

# Hobbies

## WEEKLY

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## A WORKING MODEL LOCOMOTIVE

**W**E give you this week another of our working models to be run by clockwork. This time it is for a Tank Locomotive of 0, 6, 2 type, a compact little engine which makes up quite simply and which lends itself to the style of clockwork motor suggested. In this model again we are using the standard Meccano clockwork motor

Our model is not based on any existing standard gauge, but is designed solely to accommodate the motor mentioned. It is, however, proportionate in all its leading

measurements to the actual standard engine from which the model has been taken.

The length of the model from buffer to buffer is 17½ ins. and its height is 6½ ins. The wheels are flanged so the engine can run realistically on a prepared track. If, however, a track is not desired, then the inner flanges of the wheels could be omitted and the model made to run on any even flat surface.

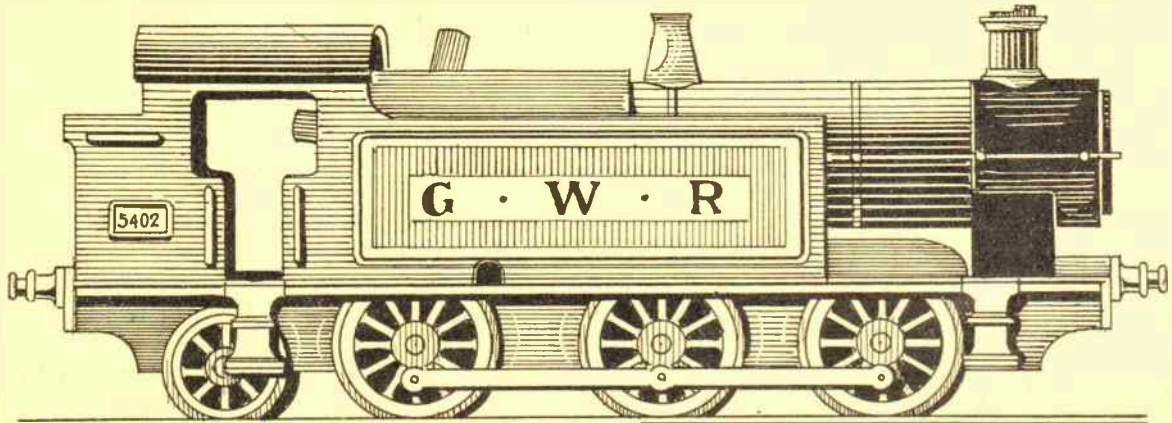
### Drawing the Parts

Before commencing to build our model we would like to draw atten-

tion to the scale diagram of the side view and the working parts in Fig. 2. Here, the covered cab is shown and the small coal bunker at the rear of this. Then in front of the cab is the firebox, and this is where the clockwork motor is installed

The method of linking up the motor with the driving wheels is shown, and the connecting rod to the three wheels also given.

When fitting these connecting rods each side of the engine, one should be in the lower position as shown here, and the other side almost in the upper position.



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The position of the spindle for winding the motor is shown, and openings must therefore be cut carefully in the side casings for the passage of the winding key.

The boiler butts directly on to the front of the firebox and is glued to it, while the front end of the boiler is supported by cradle-like pieces. The footplate, or floor as we shall call it, runs the whole length of the model, and to this the wheel supports (frames) are fixed.

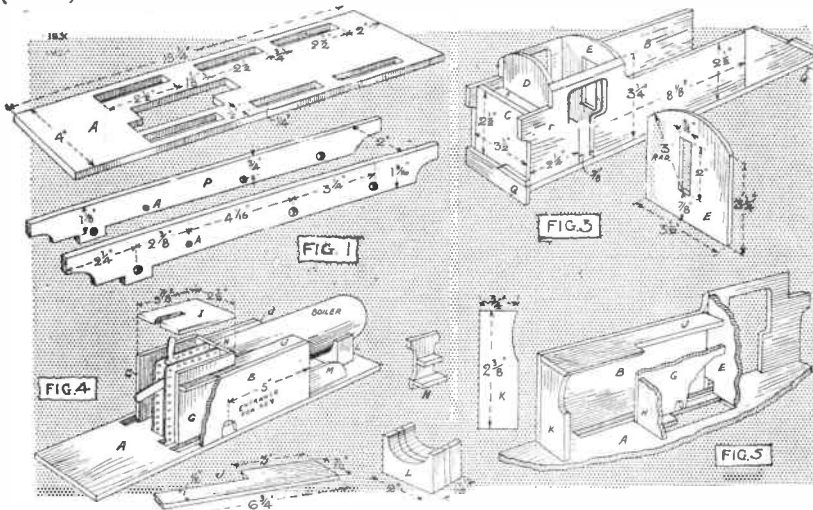


Fig. 2 shows the motor so placed and arranged that the brake lever, which is also the starting and stopping lever, is situated on top of the firebox and projects through it for convenient handling.

The reversing lever is situated inside the cab as shown, and this is easily operated from either side of the cab where the openings occur.

In Fig. 1 the floor or footplate is shown and this must be the first part to make. It is cut from  $\frac{1}{4}$  in. wood and all the slots for the wheels, etc., must be carefully set out from the measurements given and cut with a fine fretsaw.

The wheel supports also shown in the lower half of Fig. 1, are cut from  $\frac{1}{4}$  in. wood and glued and screwed to the underside of the floor. They stand in  $\frac{1}{2}$  in. from the outer edges of the floor, and will be found to be 2 ins. apart in the clear when fixed.

All holes for the axles of the wheels must be  $\frac{1}{8}$  in. diam. with the exception of those marked A which must be full  $\frac{3}{16}$  in. The reason is that the large metal sprocket wheels attached to this particular axle has a  $\frac{3}{16}$  in. hole and must therefore fit tightly to ensure the driving power.

