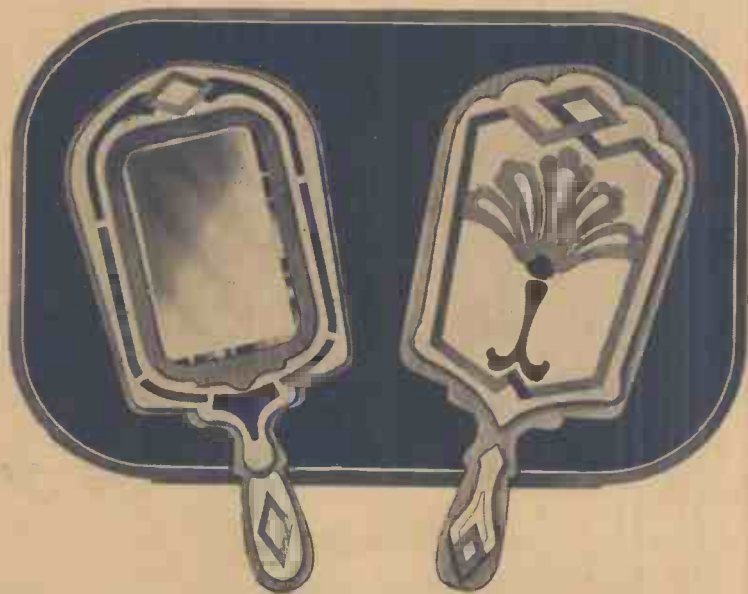


Hobbies

A JOURNAL FOR THE FRETWORKER &
HOME CRAFTSMAN.



LADY'S HAND-MIRROR.

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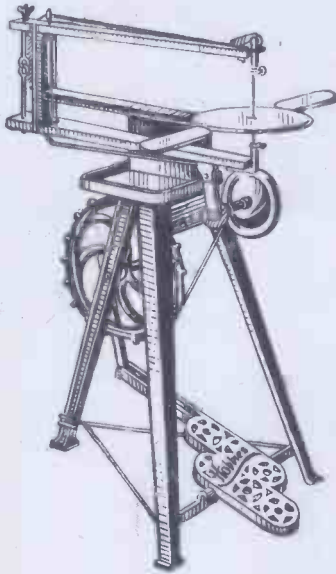
JUNE 15th. 1929

No 1756

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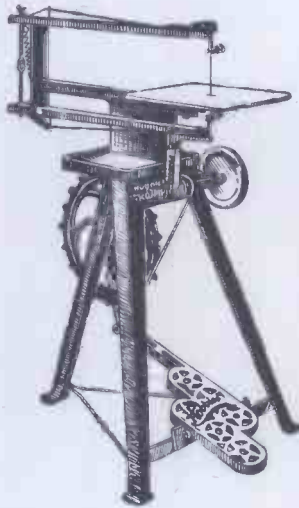
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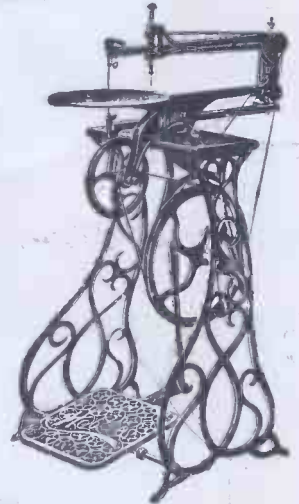
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Hobbies

THE
FRETWORKER'S
WEEKLY
JOURNAL

VOL. 68.
No. 1756.

OUR INLAID DESIGN. LADY'S HAND-MIRROR.

JUNE 15,
1929.

ONE of the principal joys of Fretwork is the opportunity of being able to turn to almost any subject we like so as to undertake that which we prefer next. A range of 500 in Hobbies' Catalogue provides enough assortment for anyone, and the trouble is usually the other way round. Having completed a piece of work one wonders which to turn to next, and there is the difficulty of sorting down all those we should like to make, and finally coming to a decision on one. This decision, of course, rests entirely with the individual worker, but there is a definite popularity of certain classes of work. These, too, are reflected in their sections in the Catalogue, and a glance through the design pages will show that the section of inlaid work has as big a hold as any.

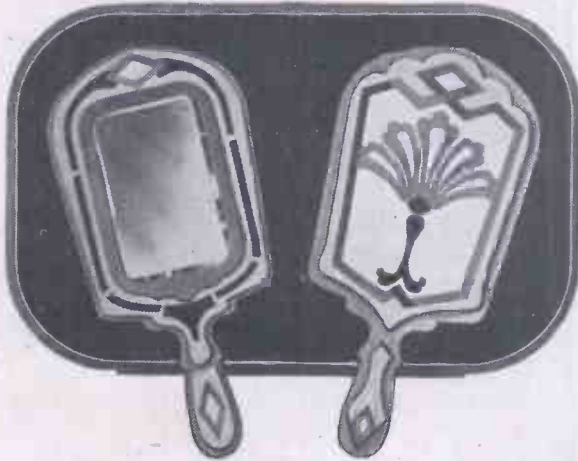
The Difference in Inlay Work.

This is quite understandable because, after all, everyone likes a change now and then, and the worker who has done ordinary fretwork designs for some time finds it a little relaxation to turn to inlay work. This may sound as though fretwork is tiring in itself. It is not. At the same time inlaid work continues the use of the fret-saw and the usual tools, but brings into being a piece of work quite different both in process and finish from the ordinary design. This is seen even in the layout of the design patterns on the Sheet presented with this issue, and those who have not previously undertaken inlaid

work at all would be well advised to make their first attempt on the simple Hand Mirror which forms the subject of this week's presentation sheet. Such a mirror is of undoubted usefulness to any lady, whilst the small panels of inlay work which are introduced provide just sufficient trial for the beginner to practise upon without proving sufficiently long to tire him out.

Solid Flat Surfaces.

In inlay work one of the great advantages is that the finished surfaces are all flat. There is none of the interior fretwork such as is found in the usual design; which provides the possibility of finishing off the work with Lightning Polish, because there is then none of the interior edges to be painted with a brush. Moreover, as in inlaid work four or more varieties of wood are used, an amazing and striking picture in contrast is provided. The usual boards are



No. 1756.—LADY'S INLAID HAND-MIRROR.

mahogany, whitewood, padouk and satinwood, and those who know anything about them will be able to imagine what a picturesque result any panel of work makes if cut out in these four. Thus, when the design is finished the application of lightning polish not only heightens the attractiveness of such a design, but also brings about the brilliant finish of a professional polished surface.

The Work Required.

The picture herewith illustrates both the back and the front of the Mirror, which can be made from the patterns supplied on the Design Sheet in full size. A parcel of wood with the necessary boards is also obtainable with the rectangular bevel-edged mirror to which the design is planned. The article is built on a main framework of $\frac{1}{4}$ -in. material—a piece which is cut to a plain outline shown on the right of the Design Sheet. This outline can be either retraced from the pattern supplied, or, of course, the pattern pasted down to the wood itself in the usual way. The inlay panels are put on the back and the front of this main piece. On the back we have an overall design, and below it is a further small inlaid pattern to make up the thickness of the handle.

Back and Front.

On the reverse side there is another inlaid panel, but this, instead of being all over, has its centre cut out in a rectangle the same shape as the mirror. Thus this panel forms the recess in which the glass is placed, and it is there held in position by a thin mahogany overlay glued all round. On the handle again comes the small inlaid pattern similar to that on the reverse. A helpful drawing showing how the whole thing is made up is given at Fig. 1. This is a section cut right through the centre of the mirror, and indicating quite clearly how the various parts are added to the main back. The work of cutting the main back has already been mentioned, and our next job is, therefore, to get on with the inlaid panels.

The Inlaid Panels.

The cutting of these is quite different from the ordinary fretwork, in that instead of working on one single piece, we actually cut the picture parts from four thicknesses of wood at the same time. This means, of course, that the boards must be quite thin, and those supplied are $\frac{1}{16}$ in. planed on both sides. These four panels of wood are nailed together so that after all we are working on a complete piece not more than $\frac{1}{4}$ -in. thick. The design of the inlay is lettered, and the pattern should be pasted on that piece of wood which is required as the outside frame. In both cases this is the satinwood, and with the pattern fixed down the whole of the four boards can be nailed together

with long thin fretnails. They are driven through outside the pattern lines, and turned round beneath the bottom board to hold all four firmly. No fretnails should be put inside any part of the picture because every piece is used somewhere.

How to Proceed.

The inside work is commenced upon first, and a very small drill hole made to accommodate the saw. Then with a fine saw threaded in the frame in the usual way, we proceed round the line of the nearest part so that when we come to our starting point again four pieces of exactly the same shape drop out. The piece of wood shown on the key of the inlay is kept, and the other three discarded. So, by gradually going round the adjoining patterns, we extract the parts required and make up as a separate picture the inlaid panel necessary in its various colours. In the case where there are inlay parts actually inside all the other work, we must make a drill hole in each piece, and cut these parts out before proceeding to the main outline. This can be seen in the inlaid panel on the back of the mirror. In the fan shape we must not go round the outline first to cut out the various inside shapes which are marked W. It will be understood that if we cut round the outside of the fan, the whole of the part will drop out, and four pieces come apart before we have taken away the smaller inside shapes.

Gluing the Parts.

