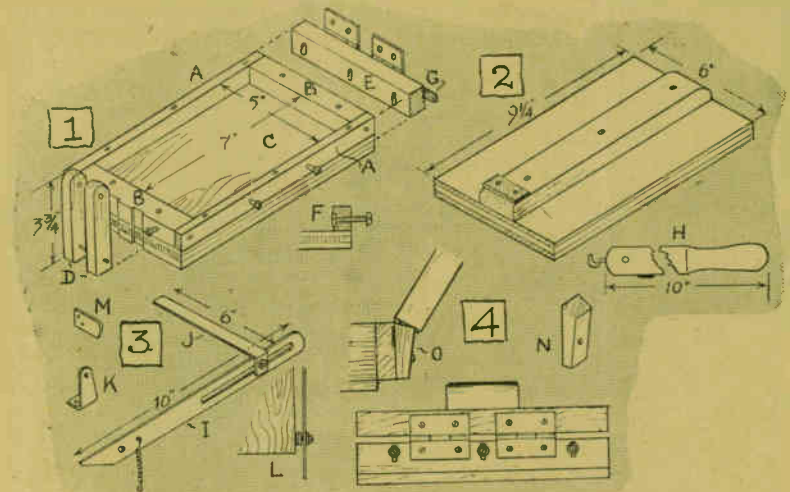
To this hook attach a piece of helical spring, the opposite end of the spring being hooked over a wire nail, pushed through the holes in the parts, D, already bored for that purpose. The purpose of the spring, it is, perhaps, needless to add, is to bring the lever upright after depression.

Gripper

The paper gripper, and its parts, Fig. 3, is of simple construction. The metal arm, I, is cut from stout metal to the length given. In this, cut a slot to about half its length, $\frac{1}{4}$ in. wide. The width of the arm should be $\frac{1}{2}$ in. to $\frac{3}{4}$ in., no more. Bore a hole at $\frac{1}{4}$ ins. from the pointed end, and fit it to the side edge of the platen, where seen in the general view of the press.

At $\frac{1}{2}$ in. further along, past this hole, bore a small hole for a short piece of spring, necessary to force the gripper down to the paper, and keep the latter in place during printing.

The finger, J, is of metal, $\frac{3}{8}$ in. wide, and is $6\frac{1}{2}$ ins. long. A piece $\frac{1}{2}$ in. long is bent over at right angles, bored, and the finger fitted to the arm with a small screw bolt, so that it can be slid along as necessary to hold any size of paper. Cut a metal piece, K, to shape, letting it stick up about $\frac{1}{2}$ in. and drill it to hold the gripper spring. It is screwed to the top of the platen where seen in the drawings.



A second metal part, M, is $\frac{1}{2}$ in. wide and $\frac{1}{2}$ in. long. This is screwed to the piece, E, to extend beyond it just $\frac{1}{2}$ in. as shown at, G, in Fig. 1. Its purpose is to catch the arm of the paper gripper, as the platen comes back, and release the paper printed.

A Precaution to Take

It is important to see, when fitting the gripper arm, that it is far away enough from the edge of the platen to allow free movement—it must allow clearance for the head of the bolt holding the finger in place. This can be effected by interposing two or more washers between it and the platen edge, as in the detail sketch, L.

Another washer should be slipped under the head of the fixing screw, also. Use $\frac{1}{2}$ in. to $\frac{3}{4}$ in. washers for

these, and for fixing a stout round-headed screw.

Fig. 4 shows a back view of the press, minus the paper gripper, and will help to make clear much of the foregoing details, if any difficulties arise. Note the position of the hinges, and screw slots for example.

Wooden Stops

A pair of wooden stops should be made and fitted, to stop the platen from going too far back. These are cut to the shape shown from pieces of $\frac{1}{2}$ in. by $\frac{1}{2}$ in. wood, as at N, and are fitted to piece, E, one at each end.

Note how these are bevelled off on their top ends (see detail, O), to support the platen when the latter is back, ready to receive the paper.

The platen should be covered with several thicknesses of paper, to provide a softer surface than the wood to receive the impressions. Set up a few lines of type in the chase, at top and bottom. Lay the platen on, and hold it down to the type firmly while the hinges are screwed to the back edge of it.

Now bring the lever over, mark where it presses on the metal slip at the front edge of the platen, and at this spot, screw a metal piece across to save the wood getting dented.

Appliances for Use

The press is now complete and ready for service. It is no part of this article to explain the art of printing. Simple handbooks are available to teach this. Type and a hand roller are necessary, of course, and certain other appliances. How to make some of these will be explained in a later article. It may be added, however, that an even impression is obtained by adjusting the bar, E, which can easily be done by loosening the screws, and raising or lowering, E, as may be found necessary.

How to make necessary and helpful accessories will be given in a second article.

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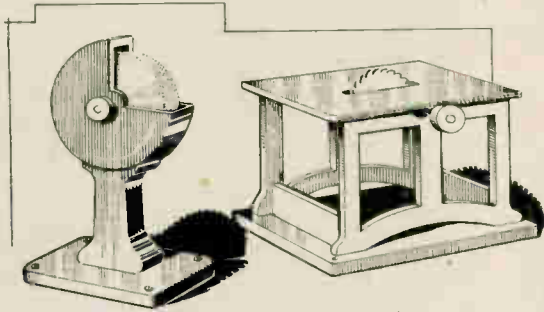
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An electric motor can be used to drive these TWO WORKING MODELS



HERE are instructions for making two simple little working models that may be driven by any ordinary type of electric motor. In the illustrations we see a realistic grindstone with pulley attachment, and a circular saw with bench and pulley complete. To save the worker the work in drawing out the various parts, we have included in this issue (on page 271) patterns giving all but the plain outline base of the saw model. All the worker need do, therefore, is to paste down the patterns, or mark them out on the wood and cut them out with the fretsaw.

The Grindstone

Commencing with the grindstone, make the base shown at A in the sheet of patterns from $\frac{1}{4}$ in. or $\frac{3}{8}$ in. wood. Cut out the mortise, keeping to the inside of the lines for this so the tenons on the upright standard fit snugly and firmly.

