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FREE INSIDE
Design Sheet and Instructions for making a Playing Card Case and Trump Indicator

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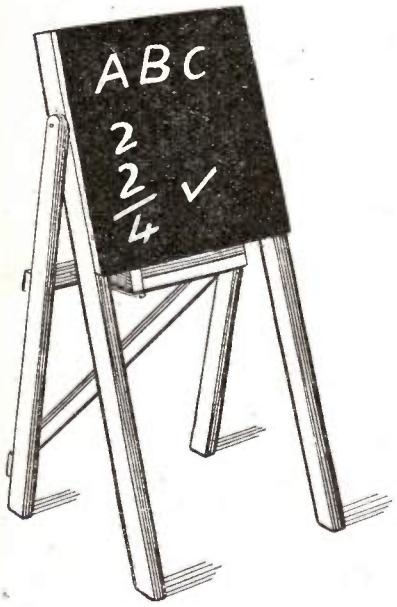
Instructions for making a

CHILD'S DRAWING BOARD



MOST children, given a pencil and paper, will amuse themselves for hours, the natural instinct to draw or write, asserting itself. With a drawing board of their own, and the necessary chalks, the youngsters can utilise these instincts at their pleasure, and quite possibly develop natural gifts. The board illustrated includes its own easel, and folds quite flat when not in use. It is light in weight, and large enough for most kiddies, though, of course, its size as given, can be increased at discretion.

A side view is given in Fig. 1, from which the construction and dimensions can be gained. The board itself is made from plywood, and is not a separate article but a fixture to the frame support. As will be seen the supports consist of a frame, to which the board is nailed, and a pair of rear struts. The frame, minus board, is shown separately in Fig. 2. It is made up of ½in. or ⅝in. by 1½in. wood; deal will serve quite well. The top rail is notched across as at (B); the lower one just tenoned or grooved in, in the usual manner. At 6ins. down from the top, bore holes through for the screws pivoting the struts.

Run a smoothing plane over the face edges of the rails, if necessary, to ensure them being quite level with the sides of the frame, and making a flat support to which the plywood board can be subsequently nailed on. Cut the two struts from similar material to the sides, etc., and trim the top ends of both to a semi-circle. Make a hole for the screw in the centre of the semi-circle. A pair of stout 1in. round-headed screws are used to join the struts to the frame. The holes for these should be a good easy fit for the shanks; the corresponding holes in the sides of the frame must be less to enable the threads of the screws to cut their way in the wood. Under the heads of the screws place a washer, then screw home, not too tightly, but just enough to allow the struts free movement to open out and close as required.

Lay the frame face down on the bench, with its struts closed down to the sides. At the distance up from the bottom, nail a 2in. wide strip of wood (A) in Fig. 1 across the struts. From here, a diagonal strip 1in. wide, is also nailed, this reaching to 3ins. from the bottom opposite corner. This can be seen in the view of the completed article.

A box to hold chalks can be added, details of which are shown in Fig. 3 (C). Make up of thinner wood, with plywood for front and back. The front

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THE MAGAZINE FOR MODELLERS, HANDYMEN AND HOME CRAFTSMEN

strip is not more than 1in. wide, to leave room for the fingers to pick the chalks out. This is strongly joined to the underside of the cross rail of the frame. A pair of small holes 9ins. apart are bored in rail (A) and the ends of a cord passed through as in detail (D). Open out the struts, and stand the whole up, then knot the ends of the cord to screw eyes, driven in the underside of the chalk box, or inside faces of the frame sides, to keep the supports from slipping backwards.

The board is a square of three-ply ¼in. or ⅜in. thick, as preferred. Fix this to the frame with glue and a few small panel pins. Punch the heads of these down a little, and level up the holes with stopping, plastic wood, for example. The bottom ends of frame and struts should be bevelled off as shown in the general view, to stand firmly on the floor.

Go over the completed article with medium and fine glasspaper, to remove all roughness and splintery edges. This is important for all articles made of soft wood for the use of children. With the exception of the board, the remainder of the work can be left in the white or varnished. A coat of varnish, however, does help the article to show soils up less, and youngsters fingers are often sticky and grubby.

The board should be painted dead black, and though ordinary flat black paint could be employed, a better surface is obtained for chalk work by using the special black sold for the purpose. It may be added that the most economical method of constructing the board is to saw the strips of wood to 1½ins. wide from a piece of board 3ft. long, which with a few odd bits for the chalk box, etc., will be enough, plus a square of plywood for the board itself. (485)

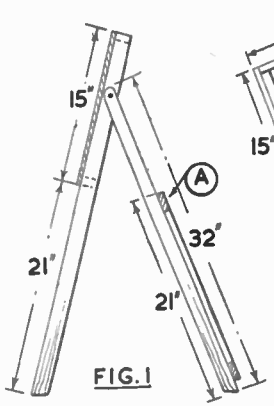


FIG. 1

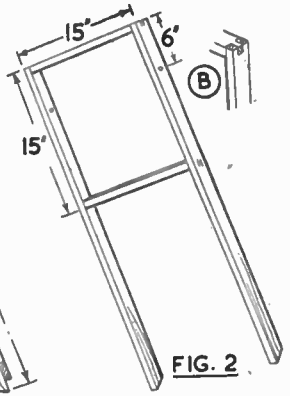


FIG. 2

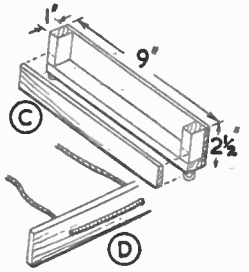


FIG. 3

You might like to know about

Making Blueprints

THE familiar engineers' blueprints are made by a very similar method to the printing of photographs, but much simpler and cheaper. An amateur can quite easily reproduce his own drawings at home with simple equipment.

Briefly, the drawing or tracing, on transparent paper, is placed in front of some light-sensitive paper and exposed to light. After a short time the paper is removed and washed in water. This fixes the picture, which remains as white lines on a blue background.

Sensitive Paper

It is possible to make the light-sensitive paper. Two solutions are needed: one of iron ammonium citrate and the other of potassium ferricyanide, each mixed with four times its weight of water. When mixed together the solution formed is light-sensitive, so must be stored in a light-tight bottle. Work in a dim light, and paint the mixture on to paper pinned to a board, then leave to dry.

The ready-prepared paper may be bought from drawing office supply firms. It is called 'Ferro-prussiate paper' and costs about 6s. 6d. for a 10yd. roll, 30ins. wide. It should be stored in the wrapping paper in which it is received and only opened in dim light. A damp atmosphere will quickly spoil the paper.

It is possible to make prints from pencil drawings on thin paper, but the best prints come from indian ink lines on transparent material. Tracing paper is cheap. Professional work is done on tracing linen or on plastic film, such as 'Ethulon' or 'Kodatrace'. Pieces of paper, linen or tracing film may be bought from the same places as the sensitive paper.

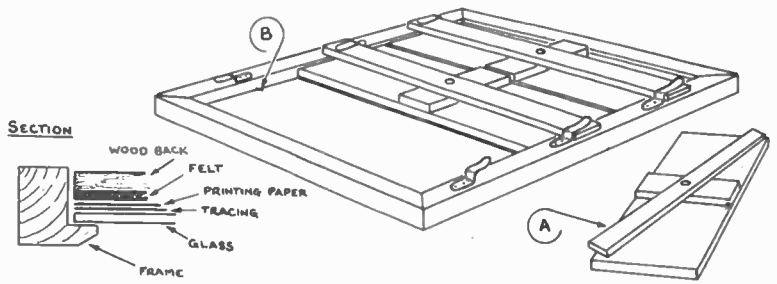
The tracing and the sensitive paper must be pressed together to get a clean print with sharp lines. A photographic printing frame will do this for small prints, but for larger prints it is possible to adapt an old picture frame. The back may be in two or three pieces, lined with felt or thick cloth, and held tight by springy pieces of wood (A). Fix the glass with a few brads (B).

To make a print, lay the tracing in the frame, with its front towards the glass, and the sensitive paper behind it. Fasten the back and check that everything is as it should be when viewed from the front. Take the frame into the open. If the sun is shining, let it face the sun. The length of time to expose must be found by experiment. On a summer day the first trial piece should be given about a minute.

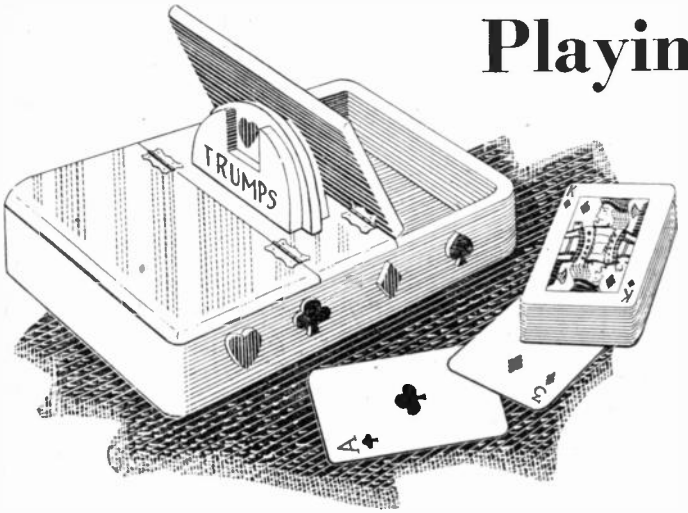
Checking Progress

Progress can be checked by removing one of the end sections of the back and turning up the paper. When correctly exposed the background should appear blue-green and the lines a yellow-green. The best results are made when the print is exposed to the limit—over-exposure fogs the lines.

Remove the paper from the frame and wash in running water until the water runs clear—maybe half a minute. Hang the print to dry, and the job is complete. (461)



Playing Card Case and Trump Indicator



This attractive article is made from Design No. 2964, given free in this issue. A kit of materials, including wood and hinges, can be obtained from any Hobbies Branch, or post free from Hobbies Ltd., Dereham, Norfolk, price 7/4, including tax.

MOST of us enjoy a game of cards from time to time, and in most households one can find at least a couple of packs. The attractive card case illustrated should, therefore, be a welcome gift in almost any home. It is designed to hold two packs of cards and is also a trump indicator.

There is nothing difficult about the construction, and the work can be quite confidently attempted by young craftsmen. Transfer the patterns to the wood in the usual way, with carbon paper and a hard pencil, taking care that the arrows on the design sheet correspond with the direction of the grain of the wood.