When the parts of the whole panel are complete, the last operation is to cut round the outside of the design. This releases the final frame, and the piece of satinwood required is taken and glued to its place on the mirror back. Then the various pieces of the inlay already made up into the picture are glued to each other, and to the back inside this framework just made.

Put the glue in so that it squeezes up round the edges of the various parts, and even if it does squeeze up over the top it does not matter. A rubbing of sandpaper when the glue is dry will take away all the paper remains, and bring a perfectly flat and semi-glossy surface to the wood.

A Complete Design Part.

This procedure is the same in every case of inlay, and is sufficient guidance for us to

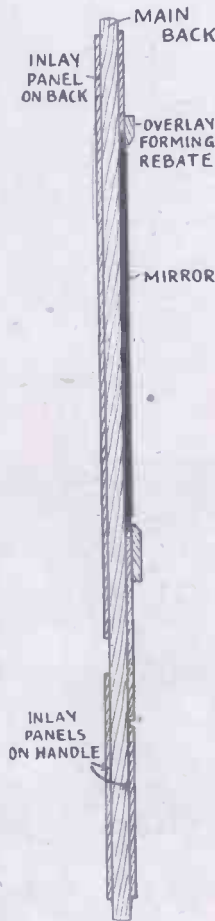
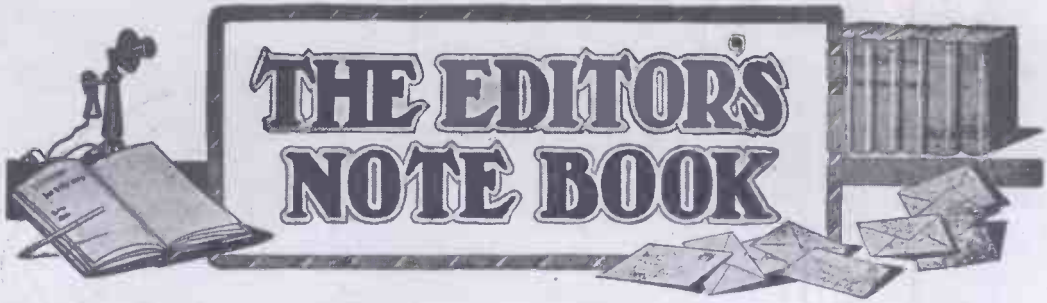


FIG. 1



THE EDITOR'S NOTE BOOK

Jobs Aboard Ship.

DURING the War we had to run a special correspondence department to keep in touch with lads of the Navy who read and wrote to *Hobbies*. Splendid fellows, all of them, and excellent workers, too. Interesting to find now that there are a great number of those who serve aboard and abroad still delight in being handymen. We get photographs and letters from ships and shores all over the world from keen fretworkers and woodworkers who follow their hobby afloat. And have you ever considered what a modern ship—whether warship or liner—must carry in the way of a carpentry outfit? A *Hobbies*' cabinet certainly has a good range of tools, but hardly enough to do odd jobs on a first-class battleship weighing anything up to 40,000 tons. In olden times the ship returned to dock for repairs, but nowadays the crew includes a staff of experts—possibly including fretworkers—who can do most of the jobs on the spot. The best imitation of fretwork which we have seen aboard was a funnel and upperworks of one poor old mammoth which limped home after a bad slamming in a fight.

A Conversion in Wales.

The activities of our readers are really amazing, and we are frequently receiving delightful suggestions. For instance, Mr. W. J. Lewis, of Merthyr Tydvil, worked out a method of converting our recent Eiffel Tower Bracket into a clock case. By a little ingenuity he incorporated a platform and clock holder, but

as he promises to let us have a photograph we may be able to show you exactly what he means a little later. Mr. Lewis combines photography and fretwork as his two hobbies, and is evidently very enthusiastic about both.

Next Week's Budget.

Next week *Hobbies* will have grown to an Enlarged Number, for we are celebrating the approach—or possibly the arrival—of summer with a special issue. So you will have a design sheet double the usual size, and a bigger number of useful and topical articles which will keep you happily employed for some time. Owners of a motor-bike will fall for the garage we

shall show them how to make; wireless enthusiasts will be intrigued by the frame aerial for a portable set, fathers getting ready for holidays will start to make the hammock, and little people with an inclination to fall in yacht ponds will do well to read the article how to sail boats—without falling in. Of course, this is not all, but it should be enough to make you eager for next Wednesday. Without our saying a word about the handsome cabinet you can make from the free design.



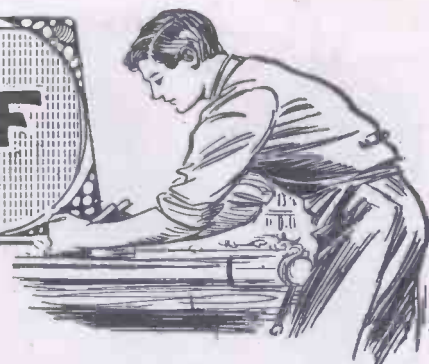
THE SUBJECT OF NEXT WEEK'S SPECIAL DESIGN.

Salesmanship as a Hobby!

One reader asks us if we cannot have some articles on Salesmanship. We are afraid not. If we know anything about it, salesmanship is hard work—certainly not a pastime which one undertakes out of sheer pleasure. Salesmanship is, of course, a training altogether different from a course of carpentry.

THE EDITOR.

THE HANDLING OF TOOLS



SAWS—RIPPERS AND CROSS-CUTS.

ONCE asked a man in a joiner's shop what he was doing. He replied "I am having a ripping time." He was ripping a piece of wood. Now, wood as a general rule requires cutting two ways, viz., with the grain and across it. In the first we call it ripping the material; in the second cross-cutting. At this point it is well to remember that we measure the length of wood by the run of the grain. It is often amusing to note that many people think a circular piece of wood has not length simply because it is shaped as a circle.

Now, wood is cut with a rip and a cross-cut saw. Ripping means tearing the fibres asunder just like a person pulling a piece of cloth in two the way the material is woven. Let them try to pull it in two across, and notice the difference in the resistance to tearing. This is amply proved by chopping wood—it splits easy the way of the grain, whereas, try the hatchet across the grain and see what occurs. For these two forms of cutting, the blades of the saws vary, the one for the cross-cutting having much smaller teeth, whilst the one for ripping has large teeth. The keen observer may wonder why does not the blade stick in the kerf and what reduces the friction.

This is got over by what is known as the

set on the saws. Look down the long rows of teeth on the saws and you will see what I mean.

There can be said to be two ways of cutting pieces of wood over, say, 12ins. long, i.e., on the bench or on the sawing stool. It is not wise at all to cut and rip in the vice, that is, of course, long pieces. Now, is it hobby-like

or craftsman-like to start cutting a piece of wood at both ends and meet in the centre? It shows a lacking in confidence and self-reliance.

Handling.

From the previous article on the Tenon and Dovetail saws you cannot get wrong in handling the cross or the rip-saw. The index finger again is a pronounced feature in the handling. For small tenoning in joinery

woodwork or cabinet work, there is no objection to the use of the vice, but keep out of it for, say, heavy outdoor constructive work. Speaking of self-reliance, I have seen workers in starting a cut for a ripper-saw use a dovetail or a tenon saw to make a groove to insert the ripper. Methods like those never make a craftsman. The handling of the two saws follows out, as before said, the tenon and the dovetail, and the same applies to the position of the feet in regard to upright cutting; but when you come to using



STARTING A DOWN-CUT WITH A RIPPER-SAW FOR A TENON.

HANDLING TOOLS.

Hobbies

"know-all," and probably if I had said anything he would have retorted, "Another peeping Tom!"

This series of articles is of special service for those interested in woodwork, metalwork, etc.—the boy at school, and those who have their own hobbies at home—and, if you happen to have missed any of the previous chapters, get the back issues of this Journal containing them.



CUTTING ON A SAWING STOOL.

a sawing stool (or stock, as it is often called) rest the knee on the material, and don't apply pressure on the blade if the saw is in condition. If it won't saw it is your fault. Feed the blade with some lubricant, and keep the saws clean. You will notice in these two saws that they have no backs like the dovetail and the tenon, for the simple reason they are stronger. I overheard a man say, not long ago, when digging a drain, that anybody could use a pick and shovel. I could have told him working alongside him was another who with less exertion was doing twice as much work as him simply because he was handling his pick and shovel in a rational and natural manner. He was a



ONE OF THE BIG MACHINES USED FOR CUTTING CLOTH IN A YORKSHIRE FACTORY. NOTICE THE THICKNESS OF THE CLOTH ON THE TABLE.

Tell your boy friends about these articles on Handling Tools; they will thank you for mentioning such helpful advice.

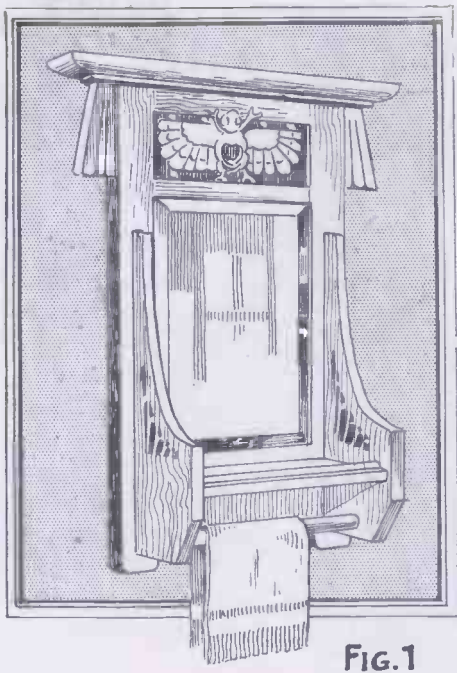


FIG. 1

BATHROOM MIRROR in the EGYPTIAN STYLE.

