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THE ORIGINAL  
'DO-IT-YOURSELF'  
MAGAZINE

# HOBBIES *weekly*

FOR ALL  
HOME CRAFTSMEN

**Instructions  
for making . . .**

*Also in this issue:*

NOVELTY AND  
TOY PROJECTS

COLLECTORS' CLUB

A CARVED INKSTAND

PROPAGATION OF  
CACTI

LOOM WEAVING

FORMULAS FOR  
HOME PRODUCTS

ANGLING FOR TOPE

ETC. ETC.



## **TANDEM SIDECAR WITH TWO SEATS**

*Up-to-the-minute ideas*

*Practical designs*

*Pleasing and profitable things to make*

World Radio History



**5<sup>D</sup>**



# ACTI & SUCCULENTS



*MAMMILLARIA* seedlings grown in Vermiculite. Compare their size with a sixpence

**S**UCCULENT plants may be propagated either vegetatively or by seed. The ideal time for vegetative propagation is the early summer. One of the easiest ways of propagating succulents is by the removal of off-sets. If these are at ground level they often have an independent root system of their own. If not, they grow roots very quickly. These off-sets should be at least  $\frac{1}{2}$  in. in diameter before removal. Plants that may be propagated by this method are: Mammillaria, Echinopsis, Rebutia, Lobivia, and some group-forming Euphorbias.

method can be used on Pachyphytum, Cotyledon, Echeveria, and Crassula.

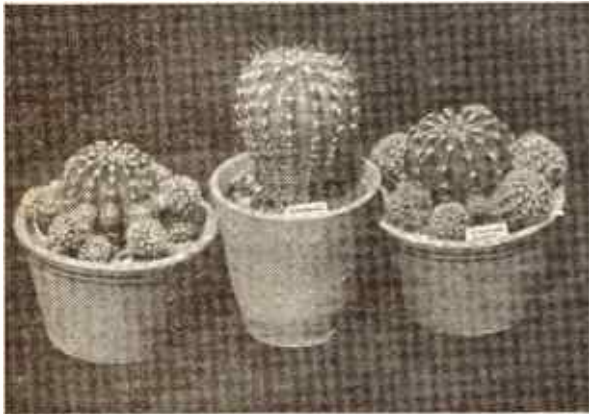
Finally there are cuttings. Pads and side shoots can be removed both from

## 9—PROPAGATION

cacti and succulents. Before planting these cuttings should be left in a warm, dry place for about three days in order to callouse over; this reduces the chances of rotting.

seed pan covered with a sheet of paper to keep the moisture in and the light out.

The seed pan should be examined, and as soon as one seed has germinated, it should be uncovered. The seedlings should be kept just moist. They will be simply little blobs of green. After about



A group of *ECHINOPSIS*, spherical members of the *CEREAEAE*, producing many offshoots



*OPUNTIA BRASILIENSIS* pads may easily be removed

Other succulents form plants with many 'crowns'. These can be quite easily split up, but before re-planting these sections, they should be left to dry for several days to prevent rotting. This method can be used on Glottiphyllum, Faucaria, some Crassula, Chamaecereus, and clumps of Lithops and Conophytum.

The Bryophyllum are interesting in that they produce young plantlets on the ends of their leaves. These develop roots while still on the parent plant; when they are ready they drop off and root.

Many succulent plants can be grown from leaf cuttings. The leaves are removed from the parent and potted up. These will root and eventually send out small plants in a similar manner to Begonias and African Violets. This

Both cacti and succulents can be raised from seed. On the whole other succulents are faster growing than cacti; Faucaria and Glottiphyllum are two very good ones to start with. The best germinating temperature is about 70°F. If a propagator is available, seed sowing may be commenced in March, otherwise it is better to wait until May.

John Innes seed compost (obtainable from seed shops and from Woolworth's in spring) is a good sowing medium. Before planting the seeds it should be watered with a dilute solution of potassium permanganate. A few crystals added to water until it is coloured pale pink is about the right strength. The seeds should simply be scattered on top of the compost, and the

a month, the first bristles will appear on the cacti and tiny leaves on the other succulents. The seedlings should be left in the seed pan until they begin to jostle one another, when they may be transferred to John Innes No. 1 compost.

Next: Cactus Gardens.

### Prize with 1898 Design

**M**R W. EASTON of Middlesbrough, Yorks., has won a large number of prizes with models cut from Hobbies designs. His latest success was a second prize at a Handicrafts Show in August, where his entry consisted of a Lady's Hand Mirror, Design No. 121, issued as long ago as February 1898.

# USE OF WOODEN LOOMS

THE card loom for making the scarf mentioned in the second article of this series is just about the largest loom that can be made from card. The disadvantages of such a loom are that, to keep a warp taut, a certain amount of bending must be expected, and that usually a card loom is used for one job and then destroyed in removing the weaving. Therefore, if weaving is to become a hobby, a more substantial loom must be made.

There are many different types of loom available to the beginner, from the simple two-way box shape to the large four-way loom, all of which are designed to be used on a table. The upright foot-pedalled loom is too difficult for the beginner until he has some yards of weaving behind him.

As he masters one type, the beginner will wish to advance on to a better loom, until he reaches the four-way table model that will enable him to do most of the things he desires. Therefore, as these looms can cost quite a lot of money if each one is bought separately, the looms described in this article have been so planned that by simply adding parts here and there, the original box loom eventually becomes the four-way type.

As the final loom in this series will enable the weaver to produce weaving 14 in. to 15 in. wide, the original box loom upon which it is based must be made larger than it normally would be. A reasonable size would be 17 in. by 3 in. by 23 in. which, are the approximate outside measurements when using  $\frac{3}{4}$  in. wood planed down to about  $\frac{1}{2}$  in. The farthest end away from the weaving would normally be higher than the weaving end to allow the weaver a better view of his work, but if progression from one loom to another is intended, then both ends should be the same height.

## The simple table loom

This is no more than rectangular framework with  $15\frac{1}{2}$  in. by 3 in. by  $\frac{3}{4}$  in. ends and 23 in. by 3 in. by  $\frac{3}{4}$  in. sides. The sides are screwed to the ends with three screws at each corner after the wood has been well rubbed down and the edges of the ends rounded with a file or with a glasspaper block. The framing from large packing cases will be found to be just about the right thickness of wood required.

The setting up of the loom is simple.

Cut each warp strand to a length equal to the distance around the length of the loom, plus a few inches extra for tying the ends together. The number of warp strands required for such a loom, where the sheds are to be separated by leash rods, need not exceed eight per inch, but where the loom is to be operated by heddle, the making of which will be described later, the number should be stepped up to thirteen per inch.

## By G. A. Edmonds

One extra warp strand is required to make the odd number, plus four extra so that the last two and the first two strands may be doubled to form a selvage.

Each strand is taken round the length of the loom and is tied at the end nearest the weaver at the top of the loom, so that it is reasonably tight, yet free to be moved around the length of the loom if it is pulled. Warp sticks are inserted at both ends of the loom to ensure good spacing and the tautness of the warp. These are very important when the loom is to be operated by leash rods. The warp sticks at the weaving end will of course move around with the weaving, whilst those at the far end are moved back-

wards as the weaving progresses.

When the warp is set in the colour, or colours, required, the leash rods are attached, as described in a previous article, so that the first strand in every pair goes through the leashes in the first leash rod, and the second in each pair through the leashes in the second leash rod. The loom now becomes a two-way loom, because two separate sheds are formed by alternately raising and lowering the first and the second leash rods. The loom now becomes a two-way loom, because two separate sheds are formed by alternately raising and lowering the first and the second leash rods. Plain, check and tartan can be woven on this loom.

It can be converted to a four-way loom by the addition of two more leash rods. The four are threaded in the following order. In every group of four strands, the first is threaded through the first leash on the first rod; the second through the first leash on the second rod; the third through the first on the third rod; the fourth through the first leash on the fourth rod; and so on.

For more efficient two-way operating, a heddle, as described next, can be used.

