

# Hobbies

## WEEKLY

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## A practical home-made SPINNING WHEEL

A SPINNING wheel of easy construction is illustrated, which readers interested in weaving may care to make. The design has been adapted to obviate the need of turned work, without having a cumbersome effect. Readers who own a lathe for wood turning, can however, turn the various parts if they care to do so and make the article more like the old fashioned implement.

The main dimensions are given in Figs. 1 and 2. The stard consists of a top of 1 in. deal, with two legs of similar stuff, just like a stool. The legs should be tenoned into the top, but for appearance sake need not go right through. Tight joints and glue should make a strong piece of work.

### The First Work

The posts and horizontal are cut from 1½ in. sq. wood. Note, that the lengths given do not include the tenons for the joints.

All these parts are mortised and tenoned together. The tenons on the posts at the bottom are cut 1 in. long, and a dovetail slot cut in the tenons so that they can be firmly wedged underneath the top of the stard, as in Fig. 3.

Near the top of the posts, slots

are cut for the spindle bearings. For clearness these are drawn separately in Fig. 1. They are ½ in. wide. The back slot goes right through, the smaller front one is 1 in. deep and is cut from the far side, or righthand side.

Squares of fretwood are cut to form caps to glue on top of the posts as shown. They make a neat finish.

The posts, by the way, are fixed 3 ins. apart, to admit the wheel easily. All these parts are stop chamfered to lighten the heavy effect and produce an ornamental finish. The edges of the top and legs are also chamfered. For all these parts deal can be used, but hardwood is much better if available.

The treadle is a piece of board tenoned to a 1½ in. sq. rod. The latter is centred at each end and pieces of ½ in. round rod glued in for spindles.

The bearing holes for these are not bored in the legs of the stard, but in separate side pieces, as shown. Pieces of wood, 2 ins. by 4 ins. will do, fixed each side with two screws. Smear spindles and holes with blacklead, as a lubricant.

The wheels need some care in making as it should run true to be well balanced. Glue two or more 1 in. thick boards together to make a square of the dimensions given in Fig. 4.

### Cutting the Wheels

The 1 in. board, if planed, will measure about ¾ in. thick, actually, but, if full thickness boards are used the space between the posts should be 1 in. or more than that given. On the boards strike the circles shown, and in the centre bore a ½ in. hole for the axle.



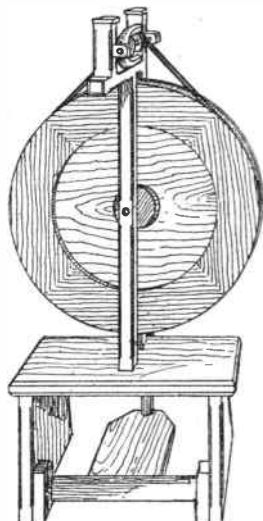
A simple cutting appliance should now be made consisting of a length of wood, with a bit of  $\frac{1}{4}$  in. rod glued in at one end to slip in the axle hole.

At a distance from the centre of the rod equal to the radius of the wheel, i.e.  $8\frac{1}{2}$  ins. firmly wedge in a piece of steel, say  $\frac{1}{4}$  in. stuff, sharpened to a wedge-shaped point, as seen in Fig. 5.

A bit cut off a thick wire nail might serve for the steel. With this implement, worked in a rotary direction, cut partly through the boards on the outer circle. Then remove and cut the reverse side similarly. The remainder of the cutting can be finished with a coarse fretsaw blade, and should result in a reasonably accurate disc, truly centred.

### Flange Pieces

The flange pieces are cut from  $\frac{1}{4}$  in. fretwood, in convenient segments, and glued on, the middle circle acting as a guide to accurate positioning. The flange pieces are  $3\frac{1}{2}$  ins.



Front view of the machine

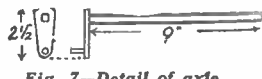


Fig. 7—Detail of axle



Fig. 10—Reel and pulley

wide and so overlap the wheel to form the flanges.

An easy way to get these segments accurate is to strike on thin paper an outer circle of 18 ins. dia., and an inner one of  $11\frac{1}{2}$  ins. dia.

Divide this by radial lines from the centre into four, or more segments, and paste the segments to the fretwood. Cut two of each segment and glue to the wheel each side.

The centre bosses are cut from 1 in. board,  $3\frac{1}{2}$  ins. dia. The outer edges are nicely rounded, and the bosses bored  $\frac{1}{4}$  in. in their centres. In one

boss, on the back surface, chisel out a wedge-shaped groove,  $\frac{1}{4}$  in. deep for a key (see Fig. 6) the bottom edge of the groove cutting across the axle hole  $\frac{1}{4}$  in. deep.

Now glue and screw the bosses in position, with the axle holes truly in line. Fig. 6, a part section through the wheel, will help to explain the above details.

### The Axle

The axle, Fig. 7, is a length of iron or mild steel. The crank is a piece of  $\frac{1}{4}$  in. by 1 in. iron riveted to one end. The pin, on which the pitman works, is a short piece of mild steel, riveted on.

Where the wheel will come, file a groove,  $\frac{1}{4}$  in. deep and wide for the key. The key is a wedge-shaped piece of metal, or hardwood, cut to fit the groove.