MANY of our artistic workers will welcome the decorative mirror shown on this page as it gives scope for individual treatment for either carving or fret-work. It is termed a bathroom mirror, but there is no reason why it should not be found just as suitable for the bedroom, in which case the towel rail beneath the shelf would be omitted.

Materials.

Oak would be the best variety of wood from which to make the article, but if the work is to be painted, the most easily worked and most suitable wood would be deal, remembering in the painting to give at least three coats of paint finishing with one of enamel.

Size of Mirror.

The mirror adopted, measures 10½ ins. by 8 ins., and may be obtained from Hobbies Ltd., the number which it is necessary to quote in ordering being 5732. The frame opening will therefore be arranged to this size, an allowance of ¼-in. each way being made for the rebate to hold the mirror.

Figure 1 shows the general appearance of the finished frame, while Fig. 2 gives a front view with all necessary dimensions for making up.

Now the decoration in the panel above the mirror is typically Egyptian, while the two side "ears" and the long shelf supports are in keeping with this style.

Side and Cross Rails.

The two side rails should be first taken in hand, and these measure 19 ins. long by 1½ ins. wide by ¾-in. thick. The rails should be planed

up, and the two pieces laid together and marked off for the positions of the mortises as shown in detail in Fig. 4.

The lower cross rail stands 3 ins. up from the bottom of the verticals, and is tenoned into them in a similar manner to the top one, only the tenon extends the whole width of the rail instead of being shouldered down as illustrated in Fig. 4.

We therefore set up the 3 ins., then mark off the width of the rail, 1½ ins., and above this 10 ins. and ¾-in., which latter measurement is the width of the narrow cross rail. Four inches is left now at the top, and this is taken up by the panel and the top rail. Mark off the positions of the tenons on the thickness of the rails, and proceed to cut the mortises with a quarter inch chisel.

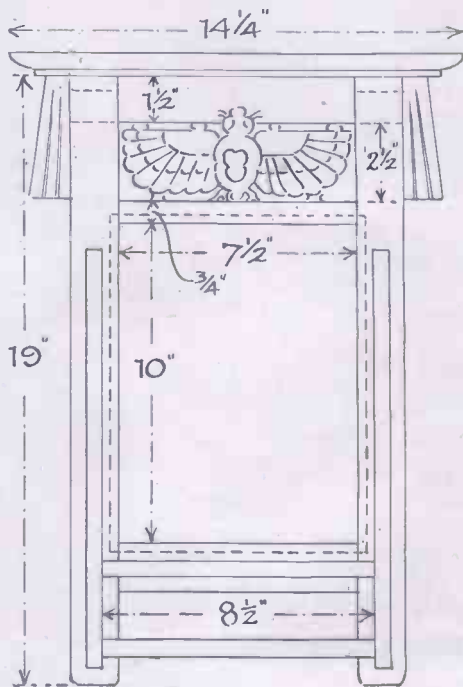


FIG. 2

BATHROOM MIRROR IN EGYPTIAN STYLE.

Hobbies

Top and Lower Rails.

The top and lower rails are next planed up and prepared from stuff $10\frac{1}{2}$ ins. long by $1\frac{1}{2}$ ins. wide by $\frac{1}{2}$ -in. thick. Lay the two $10\frac{1}{2}$ in. pieces together, and mark off $1\frac{1}{2}$ ins. from each end, this representing the length of the tenons.

The thickness of the tenons will be $\frac{1}{4}$ in., therefore cut down to a depth of $\frac{1}{4}$ -in. on each face and set the shoulder down $\frac{1}{2}$ -in. as shown in the detail Fig. 4. The lower rail will not be shouldered so that the tenon will remain the full width of the rail, viz., $1\frac{1}{2}$ ins. The narrow rail separating the mirror from the decorated panel will now be prepared from $\frac{3}{4}$ -in. square stuff. The length of this rail is 8 ins., and from this length a $\frac{1}{4}$ -in. stub tenon is set out at each end as shown in the detail Fig. 4A.

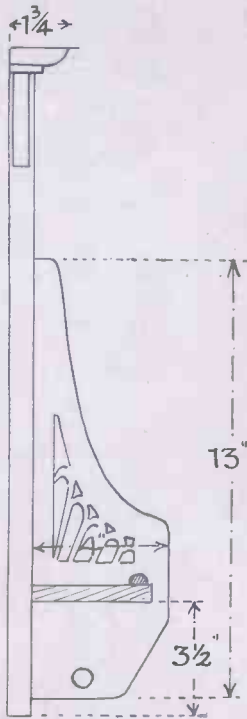


FIG. 3

The mortises for these small tenons must be set out, and cut at the same time that the other larger mortises are cut.

Completing the Frame.

Having now the whole of the frame prepared, it may be fitted and glued together. It should be found in taking test measurements that the opening is just $\frac{1}{2}$ -in. smaller than the mirror each way.

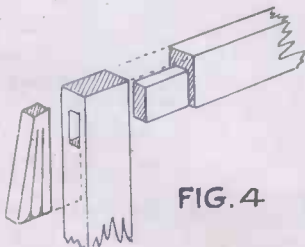


FIG. 4



FIG. 4A

If desired, short dowel pins may be driven through the tenon joints, these may be $\frac{1}{4}$ -in. in diameter, and care must be taken to bore holes for these with the brace and bit before attempting to insert the glued pins. Now lay the

frame face downwards on the bench and proceed to mark off a margin of $\frac{1}{4}$ -in. full all round the opening. This must be chiselled down to a depth of $\frac{3}{8}$ -in.; a detailed section through the mirror and frame being shown in Fig. 7. This figure shows how the mirror is finally held in place by beads F, which are nailed through to the frame, and finally covered with a thin backing board B, which may consist of three-ply wood secured to the frame by small brass screws.

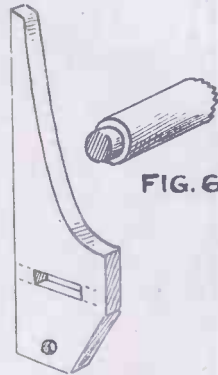


FIG. 5



FIG. 6

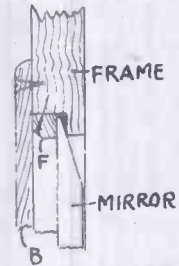


FIG. 7

Brackets, Shelf, and Towel Rail.

The two brackets supporting the shelf will now be prepared. Two pieces of wood measuring 13 ins. long by 4 ins. wide by $\frac{1}{2}$ -in. thick will be required, and marked out to the shape shown in Fig. 3. For the small decorated frets, the detail Fig. 9 will be enlarged, the dotted lines being spaced at 1 in. intervals. When the interior fretcutting has been accomplished, the outside shaping will be cut and the edges nicely smoothed up with glasspaper. Assuming the fretted design was drawn direct on the one piece, the outline for the second bracket may be transferred by means of a tracing in pencil and carbon paper. The outline for the second bracket may, of course, be obtained by using the first as a template and drawing round it carefully and closely. Set out the holes for the towel rail, and bore them with brace and bit somewhat smaller than the rail itself so that in the ends of the rails shoulders may be formed as shown in the detail Fig. 6. In Fig. 5 which shows a detail of one of the brackets is seen a slot formed to take a tenon on the shelf. This although not really necessary helps



FIG. 7A

to strengthen the whole. The shelf measures 8½ ins. long in the clear, but if tenons are included to fit the brackets, an extra 1 in. or so in length will be required.

The shelf is 3½ ins. wide and ½ in. thick, and will be screwed to the frame from the back. To the edge of the shelf will be fixed a small beading as shown in Fig. 3.

The towel rail consists of ¾ in. round rod shouldered as shown and glued into the brackets.

When all these members have been fitted and glued together the brackets will be glued and screwed to the frame. 1½ in. countersunk screws being used for this purpose.

Cornice Rail.

For the cornice rail a piece of wood measuring 14½ ins. by 1¾ ins. by ¾ in. will be required having a moulding worked upon it as shown. To this will be glued a flat ¼ in. piece to form the lower member of the rail. The whole will be screwed or doweled to the top rail of the frame.



FIG. 9

The Decorative Panel.

The panel above the mirror may now be made, and the decoration for this can be carried out either in fretwork or low-relief carving. The suggested design is shown in Fig. 8, and an enlargement can be made from this diagram with the aid of the cross dotted lines shown on the left. Either ¼ in. or ⅜ in. wood may be used for the panel which is ulti-

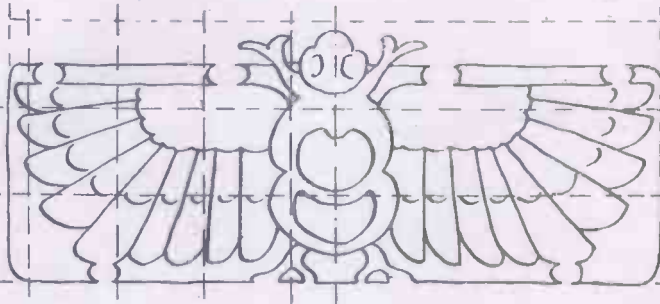


FIG. 8

mately fixed as shown in Fig. 7A. Here is seen quarter-round beading nailed round inside the opening about 1/16 in. in, then the panel is inserted from the back and small sprigs driven into frame to keep this securely in place.