## Simple two-way loom with heddle

A heddle is a device fitted to looms to ensure a rapid and efficient dividing of the sheds. The principle is simple. A frame, twice the width of the shed and long enough to take the whole of the warp, is strung with wires, each wire so twisted that it has a hole at its centre. The warp strands pass alternately through a hole and the next through the gap between the first and the second wires. Those that pass through the slots will remain in the same position, whether the heddle is lifted or depressed, while those that pass through the holes will move up as a shed when the heddle is lifted, and go down past the static strands to form a different shed when the heddle is depressed. Metal heddles, fourteen inches long, stamped with slots and holes, can be purchased for about a shilling an inch, but as these are impracticable for use with the four-way loom to be made later (when the weaver will need to make his own heddles), the expense is unjustified.

The heddle can be made as follows. Take a 14 in. length of planed 1 in. lath and saw it down its length into two  $\frac{1}{2}$  in. pieces. Do the same with a 4 in. length. Plane the sawn surfaces and join together to make a frame 14 in. long by 4 in. wide, leaving one four-inch side open for the moment.

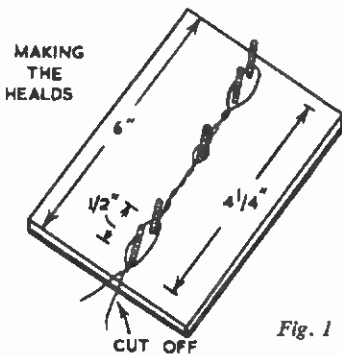
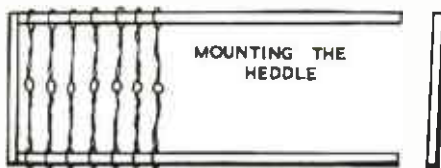


Fig. 1

On a six-inches square of wood mark two dots slightly over 4 in. apart; one more dead in the centre between them; and two others half an inch in from the outside dots. Remove the heads from five three-inch nails and drive them through the dots for half an inch of their length. Take 12 in. of fine wire, about the thickness of 15 amp fuse wire, and bend loosely in half. Take the loop thus formed and place it around the top nail, pull it tight, and twist the ends together around the second nail. Continue twisting until the middle nail is reached and take the wire round on either side of this nail and continue twisting until the lower nails are reached. Do the same here as for the top nails,

although in reverse, and twist off around the last nail, removing any excess. (See Fig. 1.)

Remove the wire frame from the mould and slide the top and bottom loops on to the wooden framework made earlier. Continue making these wire frames until sufficient have been made for every second warp strand. Turn the centre holes in every wire frame so that they are parallel with the sides of the wooden frame. These wire frames are called healds.

Setting-up is as has been described. The first shed through the spaces between the healds and the second shed through the centre holes. Remember to double the first two and the last two

warps. Keeping the heddle in place whilst the threading is being done is rather difficult, therefore it is best to thread the outside holes first, then the remainder of the holes, and lastly the slots.

The weaving is carried out as described in previous articles and the warp is pulled round the loom as the weaving progresses. Four rubber doorstops can be nailed to the underside of the loom, one at each corner, to prevent the loom marking a table, and to keep the weaving free as it travels underneath.

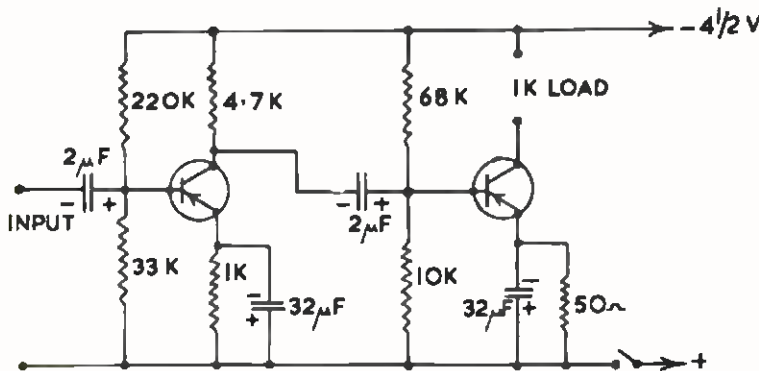
The next article in this series will deal with the conversion of this loom to a two-way roller loom, and then to a four-way roller loom.

## Replies to readers of general interest

### Transistor pre-amplifier

**C**OULD you possibly send a circuit for transistor pre-amplifiers for use with an electric guitar which has an earphone mounted on the soundboard? If possible, could it fit some of the following requirements: 2 inputs, volume control (tone control if possible), and I would like it to be made of surplus transistors. Also

The type of pick-up which has a magnet under each wire may be made from earphone magnets. Steel wires are necessary. The vibrating steel wire effectively replaces the diaphragm or armature in completing the magnetic circuit. The output is not very great.



could you please send any information on the construction of guitar pickups which have individual poles for each string? (M.F. — Stourbridge).

**A** 2-TRANSISTOR circuit for Brimar TJ2 or TS2 transistors is shown. With surplus transistors it may be necessary to change the value of base supply resistors (220K and 68K) for best results. One complete stage may be omitted if one transistor is sufficient. Using a 5K potentiometer in place of the 4.7K resistor, with slider to 2µF condenser, will furnish a volume control. Tone may be mellowed by shunting condensers across the input; or made more brilliant by providing smaller condensers instead of one 2µF component.

### Fitting a flying shelf

**I**N Hobbies Weekly of 6th July you have a Two-Minute Quiz showing a picture of a 'flying shelf'. Will you please tell me how it is kept up on the wall? (C.C. — Plymouth).

**N**OT many flying shelves are seen today. Originally they were built into the wall, and some can still be seen in old inns and buildings.

To fit an imitation flying shelf, proceed as shown in the

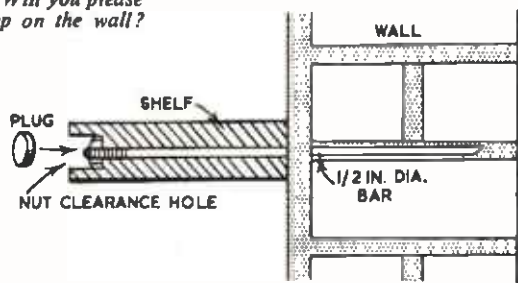
drawing. First, knock a round hole in the mortar between layers of brick, to a depth of at least 8 in.

Bed into the hole, with a mixture of one part cement to one part sharp sand, a steel bar that is threaded one end to take a matching nut.

For a shelf of, say, 4 ft., you will need three such bars. Shelves over this length will require four or more. The shelf should then be drilled centrally right through its width, and through which the bar will pass. A countersunk nut clearance hole is then drilled to allow the nut to catch on to the threaded portion of the bar. The shelf is then fixed by tightening the nut with a box spanner. Afterwards, the nut clearance hole is filled in with a tight fitting plug made of wood.

Allow two days for the cement mixture to harden before fitting the shelf.

For shelves which are not intended to take much weight, wood dowels can be substituted for the metal bars. They should be glued well into the shelf after cementing into the wall.



# Two-seater Tandem Sidecar

**F**OLLOWING a request for guidance from a reader who has a chassis, and wishes to build a two-seater sidecar for use with a tandem, the one illustrated has been evolved. The illustrations may not be complete in every detail, but they give enough information for building a smart and efficient car. The seats are back to back and are for average size children of five and three years old. Suitable modifications can also be made to these details if it is desired to build a bicycle sidecar or a single seater.

Measurements must be worked out as you go along, and the design modified if necessary to suit the chassis to be used.

Transparent material for making the sidecar screens can be obtained from Hobbies Ltd., Dereham, Norfolk.

Prices are: .020m. thick.