The Box Section

Now make the box section of the design, cutting the base piece (A), sides (B) and ends and partitions (C). Clean them up and glue and pin them together as shown by the dotted lines on the design sheet.

Next the trump indicator should be made. For this, cut the two pieces (E), the two pieces (F) and piece (G). Two card washers (H) are also required, and are pasted centrally either side of piece (G). The dotted lines on the design sheet will make this quite clear.

Before assembling these pieces, the coloured 'pips' and the words 'No Trumps' should be painted on either side of the disc (G). Care should be taken with this work as much of the finish of the article will depend upon the quality of the painting. If it is ultimately intended to stain the box, the indicator pieces should be stained before the 'pips', etc., are painted on them. For the painting, good quality black and red enamels should be used, and a coat of clear varnish should be given to the whole of the disc. The worker should proceed in much the same manner if it is intended to paint the case eventually, as once the indicator parts are assembled it will be found impossible to paint them properly.

The word 'Trumps' should be painted on each of the pieces (F) as indicated on the design sheet, and here again any staining or finishing of these pieces should be done at this stage. As an alternative to painting the word 'Trumps', the letters can be burned on with a heated steel knitting needle.

When all these parts are dry and ready for assembly, they should be put together as shown in Fig. 1, and the whole of the trump indicator portion is then glued and pinned into position on the card case. The dotted lines on the design sheet and Fig. 2 will make the position clear. Note that the pivot holes marked (P) in the pieces (F) should be drilled with a fretwork or other small drill. A ¾in. fretpin with the head removed is used as the pivot itself.

Next, the worker can make the two lids, hinging them in position with two ¾in. fancy hinges as supplied in the kit. Now cut out the overlay 'pips' and glue a set of each to either side of the box in the order shown by the dotted lines on the design sheet.

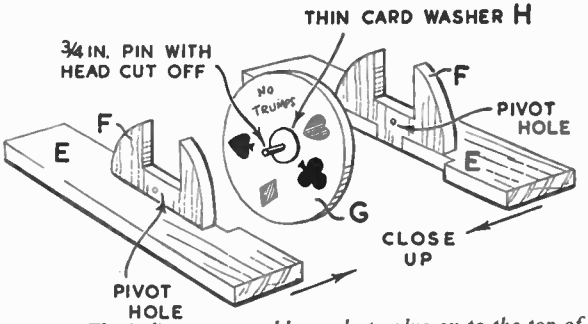


Fig. 1—The indicator assembly ready to glue on to the top of the box

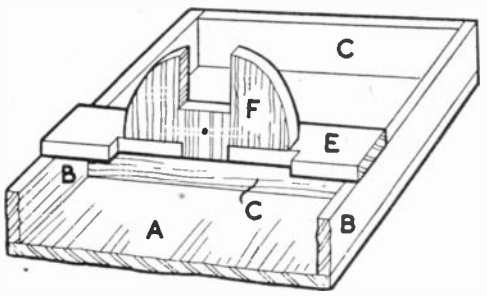


Fig. 2—A view of the general construction

Finishing

This completes the construction, and the whole work should now be cleaned

(*Continued on page* 324)

Dynamo Trouble

I HAVE a dynamo which will not work satisfactorily. It will drive the front light very well, but once you connect the rear light wires to it, it seems to take all the power away from the front. Could you tell me what is wrong, please? (T.P.—New Tredegar).

THE fault probably lies in the type of bulb which you are using in the rear lamp. Most cycle dynamos generate quite a small current. The usual bulb consumes about ·25 to ·5 amperes. Because of this, it is usual to employ a special low-consumption bulb in the *rear* lamp. These are normally rated at ·06 ampere, thereby leaving most of the current available for the front lamp. It appears that you have an ordinary bulb in the rear lamp; if you remove this, using one of the low-consumption type, your difficulty should be overcome. Also check that the wire going to the rear light is not anywhere short-circuiting to the frame of the cycle.

* * *

Colouring Perspex

I HAVE made a table lamp out of clear Perspex, and have removed the glossy surface, giving it a frosted appearance—pleasant enough to look at when lit, but drab-looking when not. Can you advise me how to colour it in a pleasant shade of pink? (D.R.—Bournemouth).

IT is difficult to colour Perspex, as none of the common solvents will soften the surface to allow the colouring matter to obtain a hold. Soaking in iodine will produce an amber shade. You would probably get the result you want by wiping over with a polychromatic lacquer, leaving for a while, then wiping off the surface. One maker is Mander Bros. Ltd., Paint Manufacturers, Wolverhampton. Any colour is obtainable, and you may need their thinners for work on Perspex. For future work you may be interested to know there is a Perspex grade which appears clear when looked straight through, but has a pleasant pink tinge when viewed at an angle or at the edges.

* * *

Veneering

PLEASE inform me of the best glue for veneering, as most normal wood glues 'go off' far too quickly to allow any area to be covered. (R.W.P.—Skegness).

THERE is probably nothing wrong with the glue, but in the method of application. When starting to veneer, tooth the background first, then apply the glue all over. Press veneer flat and damp with a cloth, then apply glue to it in dabs, here and there. Press in position and damp the top of the veneer, then rub a hot flat-iron all over to melt the glue beneath. With a veneering hammer, press all over the surface to work the glue out, starting from the centre and working towards the edges. Re-heat the iron and use as may be necessary to re-melt glue until adhesion takes place all over. Then place a sheet of paper over and keep under pressure until the glue is quite hard. A powdered glue can be bought anywhere as concentrated size, and is quite suitable for all purposes you require.

* * *

Alcoholic Stains

WHAT can I use for removing alcoholic stains, also grease marks from wool gabardine raincoat? (J.S.—Sunderland).

GREASE marks can be removed by laying clean blotting paper over them and holding a warm iron on the paper with light pressure. This melts the grease which is then absorbed by the blotting paper. Another plan is to use Fullers earth spread over the grease marks and leave in a warm room until the Fullers earth has absorbed the grease. Alcoholic stains, if spirituous in origin, can be dealt with in most cases by rubbing with a clean linen rag moistened with clean petrol, or preferably with rectified alcohol, but do this well away from any naked flame or fire. Beer stains, being largely due to sugary contents, can usually be removed by rubbing with a clean rag soaked in hot water.

* * *

Recording

I AM very interested in record recording; can you please give me any information on this subject? I have tried tape and wire recording, but would like to take up record recording. (A.C.—Portsmouth).

BLANK discs are now somewhat difficult to obtain. When recording, they are driven by the usual turntable, a fairly powerful motor being required. The cutting head is similar to a very robust pick-up, with a diamond or other cutting stylus. It is drawn slowly towards the centre of the record by a screw mechanism, in order to obtain an even groove. The cutting head requires a strong input—5 to 10 watts or so. A disadvantage of this system, for the amateur, is that the discs are expensive, cannot be used for other recordings (as with tape or wire) and only provide a limited number of play-backs before deteriorating. No manufacturer at present producing blank discs for the amateur can be located, but these were available in limited quantities some years ago, and you might possibly be able to find a shop or stockist who has such discs available. Some consisted of an aluminium alloy, and you might be able to obtain fair results from various similar malleable substances.

Important

A number of readers who have lately sent us queries have omitted to give their names and addresses. Because of this it will be several weeks before they get answers to their problems—we work several weeks ahead with preparation of Hobbies Weekly. To get a prompt reply, always give your full name and address, or better still, enclose a stamped addressed envelope.

Card Case and Trump Indicator

(*Continued from page* 323)

up and all edges rounded off. Where pins have been used, they should be slightly countersunk and the holes filled with plastic wood. If a stained and wax polished finish is desired, however, care should be taken in the application of the plastic wood, as if it is put into the holes in its natural colour and left to dry, it will show through any subsequent stain as white spots. Therefore, the plastic wood, while still moist, should be treated with the stain to the depth required before being used to plug the holes. Then when the remainder of the box is stained, the whole thing will match up.

If an enamel finish has been chosen for the case, no treatment of the plastic wood will be required. Whatever the finish, however, the 'pips' on either side of the case should be painted in their appropriate colours with quality enamel.

For preference, we would suggest that the box be stained light oak and wax polished, when the colourful indicator and overlays will appear to best advantage.

DESIGNING AND BUILDING MODEL RAILWAYS

By E. F. Carter

WITH the aid of a little soldering, there is practically no limit to the amount of simple super-details which can be made and fitted easily to a cheaper type of 'O' gauge locomotive body and its tender—if it has one. There is, however, a definite method of preparation for soldering which must be carried out if success is to be achieved.

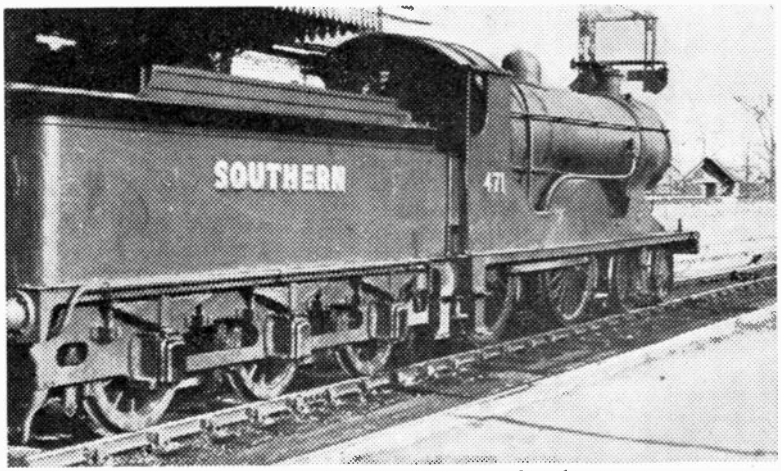
On the average cheaper commercial engines (often of pre-war vintage) the body colour, lining, and lettering is printed upon the 'tin' before the latter is pressed to shape and clipped together with the well-known little tangs. This paint must be removed completely before any soldering can take place, and it is not a practical proposition to scrape it off with a knife, as this would seriously scratch and score the underlying metal in such a way that any number of subsequent paint coats would be powerless to eradicate the poor surface.

The best method—indeed, the only satisfactory one—is that of dipping the whole loco body into a caustic solution, such as can be made both cheaply and easily by mixing together equal parts of gas-oven cleaning compound and hot water. It is hardly necessary to mention that such a caustic mixture is harmful to the hands, and the working instructions on the cleaning compound tin *must* be followed to the letter—apart from the 50-50 dilution mentioned above. Above all, mind your eyes, hands and clothes.