Bore holes in the four corners of the base so the completed model may be screwed down to a larger base board, which may, indeed, contain several of these little models.

Now take the pattern B from the pattern sheet and use on $\frac{1}{4}$ in. wood. Handle the upper curved portions very carefully during cutting and cleaning up as they are somewhat delicate and will be inclined to split off unless you have been able to use plywood. After two of these pieces have been cut out and the side covering pieces, C, glued to them, they will, however, be perfectly strong.

Side Pieces

The pattern for the side pieces, C, are given on the sheet, with dotted lines showing where the inner pieces, B, will eventually come after they have all been glued together. Two pieces, C, $\frac{1}{4}$ in. thick will be required with a full $\frac{1}{4}$ in. diameter hole made as shown in each. In Fig. 1 three of the members are shown glued up, the near disc, C, being omitted to show the interior.

The completed standard can now be glued into its base. Next cut out D which represents the grindstone. This can be got from one of the waste pieces of $\frac{1}{4}$ in. wood from B. We now require the two washers, K, seen on the pattern sheet, and one pulley wheel E.

The washers may be $\frac{1}{4}$ in. thick, and the pulley $\frac{1}{4}$ in. thick, the groove in the latter being made with a rat-tail file or, perhaps, a triangular file. In Fig. 2 we see the assembled parts, the $\frac{1}{4}$ in. diameter spindle being $1\frac{1}{8}$ ins. long. The pulley is glued on one end of the spindle and flush with the end of it and one washer glued on and against the pulley.

These parts are pushed through one side of the standard and through the grindstone D. Then on the projecting spindle the second washer, K, is glued, bearing in mind that D is kept central between the two sides C. The whole should revolve freely.

The Saw Bench Model

Our second model can now be made, and the base for this is shown as F, in Fig. 3, cut from $\frac{1}{4}$ in. or $\frac{3}{8}$ in. wood. Corner holes are made for screws for a larger stand or base. The sides of the frame to support the bench top are given as B on the pattern sheet. Two are wanted in $\frac{1}{4}$ in. thick wood. After cleaning, they are glued to the base, with two plain rails, L, glued between them to keep them rigid (see diagram Fig. 3).

The bench top may be cut from $\frac{1}{4}$ in. stuff and to the measurements given at Fig. 4, the slot being central and $\frac{1}{4}$ in. in width. Glue the top to the side frames, adding little glued blocks

of wood underneath in the angle to strengthen the construction. The edges of the top should be rounded with coarse and fine glasspaper.

Circular Saw

The circular saw can be cut from thin plywood, or preferably from tin, to the pattern given at H on the pattern sheet. If metal, then the pattern can be stuck to it with gum, paste in this case not being suitable. Five $\frac{1}{4}$ in. washers are next cut, as K on the sheet, and two of these will be glued, one each side of the saw when the spindle is being assembled.

The sectional diagram, Fig. 5, shows the correct method of assembling. First cut off a length of $\frac{1}{4}$ in. spindle $3\frac{1}{8}$ ins. long, and to one end of this, glue on a pulley, as E on the pattern sheet, and one $\frac{1}{4}$ in. washer close up to and on it.

Push the spindle through one of the holes in the frame, and, holding the circular saw in the slot, put the spindle through this and its two side washers. Continue through with the spindle and finish off with another washer glued firmly on. There should be sufficient clearance left between the washers and the sides of the frames to allow the spindle to revolve freely and to keep the saw central within the slot on the top. The spindle is shown as J, full size on the pattern sheet, so also is the spindle for the grindstone model at I.

Painted Finish

The painting and finish of these two models can be more or less left to the individual taste of the worker. They would, however, look well enamelled up in bright colours. All parts should be glasspapered previous to painting, the dust being removed before the brush work is put in hand.

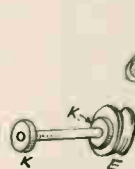


Fig. 2—Spindle and pulley



Fig. 1—Grindstone case and pillar

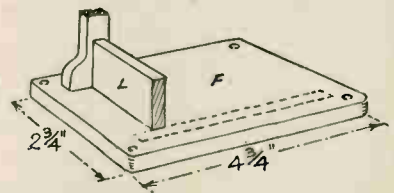


Fig. 3—Base of saw bench

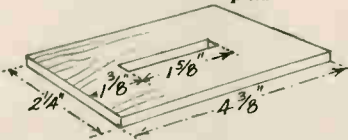


Fig. 4—Details of top

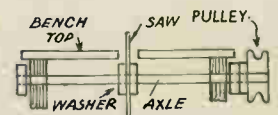


Fig. 5—Section showing drive

A Craftsman's Notebook

Removing Whitewash Splashes

YOU may have occasion to whiten the ceiling or top surround of a room in which the walls are already nicely papered and do not need re-decorating. The difficulty is to keep spots of whitewash from getting on to the wallpaper, for even the most expert amateur with a brush cannot avoid a few splashes.

If the walls can be covered up while working all well and good, but sometimes this is not convenient. In such cases it is best to tackle the stray splashes soon after they have dried rather than attempt to rub them off while still wet.

A soft dry duster will then soon clean the marks off, and the paper will look none the worse. Extra big thick streaks may be first lightly scraped with a penknife to remove the bulk, finally rubbing clean with the duster.

A Joke Library

ANYTHING out of the ordinary in the way of collections is always interesting to hear about, and I, therefore, feel I ought to mention the latest hobby of one collector I know.

He has started to specialise in jokes, every one he comes across in the Press being clipped out and pasted into a big book reserved for the purpose. His aim, he tells me, is to build up the biggest-ever library of jokes, and if he continues with the same enthusiasm, he will certainly have something unique in the way of collections.

I seem to have heard of such a library being made in America some time ago, but cannot recall details, and do not know whether it was put to any particular purpose. Certainly I do not know of anyone with a similar hobby, though, of course, there may well be other joke-collecting enthusiasts in this country. Apart, of course, from the theatrical people who have their own "gag" books!

A Chat about Coins

NUMISMATICS, in case you did not know, is the science of coins and medals, a numismatist being one who has a knowledge of these things. There is certainly plenty to learn about coins and even if they are not your hobby it is interesting to know a little about those we use every day.