### The Cab and Sides

The upper structure consisting of the cab and the side casing may next be done, and Fig. 3 gives the necessary measurements. The two sides B are  $1\frac{1}{2}$  ins. long overall,  $\frac{3}{4}$  ins. wide and  $\frac{1}{4}$  in. thick. The back C is a plain piece glued between the sides, with

pieces D and E, also glued between.

A detail of the piece E is given as it has a slot for the reversing lever, Piece D may be outlined by drawing round E. The top edges of pieces B must be shaped off just where the cab is, to allow the roof to be dressed over it to complete its curved shape.

The roof of the cab may be formed from stout cardboard or even tin bent to shape and nailed on. It should not however, be fixed until some of

the other work has been done.

### The Firebox and Motor

A clear diagram of these is given in Fig. 4. Pieces G, H and I make up the firebox which forms the motor compartment. Piece G measures  $3\frac{1}{2}$  ins. by  $3\frac{1}{2}$  ins., piece H  $3\frac{1}{2}$  ins. by 2 ins. and piece I as shown. This piece has a slot for brake handle and the true position should be found by test after the motor has been put into place.

After gluing the pieces together the box is fixed to the front of the cab and to the floor. The position of the

the motor before this is fixed in place.

The boiler is a plain cylinder 7 ins. long by  $2\frac{1}{4}$  ins. in diam. A piece of stout cardboard tubing answers well for this with discs of  $\frac{3}{16}$  in. or  $\frac{1}{4}$  in. wood let in each end and glued.

The part is glued to the front of the firebox, its top being  $\frac{1}{4}$  in. below piece H. A cradle L (Fig. 4), supports the front of the boiler. This cradle is made up of two  $\frac{1}{4}$  in. pieces and one  $\frac{1}{4}$  in. piece glued together and cut to the curve of the boiler to fit.

To case between the sides B and the top parts of the boiler, pieces J are cut and fitted on as shown in the sectional detail Fig. 5, where the boiler is omitted for sake of clearness.

In Fig. 4, lower diagram, the measurements are included for pieces J. Those edges which meet the boiler must be bevelled as shown in Fig. 5.

The front casing pieces (K) are cut to the measurements given in Fig. 5. Piece M forming the front wheel guards (Fig. 2) are  $\frac{3}{16}$  in. thick.

The funnel may be made from the middle portion of a cotton reel with the addition of shaped discs each end to form the capping and base respectively.

The base of the funnel is "saddled" over the boiler by first laying a piece of glasspaper round the latter and then rubbing the base along it. The safety-valve (Fig 2) is shaped from a small block of wood and "saddled" as advised for the funnel.

A disc of  $\frac{1}{4}$  in. wood 2 ins. in diam. is cut and glued to the front of the boiler to form its door, and handle and hinges later added. A handrail of stout wire may be made to extend from pieces K along the sides and front of the boiler.

### The Wheels and Axles

Each of the eight wheels is made in two parts as already mentioned. The wheels are  $\frac{1}{4}$  in. thick, six being  $2\frac{1}{4}$  ins. in diam. and two  $1\frac{1}{2}$  in. diam. Spokes to the wheels could be cut with the fretsaw as indicated in Fig. 2.

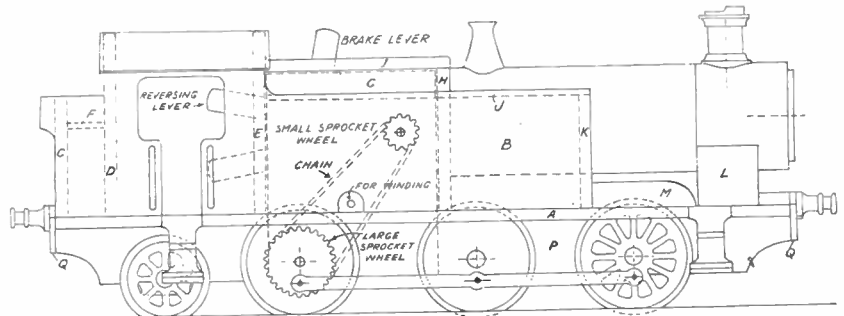


Fig. 2—A side detail showing position of lettered parts

motor and its box can be seen Fig. 4 and again in Fig. 5. The lid piece I is made removable to afford access to the motor.

Four round-head screws should be used for this fixing. The small ( $\frac{1}{4}$  in.) sprocket wheel with the chain passed round it must be included on

Or the spokes could be painted on afterwards if desired.

The flanges may be of  $\frac{1}{16}$  in. wood, six being  $2\frac{1}{4}$  ins. diam., and two  $1\frac{1}{2}$  in. For sake of strength it would not be advisable to include the spokes. Cut three axle bars from  $\frac{3}{8}$  in. dowel rod

(Continued foot of page 211)

# For attic, cellar, shed or pantry you can make this HOME-MADE LIGHT UNIT

**I**N dark cellars, and pantry cupboards, a light is very necessary. Electric lighting is really the only practical method, as it can be turned on and off as required without the use of matches.

A very simple and economical lighting arrangement is illustrated, worth the reader's attention. It requires no dry battery, getting its current from Leclanché cells of primitive type.

The light is only intermittent, but as such lights are only required for a minute or two at a time, that is no detriment and the advantage of not requiring a dry battery in these times of battery shortage needs no stressing.

## The Lamp Block

The lamp is a hanging one, suspended from a hook in the cellar roof. It is easy to make. Fig. 1 shows the lamp holder. The lower piece, A, is a 2 in. square of  $\frac{3}{8}$  in. thick wood, shaped as shown. In the centre, bore a  $\frac{3}{8}$  in. hole for the lamp to enter, which, by the way, is a 2.5 volt. one.

