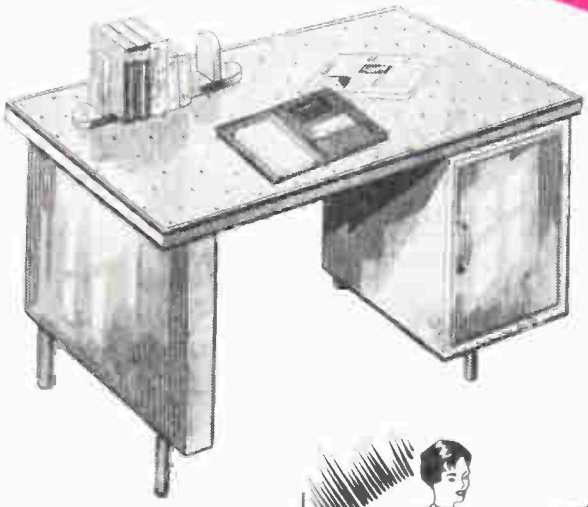
27th MAY 1959 VOL. 128 NUMBER 3317

THE **ORIGINAL** 'DO-IT-YOURSELF' MAGAZINE

HOBBIES *weekly*

FOR ALL HOME CRAFTSMEN



Also in this issue:

WRITING DESK and DRIP DRIER

WORTHWHILE PROJECTS YOU CAN MAKE

Hobbies

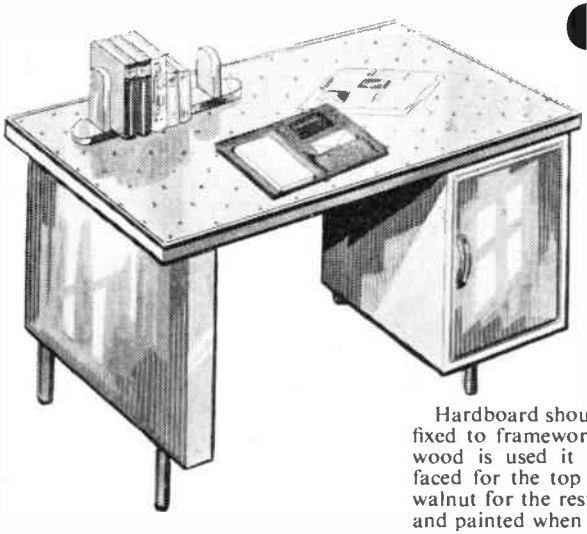
Up-to-the-minute ideas

Practical designs

Pleasing and profitable things to make

5D

CONTEMPORARY WRITING DESK



Full details for making

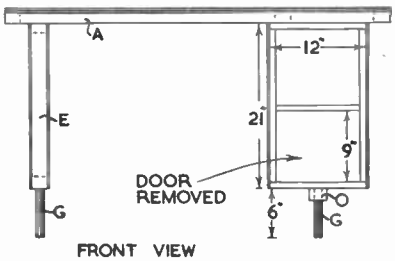
WITH a little care and attention to detail this desk will look as good as the professionally made article. The shape is modern and attractive and the construction is easy for the amateur to understand. It may be completed without buying special tools and cost may be kept down to a minimum.

Materials consist of deal and hardboard but plywood may be substituted for the latter. Good quality deal should be picked out for this job and it is worthwhile paying a little extra for the best.

Hardboard should be ¼in. thick and is fixed to framework for rigidity. If plywood is used it could be plain birch faced for the top and veneered oak or walnut for the rest. Edges may be filled and painted when finishing.

The general construction is shown in the front and end views in Fig. 1 and some helpful measurements are shown. Notice that the legs consist of lengths of 1in. diameter round rod.

Commence by making up the top as shown in Fig. 2. The framework is of 2in. by 1½in. deal and is halved together. The top of ¼in. hardboard is glued and pinned in position. Pins may be punched in and if glue is used there will be no fear of the board lifting.



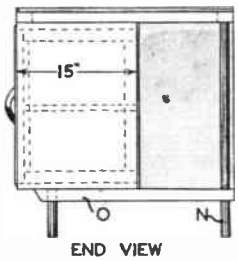


Fig. 1

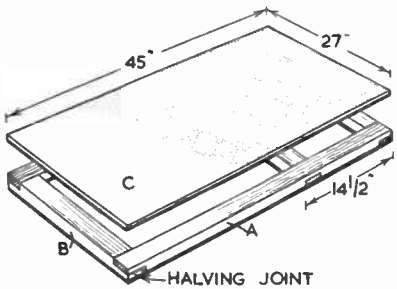


Fig. 2

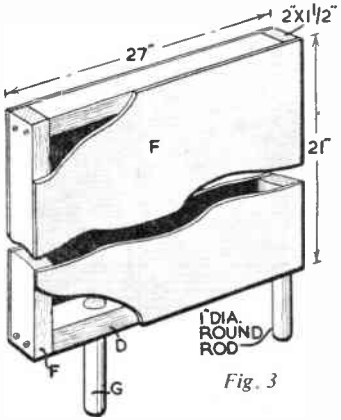


Fig. 3

Next make up the end as shown in Fig. 3. The framework is butted at the corners and secured by countersunk screws. The heads are afterwards covered with plastic wood or woodfiller. The legs (G) are let into the bottom rail (D) and should be glued in position. A nail through the side into the leg will prevent any movement.

Next the cabinet as indicated in Fig. 4. Two frames measuring 20ins. by 15ins. are made up from 1in. by 1½in. material halved together. The shelves (J) and (K) are cut from ¼in. plywood. Shelves (J) are nailed to the frames and the middle shelf (K) is supported by pieces of ¾in. square stripwood (L). Hardboard is cut to size and pinned in place to cover the frames (M).

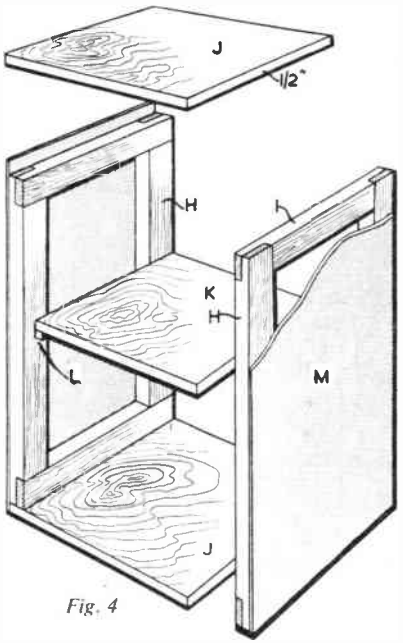


Fig. 4

The rail (O) (Fig. 1) which is of 2in. by 1½ins. wood is screwed underneath the cabinet and serves as a support for the legs (G) and (N). The leg (N) goes right through rail (O) and is let into the framework at the top.

● **Continued on page 127**

MAKE A DRIP-DRY CLOTHES HORSE

THIS simple gadget is ideal for use in the bathroom and can be folded and put away when not in use. It is made from stripwood and round rod, which may be purchased locally or direct from Hobbies Ltd, Dereham, Norfolk.

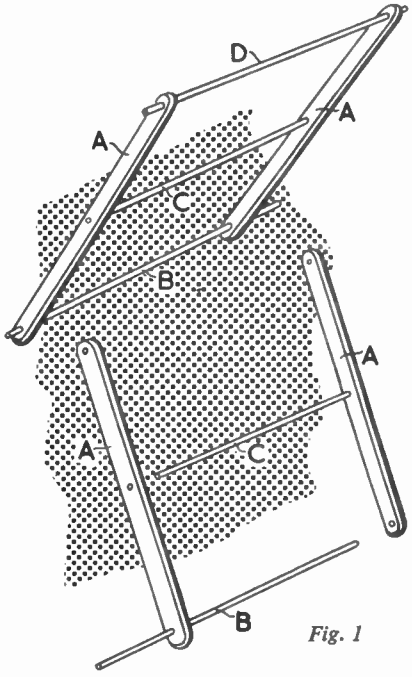


Fig. 1

No actual measurements are shown because these will depend upon your own personal requirements. The pieces (A) are of 1½in. by ¾in. stripwood and can be between 2ft. and 3ft. in length. Each piece is drilled to take ½in. round rod as shown in the exploded view in Fig. 1.

The length of the round rod is adjusted to suit the bath and 5 pieces are required. You will see from Fig. 1 that these are various lengths, pieces (C) being a little shorter than the inside widths of the bath, pieces (B) about 6ins. wider, and piece (D) about halfway between the two. The extending pieces of (B) rest upon the sides of the bath as shown in the illustration, whilst piece (D) forms a pivot, enabling the horse to be folded. The measurement (F) (see Fig. 2) will be slightly less than the inside width of the bath.

The centre pieces (C) are glued firmly in place and may even be secured with a pin or nail through the stripwood. Pieces (B) are also glued to pieces (A) and help to make the 'horse' rigid. The pivot piece (D) is glued to one frame of the 'horse' only.

To keep the two frames in position, screw-eyes and cord are attached as shown in Fig. 2. Clean up with glasspaper and give two coats of brush polish. Alternatively the horse may be finished with high gloss enamel. 1½in. by ¾in. strip costs 1/10 per 3ft. length, and ½in. diameter round rod costs 9d. per 3ft. length. Postage and packing on 5 pieces of round rod and four pieces of strip amount to 2/-. (M.h.)

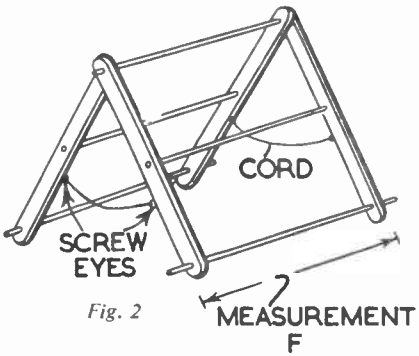


Fig. 2

● Continued from page 126

Contemporary Writing Desk

Complete the main construction by fixing the cabinet to the top, with screws through (J) into (A). The end, shown in (Fig. 3), is also fixed in place at this stage. Drive long screws down through the top frame (A) into piece (D) and countersink the screws. Fill with plastic wood.