54 in. by 24 in. 25/-  
27 in. by 24 in. 14/6  
(Post 1/- extra)

27 in. by 12 in. 7/6  
13½ in. by 12 in. 4/-  
(Post 6d. extra)

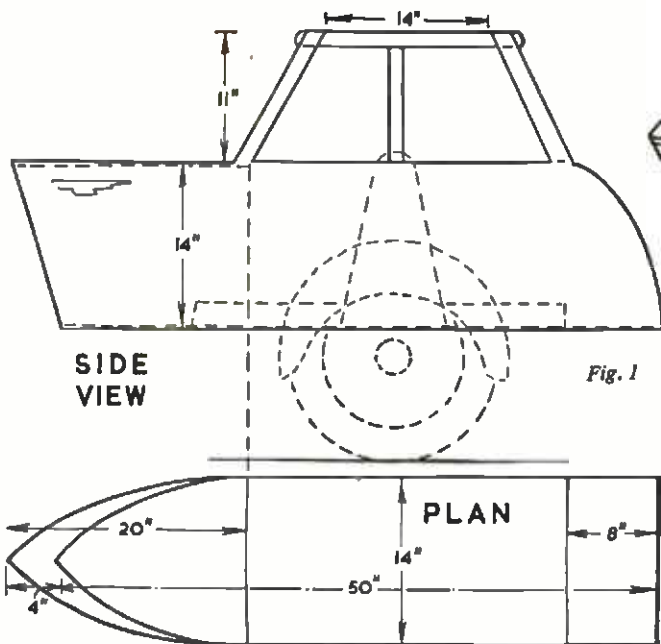


Fig. 1

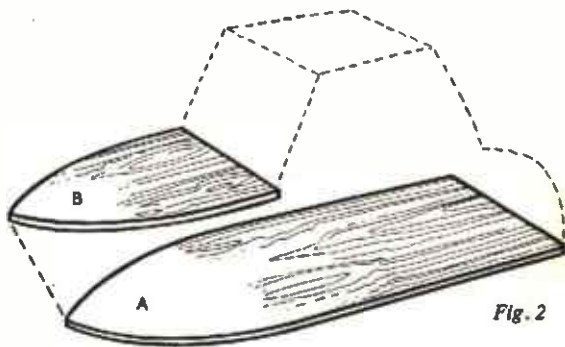


Fig. 2

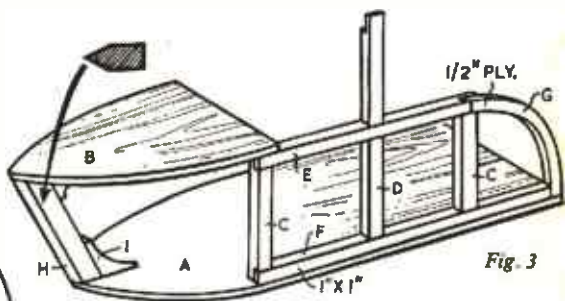


Fig. 3

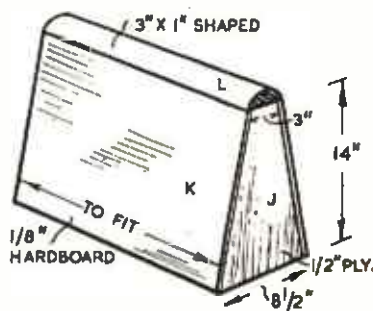


Fig. 4

The side view and plan in Fig. 1 give a good idea of shape, layout, and general measurements. The total width of the body should be about 14 in., and the length about 4½ ft.

It will be seen from Fig. 2 that pieces A and B, which are cut from ½ in. ply, form the basis of the design. The measurements can be obtained from Fig. 1. The side frames, consisting of pieces C, D, E, F, and G, are assembled, as shown in Fig. 3, and are halved together for strength. Note that piece G is of ½ in. plywood, and pieces C, D, E, and F are of 1 in. by 1 in.

stripwood. Use waterproof glue when assembling the pieces, and allow to dry thoroughly before fixing to A and B.

The stem H is cut from 1½ in. by 1 in. wood, and is strengthened by two shaped brackets I, one at the top under B, and one at the bottom. Fig. 3 shows one side frame, and the stem in position.

The seat backs are made up as seen in Fig. 4, the ends J being cut from ½ in. plywood, and the top L shaped from a 3 in. by 1 in. strip of soft wood. Cut the backing pieces K from ½ in. hardboard and pin in place.

The windscreens (back and front), and

the hood assembly are constructed as shown in Fig. 5, and are screwed to the body of the car. Use 1 in. by 1 in. strip, and joint together as indicated. The transparent material is pinned to the outside and made weatherproof by gluing and tacking ½ in. half-round beading all round. The hood consists of a piece of canvas tacked to the back, and held by tapes when rolled up.

The seats will consist of foam rubber slabs covered with material and placed in position.

Continued on page 59

# A WATCH CAN CATCH COLD!

**H**OW and when do you wind your watch?

You will know that the actual winding operation tightens up the main spring which makes the watch go. This spring, when fully wound, gives better resistance against shocks, vibrations, and changes of temperature. So it is important that you wind your watch when it is most likely to be subjected to the normal strains and stresses of the day. And this can only be the first thing in the morning before you set out. It is said that it is better to allow a preliminary warming up by wearing the watch for ten minutes or so before winding. If you wind it up before you go to bed it will be half run down by the next morning and therefore not so resistant to shock.

Winding is best done forwards and backwards, since jerky movements are, undoubtedly, responsible for many broken stems. If you do break a stem or this becomes loose never try to force it back into position. Take it to a repairer at once.

Watches, like ourselves, are subject to ailments and breakdowns with the approach of colder weather, but we can counteract these by observation of a few simple rules.

A greater strain is placed on a watch when a fractional contraction of the metal occurs due to conditions of extreme cold. For example, a spring may break due to sudden contraction caused by one of your actions. You may take off your watch in the bathroom, laying it down on a cold window sill, and this sudden drop in temperature is sufficient to snap the brittle spring. The remedy is to keep your watch warm — a matter of placing it in your pocket for a moment or so while you wash.

Your watch may catch a chill by leaving it in a cold place overnight, especially if it is placed on a dressing table near a window where icy draughts blow around. On the other hand it is most unwise to sleep with your watch on your wrist, for this is only inviting more trouble. Fine dust from the bed linen will find its way into the mechanism of even the best of watches. The same remarks apply to leaving your watch under the pillow.

When a watch starts missing a tick or so, and appears to stick a little, it is a

and dirt, and some amateur repairers have been known to swill the works in a saucer of petrol. This does loosen the dirt, of course, but in a few days some remaining thick oil will clog the watch. Such operations are inadvisable, and I will confess to one attempt at rinsing my watch in petrol. But it was the first and last time, since it eventually proved too expensive!

Steam and moisture are also enemies to avoid, so don't go for a dip or take a bath while wearing your watch. Some of the more expensive watches are claimed to be waterproof, but even so it is unreasonable to expect them to withstand salt water or long immersions.

Then there are strains and stresses caused while playing games such as football, cricket, and tennis. Watches do not take kindly to such vigorous movements, and prefer a much quieter existence.

If you accidentally drop your watch into water, take it out as quickly as possible, immerse in a bath of thin oil, and then take to your repairer, who will act before any further damage can be done. If the glass breaks or falls out, place the watch in a match box for carrying to the repairer.

There are several makes of good watches available at reasonable prices to suit all pockets. And most of these will give reliable service provided you take reasonable care. Choice of a watch may be guided by your hobby. The photographer will find one with a 'sweep' hand a decided advantage, for it is easier to see the seconds ticking away. From a practical point of view you will find that the larger watches are the more accurate because the parts can be produced with finer precision. Cases should be adequate for your daily job and to protect the mechanism, so quite a large proportion are now made from stainless steel. These are much stronger than the gold-cased varieties, which are mostly made from very thin metal, and do not offer much resistance against stresses and changes of temperature.

Keep your watch trouble-free by observing these simple rules. Don't meddle with it if there are any signs of it losing time. Take it to the repairer, because it may only need cleaning and oiling. And if you drop it on to a hard floor you may expect something to break, for the mechanism is very delicate and here you will have little option but to seek the aid of the specialist.

There is one other point. Many watches fall from the wrist because the strap has become worn — so replace it in good time.