The mechanism of the engine—electric or clockwork, should be carefully removed from its body, as should the bogie and couplings, and a piece of stout copper wire (*not* string) tied round one of the buffers for use as a handle when lowering the body into the solution. The latter must be made really hot in an old iron saucepan and poured into a metal or earthenware receptacle of sufficient size to allow the body to be completely immersed lengthways. Beware of splashes when pouring the liquor and manipulating the body therein.

After about half-an-hour in the bath, the body may be removed and at once washed in hot water, and a trial made to see how the caustic has been acting. If it is not easy to remove the paintwork with a piece of sharpened wood (such as a gipsy-made clothes-peg), leaving the bright metal beneath, then the solution must be made stronger (i.e. more caustic) or the body allowed to remain in it for a longer time.

At all events, when the caustic has done its work thoroughly, it will be an easy matter to remove all the paint, lining, and lettering with the aid of the wooden 'knife' and an old tooth-brush *after* the body has been washed free of all traces of caustic—*inside* particularly.



A view of a 4—4—0 loco and tender

When all paintwork has been brushed off, the metal should have a final scrub with a clean brush in a basin of water just off the boil, after which it can be dried off, either in front of the fire or in a gas-oven turned down low. Do not apply too much heat, as there are sometimes parts on a body which have been already soldered in place, and there is no need to make additional work by melting them off!!

If a 'scratch-brush' made of steel wool (as used for kitchen purposes) is available, it is a good plan to rub gently the platework with it, taking care to get right into the odd corners by rolling up little balls of the wool and using them at the end of an orange-stick—perhaps obtained from a convenient relative! Unless such corners are cleaned perfectly from the old paint, a crude 'botched' look will assuredly be produced on the finished job. Care is well worth while in these early stages. Do *not* be tempted to use a penknife blade for cleaning down—its use will scratch the metal surface.

Now comes the somewhat difficult matter of choosing just which details it is desired to add to the engine, and this is not always easy because without a lathe of sorts it is a problem to make some fitments. Fortunately, there are some others which are both easy to produce and yet which are capable of effecting a definite improvement in an engine's general appearance.

As the reader probably already knows, piping is represented in model form by wire of a suitable thickness, and its addition to a loco body is extremely easy, calling as it does for little soldering skill, as this part of the job is carried out inside the boiler and cab; so the appearance of the joints is of little account.

However, care should be taken to bend the wire where necessary without developing kinks, and wire of too thick a scale gauge should never be used.

The table below will give details of the correct gauge of tinned copper wire to use for the representation of loco piping in 'O' gauge—7 mm. scale.

ENGINE 'PIPING' AND WIRE TABLE ('O' GAUGE)

Size of pipe or rod on Full-size Engine.	S.W.G. of wire to use.
1in.	No. 47
1¼ins.	No. 45
1½ins.	*No. 42
1¾ins.	No. 42
2ins.	No. 41
2¼ins.	No. 39
2½ins.	*No. 38

*Use three paint coats. (464)

These novelties are

ALL MADE FROM SEA SHELLS

A VISIT to the seaside generally means taking home a collection of shells which have been gathered from the beach. It is a most interesting pastime to walk along the sands as the tide goes out and pick up the very many different kinds of shells left there.

It is, unfortunately, at this point that most collections cease to be of any further interest. They are probably put in a paper bag or box, taken home, and after, perhaps, a further inspection, are put on a shelf and forgotten completely.

Don't let this happen to your collection. The many happy hours spent in hunting for curious shells need only be the beginning of a very interesting and, indeed, profitable hobby.

Different Kinds

If you contemplate making a lot of different articles to sell at Bazaars or to raise funds for something, then you should first collect as many different kinds and sizes of shells as you can. Nearly every type can be of use to form part of some amusing model. Many queer birds and animals can be made almost entirely with shells, besides a charming collection of flowers and many other really useful articles. It is really surprising how many different ideas will easily occur to you as you get busy with this new shell craft, and when carefully made, they will form quite admirable presents.

When you get your collection home the shells should be well washed in several changes of water, and then put in the sun or near a stove to dry. This will clean off all traces of sand, seaweed and salt water.

The shell marked (A) in the drawing is fairly common on most beaches and can be found in a very large variety of sizes and colours. A pincushion (B) is probably the easiest article which can be made from a shell of this type—one between 2ins. and 3ins. being the most suitable.

The inside is stuffed fairly tightly with cotton wool and the opening covered over with a piece of velvet, tucking the edges in carefully to form a smooth surface. A spot or two of liquid glue may be used to fasten the velvet to the shell if desired.

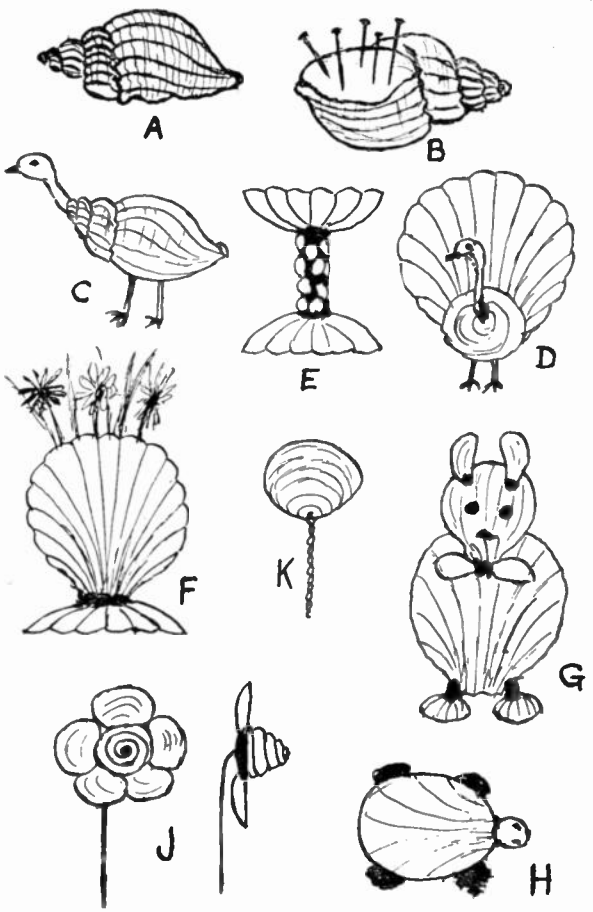
Another use for this type of shell is a miniature garden. The shell is first filled with either plaster of paris, modelling clay or even putty and then some small twigs or everlasting flowers are stuck in to form a very realistic garden.

If the shell is fastened to a base of modelling clay so that the opening is level, it can be filled with water and used as a vase to hold small flowers.

By using the same type of shell for the body, many different kinds of birds or fantastic animals may be designed. That shown at (C) is quite an ordinary bird, the neck and head of which is modelled with clay and stuck in position. The shell must be filled with clay to form a support for the two twig legs, or they may be made of wire and covered with clay.

The peacock in Fig. (D) is a very attractive model and is quite easy to make. The bird is made the same as (C) and then the fan tail formed with a scallop shell which can be painted in greens and blues to look like a peacock if desired.

Two scallop shells are used to make the pin tray or ash tray (E). They can be stuck together closely with modelling clay or a short stem of the same material may separate them. Small shells pushed in to the clay stem give quite a distinctive finish to the article.



Variety of Uses

The model shown at (F) can be adopted for a variety of uses, such as a holder for pens and pencils or a flower vase. A strip of modelling clay ¼in. to ½in. wide round the edges of two scallop shells forms the container, while another one is used for the base. The kind of modelling clay is that used for barbola work which will set very hard after a short time.

When using this clay the shells and the edges of the clay should be damped to make it adhere better.

The very lifelike figure shown at (G) is quite easy to make. A large scallop shell is used for the body, while a smaller one of the same type is stuck on for the head. Two small mussel shells are fastened on with modelling clay which is also used to make the eyes and bow. Make the feet with a pair of cockle shells, taking care to fasten them with plenty of clay, so that the model will stand upright and not overbalance.

Fig. (H) is a tortoise and needs very little explanation as it is so simple to make. Any size scallop shell forms the body, and the head and feet are modelled with clay.

Flowers

Flowers are, perhaps, a little more difficult to make but are well worth the time and trouble taken to make them. The front and side views shown at (J)

(*Continued on page* 333)

Some Experiments with Aniline

THE mention of the word 'aniline' brings to mind aniline dyes. Indeed, the first artificial dye was made from this oily liquid and many since discovered are produced from aniline or compounds related to it.

Though most have to be prepared by long and often complex processes, there are some dyes which the home chemist can quickly and easily prepare.

Mauveine is one of these. As it was the first artificial dye to be discovered, its preparation is doubly interesting.

Measure out about 10 c.c. of aniline and run it into a beaker containing 100 c.c. of boiling water. Then stir in dilute (of 10 to 20 per cent strength) sulphuric acid until the oily drops of aniline disappear. Let the solution cool, when white crystals of aniline sulphate will be deposited. Remove them and drain and dry them on a porous tile. A further crop may be had by evaporating the mother liquor.

Dissolve 6 grams of the crystals in 250 c.c. of hot water. Keep the rest for your laboratory stock. Also dissolve 6·6 grams of potassium dichromate in another 250 c.c. of hot water. Let the two solutions cool to room temperature, mix them and let the mixture stand overnight.

Precipitate

A black precipitate of mauveine will have formed. Filter it off, wash with cold water and dry it on top of the domestic oven. By letting the filtrate stand for another two or three days a further quantity of mauveine may be had.

To dye with mauveine, first dissolve a small pinch of the dye by boiling it on the water bath with 10 c.c. of methylated spirit in a small flask fitted with a condenser (Fig. 1). A deep red solution will result. Wet a piece of white wool in 50 c.c. of boiling water in a small beaker, remove the wool and pour in the mauveine solution. Replace the wool and let it dye for half an hour in the cooling solution, stirring every minute or so.

If you now wash the wool in cold water and dry it, you will find it has been dyed dull violet. Mauveine, though now superseded by brighter violets, is still to be seen in most stamp albums, for the Great Britain 1d. lilac stamp of 1881 was coloured with this dye.

Pleasing shades of grey may also be dyed with mauveine. To 5 c.c. of about 5 per cent strength hydrochloric acid add a small pinch of mauveine and boil. The dye will dissolve to a reddish solution. Pour this into 50 c.c. of boiling water and dye for half an hour another piece of wool which has first been wetted in the boiling water. The material will be dyed grey.