Place a washer each side of the wheel and push the axle through. Fix the wheel to the axle by driving

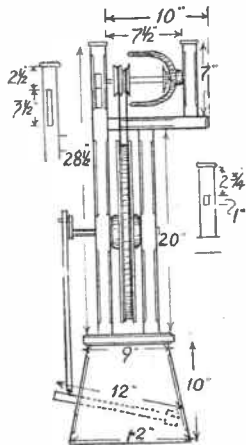


Fig. 1—Side view

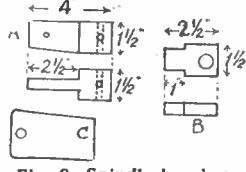


Fig. 8—Spindle bearings

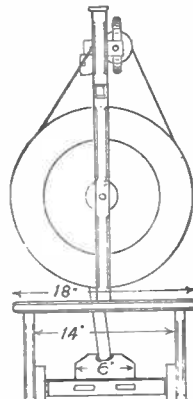


Fig. 2—Front elevation

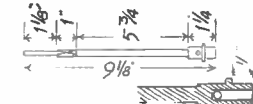


Fig. 9—The spindle parts



Fig. 12—Substitute spindle

the key in until tight.

The bearing holes in the posts, by the way, are best bushed with leather. The holes, of course, are bored a little larger than the axle to allow for this.

Take care to cut the leather an accurate fit in the holes so that its ends butt together neatly, also, allow enough room for the axle to revolve freely. These bearings lessen noise, and allow of replacement when worn.

### The Pitman

The pitman is a length of  $\frac{1}{4}$  in. by 1 in. wood. Bore a hole near the top to slip over the pin on the crank and at the bottom another hole, this time bored through sideways.

The pitman is connected to the

treadle by a leather lace, passing through the pitman and holes bored in the treadle and then knotted together to make a link, not too tight. At the end of the crank pin drill a small hole, and slip through it a split pin to keep the pitman from working off.

### Spindle Bearings

The spindle bearings, slots for which have been already cut in the posts, are drawn in Fig. 8. They should, if possible, be cut from hardwood. A is the back bearing.

The hole for the spindle should be  $\frac{1}{4}$  in. or if the bearings are bushed with leather (advisable in this case) a little larger. In the top of the bearing a second hole is bored through, cutting through the bearing hole at right angles, to admit a pin.

The purpose of this pin is to prevent the spindle working out when in motion. Cut the tenon to slide in the slot in post, it should slope up

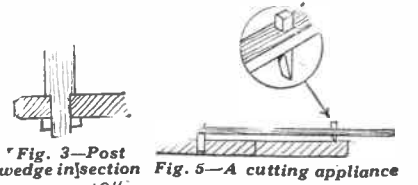


Fig. 3—Post wedge in section Fig. 5—A cutting appliance

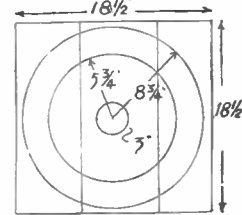


Fig. 4—Wheel construction

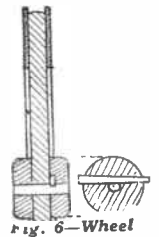


Fig. 6—Wheel

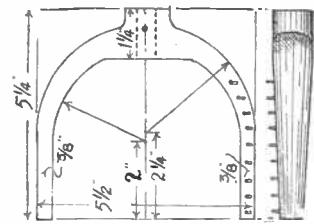


Fig. 11—Details of the neck

a little at the bottom, as shown.

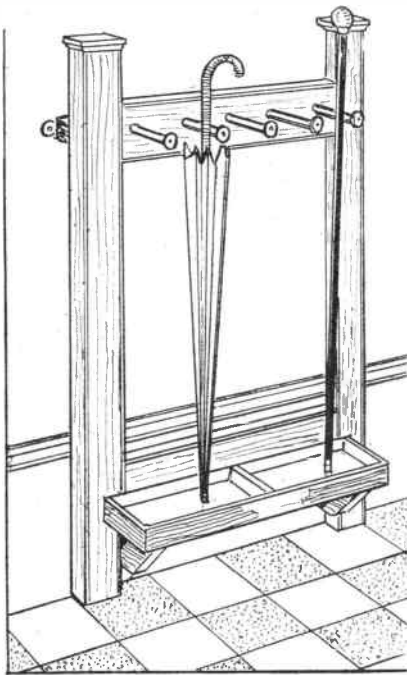
A space will be left in the slot, and to fill this a wedge-shaped piece, C, is cut. Where the tenon of the bearing extends beyond the post, bore a hole into which a wood peg is fitted, to prevent the bearing pulling out.

The purpose of the wedge is to allow the bearing, when the wedge is withdrawn, to be lowered and so release the spindle when the reel is to be taken off.

The illustrations herewith show quite clearly the various parts mentioned and by referring to them you should be able to go ahead with the construction as far as this. Next week we shall complete the model.

(To be Continued)

# This simple work is planned for the narrow hall as AN UMBRELLA STAND



A SMALL umbrella stand, just the thing for a narrow hall, can be easily made. As thick hardwood is hard to get, a wartime substitute is deal, faced with fretwood. This looks as well as the solid wood, and is cheaper.

The frame, Fig. 1, is made up with the deal, which can be  $\frac{3}{4}$  in. thick. No need to be too particular over this. Join up the frame with a simple halved joint, as at A, then take a part.

### The Framework

Hardwood,  $\frac{3}{4}$  in. thick is recommended for facing. Cut two pieces the same size as the uprights, and two cross pieces the width between the uprights, i.e., 1 ft. 2 ins. long. Obviously the cross pieces only need facing on the sides that show, not the end tenon parts.

Provide a jar of thin, hot glue, and glue the facings to the deal. All four can be cramped up together until the glue is hard. Take care to get the end edges of the cross facings level with

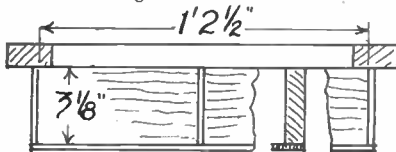


Fig. 2—The tray shelving, with details

the shoulders of the tenons behind.