At Fig. 10 is shown the two side "ears," which fit under the ends of the cornice and against the frame. Two pieces of ½ in.

thick wood are required for these, and they will be cut on the taper as shown. The lining out will be done with the V tool or small gouge, the circular ends being carried out either with the fretsaw or carved in relief as illustrated in the diagram.

If the article is made from oak, the whole should be cleaned off thoroughly and rubbed up with raw linseed oil.

We give the cutting list which will be found very helpful:—

- 2 Rails, 19 ins. × 1½ ins. × ¾ in. Side.
- 2 " 10½ ins. × 1½ ins. × ¾ in. Top and Bottom.
- 1 Rail, 8 ins. × ¾ in. × ¾ in. Above Mirror.
- 2 Pieces, 13 ins. × 4 ins. × ½ in. Brackets.
- 1 Piece, 9½ ins. × 3½ ins. × ½ in. Shelf.
- 1 " 8½ ins. × ½ in. × ½ in. Beading.
- 1 " 14½ ins. × 1¾ ins. × ¾ in. } Cornice.
- 1 " 12 ins. × 1 in. × ¼ in. }
- 1 " 7½ ins. × 2½ ins. × ¼ in. Panel.
- 2 Pieces 4 ins. × 1½ ins. × ½ in. " Ears."

Three-ply wood for backing measuring 14 ins. by 9½ ins.

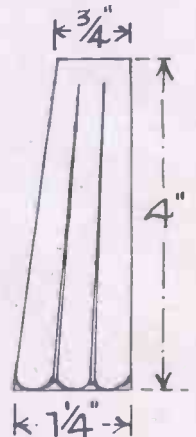
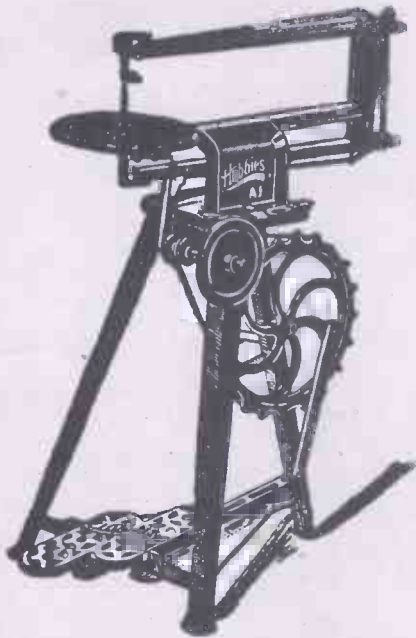


FIG. 10

"Hobbies" Summer Number next week and large Special Design.

OUR PUZZLE.

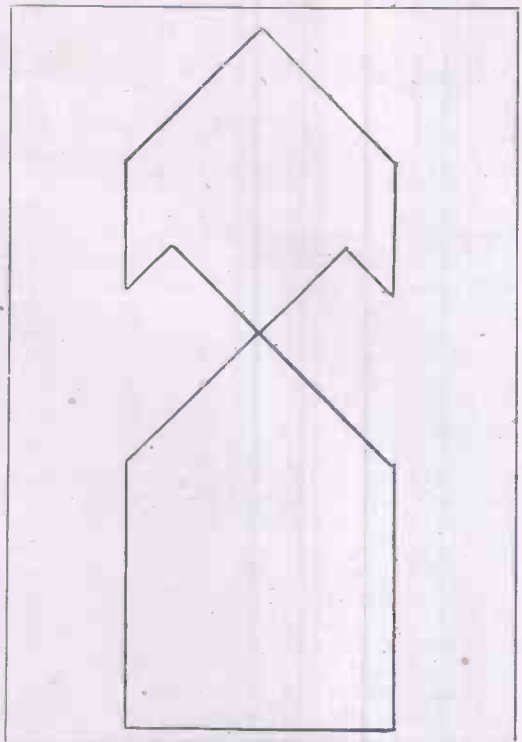
HOW TO WIN AN A1. FRETWORK MACHINE.



THE PRIZE.

WHY not try to win a Hobbies' Fret-machine to help you to do better work? This week an A1. Machine will be awarded the sender of the correct solution of Puzzle No. 281, who also gives an exact (or nearest to exact) estimate of the number of correct solutions received of that particular puzzle, provided he or she has not previously won an A1. Machine in these puzzle competitions.

In the event of no correct solution being received, the prize will be awarded the sender of the nearest correct with the exact estimate or nearest. Should ties for the prize occur, the machine will be withheld, and fretwork goods to the value thereof (50s.) divided.



Puzzle No. 281.

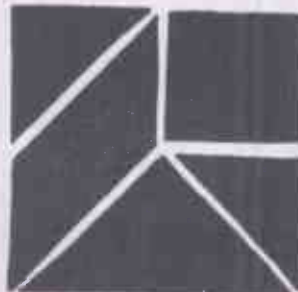
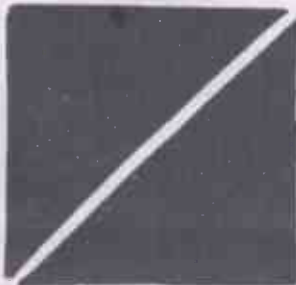
So what you have to do is to cut from $\frac{1}{4}$ -in. or $\frac{3}{16}$ -in. fretwood the seven pieces as illustrated, arrange them together in such a manner as, in your opinion, forms the correct solution of the puzzle outline given and affix them to a piece of cardboard, or other material, to keep them in position. Then write your estimate and name and address on the printed form; paste this form on the back of the solution; write the number of the Puzzle on the back of

Estimate (Puzzle No. 281).

My estimate of the number of correct solutions received of this Puzzle is.....

Name.....

Address.....



The pieces which form the Puzzle.

the envelope; and post it to reach the Puzzle Editor, HOBBIES, Dereham, by June 25th, 1929. The Editor's decision in all matters relating to this competition must be accepted as final.

THE NATURE LOVER IN JUNE.

JUNE is a month during which the Nature-lover feels that he must spend the whole of his time out-of-doors; for the days are long, and yet too fleeting to allow him to chronicle one half of the wonders of summer at its best. Vast is the beauty spread before us. All the innumerable flowers of wayside, field, and woodland call forth our delight. The student of botany has plenty to occupy his attention now, and his note-book and pencil need not be idle for a minute. No nook is without its plant or flower or moss or lichen; for it is very true that "Nature leaves no crypt in her great temple undecorated."

In the meadows the grass is now tall and ripples in the bright sunshine; soon the mowers will reap the hay harvest. To casual rambles in the fields grass is—well, just grass. To the observant Nature-lover it is much more than that—it is a wonderful combination of beautiful grasses, plants, herbs, and flowers. Never was a lady's hat feather fashioned more delicately than a frond of feather-grass, which is as smooth, as silky, and as glossy as the richest crepe de chine. Then we have the trembling or "tottery" grass hung with its gleaming spikelets of purplish-brown; beautiful indeed is the "pearl" grass that shakes its fairy "bells" when the summer breeze strays over the ripening meadows. Here, too, is the scented vernal grass, which gives out the sweet aroma that fills the country lanes with fragrance when the hay is being made. There are the rough, smooth, and the annual meadow grasses; and in addition each field is rich with trefoil, clover, dog-daisies, hardheads, and a hundred other blossoms of one kind or another.

June, too, is a period when there is much to be observed in Birdland. All the summer birds are now busy with their nesting, and the opportunities for studying the habits of the rarer migrants, such as the nightjar, are now many. Many birds are in full song, but the blackbirds and thrushes are not so insistent to be heard as in April and May. In June the tree-pipit is one of our most conspicuous singers. This bird may be easily identified by its habit of singing whilst planing down from a height; this pipit sings chiefly on the wing, though you may also hear it warbling softly on its perch. Its favourite method, however, is to spring up into the air, and then carol its rippling notes as it descends.

Probably you will note, when strolling down a lane or along a field path under the trees, a small bird of sober, mottled brown plumage, perched on the topmost twigs of a bush at the roadside or on the bough of a tree. Suddenly it will ascend in short spirals into the air, rising to a height of 40 to 50 feet, then descending in a curve with white-lined tail outspread, singing in sweet, canary-like notes which quicken as the bird nears the ground, to finish in a long drawn-out

note. Sometimes you will see the tree-pipit perched on the telegraph wires. It will repeatedly get up aloft and come planing down again uttering its sweet song and then pitch on the wires once more.

Of other June melodists the garden-warbler, blackcap, white throat, reed-warbler, and—in the south-country—the nightingale, are now busy with young, for nesting is at its height at the beginning of June. Later on when domestic duties are at an end when the wild roses are staining the rose-bushes at the laneside on the confines of July their songs become stilled, and a strange silence falls in the leafy concert hall.

June finds the last words being written in the final chapter of many a Birdland romance. Everywhere in coppice, hedgerow and green-laced thicket we may note the nurseries of the birds. Among the wild growths on the furze bank and in the bushes where the buds of gipsy roses are showing or snugly hidden down among the knotted stems of the umbelliferous plants and nettles we may see cradles containing young birds. If you are handy with a camera, now comes your chance of obtaining some charming bird studies.