The door consists of a frame, pieces (R) and (Q) of 1in. by 1½in. wood halved together and covered with hardboard, which overlaps about ¼in. all round. The diagram in Fig. 5 shows the construction and also shows a detail of the special cabinet hinge which may be used. If you examine the hinge you will see quite clearly how it may be fixed. Hobbies No. 711 handle is screwed in place and a ball catch fixed inside.

Clean up all round with glasspaper and fill the grain where necessary. Give a first coat of flat undercoat and allow to dry thoroughly. Give two finishing coats and clean down if necessary with silicon carbide paper used wet.

The top is covered with Formica or one of the cheaper plastic coverings, and the shelves lined with similar material.

Cabinet hinges cost 9d. per pair, No. 711 handles 6d. each. No. 6225 double-ball catches 1/6 each. Postage extra in each case, from Hobbies Ltd. Dereham, Norfolk. (M.h.)

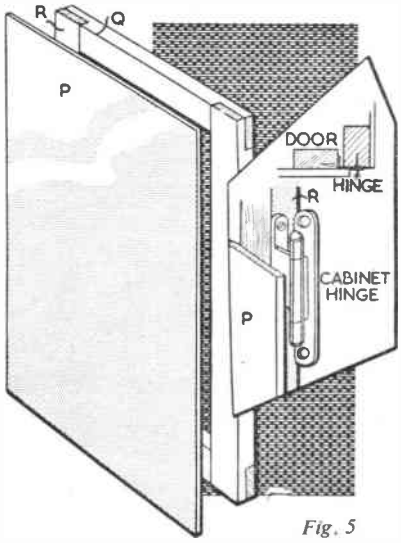


Fig. 5

A NOVEL INDICATOR FOR MILK ORDERS

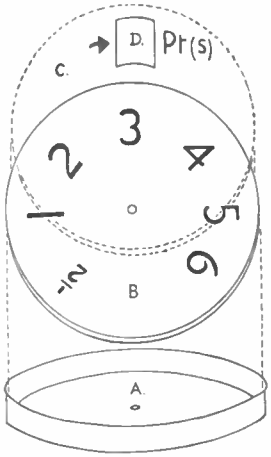
YOU will need for this the lid of a 2¾in. diameter shoe polish tin (A). Cut a circle of wood, a fraction under this diameter, and ⅜in. thick, to fit on the bottom of the lid (B). Drill a ⅛in. diameter hole through the centre. The top disc (C), is 2 11/16in. diameter, and ⅜in. thick, also drilled through the centre. Cut out the aperture (D), ½in. square, and ⅜in. from the edge of the disc.

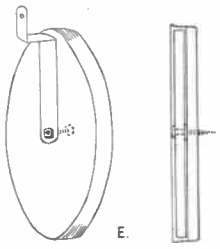
By H. Ridgway

Enamel the outside of the lid, and the inside of the rim. The disc (B) is given a coat of size, and then enamelled white. The numbers are later painted in black. The disc (C), is sized and then enamelled in a contrasting colour. The arrow and 'Pt(s)' are painted on in black. Place the disc (B) in the lid, and continue the centre hole by drilling through the tin. At this stage the indicator may be numbered. To do this, temporarily assemble it, and with a soft lead pencil draw the required numbers in the aperture (D). Remove the disc (B) and complete the numbering with paint and a fine brush. When the paint has dried, secure the disc (B) to the bottom of the lid with impact glue.

Two methods of suspending the indicator are shown at (E). A small ⅛in. diameter bolt may be used, to which a tin plate hanger is attached. The disc (C) must revolve without turning the bolt round, or the nut will work loose. Place a washer under the head of the bolt and also between the discs. Alternatively, a suitable screw can be used. Washers are needed, as in the first method. The screw or bolt should be tightened sufficiently to hold the aperture (D) firmly in any required position.

The numbering shown is merely given as a guide. Readers will, of course, amend to suit their own requirements — it may be usual, for instance, to order an odd half-pint with a given number of whole pints, and the numbering must be made to provide for this.



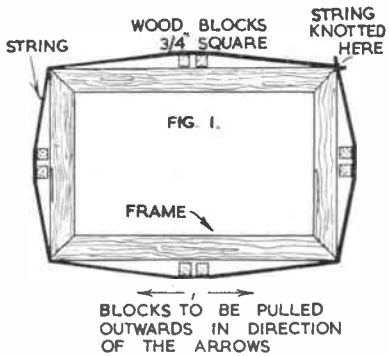


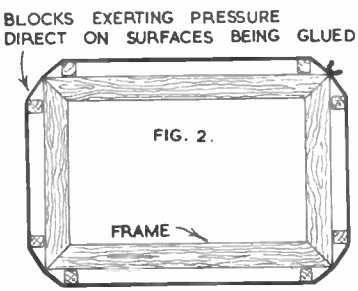
PICTURE FRAMING WITHOUT CRAMPS

WHEN gluing two surfaces together, the best results are always obtained if pressure is put on the joint while the glue is drying. In the case of picture frames this gluing under pressure is absolutely essential to attain the desired strength at the four corners. It may be done quite simply without the use of a special cramp.

By C. Adrian

Eight small blocks of wood, approximately ¾in. square, are first cut. (Their length will depend upon the size of the frame to be glued, and should be about double the depth of the picture moulding.) The mitred ends of the four pieces of moulding are then coated with glue, which is allowed to become tacky before the frame is roughly assembled on a flat surface. A loop of stout string on a running knot is next passed around the perimeter of the frame and pulled as tight as possible; it is tied on a corner.





Working on one side at a time, the string is pulled away from the moulding and two of the wood blocks inserted as shown in Fig. 1. Only at the stage when all eight blocks are in place is it necessary to adjust the corner joints so that they are perfectly flush. Finally (and preferably with two people working on opposite sides simultaneously), the two blocks are gripped between forefingers and thumbs, and pulled apart along the moulding until they take up the positions shown in Fig. 2. Each corner is thus securely clamped between the two blocks which exert the required pressure direct on the faces being glued.

Reveals inaccuracies

This method has an added advantage in that it immediately shows up any inaccuracy in the mitreing of the moulding. Under the localised pressure of the blocks, each pair of mitred faces will mate to the best of its ability and independent of the others. If the moulding has not been cut true, the frame will, therefore, twist, although the joints will be perfect.

Completing 'Wensum'

THE SAILING DINGHY

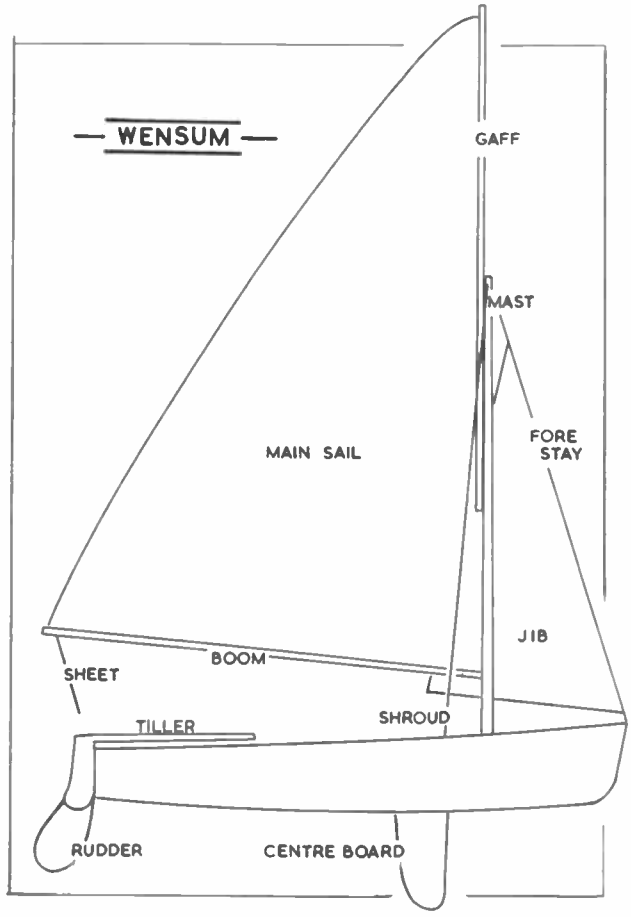
WHILE it is possible to complete the Wensum dinghy for rowing and outboard motor only, as described in previous articles, and convert it to sailing later, it is better to include the modifications needed for sailing during building.

The main modification to the boat itself is the addition of the centreboard and its case. Side benches and a rudder are also needed. Decking may also be desired, but for a general-purpose boat we suggest completing it without decking. If used mainly for racing, plywood fore- and side-decks may be added later.

By P. W. Blandford

The centreboard is made from ¼in. marine plywood pivoting through a slot in the keel inside a box which is built between the hog and a gangboard between two thwarts. It is best to fit the centreboard case before the main and mast thwarts. The centre of frame 2 has to be cut out to clear the centreboard case. Unscrew the temporary jointing piece and cut away the frame to the hog.

The plans give the sizes, and one of the ¼in. plywood sides should be made first as a template for the other parts (Fig. 15). Cut it too wide at first, then plane the bottom edge to match the slight curve of the hog. Mark where the two thwarts will come on the risers and lay an odd piece of straight wood across in each position and mark where the thwarts will cross the centreboard case (Fig. 15A). This will give you the height of the ends of the plywood. Draw a line between these points and cut off the waste, then make a second piece.



The centreboard, rudder parts and bottom boards being varnished

Add strips to the top and bottom edges of the plywood, then join the parts with the spacing pieces between so as to make a watertight box open at top and bottom. Mark the position of the slot in the bottom on the hog. Drill ¼in. holes at each end and several more near one end so that an opening may be chopped out to get a saw through (Fig. 15B). Turn the boat over and mark the width of the slot on the keel, then saw out, keeping to the inside of the lines. Do not finish the slot to width at this stage.