In the meantime cut the edging strips of  $\frac{3}{4}$  in. fretwood. These are as wide as the wood will be thick when faced. In other words, if  $\frac{3}{4}$  in. deal is faced with  $\frac{3}{4}$  in. fretwood the edging strips will be  $\frac{3}{4}$  in.

Now take the pieces already faced, and where necessary take a fine shaving off their edges to make all level, not too much or the joints will be a loose fit. Now glue the edging strips on and cramp up as before.

It should be noted that these edging strips are applied to the outer edges only of the uprights, as at C, and to the top edges only of the cross pieces, as at B.

### Fancy Edging

A small head should be worked on the edges of all these parts before they are glued together. This can be done with a simple home-made tool, if a bead plane is not available.

The tool consists of a stout iron screw, driven into a piece of wood leaving the head sticking out about  $\frac{3}{4}$  in.. See the slot is vertical, and use the tool like a cutting gauge. The edge of the slot will cut quite a decent bead. Now glue the parts together to make the frame.

When dry cut a piece of deal to dimensions given in Fig. 2, for the tray shelf at the bottom. This faced on front and side edges with fretwood, the strips being wide enough to stick up above the shelf  $\frac{1}{2}$  in. and so form a rim.

Screw the shelf across the frame where shown by the dotted lines in Fig. 1. Some support is needed underneath the shelf, and this is provided by a bracket each end.

No drawing is given for this but they can be seen in the finished view. They measure 4 ins. by 2 ins. and have their front bottom corners sawn off.

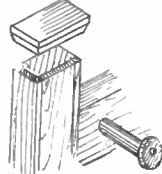


Fig. 3—Capping and peg piece

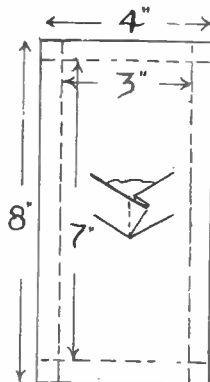


Fig. 4—The tray shaping

No other shaping is necessary.

Fix to the inside edges of the uprights, below the shelf, and to the shelf itself with a screw to each.

On the top cross rail run a pencil line across the centre, and on this, and at the distance given, bore a row of holes for the pegs which keep the umbrellas and sticks from falling. These pegs are pieces of  $\frac{1}{2}$  in. dowel rod,  $3\frac{3}{4}$  ins. long. Bore the holes for them about  $\frac{3}{4}$  in. deep.

The ends of the pegs, being that part which enters the holes, should have a small V-shaped groove cut to allow the air to escape when the pegs are driven in. Glue them and tap gently in with a mallet.

### Capping Piece

A cap of fretwood, 1 in. diam. is cut for each peg. Round the edges of the caps and fix each with glue and a single round-headed screw.

To the tops of the uprights a cap should be added as a finish. The caps are two pieces of fretwood, glued together to make  $\frac{1}{2}$  in. thickness. They are cut to overlap  $\frac{1}{4}$  in. over the sides and front, and are bevelled underneath. Glue on top and add a few thin nails. Both the above details are drawn in Fig. 3.

The trays, Fig. 4, can be made of tinsplate, obtainable from empty food tins. Cut off the top and bottom of the tins and cut out the vertical seam. Then flatten out the tin and clean. Cut to dimensions in Fig. 4.

Mark the inner rectangle, and from there to the edges bend up at right-

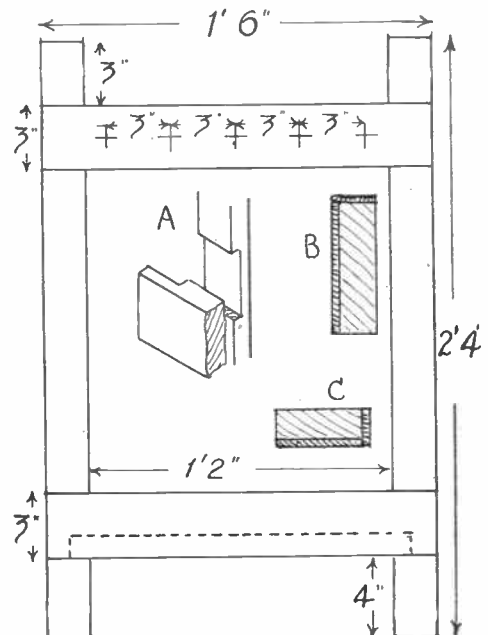


Fig. 1—Details of main frame and joints

angles for the rims. This can be easily done if a strip of wood is laid to touch the bending lines, and the tin bent up against it.

The corners are drawn together and punched flat with pliers (as in the inset) and then hammered over flat to one side. The tins will not meet together on the shelf so a strip of fretwood is glued across to fill the space between.

The completed stand should be polished, or varnished, as preferred. The deal portions will be brought into tone with the general effect if stained to match the fretwood. The trays should be enamelled black or green.

Owing to the narrowness of the stand it will not stand upright of itself, so it should be fixed to the wall with screws. A plate should be fixed

to the stand each side for this.

Where the hall has a skirting board, a small wood block should be added each side to which the plates can be screwed.

This block, as well as the wall plate, can be seen in the picture on the previous page of the finished Stand. Be sure to glue the blocks on securely, as they will be too small to screw satisfactorily.

## Practical points to watch when you are dealing in SECOND-HAND BICYCLES

**W**ITH the increasing difficulty in getting a new bicycle owing to war restrictions, coupled with the great demand for machines by erstwhile motorists and others needing handy means of transport now that most 'buses are overcrowded, many are seeking second-hand bargains.