Magenta

Another early dye to be discovered is magenta. To prepare this, mix in a dry test tube 5 c.c. of ordinary 'commercial' quality aniline (the reaction will not work with very pure aniline) with enough powdered mercuric chloride to form a paste.

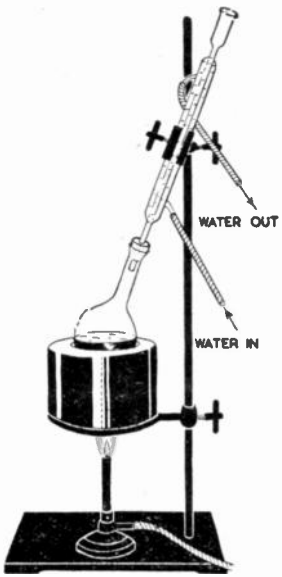


FIG 1

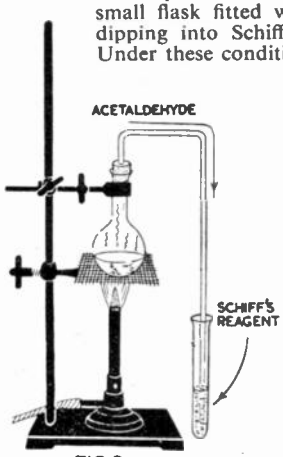


FIG 2

Warm over a flame until a solid purple-red mass forms. Boil this for ten minutes with 50 c.c. of methylated spirit in the apparatus shown in Fig. 1, filter the solution and distil off the meths. on the water bath. Solid magenta will be left in the distillation flask. Remove it and bottle it.

To dye with magenta, wet a piece of wool in 50 c.c. of boiling water, take it out and stir in enough of the dye as will form a full red solution. Add a few drops of acetic acid and replace the wool. Let it dye for ten minutes in the cooling solution, and stir it occasionally.

If you now wash the wool in plain water you will find it has been dyed mauve.

Magenta belongs to the group of dyes known as 'basic' dyes. These have the drawback of fading quickly. To show this, fasten your piece of dyed wool to a small board, cover half of it with black paper and leave it in a sunny window for a few weeks. On removing the black paper you will find the wool beneath is still bright, whereas the exposed half has faded.

Magenta is an ingredient of Schiff's reagent, which will detect aldehydes and is also a good test for alcohol. To prepare a supply for your reagent shelf, dissolve in hot water enough magenta to form a deep pink solution, cool it and pass in sulphur dioxide until the solution just becomes colourless. The reagent is now ready for use. Aldehydes turn it pink.

To try it out, we can prove the presence of alcohol in methylated spirit. Warm together equal volumes of potassium dichromate solution, methylated spirit and dilute sulphuric in a small flask fitted with a delivery tube dipping into Schiff's reagent (Fig. 2). Under these conditions the alcohol will form acetaldehyde, which will bubble through and restore the pink colour to the Schiff's reagent.

The well-known dye aniline black, which is much used by calico printers, is also easily made.

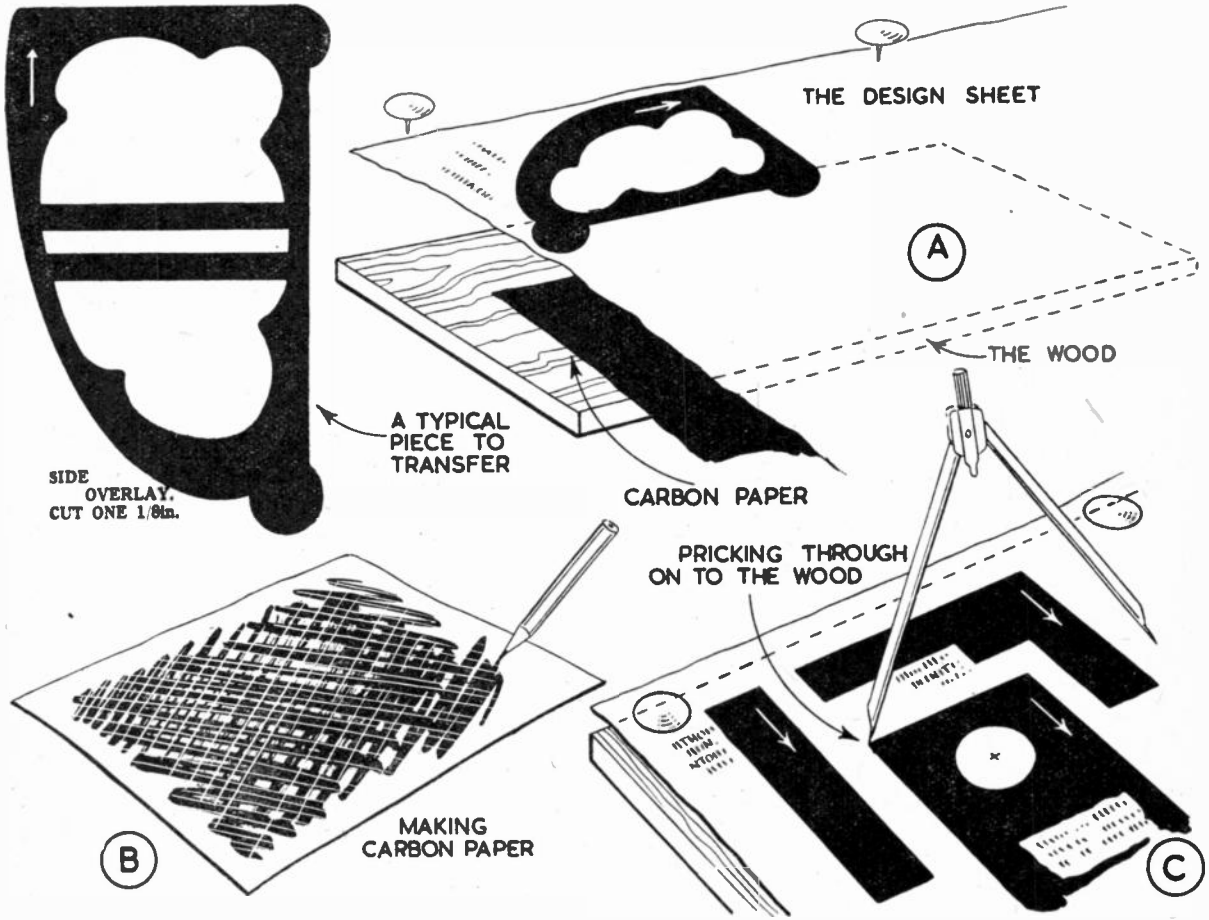
Dissolve about 5 c.c. of aniline in dilute sulphuric acid and warm to 70 degrees Centigrade in a small beaker. Stir in potassium dichromate solution a few c.c. at a time until a dark green colour and precipitate forms.

Keeping the temperature around 70 degrees, continue adding the dichromate drop by drop until the dark green colour passes to black. Then filter the solution at once, or the dye may undergo a further reaction.

Wash the precipitate of aniline black on the filter until the wash waters are almost colourless. Then dry the dye in the oven for your specimen collection. Aniline black cannot be used for ordinary dyeing owing to its insolubility in water. (459)

If you have any problems concerning chemistry, write to the Editor. Our experts are always willing to help you.

Transferring the Design to the Wood



MANY newcomers to fretwork and model making are at a loss to know the best method of transferring designs to the wood. We hope that the illustrations and instructions here will clear up this difficulty.

In the past there have been advocates of cutting out the patterns and pasting them down to the wood. This is all right for very small pieces, but when pasting up larger pieces, you find that moisture is inclined to stretch the paper.

Carbon Paper

For irregular parts of toys, models or fretwork we recommend the use of carbon paper. Either blue or black can be used. You will be able to buy a sheet or two locally, or you can send to Hobbies Ltd., Dereham, Norfolk. The cost will be 6d. a sheet post free. The size of each sheet is 22ins. by 18ins.

Now for the actual job of transferring. Cut the carbon paper into convenient sizes, say, 9ins. by 11ins. and use as shown in the diagram (A). First pin the design down to the wood, keeping the pattern in the right direction with the grain, and then slip the carbon paper, face downwards, under the design.

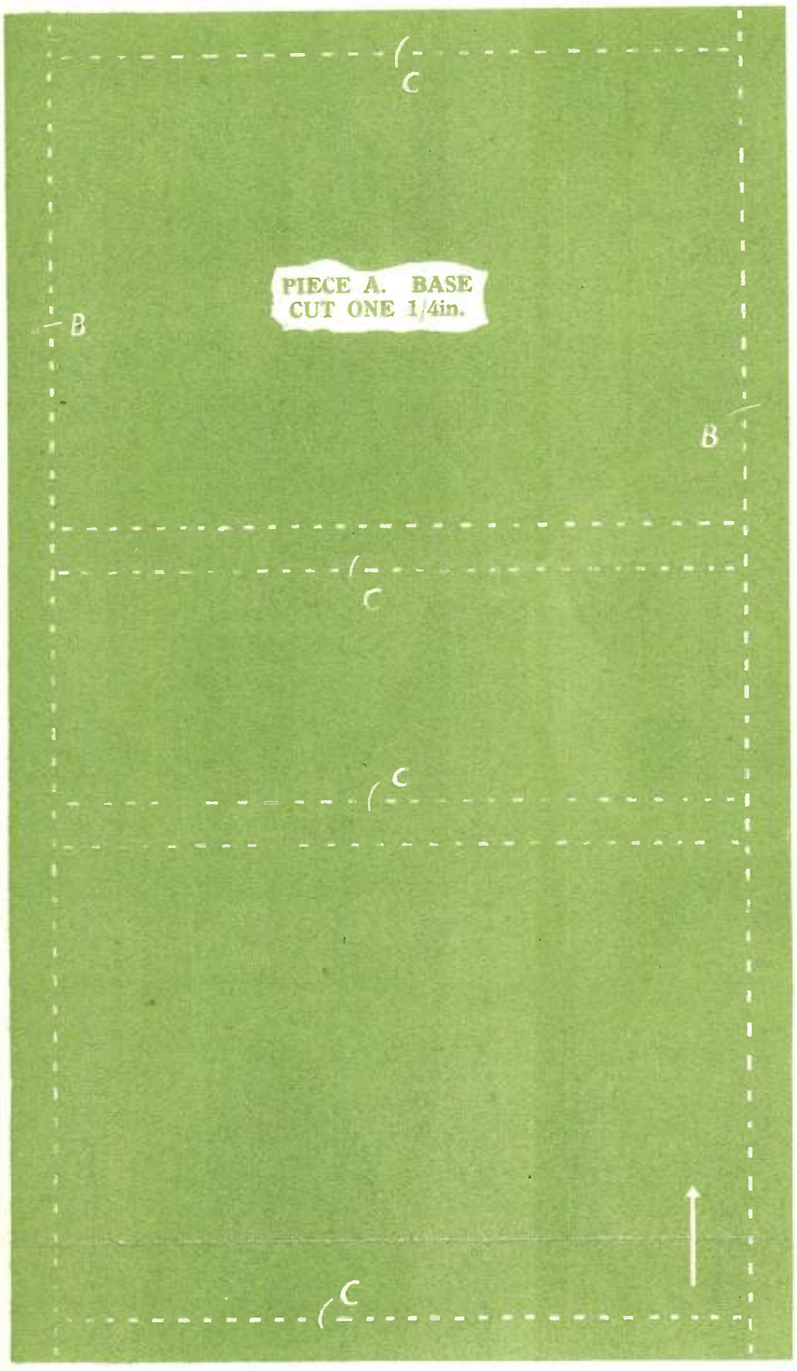
Draw round the outline of the pattern with a pencil or a ball pen, using a ruler for the straight parts. Before taking out the pins, just lift the design sheet and carbon paper to see if you have missed any lines. Now take out the pins and place the design sheet in position for the next pattern and carry on as before.

