

Hobbies

WEEKLY

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WE give this week details and full description of the toy model Garage, shown at Fig. 1. This, as will be seen, is of quite the modern type of building, square, and plain in character and, therefore, simple in construction and assembly. On plan, the building measures 18ins. long by 8ins. wide and it stands 11ins. high.

In front of the garage stands a covered shelter for pumps, etc., made as a separate unit and optional, of course. It does, however, add much to the attractiveness of the model.

Looking at the plan, Fig. 2, we see there are three distinct compartments with doorways leading to each. On the right-hand we have an open shop for repairs, etc. In the middle, space for an office is provided, while on the left is represented a showroom. At the rear of each side compartments are large doors for the entry of cars, and the two windows at the front are designed typically modern.

A SIMPLE TOY MODEL GARAGE

One will assuredly ask at the outset how the interior of the three compartments is reached. Well, this is explained by a glance at Fig. 3. Here is a cross section through the building clearly explaining how a portion of the roof containing the upper storey is hinged to fold back. This makes for ample space in handling the cars in the workshops and showroom.

For Miniature Toys

This little garage will comfortably take any of

the smaller size toy cars up to the size chosen as a guide for this model, viz., 4½ins. long, 1½ins. wide, and 1½ins. high. The material from which the toy can be built may vary from ¼in. plywood to stout fibre or wood pulp board or a laminated paper board. The three latter can be readily cut with the fretsaw, leaving a good edge surface for gluing. Furthermore, ordinary tube glue can be used, making a perfectly strong and rigid joint.

In commencing to make the garage first set out and cut the base or floor piece 18ins. long by 8ins. wide. On this erect the front and the back uprights, as shown on the plan, Fig. 2. These each measure 17ins. long and 5¼ins. wide. From Fig. 4 it will be seen how to mark out the windows and the door openings.

Front Openings

The front will have the two windows and one opening, but the rear wall will have just two door openings cut to the same size as the front opening. This is further explained in the part sectional diagram Fig. 5. The two ends of the building and the two interior cross walls will each be 7½ins. long, but the cross walls will be 5ins. wide as against 5½ins. for the end walls. The ends will be plain, but the cross walls will have small door openings cut in them 4½ins. high by 1½ins. wide and ¼in. away from one edge seen again in the plan Fig. 2.

Realistic windows can be made in two ways. They may consist of stout card fixed in the openings cut in the front board, or they may be painted on

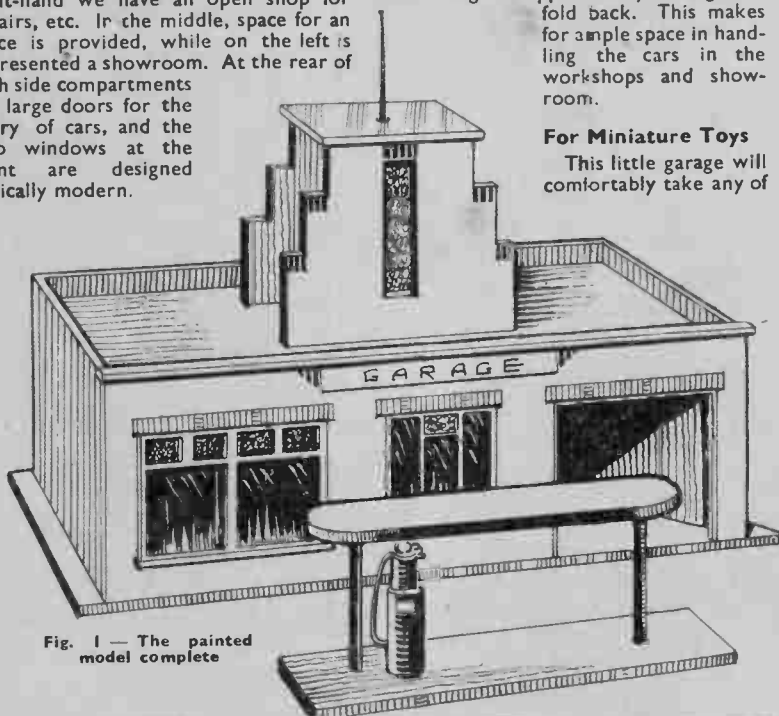


Fig. 1 - The painted model complete

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the glass or the stout celluloid which ever has been chosen to fill the openings. Either material can be fixed by gluing thin match-like pieces round the openings, then letting the filling material rest in the rebate so formed. Glue should answer as fixing or gummed tape may be used at the rear.

The heads of the window and door openings may have wide overlays of card or thin wood glued on, as seen in Fig. 4. Do not, however, do any of this deco-

required, will rest upon fillets of wood about $\frac{1}{4}$ in. by $\frac{1}{4}$ in. in section glued round inside the walls. The front roof will close down on the inside fillet, while the back and side fillets will support and tie the roof strongly together. Fine fret pins may run through the fixed back roof into the cross partitions if required. Looking at the enlarged diagram Fig. 6 we see the fixings, etc., just mentioned with section—cut away, of roof in raised

The connecting cross walls are plain pieces measuring $5\frac{1}{2}$ ins. high by $2\frac{1}{2}$ ins. wide. See that all the pieces go squarely together and then add the inside fillets if required before putting on the roof. This consists of a piece 5 ins. by $3\frac{1}{2}$ ins. simply laid on and glued, with a few fret pins added for the sake of strength.

The finished structure is simply glued to the front portion of the roof, as seen in Fig. 3. A flagpole may be added on the roof, a piece of stout wire being useful for this. The whole finished building would look well painted cream with a bright colour added in places to give

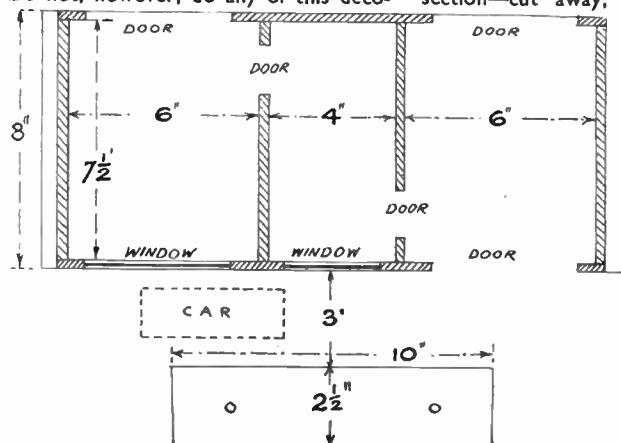


Fig. 2—Plan view of walls, windows, and pump shelter

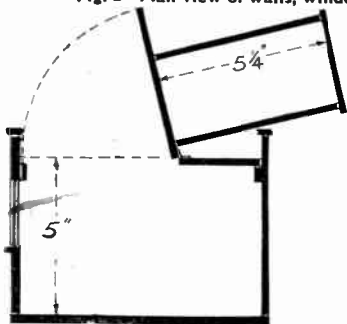


Fig. 3—Section showing hinged top

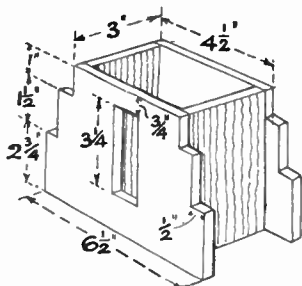


Fig. 7—The roof superstructure

rative work until the cross walls are in place and held securely by the roof.

This part can now be marked out and cut. A board $16\frac{1}{2}$ ins. long and $7\frac{1}{2}$ ins. wide is needed, and it will be cut into two widths. One section is $2\frac{1}{2}$ ins. wide for the rear portion of roof, and the remaining width piece for the front roof. The two pieces will be hinged together by stout linen tape about $\frac{3}{4}$ in. wide, see Fig. 3.

Carcase Work

The roof, back and front, and sides if

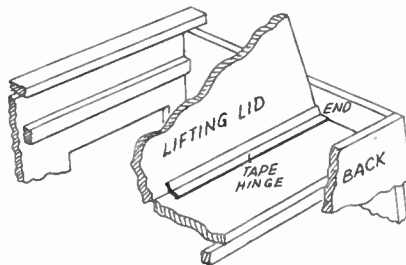


Fig. 6—Detail of roof and hinged upper portion

position. This diagram taken with that in Fig. 3 gives a clear explanation.

A parapet consisting of a strip of wood, $\frac{1}{4}$ in. by $\frac{1}{4}$ in. in section may top the front wall and be glued and pinned, as shown. A similar parapet for the rear wall is optional. The upper central structure on the roof consists of four pieces of the board cut and glued together with angle fillets glued inside for further strength if needed.

The shaping of the front and rear walls of the structure can be got from the detail Fig. 7. Set the measurements direct on to paper and the outline is then pricked off and the points joined up in pencil as guide lines for cutting.

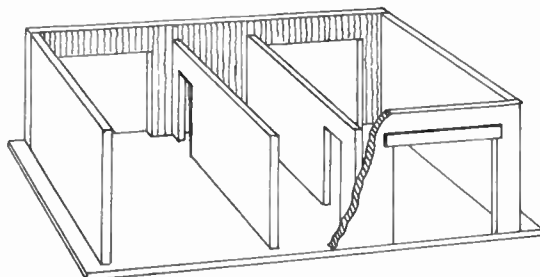


Fig. 5—Cut-away view of walls and main entrance

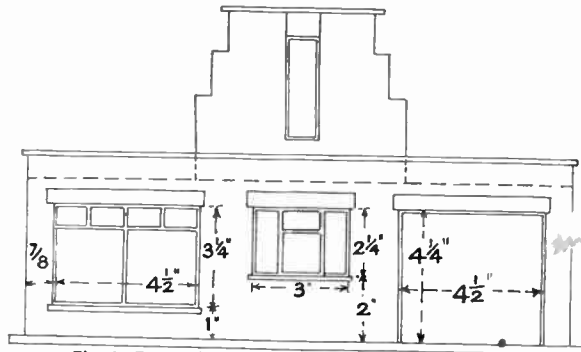


Fig. 4—Front elevation with window measurements

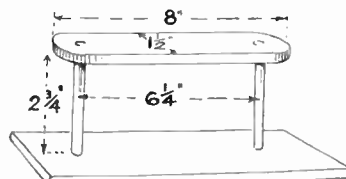


Fig. 8—Details of pump stand

character and relief, as illustrated in the sketch of the completed toy.

The covered shelter for the pumps, etc., is very simple to make, as Fig. 8 will show. The base of the shelter should be about 10 ins. long and $2\frac{1}{2}$ ins. wide, the upper pieces, consisting of round rod and a shaped top, are clearly shown in the detail.

The base of the shelter should be painted grey or green, as also would the base of the garage. The top of the garage roof and the top of the shelter should also be grey.

Undertake the painting with care after cleaning and smoothing all parts with glasspaper. A first priming coat of flat grey or buff can be put on first and allowed to dry in thoroughly before the second colour is added. Lines should be applied in black finally. (200)

The art of collecting, mounting and keeping MATCHBOX LABELS

MATCH-BOX Labels—an ever increasing number of enthusiasts from all over the world are collecting these apparently insignificant scraps of paper. The writer is one of them and can say that compared with stamps, milk tops or cheese labels, this is likely to be a more satisfying pastime. It brings you into contact not with the crowned heads of other countries, but with their history, geography, sports, hobbies and many other similar details.

In order to assist individually as a collector, and the hobby in general, a society called 'The British Matchbox Label and Booklet Society', was formed in London by a small number of enthu-

If you come across a label printed in a language which might be 'double Dutch' as far as you can tell, again the Society can help you. Translations of about fifteen languages are given free to members in order to help further the hobby.

It is doubtful whether you would be able to get hold of a label of any value, but such do exist, most of them carefully preserved. One is called the Troy Label, valued at about £100 uncut, and owned by Mrs. Inman, who has over 35,000 labels. Others change hands at informal auctions held yearly in London, for quite enough money to give you a luxury holiday!

As well as prices, so sizes vary, the largest being known as gross size. The smallest is very tiny, the boxes holding only 30 to 40 half-size matches.

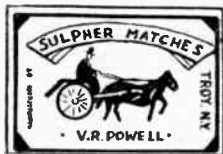
There is also a magazine called the 'Philumenist', which claims to be the only independent magazine devoted to the world-wide hobby of matchbox label collecting. It is in its tenth year of

publication. It deals with trade news, meetings and publications of interest to labelists and keeps a record of all articles about the hobby which appear in the world press. This is of great interest to collectors as it keeps them abreast of the latest events in Philumenist circles.

An Expanding Hobby

The hobby is expanding rapidly not only in Great Britain but universally and is proving a fascinating hobby in every way. Much research is needed, as the hobby is only technically in its infancy and everyone interested can help by keeping the experts informed about genuinely rare labels. It is promoting friendship all over the world, collectors in each country helping to maintain a high standard of honesty in dealings.

Rare labels can be picked up by the beginner from sources inaccessible to the expert, your friends and relations (particularly the older ones) or your local antique shop being likely sources. You may get that luxury holiday yet! (146)



The world's rarest label — The Trotting Horse

siasts in 1945. The hobby actually preceded this society by nearly a century, thus being older than stamp collecting. During the last century, in 1859, Anatole France tells in his novel 'Le crime de Silvestre Bonnard', how a royal couple toured Europe in search of elusive labels!

The actual mounting differs little from its cousin—the stamps. It may be with two hinges to the label, or photograph-album-wise. In a collection given to the author every label has been neatly sewn on to boards constituting pages of the book; certainly ideal if you are gifted that way. In order to reduce bulkiness most collectors steam or soak the labels from the wood. If you are careful, soaking is to be preferred, as the labels are sometimes in need of a wash.

The Label Society helps beginners by having a 'pool' at the flat rate of a half-penny a label. Some of these may be mint labels, and you may wonder how collectors have been able to get them from the wood so cleanly. Actually they



One of the labels of History

have never seen a matchbox, having been sent straight to the Society from the manufacturer.

Most 'philumenists', for this is the name you can call yourself, (philos, loving and lumen, light: Greek), put their labels under the heading of the country in which they were made. Others prefer to classify theirs in a subject order. This becomes a little confusing unless your subjects embrace a large area, for the labels cover almost as many ideas as there are cars in London!

Something like a Model!

THE sort of layout the model railway builder dreams about, but really well within the possibilities of the keen enthusiast. Although this fine railway set was on show at an exhibition in London, it is normally housed in a flat—running between two rooms. A bit awkward, perhaps, to have the doors permanently open—or, perhaps, the landlord allowed a 'hole in the wall' tunnel. It is built to a scale of 1 in 72 and was made by Mr. P. B. Denny of Acton, London, W. The collection and building of such a railway is a fascinating hobby, adding accessories from time to time, so the layout grows to be as realistic as the one you see here.



(Daily Graphic Photo)

Metals can be marked and articles named with this ELECTRIC ENGRAVER

MANY readers will have seen the machines which enable initials, etc., to be engraved on metal, in actual use. With their aid, soft metals such as are used for making cigarette cases, dog-collar name and address plates, and so on, can be marked as desired in a few moments. Some other materials (such as leather) can also be successfully treated in the same way and the construction of a suitable engraving tool of this type does not present much difficulty.

Various methods of obtaining the necessary vibratory movement are employed, that in the tool illustrated being similar to an electric buzzer or bell.

Method of Working

Fig. 1 will enable the way in which the engraver works to be understood with ease. An armature is mounted above a bobbin, the circuit to which is completed through a brass strip and contact screw. The bobbin is, therefore, energised, and the armature is drawn sharply down.

This breaks the electric circuit so that the armature is released and springs back, when the sequence of operations is repeated and a rapid vibration of the armature set up. The movement is transferred to the writing stylus, which is pointed and should consist of steel or other hard metal.

The bobbin is held in the hand and with a few moment's practice writing may be carried out easily. To get a really powerful action suitable for engraving on metal, a very strong magnet is required. Though dry batteries are satisfactory for an engraver of small or moderate strength, some other form

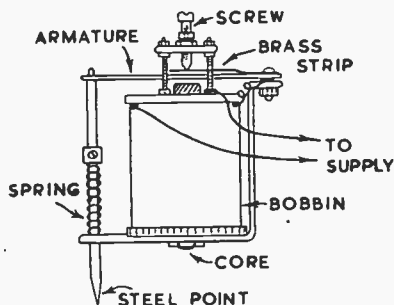


Fig. 1—Side view of the engraver complete

of supply is really required if metal is to be engraved deeply.

A six- or twelve-volt accumulator is the ideal source of current and in some cases it may be possible to make use of a car battery, taking two leads provided with clips to this. A mains transformer can also be used, though alternating current is not quite so satisfactory. Failing these forms of supply, dry

batteries with large cells can be used provided the engraver is carefully made so as to operate as effectively as possible.

The Bobbin

The core for this must be of iron and a piece sawn from a large bolt obtained from an ironmonger's can be used if nothing else is to hand, or if few metal-working facilities are available. It should be between $\frac{3}{8}$ in. and $\frac{1}{2}$ in. in diameter and is $2\frac{1}{2}$ ins. long. The top or sawn-off end is filed quite flat. If a nut is available for the threaded end, this will facilitate construction.

Two discs of thin plywood $1\frac{1}{2}$ ins. in diameter are cut and drilled so that they are a very tight fit on the core. The top disc is about $\frac{1}{8}$ in. from the end of the core; at the bottom end, leave about $\frac{3}{8}$ in. projecting so that the nut can be placed on afterwards. Wrap a layer of stout brown paper round the core, bind with cotton, and then give the whole a thorough coating with varnish and leave to dry. There should be no chance of the discs coming off during winding. It is also essential that the top disc be firm because this supports the contact-screw assembly.

Take two 6 B.A. countersunk-headed screws about $\frac{1}{2}$ in. long and pass them upwards through holes drilled in the top disc, securing them with nuts done up tightly. This must be done before winding the bobbin, and two slips of postcard are glued over the heads of the bolts, on the inside of the disc, to assure the insulation on the wire which will afterwards be put on is not scraped away, causing a short-circuit.

Armature Assembly

In order to get the necessary power and strength, a strip of flat iron must be used for the armature. It is $\frac{1}{8}$ in. wide and $2\frac{1}{2}$ ins. long. Material $\frac{1}{16}$ in. thick is satisfactory, and it should be drilled near each end.

A strip of $\frac{3}{16}$ in. (or similar) flat iron $\frac{1}{8}$ in. wide is bent into the shape shown in Fig. 1. This is drilled in three places—

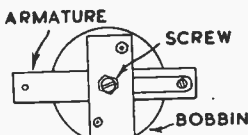
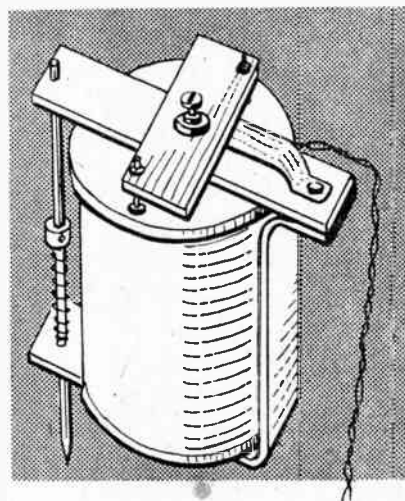


Fig. 2—Top view of bobbin and contacts

at the top end where the armature is bolted on, at the bottom, where the core is fixed, and at the projecting end, to act as a guide for the engraving tool itself. The hole for the engraving rod should not be larger than is necessary or accurate fine writing will not be possible. A brass strip is also held by the bolt securing the armature. The latter should pass directly over the core, when in position, with a gap of about $\frac{1}{8}$ in. between core and armature.



Contact Assembly

The two bolts projecting upwards from the top disc support a small metal strip about $\frac{1}{8}$ in. by $1\frac{1}{2}$ ins., which is secured by lock nuts. A hole about $\frac{3}{16}$ in. in diameter is drilled in the centre of this strip and a 4 B.A. nut soldered over it. (If nut and strip are of brass or similar metal the solder will take readily).

A screw which has been filed to a point passes down through this nut, and is held in place by a further lock-nut. This screw can be adjusted so as to arrange that the correct pressure for best results is obtained on the brass strip secured to the armature.

A really firm contact between screw and strip is necessary, and after a period of use the point of the screw and spot it touches on the strip will need filing or scraping, so that good contact may be retained. A top view of the contact arrangement is seen in Fig. 2.

Engraving Point

If the tool is to be used on metal and not soon become blunted, hard steel should be used here. For wood, leather, and similar surfaces softer materials (e.g., a nail with head sawn off) can be used. The rod is about $\frac{3}{16}$ in. in diameter and $3\frac{1}{2}$ ins. long. The lower end is ground or filed to a point and the upper end slightly reduced in diameter so that it fits loosely in position in the hole at the end of the armature.

A fairly strong spring presses the rod up against the armature. If a collar with set-screw is used, as illustrated, the pressure of this spring can easily be adjusted.