Where shown at A.1. drive in a thin screw to press against the lamp cap and form a connection. The second connection is a strip of thin brass or tin, fixed to A with a screw with its free end pressing on the stud of the lamp, as shown.

The upper part of the holder B, is a 1 in. sq. strip of wood, 2 ins. long, bevelled at each end. This has a hole bored through its centre for the wires to enter, and also a piece hollowed out below to clear the lamp contact beneath. Fix it with a screw at each end.

The reflector, Fig. 2, is drawn on thin paper and pasted to tinfoil,

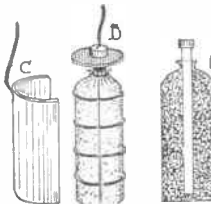
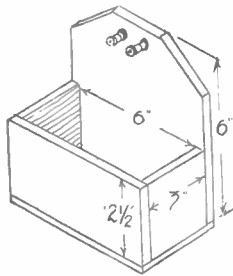
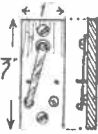
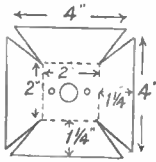
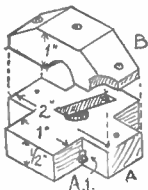


Fig. 1—The lamp holder

Fig. 2—Shape of shade

Fig. 3—The Switch

Fig. 4—The cell holder

Fig. 5—Detail of cell

cut from an empty tin. Cut to shape, and in the centre make a  $\frac{3}{8}$  in. hole to admit the lamp.

Punch a small hole each side of the  $\frac{3}{8}$  in. one for screws, and bend the sides up to 45 degrees. Screw the reflector to A. Fix the lamp in and tighten screw A.1. until it contacts the lamp.

Remove piece B and pass the wires (flex or D.C.C. wire as available) through the hole. Connect these wires to screw A.1. and contact strip respectively.

Rescrew B in place and test the lamp by connecting the free ends of the wire to a torch battery. See all is satisfactory. The outside of the reflector might be treated to a coat of black enamel, also the lamp holder

## The Switch

The switch, Fig. 3, is a simple home-made affair. At ordinary times such a switch can be bought for a few pence and is scarcely worth the trouble of making, and one may even be got nowadays cheaply.

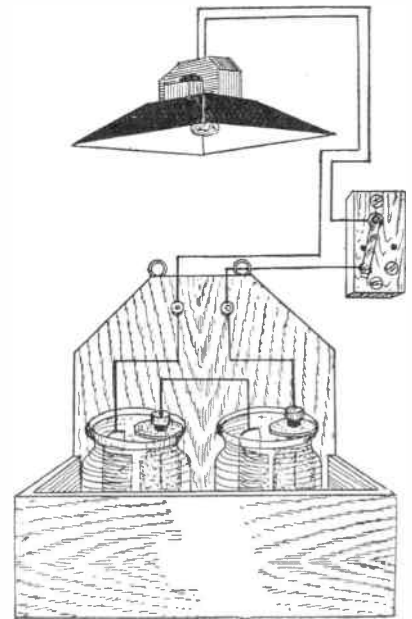
If one has to be made, cut the mount from a piece of fretwood. Bore a hole top and bottom for fixing screws and countersink the holes. The switch arm is a strip of brass or tin, working on a round-headed screw with a washer underneath.

## Contact Parts

Curl up the end of the switcharm to provide a convenient grip for the fingers. The contact studs are also screws. The black dots each side are shoemakers' brads placed to act as pins to prevent the switch arm moving too far. Fix the switch in a place convenient for the hand to reach in the dark.

Fig. 4 shows the battery box, made from deal or common boxwood. Where shown, fix a pair of terminals. If it is proposed to hang the box on the wall then a pair of screw eyes or hangers, should be fitted. These will not, of course, be necessary if the box can stand on the floor, or a shelf.

The dimensions of the box as given,



The latter, however, will not give the service the thicker sheet zinc will do. To each, solder a length of D.C.C. wire as connections. Bend the zincs to a curve to fit the jars.

For the carbon elements get the carbon rods from the cycle lamp battery and clean them free of any depolariser still adhering to them. Two sacks should now be made. These are 4 in. squares of calico, each stitched together round a broomstick to form a tube.

Draw together at one end and stitch to form a bottom to each sack. Get a few small carbon rods from an old torch or other battery, add a handful of clean cinders and crush the lot with a hammer. Place these, before crushing, in a piece of calico or else half the stuff will be lost.

Place the rods in the sacks and fill up with the crushed carbon and cinders. Tie the sacks round the carbon rods and twist twine round the sacks tightly to hold all firm. The rods should then be in the centre of the sacks, as in section E.

Cut a pair of 1 in. diam. cardboard discs with  $\frac{1}{4}$  in. holes in the centres. Fix these over the rods, just under the brass caps, and varnish them.

They are to prevent, as far as possible, the salts of the solution creeping up. To each rod, solder a piece of D.C.C. wire.

(Continued foot of page 209)

# A few narrow strips and a panel only needed for a CHEAP FIREPLACE SCREEN

THE time will soon be here when we can do without fires in some of our rooms at least. To hide up what one may consider an uninteresting part of the room, viz., an empty fireplace, we must find a means of screening it off.

Our idea of a suitable screen is illustrated in Fig. 1, and this is made wholly of wood to match the surrounding furniture.

It is cheap to make and only requires two of Hobbies K4 standard panels to complete it. We have introduced into the design of the screen a galleon overlay which, it must be agreed adds immensely to its attractive appearance.