With the boat the right way up put the centreboard case in position temporarily with a few screws. Make the two thwarts. The mast thwart has a hole cut to take the mast, and both are notched to take the gangboard. Assemble the thwarts temporarily and make the gangboard (Fig. 15C). If the assembly is satisfactory, dismantle it. Although it might do to fix the case down with glue it is probably better to use a flexible jointing compound such as 'Seelastik'. Screw the case down on to this, tightening the screws in turn so that the compound is compressed and oozes out around the sides. Fix the thwarts and gangboard with glue and screws — if the boat is stood on edge, the screws under the gangboard are more easily driven. Trim the slot in the keel with chisel and file to match the inside of the case.

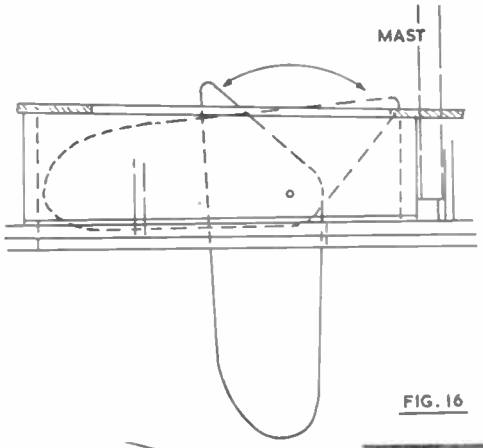
The mast will have a tenon at its foot and a step has to be prepared for this between the centreboard case and frame 1 (Fig. 15D). This can be made from waste cut when making the stem.

The centreboard is made to the full-

size drawing from ¾in. plywood and the edges of the part which will project below the boat are thinned down to a streamlined form. Blocks glued each side at the top form handles. The board pivots on a ¾in. brass bolt. If washers are used under the bolt head and nut there should be no leakage, but if there is any doubt the bolt may be smeared with jointing compound.

Varnish the parts before the centreboard is finally fitted. The inside of the case may be dealt with using canvas fixed around a thin batten. To provide sufficient friction to hold the centreboard in any position a short length of rubber hose is screwed to it (Fig. 16). By adjusting the screws the rubber may be squeezed to vary the amount of friction.

When sailing, the helmsman needs to sit at the side of the boat and he needs side benches (M) between the main thwart and the stern sheets. Each side bench is made from the same material as



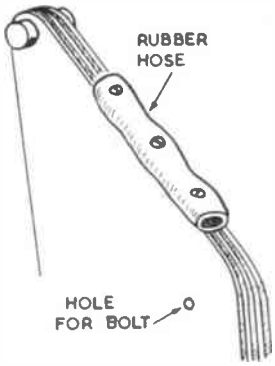


FIG. 16

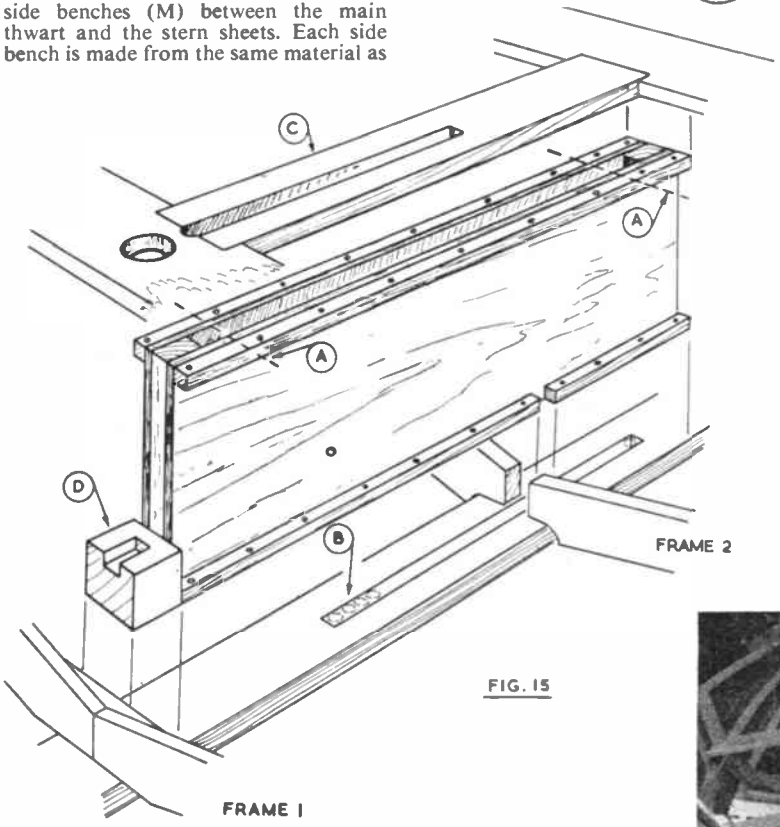
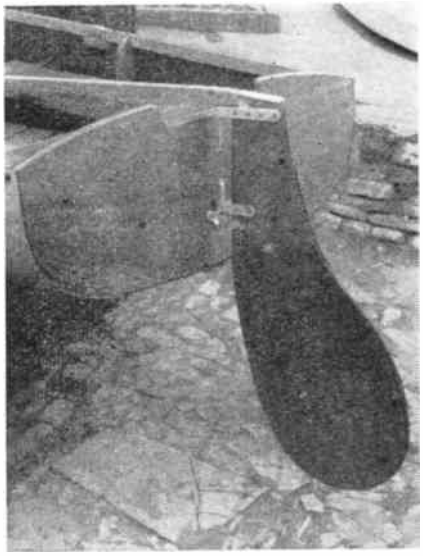


FIG. 15



The rudder in position on the transom

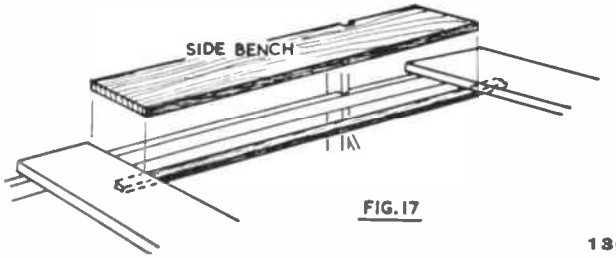
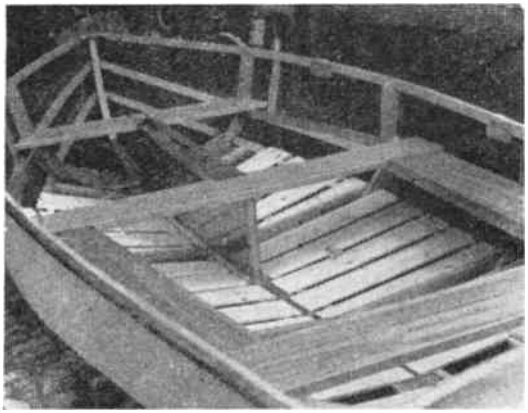


FIG. 17



The hull completed for sailing, with the centreboard fitted in its case and side benches between the thwarts

the thwarts. It rests on the riser and its front edge is supported by a strip screwed under the thwarts (Fig. 17).

The rudder needs to be fairly deep to give adequate control. A fixed rudder might cause trouble when running into shallow water, so this one is arranged with a pivoted blade held down by rubber under tension. If the boat runs into shallow water unintentionally the centreboard will be pushed into its case and the rudder blade will rise.

Full-size plans available

Complete plans for building the Wensum Sailing Dinghy are available from Hobbies Ltd., Dereham, Norfolk, price 16s. 0d., *plus* 9d. *postage. The plans include all information needed to build the boat — full-size drawings of the frames and other shaped parts, several other detail drawings, a material schedule and step-by-step instructions — for rowing, outboard motor and sailing.*

The rudder parts are shown full-size in the plans available. The blade is $\frac{3}{8}$in. thick and thinned around the edges in the same way as the centreboard. The stock is built up from $\frac{3}{16}$in. plywood. The blade pivots on a $\frac{1}{4}$in. bolt and a screw stops it in the down position. A strip of rubber passes between the cheeks of the stock and keeps the blade pulled down (Fig. 18). The tiller fits into a socket made by bending a piece of brass sheet over the top of the rudder and is held there by a pin through a hole.

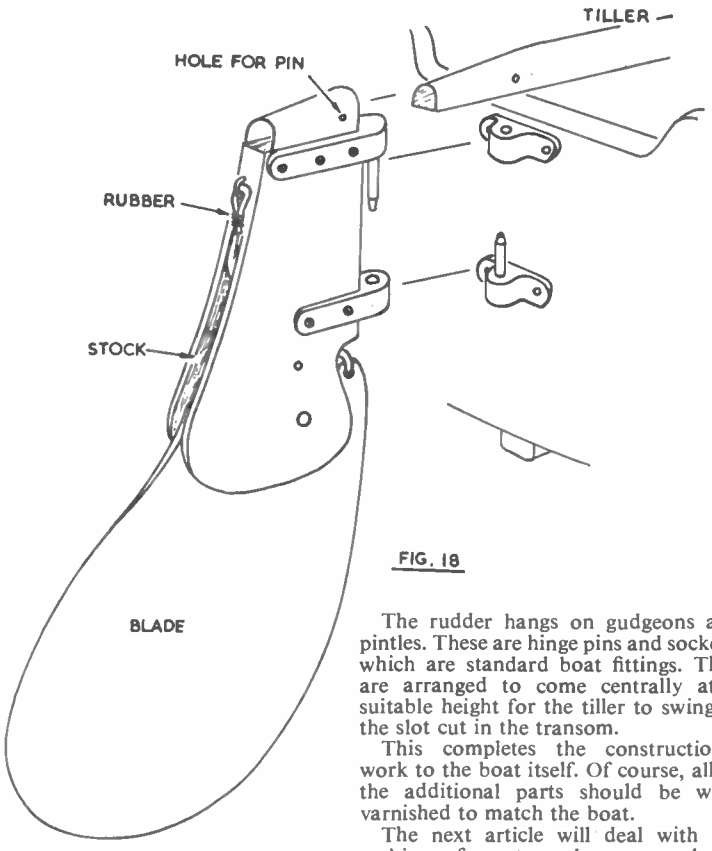


FIG. 18

The rudder hangs on gudgeons and pintles. These are hinge pins and sockets, which are standard boat fittings. They are arranged to come centrally at a suitable height for the tiller to swing in the slot cut in the transom.

