

HOBBIES WEEKLY

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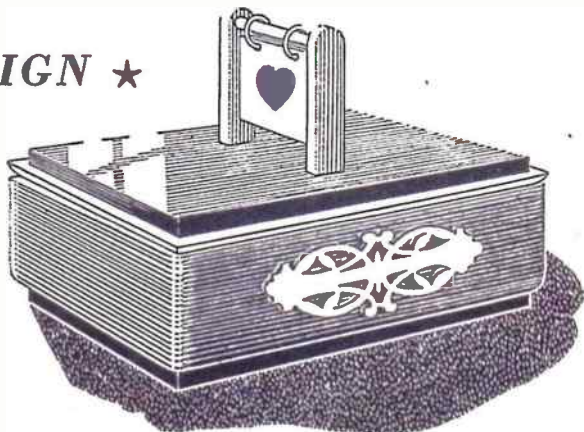
OUR £200

★ COMPETITION DESIGN ★

IN introducing the design for the 1956 Hobbies Fretwork Competition we are also happy to announce amendments to previous conditions and rules, which we feel sure our readers will appreciate.

More Prizes

In the first instance, the prize value of the Competition has been stepped up to over £200, thereby giving many more



A NOVEL

TRUMP INDICATOR

AND CARD BOX

competitors the chance of winning one of the valuable prizes. This has been decided on because of the uniformly excellent work which was submitted for last year's Competition. And it is always the policy of Hobbies Ltd to encourage those who, although possibly not in the top grade of fretcutters, yet by their keenness deserve some recognition. They will be catered for by the award of special vouchers in the Competition.

Also, it is obvious from the choice of last year's winners that vouchers to obtain Hobbies goods are in most favour. Principally, perhaps, because the

winners already have the machine or outfit offered. And it is for this reason that the voucher prizes listed on page 370 will be sent to the main winners in both

Open and Junior Sections. It will be noted that these have been graded more closely, giving bigger value to the runners-up. The winner of the premier award will also hold the Silver Challenge Cup for one year, and a replica will become his own property.

Incidentally, some of the 1955 winners who chose vouchers instead of the prizes offered, took full advantage of the opportunity by selecting equipment

A Musical Movement
will add to the
Novelty

All correspondence should be addressed to The Editor, Hobbies Weekly, Dereham, Norfolk

For Modellers, Fretworkers
and Home Craftsmen

4^D

PRIZES

OPEN SECTION

1st Prize — Silver Challenge Cup and replica and Voucher for £15 15 0
2nd Prize Voucher for £12 12 0
3rd Prize " " £10 10 0
4th Prize " " £7 7 0
5th Prize " " £5 5 0
6th Prize " " £4 4 0
7th Prize " " £3 3 0
8th, 9th and 10th Prizes " " £2 2 0
11th and 12th Prizes " " £1 10 6

JUNIOR SECTION

(Open to those under 16 years of age)

1st Prize Voucher for £12 12 0
2nd Prize " " £7 7 0
2nd Prize " " £5 5 0
4th Prize " " £3 3 0
5th, 6th and 7th Prizes " " £2 2 0
8th, 9th, and 10th Prizes " " £1 10 6

Vouchers for £1 will be awarded for the next best 48 entries

In addition, dozens of other valuable prizes and Certificates of Merit will be awarded. Winners of the vouchers may choose any Hobbies goods to the value of the prizes won

RULES

1. All entries must be made from Hobbies Design No. 3124, presented free with this (September 14th) issue of *Hobbies Weekly*.
2. Points will be awarded for the quality of the fretcutting, plus the excellence of the finish (staining, wax polishing, etc.). Full instructions for making the article are included in this issue.
3. An entry must be the unaltered effort of the competitor.
4. Entries must be sent to the Competition Dept., Hobbies Ltd., Dereham, Norfolk, to reach there not later than April 30th, 1956.
5. A label bearing the name and address of the competitor, age and Section of the Competition for which the entry is to be judged, must be firmly stuck underneath the entry. Competitors who wish their entries returned must include a 1/- P.O. to cover cost of repacking and postage.
6. Because of Customs restrictions, etc, entries are confined to those from Great Britain and Northern Ireland.
7. Prizewinners will be notified by June 30th, 1956, and details will also be given in *Hobbies Weekly*.
8. Hobbies Ltd cannot accept responsibility for any loss or damage to entries, but all reasonable care will be taken with them.
9. The judges' decisions are final, and no correspondence can be entered into.

which they had 'been wanting for years', as some of them explained. Just have a look through *Hobbies 1956 Handbook* to see what you would choose if . . . And then make up your mind to enter for this grand, free competition. The rules are simple . . . the prizes must be won . . . and you have as good a chance to win one as the next person.

The design chosen for the Competition — a Trump Indicator and Card Box in which can be incorporated a musical movement—bears the accent of novelty which makes it quite attractive and yet the make-up is so simple that even the youngest and most inexperienced among you should have no qualms about your ability to complete it successfully.

For the purposes of the Competition it is *not* necessary to include a musical movement, as this will not enter into the judging, which will be purely on fretcutting and the finish of the box. The musical compartment can be made to contain cigarettes, but, of course, the addition of a movement gives the box a novel appeal.

The lid of the box is reversible. On one side is the trump indicator, and on the other there is a handle and decorative overlay. When the finished article

is submitted for judging in the Competition, the lid should have the handle uppermost for safer packing and delivery.

It will be seen that the box thus contains three separate compartments — one for a pack of cards, one for a musical movement, or cigarettes, and a narrow one in the middle to take either the handle or trump indicator, depending on the position of the lid.

Full instructions for making the box are given on page 375

It is advised that the competitor should purchase a complete kit as offered by Hobbies Ltd as he will then have all the materials needed, including the trump indicator. If required, a musical movement can also be purchased and details of tunes etc, are given on page 375. Beginners should note that in this instance it is best to use specially prepared fretwood, particularly where a natural stain and polished finish is required. An extra precaution to the entry in the form of a carton is provided to all who purchase the special kit — a real

advantage when the box is sent to us for judging.

An indication of the type of work which is entered for this Competition can be seen at the 3rd International Handicrafts, Homecrafts and Hobbies Exhibition at Earl's Court, London, from September 22nd to October 1st 1955. On Hobbies stand there will be shown some of the entries which gained awards in last year's Competition, and we shall be pleased to welcome any reader there, and give any further information needed.

An addition to the rules which we have had to make concerns overseas readers. In view of the Customs restriction, etc, it will be noted that only those entries from Great Britain and Northern Ireland can be entertained — a regrettable decision in view of the enthusiasm of some of our overseas readers but one which we are obliged to enforce.

Study the rules carefully, and when you have completed your box to your satisfaction, send it along to Hobbies Ltd, Dereham, Norfolk. And do not forget to stick a label on the underside, giving your name and address, age and section of the Competition in which the entry is to be judged.

PHOTOGRAPHY

HOW WIDE THE APERTURE?