Winding the Bobbin

The gauge of wire used will depend to some extent upon the electrical supply available. For deep engraving on metal

(Continued foot of page 279)

Make some youngster happy with this novel ROLL-ALONG MUSIC BOX

THE little toy illustrated here will be welcomed by any small child, and is within the scope of even a beginner with a few fretwork tools. It requires only some small pieces of wood, some oddments of thin brass strip or other springy metal, and a little bright coloured paint.

As the toy is rolled along it emits a succession of those tinkly musical-box notes which never fail to delight a youngster.

The principle of the toy is simply that of two cylinders, one revolving inside the other and at a different speed. A plectrum fixed on the inside of the outer cylinder strikes the notes (which are fixed on the inner section) in succession as the toy is rolled along. The inner drum is weighted to prevent both turning at the same speed.

Materials Required

For the main rollers two pieces of wood about $6\frac{1}{2}$ ins. in diameter are required. These are best cut from wood $\frac{1}{2}$ in. thick. Thinner material however can be used if more convenient, since in any case the width of the toy compared

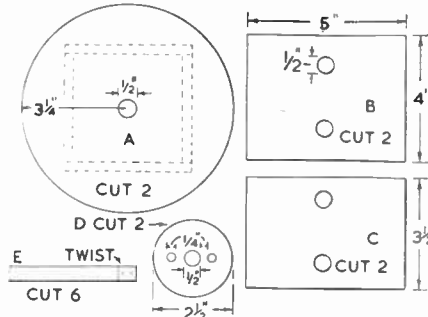


Fig. 1—The parts of the drum

to its height ensures that it will not easily tip over. The dimensions shown allow of wood $\frac{1}{2}$ in. thick being used for the remainder. These parts consist of two pieces 5 ins. by 4 ins. and two pieces 5 ins. by $3\frac{1}{2}$ ins. for the case, and two discs $2\frac{1}{2}$ ins. diameter for the drum.

For the centre spindle one piece of $\frac{1}{2}$ in. dowel about 7 ins. long is required, and for the stays supporting the drum two lengths of $\frac{1}{2}$ in. dowel 4 ins. long. For the 'notes' a few pieces of springy brass strip or similar material are required, and two small pieces of lead or something equally heavy to give the drum extra weight.

Construction

Cut out the two large discs, the two smaller discs, and the pieces that make up the case. Screw or glue three of the case pieces to one of the large discs, in the position shown by the dotted lines at Fig. 1A. Before adding the fourth

side, however, the plectrum must first be fixed on.

This is simply a piece of the brass strip about $\frac{3}{4}$ in. long, bent to a right angle in the middle. One end is cut to a point and the other bored for two small screws, by means of which it is held to the fourth piece of the case, as shown at Fig. 2.

Take care not to cut the pointed end too short. It will, in any case, require a little adjustment later, to ensure that it just catches the brass strips on the inner drum but does not project sufficiently to prevent the outer drum from revolving independently of the inner. Cut two lengths of $\frac{1}{2}$ in. dowel and the one piece of $\frac{1}{2}$ in. dowel and glue these into the smaller discs as shown at Fig. 3.

The Notes

To make the notes six pieces of the metal strip are required, which are screwed round the edge of one side of the inner drum. The other end of each strip remains free to vibrate when caught by the plectrum. On the size and fitting of these strips de-

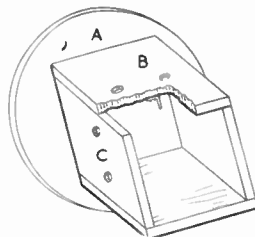
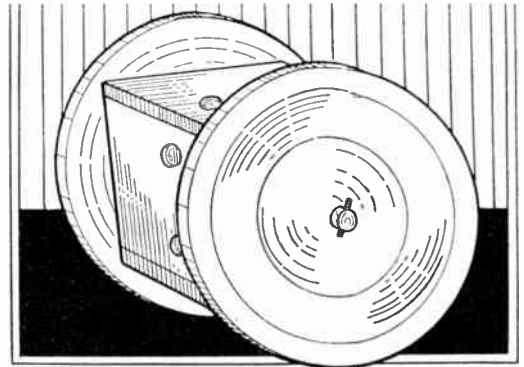


Fig. 2—Box fitted to disc



pieces of different thickness if available) will make a big difference to the finished toy.

As a trial, cut the pieces $3\frac{1}{2}$ ins., 3 ins., $2\frac{1}{2}$ ins., 2 ins., 2 ins. and $1\frac{1}{2}$ ins. Drill two small holes in each, at one end, and then, holding them in a vice or between pliers, twist them to a right-angle near the end where the holes have been drilled, as shown at Fig. 1 (E). Divide one of the discs into six equal divisions round the edge (60 degrees each by protractor) then screw one piece of the metal strip in the middle of each section. This is shown at Fig. 3, but for clearness only one of the six notes is shown.

Arrange the pieces short and long alternately, and trim up each piece afterwards with shears until, when they are struck in succession, the most pleasing effect is obtained. If available, put small washers on the screws between the metal strips and the wood, and do not tighten the screws any more than is necessary to hold the strips in place.

When all six pieces have been fixed round the edge of drum, and a satisfactory sequence of notes obtained, put the drum temporarily into the case and try out the plectrum by revolving the drum with the fingers. Adjust the plectrum until it just catches all the notes as the drum is revolved.

Now remove the drum again and screw a small piece of sheet lead (or anything similar that can be drilled for screws) about 1 in. by $\frac{1}{2}$ in. to each of the drum discs, as shown at Fig. 3. Glass-paper the main spindle and the holes bored for it in the big discs, until the drum spins freely. Then put the drum into position and add the second big disc. The drum is prevented from moving sideways by wooden pegs glued through the spindle at each end, as shown in the sketch of the complete toy.

Finish off in brightly-coloured paint or enamel, with circles of contrasting shades. (190)

For household notes, bills, ration books etc. — a practical KITCHEN WALL RACK

HERE is shown a very useful wall rack for the kitchen, and it can be very cheaply made from a few pieces of odd $\frac{1}{2}$ in. thick wood. The rack consists of an open-top compartment on the right for the safe keeping of ration books and trade and price lists. Then next to it is a shopping list roll. This is mounted between two brackets having slots cut in them for a movable spindle which passes through the centre of the roll allowing it to revolve freely.

For All Purposes

The paper as it is drawn downwards from the roll passes behind two metal fixed strips, this keeps the paper flat against the back board and thus facilitates any notes being made on the paper between the strips. The list thus made, the paper can be torn off straight by using the lower strip as a guide. Rolls of note paper of standard width and made on purpose for such shopping lists can be bought at almost any stationers.

Then again, on the extreme left there is space for a 'bull-dog' metal clip, useful for holding accounts, notes, or such-like papers. A pencil for making notes can be kept in the place shown, with a string attached so the pencil is always handy when wanted.

A fairly hard wood should be chosen,

a good piece of plywood would be highly suitable if kept in a dry place.

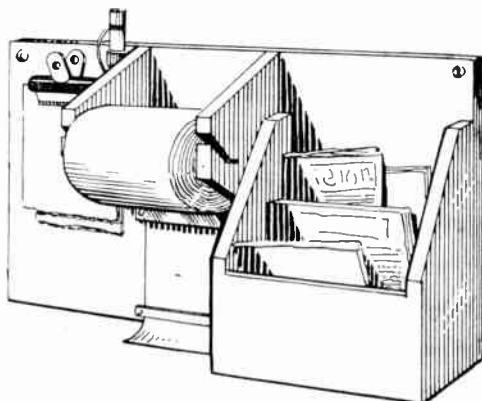
In Fig. 1 we see a plan of the back board with the position of the various pieces marked on. Dealing with the right-hand compartment, there are two upright sides to make each from a piece measuring 6 ins. by $2\frac{1}{2}$ ins.

In the outline of this piece (Fig. 2) the necessary measurements are given, and note should be made of the $\frac{1}{2}$ in. recess, $2\frac{1}{2}$ ins. long to take the front of the 'box' which is glued and nailed in. The front measures $6\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. and the top edge should be rounded over and made perfectly smooth with glass-paper.

The Floor

The floor measures 6 ins. by 2 ins. and is dropped in between the sides and on to the front. See the back edge of the floor lies flush with the back of the uprights so it will later lie level and even against the back. Glue the upright edges to the back and run in one or two countersunk screws to make a firm job.

The two brackets supporting the



paper roll are cut to the outline shown in the circle at Fig. 2. Use a 30 degrees set square for setting out as shown and fix them to the back to the measurements shown. The vee-shaped cut in the front of these brackets is to take the ends of the spindle after the spool of paper has been threaded on.

Tear Strips

Beneath the brackets, screw or nail on the two strips of metal shown at Fig. 1. These should be 3 ins. long and $\frac{1}{2}$ in. or $\frac{3}{8}$ in. wide and cut from an ordinary tin container. When cut, the edges of the strips must be smoothed off with emery paper or a file.

A piece of stout wire or a length of round rod will answer for supporting the paper roll. The paper after being threaded on to the spindle must be taken down behind the two metal strips and pulled taut for ease in writing.

The whole of the woodwork may be stained dark and varnished or it may be painted up in some well-chosen art shade. The completed rack should be held to the wall by screws running into plugs let in the wall.

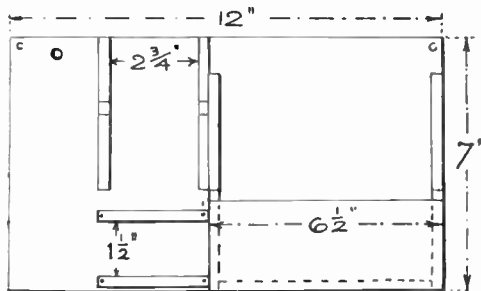


Fig. 1—Details of back board

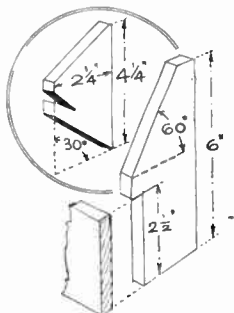


Fig. 2—End brackets

Engraving Tool—(Continued from page 277)

a very powerful action is essential and this will require 16 or 18 S.W.G. wire, with a 6 or 12 volt accumulator. If current consumption is to be reduced, 20 S.W.G. wire can be used for the 12 volt supply, but the use of thinner wires will, naturally, weaken the magnetic pull set up in the core.

For dry battery use, 18 S.W.G. to 22 S.W.G. wire can be used, and the spring and bracket holding the armature may with advantage be a little weaker. For the most powerful action on a 6 volt accumulator supply, 14 S.W.G. wire is possible, but with dry cells a thinner gauge will have to be employed, as mentioned, because the cells cannot deliver the high current obtainable from an accumulator.

In all cases wind the bobbin full, all turns tight, even, and in the same direction. One end of the winding is taken to the metalwork supporting the armature; the other end of the winding goes to the battery or other source of supply. A lead from one of the bolts holding the contact screw assembly is taken to the other battery terminal, a switch being wired in circuit. All connections are shown in Fig. 1.

Using the Engraver

The contact screw and spring should first be adjusted so as to obtain the most powerful vibratory movement of the engraving point. A few trials should enable this to be accomplished. The bobbin is then held in the hand much in

the same way as when using a pen or pencil.

The object to be engraved should rest on some solid surface and the engraving point is moved over the object at a very slight distance so that the armature can vibrate, delivering a rapid succession of blows. If the point is allowed to rest on the object, the tool will not work at its best but a few trials will rapidly show how best results are obtained.

Ordinary long-hand script writing of a flowing connected character is normally the best style to adopt. If writing is attempted on springy surfaces, some support should be given underneath, or the resilience of the object will prevent proper engraving. (164)

Some further details for starting and operating A HOBBIES CLUB

AS frequently pointed out in these pages there is so much to be gained by being a member of a Hobbies Club, that every reader should consider the question of forming one in his own town or district. Last week we gave the first part of this article telling how to set to work. Now we can continue with actual running operations.

If you are covering three or four subjects all members should come along. They may, in the first instance, be interested only in model making, but if they also come along on the night when photographic work is being undertaken, it is likely they will find some new and further interest in that particular pastime. The weekly meeting need not be a formal one, but should be at a definite time both for opening and closing.

Members present should sign a book to show they are there, and the jobs for the evening should be allocated either the week before or when the members first come. Punctuality should be enforced, and a sense of neatness and tidiness for all.

Tools and Apparatus

One of the great advantages of a club such as this is that members have the use of a much wider range of tools and materials than they would have if working individually. They should be asked to bring along whatever they can for the general good, but a list must be made of these, and carefully kept in a book so that any tools or apparatus loaned can be returned to the member when he desires or finally leaves. For instance, some may bring their own fretsaw, or others hammers or mallets, or tenon saws, and other various tools which can be put into the common pool.

Expenses

The general upkeep of the club so far as materials is concerned, must be a matter of the club expenses. If you are undertaking the making of toys, for instance, then the wood, designs, glue, fretsaw blades, etc., should be bought through the club funds. These expenses incidentally, can be largely overcome by arranging sales of work completed.

And here again, an early start made for Christmas or a future Exhibition is well worth bearing in mind. Simple toys always have a ready sale, and can be offered amongst friends of the club or even put on show in the window of a helpful shopkeeper.

Price for Selling

The price at which such work has to be sold must cover the cost of the material, with a certain amount added for profit, and to help towards the expense of the club itself. Remember that if you are

offering such things for sale, then the standard must be high.

Here again, you have the advantage of the co-operative effort of various members. Some may be able to cut out the parts better, whilst others are more adept at painting and finishing. The work should be passed round so that all give a hand, and no one should be selfish enough to want to do the whole thing himself, unless, of course, that is the original arrangement.

Individual or Group Work

This introduces the question of whether the individual is to carry out his own work right through, or whether a general and larger piece of work is to be undertaken. If the latter, then the programme of its construction must be carefully arranged, and this again is a helpful means of bringing members together to work out the details.

For instance, if it is decided to make a large doll's house for sale, or some charitable effort, then a variety of work can be introduced, and each member do his part. Some can be doing the house, some the furniture, some getting ready

Present Clubs

IS there a Model-makers, or a Hobbies Club in your district? If so, will you give me some particulars please? Just the name of the Club or Society with the name and address of the Secretary and the Club Headquarters. You see, enthusiastic readers often write in from some place, who want to join, or who want to meet other fellows of a kindred spirit. So I want to make sure my present list is up-to-date.

The Editor

for the lighting, and all putting their effort towards a completely finished article which will be of a high standard and representative of the excellent work of the club itself.

You may be making several small things, and completing them at odd times. A good plan is to keep them to show as specimens, in order to obtain orders for other similar pieces of work, or again, you could group them up for a photograph and so provide prints for other people to see, in the hope of further orders coming along for the happiness and benefit of the various members themselves. Any profits made should be put into the club, with the idea of building up a reserve of money if possible. This reserve can be used for further material or for increasing the amenities of the club itself if you want any special furniture or apparatus, heating, etc.

In order to maintain interest, a certain amount of publicity must be undertaken,

and if you can show people the excellent results of the Hobbies Club, then you will increase its popularity and so add to its stability and financial backing. A letter to the local paper of any outstanding events or novelty made, or unusual result; may bring some lines of news which in turn will create interest, and may bring along further prospective members.

If you are doing something special for any particular organisation, then a suitable letter to those concerned will also help. You may be making a model of a local church, and the publicity about this beforehand will bring in additional helpful results.

If, too, you could have a notice board about the club in some prominent local position, a number of people will know of your activities who would not otherwise have done so.

A Library of Books

Consider, too, the matter of forming a small library on the subjects in which the club is interested. No doubt several of the members already have books on suitable subjects in their possession. Possibly they will loan them to the club and suitable bookshelves can be arranged for their display. It is a matter of decision whether the books have to be read on the club premises or can be taken home for later perusal.

If the latter, then you will have to have somebody responsible—a librarian, with a book in which to enter the names and borrowers of the books concerned, and to see that they are returned within a reasonable time and in good condition. No book should be allowed off the premises more than a fortnight or three weeks at the most. It is advisable, too, to put a stiff brown paper binder on all books, and to mark on them the name of the owner. Many, of course, will be prepared to give the book to the club, and this, too, should be noted as a mark of appreciation to the donor.

Additional Attractions

The activities of the members can also be varied by having visitors who are prepared to give you little talks or demonstrations on matters of interest. If you are dealing with woodwork, then an instructor from a manual centre is generally ready to help in this respect. If you are doing photography, then a local photographer or artist will probably be willing to give you some ideas.

Introduce variety when you can so that the members do not feel a sense of monotony, and a gradual loss of interest in what is being done.

Above all, the good of the club should be the first consideration of all its members, and an essential friendliness and helpfulness is part of the honour and pleasure of belonging to a Hobbies Club of mutual benefit and interest.

A novel moving model for your garden is this WINDMILL ORNAMENT



SKETCH OF COMPLETED MODEL.

THE drawings given here show a model constructed of $\frac{1}{2}$ in. timber throughout the main top and bottom sections. If preferred it can be made in a simpler form by constructing these sections out of solid pieces of timber, in which case a good deal of actual work will be saved, but the dimensions given will be the same in either case.

The model need not be highly finished when completed. In fact, it looks best if it is a little on the rough side in order to obtain an 'ancient' appearance. If it is built of timber which is attractive in

itself, it can be stained and varnished, but if the wood is of poor quality it is best to paint it with oil colours.

The following colouring looks attractive: roof red, with dark lines indicating tiles; top section white with boarding indicated; bottom section stained wood; door and window frame green; sails and rudder brown.

Construction is of $\frac{1}{2}$ in. timber, unless solid wood is used. All the main parts of top and bottom sections are numbered on the drawings. For the top section cut parts 1 and 2, parts 1 exact size and 2 slightly full. Nail parts 2 to parts 1, forming a box shape. Clean off all edges flush.

Cut parts 3 and 4 to fit the box formed (inside). Find the exact centres of these parts and drill a $\frac{1}{2}$ in. hole through the centre of part 3, but only $\frac{1}{4}$ in. deep in centre of part 4. This is the depression which the pivot runs in. Nail both parts into position.

For the sails and rudder the dimensions and construction are given in the drawings. The roof is of 18-gauge

aluminium $6\frac{1}{2}$ ins. by $5\frac{1}{2}$ ins. Bend at right angles and fix with small brass nails. To bend, mark the line for bending with a sharp point on the metal, and clamp it between two pieces of wood for the actual bending.

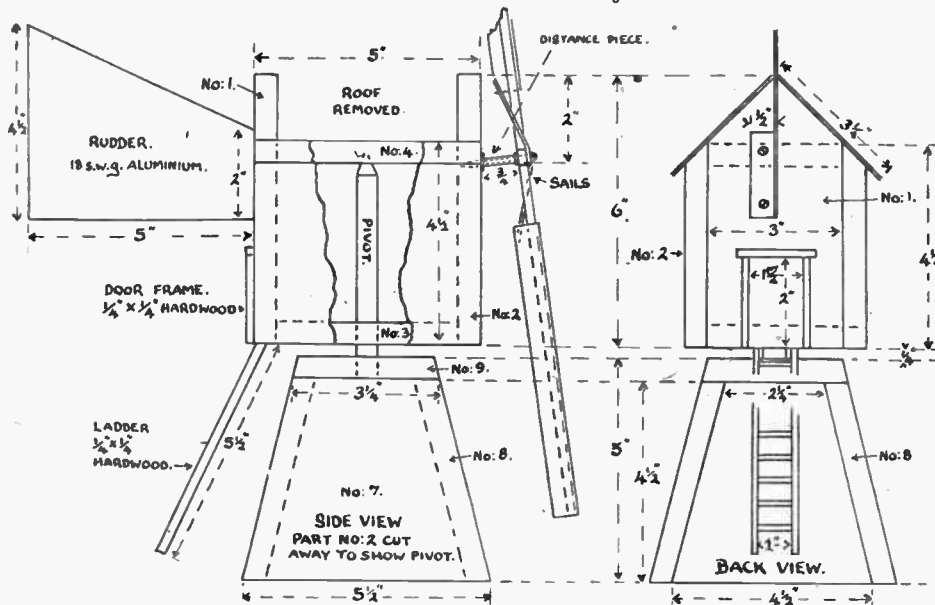
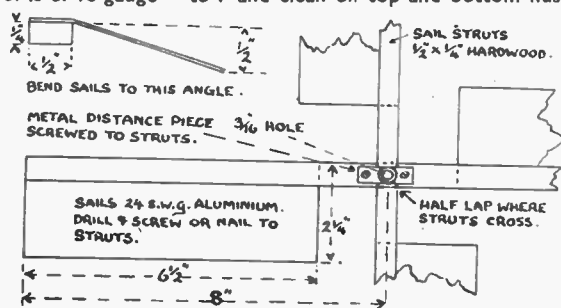
The ladder is made of $\frac{1}{2}$ in. by $\frac{1}{2}$ in. hardwood with seven rungs $\frac{1}{2}$ in. apart leaving $\frac{1}{2}$ in. clear at each end. Drill $\frac{1}{8}$ in.

holes in the sides to take the rungs and taper ends of rungs to fit holes in sides. Assemble with glue. Drill two $\frac{1}{8}$ in. holes in base of top section (beneath door, as shown in drawing) in which the top of the ladder is inserted. The sides of the ladder are tapered to fit the holes.