## Simple to Make

The screen is very simple to construct, and no tools beyond the ordinary household set are needed to make a good and workmanlike job.

The main centre panel of the screen is one complete K4 panel measuring 20ins. by 8ins. by  $\frac{1}{4}$ in. thick. All the other parts are got from another similar panel cut according to the chart given in Fig. 2.

A complete cutting list is given here and from this the various lengths and widths for all the parts may be marked off in pencil on the wood and afterwards cut with the fretsaw.

It must be observed that at the lower end of pieces A and also on the centre panel, there are  $\frac{1}{4}$ in. wide tenons, and allowances have been made in the cutting list for these. The method of tenoning the pieces into the flat rail D is shown in Fig. 3.

When all the pieces have been cut, the edges need lightly glasspapering and the tenons then marked out

carefully and the mortises in rail D spaced out and cut  $\frac{1}{4}$ in. wide. The space between the rails A and the main centre panel is 1in. wide.

## Assembly

Fig. 4 gives a plan for assembling the parts, and it must be borne in mind that rail D, after the mortises have been cut in it, must be glued and screwed to the top edge of rail B before the upright rails A and the large panel are glued into it.

The two cross rails C are glued and screwed to the rails (Fig. 5) the small filling pieces being carefully cut to size and glued in afterwards. Counter-sunk holes should be made for the screws and the heads covered with putty or glue and sawdust.

Take care in gluing on the overlays E and F to get close joints to the



Fig. 1—The striking and artistic screen in place

the best finish for the screen if mahogany has been used, and oak stain to desired depth finished with wax polish if oak has been used. In no case should paint be adapted.

The galleon overlay, taken from Hobbies fretwork design No. 2444. By cutting away the cloud effect and the encircling border, the whole is easily adapted for this overlay purpose.

This overlay should be cut from  $\frac{1}{4}$ in. wood in some contrasting colour, or may be cut from say,  $\frac{1}{4}$ in. thick wood and certain portions lightly carved away to form a low relief carving.

## Galleon Detail

A picture of the galleon design made ready for sticking down to the wood is given, and this should act as a guide for the worker when cutting it away from the design sheet.

Cut the overlay with a fine fretsaw and afterwards coat the back thinly with glue. Place it in position on the panel and weight it down until the glue has thoroughly hardened.

Some sort of simple strut may be cut from  $\frac{1}{4}$ in. or  $\frac{1}{2}$ in. wood and hinged at the back of the screen to stand at the desired angle.

## CUTTING LIST

From a panel 20ins. x 8ins.

A	2	18 $\frac{1}{2}$	by	11ins.
E	1	13 $\frac{1}{2}$	by	2 $\frac{1}{2}$ ins.
C	2	12 $\frac{1}{2}$ ins.	by	1in.
D	1	13 $\frac{1}{2}$ ins.	by	$\frac{1}{4}$ in.
E	1	6	by	1 $\frac{1}{2}$ ins.
F	2	1	by	$\frac{1}{4}$ in.

required appearance of one single piece of wood. There will be ample spare wood left over from the panel for cutting the two small feet of the screen.

The four discs of wood glued to rails A may be shaped to button form if desired.

French polish would be

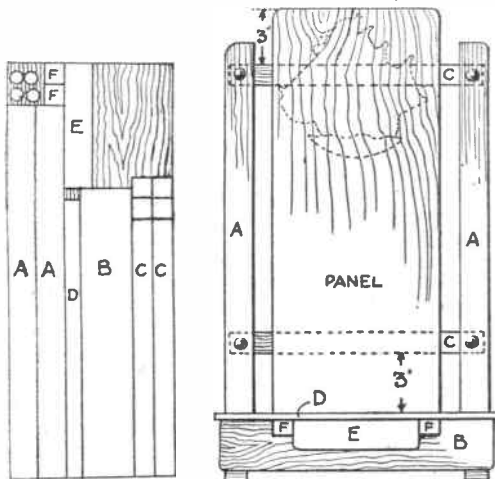


Fig. 2—Parts are marked from a panel like this

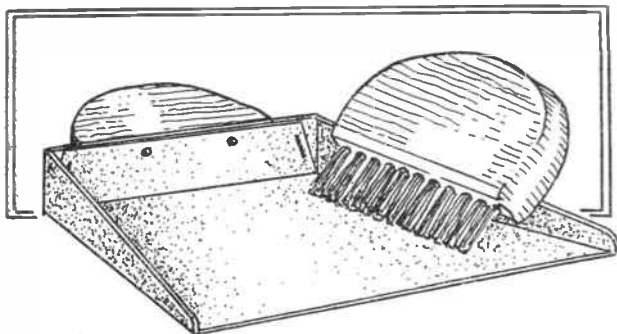
Fig. 4—General detail showing construction

Fig. 3—The flat bottom rail

Fig. 5—Back rail fixings

Free Design Chart  
next week for a  
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HOLDER**

# Complete details for a simple home-made CRUMB BRUSH AND TRAY



**T**HIS useful set can be easily made with a piece of cardboard, a small bit of wood, and an old worn-out hearth brush or similar article. Though the pan itself is only made of cardboard, properly treated as described, it will give good service for the light work demanded.

Fig. 1 shows the pattern for the pan. Mark it in pencil on the reverse side of the cardboard, which, by the way, can be taken from a linen draper's box. First draw the rectangle A, B, C, D. On this mark off the distances given, and draw lines E, F, G, H and I. Draw lines J, K at right angles to F, G.

## Shaping the Pan

The sides of the pan will look better made sloping, as shown by the dotted lines. Now cut out the outline and on the bending lines cut across slightly with a sharp penknife. Do not cut deeply, only about one-third of the thickness.