Remember, the purchasing of a second-hand machine is never so easy and simple as buying a new one. The condition of the latter is, of course, taken for granted, especially if it is made by any one of the leading manufacturers. A used machine is in a different category, however.

Beware the second-hand "bargain." You are likely to be disappointed with it, unless it is a genuine bargain. You cannot be too careful in these days.

### \*Ware Stolen Goods

There is a wave of cycle stealing throughout the country. Quite a number of these stolen machines are offered at cheap rates—sometimes so cheap that one's suspicions are— or should be—aroused at once.

One trick of the cycle-stealer is to alter the machine so it cannot be identified by its owner. One such thief recently convicted had, according to police evidence, "made two bad bicycles out of two good ones."

What he had done was to dismantle two good bicycles that he had annexed and then amalgamated the parts of one with the other, in order to avoid risk of identification. The result was that neither of the bicycles so treated, when re-assembled, was much good.

### Watch Camouflage

Such actions, it is to be feared, are often done, and by men more expert than the youth trapped by the police. Stolen machines are frequently either "camouflaged" or partly dismantled and replaced with other spare parts to avoid identification, or are repainted. Do not be influenced by shiny handlebars and new enamel. It may only be camouflage.

If you are in need of a machine and cannot buy a new one, it is wiser to

try a reliable, old-established firm in your own locality, or a reputable cycle-dealer. These are not likely to do any bargaining in machines that may be suspect. Frequently such firms or dealers have genuine bargains offered to them, and are content with a fair and reasonable profit.

Even so, there are points to watch when bargaining for a used machine. It should be thoroughly inspected. The "heart" of a bicycle is its frame.

Look over this first, and if there are signs of any of the tubes having been bent think twice about making a purchase. When a tube shows signs of bending it points to the machine having been in a collision, and it will probably be found that the frame is out of alignment.

### Test Alignment

You can test the alignment of a cycle by riding it with your hands off the handlebars. If the machine shows a marked tendency to run to one side it proves that the frame is not true.

Provided you are satisfied the frame of your prospective second-hand is "o.k." then proceed to inspect the remainder of the machine. Test the bearings for shake or undue tightness and, the wheels for loose spokes or buckled rims.

Try the chain—see that it is not too worn to be satisfactory when riding. Lift the back wheel off the ground and turn the cranks. If there is a lot of noise and shakiness forthcoming as you turn vigorously, then you can take it that the chain is badly worn.

Give the brakes a good test, and then inspect the tyres. As new tyres are hard to get nowadays, a used machine with fairly good tyres—given everything satisfactory in other respects—is a real bargain.

Remember when buying a machine to bear in mind that the first essential of a bicycle, especially if you want it for holiday touring or week-end runs, is comfort. Set the height and position of the saddle to suit you; you should just be able to pedal comfortably with the heels on the pedals.

### Test for Height

Of course, when actually riding the "ball" of the foot is used; but for a try-out for correct position the foregoing test should be made.

The handlebars should be fixed at about an inch or two inches above the saddle. Flat handlebars are the best.

Do not be tempted to buy a second-hand machine just because it is offered to you as a "bargain." It may well be in every way an excellent machine in good order and above reproach. But if it is heavy and too big for you, there will never be any real pleasure in riding it.

### General Points

A lightweight roadster with flat handlebars, a comfy saddle, tyres of medium width, and a three-speed or variable gear is worth thinking about if one comes your way. But only if it is in good running order and will pass the few simple tests out-lined above.

The question of price is, of course, a matter of adjustment between you, and no definite guidance on this matter can be given.

## ABSOLUTELY FREE!

We will give you—absolutely free—the very attractive stamp which the Free Dutch Government in London have just issued (February 1st 1943) for the Dutch West Indies Islands of Curacao. This extremely handsome stamp is in two colours and shows the Dutch flag flying over the old Fort at Saint Eustatius. Three old cannon can be seen in the foreground of the stamp while inset is a portrait of Her Royal Highness Queen Wilhelmina of the Netherlands (Holland) who is now in London. The Dutch Government have told us that no more stamps will be available when present supplies are exhausted. This very interesting and historical issue should be in every collection. It will increase the value and interest of any collection, and you can get this stamp from us Absolutely Free by asking to see one of our Approval Selections. Also you must send us 3d. in stamps to cover cost of our postages. Only one of these Gifts can be sent free to each applicant. Write now to:

**Windsor Stamp Co. (Dept. 12), Uckfield, Sussex**

# You can make all the difference to work by proper MODEL PLANE FINISHES

"IT'S a good model aeroplane, old man, but you've rather over-done the finish!" Has anyone ever said that to you and you *knew* it? If so, you are advised to read, mark and inwardly digest the new methods described in this article.

Needless to add, the methods have been tried out, with excellent results. There is no likelihood of you making a mess of your model, which is very disappointing and discouraging. All you need are bottles of special ink which are obtainable, plus some paper varnish.

## The Foundation

Assuming, therefore, that you have just made a model of a Spitfire (or any other design of plane) and are considering the best way to finish it off, pay a visit to a local artist's supply shop and buy a bottle of white drawing ink, also a bottle of (water-proof) black ink, dark brown ink and dark green ink, including a small bottle of clear paper varnish.

Now, by means of these inks you can have two special kinds of finishes—plain and mottled. It may seem expensive, but the results are worth the extra cash expended. Moreover, there is sufficient ink for covering several models.

The white ink is used as a "foundation" for the coloured inks. So, stir it thoroughly with a thin stick, then apply a single coat to the model, using a medium pencil brush. Owing to the fact that the distilled water in the white ink is liable to raise the grain of the wood, you should first rub the model with a damp rag, allow the wood to dry, then rub down the grain with fine glasspaper.