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*By H. Mann*

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great temptation to take off the back in an effort to blow away the dust. If this operation does not blow more dust in, it will certainly leave a trace of water vapour to start the process of rust! When blowing proves unsuccessful, the next step is to poke about with a pin, and before you know what has happened the balance wheel refuses to budge. You may have broken the staff or the hair spring. So don't be tempted to remove the back — consult your repairer.

More often than not, and provided they have had reasonable care, watches primarily falter because they are dirty and need oiling. In fact every watch needs oiling about once a year, and this will probably save the cost of a bigger repair. You may have been told that the vapour from paraffin will remove dust

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● Continued from page 58

## TWO-SEATER TANDEM SIDECAR

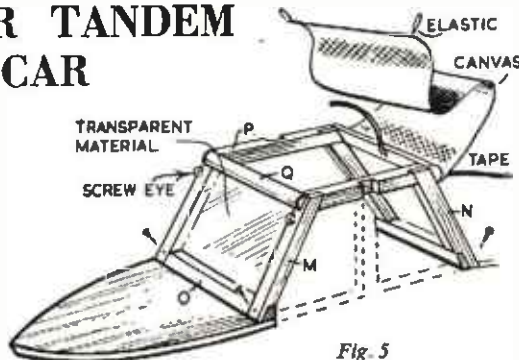


Fig. 5

Clean up and paint inside and out before bolting to the chassis. It may be necessary to add two battens across the bottom to receive the bolts, but this will, of course, depend upon the type of chassis. (M.h.)

*A touch of elegance*

# A CARVED INKSTAND



**M**ANY readers will, no doubt, like to try carving this useful inkstand. It is quite easy to make, and those who already have the necessary tools will find it inexpensive, too.

The main parts are, of course, cut with a fretsaw, and the carving is carried out before assembly. The carving is not at all difficult, and although we do not include instructions here, plenty of information can be obtained from inexpensive books.

The main illustration gives the general idea of the construction, and the remaining sketches show the details. All parts should be drawn out on the wood ready for cutting. Keep the wood under a weight until assembly, to ensure that it does not warp. Pieces 1, 2, and 3 are cut from  $\frac{1}{4}$  in. wood, and put together as indicated in Fig. 1. Make sure that the inkwells available will fit, and trim the openings slightly if necessary. The

relative positions of the parts are shown in Fig. 2.

The ends and pieces 4 are marked on to  $\frac{1}{4}$  in. wood, but not cut out. The pieces may be secured to the workbench by the waste wood, and the outline cut out after the carving has been completed.

The layout of the end pieces is clearly shown in Fig. 3, and the pieces 4 in

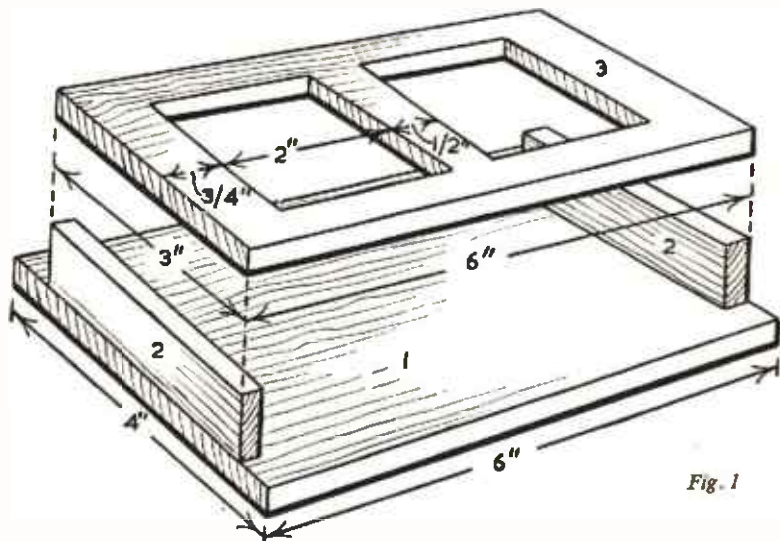


Fig. 1

Fig. 2

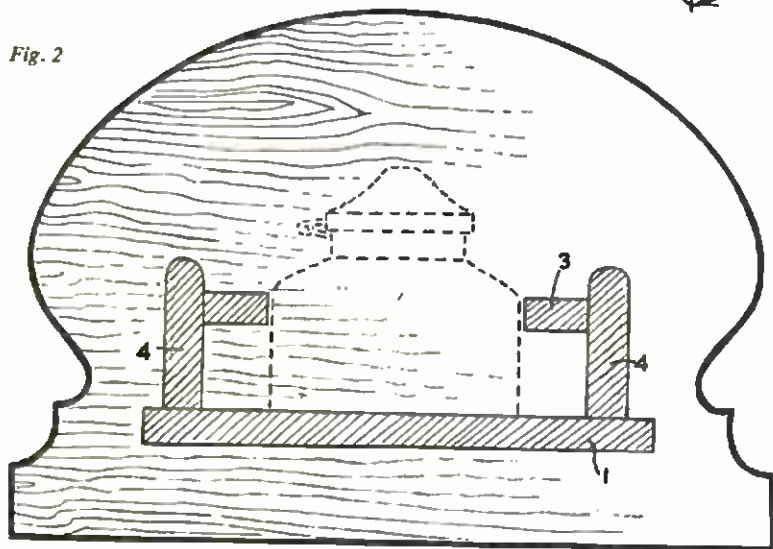


Fig. 4. The shape is enlarged by the square method, increasing the size of the squares to  $\frac{1}{4}$  in. Draw in one square at a time, and when half has been completed, it should be traced and transferred to the other side. Transfer to the wood by means of carbon paper.

When commencing to carve, the pieces should be clamped down firmly with a couple of Hobbies all-steel cramps, which are ideal for the purpose. If there is any danger of marking the wood, a piece of waste wood should be inserted under the clamp.

Commence by cutting down to about  $\frac{1}{4}$  in. to the outline of the carved panel, and also to the outline of the floral design, then continue the 'wasting' of the groundwork.

The deeper the groundwork is sunk, the greater the relief when the scrollwork is carried out. The latter will be done with  $\frac{1}{8}$  in. chisels and small gouges, and a spoon bit for the undercut edges.

For the beginner who, perhaps, is not



Fig. 3

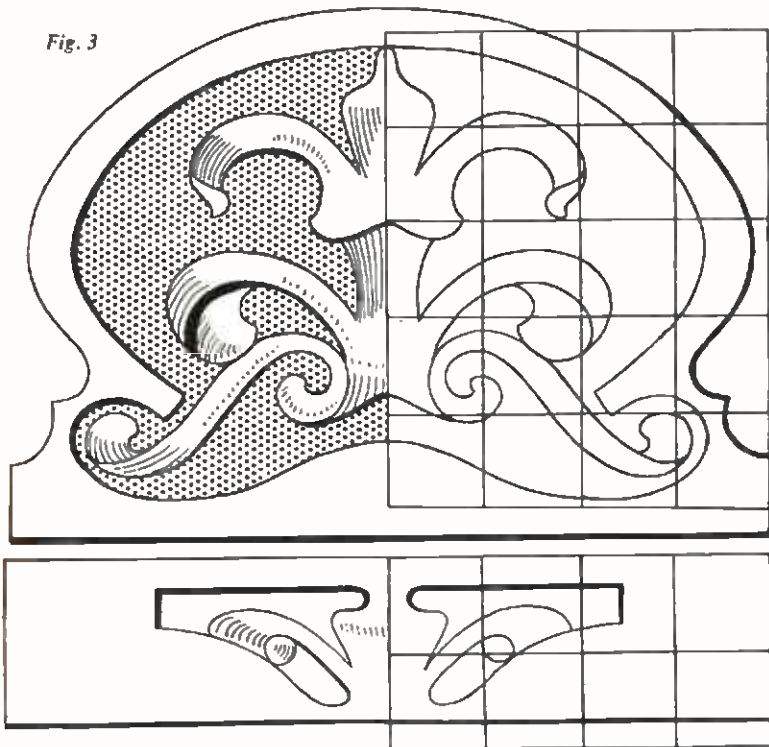


Fig. 4

sure of what tools to use, we recommend 'Wood Carving' by Percy W. Blandford — price 4/- (postage 5d.) from Hobbies Ltd., Dereham, Norfolk.