Next fit the rudder and sails to the top section. Secure sails with $1\frac{1}{2}$ in. screw 2 ins. down from the apex of the roof. Set at an angle in accordance with the drawing or it will not swing clear of the corner of the base (the same applies to the ladder). A distance piece made from copper or brass tubing is fixed to the sails as shown in the drawing, and a piece of scrap tubing of suitable internal diameter to give a comfortable working fit over the securing screw must be obtained.

The end of the tubing is slit with a hacksaw and both sides of the slit end turned back at right angles. A washer must be fitted between the distance piece and body of the windmill and the whole thoroughly greased.

For the bottom section cut parts 7 and 8 slightly oversize in length, nail parts 8 to 7 and clean off top and bottom flush



and square. Cut part 9 to fit top, nail and clean off flush all round. Find centre of part 9 and drill $\frac{1}{8}$ in. hole to take pivot, taking care to keep the hole quite vertical or the top section will not swing truly or free on the pivot.

The pivot is of hardwood dowelling $\frac{1}{8}$ in. diameter and should be driven into the hole already prepared for it. Cut it off at just the right length to allow the top section to swing comfortably clear of the base, and taper the tip to a nice rounded point. Grease the tip for easy running.

When setting the model in position in the garden it is advisable to fill the base with earth and stones to keep the model steady in action and prevent it being blown over by the wind.

(208)

Your "snaps" look all the more attractive in a PRINT VIEWING BOX

It is rather remarkable how much better snapshots look viewed through one of those large-sized reading-glasses; the kind with which the whole of a 3½ ins. by 2½ ins. print can be seen at once. If the print is viewed in an enclosed space with all side light cut off, but otherwise well illuminated, the effect is better still.

Often a fairly marked stereoscopic effect is obtained, but in all cases a greater strength and depth comes into the picture, which is certainly not there when viewing the print in the hand. This is the idea, then, of the viewing box shown here.

Size depends on the reading-glass available and its focal length, but a position needs to be arrived at where the print is in good focus with the eye near

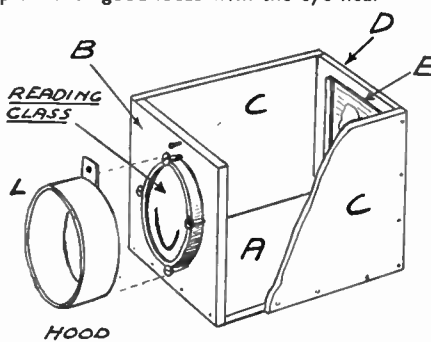


Fig. 1—General construction and parts

the glass. To find the necessary lens-to-picture distance, pin a print to a piece of card and prop it upright on the table. Hold the reading glass in a perpendicular position in front and with your eye close to its surface slide the print nearer and further away till the desired location is found. Note the distance so obtained.

The viewing box is built on a base (A) Fig. 1, 5 ins. wide and as long as the lens-picture distance just obtained, and ½ in. thick. On the forward edge of this is the front (B) from which there is taken a circular opening a shade smaller than the diameter of the reading-glass, which latter is fixed in front as shown by four screws.

Sides and Back

The sides (C) are just plain pieces of thin plywood taken over the base, front and end to give rigidity, being held by a series of small screws, but the back upright and top need a little describing.

The back itself (D) is just a plain rectangle of wood, but on this is the swivelling holder (E). This is a thin piece of plywood 3½ ins. by 2½ ins. on three sides of which is a lip to hold a standard 3½ ins. by 2½ ins. print (i.e. from 120 and 620 films).

This is made by gluing a ¼ in. strip (K) of either very thin wood or card round

the end and top and bottom and then upon this gluing a piece of card cut as (F) Fig. 3. The inside measurements are 3½ ins. by 2 ins.—a trifle narrower than the first card. This forms the lip as shown in the inset sketch.

To fit the holder, first glue the spacer (G), 3 ins. by 2 ins., (Fig. 2), at the back to allow countersinking the head of the screw that secures the frame to the back and upon which it rotates. If the head is not countersunk it will catch the prints as they are slipped in and out.

Finally, as far as this part is concerned, fit the knob (H) and cut a circular channel for it in the back, shown also in Fig. 2, so the holder can be readily turned. When fitting on to the back, the central screw should, of course, be right opposite the mid point of the reading glass.

Now for the top. This lifts up as indicated and is painted white on the inside, or supplied with a strip of mirror to reflect the light down to the surface of the print. It is fitted to the front edge by two hinges and is held in the raised position by a strip

SWIVELLING PRINT HOLDER

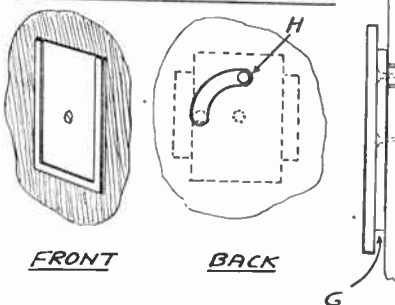
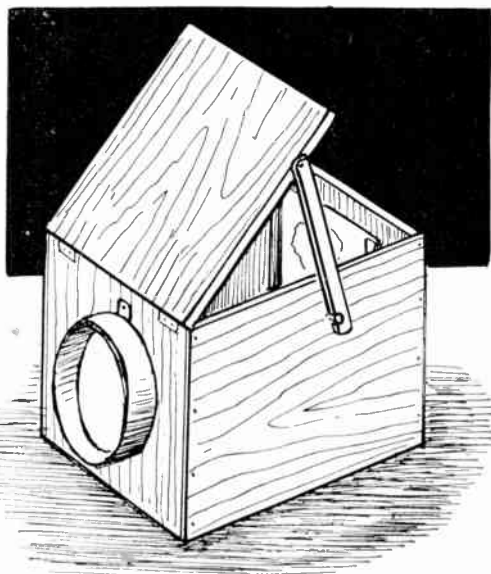


Fig. 2—Swivel holder for the prints

which has a notch cut in its lower edge. This fits over the nail as shown in the sketch of the completed article.

The inside of the back, swivelling holder and the inside of the sides and base to half-way along must be painted matt black, as we do not want any light areas to distract the eye from the picture. The inside of the front and down to the half-way line must be in white. The outside can be finished in any tasteful way, stain or polish can be used or paint if desired.



All is now completed and you can start at once seeing a new world of interest in your prints. To use the viewer, face the light so it strikes the raised top.

An Addition

An added refinement which helps good viewing is the narrow hood (L) over the face of the reading glass. This still further cuts out side light and helps to brighten the print even more. The hood is but a band of card cut some 1 in. or 1½ ins. deep, made by bending a strip round and joining the edge with H glue and two wire stitches.

It is fitted over the rim of the glass when using the viewer, but is taken off and put inside for storing. If tightly made, the card will stay on the lens and screws by friction only, but an additional holder is given by the tab of thin leather (as cut from an old glove) which is secured in the seam and goes over a small screw as shown.

The inside of the hood must also be painted dead black and allowed to dry thoroughly before the viewing box is brought into use.

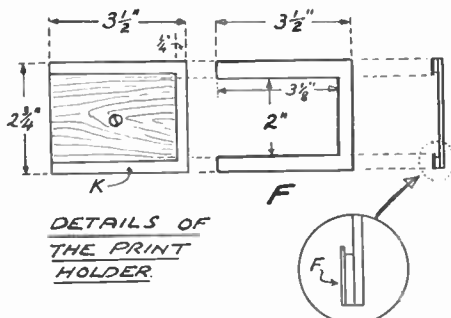


Fig. 3—Details of the holder parts

The final details on building your own HOME-MADE GARAGE

HAVING completed the general framework of this practical building we can add the final touches. The next job is making the door at the back of the garage.

Making the rear door is a very simple matter. The layout and dimensions are given in Fig. 15. Mark the first piece of matching and screw on the ledges 1in. away from the edge of the matching. Fit the other four pieces and secure with $1\frac{1}{2}$ in. nails. If it is necessary to saw a strip off the last piece of matching to give the correct door width, this is best done before the matching is nailed in position. Trim the door to length, leaving the ledges equally spaced from each end.

Making the Window Frames

The four window frames are made

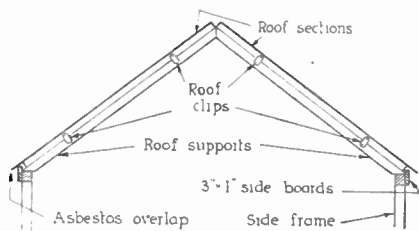


Fig. 22—How roof sections are secured

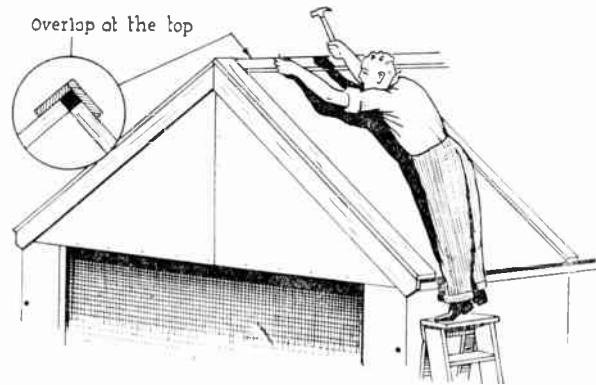


Fig. 23—Nailing the ridge boards in position

from 2in. by $1\frac{1}{2}$ in. planed and rabbeted, as shown in Fig. 16. To make a good sound job, all the corners should be morticed and tenoned. Mark the corners for sawing and re-check. It is very easy to saw in mistake when making this kind of joint.

The points to watch are to see that the rabbet in each piece will come in the right place when the joints are cut, and when cutting not to saw off the overlapping piece which fills the rabbet at the corners when the frames are assembled. It is also advisable to check the frames in their respective positions before fixing the corners with pegs or wedges.

Place two $\frac{5}{8}$ in. by 5in. bolts at each corner of the site, and have a hammer

ready to hand. Ascertain that there is a 2in. groove in the flooring to take the bottom rail of the front section. With assistance, carry the most convenient side section to its appropriate position, and prop it up with battens fixed under the rails.

Next, place the front section in position, locating it in the groove in the floor. Make sure that the groove is deep enough to allow the frame to be flush with the floor. Draw the two sections together, and from the front tap in the top bolt, passing it through the two sections. Loosely fit the washer and nut, see Fig. 17. Now fit the bottom bolt in the same way.

Carry the second side into position, and fit the two bolts with the heads outside, and loosely assemble the washers and nuts. Treat the rear section in the same way, fitting the four bolts with the heads to the outside, and the washers and nuts loosely assembled.

Now check the four sections for being square. This can be done with three weather strips tacked together to form a large square. Push on the corners to correct if necessary, and then fully tighten the eight bolts. The garage should now stand as shown in Fig. 18.

Fitting the Roof

Take up two of the 2in. by 2in. intermediate roof supports. Nail them

the roof supports and marked for sawing to length. After sawing, drill each end to take two screws, then screw the pieces in position, see Fig. 20.

Next, take up the two 14ft. lengths of 3ins. by 1in. and drill holes for $2\frac{1}{2}$ in. screws about 15ins. apart and 1in. from the side. Screw these in position along the top rails of the two side sections, leaving them standing 1in. above the top rail, see Fig. 21. It will be necessary to drill through the asbestos before inserting the screws.

With these two side boards securely screwed in position, the four roof sections can be lifted on, taking care not to break the overhang of the asbestos. The roof sections are secured by fitting the metal clips shown in Fig. 22. Four of these are fitted to each section with one screw in the roof frame and one in the roof support. The centre clips will have to be bent to accommodate the overlap of the two 2in. by 2in. frames on the 3in. by 2in. supports.

Weatherboards

Next, fit the weatherboards. These consist of eight pieces of 5in. by $\frac{3}{4}$ in. planed, two pieces 5ft., two 5ft. 1in., and four 5ft. 3ins. After cutting the pieces to length, pair up the two 5ft. 1in. pieces with the two at 5ft. Nail these to each end of the roof, the 1in. extra allowing for overlap at the top. They should be fixed to overhang the front and rear of the garage by $\frac{3}{4}$ in. Use $2\frac{1}{2}$ in. oval nails, driving two into each overlap at the top.

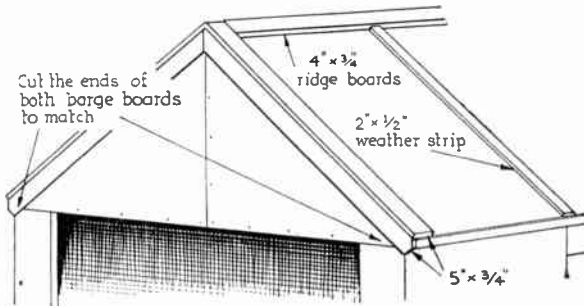


Fig. 24—Weather, ridge and barge boards fitted as here shown

together at the apex, using two 3in. oval nails (it will pay to drill for these nails to avoid splitting). Place the two pieces in position on the top rails of the two sides and in line with the first intermediate uprights. Nail them in position with two 3in. oval nails in each end, taking care that the ends do not protrude over the outside edges of the side sections, Fig. 19. Do this with the other four roof supports, nailing the pair of 3in. by 2in. pieces over the centre side uprights.

To provide extra support for the roof, to prevent the roof sagging, and the sides bulging, three cross pieces of 2in. by 2in. are fitted. These are given as 7ft. lengths in the cutting list. They should be held in position approximately 3ins. up

Now fit the two ridge boards. These are given as 13ft. 4ins. in the cutting list, and they will require shortening to fit snugly between the end boards. Mark for length, saw and nail them in position, using $2\frac{1}{2}$ in. oval nails, and allowing one board to overlap the other at the top, as shown in Fig. 23. The barge boards are fitted next.

These are nailed to the front and rear sections under the end boards. They are given as 5ft. 3ins. in the cutting list, and will require cutting to length and shape. Hold each piece in turn, in position and mark the angle at the top and saw to the mark. Before nailing the boards in position, saw the four lower ends to match, as shown in Fig. 24. Nail in position, keeping the pieces well

up to the top weatherboards.

Next, fit the six weather strips to the roof, three to each side. These are given as 5ft. in the cutting list, and should be shortened to suit. They are then nailed over the joints in the asbestos with 2in. oval nails. It is advisable to give the strips one coat of paint before nailing in position.

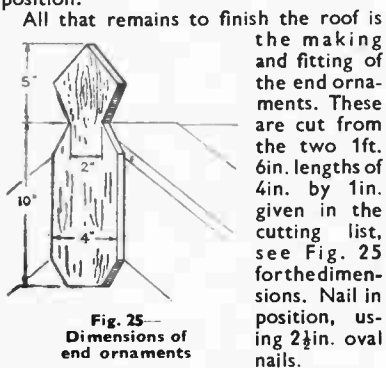


Fig. 25—
Dimensions of
end ornaments

The simplest form of hinge is used for hanging the doors. Six are required, and they are called 'T' hinges.

First lay the front doors on the floor with the outside face up, and screw two hinges to each door in line with the top and bottom ledges, and to the edge of the doors where the ledges come flush with the matching. Keep the joint of the hinge level with the edge of the door.

If the garage is to be made thief proof, use nuts and bolts instead of screws for securing the hinges. Should bolts be used, they must be fitted with the heads outside, and after the nuts are tightened, the threads should be burred over.

Fitting the Doors

Before hanging the doors, screw to one of them a length of matching. This piece is screwed to the opening edge, after the tongue and groove has been removed, and should overlap by half its width. Its purpose is to hide the gap between the doors when they are shut.

Lift the doors in turn, up to their respective uprights in the front section, and mark the position of the hinges. This will be on the front face of the upright. If a piece of $\frac{3}{8}$ in. matching is placed under the doors while the marking takes place, the doors will swing free of the ground when in use. Drill holes in the uprights for the hinge screws, pierce the asbestos, first drilling

one hole for each hinge. Screw the doors in position and check for opening. If correct, drill the other eight holes and fit the screws.

Carry out the same procedure with the rear door, ensuring that the hinges are screwed to the edge where the ledge comes flush with the matching, and that the door swings clear of the bottom rail.

Window Frames

The decision as to how many windows will be made to open, is left to the owner. Those which are not to open are simply nailed in position, with a piece of weather strip (2ins. by $\frac{3}{8}$ in.) between the window frame and the lower scantling. The other windows will have to be fitted with hinges. The thickness of the hinges is cut out of the top scantling, leaving no gap when the windows are shut. A piece of weather strip should be nailed to the lower scantling to form the window sill.

Screw the hinges to the window frames, then hold them in position in the side sections, and mark for the centre hole in each hinge. Drill for one hole in each hinge, and screw the frames in position. If correct, fit the remaining screws. Next, screw on the window fittings, and finally fit the glass, making the panes secure with putty and glaziers brads.

Weather Strips

The weather strips are all 2in. by $\frac{3}{8}$ in. planed. Their lengths can be ascertained by referring to the grouped list of materials. From this list and the views of the finished garage, no difficulty should be experienced in fixing them.

Two strips are fitted at each of the four corners, three strips down each side section, to cover the asbestos joints. Eight strips above and below the four windows, and a strip each side of the three doors. A strip right across and

above the front and rear doors, and two strips, one front and rear to cover the joints in the triangular pieces of asbestos, and two short pieces to cover the joints half way up the front section. The two strips, one each side of the front doors, will require chiselling out to accommodate the hinges.

It is advisable to paint the strips one coat before fitting, this will save time and the risk of messing the asbestos with paint.

Finishing

All that is necessary now to finish the job, is to fit the door fastenings, the gutters, and carry out the painting. The door fastenings can be arranged to suit. On the prototype small bolts were fitted to the top and bottom of one front door, drilling into the top and bottom scantlings. A large bolt was screwed half way up for bolting the two doors together. The rear door was fitted with a padlock, so that with one key the three doors can be opened, proving a time saver.

All the outside woodwork should be painted at least two coats, to suit the surrounding colour scheme.

The gutter brackets are screwed to the 3in. by 1in. roof boards, and arranged

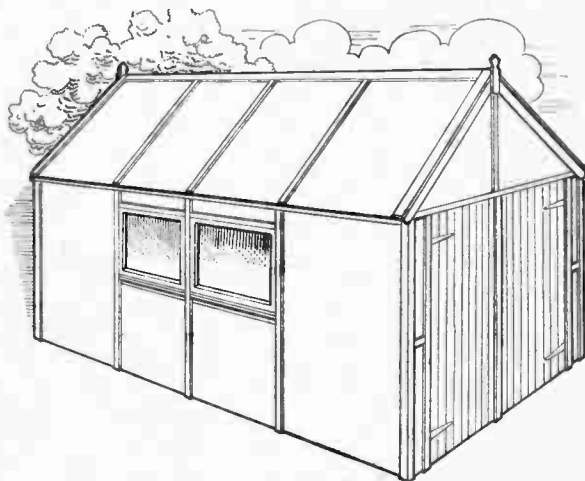


Fig. 26—Showing position of weather strips

so that the gutters fall towards the drain. The gutters are placed in position, and the job is finished.

Stamp Collecting—(Continued from page 285)

British stamps on to one page. Should this be the case, however, then the arrangement would have to be something in this sequence.

The stamps of King George V are, naturally, the most common, since he reigned 25 years (Queen Victoria 63)—but there were not nearly so many letters written in those days and also many have been lost since. Since one is likely to have more King George V stamps than any other we cannot say Queen Victoria top line, King Edward

VII second, King George V third and so on, because we should have two kings for the last row. And you can expect to get many more of this reign soon.

With one page only it would have to be Queen Victoria and King Edward VII on the top—B3, A4, B7/C3, A6, A5. On the second row the stamps of King George V—B5, B6, C6, D3, C5. On the third row would go C4 and C7, then leave space for the King Edward VIII stamps. This will then leave the fourth row for the stamps of the present reign,

starting with the Coronation stamp D4. Then will follow all the stamps of this reign including the special issues, such as Centenary of the first adhesives, the Victory Commemoration, the Silver Wedding, the Olympic Games and the 75th anniversary of the U.P.U.

That should give a good idea of how to arrange a small collection even if you have no catalogue to guide you. The same way is used for the Colonial stamps, so why not take your collection in hand now and put it right?



Faults in a Beginner's Album

THE great International Stamp Exhibition which took place in May should have served a very excellent purpose for the hobby and there are many lessons that can be learned from it. Not only was it interesting, it was instructive as well.

Suppose we think for a little of its value. For the advanced collector it meant there was a time when he or she could talk with other advanced collectors not only from this country but also from abroad, and we all know the advantage talking has over writing.

The Exhibition

For the junior collector it was an opportunity of seeing many of the valuable stamps about which one often hears but never (outside the Exhibition) sees. Those who went to the exhibition must have been struck by the extraordinary care with which exhibits were mounted and by the work that must have been put into the preparation of the writing matter that accompanied them.