## Applying the Colours

If, on account of the dark colour of the wood used, the foundation does not dry pure white, apply a second coat and allow to dry. The whole of the model should be covered with exception of the propeller and wheels.

Your model will look like it has been cast in plaster, but is quite smooth and shiny. In fact, you will find you can easily draw pencil lines on it. That is a good feature—it is what is wanted, for you can now pencil in all necessary details, the wriggly lines for the camouflage colours, the targets, the identification markings, etc.

When marking out the targets, use a compass. Lean very lightly on the pencil point, and try to get everything exact and truly in place.

Using a medium brush, apply the

green ink first, filling in its wriggly pencil lines. Work evenly to the edge of the lines, avoiding to cover the outside circles of the targets; the latter, like all lettering, must be left white.

By the time you have applied the green ink, you can start applying the brown stuff. Do not worry about the unevenness of shade in the colouring. This is, due to the nature of the ink, inevitable.

Go over the colouring a second time. The second coat gives a more even tone to the colouring, resulting in an extremely interesting "mottled" effect rather like marble.

## Finishing Off

When the ink has dried, all lines (such as those on the wings) are drawn on with the black ink. Cabin windows and any other details are drawn with the black ink. Regarding the targets, these can be coloured in with yellow, blue and red inks (there is a reason for obtaining these inks, as you will see further on).

When the inks have dried, apply a single coat of paper varnish. The varnish protects the inks and produces a high gloss, thanks to the foundation coats of ink. A model finished in the manner described, with the propeller, exhausts, oil cooler and wheel hubs coated with silver varnish paint, looks very attractive and professional.

When varnished, the work should be set aside in a dry spot for several days, for if handled while tacky, the fingers are likely to pull the foundation coat away from the wood, so one must be patient.

## Other Hints and Tips

If you desire a plain grey-coloured model, a few drops of black ink should be applied to the white ink, stirring the ink repeatedly and trying it on a piece of wood until the correct shade of grey is obtained. The grey ink is then brushed on the model. Two coats could be applied, rubbing the first coat down with fine glasspaper after the ink has hardened.

When you have filled in the details with the black drawing ink and adhered suitable transfers and coated the propeller and wheel hubs silver (the exhausts and undercarriage could be done black), the varnish is applied, or you could apply clear french polish, this drying more quickly.

A common snag in model aeroplane finishing is the

inability to obtain transfers of suitable diameters. Here, then, is a good tip.

## Marking the Targets

Whether you have coloured the model in inks (as we have described) or coloured it in the usual way with enamel paint, allow the colouring to dry, then mark the position of the various targets. Just scribe the diameters only, then fill the circles in with the white ink.

Two applications of white ink may be found necessary. When dry, mark the centre of the white discs with circles (in pencil) and fill in the spaces with the yellow, blue and red ink. Use a fine pencil brush and try not to go over the lines.

## Varnish Protection

A coat of thin varnish (or clear polish) will protect the markings which, afterwards, look like transfers. A good feature with the inks (when applied over the chalky foundation provided by the white ink) is that you can use a pen, apart from a fine brush, in adding necessary details, particularly small lettering and numerals.

Unlike enamel paints, the inks dry quickly and let you get ahead with the finishing off. We are inclined to believe that it is this waiting, more than anything else, that is the cause of messy finishes, for it is hard not to be impatient. We all like to see the model made and finished right away, anxious, no doubt, to see if it does possess some realism after the finish has been applied.

The art of "making haste slowly," strange phrase as it may seem, is very true and should be borne in mind.

## Answers to Last Week's Puzzles

### Counting Triangles

There are just 110 triangles. The general solution is difficult but if readers are interested enough we shall supply it.

### Find Their Ages

54=Husband.

45=Wife.

### A Real Teaser

Produce  $CB$  to  $D$  so that  $BD=AB$ . Then we have

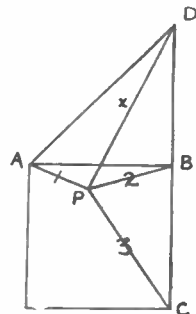
$$X^2 \times 9 = 8 \times 2BC^2$$

$$X^2 \times 9 = 8 \times AD^2$$

$$\text{or } X^2 \times 1 = AD^2$$

Hence  $\angle APD = 90^\circ$   
and hence  $\angle APB = 135^\circ$

Very neat.



# The handyman should know how to tackle AN ELECTRIC IRON

**R**EPAIRING electric smoothing irons is a job a handyman should be able to undertake, for all of them are built up in the same way. The working idea or principle is always the same, any difference being in the shape or design.

Consequently it is only a matter of knowing how these irons work and the best way is to remove the outside parts so the inside components may be seen and studied. We show a typical make of electric iron, together with its adaptor and two-pin plug top.

The other drawings illustrate the internal parts, namely the heating element and its iron. Thus you will observe that the metal cover carries the handle and terminal pins, the adaptor fitting on these. To remove the cover, two nuts are unscrewed from the holding bolts; the base of the handle is usually insulated from the cover by fibre washers or asbestos washers.

## Disconnect the Cable

Before taking the iron to pieces—if you find you have to do this, by the way—by first unscrewing the handle support nuts, be sure to disconnect the electric cable from the iron.

One of the chief causes of a breakdown in an electric iron is a short-circuit or break in the flexible cable, so this should always be tested first. Therefore withdraw the pin plug from the wall sockets or switch sockets (in the latter case the plug may have three pins, one being for an earth wire).

A short-circuit is caused by the insulation around the cable wires becoming frayed and broken in places due to constant bending and twisting. The naked wires thus tend to touch each other. Such a defect is easily discernible, a spark being emitted at the point of contact or else the outer covering of the cable may show signs of scorching.