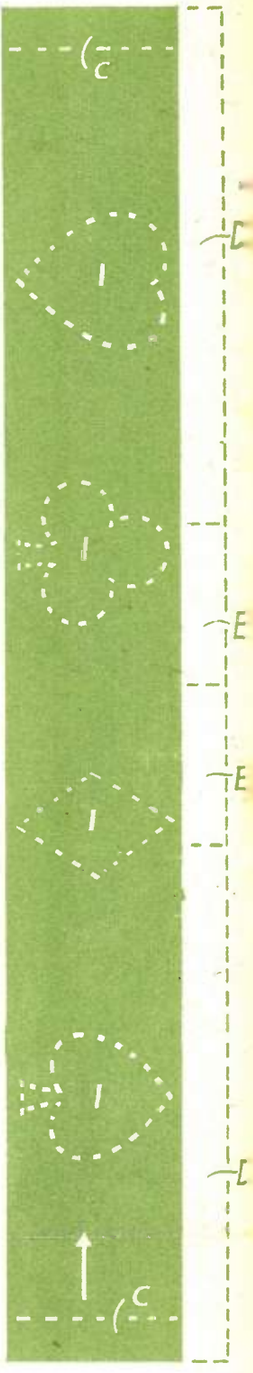
If you run out of carbon paper you can make a substitute by scribbling on a piece of note-paper as shown in (B). Use a soft pencil and lightly brush off the excess before using.

For patterns that are angular in shape, consisting of straight lines and circles you can use the method shown in (C). Pin the design sheet to the wood, remembering the direction of the grain, and prick through into the wood at the corners as shown. Any sharp point will do, a pair of dividers or a darning needle are suitable. When you have pricked all the corners and the centres of the circles you can remove the design sheet and connect up the lines with an ordinary pencil. Complete the circles with a pair of compasses.

When it is necessary to economise in wood and the number of cuts, you will find it easier to trace the whole design on to a sheet of transparent paper. You will then be able to see through the paper to fit the various pieces side by side and make one cut do for two. You transfer from the tracing as already described.

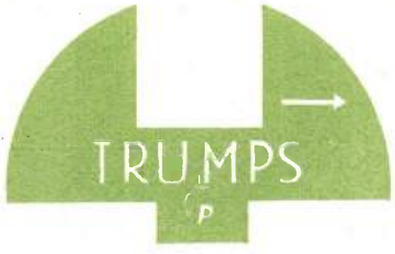
(458)





SIDES B. C
EACH FROM

PIECE C. ENDS OF BOXES.
CUT FOUR 1/4in. WOOD.



PIECES F. CUT ONE OF
EACH FROM 1/4in. WOOD.

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

THE OVERLA
SIDES OF C.
CUT TWO OF
FROM 1/8in.
AND GLUE IN
ON SIDE

THE LETTERING CAN
BE BURNT ON WITH
A KNITTING NEEDLE.

PIECE G.
CUT ONE
1/4in. AND
PAINT PIPS
ON EACH
SIDE OF
DISC.

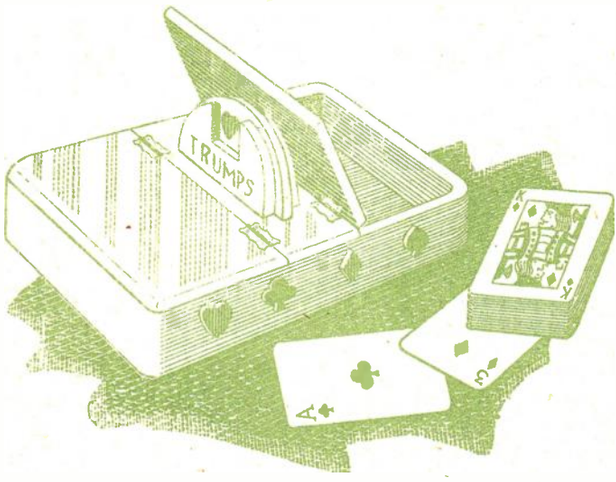
Hobbies DESIGN

No. 2964 20-8-52

SIZE ...
7¾ins. LONG.
4¼ins. WIDE.

SUPPLEMENT TO HOBBIES No. 2964.

A PLAYING CARD CASE AND TRUMP INDICATOR



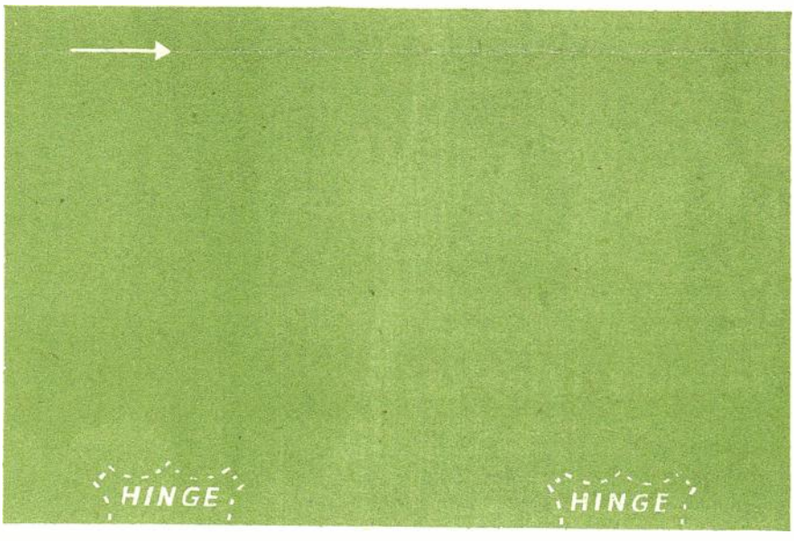
THE ARROWS INDICATE THE DIRECTION OF GRAIN OF WOOD.

PANELS OF WOOD REQUIRED FOR THIS DESIGN

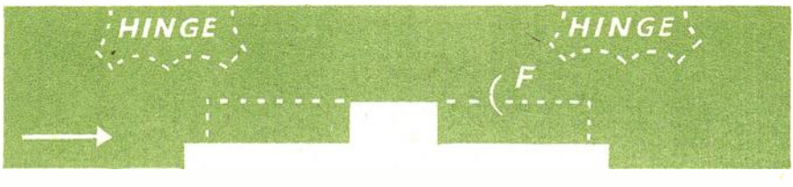
ONE H4 TWO G4 ONE G2

Materials for making this design are supplied by HOBBIES LIMITED, Dereham, Norfolk.
Price on application.

T ONE OF
.in. WOOD.

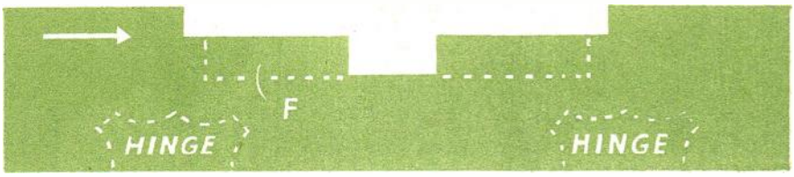


LID D. CUT TWO 1/4in. HINGE TO PIECE E.



YS ON
SE I.
EACH
WOOD
OSITION
S.

PIECES E. CUT ONE OF EACH FROM 1/4in. WOOD.