Visitors must now know the difference between stamp collecting and philately! So this seems a suitable time to illustrate and discuss a matter that the writer has had in mind for quite a long time for readers of *Hobbies Weekly*.

The illustration is a page of an album labelled 'Great Britain'. It is an actual page that the writer came across in what one might call a 'school-boy' collection. Unfortunately one comes across far too many such pages and this is so unnecessary that the hope here is that readers who have such pages will take them in hand at once and clear them up.

Not Attractive

Look at the illustration. It is a pity that it is not life size but as the album page is slightly larger than *Hobbies Weekly*, that is obviously impossible. It should, however, be clear enough to follow the remarks that are made upon it.

With just a quick casual look one notices that the stamps are mounted fairly well, yet there is something wrong. It is not an attractive page but what then is the matter? Now to describe a stamp we will mention first the row by letter, then the number of the stamp in that row, the first stamp of all will then be A1 and the last stamp will be D5.

Unwanted

Now, the first and second stamps in each of the four rows A1, A2, B1, B2, C1, C2, D1, D2 should not be in the

album at all. They are either postcard stamps or letter printed stamps. That at C2 is a stamp from a printed registered envelope and B4 is another stamp which has to come out.

It may seem a pity to have to take out nine stamps from a collection but you would certainly pull out nine weeds from a row of garden plants, so why not pull out weeds from the album?

Yes, and there are more to come out. Look at A3, a sixpenny stamp with writing on it. This stamp was not used as a means of defraying postage, but most likely it was used on a document of some sort, probably a contract. That makes number ten.

Now what about D5? Quite a normal postage stamp that was issued in 1880, but unfortunately the top right hand corner is missing. Such a torn specimen cannot remain in any decent stamp collection. A slightly torn good stamp might stay until one could find a good specimen but not this one!

Re-arranging

Now that we have removed the stamps that are not supposed to be in the album we should try to rearrange those that are left. It is hardly likely that we should have to put all the

(Continued foot of page 284)



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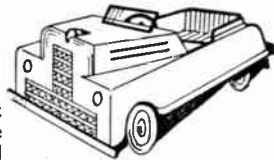
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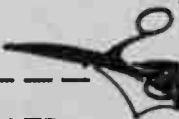
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Hobbies

WEEKLY

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August 9th, 1950

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CHILDREN'S TWIN ROCKER

IN families where there are two youngsters, the twin rocker illustrated would prove a welcome present. Both kiddies could use it at once, and keep themselves amused and employed without trouble to the rest of the family. The article can be easily made, and requires only a length of deal board.

Board of 1in. thickness and 9ins. in width is recommended, as a substantial article is desirable. A length of 8ft. 2ins. is required and so, despite the appearance of the rocker which rather creates the impression that a lot of wood is needed the actual amount is comparatively small.

Side Shapes

To get out the sides, cut off two 3ft. lengths of the wood. A pattern is given in Fig. 1. This is divided into rectangles of 1in. by 3ins. as a guide to copying the shape. It is not absolutely essential to draw the whole length, one half could serve. Divide this into the rectangle on stiff cartridge paper, then, with the aid of the pattern, draw the half outline.

If the curves can be struck with a compass, one of the beam pattern, then the whole drawing would be bet-

ter to copy. The end curves are part of 4in. circles, and here an ordinary compass would suffice.

Cross Joints

Note the position of the mortises into which the seat boards and bottom foot board, fit. Those at the top are 1in. long, and the part at the bottom 1in. longer also, and separated by 2ins. The pattern should be cut out with scissors, then pinned down to the wood and a pencil drawn round the outline to mark it on the side.

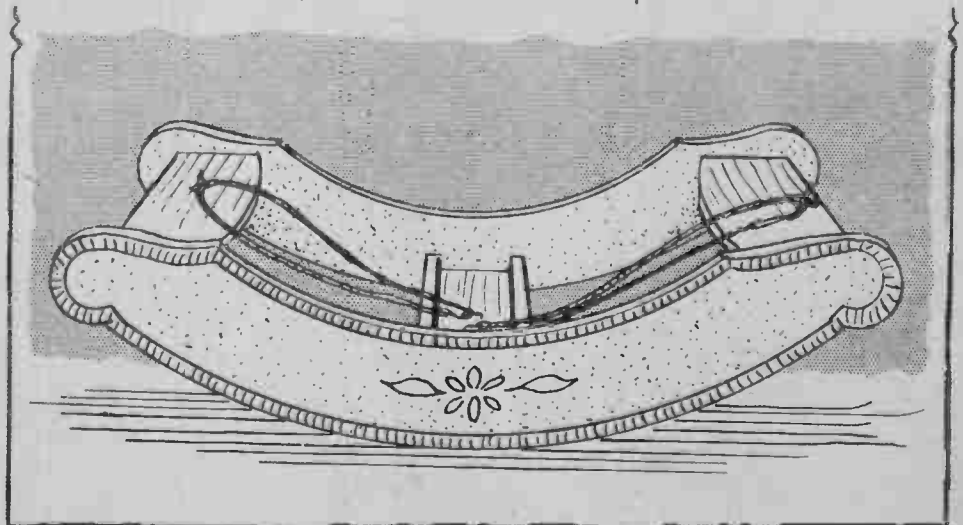
The exact position of the mortises

can best be marked by pin pricking them at each corner, and joining up the marks when the pattern is removed, with pencil lines, checking them for accuracy. It may be mentioned here that if planed board is bought, its exact thickness will, most probably, be $\frac{7}{8}$ in., not the full 1in. a point to remember when marking out the mortises.

Cleaning and Shaping

The shapes can be best cut out with a bow saw, but failing such a saw then the ever useful keyhole one can do the job. The piece cut out at the top should be carefully laid by, as from it one of the seat boards can be made. Smooth the curves all round, especially the bottom one on which the article will rock. Try and get a uniform curve—the true arc of a circle in fact, on this part.

Using the completed side as a template, pencil it on the second side part and cut that out. The mortises can be cut quite easily, if a 1in. hole is bored through first, and the remainder cleaned out with a sharp chisel.



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

The seat boards are shown at A, in Fig. 2. These utilise the full width of the cut out pieces from the top of the sides. The ends are trimmed to the length given, allowing for the 1in. tenons, of course. These are placed just 1in. from the outer edges of the boards. Make these tenons a close fit for their respective mortises. At B, a portion of the foot

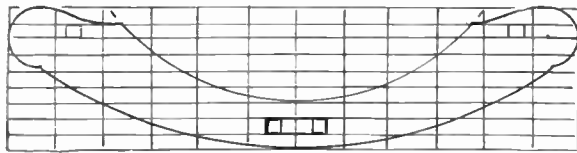


Fig. 1 Outline drawing of shape of main sides with mortises

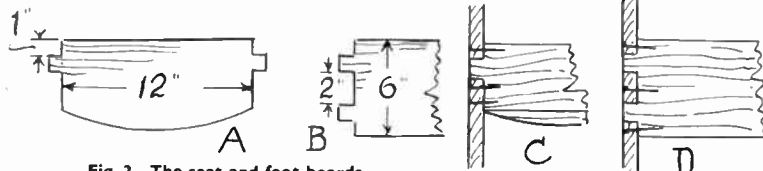


Fig. 2 The seat and foot boards

board is shown. Its length, exclusive of the tenons, is the same naturally as that of the seat boards. Here again take care to cut these tenons a good fit.

The seat and foot boards can be glued between the sides of the rocker, knocking the joints up tightly. It is important to strengthen the fixture of these boards by driving nails through the sides into the ends of the boards as shown in detail C, Fig. 3, for the seats, and D for the foot board. Screws would really be stronger here, as some strain

comes on the boards when the rocker is in action.

At each side of the footboard screw 1in. strips of the wood, as shown in Fig. 4. If the heels of the youngsters bear against these, while the soles of their shoes rest on the opposite strips, some grip is obtained to help with the rocking motion. Reins are added, which the children can hold and pull on while rocking. These impart confidence, and also act as a safety device. They can be made from a strong cord, or fine

An article of this description, if it is really to look attractive, should be gaily painted. No colour is too gaudy for such a job. Give the work a preliminary coat if possible, of priming colour to fill the grain first and save paint. Over this a hard gloss coat of brilliant red or green paint would look well, or two coats of ordinary paint, the flat kind preferably, finishing off with a coat of clear varnish.

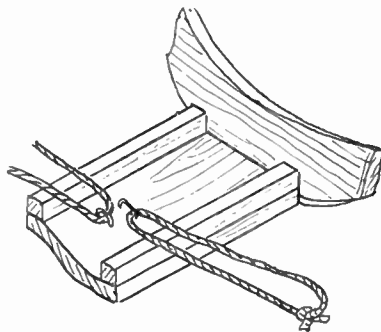


Fig. 4 Fixing the holding ropes

rope, such as sash cord.

To hold these, in the centre of the footboard drive in a pair of strong iron staples, close together, allow sufficient cord for each rein, thread through the staples, (one rein to each staple) and then knot securely. Fig. 4 shows this matter, which should be quite plain.

The work of construction being completed, go over the woodwork with glasspaper and make all smooth, especially the edges, as no splinters should remain which would hurt young hands.

A little decoration carried out would prove an added attraction. For instance, a 1/2in. border of some contrasting colour would look nice, and if a simple floral device were added, as in the drawing of the finished rocker, which does not call for much artistic skill, a good finish would be assured.

An alternative would be to fix one of those attractive transfer decorations each side, such as are now made for children's furniture. Obtainable from most stationers' or furnishing stores.

What Paints to use on Models

IF you have already a satisfactory method of painting your models, then do not try any new method; old and proven methods are the best. Experiments should be left to beginners or at any rate if you must try, then use an old model.

Preparation

This is the most important part of any painting job. For instance, if the surface to be painted is rough, then it would be foolish to expect the finished result to be smooth and even. Wood should be glasspapered to absolute smoothness; metal surfaces similarly treated with emery paper. Paper models require no special treatment.

French Oils

These are growing in popularity. The colours do not run, are water and damp proof, and do not raise the grain. Shades are readily mixed and dry semi-matt. Disadvantages are slow drying, and that some colours are costly. Drying may be accelerated by the addition of cellulose thinners.

The resulting compound is difficult to use due to over compensation. White spirit should be used as a thinner,

though sparingly, otherwise the drying time is inconvenient.

Water Paint

Probably the most useful of paints since it is easy of application and requires little preparation. Before painting wood the surface should be 'filled', using a solution of glue size—1 part, water 3 parts—and allowing to dry. If the paint tends to rub off, a little common salt in the water will prevent this.

Water Colours (Poster)

These are the most popular of paints, being readily obtained and drying an even matt. Tendency to rub off may be corrected as above. If a semi-matt finish is required, a brisk rub with a clean dry cloth will give a dull sheen which is ideal for hull finishes, etc. A slight drawback is a tendency to raise the grain.

Enamel (Oil)

This cannot be recommended for general model-making. It is only for large models of the toy and model engineering class that it can be used with advantage. However, it is excellent for covering large surfaces which can be

left to dry for long periods, since it shows no brush marks. Engineers should be careful in using it where heat is likely to occur, as it will blister.

Enamel (Synthetic)

Again an ideal paint for engineers, being easy to apply to large areas, withstanding heat without blistering or changing tint.

Enamel (Cellulose)

Dries very quickly and can be handled within fifteen minutes of completion. Is used widely by model aircraft enthusiasts, and commonly called 'dope'. Members of the fairer species call it nail varnish. It should always be used very thinly, the colour and body being obtained by three or four coats. Should it dry too quickly, one or two drops of castor oil—no more—should be mixed with, say, 6ozs. of 'dope'. More than this and failure to dry at all will be the result.

Before one coat of paint is applied to another always give a light glasspapering. In painting, an old piece of wood, practice and patience will show you more than any article. (210)

(Reproduced from the Sheffield Ship Model Society Book)

Enjoyment of a popular pastime obtained by making AN ARCHERY SET

THE bow and arrow was, at one period of English history, the most terrible weapon of its time, and though we may laugh at it nowadays as a weapon of war, in olden times the archer made it one to be feared. All that is passed, and the bow and arrow merely a sport—but a jolly interesting one for all that. It is comparatively a cheap one too, as the accessories can be made at little cost and will last.

The bow is the most important, and for this a tough, springy piece of wood is essential. Ash is a good choice, also hickory, lancewood and greenheart. It will probably be a case of using ash, as undoubtedly this is the most easily obtainable now.

Suitable Length

A not-too-powerful bow is advisable for a beginner and a length of the wood chosen, 5ft. long, will about suit. Choose a straightforward strip and plane it to round section with a diameter of about 1 inch. This will be quite strong enough.

For a distance of 5ins. at the centre, the wood is left as it were, but from here to the ends it is shaved down to $\frac{1}{2}$ in. wide and $\frac{3}{8}$ in. thick at the ends. Do this tapering carefully and evenly, and note that the shape alters from a round at the middle to D-shape, as shown by the sections given in Fig. 1 across the bow.

An inch or so from the ends, notches for the cord to lie in are filed out the shape shown. The bow should now be bent as a test, and if one half bends more easily than the other, the tougher half should be scraped down until both are about equal. Now glasspaper to smoothness.

Strong Cord

For the cord, or string as it is more usually called, a tough whipcord can be used. Fold one end double and tie to form a loop, as shown in the diagram. Hitch this to the bow, bend the bow and tie the other end of the cord to it so that when taut the cord is distant from the centre of the bow about 5ins. Loosen the cord and make a second loop where the knot comes.

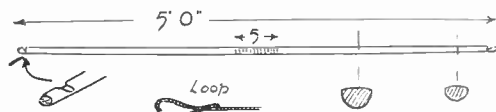


Fig. 1—Details of bow strip with section of shape

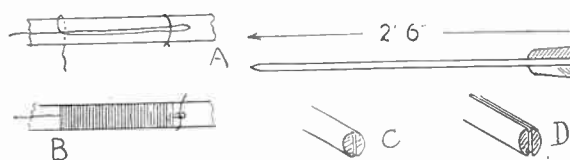


Fig. 2—Centre binding

Fig. 3—Details of arrow construction

The centre of the bow should now be bound for 5ins. with a strong thread, just like the handle of a bat. To do this, neatly double 7ins. of the thread and lay along the bow, as at A, in Fig. 2. Tie a piece of thread round it to keep it there, then from the commencement of the space to be bound, wind the thread round and round until it covers the whole 5ins. length.

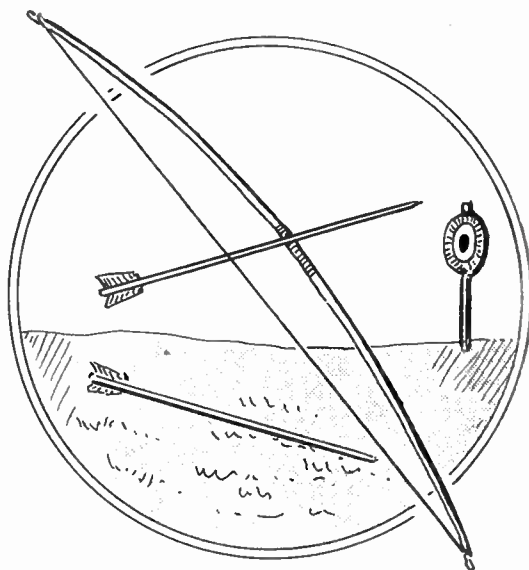
Cut off, and pass the end through the loop as at B, pull the commencing end, and the finishing end will disappear under the binding. Cut off any surplus, then varnish the bow and binding also. Finish the bow by tying a piece of coloured thread round the exact centre of the binding as a guide to placing the arrow.

Some lengths of $\frac{1}{2}$ in. round ash will be required for the arrows, several of which it is convenient to possess, to save much trotting up to the target to retrieve them. Cut to the length shown at Fig. 3, and sharpen one end to a bluntish point.

A good tip here is to char the end in a fire, or gas jet, as it hardens the wood and makes the point last longer. At the flight end, file a groove into which the cord can lie, as at C. From the ends of this groove and using a tenon saw, make saw kerfs about $\frac{1}{4}$ ins. long and $\frac{1}{8}$ in. deep to contain the feather flights, as at D.

The Feathers

Any feathers large enough for the purpose can be utilised. The old archers used to swear by the feathers of a goose, but that may have been just a sportsman's fad. One half of each feather should be cut away to the rib, then be roughly trimmed to length and glued in the saw kerfs. When the glue is quite hard,



and not before, trim the flights to shape.

The Target

Of course a target will be needed, and this is sketched at E in Fig. 4. Make a straw rope, say about $1\frac{1}{2}$ ins. diameter and when sufficient has been done wind it round and round, like a mat, tying it with string to keep all together and flat.

It could be covered with coarse canvas and be painted with concentric circles, red, white and blue, as a guide to the 'hits'. As the sport is generally held in a field, a sharp pointed post might well be used to hold the target up.

Bracer Guard

One accessory it is wise to make is a bracer guard, to bind round the inside of the forearm and save the skin from the possible flaying it may receive when the bow string springs forward. This can be made of stout canvas to the dimensions and shape shown at F, and be provided with tapes, or what is better still, straps and buckles, to hold it safe to the forearm. A quiver to hold the arrows might be included also. This is not illustrated, as it is merely a long bag, like a golfer's, and slung over the shoulder. Canvas would do for this also.

Using the bow, it is gripped with the fingers of the left-hand, at its centre, the arm being kept straight and stiff. The body is braced and the arrow should rest on the hollow between thumb and forefinger. The string is firmly gripped between the fingers, the arrow between thumb and forefinger, with the cord pressing against the notch as the string is drawn back.

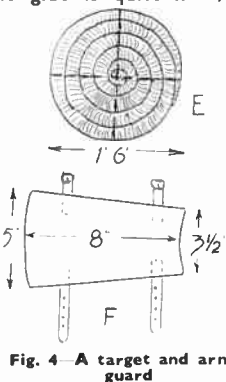
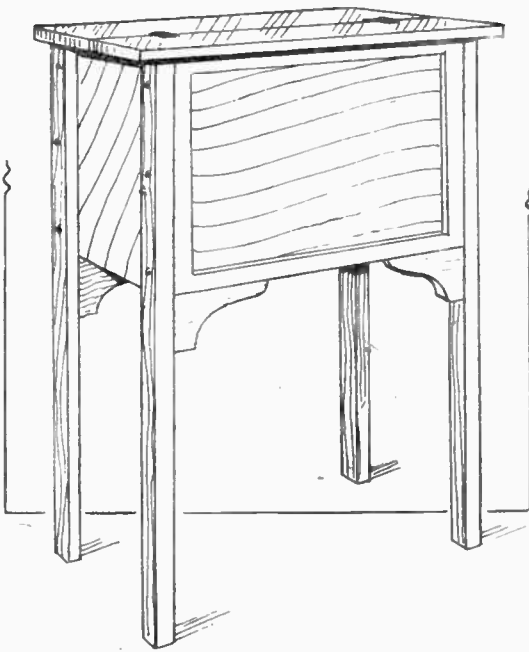


Fig. 4—A target and arm guard

Any housewife would be delighted with this TABLE VEGETABLE BOX



Boxes vary, as readers know full well, and one with smooth sides should be chosen if possible, as much labour of glass-paperying will be saved. Place the lid aside, as this can be used to make the interior division seen in the diagram. If considered necessary, strengthen the box, especially the bottom, with a few extra nails, and in any case drive all nails well home, as no nail heads are wanted sticking up.

Division Piece

The division piece can now be nailed across. It is suggested here to place the division so that one compartment is about double the size of the other, the larger one being reserved for potatoes, the vegetable probably most in demand in most households. That however, is a

matter for personal choice.

If a length of blind lath is available or can be bought locally cheaply, an improvement to the front of the box can be easily effected by gluing and pinning it round to cover nail heads and box bottom, and thicken the top. This addition is shown in the diagram. The pieces of lath will look much better if mitred at the corners, giving a panelled effect to the front view.

Leg Pieces

Cut the pieces of wood to be used for the legs accurately to the same length each. It is not imperative to be tied down to the sizes of wood suggested, i.e. 1 in. by 1 1/2 in., as any wood near to these dimensions will serve quite well.

The legs are screwed to the ends of the box, with round-headed brass screws, glue being added to the joints to strengthen. In the angles underneath

the box, at both back and front, it will be helpful to add brackets as shown at A in Fig. 2, to stiffen the structure.

These brackets can be cut to size and shape shown and fitted in with glue and nails or screws. It will be noticed that the shape of these brackets allows them to be fitted in easily, the nails being driven in where indicated in the drawing. If the bottom of the box is of rather thin wood, as sometimes is the case with these boxes, screws would be better than nails for fixing the brackets; they hold better.

If a stouter wood, say 1 1/2 in. square is available to use for the legs, then they can be cut away to half thickness where they contact the box ends, as at B, and so fitted, the brackets can be omitted if desired. However, in either case, their inclusion does strengthen the article and rather improves its appearance as well.