Now bend up the pan to shape. The extensions at E, F and G, H are bent back and butt together at the back of the pan. Where shown in the inset, fix together with a wire staple at each end. These staples can be bent up from household pins, or staples taken from a periodical will do.

Fig. 2 shows the handle of the pan. Mark out on a piece of  $\frac{3}{8}$  in. thick wood. Bevel off the front to a line  $\frac{3}{16}$  in. from the top edge, turn over and reduce the thickness at the back as shown.

Now cut the wood to the semi-circular shape. Fix the handle with

glue and a couple of round-headed brass screws to the back of the pan.

Even the amateur can quite easily make the brush. Fig. 3 shows how to mark out the stock for the brush from  $\frac{3}{8}$  in. thick wood, like the handle.

Round the curved edge nicely, and to the bottom temporarily nail a strip of hardwood  $\frac{3}{8}$  in. thick and to size given as shown at L.

Run a line along the middle of this strip, remove it from the stock and at  $\frac{3}{8}$  in. centres, bore holes right through for the hairs. Holes about  $\frac{3}{16}$  in. dia. will be large enough.

## Making the Brush

As mentioned, an old hearth broom will provide the hairs, or anything having hairs long enough and enough of them left. Place strip L in a vice as shown in Fig. 4, with the holes clear.

Provide a length of strong twine or thin wire if you can get it. Fasten one end, then double the twine and

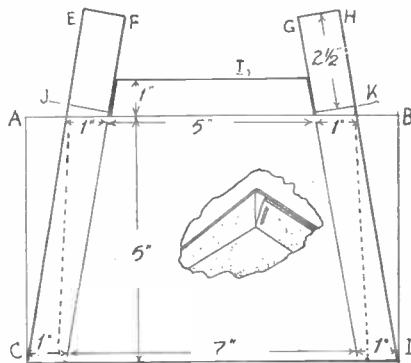


Fig. 1—Shape of tray, sides and base

push through a hole. Open the loop, get a tuft of the hairs, push this tuft through the loop, bend double and draw the twine until the tuft of hairs disappears in the hole.

It is important to get just the right

amount of hair to each tuft, for if not enough, the hairs will be loose, and if too much, there will be a strain on the twine that may break it. Repeat the drawing process until all the holes are filled.

## Trimming

The ends of the twine are then frayed out and flattened, and slip L nailed to the stock. The edges of the slip are then bevelled off near to the hairs, and the hairs trimmed level with scissors. This completes the job bar finishing.

Stain the wood and cardboard. Then prepare a little glue size, that is ordinary mixed glue diluted by an equal quantity of hot water, and give the cardboard one or two coats of it.

A coat can also be applied to the wood if of a porous nature, like deal. Smooth off the wood with a rubbing of worn glasspaper and finish off with a coat of varnish over the lot.

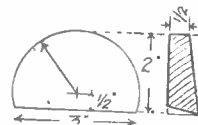


Fig. 2—Handle

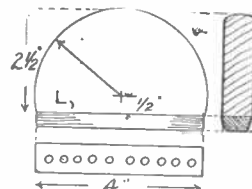


Fig. 3—Details of brush

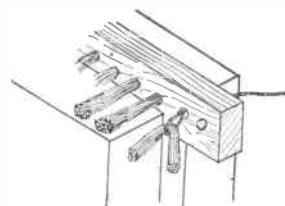


Fig. 4—Fixing the hair

One or two transfers would improve these articles. A medium sized one in the centre of the pan and a small one on handle and brush. Fix these before applying the varnish, as this will protect them against wear.

## Light Unit—(Continued from page 207)

Now place the elements in the jars. Twist the wires from one carbon and zinc together, the remaining two wires are joined to the terminals of the battery box. Fill the jars two thirds full with a strong solution of sal-ammoniac.

The remaining connections will be

seen in the general view of the finished lighting arrangement. One of the wires leading from the lamp is cut against the switch and the cut ends fixed to the switcharm and one of the studs respectively. The wires are then led to the battery box and attached to the terminals.

Let the battery stand for a short time to get excited, then switch on and all being right the lamp will light up. Give the battery a little attention at times, such as cleaning the zincs and brass caps, and replacing any solution lost through evaporation.

# How you can undertake the making of fancy CARDBOARD BOXES

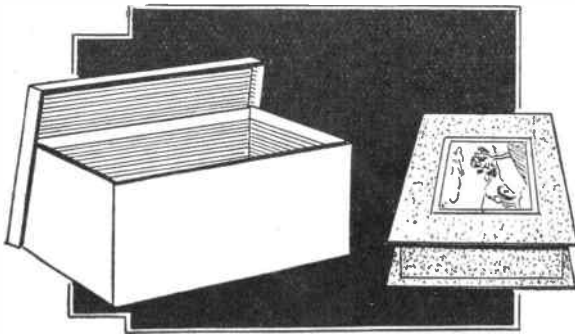


Fig. 1—Pattern of card

**M**ANY readers will find it useful to know how to make their own cardboard boxes. Such things as jig-saw puzzles, for instance, require a box, and home-made presents appear to greater advantage when housed in a box.

Simple box making is not difficult at all, and the material, obtained from draper's and boot boxes, etc. can usually be got even now for a trifle. Two types of boxes are illustrated for the purpose of this article.

The plain box, shown on the left is made this way. On a sheet of cardboard draw the pattern in Fig. 1, the distance a—b being the width of the proposed box and c—d, the length. Make the sides equal to the depth of box required and cut out the corners, e.

### Cutting to Bend

Now, with a penknife and straight edge, cut slightly on the lines to facilitate bending. The cuts should just penetrate the cardboard about a third of its thickness, no more or the box will be weakened. The sides can now be bent up ready for covering.