This completes the constructional work to the boat itself. Of course, all of the additional parts should be well-varnished to match the boat.

The next article will deal with the making of masts and spars, and the arrangement and construction of rigging to complete the boat as a sailing dinghy.

THE first 1½d. British stamp was issued in 1858. Two plates were used for this value. In plate 1 a curious error occurs; the third stamp in the sixteenth row is lettered OP in the top angles and P.C. in the lower angles, instead of CP–PC.

Owing to the colour employed for this stamp being similar to that employed for the 1d. value, the 1½d. stamp may often be found among lots of unsorted penny reds.

A similar error is to be found in plate 2 of the 2½d. stamp, where the eighth stamp in the twelfth row is lettered LH–FL in error for LH–HL.

2 by the minute hair-lines which are drawn across the exterior angles of the squares occupied by the corner letters. The same remarks apply to the 1/- green

On July 1st, 1867, a surface-printed stamp of the 10d. value superseded the embossed stamp. The stamps were printed from two plates. The watermark for this value was normally a spray of roses, but at least one sheet appears to have been printed in error upon the emblems paper employed for the last issue, as two used copies are known.

A rare variety may also be found in the 6d. value of the octagonal issues. This consists in the impression of the stamp being printed on the gummed side, a few sheets of which were issued thus. This variety was due to the gum being so transparent that difficulty was experienced in distinguishing the gummed from the ungummed side, and to prevent the recurrence of this mistake the gum was subsequently slightly tinted green.

Other British stamps may also be found printed on the gummed side, notably the 1d. lilac of 1881 and 2½d. purple of 1887.

The 1862 issue, with small uncoloured letters in the corners, watermark emblems, is pregnant with rare varieties. The 3d. rose of this issue was printed from plates 2 and 3 only.

Of plate 3 (which may be distinguished by the small white dot which was inserted on each side of the stamps just below the foliate ornament) only five sheets were printed.

The 9d. value of this issue was also printed from plates 2 and 3 only. Only five sheets of plate 3 were printed, the stamps from this plate being distinguishable from impressions from plate

of this issue, copies from plate 3 with the hair-lines being of extreme rarity. An interesting variety exists on the stamp lettered DK, KD of plate 1. This consists of a white circle round the lowest K, which is due to the letter-plug not having been driven thoroughly home into the plate.

MORE CLASSIC STAMPS OF BRITAIN–*By R.L.C.*

Only five sheets were struck from plate 2, and these were issued to the public, but used copies are rare.

Among the stamps of the 4d. value there are two great rarities, one being the 4d. vermilion, plate 16, and the other being the 4d. sage-green, plate 17, watermark large garter.

And now some news about modern issues: No more 11d. stamps are to be printed. There has been a fall in the demand for them and their sale will be discontinued when existing stocks are used up. These stamps were first introduced in December 1947 and 164,405,000 of the King George VI issue were sold. The sale of the Queen Elizabeth design is 64 million.

Some notes on Ethiopia

THE oval-faced frizzly-haired Abyssinians or Ethiopians comprise many tribes. In manners and customs they resemble the ancient Israelites, and in language they resemble the Hebrews more than any other race.

All Abyssinians are fond of personal ornamentation. A silver chain on a

man's neck signifies that he has killed an elephant. Silver bracelets and various amulets are worn to guard against ill luck. Princes and chiefs carry silver-plated weapons, ornamented with gold and precious stones.

The Ethiopian Lion and royal symbols are depicted on Emperor Haile Selassie's coronation stamps of 1930. And the Emperor in ceremonial robes on pictorials of 1942 (set of 3, catalogued at 2/- mint).

Liberation commemorations of 1949 show the Emperor, Empress, Lion and Map of Abyssinia (30 c. 1/- used) and Shield and Spears (80 c., 3/-used).

● Continued on page 138

Radio Control of Models — 7

THE STEERING ACTUATOR

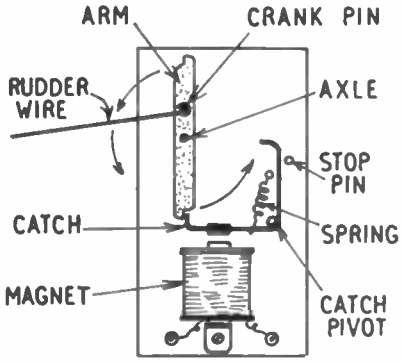
THE actuator is a magnetic device which steers the model, or controls the speed or direction of running of the propulsion motor. Simple actuators are quite straightforward and easy to build, but more control arrangements can be added until the device is quite complicated. The actuator described here is for steering — and reversing: stopping, and speed control can be added afterwards.

By 'Radio Mech'

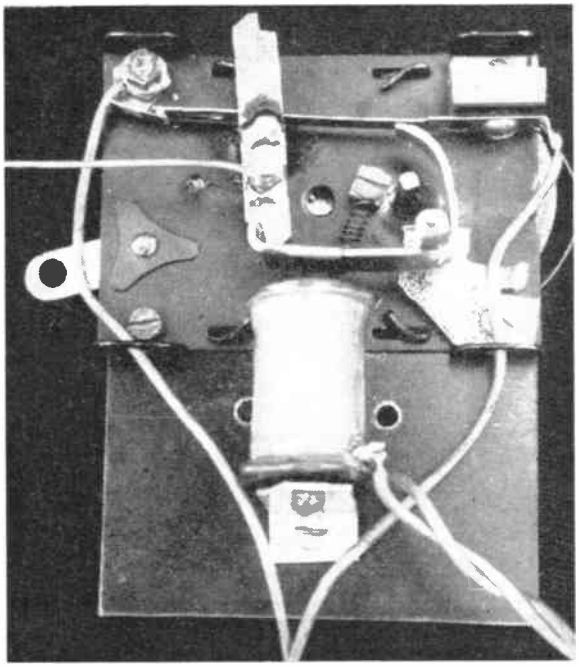
For steering only, the mechanism to make up is shown in Fig. 1. Ready-built units of this kind can be purchased from suppliers of model control equipment. The mechanism is built upon a small clockwork motor, the arm shown being fixed to the motor axle. The arm is thus trying to turn in the direction of the arrows, but is prevented by the catch.

The magnet is wired to a battery and the receiver relay contacts. When the receiver relay closes, the catch is drawn towards the magnet. This releases the arm, which makes a quarter turn, the end then being caught by the other end of the catch. When the magnet circuit is interrupted, the catch returns to the position shown in Fig. 1, and the arm turns until its other end engages the catch.

Rotation of the arm moves the rudder through the wire looped over the crank pin. By opening and closing the key wired to the transmitter, the arm can be made to take up any one of four positions. One position turns the rudder to the right, and one position turns it to the left. Between these positions are those which give straight ahead sailing.



ig. 1—Four-position actuator



Steering actuator with 'off' contacts to stop propeller motor

The transmitter key or push switch would thus give control as follows:

Key released — straight ahead.
Key pressed — turn right.
Key released — straight ahead.
Key pressed — turn left.

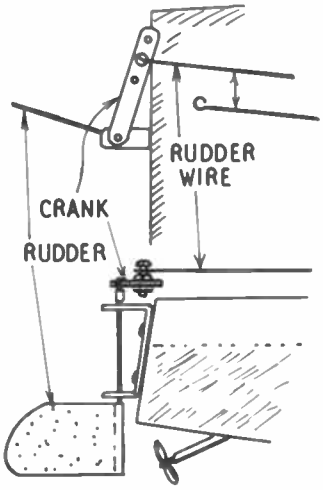


Fig. 2—Rudder with crank

This sequence is repeated until the clockwork motor needs rewinding, which would be hundreds of manœuvres. Undesired control settings can be flicked through in a fraction of a second. For example, if the actuator were at the first position, a quick touch on the key, almost immediately released, then followed by a continuous pressure, would turn the model to the left. The momentary right setting of the rudder would not be noticed, as the model would not have time to respond.

This type of control is fitted in many of the simpler ready-made radio models. It is also used for steering aircraft, twisted elastic usually replacing the clockwork motor, to keep weight down.

Actuator construction

A small clockwork motor as used in constructional toys, or taken from a damaged toy car or other toy, is satisfactory. If one side plate is not large enough to hold the magnet, etc., then a thin metal plate or sheet of Paxolin can be attached with three small bolts. Have the winder upwards. A long winding key is most convenient.

The arm is most easily made from brass, soldered to the axle. The catch can also be made from brass, with a piece of

'tin' or thin iron folded round opposite the magnet. To pivot the catch, a short piece of small diameter brass tubing can be soldered in the angle between the limbs, and slipped over a pivot pin. The spring should be very light, and can be made by winding a few inches of thin wire upon a rod or nail. The stop pin prevents the catch moving too far away.

Current for the magnet can be taken from the driving battery, or from a separate 4½V. battery. For this voltage, 200 to 300 turns of 28 S.W.G. or similar wire will be satisfactory. An iron core may be made by sawing a piece off a ¼in. diameter iron bolt. The core is about 1in. long. Stiff card cheeks keep the turns in place, and a layer of paper or tape should be wound over the core before putting on the wire. Suitable magnets can also be taken from old bells or buzzers.

The catch and arm should be free from roughness at the ends, and the whole adjusted, by bending the catch until it works freely. The crank pin is about ¼in. to ⅜in. from the axle, and a short 8 B.A. bolt will be suitable.

Fig. 2 shows the rudder, soldered to a thin rod which passes through a bracket screwed to the model. If the boat already has a rudder on an axle, so that it can be turned from above, this will not need changing, provided it moves freely.