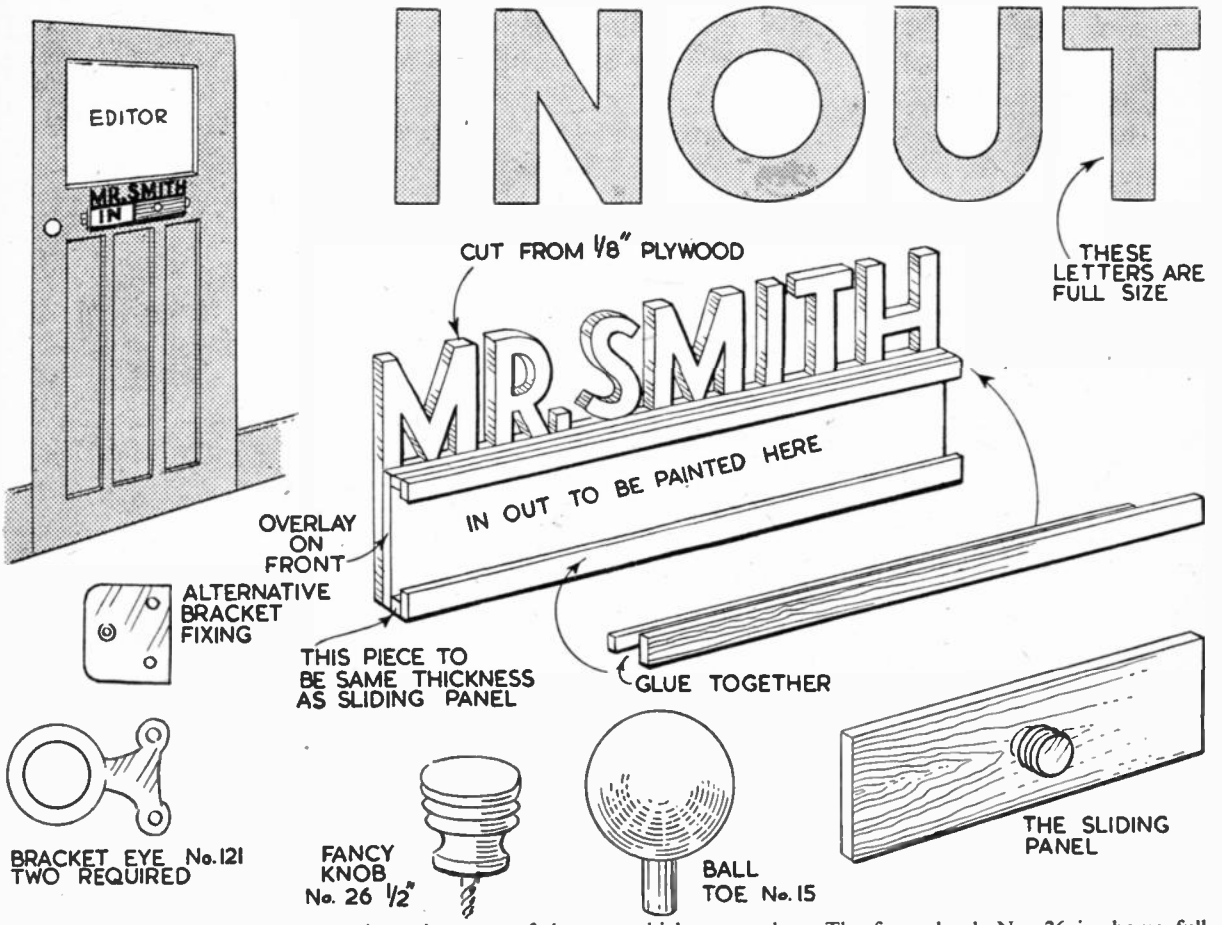
WASHER H. CUT TWO FROM CARD AND PLACE ONE ON EACH SIDE OF PIECE G TO ENSURE EASY MOVEMENT BETWEEN PIECES F.

PRINTED IN ENGLAND.

WRH

How you can make

AN 'IN-OUT' INDICATOR



THE indicator shown here is intended for use in business premises and blocks of flats and could be adapted for use elsewhere. Visitors can see at a glance if their friend or prospective business client is at home. The indicator board is fixed to the door and the sliding panel moved to cover IN or OUT.

Alternative

The indicator can be constructed complete with name, or can be attached beside or underneath an existing name on a door. The letters are cut from the back which extends all the way along the indicator. In the case of long names the back can thus protrude on either side.

The length of the overlay should be about 6ins. to 7ins., and the height about 1½ins. Note that the two spacing pieces are of the same thickness as the sliding panel.

All the parts are cut from ⅛in. or $\frac{5}{32}$in. wood, using plywood for the back, from which the name is cut.

When the various parts have been cut out they should be assembled and cleaned up with fine grade glasspaper. Give two or three coats of black or white enamel, paying particular attention to the end grain on the edges.

Trace the letters IN-OUT and transfer them to the overlay where indicated. In order to get the spacing correct, divide the overlay in half with a line down the middle and put one word centrally in each half. Paint the words in a contrasting colour, e.g., black on white or white on black.

The sliding panel is made to move easily in the grooves provided, and is pushed along by means of the knob. The fancy knob No. 26 is shown full size and can be obtained in several colours price 3d. each. Screw the knob into the panel and file off the protruding portion of the screw.

The ball toe No. 15 costs 1½d. and is glued into a hole drilled in the panel. Either of the above articles can be obtained from Hobbies Ltd., Dereham. Norfolk.

Hanging

The indicator can be hung on the door, in which case two bracket eyes are needed, or it can be fixed by means of two metal brackets screwed in place. The brackets can be cut from a piece of metal, using a *Hobbies* metal-cutting sawblade, or the bracket eyes can be obtained from Hobbies Ltd., price 1d. each. (462)

FOR THE YOUNG ANGLER

Timely Hints on Catching Roach

ROACH is one of the most popular fish with float-anglers. It is well distributed in rivers, lakes, canals and ponds, and there is no difficulty in obtaining a spot of roach-fishing. Though this fish is in season during June it remains in poor condition for a time, and August is a better month in which to start roaching in earnest. In slow-running rivers especially is it wise to wait a while.

But with the coming of September the fish will have attained prime condition, and give fine sport. From then onwards through the winter, roach, when hooked, battle with an energy unknown during the summer period.

Rod and Tackle

If you are out for roach, then provide yourself with a lightweight rod of from 11ft. to 12ft. long—a three-jointed rod of cane with 'stand-off' rings. It should not be whippy at the top. If the rod has a greenheart or lancewood top-joint all the better. The line should be of fine plaited silk, and the reel of the 'Nottingham' type with a free-running drum capable of carrying 40yds. of line. Casts are generally 1yd. or 2yds. long. Nylon and synthetic gut such as 'monoflow' are now replacing the ordinary silkworm gut. We recommend size 3x.

Hooks should be Nos. 12 to 16—the smaller sizes for use in match-fishing. Favourite types of roach hooks include 'Crystal' Bend, 'Model Perfect', Gilt, and Kirby. The first-named is, in the writer's opinion, the best of the lot for roaching, and No. 12 the most useful size. Hooks may be bought mounted on short lengths of fine gut or gut-substitute as mentioned above; they are more economical than those mounted on long lengths, as the 1yd. gut bottoms.

As to the float, it will depend upon the kind of water you fish in. In quiet waters a light crow-quill is best. In streamy rivers the quill float with slender cork body is more useful. Celluloid floats are light and effective, and the same can be said of porcupine quills. For deep and heavy water the goose quill is popular. Remember, in still or slow-moving water, a light quill is the thing, and a tapering quill and cork when angling on fast and streamy rivers.

You will require split-shot for 'shotting' the float when you have ascertained the depth and pace of the 'swim' you intend to fish. By plumbing the depth, using a lead plummet, you can adjust the float accordingly, and make sure you will be fishing the bait at the right depth.

Baits are Many

Baits for roach fishing in late summer and autumn are many—pastes, maggots, wasp grubs, creed or stewed wheat, breadcrust, pearl barley, red worms, dew worms, tail-end of lob, hemp, silk-weed, elderberries, flies, grubs, etc.

Ground-bait is made of soaked bread and bran, thrown in the 'swim' in small balls. If maggots are being used for hook bait, then a sprinkling of these wrigglers can be added to each ball. 'Cloud' ground bait is made from dried bread ground up fine. This is mostly used when fishing in clear waters or quiet waters such as canals. When the hook-bait is hemp, then ground-bait with hemp, but not lavishly. In still or slow water just a few grains from time to time are sufficient.

It is as well to go provided with an assortment of baits, so that if necessary to do so you can 'ring the changes' by trying fresh baits. Ground-bait sparingly —'little but often' being the slogan.

Brightly-coloured maggots are often in demand by match-fishers in streams where roach are predominant. You see anglers baiting their hooks with wrigglers stained yellow, golden, red, and green. It is doubtful whether there is any special virtue in this colouring, and think that the plain maggot is good enough for any roach when the fish are 'on the feed'.

'Swimming the Stream'

Swimming the stream or 'trotting' is a good method of catching roach. Other methods include 'laying-on' or 'stret-pegging' as some call it, and ledgering. In September and October we vote for the former method—swimming a bait down a good 'swim' with a nicely-adjusted float to give the signal instantly a roach takes the baited hook.

Adjust the float so that the baited hook trips the bottom. You will, of course, have to put sufficient split-shot on the cast to weight the float—the size of float and number of shot needed will depend upon the type of 'swim'—fast and streamy, slow and deep, shallow and clear as in a canal, or very strong current, as the case may be.

Put your landing-net ready to hand in case you are lucky enough to hook a 'big 'un!' Whopper roach fight hard. Cast the bait in at the head of the 'swim' and fish every inch of the water carefully, and as quietly as possible. If fishing on the bottom or near, and you get no response after trying for some time, try the bait a little higher up. Hold the float back gently as the bait travels along, so that it trips slightly ahead of the quill; you will find this of great advantage when you get a bite, for it will enable you to strike quickly. When a fish is hooked do not allow it to splash about too much and get it out of the 'swim' before the remainder of the shoal are disturbed.

Selecting a 'Swim'

In a well-fished water it is easy to find the likely 'swims' by looking out for the stands where other anglers have been. If you need to discover a promising spot for yourself remember that roach like such places as streamy runs, eddies, lay-bys under banks, quiet glides between weed-beds, weir pools, and, in a rising water after rain, the slacks close inshore. In fast rivers they seek a lazy eddy. They also like slow curling eddies under bushes. During early autumn they may be on the gravelly shallows, and in and along the clear runs by the side of rushes and weeds.

In quiet streams, meres, lakes and canals roach may be found nearly everywhere, provided the bottom is right and the locality suitable.

Once you have made up your mind that a certain spot looks a likely one, then take up an advantageous position and settle down quietly. Don't move about a lot, and don't get too near the water's edge. Roach are sensitive fish. Keep very quiet and out of sight. Keep your eyes on the float for a nibble. Be patient. (A.S.)

Rusty Tank

I HAVE a steel paraffin tank in a Valor heating stove and find the paraffin is rusting the bottom. Can you tell me of any method of preventing the rusting? (J.S.—Saltburn).

ONCE rusting has commenced, there is little or nothing that can be done to remedy it, or to prevent it happening again. Probably the best thing to do would be to remove the tank, thoroughly clean it, scrape out the rust, then have it 'tinned'—that is, coated with tin or lead applied in the molten state using a suitable flux, as if soft soldering.

It's easy to make these

Two Chairs for Large Dolls

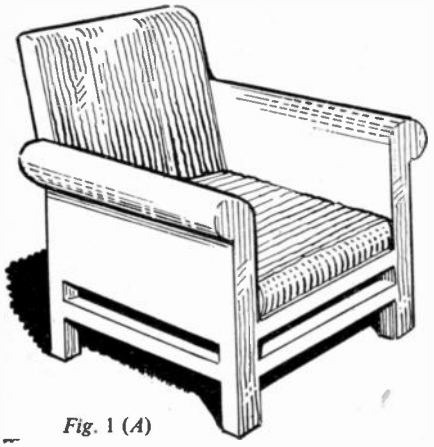


Fig. 1 (*A*)

THE pieces of doll's furniture illustrated, consisting of two types of easy chair, are not intended for a doll's house, but for the use of the larger doll—which would be far too big for even an outsize in houses.