White glazed paper is often used for covering, but almost any paper can be employed—even wallpaper. In fact, if an odd roll of suitable patterned wallpaper can be got, it may even be preferable to the plain white.

Cut a strip long enough to go round the four sides of the box, plus  $\frac{1}{2}$  in. overlap, and wide enough to allow a  $\frac{1}{2}$  in. paste over at top and bottom.

Paste the paper, lay the box on

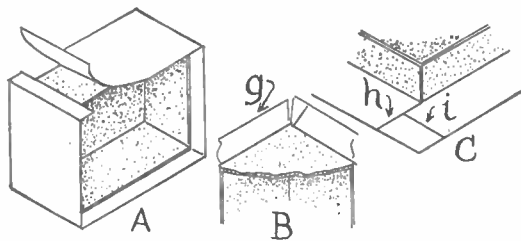


Fig. 2—The stages of bending and finishing

and wrap the paper round it, as in Fig. 2 A, rubbing it down with a clean rag. Avoid creases as far as possible.

Fold the top lap over on the inside, first snipping the corners with scissors, then turn over, bottom upwards, as at B.

Snip the corners here and fold the side laps g over.

Trim the end laps to 45 degrees and fold them over too. This finishes the box, now for the lid.

### The Lid

The lid is marked out on the cardboard similarly, but should be a trifle larger naturally, or it will not fit. Do not overdo this as a loose fitting lid is a nuisance.

With rather thin cardboard  $\frac{1}{16}$  in. each way extra will likely be enough. The paper for covering should be cut as large as the cardboard, before it is bent to shape, plus  $\frac{1}{2}$  in. all round for folding over on the inside.

Paste the paper and lay the lid on it, turn over and rub well down. Turn up the edges of the lid, then cut the corners of the paper, as at C, Fig. 2 making cut h in line with the sides and cut i about  $\frac{1}{2}$  in. from the corners.

### Completing the Box

Bend up i and rub down to the sides of the lid, and fold the flap at each end over to the ends to keep the lid in shape. Bend up the end laps, h, then fold the paper, all four sides, over to the inside of the lid and again rub down. This completes the box.

Another form of plain box, requiring no covering paper, which will suit certain purposes is made as follows. Cut the cardboard, as already described, but add to each corner a narrow strip, as at f in Fig. 3 for folding to the ends. These strips need not be more than 1 in. or even less for a smaller box.

The remainder of the corners are

cut away as before. Cut on the bending lines, bend up and fasten the corners together with wire staples, as in Fig. 4.

These staples can be bent up from pins, the common household type, cutting the heads off first. It is well to give some support to the corners while fixing them, such as a strip of wood.

Make the holes for the staples with an awl or similar, tool press them through to the inside, and close them. The lid is made similarly, but allowance should be made, when reckoning the length of the lid, for the double thickness of cardboard at the ends.

### Another Style

Sometimes a more artistic box is required, and that illustrated to the right of the plain one may fill requirements. For this, make up both box and lid as described for the plain covered one already dealt with, with this difference.

Make the lid the same depth as the box and cover it in the same manner. In fact, just as if you were making two separate boxes.

Now cut a top and bottom piece extra, making them  $\frac{3}{8}$  in. larger all round, taking the measurements from the lid, not from the bottom of the box.

Take the bottom extra piece and cut the covering paper to its dimensions, plus 1 in. all round (see Fig. 5). Paste it, lay the cardboard on it and rub down. Turn over and cut the paper at j in line with the sides, and at k, just  $\frac{1}{2}$  in. from the corners of the cardboard. Fold k over and rub down, creasing the ends of the paper over to the edge of the cardboard as well.

Now fold lap j and rub that down, laps j, by the way, are best trimmed to 45 degrees at the ends.

Lay the bottom extra, covered side up, glue the bottom of box to it, centring it truly. The top extra is covered in same way and glued to box top. Fig. 5—The turnover

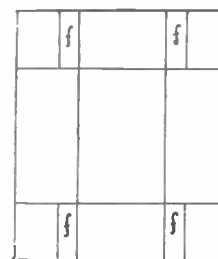
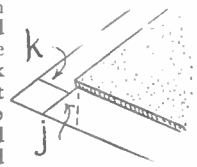


Fig. 3—Another pattern

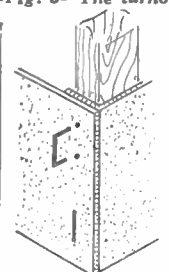


Fig. 4—Stapling

# A banister rail and some odd wood make A SIMPLE ASH-TRAY STAND

READERS desiring an easily-made, yet dignified, ash-tray stand will no doubt welcome the suggestion in this article. The stand shown is made from small, scrap pieces of wood and an old banister rail.

Such a rail, together with its dimensions, is provided at Fig. 2. A glance at the side elevation will show how the rail, or rung, as it is often called, can be incorporated, the rail giving the finished work a much neater and better appearance than a plain piece of wood.

The rail enables one to have a

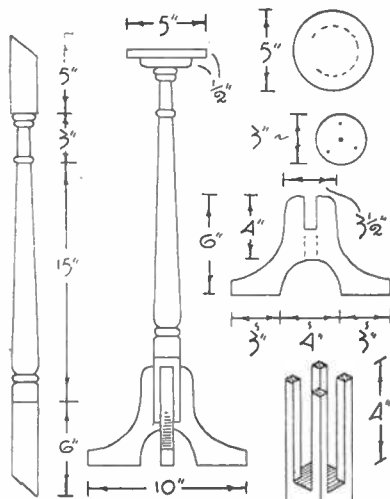


Fig. 2—Detail of banister rail and side view

Fig. 3—Sizes of parts

first thing to make. Mark out two shapes on pieces of  $\frac{3}{4}$  in. (or  $\frac{1}{2}$  in.) thick wood measuring 6 ins. long by 10 ins. wide. In order that the feet will lock neatly together, their centres are checked halfway, the slots being cut the thickness of the wood used, that is, either  $\frac{3}{4}$  in. or  $\frac{1}{2}$  in. wide.