The crank is soldered to the axle, and has three or four holes, giving a range of pivot points for the rudder wire, so that the extent to which the rudder moves can easily be adjusted. The rudder wire is of such a length that the rudder is straight when the arm is in the position shown in Fig. 1, or has made a half revolution from this position.

This method of steering is suitable for a yacht, or electric or clockwork boat. It could also be used in a steam model. With clockwork or steam, care is necessary to guide the model in before the propeller ceases to run.

'Stop' circuit

It will have been seen that two positions of the arm give straight ahead sailing. One of these positions can thus be made more useful by arranging that the propulsion motor stops, so that the model can be brought to rest, or taken away from rest.

To do this, a small cam of insulating material is made a push fit on the axle carrying the arm. This cam can be filed from ebonite or hardwood, drilled to fit the axle.

The motor circuit is completed through the thin spring strip (X) in Fig. 3, which bears upon the contact screw (Y). The cam is so positioned that in one straight ahead position of the rudder, it lifts the strip (X) from the screw (Y), thus stopping the propeller

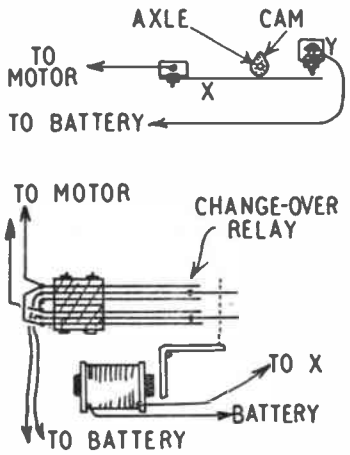


Fig. 3—Stop and reverse circuits

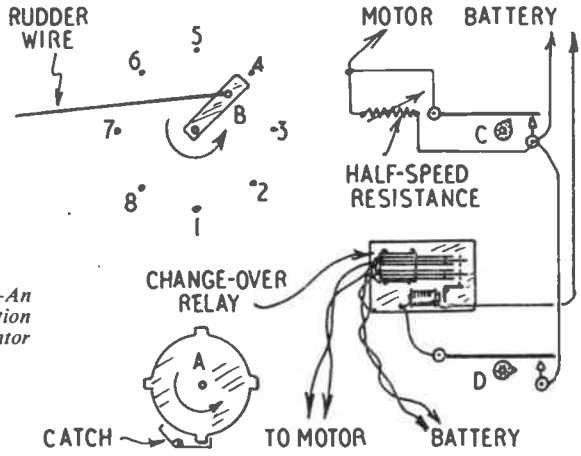


Fig. 4—An 8-position actuator

motor. The transmitter keying will then be as follows:

1. Model stopped.
2. Turn right.
3. Straight ahead.
4. Turn left.

This sequence is repeated until the actuator needs rewinding. Such a stop circuit is well worth adding, because it gives so much better control than steering alone.

Motor reversing

Permanent magnet motors can be reversed by changing the battery polarity, and this effect can be used to sail the model backwards, at will. To avoid having several contacts directly operated by the cam, a change-over or reversing relay may be wired as in Fig. 3. When no current flows through the relay, the model sails ahead. When the relay is energised, the double-pole contacts change over the polarity of supply to the motor, reversing it. The contact screw (Y) should be placed the other side of strip (X), so that contact is only made (to energise the relay) at one straight ahead setting of the rudder.

The four positions will then be:

1. Straight ahead.
2. Turn right.
3. Astern.
4. Turn left.

It will be seen that the 'off' position is no longer available. This arises because there are only four positions, and is overcome by using an 8-position actuator.

For eight positions

Here, the wheel (A) in Fig. 4 replaces the straight arm in Fig. 1, and the shape of the catch is slightly changed. By operating the transmitter key, the wheel can be made to take up any one of 8 positions, instead of the 4 of the simple actuator.

The axle also carries the crank pin (B), which can be fitted to the 4-tooth wheel. This controls the rudder as before, except that half-right and half-left positions can also be chosen.

If half-speed running is required, the cam (C) can open the contacts at one straight ahead position, so that the resistance comes into circuit in series with the motor. Or the cam (D) can switch in the reversing relay mentioned, for sailing astern. Duplicated positions of the rudder can be used for 'stop' or other circuits, the 'stop' circuit being as in Fig. 3.

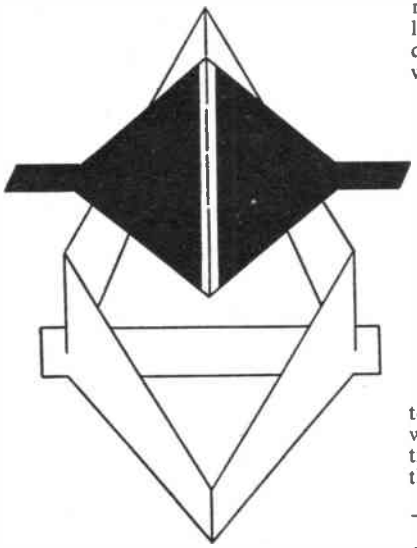
Keying the transmitter could thus give the following:

1. Full speed ahead.
2. Full speed half to port.
3. Full speed to port.
4. Stop.
5. Half speed astern.
6. Full speed half to starboard.

● **Continued on page 135**

A GRAVITY-DEFYING ROLLER

AN object which will roll uphill unaided, in apparent contradiction to the law of gravity, will be sure to cause comment and arouse curiosity. Such a contrivance can be made from a pair of plastic funnels and some strips of stout cardboard. The seeming miracle is due to an unusual optical illusion and closer examination will be necessary in order to dispel the mystery.



The rolling device is made from two funnels about 4ins. in diameter that must be fastened together with Sellotape to produce an object resembling a double-ended spinning top.

Construct a two-sided track for the apparatus from two strips of cardboard 12ins. long and 4ins. wide. Let each side of the track rise from a height of 2½ins. at either end to a point 4ins. high in the middle. The gradient on both strips should be perfectly straight and the shapes of the strips should match exactly. Rule vertical lines from the bases of the strips to the highest point and score along these lines, using a ruler and penknife, before folding along them. Cut a slot ½in. deep from the base of each strip, along the folds.

Prepare a strip of cardboard 4ins. long and 1in. wide and cut ½in. deep slots in it ½in. from either end. This strip will be needed to hold the track apart at its widest point.

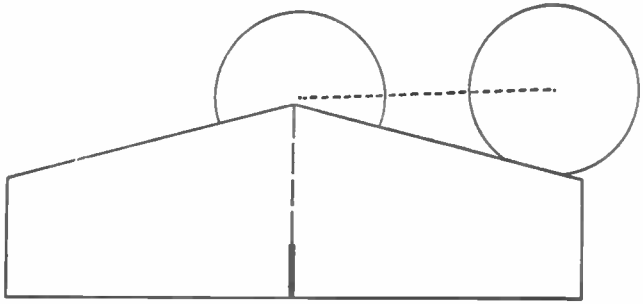
Assemble the track by securing the ends together with Sellotape and fix the 1in. wide strip of cardboard into the slots at the base.

When you place the 'roller' at one of the lower ends of the track it will move towards the highest point, as if in fact it were ascending a little hill.

The cause of this illusion is due both to the shape of the 'roller' and the nature of the track's construction, and will be apparent if you remember that when the funnels are placed at the lowest and narrowest part of the track, their common centre of gravity is well above the level of the points of support. Consequently, the funnels will be unstable and will roll along the track in an attempt to bring their centre of gravity in line with the points of support. Since the track broadens towards its centre and the funnels taper outwards, the 'roller' will move towards the centre of the track, where stability can be achieved. Actually the funnels move downhill relative to the base of the track.

If you wish to construct the apparatus on a larger scale, you must make certain that the difference in height between the ends and centre of the track is less than the widest radius of the funnels.

Another demonstration of uphill rolling can be made using a large round tin or box inside which a heavy weight is held in place with strips of Sellotape. Set up a gently sloping board which has a length less than half the circumference of the tin. Hold the tin at the beginning of the slope with its concealed weight uppermost and slightly inclining towards the direction of the slope. When you release the tin, gravity will act upon the weight and the tin will roll uphill. (A.E.W.)



● Continued from page 134

Model Control Steering

7. Full speed to starboard.
8. Not used.

As mentioned in an earlier article, the degree of control provided for by the actuator can be extended by using more complex circuits. In a small model, the degrees of control described here would be ample, for realistic sailing.

Two further methods of increasing control over a model do, however, deserve mention. They cannot be used in a small boat, but may easily be added later when the model is large enough to contain the equipment.

One such method is the use of a latching relay. When this is energised, it locks in the 'on' position until it is energised again, when it remains 'off' until again energised. If such a relay were wired to contacts closed at position 8, it could throw the driving motor into reverse. The model would then continue to travel astern while any of the other steering positions were selected, and would not sail ahead again until position 8 was reached.

Delayed relays are also used. These are of high resistance, with a large condenser in parallel, and receive current through a resistor. As a result, the relay does not close until the condenser is charged, and it remains closed until this charge has leaked away. If a delaying relay is used with each circuit closed by cams on the actuator axle, the model will not begin to respond until a certain time has elapsed. A delay of half a second or so will then allow reverse positions to be passed over without the driving motor temporarily running astern.

Next week's article will describe the 'space and pulse' method of steering a model boat. The free design will be for a child's chair and desk. Make sure of your copy.

MORE USEFUL FORMULAS

JOINTING or the repairing of iron articles is a problem which occasionally crops up. A knowledge of the cements applicable will then prove economical.

Guttering and downspouts may be repaired with a paste made from boiled linseed oil, white lead, pipeclay and manganese dioxide. First mix equal weights of the last three and form the mixture into a cone on a sheet of tin or glass. Press a hollow in the centre of the cone with a thick rod. Fill the hollow with boiled linseed oil, and leave it overnight to soak in. Now work the paste with an old knife, adding more oil little by little until a fairly plastic paste results.

For its application, the iron must be dry and brushed free of grit. It is an advantage also to give the work a coat of boiled linseed oil twenty-four hours before applying the cement. As the cement takes some time to harden, support in the shape of string binding may be necessary while the hardening is proceeding.