This article by D. Y. Gooderson will help you decide

ALTHOUGH not synonymous, the terms aperture and stop are related, and may be applied together for the sake of clearness, for the stopping down from $f3.5$ to $f22$ also means a closing down from a wide aperture to a small one. The f numbers on a camera represent the proportion of the diameters of the aperture to the focal length of the lens. The size of the apertures is represented by the stop numbers.

In actual practice, to stop down from $f8$ to $f16$, needs four times the exposure. The size of the aperture, which controls the amount of light passing through to the plate or film, is in proportion not to the stop number itself, but to its square. A table demonstrating the true relation between the stop number and the exposure required (as determined by the aperture) is as follows:

$f8$	$8^2 = 64$
$f11$	$11^2 = 121$
$f16$	$16^2 = 256$



An example of where the wide aperture scores. The parrot is dead sharp and stands away from the subdued background. If a small aperture had been used, the parrot would have been lost against a detailed background of leaves and branches

An interesting photograph spoilt by using too wide an aperture. The house through the archway was interesting, and a figure was included to break up the bare wall by the house. The house was focused on to get the sharp detail, but with such a wide aperture, the figure and arch are slightly out of focus. If the archway had been focused on, and the camera stopped down so that the house was sharp too, a better result would have been obtained



It will be seen that 11^2 is near enough double 8^2 . So that by using the stop $f11$, double the exposure is necessary as at $f8$. $f16$ which, is double the number $f8$, needs four times the exposure; that is to say, when stopping down from $f8$ to $f16$, the aperture allows only such light through which needs four times the exposure.

Full Benefit

In photography today, wider apertures than $f8$ or $f6.3$ are so common that a knowledge of the effect of setting the camera to $f4.5$, $f3.5$ or even greater apertures or stops, is necessary to get the full benefit of the camera. First impressions of the beginner are that as a wide aperture lets more light through, faster speeds can be used, and greater scope obtained as regards subjects. Fast-moving objects and many indoor subjects become possible which were once barred to the photographer. Poor weather conditions are not such an obstacle. These impressions are true up to a point, but the type of

subject, too, must be taken into consideration. The subject determines at times whether a wide aperture can be used at all.

It is well worth while using a whole film, experimenting on one subject, using different apertures. Imagine an indoor subject, say a section of a model railway, occupying a few feet in depth. Suppose the camera is focused midway between the nearest point and the far end of the section it is desired to photograph. Three exposures are made at $f3.5$, $f8$ and $f22$. When the results are seen, it is found that at $f3.5$, only the centre portion is sharp. At $f8$, not only the centre, but a certain distance each way from the centre is also sharp, while at $f22$, the whole section is sharp. Thus it is seen that although by using $f3.5$ a much shorter exposure can be given, the subject may decide that a small aperture must be used to get the desired result. Naturally, the camera must be placed at least the minimum distance from the nearest point of the object, as seen either on the

ground glass, or by the minimum distance as shown on the camera.

The same thing is true, of course, out of doors. The smaller the stop, the

points by contrast and more detailed painting, so the photographer, by skillful use of the apertures at his disposal, can emphasise his main theme



Again the wide aperture scores, softening the background behind the children. Imagine a hard horizon line running behind their heads

greater will be the depth of focus. A large aperture focused on the near foreground gives a sharp foreground and a blurred middle distance and distance. If sharp definition is required in both the foreground and the middle distance, then a smaller aperture must be used.

Having found what to avoid, we can concentrate on the advantages of the use of a wide aperture. It will enable us to give a quick exposure for moving objects — the motor-car and the train. By focusing on the objects, opening up to a wide aperture, and giving a fast exposure, the main subject, the car or the train, will be sharp, while the background will be blurred or out of focus. This will show the main subject up to greater advantage.

Selective Composition

For both indoor and outdoor subjects, the wide aperture comes into its own, where prominence is needed for the main objects; for subduing backgrounds, and for selective composition. Objects of secondary importance can be subdued. A bowl of fruit can be spoiled by a harsh background. The background can be softened by using a wide aperture, so that the background is out of focus. A portrait is given prominence if the surroundings are subdued.

The choice of aperture is one of the photographer's opportunities to create an artistic rendering of his subject. As the artist can emphasise certain

Landscapes call for medium stops. If a wide aperture had been used, the result would have been a tree study, not a landscape



by focusing on one or two main objects, while the surrounding parts are subdued by being to a greater or lesser degree out of focus.

Wide apertures are useful for animal studies. When taking animals in cages with wire netting, if a wide aperture is used, and the camera placed almost touching the wire netting, the wire itself will be so much out of focus, that it will not be recorded on the film. A dog study is improved if the dog is not mixed up with surrounding twigs and bushes.

Landscape Work

In landscape work, the wider apertures would not often be used. The haze and atmosphere created by long distances tone down the background. The majority of landscapes call for the medium stops $f/8$ or $f/11$. Lastly, there are the smallest stops $f/22$ and $f/32$. These are admirable for interiors where detail is required over a great depth, such as the long nave of a cathedral.

A few exposures at different apertures is good experience and another step to the mastery of your own particular camera.

ADD BEAUTY TO YOUR HOME

Try Your Hand at Wood Veneers

Says Victor Sutton

THE keen home handyman is always ready to try a new idea, and in natural wood veneers he certainly has a pleasing venture into adding beauty and luxury to the home.

It is real wood processed so as to be able to paste it on old or new wood, cardboard, hardboard, paper, cork, linoleum or any flat surface which is suitable for pasting.

Non-porous Surface

It makes a really first-class job as a lower border in the porch, lounge or passage, but one must remove old paint first, and give the wall two really good coats of size or any paint 'sealer' of repute. That is a very important point to remember in this process; always have a solid, non-porous surface to take the paste.

The veneers are made by bonding one-piece wood skins permanently to tough paper. In this way they retain the natural beauty of the grain and the marking remains as beautiful as on the most expensive furniture. You can leave them in their natural shade or, within twenty-four hours of pasting, polish or treat them in any way you like.

These veneers can bring fresh life to trays, tables, lampshades, drawers and many other items around the home. All you need is a good paste, a roller, or an old flat iron, and some sharp scissors. You can cut the material, fold it, snip it, and mould it on to existing borders and mouldings. There are several natural colours from which to choose — everything from a lush light oak to a bluish tan effect, and the novelty of the unusual beauty of the olive green.

In the case of old wardrobes showing signs of wear you may have to level off any bits of veneer which are uneven. Keep the paste off the top surface of the veneer because some pastes leave marks.

Wall Panel

You can add the veneer on sections of a wall to create a panel, which is an idea that can be used over a bed-head or where you have two single beds. If the wall is bad add the veneer to hardboard panels. This is a good solution for a bad wall patch which never takes paper well. The table can be covered with a veneer in contrasting shade.

A chocolate box, covered with veneer, can make a cigarette box gift for a man. Table mats can take on a new and interesting life.