The Top

Cut the two pieces of board for the top, to length long enough to overlap the legs by 3/4 in. The combined width of the two should also allow for the same overlap at back and front. These boards should then be hinged together with 1 1/2 in. iron hinges. Fit them on the face side, as in plan view, Fig. 3, and recess the leaves of the hinges flush with the surface. They must not stick up

(Continued foot of page 294)

It is always a convenient matter to have some receptacle in which potatoes, onions and other vegetables for the household can be neatly stowed away. It helps to avoid untidiness in the kitchens, and what is of more importance, keeps mice away. The table box, illustrated, is a combined piece of kitchen furniture, it includes besides the very convenient little table, a handy box receptacle for the vegetables, with a hinged lid for easy access to them.

Despite its appearance, the article is of very simple construction, any handy woodworker can make it, and the quantity of wood required is surprisingly small, as a grocer's box is suggested for the vegetable receptacle.

Timber Required

In fact, given the box, all the timber needed is about 4ft. of 3/4 in. by 8 in. deal board, with 4 pieces of 1 in. by 1 1/2 in. wood, 2ft. 6 ins. long, for the legs. Angle bracket can be readily cut from scrap. Not an expensive set-out, but if well made, quite equal to a commercial article costing four times the money.

For the box, choose a good quality one, as near as possible to the dimensions given in Fig. 1. In fact, these dimensions were taken from such a box (one of the kind used to export fruit to this country), used to make the original article.

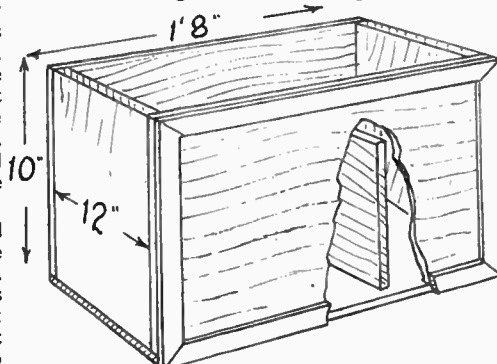


Fig. 1—Cut-away view showing box construction

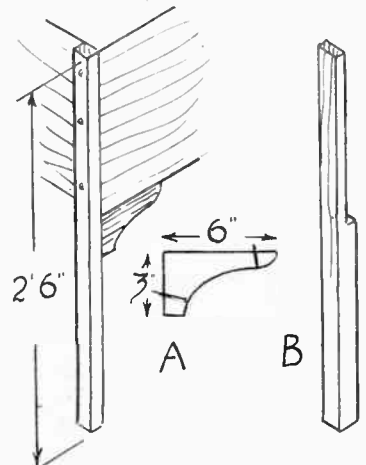


Fig. 2—Detail of leg and corner bracket

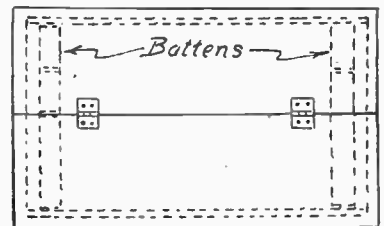


Fig. 3—The lid with adjoining sections dotted

The slot provides a secret in this novelty OWL MONEY BOX

AT first glance of the completed money box it would be taken for just a block of wood with a decorative overlay stuck on the front. But lift it and shake it and one knows immediately that it contains coins. Looking around the box the problem is to find how the coins got there, and where the slot is through which the money is put. Full size patterns which can be copied or pasted to wood are printed on page 303.

A Movable Head

To solve the problem, look at the circled top diagram in Fig. 1. We see here the head of the owl being raised with finger and thumb and a slot revealed underneath. So the wise old owl evidently will not 'tell' unless he gets his ears lifted! Now this interesting little novelty is very simple to make, and the wood for it should cost but a few pence.

A good idea of the size of the finished article can be got from the full-size outlines of the various parts given on page 303 of this issue. No enlarging of any part is necessary, but the owl overlay needs some imagination in getting the colouring and the detail of eyes, etc., to look realistic. The box is made wholly of $\frac{1}{4}$ in. thick wood, while the overlay consists of $\frac{1}{8}$ in. stuff.

Having, then, some pieces of wood of convenient size for handling, we commence to prick off the pieces direct from the pattern sheet and to connect up these points with the pencil. The base (A), the front and back (B), and the top (H) can be done thus and cut round with the fretsaw. Only one of the pieces (B) will have the two slots cut in it, the back section of the box being, of course, a plain oblong.

A disc will be cut from piece (A), which is the base of the box, for the removal of the money. The centre is indicated on the diagram from which the circle can be described on the wood direct.

Wedge Disc

When cutting round the disc hold the fretsaw a slight angle so that the piece removed is wedge-shaped as it were and

Pipe Hanger

HERE is a useful device for a single shelf pipe rack, which abolishes the inconvenience of the bowl having to be at the top of the hole with the stem hanging. The nicotine thus drains into the mouth-piece causing an unpleasant taste. A rubber band is looped over the pipe and the pipe pushed through the hole, stem upwards. When the band is brought under the rack to the side and

can be returned to its original position without actually falling right through. A piece of stout brown paper should be glued over the whole base of the box, including the returned disc at completion. When it is required to empty the box of its coins, the sharp tip of the blade of an ordinary pocket knife can be inserted in the cut and run the complete circle, thus releasing the disc for removal.

The base (A) of the box should have its three top edges rounded off neatly with file and glass-paper and look like the finished thing in Fig. 1. The two ends of the box measure $4\frac{1}{4}$ ins. by $1\frac{1}{2}$ ins. and they will be glued between the back and the front. Fig. 2 shows this and also the general construction of the box.

Bird Shape

The box can be completed with the exception of putting on the top which must be held over until the movable part has been put in place. The overlay (D) is next cut and the pattern for this is given and must be pasted down to the wood or traced off and transferred by carbon paper. Note how the head, etc., is cut through and must meet accurately after the body portion is glued to the box.

The square opening in the head is to take the piece (G) which must be securely glued in. The end grain of piece (G) is covered by the piece (E) later, when the head position is tested. The back piece (F) is accurately cut from the $\frac{1}{4}$ in. stuff and glued on, as the

again looped over the stem, the pipe will be held bowl downwards and no unpleasant taste will occur.

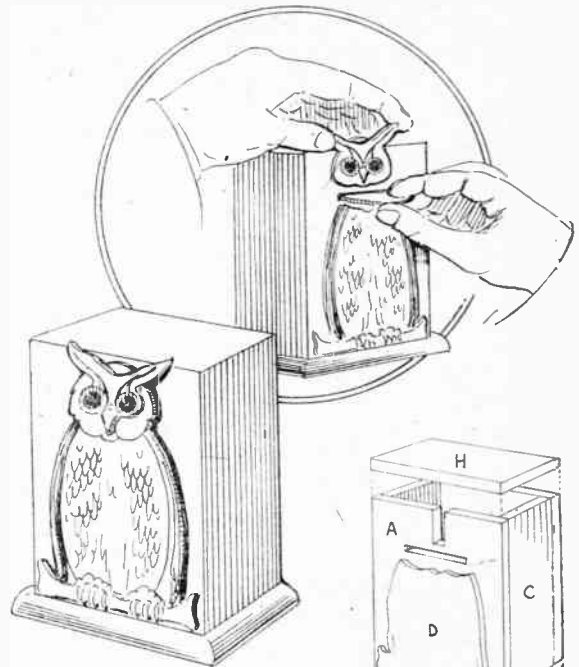
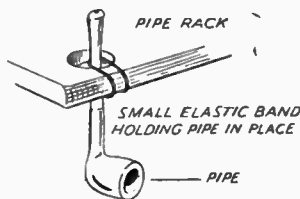


Fig. 1—The box and its money slot

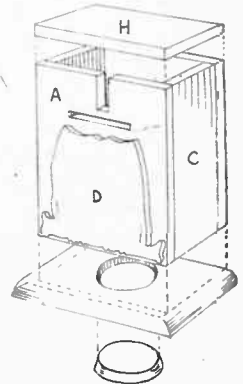


Fig. 2—General details of construction

enlarged detail Fig. 3 shows.

When the glue has hardened on all these parts the whole thing may be dropped into place in the slot in the front of the box and the top (H) finally fixed on. All three parts (E), (F) and (G) should slide up and down stiffly in the slot. Should (G) run too freely so that movement is visible on the slightest movement of the box, then a thin washer should be inserted between (F) and the inside of the box.

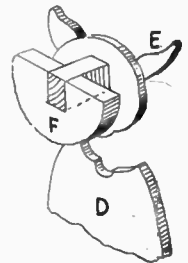


Fig. 3—Head and disc

The box should be cleaned with fine glasspaper and painted in bright green with the front of the box black, so the owl shows up well. The bird is appropriately painted in browns of suitable tones. The eyes should be dark brown or they would look well if suitable beads could be got and glued in.

The dotted lines on the body overlay at (D) on the pattern sheet should be deeply scratched in the wood to look exactly as if it were cut to march the cut line in the neck. The moving part of the head would then not be so apparent.

Details about bait that attract fish are given in these ANGLING NOTES

CHOICE of bait is a vital matter when fishing during summer holiday time. At this period, when weeds are flourishing, the fish are usually well supplied for food from Nature's own larder. Consequently, they must be tempted to take your baited hook by putting something on it that they will find to their liking.

'Bait the hook well, and the fish will bite' wrote Shakespeare, and there is some truth in it. Not always, of course, will they prove obliging, no matter how tempting is your offering. But knowing the best baits to use helps a lot.

Therefore let us glance, briefly, over the list of baits likely to prove attractive to such fishes as the beginner on river, lake, canal or drain seeks to catch in late summer—August and September.

Worms

Worms are always a good stand-by—few fish refuse a worm. For the bigger fish the most useful is the lobworm. Barbel, carp, tench, grandfather roach, and others, even the kingly salmon, like a succulent lob, especially after a good rainfall has coloured the stream and drainage water has carried a few worms into the river to whet their appetites.

You can catch lobworms at night on the grass of your lawn (when the wriggly creatures come up out of the soil) or digging deep into a moist strip of garden will probably turn up as many as you need for a day's fishing.

Red worms, brandlings and cockspurs are also attractive to such fish as trout, perch, chub, dace, bream, roach and gudgeon. Such worms are found in manure heaps and piles of decayed garden rubbish. These baits should be caught up in advance and put in a suitable receptacle—such as an old flower-pot of useful size—filled with clean moss, damped. Leave them there for a week or so, and they will toughen and so last longer on the hook.

Silk Weed Useful

In summer some baits are particularly useful. One that will attract roach is the silky weed found adhering to the steps and timbers of weirs and such-like places. It is a simple matter to collect a quantity and keep it in a tin containing river water. Cover the hook with the

weed and swim it down the runs and shallow streams below a weir.

In summer, too, chub will often take such baits as cherries, (take out the stone and insert a hook in its place, squeezing up the cherry again on to the hook). Other fruits as damsons may also be tried.

Natural Flies

Do not overlook the value of natural flies and other insects for hot weather fishing. Bluebottles, woodflies, cowdung flies, fern-web beetles, grasshoppers, bees, larvae and caterpillars are all used with success in summer, for trout, chub, roach, dace, etc.

Such baits are carefully impaled on the hook and 'dapped' on the surface of the stream. Needless to say, it is

In late summer, withy-bobs (large speckled caterpillars found on waterside trees) are excellent for catching chub.

Artificial Flies

In sun-bright weather, chub, roach, dace and rudd can all be caught on small artificial flies.

Chub and dace are the main quarry of the dry-fly angler whose objective is to take advantage of days when such 'coarse' fish are rising to surface food. The usual fly-rod and tackle as used for trout and grayling is the best rig-out, but it is possible to manage with any good supple rod. A dressed silk line and gut-casts tapered from 1x to 3x, 2yds. or 3yds. in length, are the needful requisites.

The line should be greased with Muclin or Cerolene applied with a bit of wash-leather. It is also as well to grease the gut-cast nearly to the fly—both line and cast should float well. The fly itself is anointed with liquid Muclin (or you can make do with a spot of grease) to keep the lure on top of the water.

Flies recommended include Wickham, Tups, Black Gnat, Alder, Coachman, Olive Quill, and Black Palmer, on smallish hooks.

Early and Late

In very warm weather during August or September you should fish early and late in the day; an all-night session in such conditions may prove fruitful. For tench and carp especially, at sun-up and after sun-down the angler will do better than in the noontide hours. Bait with wasp grubs or honey paste.

In the daytime, all kinds of fish love the shade of weeds in sun-bright weather and it is a good plan to fish as close to weed patches as advisable. You have to risk a big fish, after hooking, trying his best to get into the weed jungle, but with skill you may work him clear by hand-lining him, if he does succeed in boring into the entanglements.

One more bait worthy of mention and which was used before the war is creed wheat. Anglers using it put a quantity of wheat in a pan and let it simmer until the grains crack open.

Do not leave any live baits, such as maggots, grubs, worms, etc., exposed to the sun—it does not agree with them!

Our gift design—a GALLEON TRAY

If you are making the attractive Tray shown you need Kit No. 2858 of wood. From any Hobbies Branch for 5/10 or post free 9d. extra, Hobbies Ltd., Dereham, Norfolk.



necessary to keep well out of sight while doing so, or you will not catch a fish.

Slugs, snails, beetles, moths and butterflies may all in turn be used with some success during hot sunny weather. Hide behind bushes and poke your rod over the water, letting the baited hook fall gently on the surface. By tapping the butt joint of the rod with your free hand you can impart a quivering motion to the bait, making it all the more attractive to the fish watching for such titbits falling from the boughs.

Vegetable Box—(Continued from page 292)

above it as they will inevitably catch against something when articles are moved on the table top, or the top is wiped down.

Underneath the top, battens of $\frac{3}{4}$ in. by $1\frac{1}{2}$ in. wood are screwed to prevent warping. The position of these is shown by dotted lines, and it is rather important to fit them accurately as they help to keep the top steady and prevent it sliding about. The battens

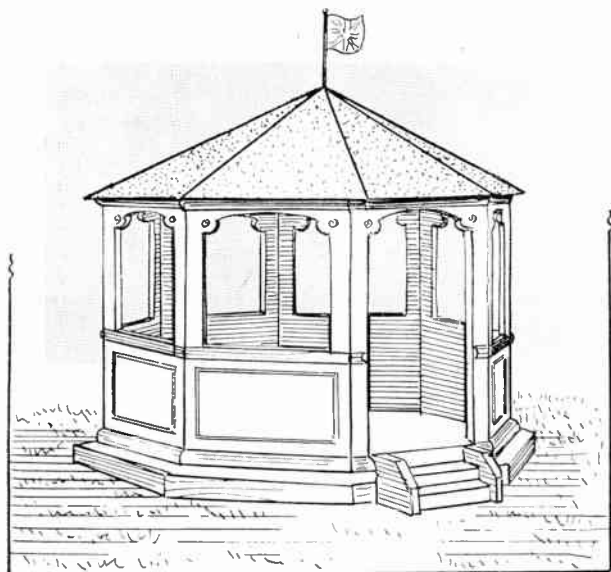
are, of course, divided where the hinges come, to allow the front half of the top to be lifted up as a lid, to allow access to the vegetables inside.

It is not proposed to fix the back half of the lid on but rather to allow it to rest on the box, as this will permit of the whole top being lifted off for cleaning out the interior at intervals. If, however, it proves awkward to shift the article without the lid coming off,

then a small cheap pattern of cupboard bolt could be fitted to the battens each side, where indicated by the dotted cross lines, and be shot home in holes bored in the ends of the box.

The whole article should be painted. White is suggested, to look smart and clean, otherwise the plain wood soon soils, and scrubbing down becomes necessary at rather frequent intervals. Clean, of course, before painting.

A reminder of the seaside holiday is this MODEL BANDSTAND



THIS is an attractive and rather unusual model, well worth making as a change from the popular ships and buildings. There is nothing difficult about it, but some care is necessary over jointing the sides if the result is to look well, also a lot depends on the finish.

What we may describe as the carcase consists of two octagonal pieces of fretwood, joined by 8 side pieces. The octagonal shapes are shown at Fig. 1. These are set out and cut from $\frac{1}{4}$ in. fretwood.

The shape is quite easy to draw, first set out a square to the outside dimensions, then with compass and radius from corner to centre, strike the quarter circle, as shown. Repeat this at the other three corners, and where the arcs cut the sides run lines across to form the octagon. Cut these shapes out accurately and both alike.

Side Frames

Of the 8 sides, cut 7 to size A, and 1 to size B. Note here, the only difference between A and B is in the window opening, which in the latter extends to $\frac{1}{4}$ in. above the bottom to form a doorway. Before cutting out the openings, it will be advisable to bevel the side edges for the parts to fit together round the octagon top and bottom pieces.

The correct angle of bevel is $67\frac{1}{2}$ degs. and a simple gadget, as at C, in Fig. 4, can be made to simplify the business. This is drawn out on a piece of thin paper, gummed down to tin and cut out. It need not exceed 1 in. square. The flange at the bottom is cut across the middle, and one half bent upwards and the other half bent downwards.

their replacement to the particular side edges they have been fitted to. Now mark out and saw the window and door openings; which done, fit the sides back again, this time with glue and some additional nails as well. The diagrams D, Fig. 2, shows one of the sides in position to help explain the above.

The base of the model is another octagon, cut this time to the dimensions

Remove the paper from the tin by soaking in warm water. Place it on the end edges of each side and mark the angle of bevel with pencil lines. It will be seen that the width of these sides is rather full, to allow of slight difference in width across the face edges of the octagons. Fit each part in turn, securing it temporarily with a single nail at top and bottom.

Then remove and number them to ensure

given in Fig. 3. It can be cut from deal or other wood, (no need to waste fretwood over this part) planed to $\frac{1}{8}$ in. thickness. A small piece is cut out of one side as shown, in which the steps are to be fitted later.

Assembly

Now glue the carcase exactly in the centre of the base and when the glue is set hard, further secure with a couple of screws from underneath, well countersunk.

From the waste of the $\frac{1}{4}$ in. fretwood, prepare some strips of quarter round moulding and mitre these round each side at top and bottom, as shown in the section E, Fig. 2, at A and B. These should be neatly joined at the angles and here the gadget C, will again come in useful. Level with the window openings, mitre round some half round strips, also cut from the scrap $\frac{1}{4}$ in. fretwood. These are shown at C, in Fig. 2. The mouldings are cut short of the doorway, naturally.

The Steps

For the steps, cut 2 to the dimensions given in the inset. Fig. 3, from $\frac{3}{8}$ in. wood. The steps are cut from $\frac{1}{4}$ in. wood, one measuring $\frac{1}{4}$ in. by $\frac{1}{4}$ in. and the other $\frac{1}{4}$ in. square. They are glued together and then to the side pieces, the whole being then fixed in the cut-out of the base, opposite the doorway. The drawing of the completed model shows this detail quite clearly.

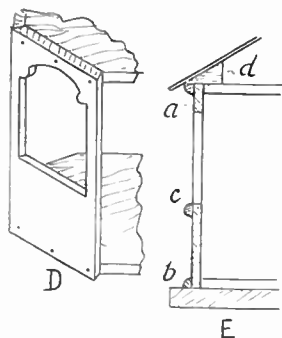


Fig. 2—Fixing the sides

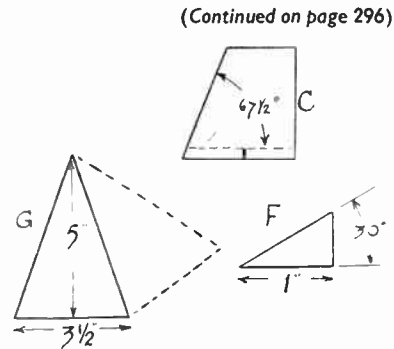


Fig. 4—Parts of the card roof

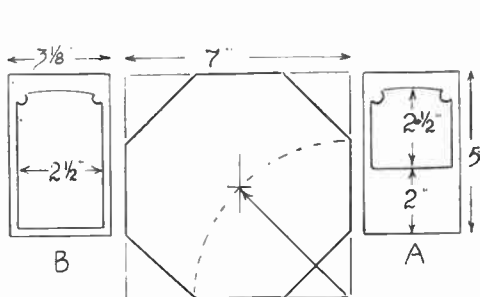


Fig. 1—The floor and side panels

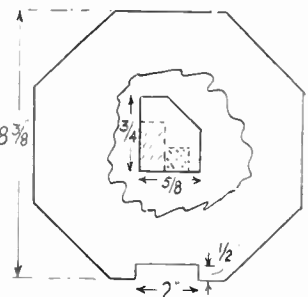


Fig. 3—The base and steps side

More gadgets and suggestions for practical HOME IMPROVEMENTS

WHEN we expect guests we just do not know where to put those extra coats without weighing the existing hall stand down.

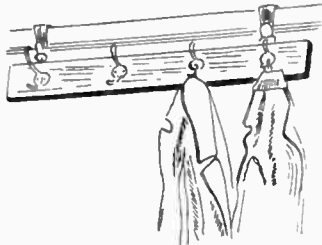


Fig. 1—A temporary hall coat hanger

Why not have a simple mobile one which you can bring out for the occasion?