Fig. 1

A cement which can be stored indefinitely in well-closed containers may be mixed ready for use from 1 ounce of ammonium chloride (sal ammoniac), ½ ounce of flowers of sulphur and 8 ounces of iron filings. When you buy the ammonium chloride ask for the powder form (actually it consists of very fine crystals), for if you have it in the larger crystals it is exceedingly difficult to powder. Should you already have a stock of it as the larger crystals, and do not wish to buy a special new supply, the best way to reduce it to the fine form is to add it to boiling water until no more will dissolve. The vessel containing the solution should then be stood in cold water, and the solution stirred constantly until it is cold. By this method the ammonium chloride separates as very fine crystals. Filter them off and dry them in a warm room. The filtrate can be evaporated down to recover the rest of the ammonium chloride.

Having made an intimate mixture of the ingredients, mix approximately enough for the job in hand with water to make a paste. Apply it to the clean and dry work. It sets hard in a few hours. For mending holes in cast iron, such as a domestic boiler, allow some to extrude through the hole, and press it over the edges, as shown in Fig. 1.

Bone finishing

Hobbyists often see the possibilities of large bones for making spill holders or napkin rings, but meet difficulty in the finishing. The high polish which so sets off a finished article is not hard to attain when one uses the right procedure.

First boil the bones to loosen all meat and fat if this has not already been done. Dry each bone thoroughly in a warm place, and then scrape away all major roughnesses with a knife or piece of glass. Next smooth it down with fine glasspaper, and then with a paste of pumice powder and water. Rinse the bone, dry it, and polish with a paste of precipitated chalk and soapy water. Rinse and give a final buffing with dry precipitated chalk on a soft leather. A little patience will yield a high gloss.

Knife powder

Old knives can be given a new look and made sharper by rubbing them on a board with a little of a simply-made powder. First mix thoroughly together 5 ounces of silica powder, 3 ounces of powdered cuttle bone and 1½ ounces of pipeclay. Then mix this with 1½ pounds of bath brick powder.

Fragrant moth preventers

With the advent of the moth season it will pay to take a step in time. The smell of either of the usual preventers — naphthalene balls and paradichlorobenzene — is objectionable to some people, a smell which will adhere to the clothes for some hours after removal from the wardrobe.

Pleasant smelling preventers can be made by melting in a clean tin in a water bath 9 ounces of naphthalene and 3 ounces of camphor. Stir in 1 teaspoonful of oil of spike lavender, and pour out into moulds. Suitable moulds can be made from a board and slips of stripwood, as shown in Fig. 2. The stripwood partitions should butt accurately to each other and be held together by means of a large rubber band. When the mixture has solidified and grown quite cold, dismantle the moulds and store the moth preventers in a press-lidded tin or screw-top jar, for like other moth preventers, they gradually disappear on exposure to the air through volatilisation.

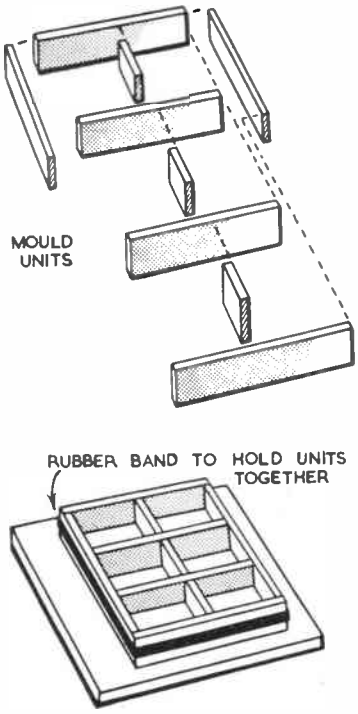


Fig. 2

Solder

This is cheaper to make than to buy. If you use fair quantities it is obviously more economical to prepare a stock supply. Its production is simplicity itself. Melt 2 parts of tin, add 1 part of lead (both by weight) and stir with a stick or large nail until the lead has melted and mixed with the tin. Pour out the solder into strip moulds made by pressing a thin dowel rod into well packed smooth earth or sand.

Leather cleaner

Dingy leather can be cleaned up with a good home-made product. To make a supply, dissolve 6 grams of Castile soap in 160 c.c. of boiling water, cool the solution, stir in 6 c.c. of strong ammonia solution, then 14 c.c. of glycerine and finally 7 c.c. of ethylene chloride (also known as 1:2-dichloro-ethane).

After rubbing the leather with the preparation, wipe with a wet cloth, and proceed with the usual polishing.

(L.A.F.)

Mainly for Modellers

FOLLOWING our last article on ship's cordage, in which we dealt with the individual make-up of the ropes used, I propose now to enlarge on the details and suggest ways that some of this detail can be included in our models.

It will be as well if we start by considering the wire rope introduced during the latter half of the 19th century. This was usually laid around a centre heart of a softer material such as hemp, jute or manilla, the latter tarred, and was made up of six or more wire threads. These do not cross over or twist around each other, but are laid spirally around the heart. In the late 19th century all wire rope was six stranded.

It is interesting to note here that the size of the rope, i.e., the circumference, multiplied three times will give the size of block through which it can be reeved or passed.

For the interest of our readers I give below details of a few sizes of wire rope used in standing rigging.

It is not necessary to give a list of all sizes, but the above example will be sufficient to show the tremendous strain they are designed to take.

In building large scale models it is possible to include the following additions to our rigging ropes, and they will add to our interest and to the authentic detail of our model.

Serving

This is close and continuous covering of a rope by a minor cord. This minor cord is added with the turns close together over a part already wormed and parcelled, and is intended to protect the rope at this point from wear caused by chafing against some part of the ship or its furniture.

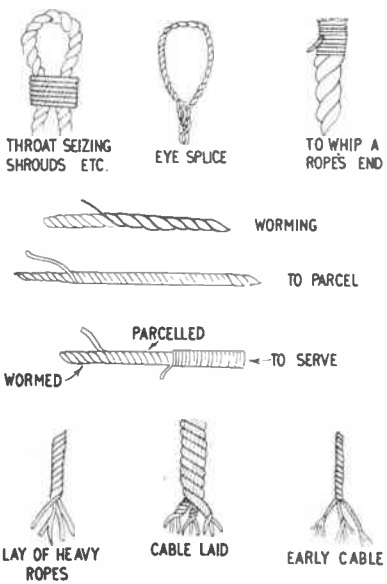
Worming

This consists of winding a suitable size smaller rope or cord to fill up the spaces spirally formed by the strands of rope. It makes the rope circular in section ready to be parcelled and served.

Parcelling

This is the use of strips of material (sacking, canvas, etc.) to cover up the rope that has been wormed. It is cut the same width as the diameter of the rope being parcelled, and in full-size practice is treated with Stockholm tar. We will deal later with the actual operation as applied to a large scale model.

We also have need in larger models to seize an eye in a rope for authentic rigging. This applies especially in the case of shrouds, as mentioned in an earlier article of mine. A splice is illustrated, and splices for different purposes will also be discussed.



Size	No. of wires in strands	No. of strands in rope
8ins.	19	6
7ins.	19	6
6ins.	19	6
5ins.	19	6
Size	**Weight per fathom**	**Breaking strain**
8ins.	62 lbs.	160 tons
7ins.	53 lbs.	141 tons
6ins.	34 lbs.	90 tons
5ins.	23 lbs.	63 tons

Size	Weight	Type of ship
22½ins.	94 cwts.	90 guns
20½ins.	78 cwts.	74 guns
18½ins.	63 cwts.	50 guns
15ins.	42 cwts.	24 guns

MORE ABOUT SHIP'S CORDAGE

by 'Whipstaff'

In the sketches are shown the ordinary lay of the larger ropes and that of the heaviest of all, the cable laid rope.

Now for some actual details of ropes on early vessels, such as those featured in our Hobbies range of kits.

In the latter half of the 18th century the bower cable for a 74 gun ship was 20½ins. in circumference, and our sketch shows the make-up of one of these cables which you will see would be very heavy to handle.

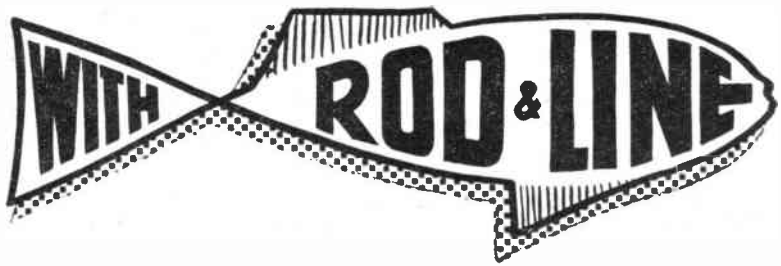
For comparison with the table given of wire rope, a few examples of 18th century hemp rope cables are also tabulated.

A PRACTICAL HANDBOOK FOR THE CREATIVE AMATEUR

READERS of *Hobbies Weekly* are well acquainted with the work of Gordon Allen, who has described many interesting projects in these pages. We can, therefore, particularly recommend a practical handbook entitled 'Week-end Homeworker' edited by Mr. Allen, and priced at 3/6, which is aimed 'strictly at the amateur with a creative itch'.

Thoroughly appreciating the fact that 'one illustration is worth a thousand words', this publication excels in its pictorial presentation of projects which are well within the capabilities of the average worker — not forgetting those who, perforce, have to work on the kitchen table, and with a minimum of tools.

Obviously we are not all experienced carpenters with a complete knowledge of the right type of joint to use on all occasions, and Mr. Allen shows that simplification in this direction can produce no less a satisfying result. Projects described should satisfy all home lovers and especially those with young children.



EASY-TO-MAKE TACKLE CARRIER

By 'Kingfisher'

IN my wanderings along the river banks and lake sides I have often watched anglers assembling their tackle prior to fishing. Everything is neat and tidy, but very often when it comes to the cast, and hook lengths these seem to be wound round all kinds of things such as pieces of cardboard or even cigarette packets and match boxes.