The simplest construction has been specified for these chairs, and wood ½in. thick is used throughout.

A good idea of the finished chairs may be obtained from the sketches in Fig. 1, (A) being a fireside chair and (B) a lounge chair. The height of (A) from the floor to the top of the back is about 9ins., and its depth from front to rear is roughly 6ins. Its width to the outside of the arms is about 7ins.

The lounge chair (B) is made proportionate to (A) and is about 8ins. high, 7¼ins. deep, and 6ins. wide. Seven pieces go to the making of chair (A) and five for chair (B).

Ordinary planed deal can be used for all parts, but we suggest that plywood be used for the sides of the chairs, or at any rate for the sides of chair (B) which would be weak and have a tendency to split across if ordinary wood were used.

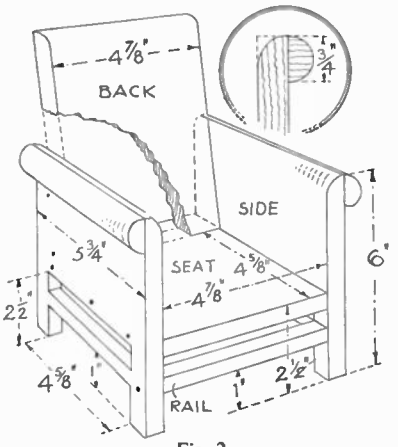


Fig. 2

Both chairs are made sturdily with plain joints, glued and nailed or screwed to give extra strength.

For chair (A) commence by making the sides from two pieces measuring 6ins. by 5¾ins., with one single perforation set out and cut, as shown in Fig. 2, to form the lower rail. The rounded part at the top, to form the arm of the sides, may be formed by first cutting two pieces of stuff about ¼in. by ½in., rounding them nicely and gluing them into place.

The inside edges of the sides at the top should be shaped so as to continue the rounded effect shown in the enlarged sectional detail in Fig. 2.

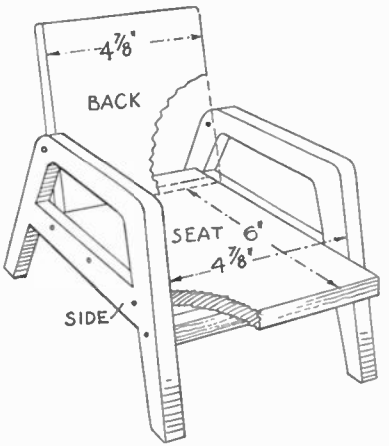


Fig. 3

The seat of the chair measures 5¾ins. by 4⅞ins., and is simply a plain rectangular piece and is glued and screwed to the sides, its upper surface being 2½ins. up from the bottom of the legs, as noted in Fig. 2.

Resting on the seat, and at a distance of 4⅛ins. from the front edge of it, stands the back, another rectangular piece measuring 6½ins. by 4⅞ins. The lower edge of this piece should be chamfered slightly to meet the seat, to which it should be glued firmly. The top edge is rounded off as seen in Fig. 2. Note that the back in this diagram is cut away so as to show how it slopes gently and meets the seat. Glue the back

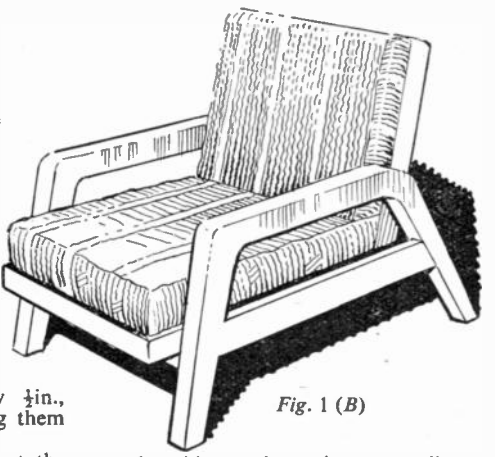


Fig. 1 (*B*)

to the sides and put in two nails or screws at each joint as seen in Fig. 2.

The final member of the chair is the front rail, which measures 4⅞ins. long by ⅜in. It is simply glued in place 1in. up from the floor and nailed through each end to make a firm job. Holes for all the nails or screws must be first accurately marked out and then bored with the awl.

The chair (B) is also of simple construction as Fig. 3 will show. As the sides of this chair are a little more shapely than those of chair (A), we have included here an outline diagram which may be enlarged to full size on the wood by means of the 1in. squares shown in Fig. 4. Note the dotted lines which indicate where the seat will come and the rail underneath its front edge.

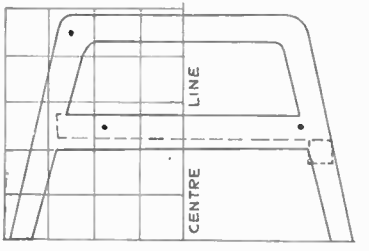


Fig. 4

Then trace off on thin paper the half diagram including the centre line, and, turning the tracing over to meet the original centre line, complete the outline of the side as seen in Fig. 4.

Cut each side accurately with the fretsaw and clean off the ragged edges with fine glasspaper. Note where the

(*Continued on page* 333)

What you should know about

Installing a Car Radio

READERS who have constructed a car radio, or have a ready-made receiver to install, may encounter difficulties in the form of interference or in arranging a suitable aerial. Quite a variety of aerials may be made, however, while interference can be reduced by taking certain precautions.

It should be noted that when a receiver is permanently installed in a vehicle a separate licence is required for it. This is not so, however, with a portable occasionally carried in the vehicle, if the user already has a licence for the portable (or another receiver) in the normal way.

Aerial Installations

The use of the best possible aerial will have several advantages. If it provides a fairly good measure of signal pick-up this will enable the programme to over-ride interference which may be present. On the other hand, if signal pick-up is poor, then the volume control on the receiver needs to be set to provide extra amplification, and this increases the volume of any interference. It should be realised that a radio receiver in a vehicle is operating under very difficult conditions. The ignition system radiates interference which may be heard as a continuous buzzing increasing in rapidity as the engine is accelerated. A long aerial cannot be provided, and the efficiency of the short length of rod or wire used is further decreased by the proximity of the metal bodywork. Passing vehicles can also cause interference, as can fluctuations in the current supplied to the receiver from the accumulator and generator.

Two popular types of aerial are shown in Fig. 1, and both are insulated from the bodywork and chassis of the vehicle. The rod is usually about 2ft. 6ins. to 3ft. 6ins. long, but can also be purchased in telescopic form, so that it may be pulled out to an increased length. Such an aerial can frequently be made from materials to hand, thin tubing being suitable. When a pair of stand-off insulators are employed, the tube may be flattened by gentle hammering at the required points and small holes drilled through the flattened sections. Mounting will then be easy and the insulators are bolted to the vehicle bodywork in turn.

The second method in Fig. 1 has the advantage that no holes require to be drilled in the sides of the vehicle, which may be an important consideration in some cases. For this type of aerial the lower end of the rod is best threaded, or the rod itself may be attached to a suitable bolt by having a sleeve of larger tubing into which rod and bolt can be soldered.

When making an aerial of this type from existing materials it should be assured that the aerial is strong enough to withstand vibration and wind pressure.

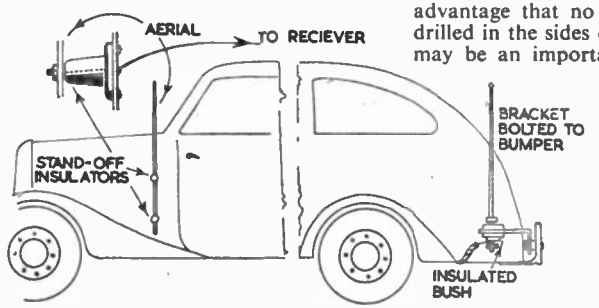


Fig. 1—Two types of vertical aerial

Horizontal Roof Aerial

One type of this is shown in Fig. 2. It is fairly long and away from sources of interference. Such an aerial can be made from a single length of stout wire (about 12 to 18 S.W.G.) and provides a fairly good measure of signal pick-up. The longer the wire, and the greater the distance between it and the roof, the more effective will it be.

Small stand-off insulators are again used, a lead being brought down from one inside the vehicle. Insulators with suction-cup bases, or intended for cementing to the roof, will avoid the need to drill the latter, but it is essential to make them really secure.

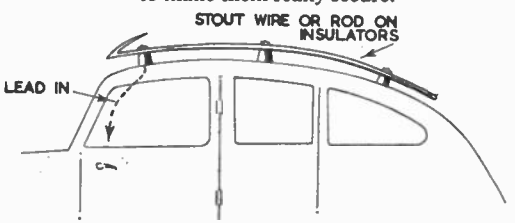


Fig. 2—A roof aerial

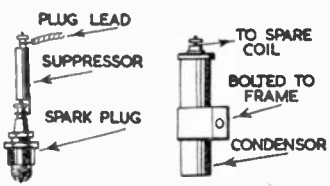


Fig. 3—Details of ignition suppressors

Wire Aerials

In addition to the method just described, it is possible to suspend a wire *inside* the vehicle near the roof. But with a vehicle with metal bodywork signal pick-up will be very small, as the aerial will be screened.

It is also possible to suspend a wire under the vehicle; this can take the form of a V-shaped aerial secured between back-axle and engine or gear-box. It should be suspended on small egg insulators, and a tension spring may be added to keep the wire tight. The pick-up of this type of aerial is not particularly great.

Ignition Interference

If this is picked up by the aerial it will cease when the aerial is removed from the receiver. If removing the

aerial in this way does not cause the interference to stop, then it is being carried to the set by battery or other wiring.

If the interference is found to be picked up by the aerial, this can be reduced by keeping the aerial lead-in as far as possible away from the engine and ignition system. The lead may also be screened, as shown in Fig. 4, the screening being returned to the vehicle chassis.

Suppressors of the type shown in Fig. 3 may also be purchased, and are frequently fitted to cars to reduce television interference. The plug suppressors consist basically of a resistor of robust type of about 5,000 ohms value. Each suppressor should be connected right up against the plug. A condenser may also be added as shown, the lead to the spark-coil being as short as possible. A further suppressor in the H.T. lead from spark-coil to distributor is sometimes used.