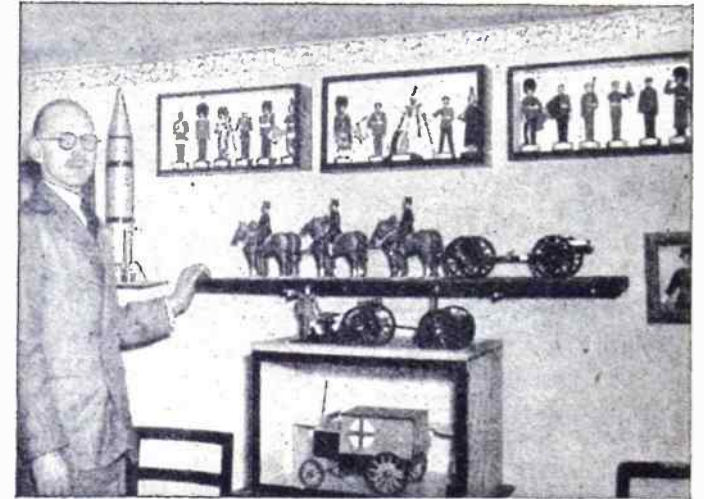
Trays, tin boxes, and round tins to hold cereals can all take on a new and fresh look with this material. It is

so versatile, hard-wearing and attractive.

Thin glue can be used but it must not be watery. Spread the fixative on both veneer and surface. Beware of bumps and bulges as you would in wallpaper.

A cheap roller levels out better than a rag or your hand because it gives a wider and firmer pressure. Press out all minute bubbles as you go. Fit squarely and adjust the moment you feel it is not setting as you want it. Leave at least twenty-four hours or more before you varnish, polish or wax. On the corners of cabinets careful mitre work is essential because overlapped joints will look unsightly.

Military Model Maker



The designing and making of military scale models is an absorbing hobby for Mr K. W. Hewlett Phillips, 6 Rectory Cottages, Cliddesden, Basingstoke, Hants. Mr Hewlett Phillips, who is pictured here with some fine examples of his craft, uses a Hobbies 'Gem' machine for the basic work.

His hobby demands an extensive knowledge of military uniforms and equipment, immense patience and the ability to improvise, says Mr Hewlett Phillips. With the permission of Commanding Officers he has visited various barracks to measure equipment, and to learn something of the histories and traditions of the regiments. When the model has been completed he has placed it before the officer of the regiment for criticism and adjustments.

Construction is not expensive, some of the materials used being wood, clay, card and paper, pins, cottons and silks, beads, silver steel rods, brass picture wire, fur, and in some instances empty ball pens and even a mustard tin.

The mixing of colours is an extremely tedious business in order to gain authenticity, and in many cases two to three weeks of experimenting is necessary before perfection is obtained. Cochineal, distemper powder, and liquid make-up are basic constituents in some of these colours.

Mr Hewlett Phillips has very kindly offered to enlighten any readers who may wish to take up this fascinating hobby, and he will be willing to give them the benefit of his vast experience on receipt of a stamped addressed envelope.



ANIMAL stamps are always popular and there are some really fine specimens, but although the pretty and common animals seem to have the greatest appeal, it should be remembered that the less common ones are usually the more interesting.

On the 12c. of the 1950 Mauritius issue, there is a picture of a dodo in front of a map of the island. If one looks up the dodo in the natural history book one finds that, although the dodo is now extinct, at one time it was fairly common. It was mentioned by the Dutch in 1598, and they, disliking the taste of the flesh,

The 4c. stamp of the 1939 set gives a very good picture of the proboscis monkey. We do not often see these animals because they do not take kindly to captivity. Their food consists of the leaves and fruits from their native forests, and as it is extremely difficult to grow these in Britain owing to the climate, the animals cannot be kept in the zoological gardens. The nose (proboscis) of the animal hangs down over the upper lip. This can be seen quite easily on the stamp.

Another very weird mammal is the one which is shown on the stamps from



The dodo

Duck-billed platypus

Proboscis monkey

The tuatara

called it a 'nauseous bird'. It was very plentiful in Mauritius until the pig was introduced. This soon led to its extermination. Since it was a flightless bird it could not escape the pigs and neither were its eggs safe from them. In size it was about the same as the turkey. It had a very large beak, no tail feathers and as the picture shows it must have been rather a curious-looking bird.

Like a Panda

North Borneo gives us two unusual-looking animals, the tapir and the proboscis monkey. In 1909 the 1c. of North Borneo showed a picture of an animal the front of which is black, and the body behind the head, shoulders and front legs is white. It almost reminds one of the panda until one looks at the head. It is a tapir. These animals are found in South and Central America as well as in the Malay Peninsula. The snout of the tapir overhangs its jaw; the fore feet have four toes and the hind feet three. Their food consists of water plants, bulbs, and shoots of trees, and they feed mainly at night.

French Guiana issued in 1904, the great ant-eater. The chief characteristics of these animals are the large bushy tail and the very small but long head. Quaintly enough, although they frequent muddy ground, in captivity they are always kept in a dry and draught-proof cage. As the name shows, the chief diet consists of ants, and the head and tongue are so formed as to render feeding easy. The snout is pushed into the ant heap and the sticky tongue darts in and out gathering a number of ants and carrying them into the mouth. In countries where ants do so much damage the ant-eaters are invaluable animals. They swim very well, live a solitary life and feed at night. They are clumsy on their feet due to their nails which are turned back; in this way the nails are excellent for turning over ant-heaps although they get in the way when they walk. When fighting the animal lies on its back and in that position the claws come into play for some excellent defensive work.

Among the more unusual animals which appear as designs on stamps, the

SOME UNCOMMON ANIMALS

duck-billed platypus, which is shown on the 9d. value of the 1938 stamp from Australia, is perhaps one of the most interesting.

Shy Animals

The duck bills — which are egg-laying mammals — are shy nocturnal animals living on worms and insects which abound in the damp regions which they inhabit. It is, of course, the presence of the food that is the main consideration when the duck bill chooses its lair.

They make a burrow at the water's edge and another entrance forty or fifty feet away. The female lays two white eggs and hatches them by incubation. The young are born blind and nourishment must be injected by the mother.

If you look at the illustration of the tuatara lizard on the 8d. stamp of the 1935 issue of New Zealand you can see a picture of the most archaic of reptiles. It is often spoken of as a living fossil, as a species very similar roamed the earth during the age of reptiles. These animals are becoming very scarce, which is not so very surprising as they are very sluggish in their movements. They live in short burrows which they share with the petrel bird. Their leathery shelled eggs are buried in the soil a few inches below the surface, and left to hatch; and since this takes 13 months, one could hardly expect the mother to sit all that time. As soon as they hatch out, the young lizards have to fend for themselves. The head of this creature is remarkable in that it has a third rudimentary eye.

How to make the

Trump Indicator and Card Box

to win a prize in our
Fretwork Competition

THE parts are shown full size on the design sheet. These should be traced and transferred on to the correct thicknesses of wood and cut out with the fretsaw.

Glue together 1, 2 and 3, thus forming the shell of the box. You can use jointing to your own particular fancy but it will be seen that we have shown butt joints. Next glue in position the partition pieces 10 and 11.