This in many instances is due to the fact that the usual type of tackle carrier is a bulky article and only holds about four made-up casts as a rule. In this article I propose to show you how to make one for about 6d. which is so flat

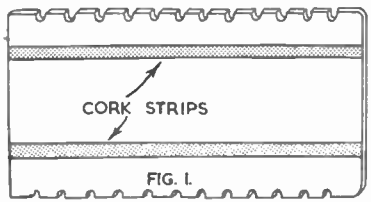


FIG. I.

that three of them will go into a tobacco tin.

The tin is the type which holds a pound of tobacco. Other tins, of course, are suitable according to what size you make your carrier. My own are about 5ins. by 4ins., but I am leaving actual measurements out of the diagrams so that you can make them of a size to suit whatever container you may have.

There are some plastic sandwich boxes in the large stores nowadays and one of these would be ideal for the job.

Your basic material is Perspex and this should be about ⅛in. thick. I find that 5ins. in length enables me to load it with 12 tackles. The first job is to file little notches along both sides spaced evenly apart (Fig. 1). The purpose of these notches is for the cast to fit in so that no fraying can take place along the edges. The work should be done with a very small round file, the diameter of which should be no more than ⅛in. The edges of these notches should be smoothed off so that there is nothing sharp to cut into the cast.

The next requirement is a cork tablemat (which can be borrowed when the wife isn't looking!) and from this you should cut two pieces about ⅜in. wide and the length of your Perspex. These strips have to be cemented on to the Perspex, so run the serrated edge of a flat file across the Perspex in order to roughen and give a key to the cement. This should be done ¼in. from the top and bottom edges.

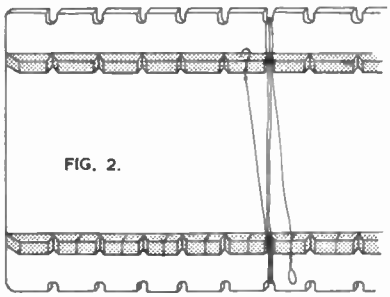


FIG. 2.

Now cut 'V' slots in the cork opposite each groove or slot in the base in order to rest the line in and avoid chafing (Fig. 2.) This is best done with a razor blade. In between each slot or 'V' on one length of cork cut a slit, but don't take any cork from this. Its purpose is to hold the loop end of the cast.

The hook is stuck into the edge of the top strip of cork and the cast wound round and round between the grooves and resting in the 'V' slots. You then have your completed tackle carrier, and if you make it for a dozen casts you can have them shotted at various weights so that you are prepared for whatever state the river may be in. If you make three or four you can have each one carrying hooks of a different size.

Talking of hooks, by the way, many anglers these days use spade-end hooks and tie them to gut in their spare time. This, I know, is a money saver, but the job is a very tedious one. A firm has cut out the tedious part of the job by producing a little machine known as the 'Eezi-Ti'. This is so simple to use that a youngster can be an expert at the job in a few minutes.

● Continued from page 132

Stamp notes on Ethiopia

The women's costume consists of a cotton robe. They often tattoo themselves on the upper joint of the arm. The hair of both sexes and all classes is arranged in a series of plaits. It was an old custom for an additional plait to be added for every man killed in battle.

Cattle, sheep and goats are bred. Horses are small but sturdy and widely used as polo ponies. Mules and donkeys are raised.

Cotton, sugar-cane, date palm and coffee are extensively cultivated. The coffee is of three types — Harari (long berry Mocha), Jimma and Sidamo. There is also a wild berry known as Abyssinian coffee. Other important products are hides and skins, wax, barley, millet (dhurra), wheat, gesho (which serves as a substitute for hops) and tobacco. Rubber trees are numerous. Iron, gold, platinum, coal, copper, sulphur and potash are found.

Trade is chiefly in the export of hides and skins of cattle, goats, sheep, leopards and monkeys. Imports are salt, cotton pieces, and yarns, ducts. building materials and petroleum products.

1947 pictorials show the river Debra Sina (4 c., 3d.), Lake Tana (8 c., 5d.), Mountain Scenery (20 c., 9d. used), Omo Falls (1 thaler, 5/- used). The 8 c., air stamp of 1947 features a native ploughing (5d.). A pictorial issue of 1919 is devoted to Abyssinian animals.

During the Italian Occupation the currency was 100 centesimi = 1 lira. It is now 100 centimes = 1 thaler.

The flag, which is illustrated on the 2 thaler stamp of 1952, consists of three horizontal bars, green-yellow-red, with lion in yellow bar.

Addis Ababa, the capital, is shown on pictorials of 1944.

When sorting Abyssinian stamps, look out for the following rarities: 1947, Pictorials: 3 t. blue — 15/-, 5 t. olive — 25/- mint. 1947, Air: 3 t. magenta — 15/-, 5 t. brown — 25/-, 10 t. purple — 50/- mint.

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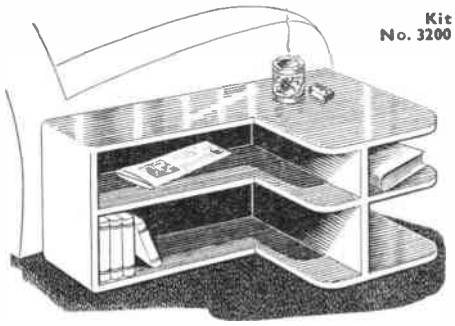

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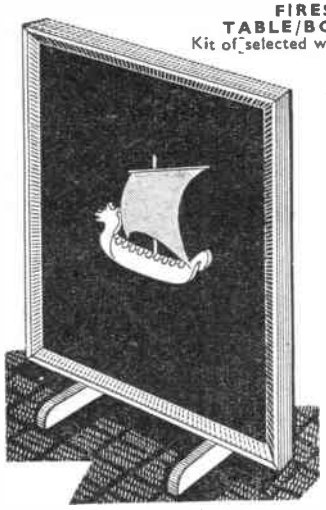

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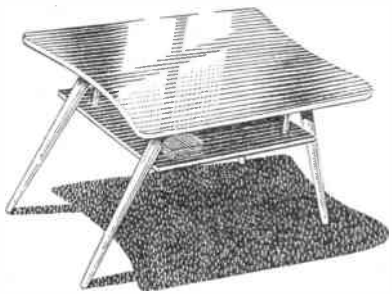

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Replies to Readers

Leaking Fish Tank

WE have a fish tank, bought only a few months ago, which started leaking, and now one glass side has come away completely. It is the usual kind, made of angle irons and glass. I should be very grateful if you could tell me what is best to repair this with, to make it watertight again. (*J.W.—Darwen.*)

TO fasten the glass into the frame of your aquarium, ordinary putty may be used, but specially prepared aquarium cements may be purchased from most shops supplying fish requirements. These do not set quite as hard as putty eventually does, and are thus less likely to leak after prolonged use. The cement is spread on the inside of the frame and the glass firmly pressed into position.

* * *

Creaking Chairs

PLEASE could you give me a remedy to stop the creaking of our chairs, which have loose hide seats? (*N.N.—Gorseinon.*)

CREAKING is caused by loose parts rubbing together. A definite creak is more likely to be caused by loose joints in the woodwork than the hide rubbing. This may be cured by putting a good glue, such as Croid, into the joint and allowing it to set. If the noise is caused by leather rubbing, it may be possible to put cloth between the offending parts or ease the rubbing by polishing thoroughly the surface of the leather.

* * *

Photoflood Bulb Switching

I FREQUENTLY use a number of photoflood bulbs for indoor photography, and as you know, the life of such lamps can be increased if they are brought to full brilliance gradually. Although I am using the series-parallel method at present, I would much prefer to use a dimmer switch. Can you tell me what value of resistance I should require to operate four (500 *watt*) *lamps in parallel, and also three* (500 *watt*) *in parallel, and also where I can obtain a suitable dimmer?* (*E.T.—Lozells.*)

FOR 4 500W. lamps you will require a resistance able to carry 10 amps; for three similar lamps, 7½amps. For such high current, dimmer resistances are expensive. This and the heat caused makes them little used, but Wallace Heaton, 127 New Bond St., London W.1, may be able to quote for them. Such a dimmer could be made from an electric fire element. A sliding contact would give adjustment of brilliance, but is not easy to make up in reliable form. An alternative is to have two or three sections of the element wire, with switches in parallel, thereby giving progressive increases in light, in steps, as each switch is closed. Switches for up to 10 amps would be necessary, and the whole would have to be well built and enclosed to avoid any chance of mains shocks.

* *

Bleaching Mahogany

COULD you please advise me how to bleach mahogany which has had a coat of medium brown stain applied to it, so that the finished result is almost white? (*D.P.—Birmingham.*)

WHETHER you are able to bleach your mahogany successfully or not depends on the previous treatment. If it has had any polish or varnish applied, it is unlikely that you will be able to remove this completely and the resulting bleach will be patchy. Try using a domestic bleach of the liquid type. This will be safer than any acid, which might whiten the wood, but would also damage the fibres. Using powerful chemicals on wood is risky, as they may affect its nature.

* * *

Two-transistor Reception

ON building a transistor receiver, I switched on about 9 o'clock and put Medium Waves on. I heard the Home Service on 276m., and then the Third programme on 280m. I used a coil consisting of 80 turns and the crystal tapped at 18 turns from the earthed end. Could you give me a reason for this? I also ask if your circuit of the Two-Transistor Receiver would work off a car aerial or a frame aerial when being used with 'phones. As I travel in a car a lot I would be interested to know. (*A.S.—Nottingham.*)

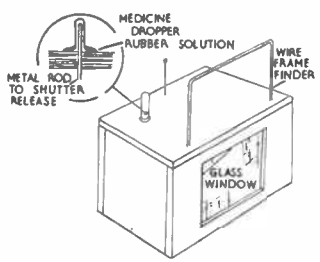
THE Home Service on 276m. would be expected, but the Third Programme does not use 280m. If the 280m. was a dial reading, the coil, tuning condenser and dial are not such as to give accurate wavelength indications. If you heard the 280m. announced, then it was probably another station relaying part of the programme. A frame aerial is not recommended for the transistor set, but a car type aerial, especially a vertical rod, would normally give enough volume for phone reception, in average conditions. The actual volume depends upon local conditions, and it is thus difficult to say exactly what to expect.