Such fitments may be obtained easily; in the majority of instances they may be tried before purchase. Usually, they do not detract greatly from the performance of the engine.

Other Causes

Occasional clicks when operating traffic indicators, etc., can be disregarded. Loose connections or joints in the vehicle may make themselves apparent by irregular cracklings. If necessary, adjacent metal parts can be banded together with stout flexible wire. Sparking at the generator due to a worn or dirty commutator or brushes can be cured by cleaning and renewing these, or having the commutator turned true. A 0·1 mfd. condenser from brushes to chassis may prove helpful.

Supply-Borne Interference

As the receiver usually derives power from the same accumulator which operates the other equipment in the vehicle, interference may pass along the connecting leads. If interference is present and removing the aerial lead-in does not stop it, this is so. Several methods of curing this trouble are possible. Large capacity (16 to 32 mfd.) condensers (which need only be of low voltage rating) can be wired from the supply lead to chassis. Small H.F. chokes, of sufficient current-carrying capacity, may be included at the receiver end of the supply leads. Normally, it is also desirable to screen the receiver completely, by using a metal cabinet.

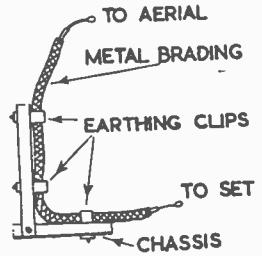


Fig. 4—A screened lead-in

Vibrator-Receiver Trouble

Interference between the vibrator and receiver sections of the equipment may arise. This can be reduced by screening, and using large condensers as mentioned so that surges do not pass from vibrator to receiver.

Finally, it must not be assumed that all the foregoing points will require attention before satisfactory results are obtained. But in a few cases some care will be necessary if really satisfactory results are desired, with good volume and a minimum of interference. (456)

Details of building a suitable car radio appeared in last week's issue—August 13th.

Made From Sea Shells
(*Continued from page* 326)

give a general idea of a very popular type, but there are many other possible variations with different kinds of shells.

The little pink or cream shells are ideal material for the petals and the method of using them is shown at (K). A small hole is drilled in the end of each shell with a twist drill. You will find it quite easy material to work with, and if the shell is placed on a piece of leather to form a pad, no difficulty will be experienced in making a neat hole.

Thread a piece of soft iron or copper wire through and twist as shown at (K). When you have prepared five shells, all the wires are twisted together, leaving a space in the centre which will vary according to the type of flower being made. One of the shells may have a long wire attached to it which will form the stalk.

The centre of the flower is moulded to shape with modelling clay and neatly covers the wires. A small grey top shell can be pressed into the clay to give variation to the centre if desired. Leaves made of mussel or other thin narrow shells can be wired on to the stalk at intervals.

Cellulose paints or enamels can be used to decorate the shells but it will be found that the natural beauty and colour of the shells will not need this artificial treatment, and they will be much better left as they are. (457)

In Simonstown, South Africa, lives a Mr. G. W. Morris, who decided he would like a hobby that is quite different from anyone else's. He had always been interested in collecting autographs of celebrities, and so decided he would himself start obtaining autographs—with a difference. All his

A Collector of V.C.s

autographs were to be signed on photographs of their owners, who were to be, not film stars or authors or politicians, but holders of the Victoria Cross. Mr. Morris began after the 1914-1918 War, and whenever an award of the coveted V.C. was announced in the newspapers, he would get in touch with the brave man through the post, asking for a signed portrait. Over the last 30 odd years, Mr. Morris has written well over 3,000 letters for his hobby, and is the proud possessor of the autographed photographs of 450 men who won the V.C. in battle. Regardless of rank or nationality, he would approach them at once, hoping that his request would be granted. During the recent war, he added more than 20 more portraits to his unique gallery of brave men. (280)

Two Chairs to make for Large Dolls
(*Continued from page* 331)

holes are to be made for the nails or screws which run through the sides into the seat and the back of the chair. The seat measures 7ins. by 4⅞ins. and is glued and screwed in the position shown in Fig. 4. A simple rail 4⅞ins. long by ½in. square connects up the two sides and is glued to the underside of the seat.

The back of the chair is 5½ins. long by 4⅞ins. wide, and here again the lower edge is chamfered to meet the seat 6ins. back from the front edge as seen in Fig. 3. The back is well supported by glue and screws as indicated. All the surfaces and edges of the wood should receive a final cleaning with fine glasspaper before the painting or staining is done.

Both chairs are made effective and realistic by the addition of seat and back cushions. For the fireside chair (A) odd pieces of brown velvet would answer nicely for cushions, while, perhaps, some pieces of folk-weave material would be most appropriately used for the lounge chair. As an idea it might be well to cover the inside surfaces of the sides of the chair (A) with the velvet, draping and gluing this over the shaped arms and finishing it neatly underneath the rounded parts. Mahogany colour should be adapted for the woodwork of chair (A), while that of chair (B) would look well and suitably coloured to represent light oak. (SWC)

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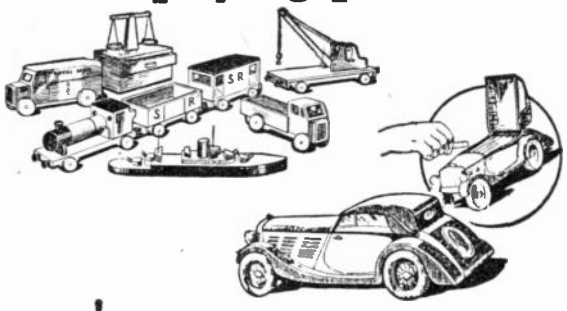

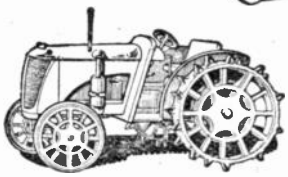

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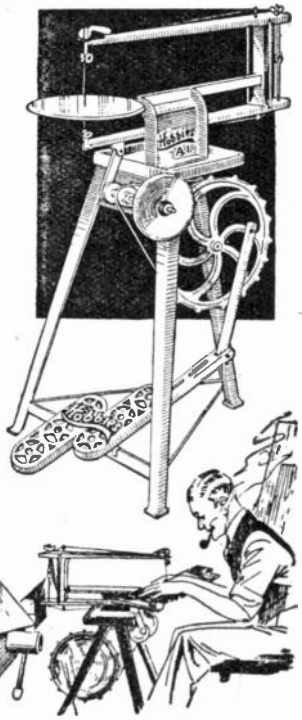

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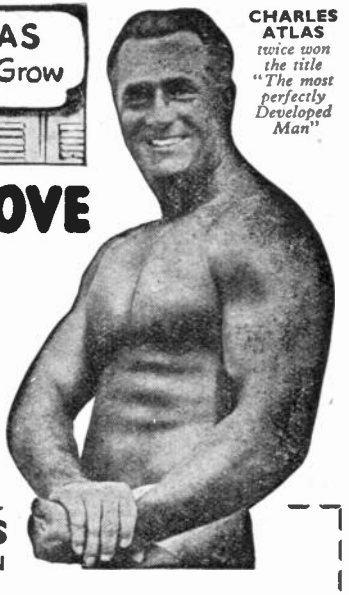

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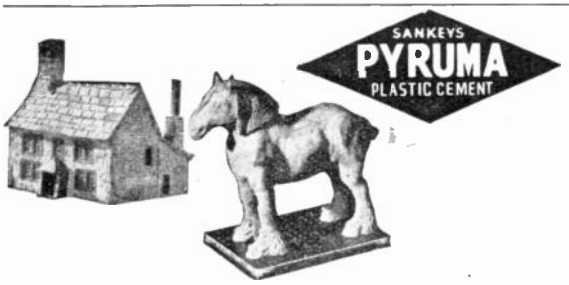

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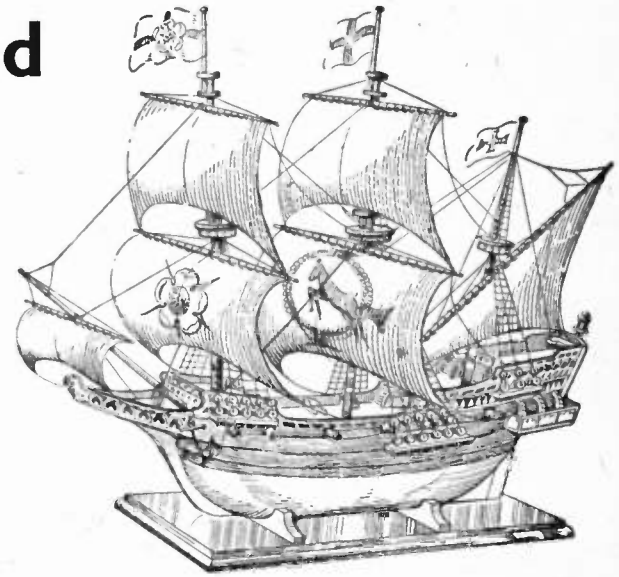

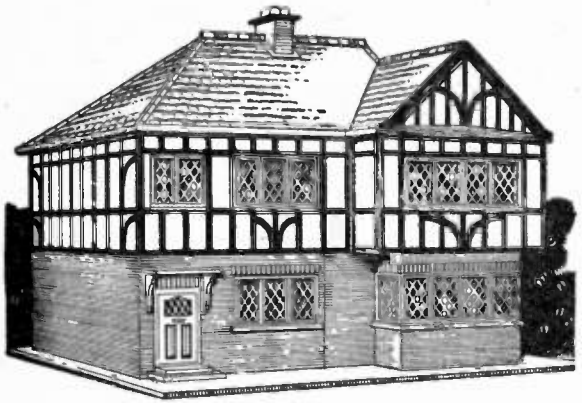

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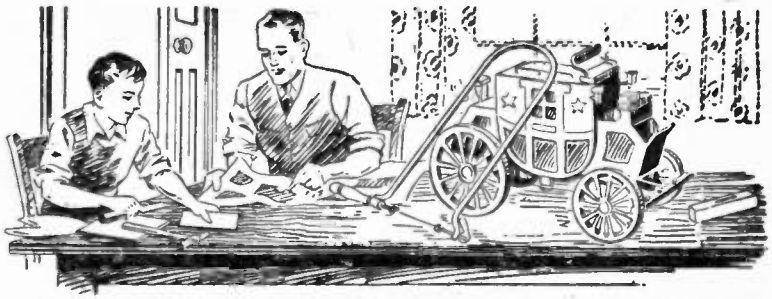

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