This one (as seen in Fig. 1) saves you knocking holes in the wall and can be left up and taken down when desired. Choose a good piece of board about 1in. thick, 3ft. long and 6ins. wide. Try to get something a little attractive in case you leave it up. Smooth it well down, especially the edges. If you like you can beat it round with the corners mitred.

Next, fix on your coat hangers, spaced out evenly and not too close. Greatcoats take quite a space. Four will be ample for this length. Fit two fairly large screw hooks in at the top about 4ins. from each end. You can then hang this on the picture rail with two of the ordinary picture hooks.

Window Insect Frame

Many, especially during the summer months like to sleep with the bedroom window open, but this does sometimes mean all sorts of creatures flying or crawling in with the possibility of a stray cat as well. Even on a foggy night the air is not so good. What can we do to remedy this situation? The answer is to make a frame filter, as shown in Fig. 2.

Make the frame from 1in. wood to fit squarely and firmly to the space which you mostly have open. Secure some good quality butter muslin and add this to the frame with double thickness spacing drawing pins round after you have stretched it tight. Drawing pins are best as you can then take the material off for washing purposes. The frame is

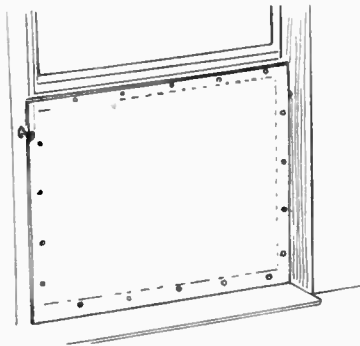


Fig. 2—A fly window trap for summer

held in place by the hooks and eyes, as shown in the illustration.

A Bathroom Seat

An old kitchen chair which has become somewhat on the wobbly side can be saved to make a useful seat and cupboard for the bathroom and altered, as you see in Fig. 3. Remove the existing seat section which will leave the back and the two front legs with rails. Cut a piece of plywood to fit the base of the two back and two front legs. Screw this on to make it firm. Bead round inside the legs with some 1in. square wood so that you will have something to nail on when fitting the sides. You cannot fix the sides to the edge of the plywood satisfactorily.

You will now be able to cover in back, front and two sides with composition boards to have a square box with floor

whilst the back of the chair still in its original position. Square up inside with 1in. quartering again to give strength. If you can get a thicker board for the top, then this will be better. Make this into a seat to hinge on the strut across base of back. You can get special cork to fit this and then paint in white or to suit your colour scheme.

Bathroom Improvements

We cannot all have tiled bathrooms and there are times when that part just above the bath gets very dirty. Provided it is not painted, you can make a panel of tile linoleum go along there and finish the edges off with a neat beading. Lino should fix on with lino paste if the wall is distempred. Paint is too glossy and the paste will not hold. Even so, you could mount the linoleum on some

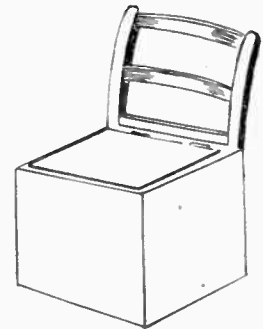


Fig. 3—Bathroom seat and cabinet

composition board which is now plentiful and really quite cheap to purchase.

Steam in the bathroom is another great problem and the mirror will get steamed up and dampness form on the walls. This is mostly when the water is running in. Open the window while the bath is filling and add a length of rubber tubing to the geyser tap or hot water tap. See that the tube is under the water. (174)

Bandstand (Continued from page 295)

The roof is made from cardboard, that to be got from a shoe box is quite thick enough for this part. Draw pattern G, Fig. 4, on stiff paper and cut out. Place on the cardboard and pencil round it, replace pattern against one side of the pencilled shape and mark round again as shown by the dotted lines, and repeat this until 8 shapes, joined together, are so marked. Draw a knife on the divisional lines lightly across, then bend the whole to the octagonal shape of the roof. Join the ends together with a strip of paper, gummed over.

From scrap bits of the fretwood cut 8 of part F, and glue them to the top of the bandstand, one touching the edge of each face of the octagon, as seen at

D, in Fig. 2. Before fitting the roof on, drill a hole in the centre of the top just a tight fit for a piece of stiff wire, which forms the flag staff. Push a piece of the wire through the centre of the roof also from the inside.

Cut the wire to a length of 4ins. and push in the hole in the top of the bandstand. Apply a little glue to the outer edges of parts F, then fit the roof on, the wire going through the central hole and sticking up above. Press the roof down to help it adhere firmly. This completes the work of construction.

The bandstand can now be painted to choice. White might be a suitable colour to employ, with green for the base and red for the roof, the panels being put in with a fine brush.

This is only a suggestion, as no rules exist as to colour of bandstands and the reader can happily please himself.

The roof, instead of paint, could well be covered with a suitably coloured paper, red, as suggested, or perhaps grey, to imitate lead or slate. If deciding to paper over instead of painting over the roof, set about the job correctly to get a satisfactory result.

First paste over the angles a 3/8in. wide strip of the paper, then cut 8 pieces of the paper to the size of the pattern G, and paste these over each sloping side of the roof. This will hide the cut lines, (which will break open on bending), and look very neat.

Finish the model by gluing a small flag to the top of the flagstaff.

For Summer Time or Christmas parties make yourself an ICE CREAM FREEZER

ICE cream is again one of those luxuries that can be enjoyed all the year round. It is very acceptable during a spell of hot weather, but it can be equally useful for a Birthday Party or even at Xmas time.

For this reason it is very nice to be able to make your own just when you feel like it, besides which you know exactly what is in it and you are also able to produce many flavours which are unobtainable at the shops.

The apparatus needed for the production of ice cream is very simple to make and apart from the time taken need not cost anything. The freezer shown in the drawing consists of two good clean lever top tins, one fitting inside the other. The small tin holds the ice cream mixture, while the other one is for the freezing mixture.

Container Size

It will be seen that the lids are on opposite ends, and it is necessary to see that they fit tightly. The freezer can be made any size to suit your requirements, but the measurements given will produce quite a nice batch of ice cream, and is also a very useful size to experiment with.

The small tin is a 2lb. size treacle tin measuring 3½ ins. diameter and 4½ ins. high. The large outside one is a paint tin about 6 ins. diameter and 8 ins. high. The small tin should be well washed out and dried to prevent rusting. You need not be so particular, however, with the paint tin, although it is better to have a nice clean one for the job.

The top end of the small tin must be soldered into the bottom of the large outer tin. Carefully clean off the printing from the treacle tin with emery paper to about ¼ in. down from the top rim. Then cut a hole in the paint tin

join all round. If it is not tight and some of the ice and salt mixture leaks out it might find its way into the ice cream tin and spoil the batch.

The turned-over rims of the two tins where the sides are joined to top and bottom are usually made tight, but it would be as well to test these out before soldering up. This may be done by filling with water and standing for a time to see if any oozes out.

You can run a little solder round the joints as a precaution but modern tins are made so well that it should not be necessary.

A Turning Handle

After soldering give the tins a thorough washing in hot soapy water and rinse out and dry well. It is now possible to make ice cream without any further addition to the tins, but it might be an advantage to fit a pivot and handle so the freezer can be slowly revolved in a wooden stand as shown in the drawing.

A stout piece of wire will do nicely for the handle and pivot. It is best to fix into a small metal plate by riveting or soldering and then to solder the plates on to the side of the tin.

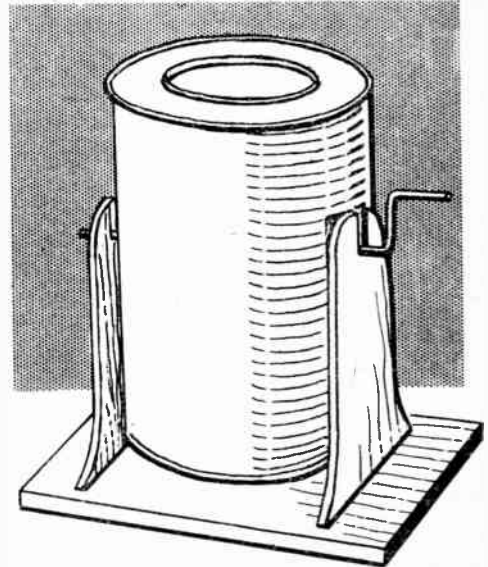
Two strips of wood having slots cut in the tops to take the pivots and fixed to a baseboard complete a handy stand. The complete freezer and stand would be much improved in appearance, besides being cleaner and less liable to rust, if given a coat or two of paint or enamel, allowing plenty of time to dry hard.

How to make Ice Cream

There are heaps of ways of making ice cream and a very interesting time can be spent in experimenting with different mixtures. Ordinary custard powder made a little thinner than usual would do to start with—make sure that you get all the lumps rubbed out before adding to the boiled milk.

Cornflour made with boiled milk and flavoured with fruit essences or real juice can be used to form some very nice ices. The exact amount of the various ingredients can be easily found by a little experimenting. A very little gelatine is sometimes added to certain mixtures to give extra body.

Water ices flavoured with fruit juices and with a small quantity of glucose added make a very pleasant change—it may be necessary to add a little cornflour or gelatine to this mixture to give sufficient body to freeze properly.



Having made the ice cream mixture and placed it in the small tin with the lid securely fixed, the next job is to freeze it. To do this the large outer tin is filled tightly with a mixture made of chopped ice and freezing salt in the proportion of about six or eight parts of ice to one of salt.

Freezing Mixture

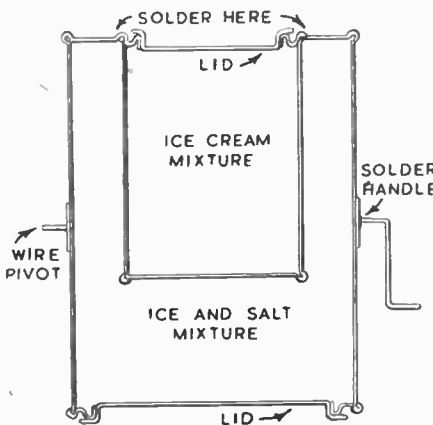
The ice is best chopped up to the size of peas and a small quantity put in the freezer, then a layer of salt, some more ice and then salt again, until the container is packed tight. The ice and salt can be obtained from an ice factory if you have one handy, if not, a fish merchant will let you have a small quantity.

Put the lid on securely and place the freezer in the stand and turn the handle slowly. At first you will need to open the small tin occasionally to see how the mixture is progressing. But after a few batches have been made you will be able to judge the time taken fairly accurately and will not need to open up until the freeze is completed.

As Stand Mixer

If you decide to make the freezer without the handle and stand, you fill up both tins just the same and then put the freezer in a cool place. After about, say, five or ten minutes, turn the tin over so the bottom is at the top, and leave in this position for a similar length of time. Then turn back again. You will not need to turn the tins many times before the mixture is frozen correctly.

After the ice cream is made it may be kept quite good in the container for many hours without refilling the ice and salt chamber. (222)



A section through the containers

bottom so as to make as tight a fit as possible. Run plenty of solder in to make sure that you have a watertight

A PHOTOGRAPHIC ALPHABET

Any amateur photographer should remember these hints to improve his pictures.

I for—

INTENSIFICATION

SOMETIMES by accident a film is taken from the developer too soon and while the image is all there it is weak and of poor printing quality. In such cases it can be improved by a process known as 'intensification'.

There are several methods, but the simplest is the 'chromium'. Here the negative is bleached, thoroughly washed and then redeveloped in the same developer originally used, when the image returns much darker than it was before.

The bleacher can be bought in tabloid form from any photographic dealers and the bleaching solution is made by dissolving one tabloid in 4 or so ounces of water. In chemical form a similar bleacher can be made by dissolving 30 grs. of potassium bichromate in 3ozs. of water, 60 drachms of hydrochloric acid being added after.

A negative to be intensified must be perfectly free from hypo, i.e., have been well washed and the washing between bleaching and developing must also be very complete, the yellow stain left by the bleacher all being removed.

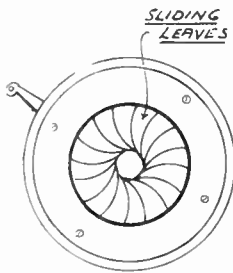
Intensification is only good for under-exposed negatives in certain cases, generally it makes such too hard and turns the final print into a 'soot and whitewash' effort.

IRIS STOP OR DIAPHRAGM

IN less expensive cameras the opening in front of the lens is given by a rotating piece of metal in which various sized holes have been punched. Rather dearer instruments, however, have what is known as an 'iris diaphragm'. This is made up

of a number of exceedingly thin metal leaves which lie one on the other. They are connected with a collar in such a way that when a ring in the outside of the lens is turned they all close in and thus make the opening less.

The advantage of the iris diaphragm is that a very fine adjustment of stop can be obtained. With the metal plate you must just take a stop of, say, f-8 or f-16, but with the 'iris' any stop between can be obtained. The iris diaphragm is a very neat piece of work and helps lens and stop to be better kept as one compact unit.



J for—

JUDGING DISTANCES

TO be able to do this with a good degree of accuracy is very important when using a camera that is focused by adjusting a pointer on a scale. Reflex cameras and those fitted with range-finders get over the trouble by letting you see the subject as you focus on it and so it is easy to tell when good definition has been obtained. With scale focusing alone, the only way is to judge how far distant is the item being taken.

Pacing is quite a good way of establishing distances, once you know how long one of your paces is. Another way is to get a fair idea of what, say, a 6ft. man or other known length would look like on the ground and then estimate how often it would go into the distance in question.

The great thing is to practise and to be constantly noting how familiar distances look, such as the length of a cricket pitch, or the height of a marked bridge. The H signs in walls which tell you where hydrants are, are also inscribed with a distance, as 10ft., 30ft., etc. Find the hydrant and see if the 10 or 30ft. agree with your idea of such distances.

K for—

KODACHROME

EVEN the beginner at photography can now get colour pictures with his snapshot camera, exactly like those seen at the cinema. The roll bought must be a 'colour film' and the results obtained are a series of coloured pictures which are viewed in the same way that you would look at magic lantern slides.

A typical colour film is Kodachrome produced by Messrs. Kodak Limited. In normal times this can be obtained in the ordinary roll-film sizes, as film packs and also in the 35 mm. width for miniature cameras.

Films of this sort are put through the camera in the usual way, the only point being to choose fairly colourful subjects when taking. The spool must then be given back to the dealer for processing, as development is rather beyond the ordinary amateur.

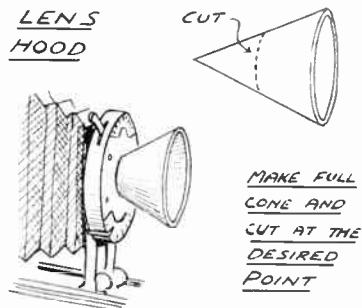
L for—

LENS HOOD

FOR a picture to be bright, the only rays to reach the lens should come from the subject. With lenses that

stick out rather, stray rays sometimes get on to the surface from the side and give a bit of haziness. This trouble can be entirely stopped by using a lens hood. A hood is quite simple to make, being simply a part cone of blackened card, as shown, which slips in the front of the lens.

Such is the brightening effect of a hood that press photographers always use this accessory. Box cameras do not need them, however, as here the lenses are usually set well inside the front and so are already 'hooded' by the body. They should be used with all folding cameras.



As well as brightening straight snapshots, a lens hood makes it possible to take a photograph with the sun well round to the front, and even with the sun dead in front if the camera is not in any way pointed up. They also help a lot if taking night scenes or interiors having side windows and other lights.

LIGHT TRAPS

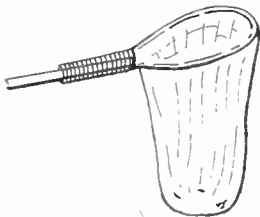
AT the near side of a dark slide, where the cover comes out from the frame, is found a strip of velvet. Such strips are also in film packs and sometimes inside cameras. These are 'light traps' and their purpose is to allow two parts to slide over one another (generally one into the outer air) without light getting in at the same time. The best material for making 'traps' of this kind it has been found is ordinary fine-pile velvet.

In the course of time the pile sometimes gets pressed down, and a certain amount of light can then get past. If you use a plate camera, therefore, and some of the dark slides are letting in light, examine the velvet strips carefully and where necessary make a renewal. If possible, strips should be in one length, but if it is imperative to join two pieces, cut the contacting ends diagonally across the width of the piece as this prevents the danger of light coming in, a danger which is there with a square cut join.

How and what to do if you undertake BUTTERFLY COLLECTING

COLLECTING butterflies is an interesting hobby in summer. A collection of these lovely insects set out in a suitable case or cabinet is a constant joy. When on your summer holidays a few hours spent in the chase of the 'winged flowers' of the countryside and the quest of rarer specimens will provide thrilling fun, and give lasting pleasure.

August is a butterfly month. At this period many of the larger species begin to be conspicuous. The beautiful and gorgeously-coloured Peacock is now on the wing; the Red Admiral also appears. Brimstones are abundant, and the numerous Fritillaries of golden-brown hues are common at this time; the



A simple homemade catching net

Comma—looking rather ragged of wing—is found in many districts.

Among others the large Tortoiseshell butterfly is well worth collecting for its glorious colouring—it is a most handsome insect and appears in August. The Painted Lady is generally about when the Michaelmas daisies flower in the country gardens. Then we have the small Tortoiseshell which is abundant from July till October.

More Species

Add to the above species the Meadow Browns, Graylings, the various Heaths, the Small Coppers and Hairstreaks, the Gatekeeper and the different Blues, of which the Common Blue, as its name indicates, is common everywhere in July and August. The Adonis Blue is more familiar with collectors in the south-country, whilst in limestone areas the Chalk-hill Blue attracts the eye by its iridescent colouring.

The various Skippers are also out

Wood Splitting

A HANDY way to prevent a split in a piece of wood from opening or lengthening, is to drive staples over the split. The split can be closed up while stapling with a clamp.

during July and August. Some of these are only found on dry soils and sand-dunes, often just locally. The Large Skipper, however, is abundant all over England, in August.

A Home-made Net

For the benefit of beginners we may list the few needs of the collector. These are simple enough—a net, a killing bottle, and a storage tin. You can buy a suitable net from the entomological dealers (addresses on request), but any handy fellow can easily make one, such as illustrated in Fig. 1, as follows.

Get 1yd. of muslin, the best and strongest you can buy. Fold it into the shape of a long bag, sew the sides and turn in a hem round the open mouth. Do not shape the net to a very fine point, make it more cup-shape and about the length of your arm. Take a piece of stout wire and bend into a ring, but leave two spurs, one at either end of the wire, about 6ins. long.

Run the wire through the hem of the bag, and see that the open mouth is held in the form of a circle by the wire.

A walking stick or a suitable cane can be used as a handle. When the time comes to use the net, place the two wire spurs along the end of the stick and bind tightly with cord (see sketch).

Killing Bottle

The killing bottle is simple. The safest thing to use as a killing agent is pulped or freshly-pounded laurel leaves. A round tin or suitable box will serve, having at one end a mass of pulped laurel leaves, the remaining space being the insects' lethal chamber; the fumes from the bruised leaves soon kill them. The tin or box must be made as nearly air-tight as possible.

For the storage tin any suitable flat tin will do, as long as it is sufficiently commodious, with an inner top and bottom provided with cork or some material as lino that will hold pins. The latter should be proper entomological pins. Ordinary pins thrust through a butterfly are too clumsy. Do not overcrowd the tin with insects.

When you have caught a butterfly in the net instantly grasp the net by the neck, as it were, with your left hand to keep the struggling insect from making its escape. With your right hand gently take hold of it, and give it a sharp pinch between your forefinger and thumb nails, at the spot where wings and body join—under the wings—taking care not to damage the specimen.

Do not try to kill it, just sort of stun it. Then remove it from the net and put it in the killing tin or bottle. Later remove it to the storage box or tin.

Keeping Your Butterflies

Having acquired a number of these lovely insects you will desire to prepare

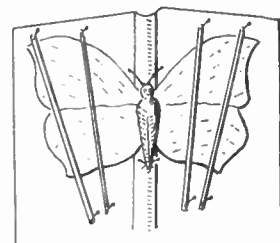
them for the cabinet. First, the specimens will need setting. You can buy setting boards or make them from cork. It is wiser to buy at least one setting board and afterwards make others to that pattern, if you desire to be economical.

Setting and Fixing

It is as well to 'relax' your fresh-killed specimens before setting, by placing them in a storage tin in which the cork has been moistened. Leave for a couple of days. Then take out and fix, one by one, on your setting board. Rest the insect's body in the centre of the groove, and with a long needle smooth out the wings carefully, so you do not damage their fragile texture.

Next, cut some narrow strips of thickish paper and pass them over the insect, two on either side of it, pinning above and below the wings, to the board. See that the insect's antennae are in correct position, and then leave the specimens in a dry place for a week or ten days before finally placing them in the cabinet. The drawing at Fig. 2 illustrates the process.