Many people who regularly handle the twelve-sided threepenny-bit, for instance, are not aware that the plant represented thereon is the Thrift or Sea Pink. Or that by examining un-worn coins through a magnifier the initials of the designer can be seen at the base of the King's head.

Interesting to know, too, is that our largest coin is the five-shilling piece, measuring 1½ ins. in diameter. The smallest, though not in general circulation, is the Maundy penny, measuring 7/16 in.

The five-shilling piece, rarely seen nowadays, was not uncommon a dozen or so years ago, but of course it was not seen regularly like the smaller coins. As recently as twenty years ago, too, the golden sovereign and half-sovereign occasionally changed hands in the ordinary course of business.

The golden guinea and silver four-

shilling piece are no longer in circulation, yet they can be described as comparatively recent coins.

The farthing, however, is still current; in fact up to the beginning of the war nearly 500 million had been minted, over 20 million new ones being required every year. These big figures make one wonder where all the farthings get to, so few of them seem to be about.

The two sides of a coin, by the way, are the obverse side which bears the principal design such as the sovereign's portrait, and the reverse side. The obverse side is so called because it faces the observer.

The Craftsman

PERSPEX TABLE LAMP

HERE is the description of a pleasing table lamp made in Perspex by one of our readers—Mr. McAlees of Belfast. Fig. 1 shows the pillar made with four pieces ¾ in. broad, 9 ins. long and bevelled at edge. These are cemented to form a ¾ in. hollow square tube.

If using 3/16 in. Perspex it is a good idea to get a piece of ¾ in. square wood, 2 ins. long. The Perspex is placed around this to form the ¾ in. square. The pieces are then cemented and clamped as shown in sketch. After the cement has set properly, the wood can be removed from the centre of pillar. Also remove the clamps.

Base and Feet

Fig. 2 shows how the base is made of two square pieces—one 5 ins. square and the other 4 ins. square. Both are bevelled at the edge. The 5 in. square one has a ¾ in. hole bored in the centre for the flex to pass up to the holder. The 4 in. square piece has a ¾ in. square hole cut in the centre. This helps to support the pillar.

The feet are then cut from ¾ in. Perspex about 1 in. square. They are bevelled on two edges only. All pieces are cemented together as sketch.

The curved side pieces are shown at Fig. 3. These are made from 3/16 in. Perspex, ¾ in. wide, 12 ins. long, then curled to shape. This is done by placing the Perspex into boiling water for a few minutes until it becomes

pliable. It is not necessary to have them any special shape as long as the four are the same.

For fixing the lamp holder, get an adaptor to fit the holder, then file one end down to ¾ in. square to fit into the pillar. This is put in position and then b o r e d

(through the Perspex) in each side of the square to take small screws. This is to stop the adaptor from lifting out.

All parts should be well polished before attempting to bend or assemble.

If it is not desired to have the wire seen, the inside of the pillar can be painted before assembly and underneath the base.

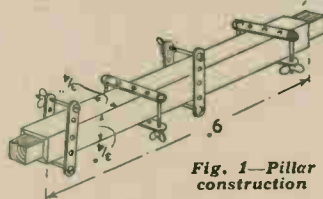
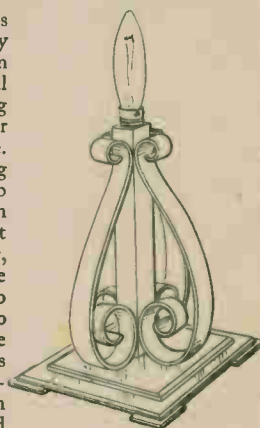


Fig. 1—Pillar construction

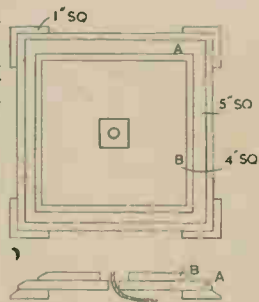


Fig. 2—The base details

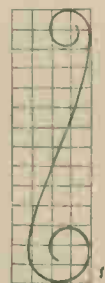


Fig. 3—Side curves

How the amateur radio enthusiast can build for himself A SHORT-WAVE TWO

READERS who would like to build a short-wave receiver should find the one described here easy to get working, and it may be made as either a one or two-valver. As short-wave conditions are so different from those on long and medium waves, a few details are not out of place.

World-Wide Range

Because short waves are reflected back by electric belts surrounding the earth at a height of many miles it is not unusual for transmitters as far away as Australia to be heard in this country, even with a single-valve set. During afternoon and evening, American and European stations are received strongly. Amateur transmitters (English and American) can be heard on the 10, 20 and 40 metre bands, scores being active on week-ends.

The main difficulty is that tuning is critical. On medium and long waves a station is audible over a spread of several degrees of the tuning dial. On short waves tuning becomes so sharp, half a dozen or more stations may be heard in the space of a single degree on the dial.

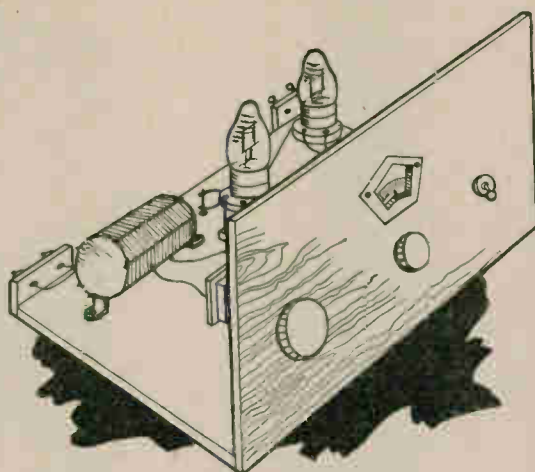
So a fairly good reduction drive is necessary or weak stations will be passed by without being heard. Stations are congregated into "bands", those most used being the 13, 17, 19, 20, 25, 31, 40, 41, and 49 metre bands. Between these lively spots on the dial little will be heard except Morse.