The side rails 4 are carved in exactly the same way. The ends and rails are now cleaned up and fixed in position. Finish by staining and polishing, or by varnishing. The inkbottles (No. 5662) cost 2/6 each, postage 7½d., and are obtainable from Hobbies Ltd., Dereham, Norfolk. They may also be obtained from Hobbies branches and stockists.

(M.H.)

## A LAUNDRY HOLDALL

THIS photo shows an article which every housewife needs when she does her washing — something light and handy to put the dirty clothes in before washing, and which also serves to transport them into the garden after washing, ready for the line. This handy holdall also folds flat when not in use, thereby saving space in the kitchen.



## SEEING THROUGH A BRICK!

OF course, you can't really see through a brick — it's a trick, and all made possible by a magic box that can be made in an hour.

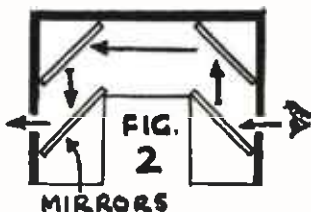
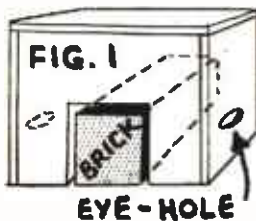
First, take a brick and build around it a box, as shown in Fig. 1. The brick does not have to be a tight fit in its hole, and there is no need to build a bottom to the box. On opposite sides of the box, cut out oval eye-holes. Place them just below the level of the top of the brick.

Inside the box are fitted handbag mirrors, as shown in the section at Fig. 2. They should be, if possible, the same width as the inside measurements of the box. They are fitted at angles, as shown, with the reflecting sides of the mirrors facing inside and opposite one another. Hold them in place with Sellotape.

Now for the illusion. Place your hand or an object in front of the left-hand eye-hole. Now peer with your eye into the right-hand eye-hole, and you will appear to be seeing right through the brick.

It's all done by the mirrors, as you have guessed. Each mirror reflects into

the next in the direction of the arrows. Make sure your friends do not see inside the magic box when you are trying the trick on them! (E.C.)



And how simple to make! I suggest that you do not make it too long nor too high, as then it would be clumsy and awkward to carry. The prototype is 2 ft. 8 in. long and 3 ft. high. You will require four pieces of wood 3 ft. by ½ in. by 1½ in. for the outside legs, which are bolted in pairs. The two cross pieces that carry the holdall are 2 in. by ½ in. One is 2 ft. 6 in. long and the other 2 ft. 8 in. To strengthen the legs it is advisable to add two cross pieces on each side, below the bolts. These measure 2 ft. 9 in. by 1½ in. by ½ in.

The container consists of a linen 'bag', which can be cut to size and sewn together by the wife. Six tapes are provided for tying to the top rails. There is a side pocket in the holdall for clothes pegs.

If the housewife is short in stature, then you can cut down the height; it will not affect the carrying capacity of the holdall. (A.S.)

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WIRE

1/4 IN  
ROD  
AT O

3 INS

PAIN  
SPAC  
WIT  
BRIG

PENNY PLACED ON  
TOP OF ONE OF DADS  
EMPTY BOTTLES

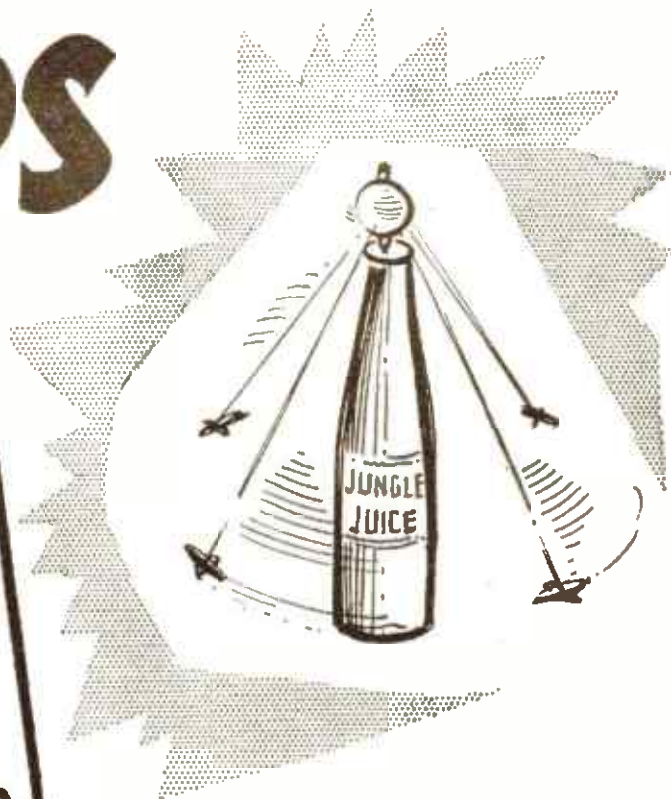
11 INS

• ENDLESS FUN FOR YOUNG SPACEMEN

WIN  
SHA

# SPACE SHIPS

1/4" HOLE DRILLED THRO'  
TO TAKE DOWEL

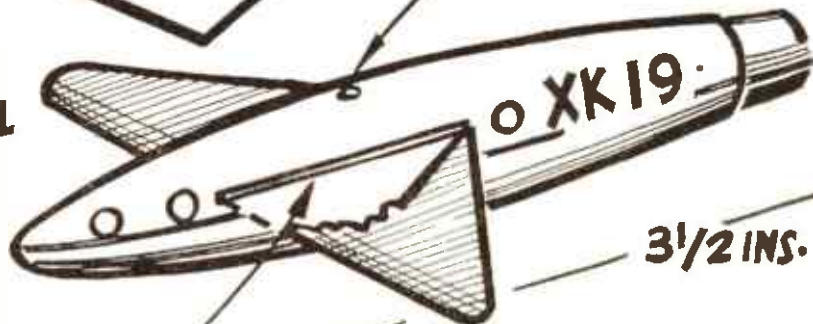


FOUR  
SPACE -  
SHIPS  
SHAPED  
FROM  
3/4 IN. SQ.  
BALSA

1/4 IN. ROUND  
ROD POINTED  
AT ONE END

PAINT THE  
SPACE SHIPS  
WITH A  
BRIGHT ENAMEL

HOLE IN WHICH TO  
INSERT WIRE



WINGS CUT FROM  
STOUT CARD

WING SLOT CUT WITH  
SHARP KNIFE

WINGS CUT FROM  
STOUT CARD

# A CAMP FIRE FOR INDOOR USE

HERE is a realistic novelty that will appeal to outdoor boys, especially those who have pleasant memories of sitting round a camp fire telling stories and singing songs. This easy-to-make 'camp fire' will help

By S. Gaskell

to keep those memories fresh all the year round. It gives the illusion of flickering and smoking like a blazing fire, and is suitable for a bedroom or Boy Scout clubroom.

The next time you go for a hike into the woods, gather together a few sticks of dead wood, and keep these at home until you are ready to do the job. You will need eight sticks about 17 in. long and about  $\frac{3}{4}$  in. across. Ordinary chopped wood sticks of similar size would do, but these should be roughened up a bit to look like the natural wood.

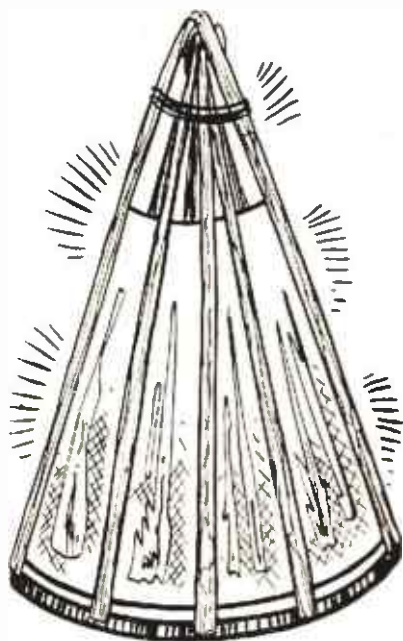
Starting with the foundation, make a 10 in. circular base from  $\frac{3}{4}$  in. thick soft wood. One end of an apple box from a greengrocer would be suitable for this. Having cut out the base, with a rule mark off eight spots round the top edge, and at each point cut a notch about  $\frac{1}{4}$  in. deep, with the rounded side of a cabinet

rasp (Fig. 1). Fix a batten holder and flex to the centre of the base, then drill a hole through one end of each stick (to prevent splitting), and nail them in the notches (Fig. 2).