The trailing jungles of undergrowth on the banks of the old winding lane is alive with newly-fledged younglings in the merry days of June. Fat young throistles cheep among the briars, tiny linnets and yellow hammers are flitting about in the greenery of the hedgerow, and wee dunnocks (hedge-sparrows) tumble in the tall buttercups at the wayside as they endeavour to find their wing-power. The partridge leads her family to enjoy a dustbath in the sandy lane, and on the bosom of the weedy pond the mother coot fusses over her second brood of little floaters, which look not unlike fluffy "puff-balls" as they swim to and fro. All these young birds that greet the June warmth and fragrance in their first experience of the world run great risks from predatory creatures. Many are the dangers they have to face during their juvenile days.

A charming picture of wild life may be obtained by the Nature-lover in June if he takes up his post and remains well hidden near to the fox's earth. If you are lucky enough to drop across the family party of cubs when they are at play great is your reward, for it is a delightful thing to witness a mother fox and her pretty little cubs romping about in the bracken. In the whole range of English wild life there is nothing more charming, perhaps, than to see a vixen and her little ones at play.

June is the month of butterflies, and the Nature-lover with a bent for entomology is now very busy indeed. On the chalky downs near

Continued on page 262.

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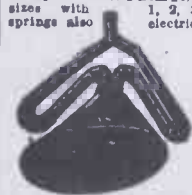
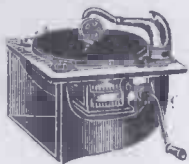
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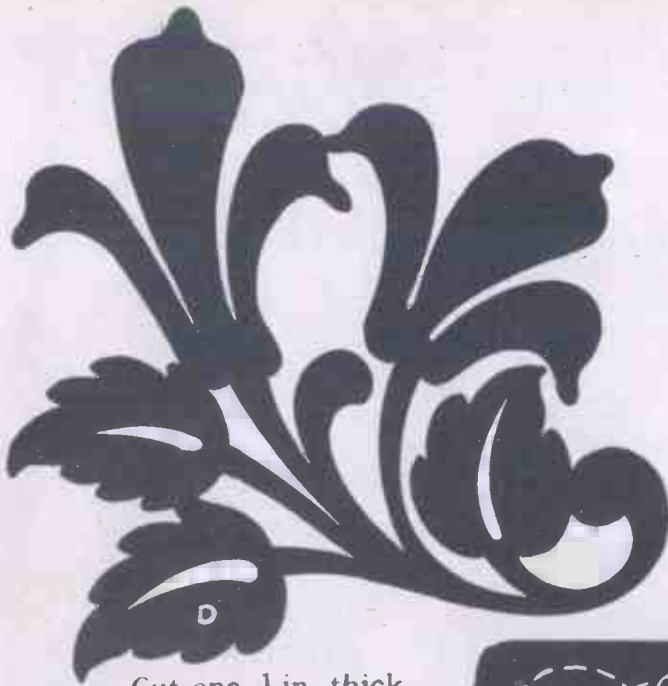
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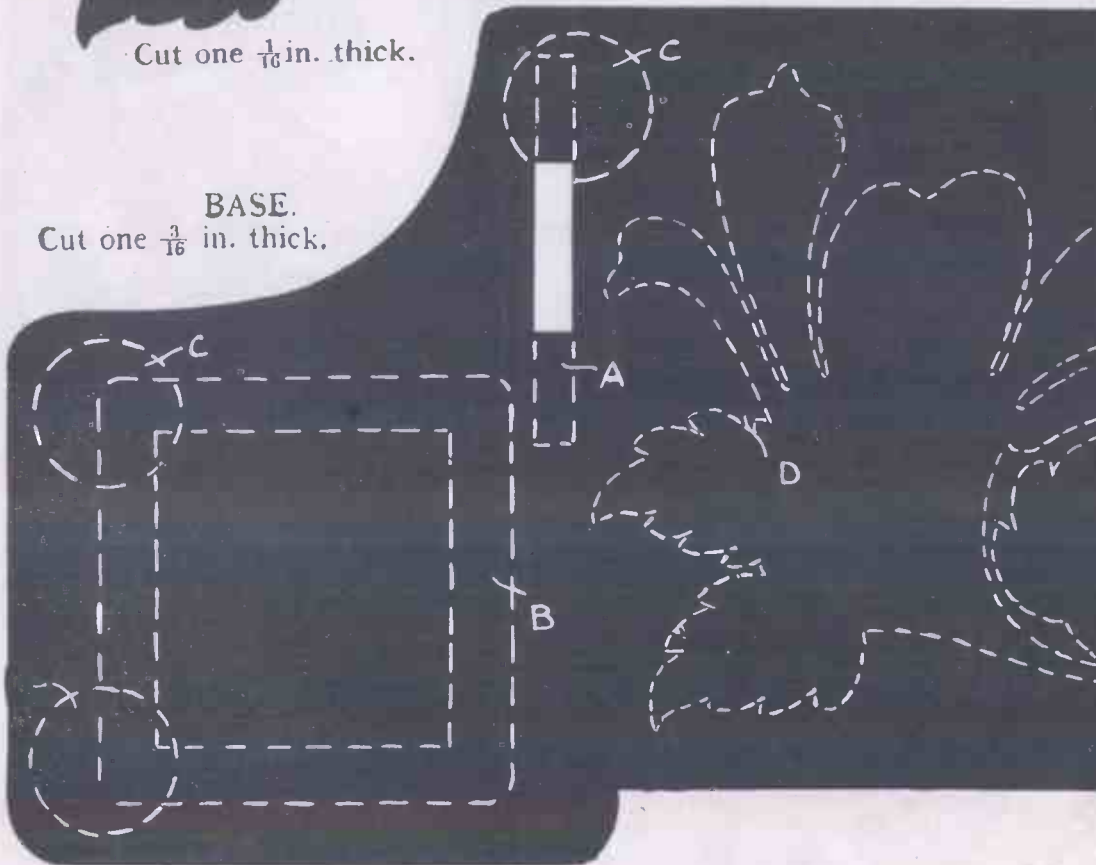


Cut one $\frac{1}{16}$ in. thick.



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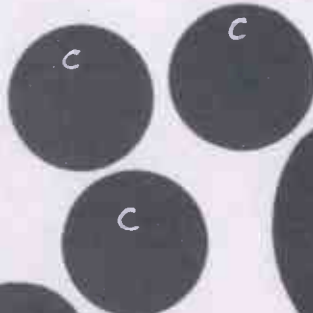
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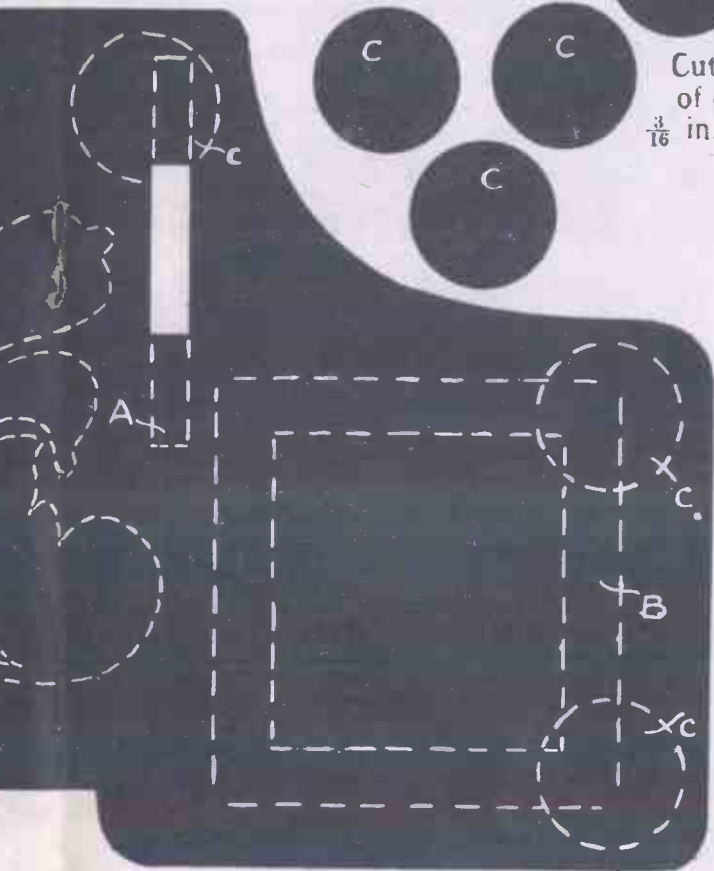
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NOTES ON THE MODEL OSCILLATING ENGINE.

IT would not be an exaggeration to say that for each one of every other type of small steam engine in use there are at least a hundred of the oscillating pattern. Cheapness, in comparison with the slide valve cylinder, has naturally something to do with it, but doubtless the inherent simplicity of their design goes a long way in accounting for their popularity.

Factor of Safety.

It may not be universally known that with these engines the factor of safety is very high; if the valve on the boiler should refuse to function from any cause, excess pressure will lift the cylinder slide and allow the escape of what might be a dangerous accumulation of steam. The great disadvantage of this type is its propensity for steam "gobbling," particularly so in the case of those which are only single acting; the stored up energy in the flywheel having to make up for the loss of power on the dead stroke, but as in any other class of machinery proper attention is necessary to ensure the best results. The following hints are intended for those owners who wish to attain maximum power consistent with economy in steam.