If a musical movement is to be used,

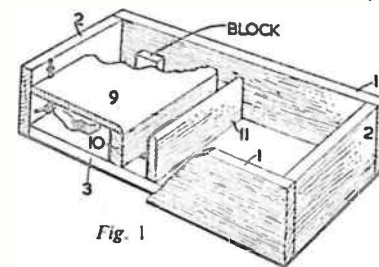


Fig. 1

it should be added at this stage. In this case, add a supporting block for piece 9 as shown in Fig. 1. Then the movement can be fixed to the base by screws inserted through the two holes. Make sure that the screws are not too long as to protrude through the base. The winder portion, of course, goes through the hole already provided for in the base.

From a piece of medium gauge wire, make the plunger which forms the stopping and starting mechanism for the musical movement. Note that the arm on the movement is bent horizontal and parallel with the end 2. By studying the diagram on the design sheet it will be seen that the plunger is slipped on the arm of the movement, then rested in the

notch provided in piece 9, finally going up through a small staple fixed to piece 2. When the lid is closed, it presses on this plunger, which in turn depresses the arm, thus stopping the mechanism. Conversely, when the lid is taken off, a tiny spring on the arm lifts the plunger, thus freeing the mechanism and starting the musical movement.

The small staple which helps to hold the plunger in a vertical position is made by cutting the head off a 1/16 in. fret pin, which is bent over to form an eye. There should be sufficient play to allow the plunger to move freely up and down but not too much side movement. The staple is pressed home into piece (2) with pliers. Note that the top of the plunger must be 1/16 in. down from the top edge

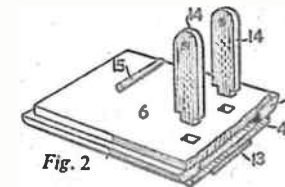


Fig. 2

of the box, thus allowing for the thickness of pieces 4 or 6 according to the placing of the lid.

With the plunger in position, piece 9 can now be glued on to form the top of the musical compartment.

The plinth at the base is formed by mitring pieces 7 and 8 and gluing them in position. This plinth is slightly inset from the edges of the base and the corners of the mitres and the base can now be rounded.



Fig. 3

On the other side of the lid glue the overlay 13 and the completed handle which is made up as shown in Fig. 3. Note that the tenon on the handle is the same depth as the thickness of overlay 13.

Finish off by adding the two overlays, one on each side of the box.

The final finish, of course, is a matter for personal taste. Staining and polishing will accentuate the natural beauty of the wood. If this method is adopted, then the addition of the overlays should be left until a perfect finish has been given to the box. Then mark the position of the overlays and scrape off carefully the polish in order to give a better surface on which to glue the overlays.

If painting is preferred, the overlays are, of course, glued on before this is undertaken.

A Souvenir Screen

BUY a hinged folding, unpainted, plywood screen, and cover it with mentos. That is all the material necessary for a souvenir screen. Favourite snapshots, holidays views, special birthday cards, and such-like, recalling happy times are just a few of the items which could be glued on it.

Place the screen flat on the floor and arrange the souvenirs at varying angles to form an artistic layout. Cut the corners so that everything fits without overlapping. Then glue them on care-

fully to prevent any wrinkling.

Remove any excess glue with a damp cloth and leave the screen to dry overnight.

Next day, spray on a coat of one of the new plastic sprays, carefully following the instructions issued with the spray. Allow it to dry for five to ten minutes; then apply a second coat. When this has dried, your spectacular souvenir screen will be finished—the envy and admiration of beholders and a source of pride and joy to you. (E.M.B.)

All About Miniature Aero-Motors

By R. H. Warring

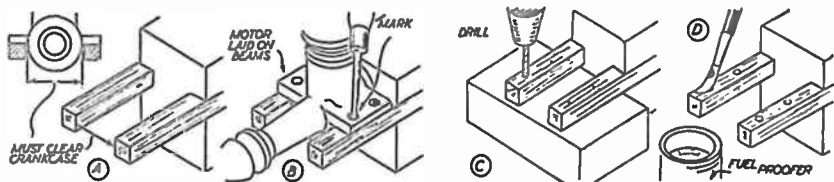
MOST model aero-engines made in this country are of the compression-ignition or 'diesel' type, which need no form of ignition and require only a fuel tank as an essential 'accessory'. On some engines the fuel tank is fitted as an integral part of the power unit so that the whole engine is completely self-contained. It is possible, in fact, to start and run such engines holding them in the hand, although this practice is not to be recommended.

installation and operation in a typical case. Installation is very important for trouble-free operation, and starts at a fairly early age in the construction of the model.

If the motor is mounted by means of lugs cast in with the crankcase, then the bearers to carry the engine which protrude from the front of the fuselage must be spaced to clear the engine

seeping into the wood and weakening it during service. Regard this as separate to a coat of fuel proofer which may be applied to the rest of the model.

The motor can then be bolted on to the bearers, using steel nuts and bolts of the appropriate size. For small motors this is usually 8 B.A. size, with 6 B.A. size for the majority of engines from 1 c.c. size upwards. Choose the bolt size to fit the holes in the lugs rather than attempting to ream out these drilled holes. Crankcase alloys are quite

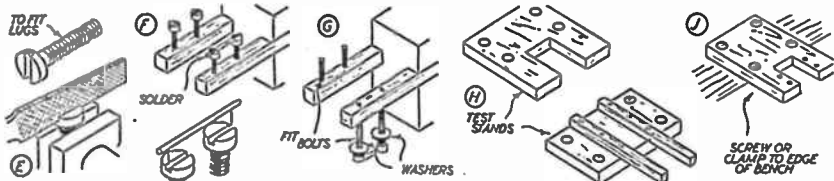


The modern model diesel (although strictly speaking, the term 'diesel' is not technically correct) is a relatively fool-proof unit which will operate off a variety of ready-mixed fuels. No miniature engine of this size, however, can be expected to start as easily as a motor-car engine, or an electric motor.

crankcase (A). This is a point which must be checked when building the fuselage. It is no good completing this component to find that the bearers are too widely spaced, or too close, to take the engine when subsequently purchased. These bearers, too, must be of good, straight-grained hardwood, such as ash

or beech. Balsa or a soft wood like spruce is relatively useless. They must be strongly cemented into the fuselage using a slow-drying cement for maximum joint strength.

Careful Drilling
Lay the motor in place on the bearers, and with an awl or a sharply pointed tool, mark the position of the mounting holes (B). Remove the motor, rest the bearers on a block of wood and drill through, as shown in (C). Take care to get the holes truly vertical as if they run out of the side of the bearers the mount will be weakened. Bearer width is usually not very generous on most designs — largely to save weight, so it is important to do a good job of drilling the holes for the bolts. Then give the front former of the fuselage and the insides of the holes a generous coat of fuel proofer (D). This will prevent oil



A certain amount of 'familiarisation' is necessary before one can operate a model engine consistently and successfully, but once past this stage, further troubles should be comparatively rare and their cause readily traced.

As a rough guide, the smaller the engine the more 'touchy' it can be expected to be as regards starting. On the other hand, the smaller the engine, the smaller and cheaper the model to which it can be fitted. For a beginner, a 1 c.c. motor is about the smallest size in which excellent starting characteristics are the rule rather than the exception. Diesels smaller than this are just as easy to start once you have mastered the technique involved. Larger engines are usually easy starters and, of course, more powerful and more noisy in operation.