A proper cabinet with drawers may be too expensive for the beginner making a first start. However, he can



How to set a butterfly

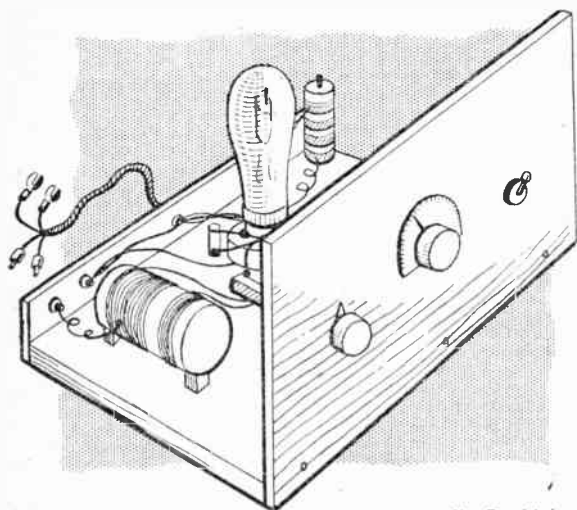
store his specimens in boxes. Get some empty soap boxes from the grocer, size about 10ins. by 14ins. by 4ins. (Or any light deal boxes same size will do). Cut the boxes round the sides and ends to form two equal traylike halves.

Cork Lining

Glue a cardboard shell round the inside of one half, and attach the other half by two small hinges. Each half needs lining on the inside with sheet cork, and then covered with thin white paper. The finished article should neatly fold together, and be practically air-tight. Pin specimens in box and label each suitably.

Sheet cork, pins, and all other necessary tools can be purchased from entomological dealers. Finally, a good book on butterflies will be found most helpful. It is better to buy one, but if you prefer you can obtain one from your public lending library or county library. (224)

For those in suitable areas here is an efficient STRAIGHT I-VALVE SET



QUITE a number of readers appear interested in making a 1-valve receiver, and any constructor can follow the design given here with confidence because it is one which gives good results with the minimum of outlay and complication. A one-valve set will give ample headphone volume, even if used with a short indoor aerial and with no earth.

If a good aerial and earth are employed, the range of reception will be proportionately increased. Medium wave reception is best during the evening, and during the hours of darkness no difficulty will be experienced in receiving a number of foreign stations, if desired.

The I-Valve Circuit

The theoretical circuit is shown in Fig. 1, and by comparing this with the practical wiring diagram the constructor should be able to see what each of the symbols represents. A home-wound coil for medium waves is used, the ends being lettered to show how they are connected.

If a ready-made coil is to hand there is no reason why this should not be employed. Similarly, a dual-range coil can be used, either ready-made or home-wound, if long waves are required in addition to medium waves. However, this is a modification which can be made

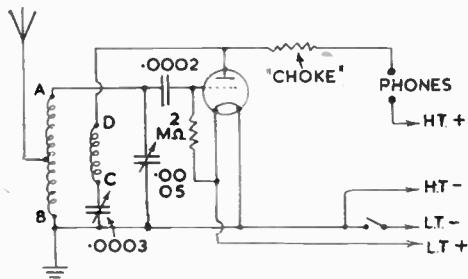


Fig. 1—Theoretical circuit of the set

at a later date without much difficulty, if necessary. The home-wound coil can be just as efficient as a ready-made one, and is of course much cheaper. In addition, many constructors prefer to make this item so as to increase their knowledge of what each component in a radio receiver actually is.

A small 2-volt accumulator is best for low tension, and will give long periods of service as the current consumption of a single valve is small. For high tension, a 60-volt battery is normally used. A higher voltage will cause fierce oscillation and not give much increase in volume.

On the other hand, good results can be obtained with a much lower voltage and a battery may be made by connecting three or four grid bias batteries in series. Even with regular use, the high tension battery will last anything up to twelve months. Actually, the consumption of a single detector valve is so small the high tension becomes unusable more from age and chemical deterioration, than from exhaustion through the current taken.

The H.F. Choke

As the diagrams show, either a resistor or H.F. choke can be used between detector anode and phones. This component is used to prevent high frequency currents passing as these have to go through the smaller coil winding and reaction condenser.

With some headphones, the windings in the phones themselves will give sufficient choking effect. Where this is so, no resistor or choke is necessary and a lead is taken directly from the anode valve-holder terminal to negative phone terminal.

This method of wiring can be tried first. If ample reaction cannot be obtained, the choke or resistor can then be

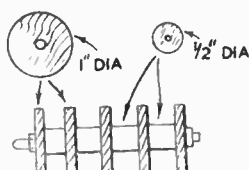


Fig. 3—Winding a choke

added. But two points must be noted—no reaction will be obtained if the reaction coil is wound in the wrong direction, or leads to its ends reversed, and if the voltage of the batteries is not up to normal, reaction will be weak.

A choke can easily be wound as shown in Fig. 2. Cut four washers $\frac{3}{16}$ in. in diameter from $\frac{1}{4}$ in. wood, and drill small holes in the centre of each. Five discs of stout cardboard or thin plywood about 1 in. in diameter are also cut, and the whole fixed on a length of screwed rod, or a long bolt, as shown.

The four spaces thus made should be wound almost full with thin insulated wire. Almost any wire will do, but to get on enough turns for the choke to work properly wire thicker than 36 S.W.G. is not recommended. All turns are in the same direction, and there will be several hundred turns in all. Wind one slot full, pass on to the next, and so on.

The finished choke can be mounted upright on the baseboard by means of the bolt, which can pass down through the base, the nut at the bottom being in a small recess.

Base and Panel

For the base a piece of wood about 6 ins. by 6 ins. and $\frac{3}{16}$ in. thick is used. A 3-ply panel about 5 ins. high is screwed to the front, and a strip of paxolin, ebonite, or ply fixed at the back to hold four terminals or sockets. The latter strip is about 1 $\frac{1}{2}$ ins. high.

Any type of on-off switch can be used. Either air-spaced or solid dielectric condensers can be used for tuning, but an air-spaced one is best. There is not much point in using an air-spaced condenser for reaction, though this can be done, if two such condensers are to hand. If only one air-spaced condenser is available, use this for tuning.

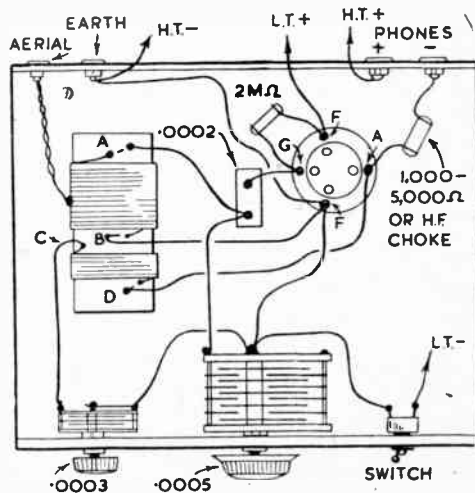


Fig. 2—Complete wiring diagram

If an air-spaced condenser is used for reaction, assure the moving and fixed plates do not touch with the control knob in any position. If the plates touch, a short circuit will be formed through phones and H.T. battery and the former may be damaged. This is why solid-dielectric condensers are usual for reaction purposes, in addition to their being cheaper than the air-spaced type. If to hand, a capacity of .0005 is equally suitable for reaction.

Wiring Up

If all the leads are put on exactly as illustrated in Fig. 2, no difficulty should arise. For battery leads, lengths of flex are used. These can be twisted together and taken through a single hole in the centre of the rear terminal strip. Take great care that the L.T. positive lead is never connected to the H.T. battery, or the valve may be damaged. If this point is observed, a valve will normally give many years of useful service.

If a coil with terminals is used, take leads to these. If a coil is to be wound as will be described, the ends may be left long enough to reach to the various parts in the set, thus simplifying wiring-up. Any type of insulated connecting wire can be used for all the leads.

Tuning Coil Winding

Fig. 2 also shows how the tuning coil is made. It is wound on an insulated tube which is fixed to the baseboard on two

small wooden blocks. The tube can be bought, or made from glued brown paper or thin cardboard. If the latter, allow to dry thoroughly, then varnish, to improve insulation.

All turns are wound on in the same direction, and the ends of the windings are anchored by being passed through pairs of small holes drilled in the tube. About $\frac{1}{4}$ in. space is left between the two windings.

The winding between (A) and (B) is the grid coil, or tuned winding, and that between (C) and (D) the reaction winding. An aerial tapping is made at approximately the centre turn of the grid winding, as shown.

As the number of turns depends upon the diameter of the tube, and other factors, and the constructor may have a tube or wire it is desired to use, the number of grid turns for various S.W.G. and former sizes are as follows:

Diameter of Former.	Wire	No of Turns
$\frac{1}{4}$ ins.	32 enam.	84
$\frac{1}{3}$ ins.	32 enam.	66
$\frac{1}{2}$ ins.	28 D.C.C.	94
$\frac{2}{3}$ ins.	28 enam.	60
2 ins.	28 enam.	50
$2\frac{1}{2}$ ins.	26 D.C.C.	70
3 ins.	24 D.C.C.	58

This is for the usual medium wave band of 200 to 550 metres. When using D.C.C. (Double Cotton Covered) wire more turns are necessary, as shown, than

with enamel covered wire. For the reaction winding, in each case, put on two-thirds the number of turns which are used on the grid winding. Actually, the number of turns on either winding is not critical, though variations from the figures given will alter the wavelengths which can be tuned.

Some household commodities are packed in containers formed from a cardboard cylinder with metal ends, and this is suitable for a coil former.

Using the Set

Almost any valve in reasonable condition will function, but for best results a detector type valve is necessary. The Osram HL2, Mullard PM2HL, and any of its equivalents produced by other manufacturers, is a good type.

Reaction should be used to build up the volume of weak stations, especially if a short indoor aerial is used. With a long aerial, tuning will be less selective. This can be overcome by reducing the length of the aerial, or connecting a small condenser in series with the aerial terminal of the set.

A similar effect can be obtained by connecting a few inches of insulated wire to the aerial terminal and twisting the lead-in of the aerial round this, assuring there is no actual metallic contact between the wires. Any ordinary medium or high impedance headphones are suitable.



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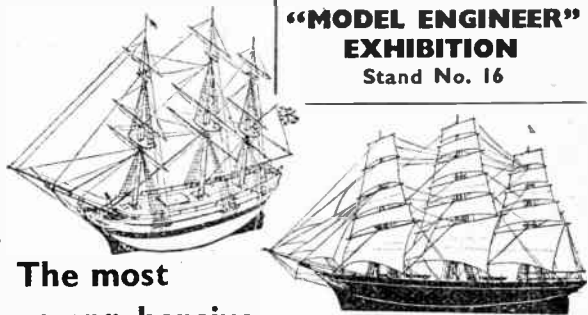
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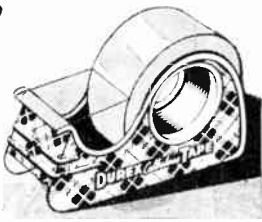
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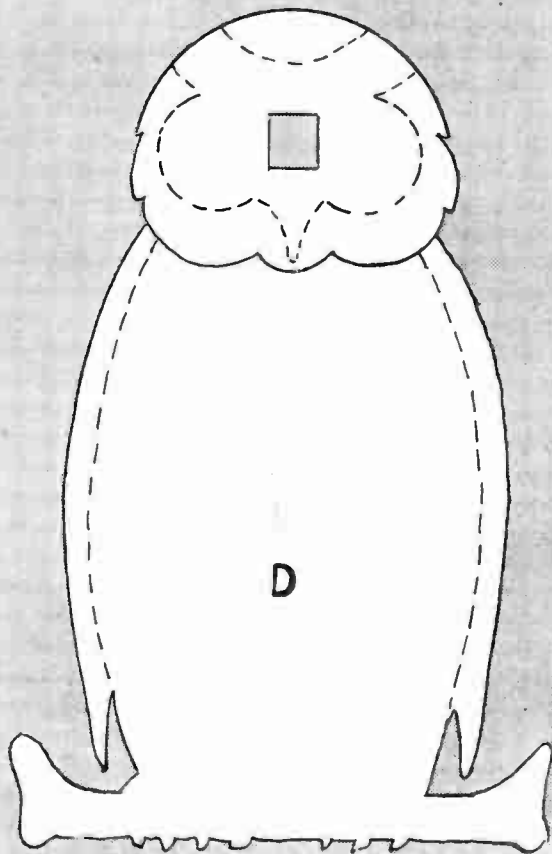
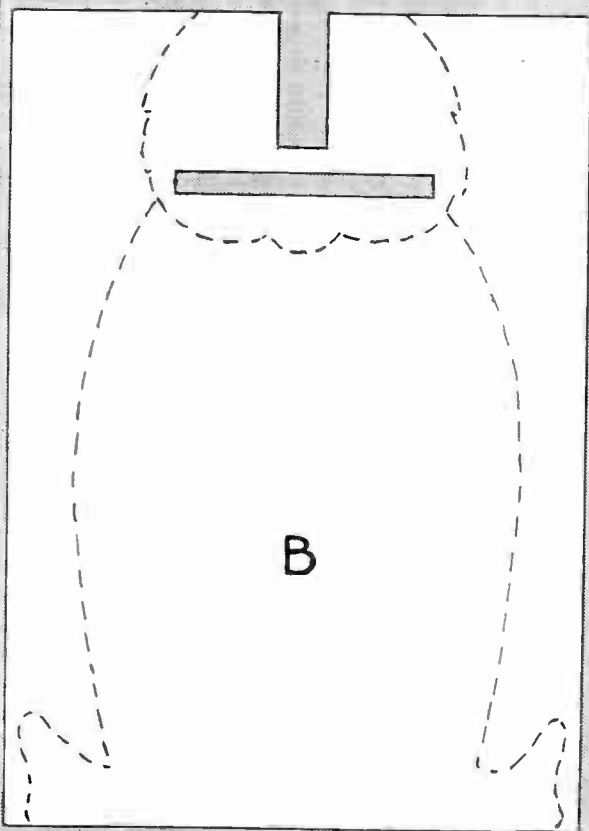
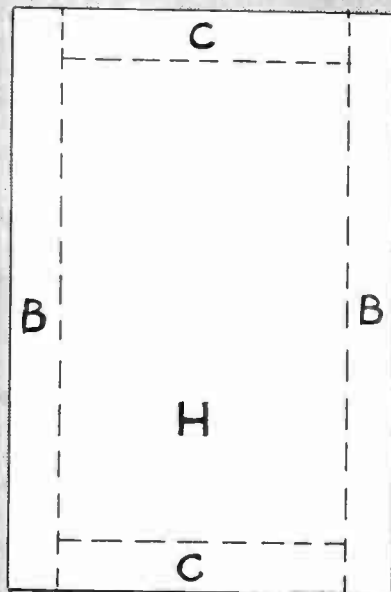
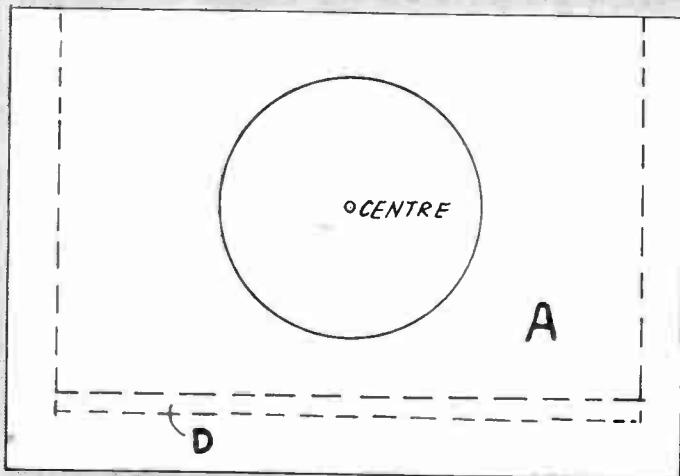
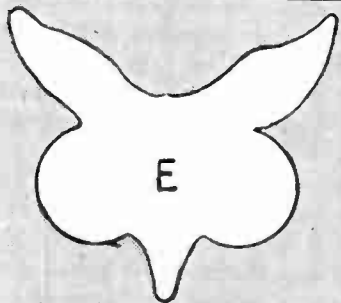
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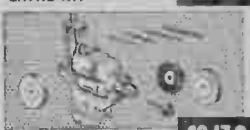
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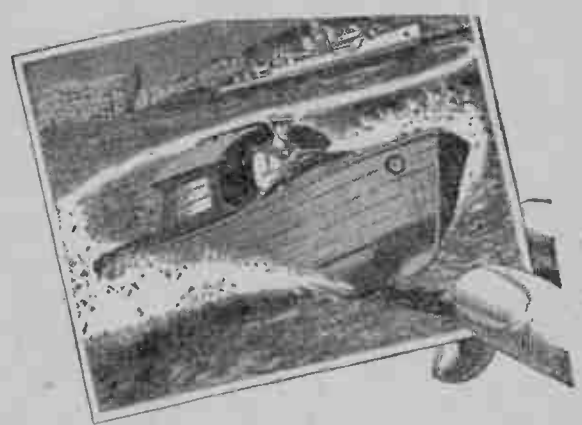
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August-16th, 1950

Price Fourpence

Vol. 110 No. 2859

A ROCKING CHAIR FOR LAWN OR ROOM

HERE is a very useful type of chair for use in the garden or on the lawn. It may be made up as a rocking chair or it could have plain ground rails as an ordinary armchair.

The chair stands 3ft. 2ins. high, 2ft. 5ins. wide overall from the outside of the armrests, and also 2ft. 5ins. from back to front, measured across the rockers. Beech or any other hard and close grained wood can be used, and the finish may be either paint or oil, the latter, if used, being well rubbed in and renewed at intervals.

In Fig. 1 we have a front view of the chair giving the various heights and spacings of the rails, etc. The side view (Fig. 2) is very helpful, as it gives all the necessary sizes from which to work when setting out the sloping back of the chair and the rockers.

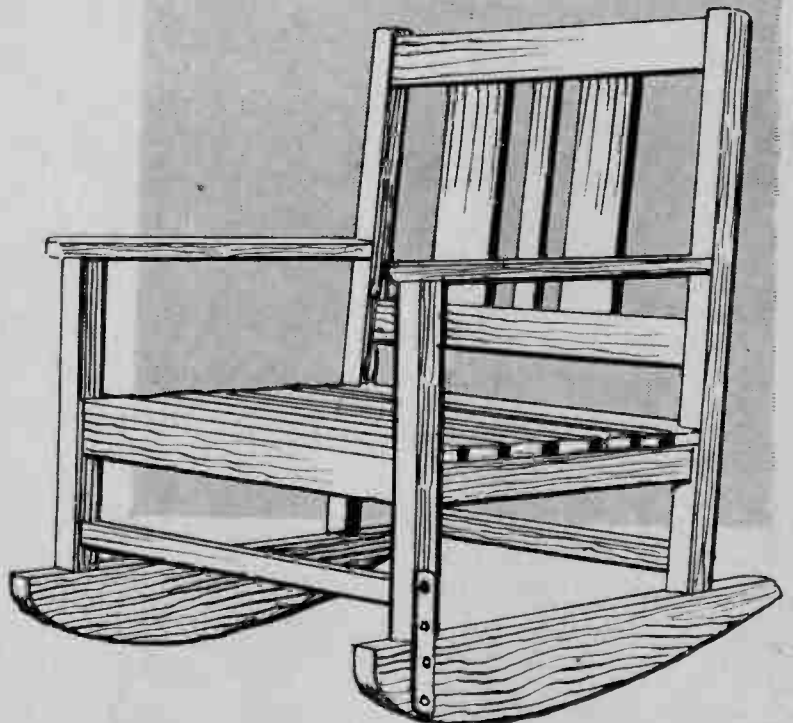
Framework

The two front uprights (A) should first be set out, and these are 1ft. 11ins. long. This measurement allows for a stub tenon on the top to fit into the arm rests, see the enlarged detail in Fig. 3. The lower end of the upright is tenoned into the rocker or the ground rail, whichever method is adopted.

In the side view of the chair (Fig. 2) is seen how the upright and rocker can be strengthened, indeed this is rather important, for the sake of firmness when rocking. A stout metal plate about 6ins. long is drilled in four places and screwed with countersunk screws as shown. The back legs (B) run at an angle with the top edge of the rocker

and must, therefore, be carefully set out. It would be best to set out the leg and the rocker full size to the measurements given on, say, a large sheet of brown paper.

Note the measurement of 2½ins. at the base of upright (B), from this, it will be seen the correct slope can be got. The length of (B) is 2ft. 11ins., which includes the 1½in. deep tenon at its foot.



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

If the ground rail is adopted, then the tenon will be 2ins. deep, and will run down, as in Fig. 4. The same remark applies to the front upright (A).

A mortise 1in. deep and 1in. wide will be cut in the two back uprights to

cut edges being nicely rounded and glasspapered smooth. Fig. 4 shows the method of framing each pair of legs into a ground rail. The latter is 2ins. deep by 1½ins. wide; that is, to the thickness of the leg. The legs are 1½ins. square.

and cut with the fretsaw. The laths or battens forming the seat 24ins. long are cut, spaced and screwed to the side rails (E) with brass countersunk screws. In the plan, Fig. 8, on the right-hand side is seen the six seat batten, and it will be noted that the extreme back and front one must be notched out to properly fit round the legs.