The Heart of the Engine.

A certain firm of model makers, when advertising their engine parts, used the slogan "The Heart of the Engine is the Cylinder," and undoubtedly they were right in their statement. One of the principal causes of loss of power in small scale engines is through steam blowing past the piston. In the general overhaul, presumed to be taking place, it is as well to do away entirely with the old piston packing. Obtain some soft cotton yarn and tallow and on melting the latter, dip a long strand of the yarn, afterwards removing the surplus tallow with the fingers. It should be wound tightly on the piston slot until the piston will not quite enter. Reduction of diameter is made by warming the piston and smoothing the packing down by means of rolling on a flat surface until the piston will pass into the cylinder. On first refitting it should be almost too tight for working, but on the engine being given steam and the flywheel helped round a few revolutions, it will soon run into a perfect fit. By treating the packing with tallow internal lubrication is almost assured until the next overhaul.

An Excellent Packing.

In the more expensive double action cylinders both covers are detachable. The writer has found that thin paper covered with a film of

gold size makes an excellent packing, but where no doubt exists of the faces being machined dead true, a smear of red lead and linseed oil is sufficient. This type is often provided with an adjustable gland for piston rod, and although its normal position (except in the case of locos) militates against successful lubrication, a strand of tallowed yarn behind the nut will prevent a lot of friction which would otherwise occur at this point. The pressure on the slide caused by the spring coupled with the oscillatory motion has a tendency to cause wear, thus promoting losses. If a little liquid metal polish is applied to one of the surfaces, the spring replaced and tensioned, and the faces ground together in the manner of a motor valve; that is, occasionally lifting clear, very little work will be required to bring both portions of the slide up to condition.

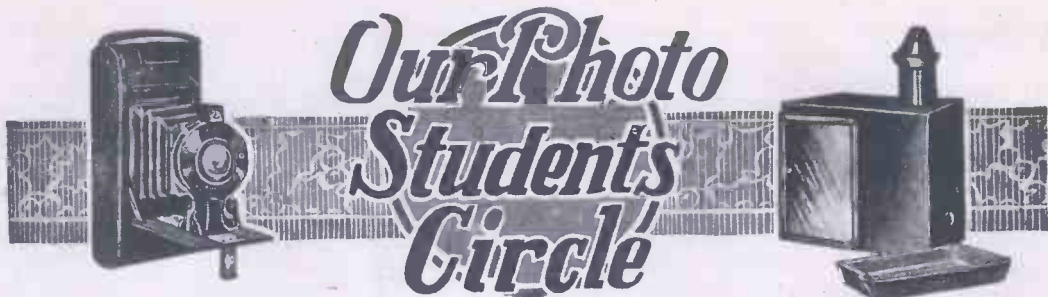
Spring Tension.

Obtaining the correct tension for the spring is a matter for experiment; if too light the pressure will force the faces apart, and in the opposite condition power will be absorbed owing to the excessive friction generated on, in comparison to the other proportions of the engine, a large surface. The best plan is to get steam on the engine, and under load if possible, then set the tension at the lightest position commensurate with no suspicion of blowing between the faces. At this point lubrication is of rather a haphazard nature as it stands to reason that oil introduced outside by means of a can can neither get inside the faces, or, if that were possible, stay there, when pressure is on. Some of the pre-war German engines had a kind of screw cap lubricator fitted to the steam pipe, which, though rather a makeshift, as one had to stop to fill up, was better than nothing. Owners of these engines will find a small two-cock lubricator inserted in the steam pipe and close up to the engine not only makes oiling an easy matter but will result in an appreciable increase of power. The oil coming in with the steam is left on the faces in the form of a film.

Big End Bearing.

The remaining feature to be considered is the big end bearing; a little consideration will show that any excessive wear at this point will interfere with the correct relative positions of the crank and piston, the piston when taking up slack in this bearing travels along the cylinder that amount without exerting any power. The most simple cure is that of "bushing." Drill out the hole a little larger than as worn and sweat in a piece of hard brass wire, then redrill to size of crank pin.

Continued on page 260.



DEVELOPING ROLL-FILMS 'AT HOME.

IT is by no means a difficult task to develop one's own films at home, and the method we are about to describe in detail is in our opinion the best for a beginner, who is supposed to know little or nothing of development. With ordinary care it is easy to produce

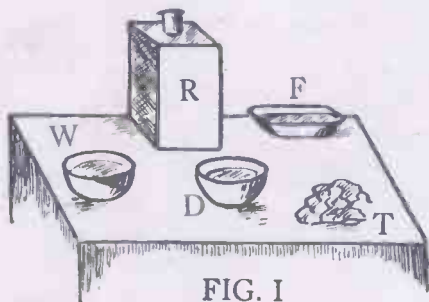


FIG. I

the most perfect negatives unless, of course, the exposures are wrong. Even an expert could not produce good negatives if the exposures were wrongly timed.

Materials.

First of all a red light is required, and it must be a really good and safe red. It is better to purchase a proper red lamp from a photographic dealer than it is to have a makeshift lamp. If the amateur wishes to make his own red lamp he should get red glass or red fabric from a proper dealer. Common red glass, fabric, or paper is not always safe for photography; if the red light is not safe the film will be fogged. It is better to use artificial light—even a candle—behind the red material than it is to use daylight.

There must be no white light whatever in a room when developing, and a good test of the safety of a red light is to look at a red penny stamp by the light, if the light is safe the red design on the stamp will not be seen, the stamp will appear as plain paper.

A large basin of clean cold water will be required, a small basin or tumbler for the developer, and a pie dish or small basin for the fixing solution. For the first experiments there is no need to buy ordinary photographic dishes.

Arranging the Table.

Use an old box for a developing table as you may spill some of the solutions or water. If, however, you use a proper table it is advisable to use a tray for the dishes so as to prevent damage being done to the table.

Arrange the table as shown in Fig. 1. R is the red light, W the basin of cold water, D the small basin of developer, F the fixing solution, and T an old towel or duster for wiping the hands or mopping up any spilt solutions.

There are many developers, but for an amateur's first attempts there is nothing better than Tabloid Rytol, and we will use it for our imaginary experiment. Two tabloids (one pair) of Rytol dissolved in 4ozs. of water will serve to develop a film, or should 8ozs. of developer be required two pair (four) tabloids should be used.

The fixing solution is made by dissolving 4ozs. of hyposulphate of soda (commonly called "hypo") in one pint of water. Half an ounce of potassium metabisulphite added to the hypo solution will improve it and prevent stains on the film, but it is not absolutely necessary, as it is the hypo that does the necessary fixing.

Preparing to Develop.

When the hypo and tabloids are dissolved, the solutions are ready for use. Having the developer in the D basin, the fixing solution in the F dish, and the bowl (W) filled with water,

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light the red light and make sure that the room is perfectly dark (except for the red light) and that no white light can be seen.

Next unroll the spool of film, separating the cream-coloured sensitive celluloid film from the black or red paper which has served to protect it from daylight; this covering paper and the wooden or metal spool are not wanted.

When the film is unrolled and free it must be soaked for a minute or two in the bowl of cold water. The method of doing this is shown in Fig. 2. The entire length of film (F) is held by the extreme ends in the form of the letter U, and by moving the hands up and down the film is "see-sawed" through the cold water, care being taken to avoid bubbles forming on the film.

When the film is first wetted both sides of it become very sticky and care must be taken not to let the film stick to anything; as the film soaks it gets softer and less sticky. When well wetted the film is ready to be developed.

Development.

Development is carried out by "see-sawing" the film through the developer (see Fig. 2) until development is complete. When is development complete? The best and safest plan is to employ the time and temperature system, and for this the temperature of the developing solution must be ascertained with a thermometer as it is not safe to guess the temperature.

The F degrees and the times of development are as follows: 45 deg. $8\frac{1}{2}$ mins.; 50 deg. 7 mins.; 55 deg. 6 mins.; 60 deg. 5 mins.; 65 deg. $4\frac{1}{2}$ mins. and 70 deg. $3\frac{1}{2}$ mins. Thus, if the temperature of the developer is 65 deg. development will be complete in $4\frac{1}{2}$ minutes, no matter what the film may look like during development, appearances being so very deceptive. These times are for Rytol only, and of the strength given above. Other strengths of Rytol, also other developers, call for different times.

Another plan, and a very rough and ready one, is to ignore time and temperature and judge development by the appearance of the pictures on the film. Experienced photographers can do this, but amateurs should not

attempt it—unless, of course, they are prepared to risk a film. The common mistake when judging development by the eye alone is to underdevelop. We may however again refer to this method of developing later on. Time and temperature is the best, and all dealers who develop films employ the system.

Fixing.

When the film is developed, the strip of pictures—still held as shown in Fig. 2—is rinsed for a minute or two in the bowl of cold water, and then placed in the fixing solution. After "see-sawing" for a minute or two in the hypo solution, leave hold of the ends and let the whole lot lie in the hypo solution, moving the film occasionally so that the hypo may act evenly and well on the whole row of pictures.