In addition, the bands become active on the longer wavelengths as night comes. For example, in the morning nothing may be heard on the 31 metre band, though by evening this will be active.

Quite a number of stations can be heard at any time, but careful tuning on the most lively wavelengths will give best results.

Tuning Coil

A ribbed former is best for this because clips can then be tapped on to the turns. If such a former is not to hand, six or eight thin strips of



ebonite may be glued round a strong cardboard tube. But such formers are generally easy to buy, and any with a diameter of from 1 in. to 2 ins. is suitable. It should be 2½ ins. to 3 ins. long.

Fig. 2 shows how it is mounted on small brackets. Tinned-copper wire is best for winding, 20 S.W.G. being convenient. Leave a space of about 1/10th inch between each turn so the aerial and other clips (see Fig. 3) can be clipped on without shorting turns.

Wind the wire as tightly as possible, securing the ends through holes in the former. (These ends are connected to nothing). At the centre, solder on a lead which goes to the moving plates of the tuning condenser.

Tuning and Reaction

The coil can be set to tune any wavelength by moving the position of the clip connected to the tuning condenser. Thus all the usual short wavebands can be covered.

The clip connected to the reaction condenser governs the ease with which the detector oscillates. So if reaction is too fierce this clip should be moved a turn or so towards the central tapping on the coil.

The aerial clip governs volume and selectivity. A position, a turn or two either side the earth tapping, is generally suitable. Do not take this clip too many turns from the centre, or oscillation will become difficult. A few minutes' listening will soon show how these clips alter results.

Constructional Details

A baseboard about 6 ins. by 8 ins. and a panel of similar size are used. Mount the tuning dial and condenser centrally. Screw down the coil, valve-holders and transformer. Two little terminal strips are used for connections, the two terminals on the right being for phones or speaker.

The reaction condenser should be mounted on a bracket about 2 ins. back from the panel to avoid hand-capacity. An insulated extension spindle and coupler is used—these may be contrived from wooden dowel or bought cheaply. The bracket can be made from two small pieces of wood screwed together. If the condenser is fixed directly to the panel, the position of the operator's hand will influence tuning.

Wiring Up

All the connections are shown in Fig. 3. All leads should be as short and direct as possible. This also applies to the three leads ending in clips. Therefore, only short lengths of flex should be used for these—just enough for the clips to be moved along the coil.

In the circuit (Fig. 1) a small aerial-series condenser is shown. This is made by twisting together two lengths of insulated wire for about 1½ ins. Fig. 3 shows this.

Small clips can be bought or fashioned from brass. If tinned-copper wire has been used for the

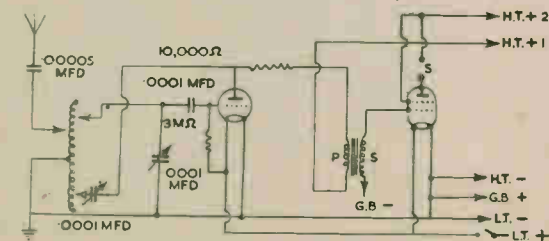


Fig. 1—The theoretical circuit of the receiver

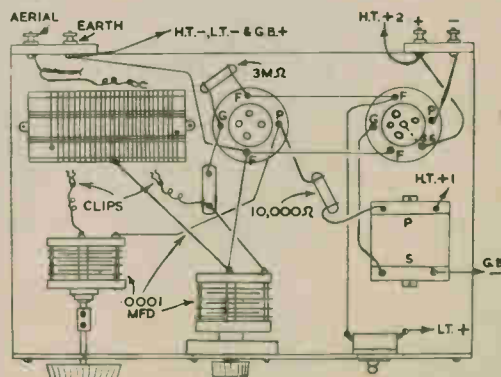


Fig. 3—Plan of base showing components and wiring

coil, this will not tarnish, and contact will be good. Bad contact may result in poor results and crackling.

Flex is used for battery connections. For convenience, each lead may be 2 or 3ft. long.

As One-Valver

If built as a one-valver, the second holder and transformer are omitted. Earphones are then connected in place of the primary of the transformer. That is, to the 10,000 ohms resistor and H.T. plus 1.

For the detector, a valve such as the HL2, or similar type, is used. With the two-valver, the right-hand holder should be fitted with a 220HPT, or similar valve. Actually, a triode or small-power valve can be used here, but amplification will be less. If phones are to be used only, a detector or low frequency triode is quite suitable for the second holder.

Operational Notes

H.T. plus 1 should be plugged in at

about 60 volts. H.T. plus 2 will require 120 volts for speaker reproduction, or 60 for phones. The grid bias will usually be between 3 and 6 volts, and should be adjusted for best results.

To begin with, put the aerial clip about three turns from the centre tap;

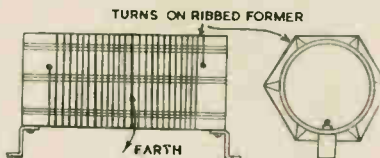


Fig. 2— How the coil is made

the right-hand clip about eight turns from the centre, and the left-hand clip about seven turns from the centre. This will tune wavelengths between about 20 and 40 metres, depending upon the diameter of the coil.

The reaction condenser must be closed until a hissing is heard and it

should be adjusted from time to time as tuning progresses to maintain the detector near oscillation, in this way.

Sharp Tuning

Tuning will be very sharp. When some stations have been heard the dial readings can be noted down as a guide. The more turns on the coil brought into circuit to the right-hand side of the earth tapping, the higher will the wavelengths tuned be. Never have more reaction turns (left-hand clip) in circuit than necessary, because this will only make reaction plumpy and fierce.

Careful operation of tuning and reaction controls is necessary for long-distance results. If used within range, and wiring is kept short, the sound transmissions of the television programme can be heard if a coil of about eight turns, 3in. in diameter, is used. Television sets, it may be noted, cannot yet be made by the amateur, owing to expense and intricate manufacture.

A MODERN HARDWOOD TOAST RACK

THIS toast rack of modern design makes a fine present, or a practical adornment for one's own breakfast table. You can see how all manner of attractive table articles can be made in wood by noticing the range now to be seen in most stores and fancy goods shops. The wood is nicely grained, hard in texture and yet pleasing when left in its natural state.