Bring the top ends together like the poles of a wigwam, and bind them tightly with a bit of strong wire (Fig. 3), and glue a piece of baize or felt to the underside of the base.

Next, cut a 'flicker' propeller of 3 in. diameter, and with eight vanes from scrap tin (Fig. 4), and with a centre punch or nail, make a tiny dent in the centre. Bend one side of each vane slightly upwards, and turn the ends down. The heat from an electric bulb acts on these vanes, and makes the propeller turn. But this is only possible if the propeller is resting on a pivot. To make this, use a length of soft 18 s.w.g. wire, and fashion it into a clip, so as to fit over the bulb. A gramophone needle is ideal for a pivot, and this should be soldered on to the top of the clip.

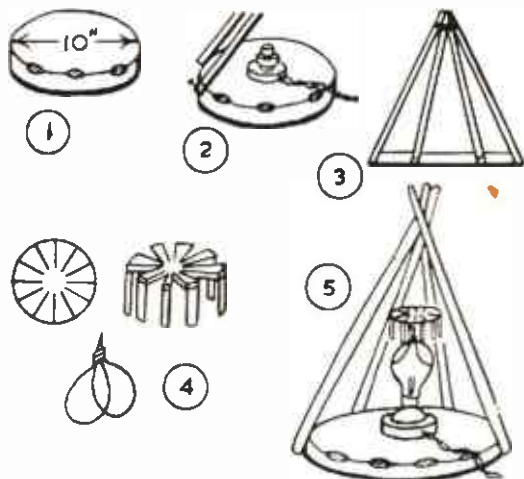
Fill in the spaces between the sticks with white ceiling paper or similar pasted to them, but leave one space open, so that the bulb, etc. can be fitted later. It is not advisable to use a continuous length of paper because of the difficulty of sticking it down in the restricted space behind the sticks. When filling the spaces, allow a  $\frac{1}{4}$  in. space at the bottom,



and about a 3 in. space at the top. This enables the air to be drawn in, and the hot air to escape, which is essential to the working of the 'fire'. Paint the space-covering papers with red and yellow poster paints to represent flames. Next, go over the sticks and the edge of the base with blackboard paint (camera black), which dries with a dull finish.

Cut four  $\frac{1}{4}$  in. strips of darkish paper about 2 in. long and four 1 in. long, and glue these alternately to the propeller vanes. Fit a 60 watt clear bulb in the holder, place the clip over it, and balance the propeller on the pivot (Fig. 5). Switch on, and give the propeller a gentle spin to start it off. As the bulb warms up, the propeller will slowly begin to rotate, and will continue to do so provided it is evenly balanced on the pivot. Once adjusted, the propeller should start revolving automatically soon after the light is switched on.

Cover the last remaining space with the 'flame' paper, fixing it in place with drawing pins. This makes it easier to remove whenever the propeller needs re-adjusting or the bulb replacing. You may find some difficulty in getting the propeller through the small opening, but it can be done with care. The only alternative would be to increase the overall size of the 'fire', but this would make it somewhat cumbersome.



# CHEMISTRY

## AT HOME

**S**HOULD you wish to make paper or cardboard resistant to oil, there is a simple formula for this. To make up the product dissolve 0.1 gram of sodium hydroxide (caustic soda) in 90.5 c.c. of water. Weigh out 6.6 grams of starch, stir to a paste with a little of the sodium hydroxide solution, and then add it to the main solution. Heat the mixture to about 85 degrees Centigrade (185 degrees Fahrenheit) in a water bath and stir until a smooth liquid results. Maintain the temperature for a further half hour, making up any water lost by evaporation.

Now add 2 c.c. of glycerine, 0.6 gram of sugar and 0.2 gram of sodium salicylate; stir till dissolved and the mixture is ready for use. Simply brush on to the paper or cardboard and allow to dry. A second coat is then applied.

**PAPER SOFTENING.** Paper can be made as soft as cloth by a very simple treatment. Dilute glycerine with nine times its own volume of water and soak the paper in this until thoroughly wetted. Then hang up to dry.

**CORK TO METAL ADHESIVE.** A satisfactory joint between cork and iron or brass can be attained by the use of sealing wax. First coat the cork surface with melted wax. Then heat the metal in a sootless flame until it is hot enough to melt the wax when touched with it. Now hold the wax in a flame until it takes fire and coat the hot metal with it. Hold the cork momentarily in the flame until the wax melts and press firmly on the waxed metal.

**DESK AND TABLE SURFACING.** If leather or oilcloth is to be fixed to a desk or table top, do not rely on office paste or mucilage. A special paste will prove much better. Thoroughly mix 9 ounces of plain flour and a level tablespoonful each of powdered gum arabic and alum. Beat the mixture into a batter with water and then heat over a low flame, stirring constantly until the batter thickens no more. Remove from the flame and cover until cold. Brush a thin coat of this on to the surface to be covered and lay on the covering. Leather should first have been wetted. Smooth carefully from the centre outwards and leave to dry.

**WOODCARVERS' STROP.** Whether you merely whittle with a pocket knife or use a full range of carving tools, a strop can give that extra bite to the tool. You will need two strips of calfskin.

Use the adhesive recommended in the last paragraph to stick these one on each long side of a strip of wood. One side of this double strop is left untreated.

## MAKE A NOTE OF THESE FORMULAS

The other is coated very thinly with Vaseline, rubbed in well and wiped clean of surplus. This prepared surface must now be treated with either emery, graphite, or wheat-straw charcoal. Which ever is used, it must be in very fine powder. Wheat-straw charcoal may be made by punching a few holes in the lid of a tin, half filling the tin with dry wheat-straw and heating in the fire until smoke and flame have disappeared from the punched holes. Remove the tin and allow to cool with the lid on. The resultant charcoal can then be powdered.

Well rub a little of the chosen powder into the Vaseline surface. Wipe clear and the strop is ready. After sharpening on the oilstone, strop the tool first on the prepared surface of the strop and finally on the untreated side. The edge can be touched up on the strop a number of times before a complete regrinding on the oilstone is necessary.

**LOTION FOR CHAPPED HANDS.** Those who suffer from chapped hands in the colder weather will find an easily made protective in a lotion consisting of 2 fluid ounces of glycerine, 6 fluid ounces of rain water, and  $\frac{1}{2}$  fluid ounce of spirit of camphor. Dissolve the glycerine in the water, add the spirit of camphor, and shake together. The chapped condition soon disappears when a little of this product is rubbed in.

**LIP SALVE.** Sore and cracked lips often go together with chapped hands. A good lip salve can soon be made by warming together in a water bath 4 grams of white wax (bleached beeswax), 1 gram of spermaceti, and 4 c.c. of oil of almonds. When the wax and spermaceti have dissolved, pour the liquid into a mould made from an upright short length of metal tubing, the lower end of which has been pressed into a disc

of clay on a board. Leave until set and cold, remove the tube from the board, push up the rod of salve and pare off any adhering clay. This tube serves as both mould and holder. A cork at either end will keep the salve clean. When required for use remove the corks, push up the salve with the finger, pushing down again after use before replacing the corks.