Since a majority of these engines are used in model aircraft we will deal with

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Lay the motor in place on the bearers, and with an awl or a sharply pointed tool, mark the position of the mounting holes (B). Remove the motor, rest the bearers on a block of wood and drill through, as shown in (C). Take care to get the holes truly vertical as if they run out of the side of the bearers the mount will be weakened. Bearer width is usually not very generous on most designs — largely to save weight, so it is important to do a good job of drilling the holes for the bolts. Then give the front former of the fuselage and the insides of the holes a generous coat of fuel proofer (D). This will prevent oil

wire (E). The bearers should have been drilled with a close clearance size hole, so that the screws can now be stood up in these holes (F). When so positioned, solder a short length of wire between the pairs of bolt heads. The screws are then permanently fitted from the underside, with large washers under the heads, as in (G). They are then ready to take the motor which is dropped in place and nuts screwed on to lock it in place.

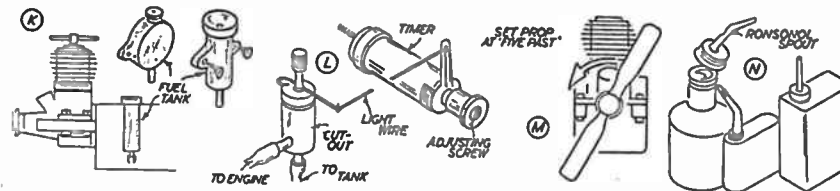
Before mounting the motor to the model, however, it should be set up for bench running. You can easily make a test stand from a piece of hardwood, either cut out to take the motor or fitted with separate lengths of bearer strip screwed in place (H). The stand is screwed or clamped down over the edge of a workbench, after being drilled to take the motor, and the motor then bolted down in place.

Bench testing enables the motor to

be run-in properly before installing in the model, and also enables you to get familiar with the starting and operating technique with the motor conveniently mounted. It is easier to handle a motor fitted to a bench in this way than when it is mounted on a more fragile and

free flight power models should be fitted with a timer-controlled fuel cut-out. Such a feature is virtually essential on a 'duration' model where motor run has to be limited to a matter of 10 to 15 seconds, with accuracy. Cut-out and timer are inter-connected by means of a

unit checked and working, the propeller can be locked on to the shaft and the engine made ready for starting. For a normal right-handed person, the best propeller position for starting is at 'five past', as shown in (M), with the piston just coming up to maximum



mobile fuselage. The same technique, of course, applies as regards handling and so bench running will not be described as a separate detail. With a new engine, follow the maker's instructions as to the best sizes of propeller for running-in and give the full period of bench running recommended.

If the motor is not fitted with an integral tank, then a separate tank must be mounted on the model. In the case of free-flight models, a plastic tank can be used, screwed and cemented to the side of the fuselage (K). Connect to the engine with transparent fuel tubing. Unless the tank capacity is small, or the tank is graduated so that you can adjust the length of motor run by that means,

light wire, as in (L), and the operation of the cut-out is fairly obvious. Once tripped by the timer, it shuts off the fuel supply to the engine, which thus stops. Clockwork timers are not adjustable, but the 'cut-out' times can be predetermined by the amount the rewind knob is turned back. In the case of pneumatic or 'airdraulic' timers, the timer arm has a full travel regardless of its actual operating time and the time of the travel is adjustable by means of a small screw. For consistent results, airdraulic timers should be mounted on a part of the model which is not likely to get exhaust oil thrown on to it, as this can affect the setting.

With the tank installed, and cut-out

compression. This is the easiest position for the propeller to be flicked over smartly in an anti-clockwise direction with the right forefinger.

Model diesel fuel is sold in cans or bottles. Cans may have a special spout fitted to the filler cap and can therefore be used for filling the tank direct. Bottled fuel should be poured into a separate fuel can, or fitted with a 'Ronsonol' type spout (N). Either method is better than trying to fill a fuel tank via a funnel, etc.

This article will be concluded in next week's issue



Chromium Plating Solution

I WISH to chromium plate a few small parts of my car, and I would be grateful if you could give me a suitable formula for the solution. (B.L.—Bedford.)

A PLATING solution may be made by mixing 1oz. of cadmium oxide with 2ozs. water to a smooth paste. Mix 2ozs. sodium cyanide, ½oz. sodium hydroxide, and ¼oz. zinc cyanide in boiling water. To this mixture add the first above, adding water to produce a bath similar to milk in consistency. Allow to cool before use. Use a zinc cadmium electrode. The current may be obtained from a 6 V accumulator. Best current will depend on the area of article to be plated. Low currents give the hardest plating, though the plating will then take longer (possibly up to six hours). The surface to be plated must be chemically clean, and not afterwards touched by the fingers. There is usually no need for prior

copper plating. The greatest possible care must be taken when mixing and handling the chemicals. The vapour must not be inhaled, and the work should be done out of doors. In the case of some of the solution touching the skin, surgical removal of the affected area may be necessary before healing is possible.

Constructing a Sun-blind

I WISH to construct a sun-blind for a window 5ft. in width. Can you give me advice on this—the usual idea is for the blind to fold into a box and it appears there must be some form of spring arrangement on the roller, or does the roller turn merely by pushing the blind back? (A.B.—Bromley.)

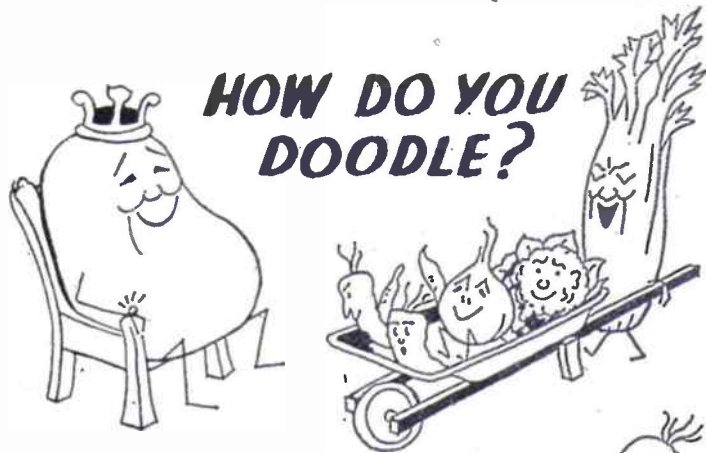
WE doubt if the common spring blind fitting would be powerful enough for a 5ft. blind. A simpler idea would be to use rack roller fittings and a broomstick. The fitting works on a

simple plan, pulling the blind down winds the cord up, and vice versa. The fittings can be bought at most hardware shops quite cheaply. A wooden covering must be made to shelter the blind against the weather.