Cardboard Pattern

First prepare a cardboard template of the middle upright. Only the centre of the hole need be marked, of course. Pencil round the outline of this template on a nicely smoothed piece of wood, 1/4in. thick. Then cut 1/2in. off the top of the template and use this for marking out the other four uprights. The grain of the wood should be upright.

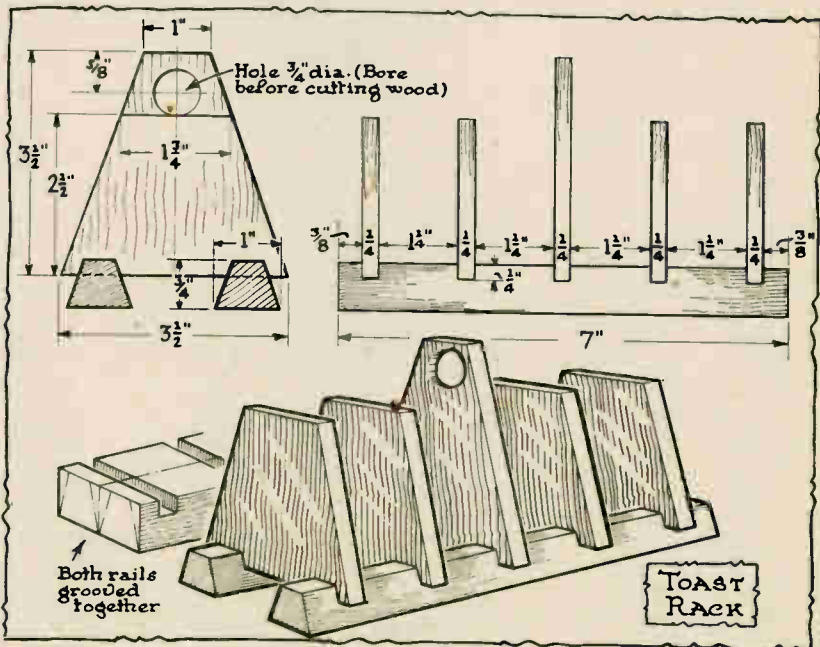
The rails are conveniently made in one piece and then separated. This not only saves work, but ensures that the pairs of slots are in perfect alignment. As the rails are 1in. wide, the double rail (see small sketch) will be a little over 2ins. wide (to allow for planing after sawing).

Base Slots

The slots are made with a tenon saw and 1/4in. chisel. To prevent the corners being dubbed over when the sides are being bevelled, it is a good idea temporarily to fix in pieces of 1/4in. square stripwood in the slots.

The uprights are fixed in the slots with a touch of glue. They should be a tight fit even without the glue. If necessary, thin panel pins can be driven in from the underside, especially for the middle piece. As such an article will, on occasion, be washed, waterproof (casein) glue is advised.

If the wood has an attractive colour, it need not be given any other treatment, but otherwise it may be painted with one of those enamels which claim to be unaffected by grease, etc. In any case, rub it down to a perfectly smooth surface to bring up a dull gloss.



This issue is the last one of the six months in Vol. 106

How you can easily make plain or decorative WEATHERVANES

HAVE you ever thought of the possibility of adding a weather-vane indicator in the garden? It always provides an interesting point to watch, and you can really become weather-wise by a little study of wind direction in conjunction with the barometer, or even a home-made weather-glass. The direction of the wind is bound up with the actual weather forecasts and the study of "met." is an interesting one for many of our readers.

Naturally, such a weathervane and wind indicator should be in an exposed place. It is no use adding it to a house or shed at a point which is overlooked or shadowed by another building or large trees. If it is sheltered from one direction there will be a blind spot which will prevent the correct indication being given.

The weathervane itself indicates the direction from which the wind is coming, and is quite simple for the handyman to construct. You see some very elaborate ones about, but even quite a simple one will



Fig. 1—Ball bearing

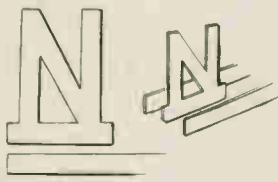


Fig. 2—The letter fixing

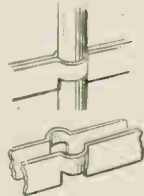
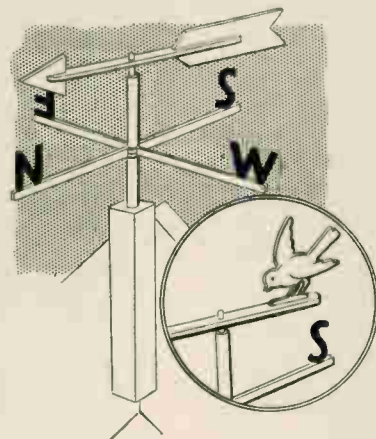


Fig. 3—The arm strips



The interior rod should have its bottom end rounded, and then a steel ball put in beneath it so that in turning there is very little friction at this point (see Fig. 1). The central upright rod should be thoroughly greased after having been made quite smooth with emery paper. The packing of grease will ensure easy turning, and the top should also be finished off with a greased band to prevent water seeping downwards and stopping rotation.

The cross arms containing the letters are of strip metal, the letters themselves being soldered between at the outer end. So they may bind securely together round the pillar, cut them out as shown in Fig. 2 before bending round. The two illustrated are put round one each side, the other two being cut open in the opposite direction so they may bed round to make a rigid whole.

The letters, of course, should be cut in metal with a lug left along the bottom to clamp between the two strips. Get all this metal work of strong substance so it will not bend in the wind. If soldering is out of the question, then you could easily rivet through in two or three places. It

need not be fixed half way up the pillar, as illustrated, but could be fitted to the bottom and bed into the post or wooden support holding the pillar itself.

Bore a hole into the wood post support for fixing. The plain indicator arrow can be of wood or metal, painted to make it waterproof. A plain arrowhead and tail can easily be drawn out, cut with the fretsaw and fitted together. The arrowhead and tail should be halved into the flat centre portion for stability.

Make a firm fitting on the top of the centre rod and hold there with a screw or a wing-nut holding it flat. Add a small washer to prevent the parts being cut by the constant rotation.