**TINPLATE INK.** Tin cans and other articles made of tin-coated steel can be marked for labelling purposes by means of a strong solution of copper nitrate. To make a small supply of the ink mix 5 c.c. of strong nitric acid with 5 c.c. of water in a beaker. Stand the beaker in the open air, for harmful fumes will be given off during the next stage. Into the diluted acid put clean scrap copper. The metal dissolves. If the metal entirely disappears, add more until some is left when all effervescence ceases. The deep blue solution is now ready for use. Write with a quill pen made from a feather, the thicker end of which has been cut obliquely so as to form a nib. A steel pen may be used if you wish only to write a word or two; wash the pen with water immediately after use. The written characters appear in black. When the ink is dry, wipe with a wetted cloth.

Should you prefer a more decorative ink a variation of the formula will produce black-edged, red-brown characters. Once again dilute 5 c.c. of strong nitric acid with 5 c.c. of water, but this time dissolve in it 0.5 gram of copper. Use this ink in the same way as the first.

**INDELIBLE GLASS INK.** If water-glass is mixed with Indian ink an indelible ink for glass results. Weigh out 20 grams of waterglass in a small beaker, warm it in a water bath, add 10 c.c. of Indian ink, and stir until an even mixture results. Let it cool until lukewarm and pour into a well-closed bottle. Degrass the glass by sponging with benzine, letting the glass dry before using the ink. Write with a steel pen, rinsing it after use. The glass should be left aside for a few days before use, so that the ink may 'bite' well into the glass. (L.A.F.)

Next week's free design will be for a pull-along toy — a performing seal rotating a ball on its nose. Other projects with Christmas gifts in mind will also be featured.

MAKE SURE OF YOUR COPY

# Novelty Holder for a Matchbox

HERE we have a novelty match-box holder which can be easily made from scraps of plywood. By introducing a string pull, which operates like the old fashioned bobbin latch, the box of matches is released. The following description applies to an average sized matchbox.

You will require two identical pieces for the front and back of  $\frac{1}{2}$  in. plywood measuring  $2\frac{1}{2}$  in. by  $1\frac{5}{8}$  in. and these can be cut out together, the corners being trimmed as shown in Fig. 1. We also need a strip for one side and a smaller strip for the inside base. Cut a thin strip of plywood  $\frac{1}{8}$  in. wide and  $3\frac{1}{2}$  in. long. This strip is then cut into two sections, one 2 in. long and the other  $1\frac{1}{2}$  in. long. The first mentioned fits between the front and back down one side, and the shorter piece is attached to the base or pedestal.

Two pieces of  $\frac{1}{8}$  in. material are re-

By S.H.L.



quired for the pedestal, one measuring 4 in. by 3 in. and the other  $2\frac{1}{2}$  in. by  $1\frac{1}{2}$  in.

Clean up all the wood before assembling, with glasspaper, smoothing the edges and drilling small holes to accept a short length of strong but thin twine through the back and front as indicated in Fig. 1. The two pieces should be cramped together for drilling so that the holes will be in the same plane. It is

essential that all edges of the plywood should be smoothed before attempting to glue.

We now come to the assembly of the few parts, first gluing the smaller base on top of the larger so that it is quite central. The small  $\frac{1}{8}$  in. strip is glued to the top of the smaller portion of the base as shown in Fig. 3. Note that this small piece is set  $\frac{1}{8}$  in. from the sides, and in order that allowance is made for the thickness of the sidepiece, it is  $\frac{1}{2}$  in. from one end but only  $\frac{1}{8}$  in. from the other end. The case will then fit centrally on the pedestal.

Reference to Figs. 2 and 3 will reveal how the holder is fitted together by gluing the sidepiece between the front and back sections. Ultimately, this case is glued to the base fitting over the  $\frac{1}{8}$  in. strip.

These novelties are quickly made in this fashion, but before proceeding further it is best to give the whole an application of thin, spirit varnish. The lettering can then be added — Pull the Latch to get a Match — in Indian ink or poster paint, followed by a further coat of varnish. It will be appreciated that we suggest that the wood is left in its natural colouring, but if desired you may paint the pedestal.

Finally a piece of thin twine, about 7 in. or 8 in. long, is threaded through the two holes, a bead being tied to each end. The case of a matchbox is inserted in the holder, the abrasive edge being on the open side. This case is inserted so that the twine is free at the top. The tray for the matches is now inserted pushing the string downwards and inside the matchbox case. When the holder is held by the left hand and the latch pulled by the right, the tray of matches will rise. Fig. 4 clearly shows how the string operates, yet is invisible except on the outside.

Since these little novelties are quickly made, it is advisable to cramp a few pieces of plywood together when you can cut out several in one operation.

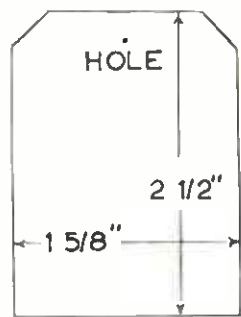


FIG 1

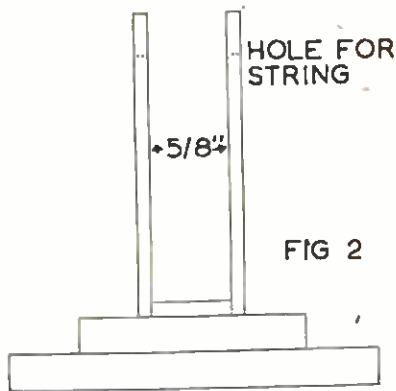


FIG 2

FIG 4

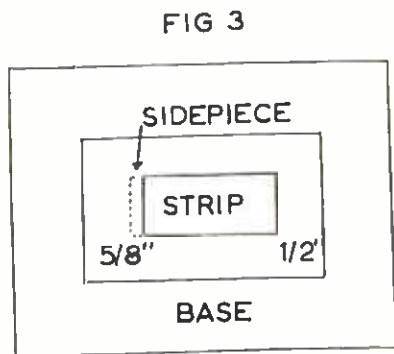
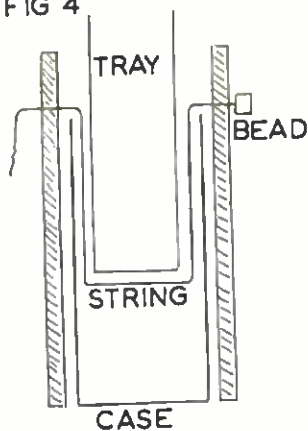


FIG 3



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# WITH ROD & LINE

**I**N my last article I told you that there are places where tope can be taken when fishing from the beach. This is very true of some parts of the Welsh coast in the Anglesey area.

In spite of that I would venture to state that most tope fishing is done from boats, and unless you are a boat owner with plenty of experience in the handling of a craft then the best thing you can do is to place yourself in the hands of a good boatman who knows his fishing.

Now don't be misled into thinking that because a chap is a first-class boat owner he can take you to tope grounds. He must also be a good fisherman to do this. If you care to treat yourself to an Admiralty chart of the area you intend to fish and have the knowledge that tope are in that area, then you want 'marks' over a sandy bottom.

A few rocks in the vicinity need not trouble you except that you might find yourself in contact with a conger, when you will know you've got a fight on your hands. However, let's not talk about conger this time.

Tope cruise along the bed of the sea searching for their food, which consists of other fish, and particularly flat fish,

which are also to be found over a sandy bottom. In fact you can put a line out to catch your bait, but as a rule the bait is missing or refusing to feed when you most require it, which is why I always take out a supply of mackerel or herring.

---

## LET'S TALK ABOUT TOPE—2

By 'Kingfisher'

---

Tope are wary fish and your tackle should be so assembled that the quarry can feel no weight when it picks up the bait. To do this you fish with what is known as a flowing trace. The first thing to go on the line is the weight, and this should be as light as possible and in accordance with the strength of the tide. My own boatman is most particular about fishing when the tide is slack and it is a fact that we seem to get amongst

the fish when this condition prevails.

After having put the weight on the line put on a small ledger bullet which should be just large enough to prevent the weight slipping down on to the trace. You can make the loop on the weight smaller by squeezing it in a little with a pair of pliers.

I stated above that you should put a ledger bullet on the line and this should read a 'barrel lead'. One end of this will rest up against the swivel, or rather the knot on the line, and will not prevent the swivel from working.