Making Lantern Slides

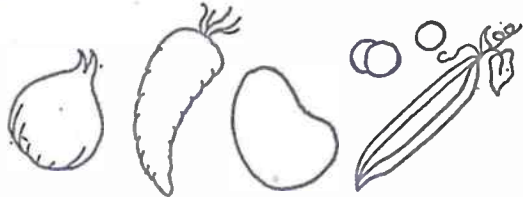
I HAVE come into possession of a lantern slide projector, but have no slides. Could you tell me how to make these as I am a keen photographer and would rather make them myself than buy them? (M.B.—Glasgow.)

SLIDES coated with sensitive emulsion may be obtained in a range of sizes from large photographic dealers. Choose the size of plate to suit your enlarger. The slides can be made by contact printing, exactly as with paper contact prints, from your own negatives. If you have an enlarger this is better, as you can choose any desired section of a negative and enlarge it to the size of the lantern plate, exactly as when making an enlargement of ordinary type. The exposure can be found by a test strip. The plate is then developed, washed, fixed, washed and dried. Colour transparencies for projection may be made directly in the camera, if you choose a positive, transparent type of film, e.g.—that meant to be viewed by transmitted light, not to make prints.



HOW DO YOU DOODLE?

MOST people doodle with a pencil at some time or other and a little thought behind the doodling can create a lot of fun. Vegetables are very simple to draw and vegetable characters are an amusing outcome of the humble shapes of



Just ordinary vegetables—



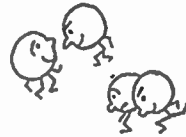
A 'weeping' onion

potatoes, carrots, onions, and the other stock of the greengrocer.

Sketch the outlines of some vegetables; seed packets will show the main



—brought to life!



shapes. Now bring them to life. Dots and dashes form the eyes. Lines, round and straight, are placed above for the eyebrows. Noses are numerous in shape; long and short, sharp and pointed; just an outline or a suggestion. Even two dots will give the effect. Hair may be determined by the growth of the vegetable. Lips are curved up at the ends for pleasantness; down for misery. Legs and arms are just straight lines, following the shape and direction of the limbs, according to the position and pose.

Incidentals which are easy to draw add to the entertainment. A crown and a chair, a wheelbarrow or a skirt may help to make the caricature. One idea leads to another. Bring them together and enjoy your doodling. (D.Y.G.)

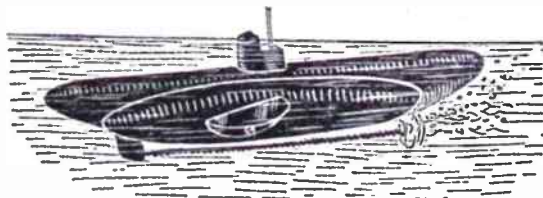
Full-size patterns are on page 383 for

Making a Working Toy Submarine

THIS little novelty can be made from odd pieces of wood cut with a fretsaw. With the addition of a piece of elastic and home-made propeller, it can be made to dive and surface most realistically.

Cut piece (A) from 3/4 in. wood and two pieces (B) from 1/2 in. Glue them together with waterproof glue and shape the parts with a penknife. There is no need to be very particular about the actual shape, so long as it is fairly streamlined. Insert a piece of wire to represent the periscope and then give two or three coats of grey paint.

For the propelling mechanism use screweyes and elastic. Cut the propeller itself from tin and shape a shaft from wire as shown. Insert a bead to help it to run smoothly.



Screw the diving fins on each side of the model and tighten the screw in each just sufficiently to allow the fins to be moved for diving. The diving position is shown in the picture on this page.

A weight should be screwed in the slot provided and it should be heavy

enough to partially submerge the submarine, leaving just the conning tower and a little of the deck showing.

When the propeller is wound up, by hand, and released, it will dive until the motor runs out, and then slowly surface. (M.P.)

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An interesting method of Diagram Copying without a Camera

By H. A. Robinson

There are times when to be able to get a quick copy of some diagram or sketch or even a section of print from a book or journal can be very useful.

Such items, of course, can be 'copied' by the full photographic method but the process is fairly intricate. A camera that will focus down to a few feet is necessary and there must be some way of holding and evenly illuminating the page, while even after the negative has been made enlarging is essential to get a reasonably sized and usable print.

There is a method, however, by which copies of book pages, etc, can be obtained without using a camera and intermediate negative, though the copy is made with photographic paper.

The method is known as the Playertype, so called after its inventor, the late Mr J. H. Player.

All that is needed is some ordinary bromide paper or better still the special 'document' paper produced by manufacturers, a sheet of glass and a dark room in which to carry out the operation. The special document paper can be

A white light is now switched on and the exposure made by allowing the light to fall on the glass and so on to the back of the bromide paper. This is the reverse of all other printing processes where the light comes through the image to the face of the paper.

The light should be held about 18ins. above the glass. A bulb on a loose flex is convenient for the job, though if the original and glass are on a loose board this can be readily lifted and held under a lamp.

The length of the exposure has to be found by trial and error by the strip method used when enlarging, as everything depends on the strength of the light and the exact distance it is away. The kind of developer used also affects the density, for while all packet and concentrated solutions that are intended for 'plate film and bromide papers' will do, some have rather better qualities for bringing up surface prints than others. Using Pactum Packet M.O., however,

in the usual way, when, although the light fell only on its back, a copy of the page or diagram appears. This is in reverse, that is to say a negative, but as it stands it may be all that is required.

To obtain a positive the paper is washed and dried and then placed face to face with a second sheet, an exposure being made as in the first case. The result will be an exact facsimile of the original.

The makers of the Kodak 'document paper' which is specially prepared for Playertype printing, suggest that with their own developer exposure should be such that developing time will be 40 seconds at 68 degrees F. Development can be carried to 90 seconds, but slight hazing may take place.

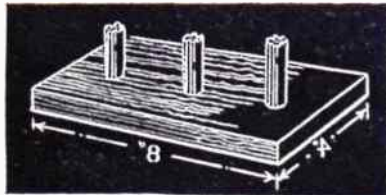
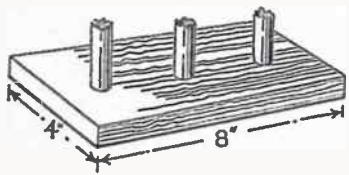
Hazing at any time and with any paper or developer does not mean that the copying has failed, for brightness can be brought back by dipping the print for a few moments in a solution of hypo and ferricyanide. This cleans up the whites at once.

In fact, a slightly prolonged development to the point of hazing and a subsequent clearing with ferricyanide gives the most sparkling results.

The whole method of Playertype printing is essentially intended for the simple and size-for-size reproduction of black and white diagrams, but with care in exposure quite good copies can be made of half-tone book plates, etc.

Documentary papers give bright results right away, but if using ordinary bromide material brighter results can often be obtained by putting a sheet of green glass over the back of the paper instead of a clear piece. When working in small sizes such a glass can be made by fixing an unexposed photographic plate and dipping it in a solution of naphthol green and water. This gives an evenly dyed surface.

It is an interesting fact about Playertype printing that it has never been quite satisfactorily explained how in the face of all photographic procedure a print comes on a paper illuminated apparently from the wrong side.