When you are finally erecting the whole indicator, do not forget to ensure that it is in the correct direction. You can probably borrow a small compass if you have not got one, to indicate which is true north. Put the whole thing as high as possible, and as previously mentioned, in an open space.

Fancy Vanes

Instead of the plain wind indicator, you may like to make a much more distinctive one by using some of the parts of the designs we have published with *Hobbies Weekly*, and which are shown now in the *Hobbies Handbook*. There are quite a number of these, a few of which are shown herewith. You can have a bird, or a figure, or galleon, or even George and the Dragon as a metal tailpiece for your indicator as shown below.

In this case, of course, the decorative portion is cut out in metal with a metal cutting fretsaw and fixed firmly to the flat platform of the indicator. The actual size of the design will come into the question of construction, and it is as well to work this out in proportion before attempting to make any of the parts. If you are having the indicator very high, then the tiny bird shown will be too small, and the larger and more decorative George and Dragon motif should be used.



Some parts from fretwork designs for ornamental vanes

A few "bits and pieces" can easily be made into a SIMPLE MODEL CRANE

MODEL cranes seem to have a fascination of their own. Perhaps because they can so readily be made "working model" or possibly because they always look so realistic. Whatever it is, there is always delight in these miniature lifting agents, while the goods yard or breakdown crane of a model railway invariably attracts favourable attention.

The crane shown here is easy to make and while not being of any special type follows the general lines of those hand-worked fellows you see at small stations. In cranes of this kind the square box at the back contains weights which counterbalance the pull of the loads. Generally this weight can be moved out further from the point of pivoting so heavier lifts can be made.

No dimensions are given with the crane shown here, as it can obviously be made in all sizes from one that would suit a gauge O railway to quite a big model.

Body Construction

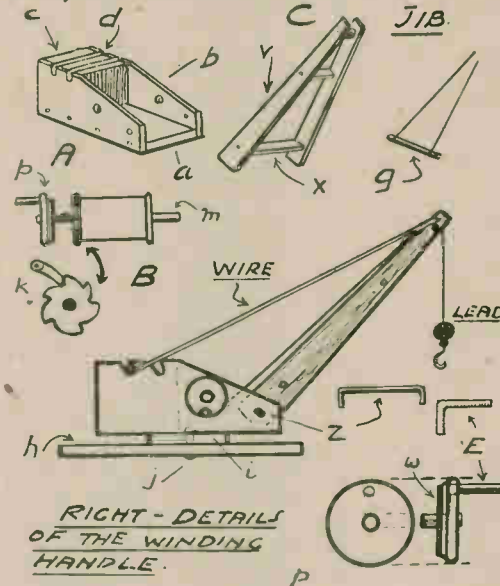
The main item of construction is the body (A). This is built up of the base (a), two sides (b) and the block (c). On the top of the latter are two horizontal cuts (d), these being to take the cross bar (g) which allows of the jib being set in two positions.

The winding drum (B) is a cotton reel for small and medium-sized models, the edge of one side being taken out as shown to take the simple pawl (k). This is best cut from a piece of metal, but can be of wood if it falls freely from the screw which holds it. Its purpose is to allow the drum to turn one way but not the other and so hold the load while the crane is swinging round.

The drum is jammed and glued on

to the axle (m), which is carried through the sides of (A). At the right-hand side (and after all is assembled) a section of another reel (p) is jammed and glued in position.

This has been slotted on a length of wire (E) fitted as shown, the wire being held in the slot by a disc of card (w) glued at the back. This disc, plus the fact that everything is tight against the side of (A) makes a very firm job of this winding handle—



which in most working model cranes is often the weakest part.

Care must, of course, be taken in the assembling. The best way is to put the base, block and sides roughly together first, with the winding drum in position to see that everything fits. Then take the near side away, and

putting the axle through, fit the outside winding disc. Finally put everything together with glue and small-sized screws at appropriate points.

The jib (C) is made up of two main members (v) and two short cross pieces (x). Slightly channel the inside of the jib arms to take the ends of the cross pieces, when a sprig at each joint will give all the firmness necessary.

Before finally fitting put in the "pulley" (y). This really need not revolve, and a rounded piece of wood held by sprigs from the outside will do quite well.

Jib Fitting

The jib is held by a spindle of wire (z) which goes through the side and the holes in the bottom of the main members—also by the wire bracing shown.

The latter is simply a length of wire which, for simplicity, threads through two holes in the top of the jib and which at its lower end is secured to a short piece of stiff wire (g). The wire drops into one of the two slots on the top of the block, when it holds everything quite firm. As mentioned, the reason for the two slots is so that the jib may be set in two positions.

In real cranes the angle of the jib can always be adjusted to give different radii at which lifts can be made and also to make it possible to raise different weights. The nearer the jib is to the upright the greater the possible load. At a very flat angle only quite a small load can be lifted even with the best of cranes, but of course the "reach" is improved.

Base Mounting

Finally the crane is mounted on the solid base (h). A piece (i) to act as a turn-table is now introduced and the whole pivoted together with the bolt (j).

The "cable" can be any pliable twine and the hook shaped from wire. A small lump of lead as shown, threaded on the twine before the hook is put on helps the working of the crane.

Colour can be almost anything, as these cranes appear in a livery from black to bright red, or if desired the wood could be left plain and still look in order.

To help the running, the wooden axle should be rubbed with candle grease or black lead (before assembling) where it passes through the sides.

Some Work of the Youngsters

THE attractive display shown is a picture of toys made with a fretsaw by boys between 11 and 12 years of age in the Silver Street Council School, Wythall, Birmingham. The work is largely through the enthusiasm of Mr. W. J. Matthews, who two years ago added Hobbies to the curriculum—a subject which has proved so popular that a very fine exhibition was staged a little time ago and attracted much attention.



The boys use two Gem fret-saw machines purchased through School Funds, whilst 12 boys have their own and 42 have bought hand-frames. Congratulations on the excellent work, to all concerned.

How the Amateur can make a useful and NOVEL RADIO ALARM

WHAT can be more irritating than to be woken up in the black hours of the early morning by the raucous and discordant clanging of an alarm clock bell.