Lower the tackle over the side of the boat and let the tide take it away as you continue to let out more and more line. When the weight comes to rest on the bottom the current will slowly pull against the bait and will lift this up and down a little, which in turn will attract your tope. Don't be surprised, however, if you catch other fish, as skate will be found on the same kind of bottom.

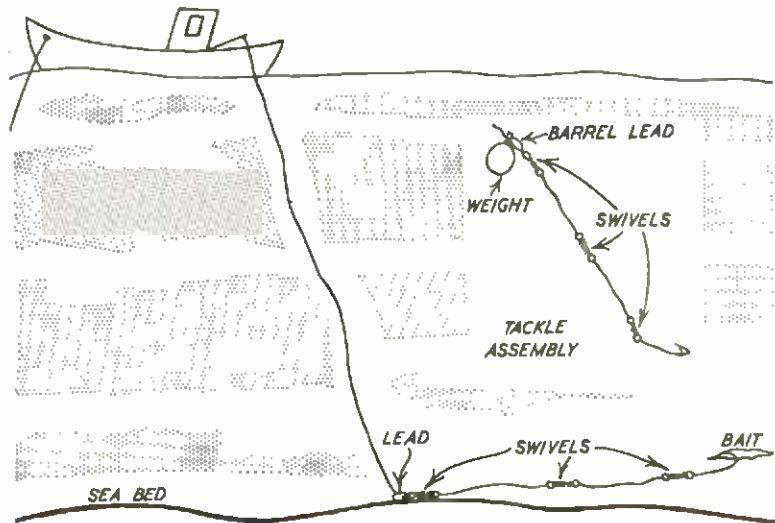
When your tope takes the hook he will do one of two things. He will run a few yards, drop the bait, pick it up again and repeat the performance. This is why you need plenty of line on your reel. He may do this a dozen times and you just mustn't strike. In this playful attitude he may well take out a hundred yards of line. When he finally starts to make a long run you can hit him and hit hard. Then look out for squalls.

Alternatively he will take the bait in a determined manner and make one long run, and in this case after he has travelled say forty yards you can give him the rod.

There are often arguments amongst tope fishermen as to whether tope will spin round and round when hooked. Some say 'yes' whilst others say 'no'. My experience is that they will. One occasion on which I got a large fish stands out in my memory very clearly. It happened last year. The fish was hooked and was being played when I felt the line go slack. After reeling in a few yards it suddenly tightened and I had the battle of my life on my hands.

The fish was brought to the boat eventually and the reason for the hard fight was apparent. He had taken the bait and in the fight he had spun round and round so that the trace was wrapped round his tail. Later on the hook length had broken but the trace held him securely. However, this left his head free, and with his power he was able to lead me all around the place before tiring and coming to the side. The first strike had hooked him securely in the jaw and the hook was still there when he was pulled into the boat.

Tope fishing is good sport. Moreover it can be cheap, as you can make up a party of say four anglers and share the cost of a boat, which will be in the region of £5 for the full day.





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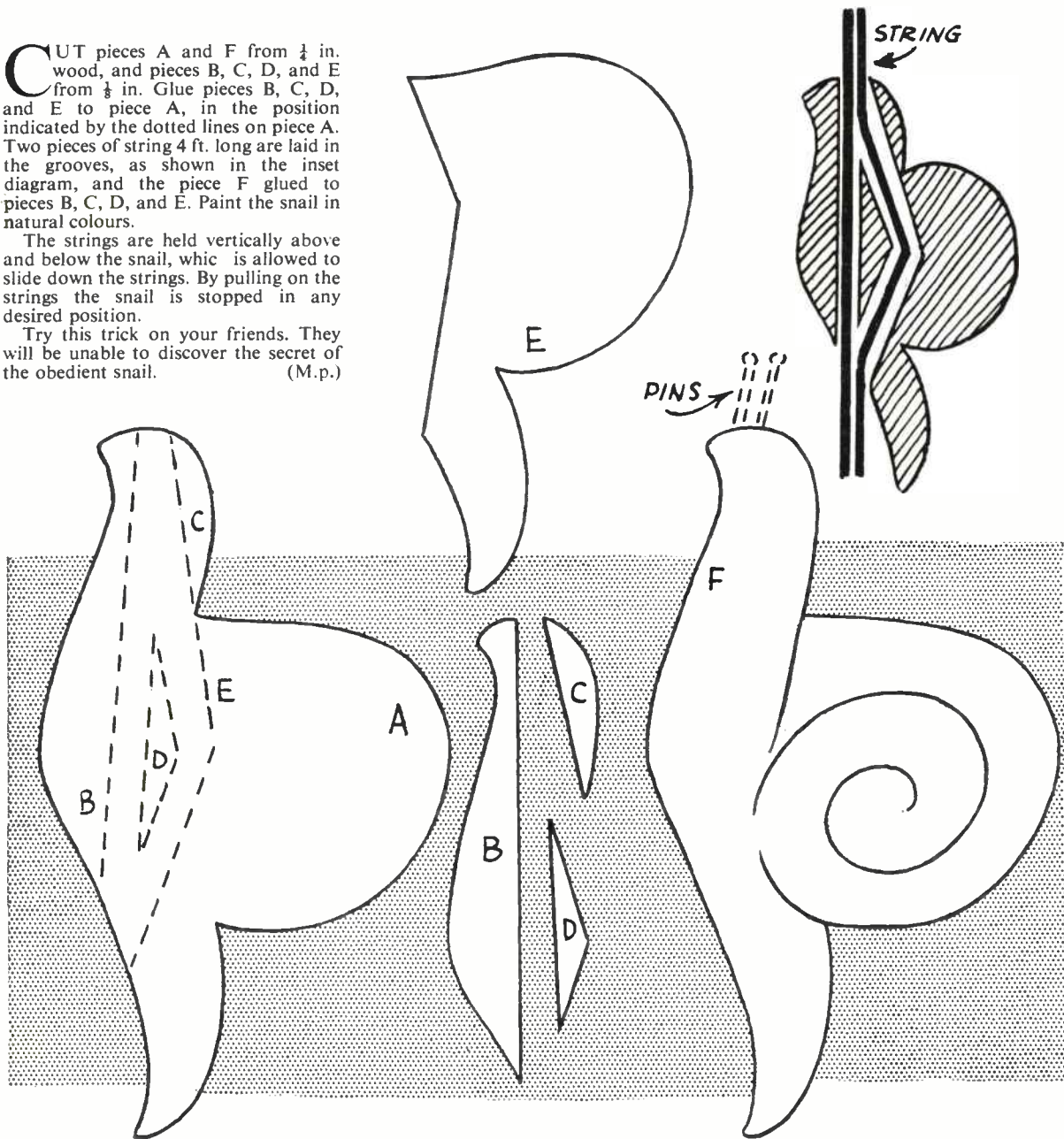
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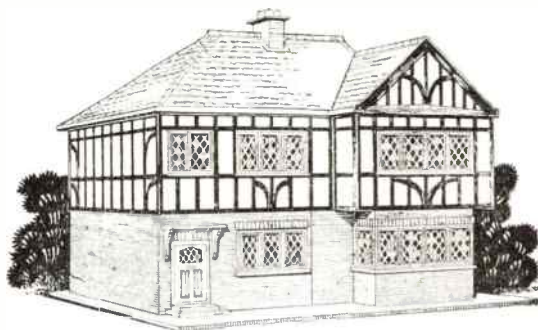
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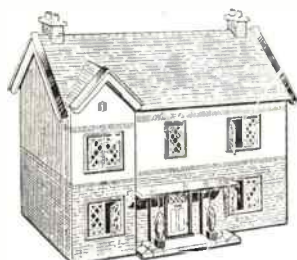


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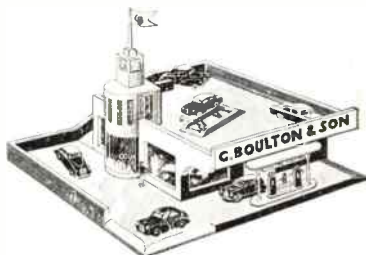
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