## Finding the Fault

In the case of a break in one or both of the cable wires the fault will have to be found by "feeling" inch by inch with the fingers. If not sure it is a break, the adaptor and plug connections should be inspected, because constant tugging may have loosened the bared wires looped around the terminal connection bolts.

If these connections are sound the best way to test the wire is to connect a lamp holder fitting to the adaptor ends of the cable, insert a suitable lamp, then plug the cable into the supply sockets. The lamp should light up in the usual way.

If not and you cannot discover the

break, a new cable should be purchased. If you can manage to find the break it would pay you in the long run to still buy a new cable.

## Repairing Cable

However, as new cables cost money and may be difficult to obtain, cut the cable where broken (cut both wires, even if only the one wire is broken, in order to have the wires corresponding in length) with the scissors, bare the wire ends, then solder or twist them together securely. Wrap the joins independently with insulation tape, then bind the windings together with more tape, covering the protective rubber sheathing and the outer cotton-covering neatly to prevent unravelling and give extra strength.

Having made the repair, test the cable by the lamp once more. If the lamp does not light, remember that a short-circuit invariably blows the fuse at the mains meter box, so fit a new fuse wire if necessary.

## Faulty Heating Element

A more common defect that arises in electric irons is a broken or burnt-out element. A new element should be obtained. It consists of a mica former around which the resistance wire is wound. The mica former is enclosed between two sheets of mica (this stuff is clear, glossy and heat-proof) which serves to insulate the resistance wire from the body of the iron, i.e., the base and iron itself.

The element has two connecting tabs for the terminal pins of the iron covering. It is usually wiser to buy a new element rather than attempt to repair the resistance wire or put on new windings, although this could be tried.

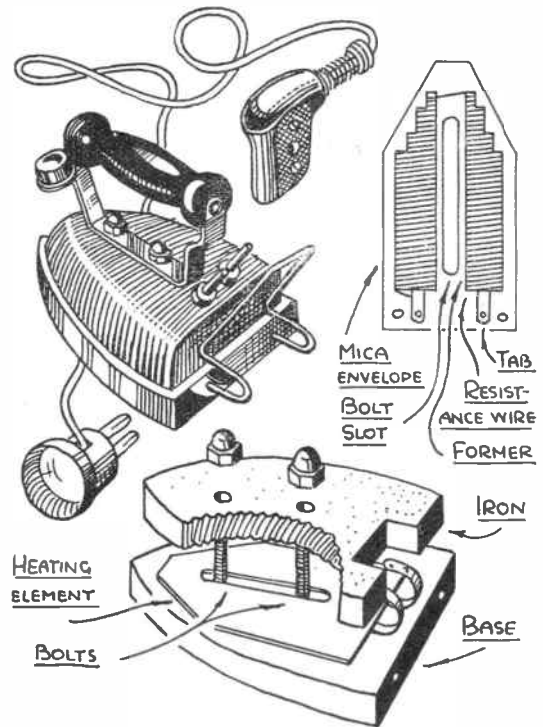
If buying a new element, take the old one with you. This will ensure that you will be served with the correct type of element, for these vary in shape and size.

Fitting a new element is a simple task. The iron is dismantled as shown, the element is placed centrally over the holding bolts, then the heavy cast iron plate set on top. The element tabs are then connected to the cover of the iron at the inside, underneath the adaptor pins.

In some irons the connection

between the element tabs and iron pins is by pressure only, and in such cases the tabs should be carefully "sprung" so they press soundly against the base of the pins, thus ensuring a good contact. Incidentally poor contact is often caused by dirt or soot on the element tabs or base of the pins; see, therefore, that everything is quite clean.

It frequently happens that a break in the resistance wire is near the connecting tabs. If this is so, in your case, the wire can be easily put right again by joining it up with the tab, unwinding the amount of wire necessary to do the job. That means, of course, less resistance wire and less



heat, but it may take you out of a difficulty until a new element can be obtained.

When broken elsewhere, the wire can never be satisfactorily repaired. Tying it in knots or soldering is useless.

## Other Faults

If after fitting the new element, repairing the cable, etc., the iron does not seem to work, here are a few minor troubles to look for and correct. It may happen that with the springy form of element contact one of the tabs might have shifted off the connecting pin and is touching the metal covering.

(Continued foot of next page)

# Useful fixatives for all kinds of jobs by using these PLASTIC CEMENT RECIPES

IT often occurs that a certain mending cement is wanted and, for various reasons, cannot be obtained. Seeing that it is just possible you may have the ingredients for making such cements, or alternatively, are able to obtain them nearer home, the following recipes will be found useful.

## Cellulose Cement

Cellulose cement is used for joining and repairing celluloid articles. It can be manufactured by dissolving pure celluloid cuttings in an earthenware jar containing some amyacetate, this being a chemical smelling like pear-drops.

Amyacetate is very volatile and inflammable and must be kept away from naked flames. The celluloid cuttings must be quite small so they dissolve more quickly. The earthenware jar should have an air-tight lid to prevent evaporation. The cement can always be thinned by adding sufficient amyacetate.

Articles to be joined must be quite clean by scraping or glasspapering. Apply the cement with a small brush to both joining edges; allow to get tacky, bring together and hold the work thus with weights or clips or cramps.

## Resin Cement

Resin cement is used largely for fixing loose table knife blades to their handles. Melt some powdered resin in a tin, adding a small lump of pitch (removed from an old dry battery). The melting must be done slowly over a lowered gas-ring or jet or a low fire, as the fumes are inflammable.

While melting, clean out the tang hole in the handle of the knife. Carefully fill the tang hole with some of the cement, then heat the metal tang itself and push it into the handle and allow the cement to harden.