If metabisulphite has been added to the fixing solution white light may be admitted into the room as soon as the film is in the hypo solution. If, however, plain hypo and water (no metabisulphite) is used, it is not advisable to admit daylight for ten minutes or more after the film has been placed in the solution.

The work the fixer does is to dissolve out the sensitive salts and make the pictures clear. Thorough fixing is essential, and one can easily see the cream-coloured sensitive parts dissolve. When the cream colour has entirely disappeared from the film it is advisable to leave it in the hypo for a further ten or fifteen minutes so as to be on the safe side. Fixing is usually complete in about twenty minutes, if the film is kept on the move.

Washing and Drying.

When fixed, the film should be washed well in running water for about an hour, and then pinned to a shelf or a suspended string to dry. Drying takes several hours. Great care is necessary when drying as both sides of the film are a little sticky when wet. If either side of a film touches anything while drying a mark will appear on a picture and perhaps spoil it.

Developing films at home is really very simple as well as being very economical, as a trial will quickly prove.

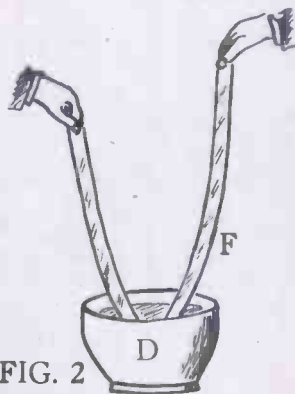


FIG. 2

June is a splendid month for the Amateur Photographer, and members of our Circle should be able to send in for the monthly Competition many pictures which will attract the judge.

AN EASILY-MADE WRITING DESK

THE desk as illustrated is one the writer made some years ago, and which has been in regular use ever since. It is made of red deal and can be produced by the average amateur.

Framework for Bottom.

All the wood will be $\frac{1}{2}$ -in. thick, so start away by getting out four pieces for the framework for the bottom as shown in Fig. 1. The two pieces for the sides will be of the shape as shown in B, of Fig. 2, and 16ins. long, 4ins. wide at the back, 2ins. wide at the front. The 4ins. width at the back will be continued along toward the front, as shown at the top of the diagram.

The piece for the back will be 17ins. long and 4ins. wide, that for the front 17ins. long and 2ins. wide.

Plane the pieces true and straight, with square edges and ends. You will be careful to have the pieces for the sides of exactly the same size. If of the same size, each top edge will slope to the right degree, this being highly necessary for the flap to bear perfectly.

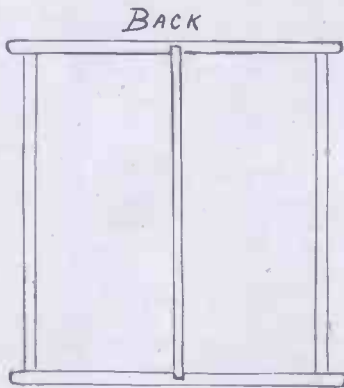
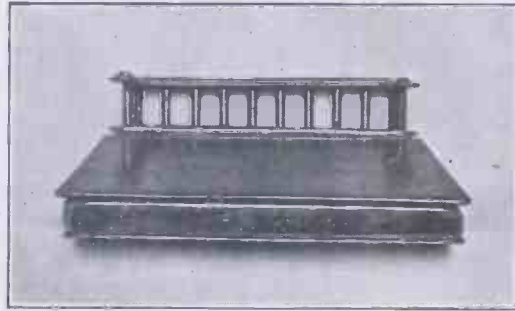


FIG. 1.

Have the ends of the front and back well rounded as shown in the diagram. Use the square and put a lead line on the inner surface of the front and back, $\frac{1}{4}$ -in. in from each end, then nail the front and back on to the sides with fine $1\frac{1}{2}$ -in. oval wire nails, having the outer edge of the end of each side correctly

at the mark. Observe that the frame is square.

I have not referred to the piece along the frame at the middle until now as I did not want this confused with the pieces for the sides. When getting out the sides, however, get out a piece of the same size $\frac{1}{2}$ -in. thick. This goes at the middle, as seen in the diagram, for making two apartments. If desired, a groove, $\frac{1}{4}$ -in. wide and $\frac{1}{8}$ -in. deep can be cut in the front and back to take the respective end as the



FRONT VIEW OF DESK.

diagram shows.

Bottom and Top.

Next, get out the bottom, having this $\frac{1}{4}$ -in. larger all round than is the outer edges of the bottom of the frame. Make the edges round from the upper side only. You should so have cut out that the long way of the grain runs from side to side of the frame. Nail on securely,

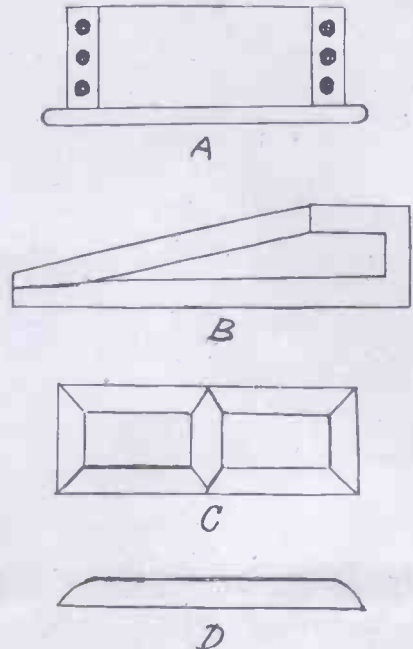


FIG. 2.

AN EASILY-MADE WRITING DESK.



putting a few nails along the middle strip also.

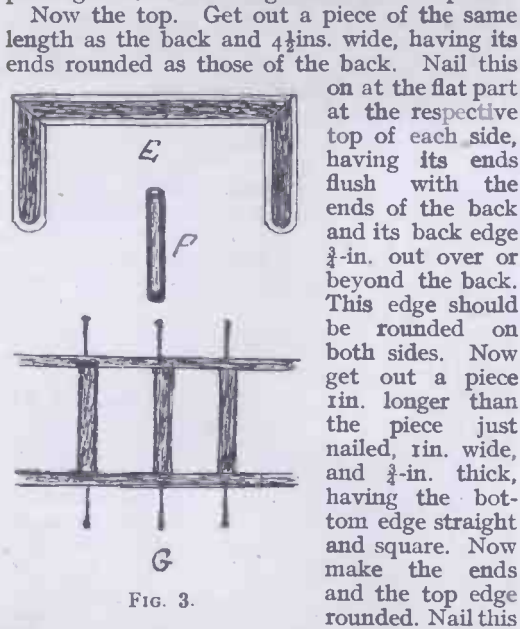


FIG. 3.

in proper position against the piece just nailed. Do not drive the nails in horizontally, but vertically, so that they will go down through each side. See A in Fig. 2. The hinges will be screwed to this piece presently.

Pillars.

Next, get out fourteen pillars, 2½ ins. or 3 ins. long. Length does not matter providing all the pillars are of exactly the same length. These will be perfectly round and ½-in. in diameter. The best way to get them out is to have a long and clean strip and to plane this to ½-in. square, then to round all the corners. Now cut off a piece to required length and cut all the other pillars by this, observing that each end is square and straight with the length. F in Fig. 3 shows the idea.

Now get out a pair like E. You will know the size when I explain that the outer edges of the bottom section should come tight against where the rounded part of the edges of the piece on top starts. The front end of the side piece of the bottom section comes tight against the side of the piece for taking the hinges. See A in Fig. 2. For a better finish, have the sides of the pieces rounded. The best

way to proceed will be to get out a long strip 1½ ins. wide and ½-in. thick, then round the edges on both sides, making the two sections from this. Though, as we have seen by A, that the front end of each side comes tight against the hinges' piece, the top piece on each side of the top section extends about 1 in. on toward the front. See photograph giving side view. E shows how each end is rounded.

Now nail on the pillars. The round and black impressions in A show the positions for the pillars at the sides. The pillar on each side at the back should form a corner, the remaining eight pillars coming between these pillars at equal distances. See photograph of front view.

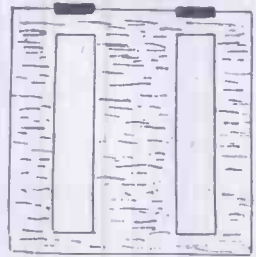


FIG. 4.

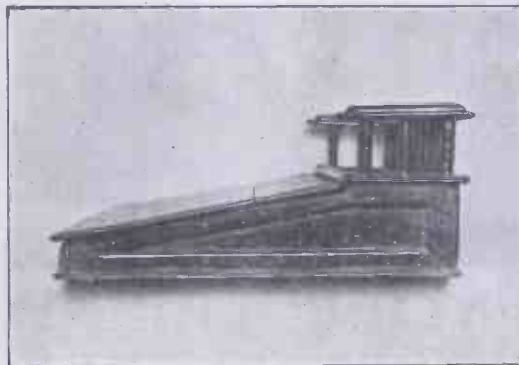
These pillars are secured as G, one nail only being used for each end, this going down the centre. Before nailing, however, take pains to mark the position for each pillar as the effect is ruin if the pillars are in all sorts of positions. Now nail the bottom section to the flat piece at the top of the frame, doing so that the pillar work appears in proper position.

Now get out a strip 1 in. wide and ½-in. thick, having same flat on the bottom surface and rounded at each edge of the top surface, similar to a shallow arch. With a few fine nails secure this to the top of the top section as shown by the dark impression in E.