Left, a block which appeared recently in 'Hobbies Weekly', and right, a surface-printed negative taken from it. A positive can now be made by a second printing

handled in a yellow light as with other bromide printing materials. A Wratten Series OO safe light is recommended by the makers, or very dim tungsten can be used provided that the sensitive emulsion does not remain too long exposed to the light. The Wratten OO Series is a fairly bright yellow and easy to work by.

To make the copy, the book or journal is laid open on an even surface. A piece of the printing paper is then laid over it, sensitive side down, and above is placed the sheet of glass. It is essential that the page and the paper are in good contact all over so the book should be pressed well open and other necessary adjustments made to get the desired 'fit'.

If the original is on a loose page it is as well to place two sheets of blotting paper underneath it to ensure good all-over contact. These preparations are carried out in the yellow light.

an exposure of 15 seconds at 14ins. from a 60 watt bulb was found correct.

To get really good results the exposure should be reasonably accurate, but a workable print can be secured by more rough and ready exposing, as 100 per cent photographic excellence is not necessary to get a quite readable copy.

Having made the exposure, the light is switched off and the paper developed

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by F. J. Christopher

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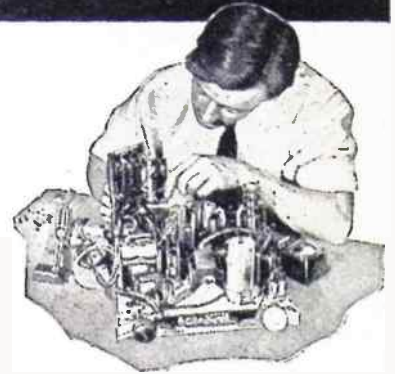
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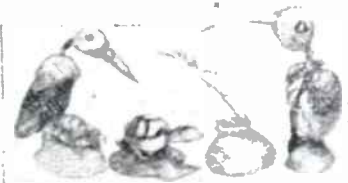
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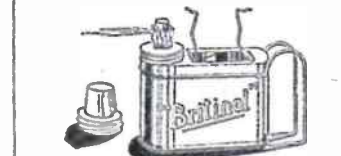
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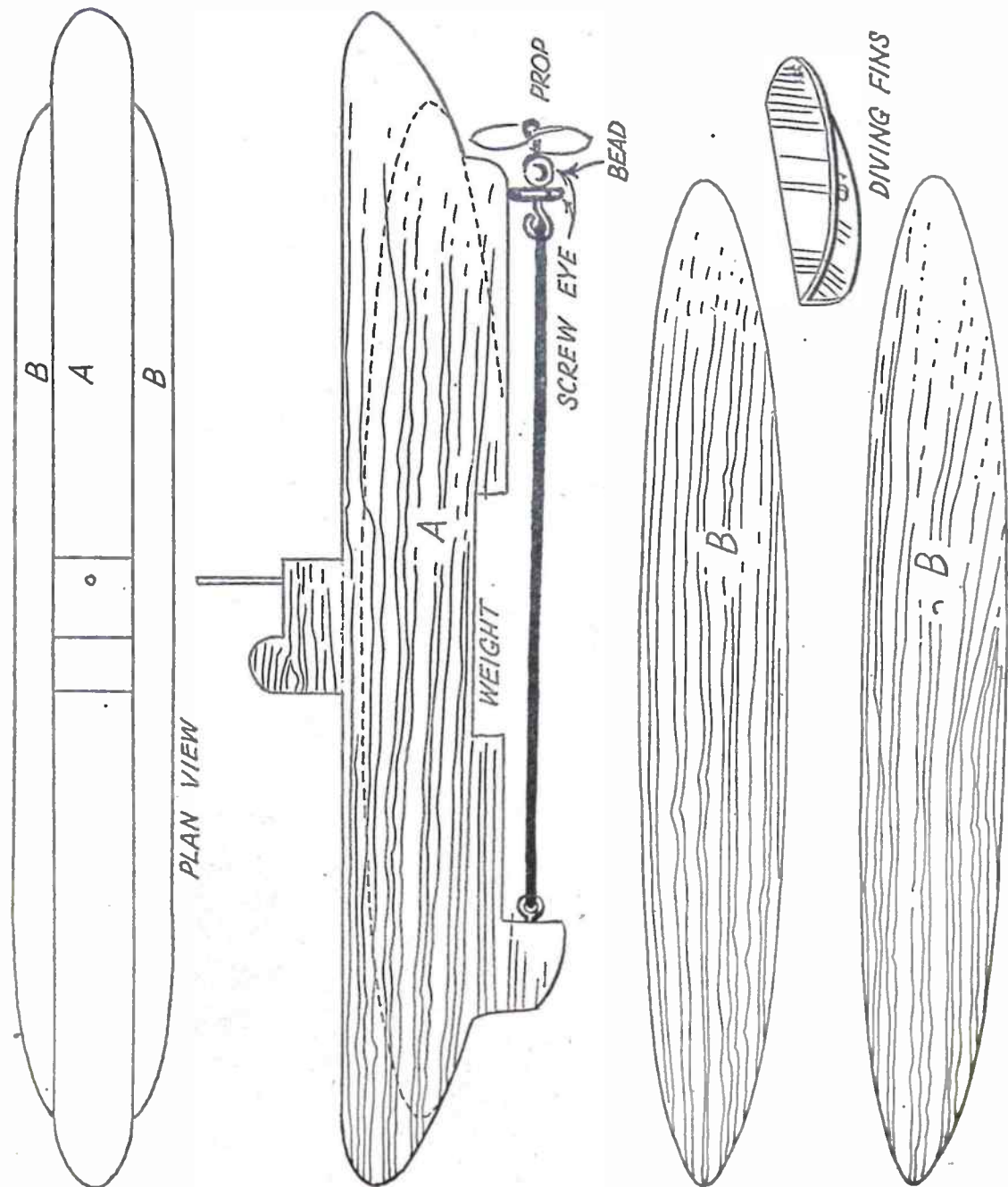
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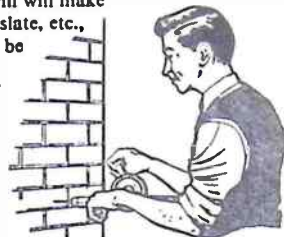
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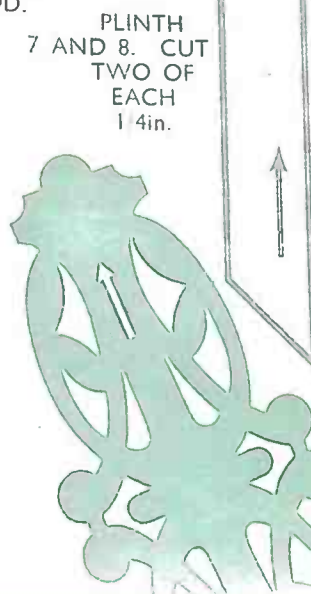
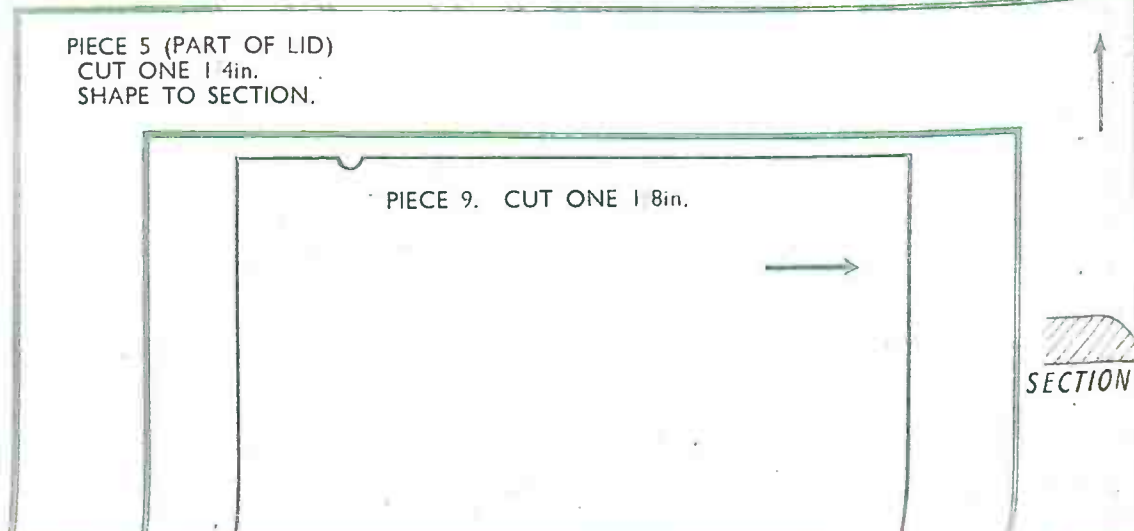
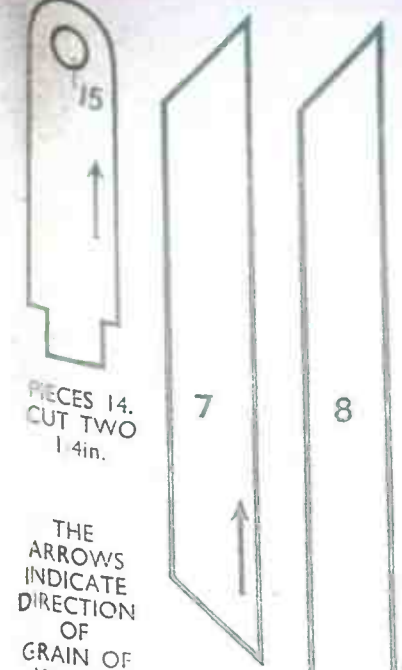
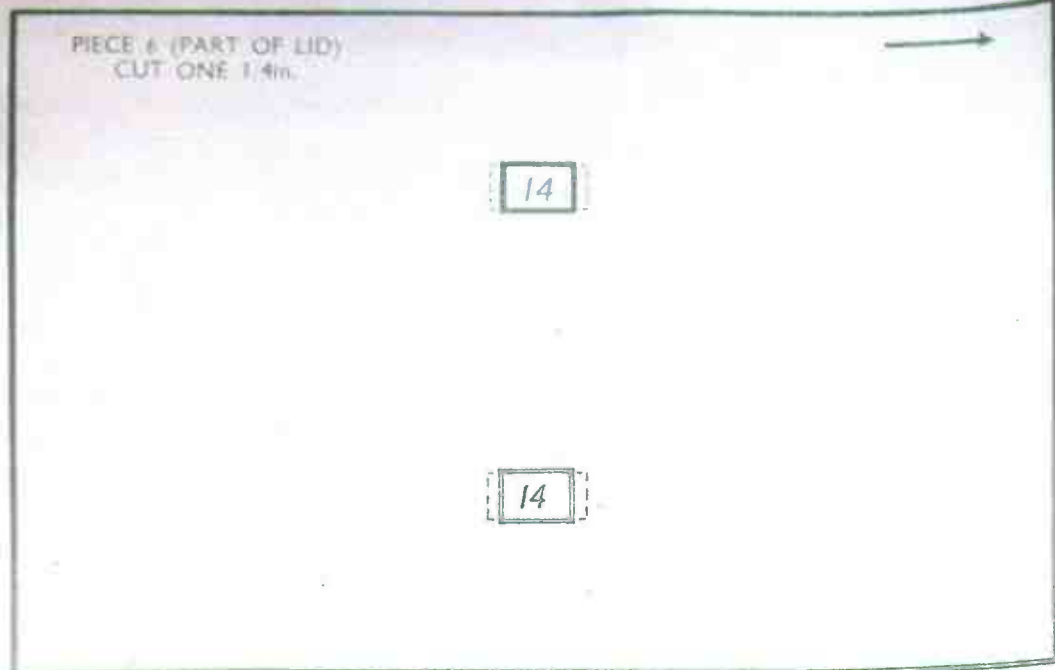
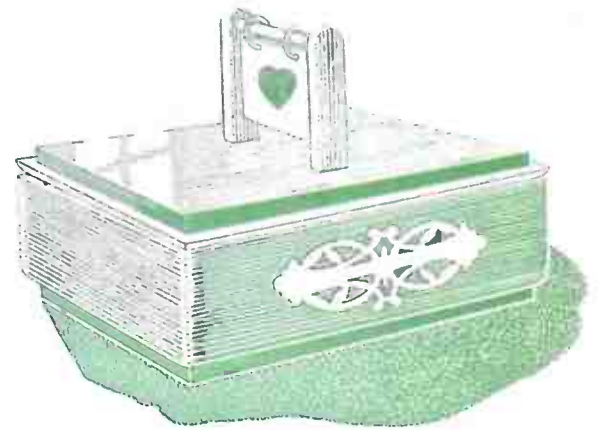
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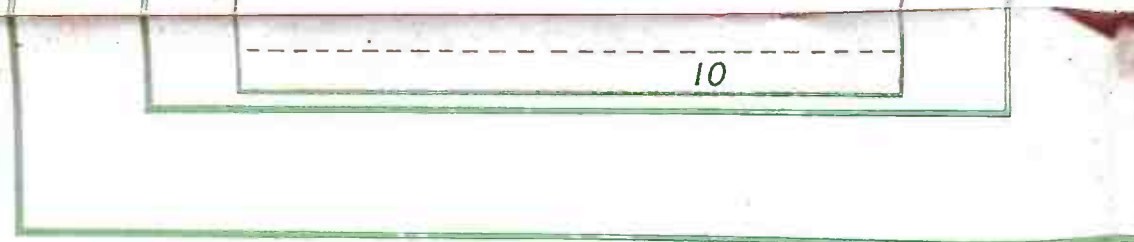
Materials required for this design

WOOD One piece 14ins. x 7ins. x 1/4in. (Hobbies H4)
One piece 12ins. x 5 1/2ins. x 1/4in. (Hobbies Q4)
One piece 12ins. x 5 1/2ins. x 1/8in. (Hobbies Q2)

FITTINGS One piece 3/16in. dia. round rod 3ins. long

A musical movement can be purchased separately if required

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