* * *

Under-water Camera

I WISH to build an under-water camera case. I have a cast metal box which I want to use as the basis for the case. Could you tell me how I should fit the window into the box? (*D.M.—Plymouth.*)

NATURALLY it is essential that the casing should be waterproof and the window should be fixed to the case with a waterproof glue of resin type. The camera would need to be firmly fixed in position in the container by the use of foam pads packed against the sides and bottom. The shutter release is seen in the illustration. It consists of a rubber medicine-type dropper fixed to the casing by rubber solution and a rod adjusted so as to make contact with the shutter release. You will also see the



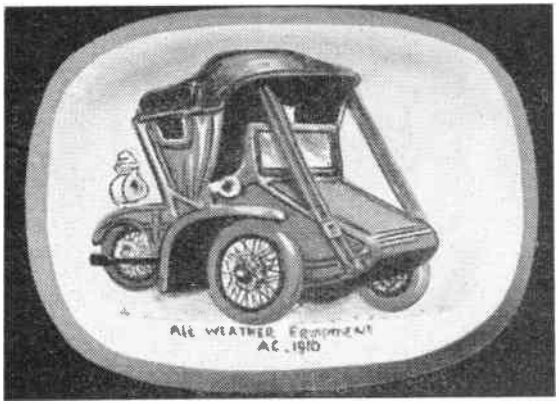
type of wire construction for use as a view-finder, but it should be noted that a glass window can also be incorporated in the top of the case for direct viewing.

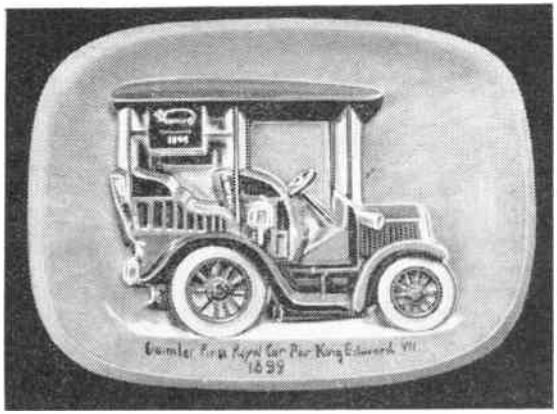
* * *

Query on Sealing Cracks

I HAVE trouble with putty coming out of my beehive roofs and sides. I re-putty and paint the cracks, but before the summer is out, the putty comes out and then I get leaks. Would the strips of Bostik or tubes of adhesive do a better job? (*C.W.—Halston.*)

THE usual cause of putty coming away is lack of paint under it — the oil in the putty soaks into the wood. The Bostik strips and Seelastik in tubes do not have this trouble, and should be better for your purpose.





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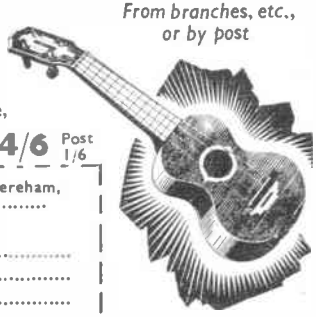

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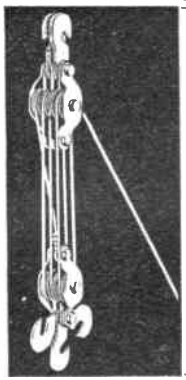

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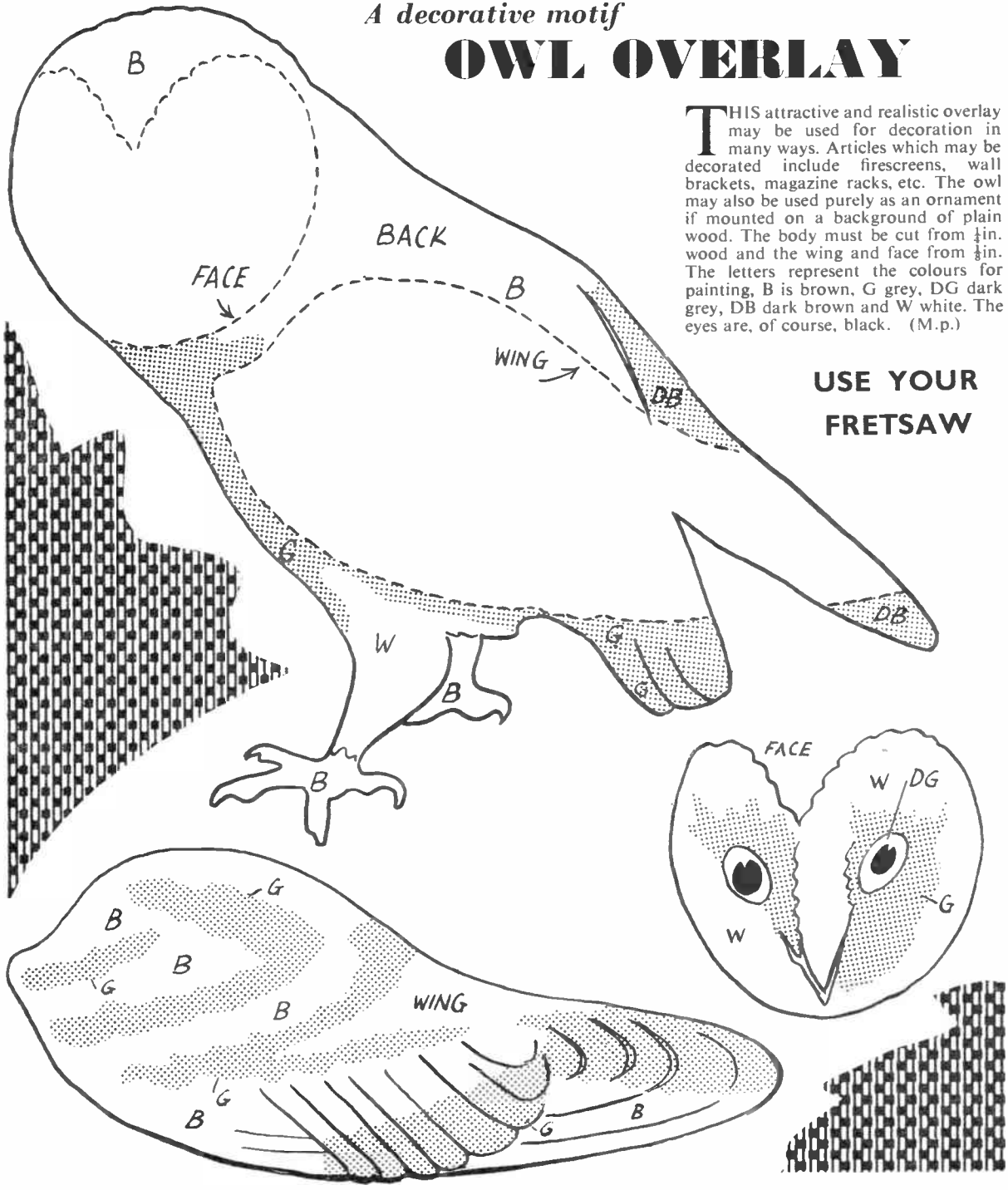

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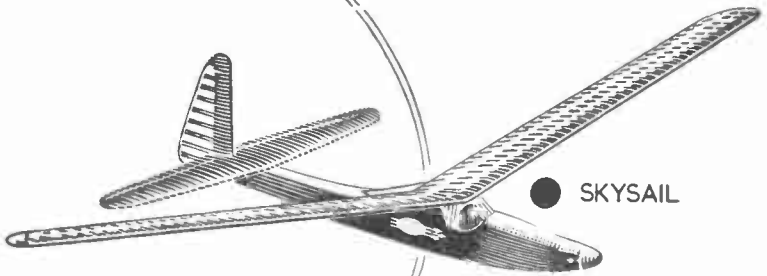

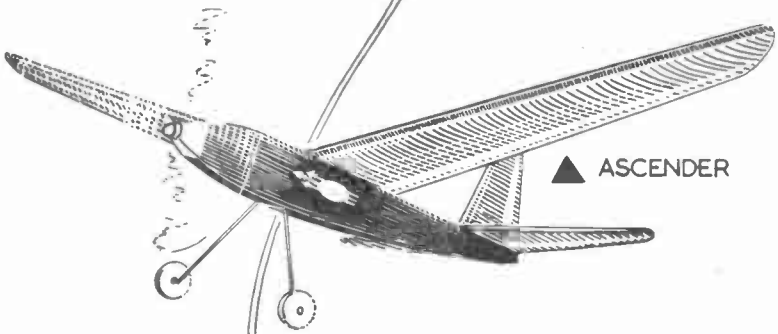

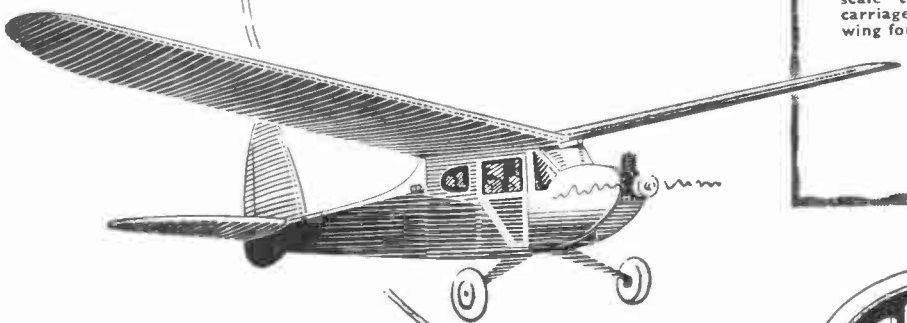

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