Proceed now by getting out a strip 1 in. wide and ½-in. thick, having the one edge square and the other edge rounded on the outer side. Nail this to each side as given in B, at the back as shown in C, and with a piece on the front as D. Have the rounded edge on the surface or front side and looking inwards, that is toward the inner space of each panel.

Flap.

Next the flap. Fig. 4 shows the under surface of this with the positions for the ledges and the hinges, and with the long way of the grain going from side to side of the frame below. The ledges will be screwed on, the screws being that length that they hold the top well but do not come through



SIDE VIEW OF THE DESK.

this. To have the screw heads so that these shall become flush with the surface of each ledge, the chisel should be run around slantwise at the top of the hole which will be bored to take each screw. The flap will be cut out at that size that its ends and the front side will be $\frac{1}{2}$ -in. beyond the strips nailed on just now to the sides and the front, and will be rounded, the edges to take the hinges being square. Make a good job of hinging so that the flap will open easily and when closed will bear perfectly.

Now punch in all the nails so that their heads are $\frac{1}{8}$ -in. below the surface. Use fine oval

nails and a fine punch so that the holes will be as small as possible.

Finish.

Clean up the desk with fine sandpaper, dust, then stain to required colour. Let dry, then fill in the nail-holes neatly with well-worked putty of the same colour as the stain. Give a hot coat of size of medium consistency and let dry. Then a coat of good varnish and when this is dry a similar coat. If a select wood is to be used, extra pains will be taken in making so that with French polish the finish shall be attractive.—P.B.

OUR INLAID DESIGN—Continued.

undertake all the panels required. So far as the small pieces to be cut for the front and back of the handle, these patterns are shown inside the opening of the mirror frame. The whole pattern as shown on the Design Sheet can be pasted down, and the work on these handles completed first. Then we can proceed with the cutting of the inlay on the surrounding framework, finally making up the panel on the mirror back as before.

Fixing the Glass.

When complete, the mirror is laid in place, and the thin mahogany overlay—with its inner edge chamfered—is glued over the edge of the glass to hold it in place. If it is found that the glass shakes in its recess, a piece of

blotting paper should be added behind it to bring it tight to the underside of the overlay.

When one is going to finish the mirror by polishing, remember not to put this overlay nor the mirror in place until the rest of the work has been treated. Polish the main part which is finished, and then polish the overlay independently before gluing it down as mentioned. If polish has been applied round the edge of the mirror frame, it will have to be scratched for the glue to get a grip.

FRETWOOD.—For this design we supply a selected parcel of Mahogany, with Sycamore, Mahogany, Satinwood and Padouk for inlay, 3/6, post free 4/.

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NOTES ON THE MODEL OSCILLATING ENGINE—Continued.

Boat Engines.

If the new bearing is made a trifle longer than originally it will wear all the better.

In conclusion, a few remarks relative to marine matters. Where every ounce of efficiency is required from a boat engine, a ball thrust to the propeller shaft is essential. When the screw is being revolved at a high speed the consequent end thrust has to be taken by the main bearing of the engine, valuable power being lost in overcoming friction. When proper provision is made the engine has only its legitimate duty in turning the shaft round. It is, of course, obvious that cheap boats are not fitted with this refinement for reasons of cost.

There are many steam boat enthusiasts who would like to add a paddle steamer to their

fleet. The oscillating engine would be at home if installed in such a boat, and for those who are sufficiently skilled to build their own hulls no great difficulties should crop up in the making of a realistic model. The writer suggests a pair of oscillating inverted engines forward and aft respectively, each pair coupled to one of the throws of a one piece two throw crank shaft with the throws at 90°. Cylinders of $\frac{3}{8}$ -in. bore would be ample for a small boat. One would imagine as viewed through the skylight, this arrangement would make a striking engine room equipment. The only point likely to give trouble in the making would be the crank shaft, but if the Editor thinks the matter of sufficient interest the writer would be pleased to give details of a simple method of making this and a suggested layout for the whole plant.—C.W.

.....

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The Garden

THE main crop of beet may be sown in southern districts, and drills should be 1 in. deep and about a foot apart. Rows should be given a dusting of lime and soot before sowing the seed in order to check attacks of slugs and caterpillars.

First sowings of beet, made in March will require thinning as soon as the young plants have made a few leaves, and should be placed in rows about 15 ins. apart, with a distance of from 6 to 9 ins. between the seedlings.

Successional sowings of broccoli seeds may be made at intervals of two or three weeks. Seeds should be sown in drills about $\frac{1}{2}$ -in. deep, and about 6 ins. apart. The first seedlings, which will appear about a month after sowing, should be pricked out about 6 ins. apart, and after a further month, during which time the seedlings become sturdy, they may be moved to their permanent quarters. Frequent hoeing between the rows will prove beneficial during dry seasons in helping to conserve moisture. A rich, well-drained, heavily-manured loam suits the broccoli best, and the soil should be tight or hardened before planting, as roots prefer firm surroundings.

As soon as Brussels Sprouts seedlings have made three or four leaves they may be transferred from frames to open ground, and placed two to three feet apart in rows at a distance of

1½ to 2ft. Sowings may be made now in the open air, it being usual, however, to obtain a succession by taking the seedlings for transplanting in rotation as they become large enough to move.

Celery trenches should now be made in readiness for seedlings produced from sowings made under glass during February and March. They should be at least 1ft. wide and 1ft. deep, and a distance of from 4 to 5ft. should separate one trench from another. The bottom of each trench should be broken up, and a dressing of well-rotted manure incorporated. The spaces between the trenches may be occupied by lettuces, French beans or radishes.

The transplanting of early sowings should be made during dull, showery, but mild weather. Each plant should be lifted from the box or frame in which it has been grown, retaining as much soil round the roots as possible. Soil round the plants should receive a dressing of soot to discourage slugs. During hot weather plants should be frequently and liberally watered to prevent stunting of the growths. The addition of soot to the water will help in controlling attacks of celery fly as well as proving beneficial to the growth of the plants. See that plants receive a good soaking whenever watering is done; light sprinklings are useless.

THE NATURE LOVER IN JUNE—*Continued.*

the south coast you may now come across the clouded yellow butterflies, so elegant in shape. The hawthorn butterfly may be seen fluttering around the may bushes and the orchard trees; it is recognised by its white, semi-transparent wings with their black markings. It is not common everywhere, however, and seems to be very rare in the north. The comma butterfly and the small tortoise-shell—the first-named a rare species in this country—are also in evidence during June. Then we may come across the marbled white, the meadow brown, the marsh and the small heath butterflies along with many other species, for June is, indeed, the month of butterflies.

During June we begin to miss the cuckoo's familiar call. Every schoolboy knows that in June the cuckoo "changes his tune," and by the end of the month the sudden cessation of his two "old notes" brings to mind that during this month the longest day comes and goes, and Midsummer Day is also honoured, but not with

the old-time observances and superstitions, for nowadays Midsummer Eve comes and goes and few note the event. Yet at one time it aroused much interest. By the end of June, too, first one and then another of the woodland choristers drop out of the chorus. Not all at once do they cease to sing, but in the days of the hay-harvest we begin to miss a familiar voice here and a well-known call there. It is the time of the passing of spring songs.

June out-of-doors is associated with all that is fairest and most fragrant in the year of the Nature-lover. June is the "queen" of months, and all Nature-lovers gladly pay homage to her beauty and graciousness, for she is throned amid splendour of azure skies, and crowned with all loveliness of blossom in a blaze of glorious sunshine. With camera, paint-brush, and pencil the Nature-lover is busy at this season, and, long though the days are, they are not long enough to allow us to do all the things we desire to do. June in the countryside is delicious in every sense.—A.S.



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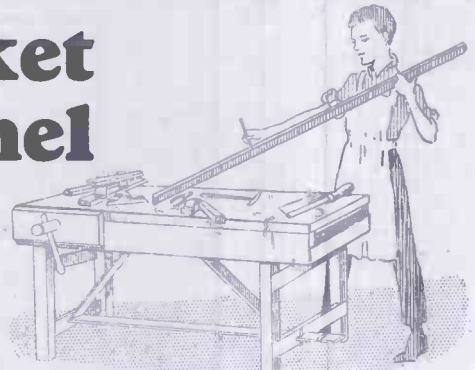
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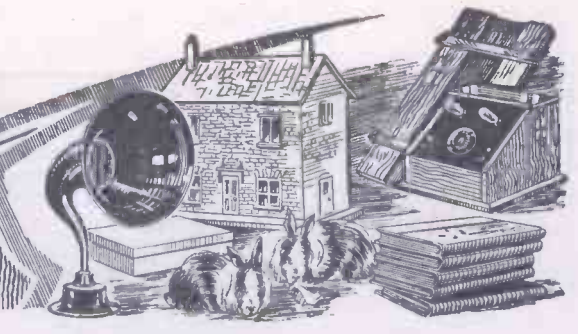
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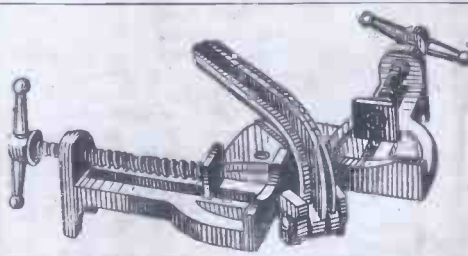
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