Now, as shown by the detail at Fig. 3, the base end of the banister rail is squared off and checked in a four-way manner so the rail fits down over the centre of the joined feet. The top square-sided part of the rail is cut off near the beads in the turning.

## A Two-disc Top

The top of the stand can be made and fitted. It consists of two discs, of  $\frac{1}{2}$  in. wood, one being 5 ins. in diam. and the other 3 ins. in diam. Round over the underside edges of the latter, then drill a hole in the centre, with three other holes nearer the circumference edge.

These holes should be drilled and countersunk to suit three  $\frac{3}{4}$  in. by 6 flathead iron screws. The central hole is made to suit an  $1\frac{1}{2}$  in. by 8 flathead iron screw.

Attach the smaller disc to the top of the rail with the longer screw. The topmost disc of wood is affixed to the smaller disc with the  $\frac{3}{4}$  in. screws. The edges of the top disc could be rounded.

## Alternative Shapes

And, instead of being circular, it could be cut hexagonal or octagonal. When attached, the work is enamelled in a suitable colour. If the old paint on the rail is blistered or extremely thick and chipped about in a lot of places, it is advisable to remove the paint and glasspaper the wood smooth.

This, of course, is done before the rail is checked. The paint can be easily removed with a wood scraper. If you have a paint remover fluid in

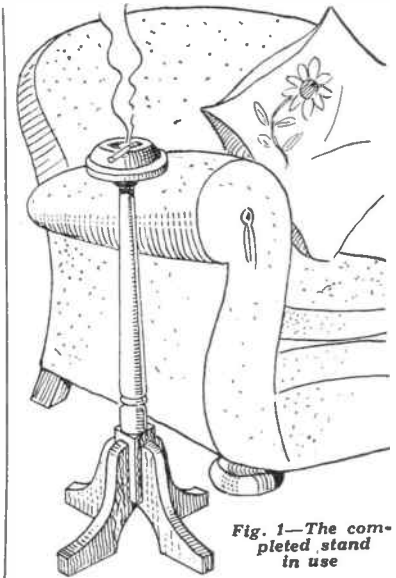


Fig. 1—The completed stand in use

the house, the job of "stripping" the rail is greatly simplified, for it is only a matter of brushing the paint remover on, allowing it to soften the paint which, with a scraper, is easily removed.

An ideal colour for the stand is oak, but mahogany is also attractive. Before applying any finish, see that the feet rest squarely on the floor.

## The Ash-tray

An ordinary brass, or bakelite, ash-tray should be used for the stand and affixed permanently to the stand top by a screw in the centre.

If you manage to clean the rail quite free of the old paint so the wood is white, the whole work could be coated with a varnish stain. If the shorter size of stand appeals, the surplus is removed at the "isolated" bead, but anywhere else would serve

stand sitting 28 ins. high or the more usual height of 24 ins. The elevation at Fig. 2 shows the 28 in. high article, whilst the illustration is of a 24 in. high stand.

The feet of the stand can be the

## Locomotive—(Continued from page 206)

$3\frac{1}{2}$  ins. long. Thread these through for the front two pair of wheels and the rear smaller pair of wheels inserting thin metal or ivory washers between the insides of the wheels and the wheel supports.

The outer face of the wheels must come flush with the ends of the axles after the latter have been cut off to the length mentioned. To make for smooth and efficient running the axle holes in the supports should be rubbed round with an ordinary lead pencil.

In fixing the wheels and the axles the former should stand centrally and clear in the slots in the floor and should not rub on the edges at any one point.

The remaining axle to be fitted is the driving axle, which is a  $3/16$  in.

Meccano axle bar cut off as required  $3\frac{1}{2}$  ins. long. It must pass through holes the same as the other axles and through the corner hole in the motor. It must be fitted with the larger sprocket wheel for the chain.

The holes in the centre of the two flanged driving wheels must fit tightly to the metal spindle and must therefore be scant  $3/16$  in. diam.

Our model is now nearly complete, and can be tested. Give the winding key a few turns and see that all the driving gear runs smoothly. See that the motor itself is rigid because the strain in winding up and the continual lever movements demand a firm hold.

The steps to the cab and to the front end of the boiler can now be

made as shown at N in the detail Fig. 4., and the buffer plates and fillets fitted and glued on.

To make the model as effective as possible it should be painted in appropriate peace-time colours.

A good track may be made from strips of  $\frac{1}{4}$  in. by  $\frac{1}{2}$  in. wood as the rails, and cross pieces of, say,  $1\frac{1}{2}$  in. by  $\frac{1}{2}$  in. pieces as the sleepers. There is no need, however, in these days of economy to have the sleepers anything like so close as they would be in an actual track. The rails measured from their inside edges should be spaced  $2\frac{1}{2}$  ins. apart.

Suitable wood can be got from Hobbies and in ordering the following panels should be quoted—one K4, one H4, one ND8 and one H2.