## Special Putty Cement

Ordinary glazier's putty is useless for cementing glass in steel window frames. It consists merely of whitening and linseed oil, mixed together.

Should, however, you be desirous

of glazing acquaria tanks, apart from steel window frames, a special quick-setting putty can be made up.

You merely make a thick paste of litharge and glycerine, the latter being heated prior to use in order to expel any water. The glass and rebates must be quite clean and dry.

## A Wood Cement

When putty or plastic wood is not available in order to stop up cracks and holes in wood, particularly in a new piece of furniture, a special wax cement can be made. Just melt some shreds of beeswax in a tin, adding a small piece of resin.

If the wood is a dark brown colour, such as mahogany or satin walnut, the cement can be coloured suitably by adding a small quantity of burnt sienna, stirring the powder into the mixture with a thin stick, the same stick being used in applying the heated cement to the work.

It dries hard in a few minutes and can be pared and glasspapered. In

the case of light-coloured woods, such as oak, no colouring is necessary.

## A Waterproof Cement

Readers desiring a waterproof cement (equally suitable for glazing acquaria tanks) can make two varieties. One is made up from red-lead and white-lead, the mixture being bound with a small quantity of gold size. This ensures a watertight joint, especially if the edges and sides of the glass are coated with the gold size.

Another reliable cement is made by mixing some litharge, plaster-of-paris, powdered resin and silver sand (in the proportions of 4 : 4 : 4 : 1) together with raw linseed oil. Add the latter ingredient gradually until you produce a plastic mass of the same consistency as putty.

The litharge is a lead compound and, like the rest of the ingredients, is obtainable from most oil and colour stores. Both cements should be stored in an airtight glass jar, with screw-on lid.

Small paint jars are ideal to use. Turps and linseed oil are, respectively, the softening fluids to use should the mixtures become hard in the jars.

## Garden Ornament Cement

Apart from making garden ornaments, the cement about to be described is ideal for repairing damage to cement gate posts, door steps, cracks in walls, etc. Mix three parts of sand to one part of portland cement, doing so in the dry state.

Add the water gradually, stirring until the mixture is fairly plastic, yet stiff. Use it immediately after being made. A sufficient quantity should be made for the job in hand only.

The cement can be coloured by sprinkling the colouring powder over it while mixing it. Do not drop the powder in one spot—it must be distributed by sprinkling. To quicken the drying, a few lumps of soda should be added to the water. The cement is ideal for mould or cast work and not for actual modelling, such as tiny gnomes, elves and so forth.

It is impossible to guarantee that all the ingredients mentioned are now obtainable.

## THIS WEEK'S FREE DESIGN SHEET

Wood for this Photo Frame is supplied by Hobbies Ltd. for 3/2 (postage 7d. extra) and the glass (No. 5804) for 3d. (postage 4d. if sent separately).



## Electric Iron—(Continued from page 186)

This would "kill" the true electrical circuit, because the adaptor pins are insulated from the covering of the iron, although attached to it. Check for this fault as it is common.

Another point, take care to see that none of the cable wire strands connected to the plug or adaptor are loose so that a strand from the bunch

of one wire is touching the other bunch of wire strands. This would also have the effect of causing a short-circuit.

If you need a new cable which can be ordinary black and red twin flex, it is advisable to obtain proper stuff such as a suitable length of 70/40 gauge double-vulcanized twin cab-

tyre flexible cable. This does not kink or twist so much as ordinary twin flex. Its toughness ensures long lasting service, moreover.

The pin sockets in adaptors are usually split and bent to grip firmly on the pins. The socket halves should in consequence be tightened by pressing them inwards as much as possible.

# FROM ODDS AND ENDS

## A Miniature Ash Tray

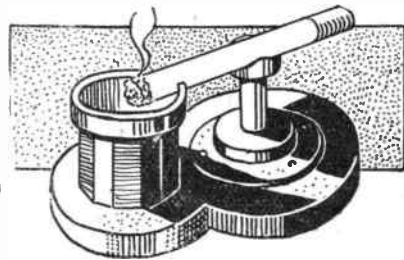


Fig. 1—The completed Ash Tray

**M**OST fellows know what a bakelite adhesive tape container is like and how neatly it is made. It seems a shame to throw such a neat affair away when the tape is used up. In fact, it is a shame, for quite a neat, miniature ash-tray can be made from all its parts as we show at Fig. 1.

All you require is a piece of  $\frac{1}{4}$  in. wood cut to the size shown, the shape being easily scribed with compasses.

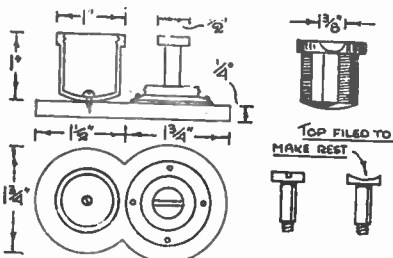


Fig. 3—Side and top view

Fig. 4—Cup holder details

A usual size of adhesive tape container is shown at Fig. 3. If the one you happen to possess is a little larger, the base must be made to suit, of course.

However, assuming the container is the size shown and made up the same, i.e., with a screw-off base into which the tape spindle is screwed, drill a hole in the cup part of the container for a  $\frac{3}{16}$  in. by 4 roundhead brass screw. The cup part is attached by means of the screw and like the other parts (the fag holder) is a permanent fixture.

### Fixing the Spindle

The spindle part is attached by drilling fine holes through the rim (about four equidistant holes, as shown by the top view) and driving shortened household pins through the rim holes into the base.