So the writer decided to make an alarm switch that would switch on the existing receiver at a pre-arranged time. The radio-alarm made proved so successful that several more for friends and relatives had to be made.

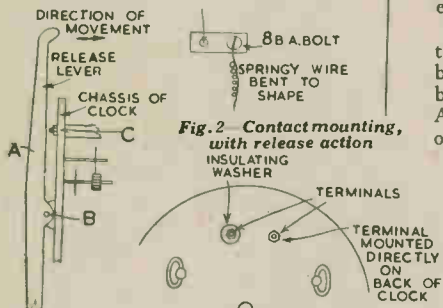


Fig. 1—Clock parts

These alarms are quite simple. The essential item is a clock, which could be modified to make a contact at a pre-arranged time. This contact energizes a relay by means of a small dry battery; the relay, once energized, remaining closed by means of its own contacts.

Let us now consider how we can fix the contacts to the clock. If we have an alarm clock, the undertaking is pretty simple. Already, in the mechanism of the clock, there is a release assembly which will move into position at a pre-arranged time. We only need it to close a contact as it moves over.

The Movement Involved

Let us assume the intervals of the clock chosen are like those shown, somewhat exaggerated, in Fig. 1. The lever, A, pivoted at B, moves in the direction of the arrow when the hour hand reaches the pre-set time. We must arrange a contact so the lever touches it when it moves over.

The lever itself is the arm of the switch and connection is made to it via the clock chassis. To mount the contact we must fix a piece of thin ebonite or similar insulating material with two holes drilled in it (Fig. 2), under one of the nuts holding the clock chassis together, such as that shown at C in Fig. 3.

When removing the nut to mount the chassis, be careful to hold the two parts of the clock chassis together until the nut is fixed again. There are

few things so disconcerting as to find a shower of gear wheels on the table!

The other hole holds an 8 B.A. bolt which mounts a piece of springy wire so bent that the lever, A, will touch it when released. The piece of ebonite holder must not project too far from the clock chassis or the latter may not fit its case again. The springy wire should be of phosphor-bronze or some similar metal, but, if this is unobtainable, a small safety-pin straightened out gives a good substitute.

A thin insulated wire is taken from the wire contact to a terminal at the back of the clock case, this terminal being mounted on insulating washers. A second terminal, mounted directly on the metal of the back, gives the circuit, via the chassis, to the lever A (see Fig. 3).

If the clock used is not of the alarm type, fit a contact on the actual face of the clock, with the

Fig. 2—Contact mounting, with release action



Fig. 3—Back terminals

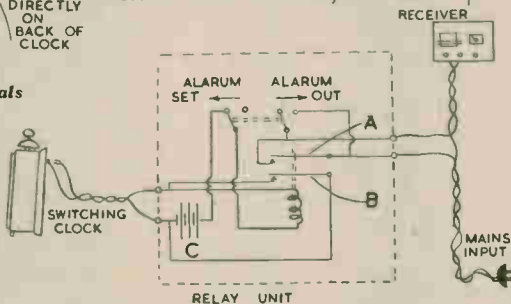


Fig. 4—Circuit of relay unit

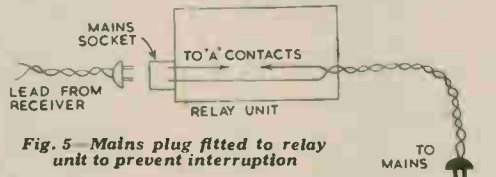


Fig. 5—Mains plug fitted to relay unit to prevent interruption

hour hand touching it as it passes over it. Space does not permit a detailed description of fixing such a contact but the operation is very simple and may easily be carried out with the exercise of a little ingenuity.

The Relay

The relay used is of the type having double-pole, single-throw contacts, both "making" when it is energized. There are some excellent types that may be bought "ex-W.D.", but care should be taken to see they work from low voltages.

A good commercially-made relay is essential, and the author does not recommend home-made relays. This is because commercially-made relays have efficient contacts that will not cause any crackles in the set when

they switch it on. Also, these contacts will be sufficiently good to switch a mains receiver on and off.

Fig. 4 shows the circuit used. A double-pole, double-throw switch of the toggle variety is used for the "Alarm Set" and "Alarm Out" positions. Before retiring for the night, the receiver is left switched on and tuned in to the programme required in the morning.

The toggle switch is then put to the "Alarm Set" position. The contacts of the switch break the circuit to the set. The alternative circuit to the set, via contacts A (Fig. 4) of the relay, is also open because the relay is not energized. As the time comes round to alarm time, the hour hand, or release lever, in the clock completes the circuit to the coil of the relay via the dry battery C. The relay closes, and the contacts, B, are then connected across the clock contacts, thereby ensuring that the relay will remain closed.

The contacts, A, of the relay also "make" switching on the mains to the receiver. When the sleeper has regained sufficient consciousness he switches the "Alarm Set" switch to "Alarm Out". This switch shorts out the contacts of the relay, so that the relay no longer controls the set. The latter can now be switched on and off in the normal manner. The alarm switch also breaks the circuit to the coil of the relay which then de-energizes.

It will be noted that the energizing battery, C, is not used any longer than is necessary. Of course, if a battery set is used, the relay unit can switch the L.T. connections.

The relay with the battery and switch may be conveniently mounted in a wooden box. Fig. 5

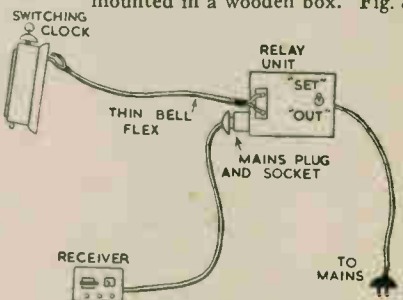


Fig. 6—Completed alarm assembly

shows how the relay unit may be wired to avoid breaking the mains lead to the receiver, and Fig. 6 gives a diagram of the complete alarm assembly.