# HINTS & TIPS WORTH KNOWING

## Mirror Back Protection

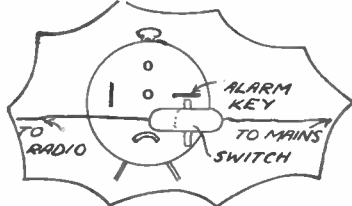
**F**OR protecting a mirror-back apply two coats of a mixture of the following. Add together  $\frac{1}{2}$  lb. red lead ground fine, two ozs. paper varnish, and 4 ozs. turpentine. Allow 24 hours before applying second coat.—(S. W. Chad, Tarporley).

## Oil Stains from Wood

**T**O remove oil stains from wood saturate a rag with benzoline and thoroughly wet the stained parts. Take up any excess with a dry rag and continue this alternate treatment.—(J. G. Jones, Huddersfield).

## Radio Alarm Switch

**K**NOWING the tendency of many people to switch off the alarm clock in the morning and then turn over and go to sleep I have fixed up an alarm as shown below. All that



is required is a simple 2-way switch together with the existing alarm and radio set. The switch is inserted in the mains as shown and placed on a stand so it is directly underneath the alarm key. When the alarm goes off the key in turning presses down the switch and switches on the wireless which has not been switched off at the set and has been previously tuned in to the required station.—(E. Scott, Creswell).

## Keeping Stains, etc.

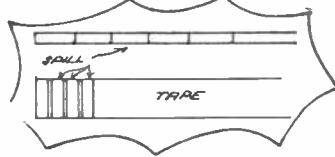
**B**OTH water and spirit stains should be kept in closed vessels to prevent evaporation. French polish and varnish should be in corked bottles and away from light. Oil paints are best kept in tins as they are sold.—(C. S. Jingle, Dover).

## Miniature Additions

**I**FIND that it is much easier and more realistic to make the gun turrets on your miniature model ships out of Pyruma. The barrels can be made out of gramophone needles for the large guns and wire or pins for the smaller ones. This method is also useful in making the smaller guns on some of your larger models such as the "Southampton" or "King George V".—(W. Gibson, Purley).

## Permanent Way

**I**AM sending you a tip for making model tank tracks. Flat wood spills are just about the right size. To make the tracks cut as shown, into short lengths and glue across the



tape at the distance required to make a realistic permanent way.—(S. Barnes, Carnforth).

## Smoothing Paper Creases

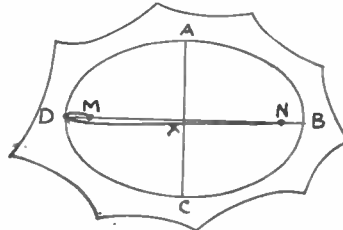
**C**REASES can be removed from folded papers as follows. Smooth as much as possible, and then cover with another clean sheet. Dampen a third sheet, place on top of the other and press with a moderately warm iron, on a flat surface.—(D. Warren, Darlington).

## Freshening Flowers

**T**O freshen cut flowers dissolve half an aspirin tablet in two quarts of water and pour this into the vase holding the flowers.—(T. Witchcock, Leeds).

## Drawing Ovals

**T**O draw ovals correctly pin a sheet of paper to a drawing board or similar piece of wood and draw the axes of the oval to the required length and breadth as below. Use a compass and with radius DX and A as a centre cut DX at, say M and BX at N. Then stick pins in the paper (upright) at D, M and N. Tie a length of cotton to pin M, lead it round D and tie to pin N, keeping



the cotton tight. Remove pin D and insert a pencil point where pin D was. Then move the pencil round towards C, keeping the cotton loop quite tight, pass through C and on to B. The pencil will trace out a perfect oval. To do the other side, the loop must be lifted over to the other side, and then the complete oval can be traced out. Table mats and many other things can be drawn this way.—(D. Vaux, Bebington).

# Final Details for A MANDOLIN

**L**AST week we gave details for all the main bodywork of a real playing instrument. Now we have the small sundry parts to deal with to complete the work.

The pegs are cut and shaped from  $\frac{1}{4}$  in. hardwood. Have the stems tapering slightly so as to "wedge" into the holes in the head. You can keep the peg heads flat at the sides or file them concave with a half-round file.

## The Other Parts

The other parts, such as the bridge, tail-piece and the plectrum are detailed at Fig. 3. Shape the bridge from  $\frac{1}{4}$  in. wood. The eight knife nicks are, in this case, paired off  $\frac{1}{4}$  in. apart.

The tail-piece is cut from sheet brass or ivorine or any similar material. When drilled, the legs are bent over almost to right angles. The plectrum is cut to shape from thin celluloid or similar stuff, the flat side of the pointed end being glasspapered to give further elasticity.

Eight small roundhead screws are driven into the rear end of the body to act as "mooring hooks" for the strings. Keep the screws, four in a row, about  $\frac{1}{4}$  in. below the front of the body and no wider than 1 in. If desired, you could use just four screws and slip the twin strings over each; if you adopt this plan, use longer screws owing to the double strain.

## A Finish

To finish off, if you have cut the body back and front from sycamore, the edging from a dark-coloured plywood and handle from deal or brown-coloured wood, including the pegs, stain the handle, sides and back of body black, then when dry and rubbed down with hessian cloth, give the whole work a thin coat of clear polish or varnish. Paper varnish is almost crystal-clear.

The best plan, perhaps, is to polish the stained parts with ebony-coloured french-polish, then use a clear polish for coating the whole of the instrument.

However, you have, as yet, to fit the frets in the finger-board. If you possess a small piece of ivorine (a white-coloured type of celluloid), snip off fourteen strips about  $1\frac{1}{4}$  ins. long by  $\frac{1}{4}$  in. wide and drive them into the saw grooves with a hammer.

When finished, fit the strings and screw on the tail-piece. The usual tuning and instructions for playing a mandolin will be found in any good tutor on the subject. If a tail-piece can be bought, do so. The tail-piece we suggest making is only a substitute.