As you can see at Fig 2, the top end of the spindle is filed slightly concave so the cigarettes will not roll off too easily. Use a half-round file for this job, or roll a piece of medium

glasspaper around a dowel and use it as a file.

The filing should be done so the coin slot cut in the top end of the spindle will be effectively removed. Make the concave quite smooth and shiny by glasspapering with finer and finer glasspaper, then by burnishing with a cloth rolled around the dowel on which a small portion of toothpaste is applied.

If desired, one side of the cup part can be filed away semicircular at the rim so the cigarette will be guided centrally into the cup, as shown by the illustration. As a finish, enamel the base a bright colour. The bakelite container need not be coloured with paint, as it is already suitably finished. A piece of green baize adhered under the base completes the novelty.

Glue the baize quite securely so it does not lift at the edges.

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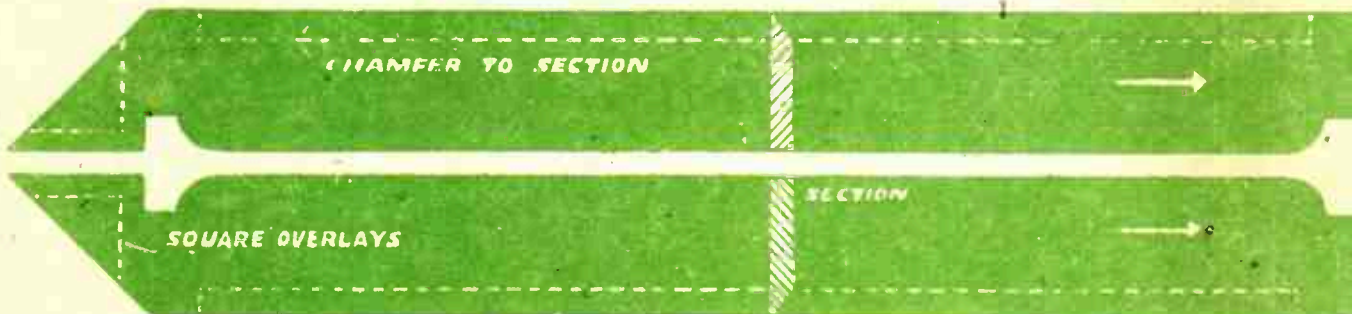




TOP OVERLAY.  
CUT ONE 1/8 in.



SIDE OVERLAY.  
CUT ONE 1/8 in.



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# DESIGN

SUPPLEMENT TO HOBBIES No. 2472.

## CABINET PHOTO FRAME

No. 2472  
3.3.43



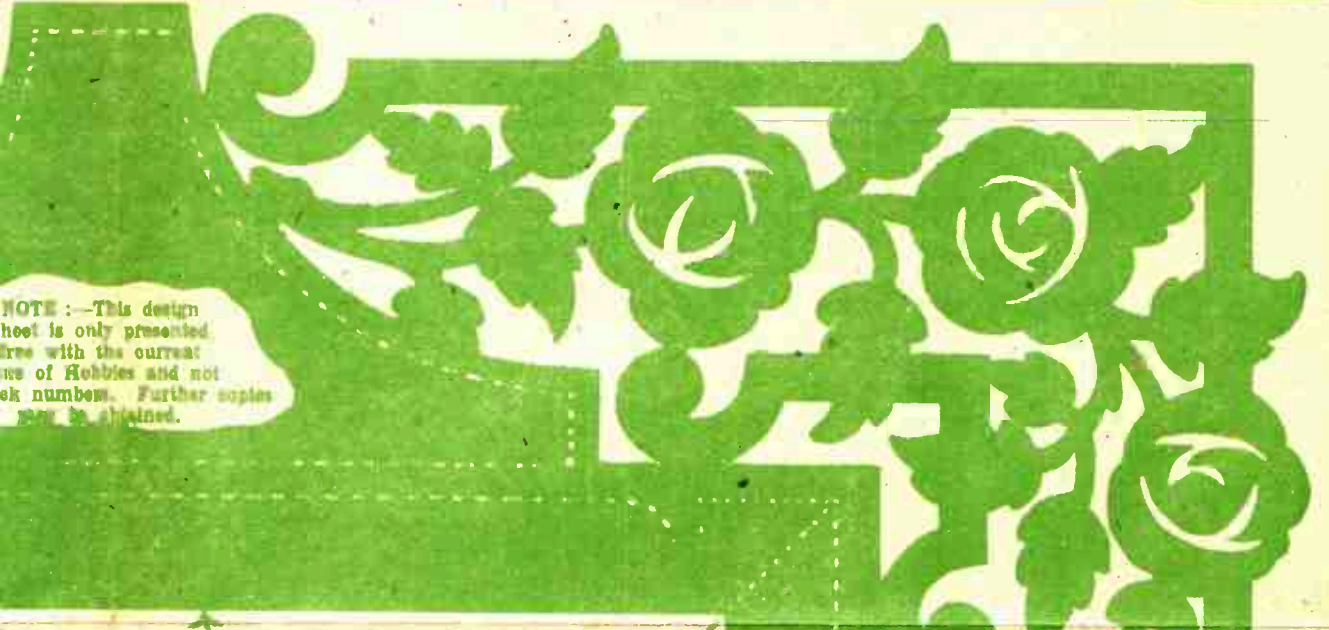
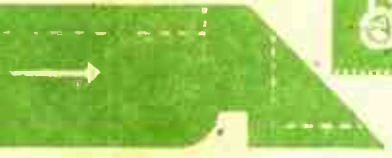
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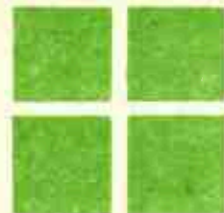
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