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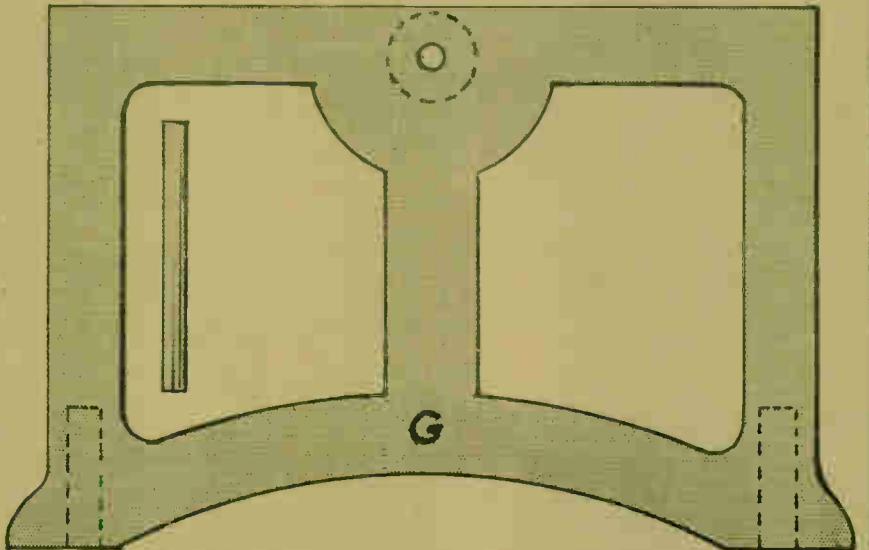
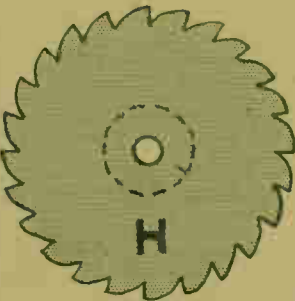
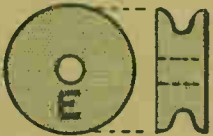
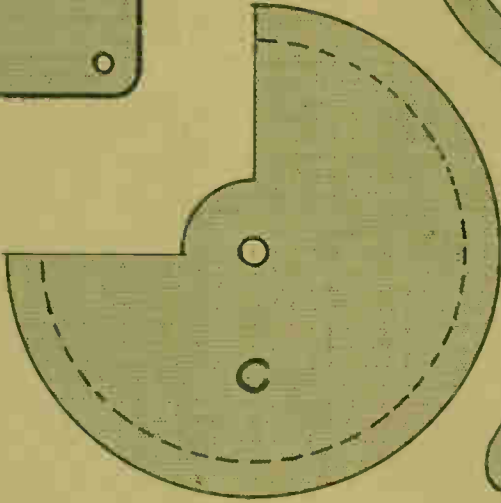
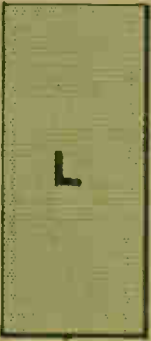
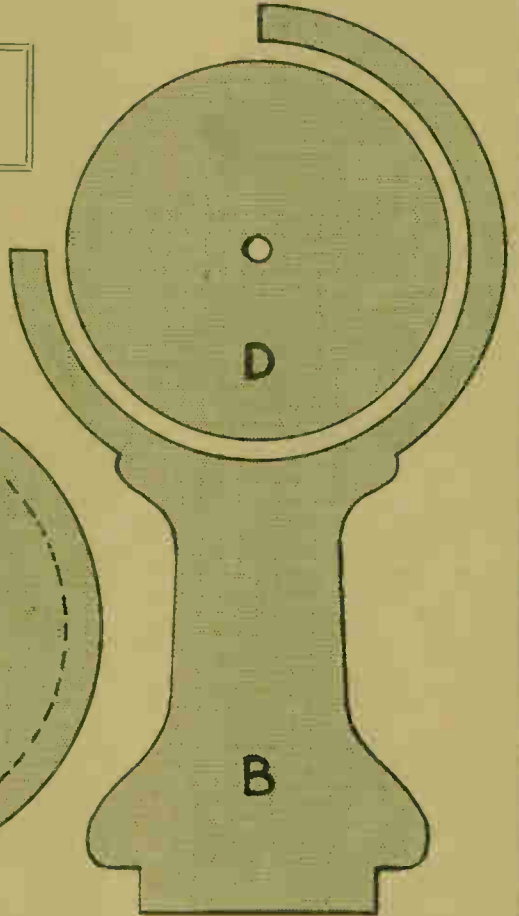
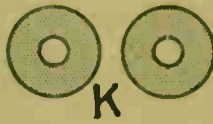
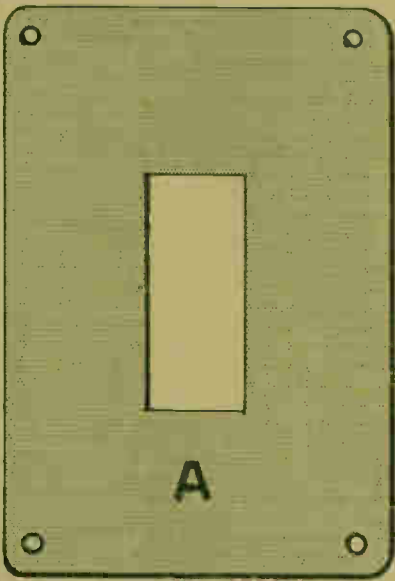
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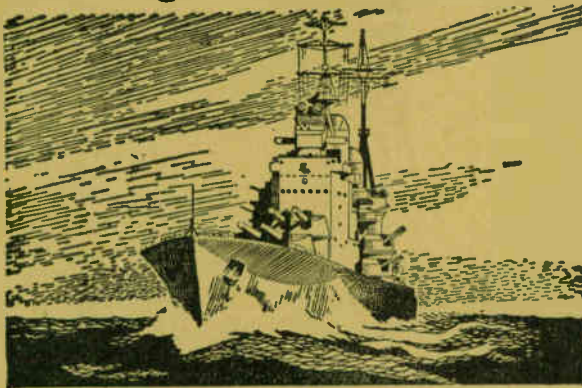
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