The left-hand plan shows the relative position and widths of rails in relation to

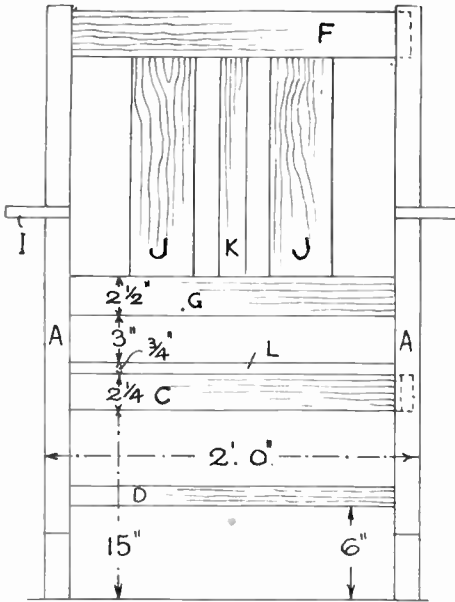


Fig. 1—Front view showing rails and back struts

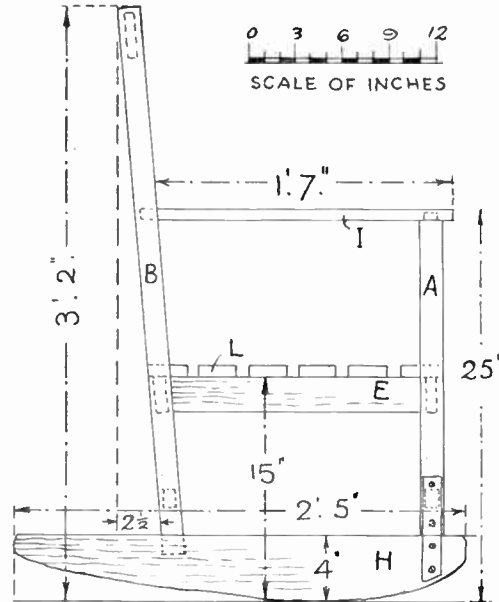


Fig. 2—Side view with shape of rocker parts

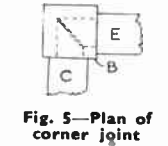


Fig. 5—Plan of corner joint

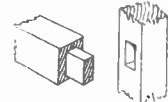


Fig. 6—Mortise and tenon



Fig. 7—Shouldered rail

take the ends of the arm rests, the tenons of which are shown in the upper diagram in Fig. 3. Mortises will also be cut in all four uprights to take the cross rails (C), (D), (E), (F) and (G) and where rails (C) and (E) meet in the back upright, the ends of the tenons will be cut to an angle of 45 degrees, as seen in the detail Fig. 5. The other tenons will be plain and look like that shown in Fig. 6.

The lengths of the various rails will be—(C) 23ins., (D) 22ins., (E) 18ins., and (F) 23ins. These sizes here given should not be adhered to strictly, but should be taken direct from the full sizes when being set out. The two rails (J) and the centre one (K) have their ends let into the cross rails (F) and (G), as shown in the two details in Fig. 7.

For the arm rests two pieces of ¾in. wood 20ins. long by 4ins. wide will be required. They will be shaped with the fretsaw to the outline given in Fig. 3, the

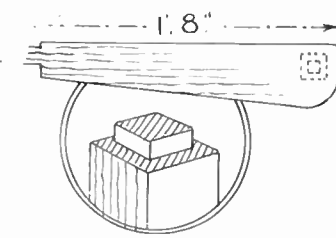


Fig. 3—Shape and joint of arm

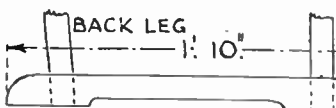


Fig. 4—Shape for ground rail

Note how the tenons on the four legs go completely through the ground rails.

The rockers are made to the dimensions given in Fig. 2, the curve being gently tapered towards the back

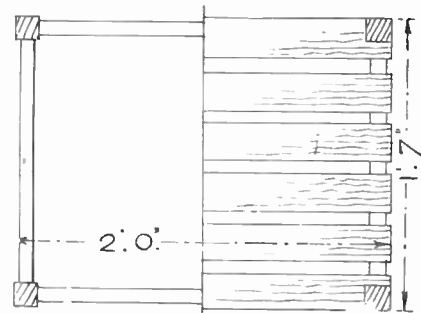


Fig. 8—Plan of half the seat frame and half the seat slats

the uprights. Included in Fig. 2 is a scale of inches—very useful as a means of finding certain sizes or measurements which it has been impossible to show clearly on the diagrams.

Wood Fillers

CAN you give me a formula for a wood and grain filler which can be brushed on? Some wood and grain fillers do not seem to penetrate the wood properly and flake off. (K.J.H.—Peterborough).

THE trouble you mention is a common one, sometimes due to an inefficient filler, and sometimes through not rubbing the filler well into the wood and afterwards wiping the surplus away. There is no brush filler that we are aware of.

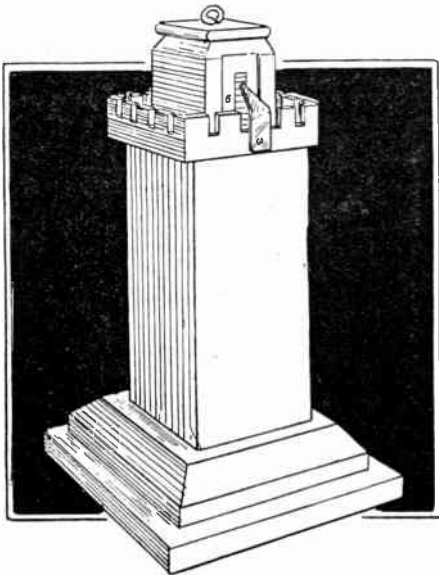
Parchment Making

COULD you tell me how parchment is actually made? I get rather interested when I come across these old trades. (F.S.—Aberdeen).

PARCHMENT is made from the skin of sheep, preferably those known as Hampshires. First the skins are washed and thoroughly cleaned, then limed for three or four weeks, again cleaned and then thickly split. They are then re-split along the fatty strata, and these fleeces are then tied

on frames, watered with hot water, creamed with whiting and soda water on both sides, and dried in a hot oven. The whiting is then washed off, and the skin is rubbed with pumice which is repeated several times. Finally the skins are rolled and dried. The work calls for specialised knowledge and dexterity to attain a high grade product, but practice on small pieces will be the best way of acquiring sufficient skill to turn out a useful (and rare) product.

Full size patterns on page 319 for this novel RADIO SAVINGS BOX



THE maintenance of a wireless receiver nowadays costs quite an appreciable sum yearly, what with the license, battery renewals, etc., so why not a box to hold, say, a weekly shilling to help in the matter? Here is a simple one, that has several points to recommend it.

It is self-registering for one thing, and is very difficult to pilfer from for another, having no coin slot into which a knife might be introduced, and the only method of opening being a tricky catch. For insertion or removal of the coins, the registering pillar has to be lifted out, and this proves difficult by anyone not in the know.

Box Parts

The parts of the box are drawn full size on the pattern page. Cut 2 of (A) in $\frac{1}{2}$ in. fretwood, then 2 of (B) to the full dimensions, and 2 to the dotted line dimensions, in $\frac{1}{2}$ in. wood. The latter parts are cut up the centre, and across, as shown, and then glued to (B), as at (J), in Fig. 1.

It is important to see the central channel, which is divided by cutting the cross channel, is in true alignment when glued in position, as the metal guide catch, fitted to the registering pillar, runs up it.

Upper Base

Base (C) requires 2, cut in $\frac{1}{2}$ in. wood. In one only, the top one, the two mortises are sawn out, the other is just a plain square. At this stage, the four sides of the tower, parts (A) and (B) are glued together. Now test to see the tenons on parts (A) fit the

mortises in the base.

All being satisfactory, glue the two parts (C) together and bevel the edges of the top one, that with the mortises cut out. Fig. 1 (K) shows the work at this stage, one side being removed to reveal the interior.

Lower Base

A second base (D) is cut, also from $\frac{1}{2}$ in. wood, and parts (C) glued to it. Then the tower is glued on, and the whole left for awhile for the glue to harden. It is then cleaned up with glasspaper. The battlement strips (E), 2 of each being required, are sawn out of $\frac{1}{2}$ in. wood. They are glued round the tower at the top, and stick up above it just $\frac{1}{2}$ in. This completes this part of the work.

For the registering pillar, cut 4 of (F) in $\frac{1}{2}$ in. fretwood. Take two of them and down the centre chisel out a groove, so that when placed together, face to face, a hole is left running down the middle, just large enough to admit a length of stiff brass wire, as at (L) in Fig. 2.

Pillar Shape

Test this with the wire, a 6 in. length of which should be cut and pushed down. The two parts can then be glued together. The other two parts of (F) are glued to this, either side, to make a square pillar.

At the top bevel off the square edges to conform to those already bevelled during the cutting. On one face of the pillar cut a shallow groove, $\frac{1}{8}$ in. deep and $\frac{1}{2}$ in. wide, into which the scale, which is cut from paper, can be glued. The whole should then be as at (M) in Fig. 2.

It may be mentioned here that the pillar could be made of 2 pieces $\frac{1}{2}$ in. thick wood, if wood of that thickness is available. When the glue is quite hard, the pillar should be well glasspapered until it fits smoothly in the tower, and can be raised or lowered quite easily.

It should be well tested, and if satisfac-

tory, cut the square (G) from $\frac{1}{2}$ in. wood, round its edges and glue it to the top of the pillar. A hole is bored in the centre of it, to let the brass wire enter. See that this hole is placed directly over that in the centre of the pillar. To the bottom of this the catch guides is fitted. This part (H) on the pattern page, is cut to the shape from stout sheet brass, metal about $\frac{1}{8}$ in. thick or a little more. A hole to admit the brass wire should be drilled through it, exactly in its centre.

Adjustment

The catch guides is pushed on the wire, and is soldered to it, as at (O) in Fig. 3. Make a secure fixture here, as there must be no danger of a twist of the wire breaking the catch off. It may be necessary to enlarge the entrance to the hole, at the bottom end of the pillar to allow the catch to lie flat on it, so do this job with a few turns of a counter-sinking tool, just enough to admit the fillet of solder on the catch.

The top of the wire, above the pillar, is now bent to form an eye, as shown at (N) for lifting and twisting purposes. Now try the pillar in place, the side guides on the catch should slide easily in the channels in the tower.

Tower Action

At (K), in Fig. 1, a view of the tower is given, one side removed, to show these channels, and how necessary it is for a smooth action, to get them in true alignment vertically. The trickiness of the catch will then be apparent, as it will be impossible to pull the pillar out, until the catch is given an $\frac{1}{8}$ th of a turn, when its guide projections will disappear under the pillar, as in detail Fig. 3, which can only be done when the pillar is raised to the exact height which will just bring the guides in line with the horizontal channels in the tower.

The whole can now be varnished, stained as well if thought desirable. In the groove of the pillar glue a strip of

(Continued foot of page 308)

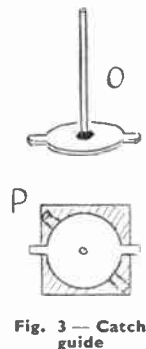
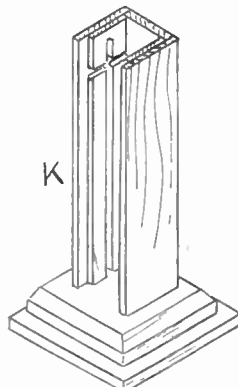


Fig. 1—General construction of main column

Fig. 2—Grooved pillar and wire

Fig. 3—Catch guide

There's lots of fun to be obtained by making A SIMPLE BOOMERANG

THIS simple but extremely efficient boomerang can be made in less than half an hour at a cost of a few pence. With practice, you can throw it to describe a flight circle of almost any radius, returning to hand each time. Furthermore, the same layout is effective for smaller or larger models, if required.

The boomerang itself consists of nothing more than two cambered wooden blades lashed together at right angles with a rubber band. Balsa wood is recommended for the blade material, since this is very light and relatively strong, besides being easy to shape to section. Also since the boomerang is light, it is not likely to hurt anyone should it accidentally strike them whilst in flight.

The Two Blades

Make two blades 12 ins. by $1\frac{1}{8}$ ins. from $\frac{3}{16}$ in. balsa sheet which can be purchased in stock sizes, usually 3 ins. in width. A 1 ft. length of stock sheet will thus make two blades. These blades must then be sanded to a cambered section.

Note the two diagrams showing normal direction of rotation of the boomerang for right- and left-handed persons. Blade camber should be adjusted accordingly, so the thicker part of the blade is always nearest the front or leading edge of the longest arms of the boomerang. This will give best results.

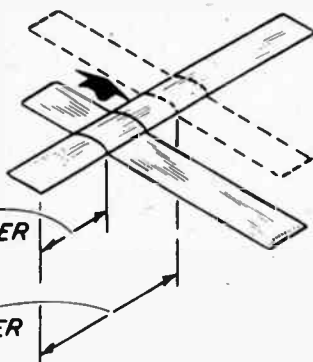
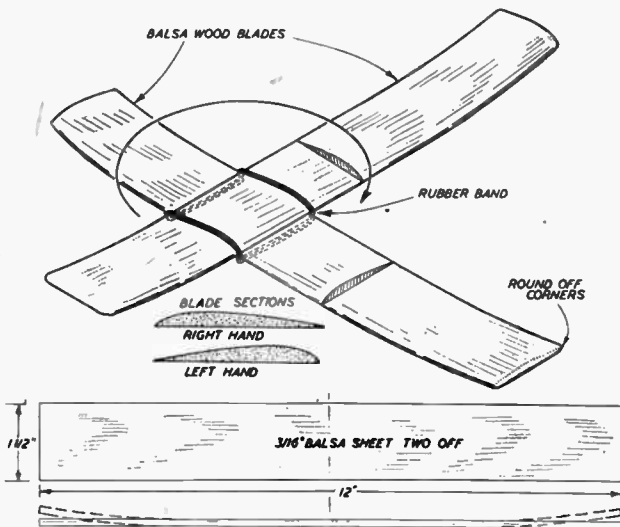
Blade section is actually not all that critical. You can simply sand in a symmetrical camber on top of the

blades, with the thickest point at the mid section, if you wish. This will give best results when your boomerang is adjusted for large diameter flight circles, when the two blades are positioned in the form of a true cross with each leg of identical length—seen in the bottom of the diagrams.

Each blade should be given roughly $\frac{1}{4}$ in. upsweep or dihedral at each tip. To do this, simply hold the finished blade in the steam issuing from the spout of a boiling kettle and bend upwards to the desired curvature.

Lash the two blades together, as shown, with a rubber band so they are at right angles with the long legs of the boomerang roughly twice the length of the shorter legs. Hold one of the shorter legs between the thumb

and the length of the longer legs to open up the circle. Adjust launching power accordingly. The upsweep or dihedral on the blades is to eliminate sideslipping and so a bad flight is almost certain to be due to a bad launch.



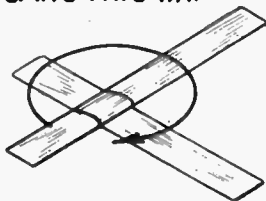
For indoor work you can make a very much smaller boomerang, keeping to the same blade proportions. In these the blades should have an aspect ratio of about eight. This means, simply, that the length of the blades should be eight times the width, and both blades, of course, must be of the same size.

Indoors

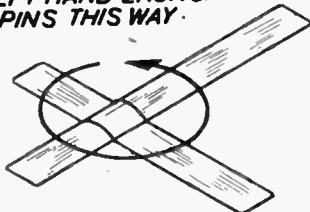
An 8 in. boomerang works very well indoors, when blade thickness can be reduced to $\frac{1}{16}$ in. Outdoors, an 18 in. boomerang can be lots of fun, this time using a blade thickness of $\frac{1}{4}$ in. Larger sizes still are practicable, but we would then advise using a stronger and heavier material for the blades, as it will be impossible to throw a large light balsa boomerang with sufficient force for a lengthy flight.

The main secret of success in all cases is plenty of practice. Then you can astound your friends with the skill you have so acquired. (229)

RIGHT HAND LAUNCH-
SPINS THIS WAY



LEFT HAND LAUNCH-
SPINS THIS WAY



SMALL FLIGHT
DIAMETER

LARGE FLIGHT
DIAMETER

and forefinger and throw the boomerang forward with a spinning motion.

In Flight

It should describe a circular path, returning to somewhere near the point from which it was launched. Practice launching, adjusting the amount of spin given until it will return exactly to the launching hand.

To vary the diameter of the flight circle, increase the length of the longer legs to reduce the diameter or decrease

Savings Box—(Continued from page 307)

stiff white paper or thin card. Cut the pointer (I) from thin brass and screw it to the top of the tower, bend its pointed end inwards to nearly, but not quite, contact the scale. At this place make a mark across the scale.

Now raise the pillar until the guides

can enter the horizontal channel, preparatory to lifting out, and there make a second mark on the pillar. This mark will be the place to lift the pillar to when inserting or removing the coins.

Between these two marks divide the scale into $\frac{1}{16}$ in. divisions (the thickness

of a shilling) and number them. Owing to the small space available for numbering, it is suggested that each 5 divisions only be marked, i.e., 5, 10, 15, 20, and so on. For making, one panel of $\frac{1}{4}$ in. wood 7 ins. by 14 ins., and one panel, $\frac{1}{8}$ in. wood 4 ins. by 9 ins. will be required.

On the beach or at the picnic entertain friends with CAMP CONJURING

It is a great mistake to imagine that conjuring tricks are only useful in winter. After a picnic lunch, while everyone sits round for a bit, is an excellent time to do a little 'leger-demain' for the amusement of your friends, while in camps there are quite a lot of opportunities to help in this way.

Although oft-repeated—do know your tricks inside out before performing and remember that half the effect lies in your patter. Also remember that people will always look to where you are looking.

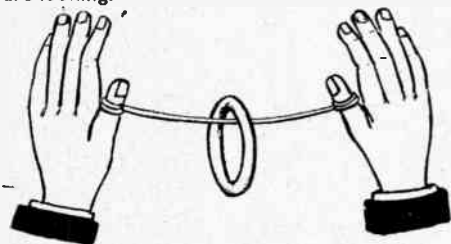


Fig. 1—Cord and bangle trick

Thus, if you want them to watch your hands—look at these intently yourself. If you do not want them to watch your hands, fix your gaze on (and talking draw the attention to) some quite different item.

Now for the first trick. You pass round for inspection a plain bangle such as can be purchased very cheaply at a chain stores. Everyone sees that there is no break anywhere. Next you ask to have your thumbs tied tightly to either end of a length of cord, Fig. 1. The ring is given to you, holding it you turn your back, say the magic word, and facing your spectators again show it threaded on the string.

Here is how it is done. To get the ring the people have examined on to the string would, of course, be impossible, but you have a second and identical ring which previously you have slipped up your forearm.

While turned away you get rid of ring number one in any convenient way—a poacher's pocket in a sports jacket is useful, or it can be dropped into the inside breast pocket—and at the same time you shake down ring number two on to the string. This trick is very effective.

Another good trick is to bring a cigarette out of your elbow. While cigarettes are being handed round you say that a conjurer has his own way of getting them. First show your hands are empty. Then raise your right arm, bending it at the elbow to a sharp angle with the hand resting on the shoulder, and carefully rub the point of the elbow with the left hand.

Nothing happens, and dismay is registered. You say that you must be working on the wrong side and so drop

the right arm and bend the left, rubbing the elbow with the right hand. Delight spreads over your face as you produce, apparently from the joint, a cigarette which you proceed to light.

The trick here is that a cigarette was pushed up under the collar of your coat on the right side just where it goes over the shoulder and is tight-fitting. You raise the right hand and while rubbing the elbow (and drawing the attention to it) work the cigarette into the right hand (which is resting on the shoulder).

Now you reverse the action and rub the left elbow with the right hand which holds the cigarette, the realistic production of which is easy.



Fig. 2—Sixpence placed over finger tip

someone to put the other two, one to each hand, against the folded fingers, as shown in Fig. 2.

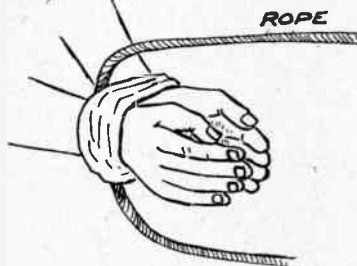


Fig. 4—The loop of the trick

Say you are going to do a little magical transference, make a quick movement of the hands and shake off the top sixpences. 'Oh, I have dropped them', you say, 'will someone please replace?' This is done. Another movement of the hands, which are kept well apart, and opening the fingers you show three sixpences in the one hand and only one in the other.

Sleight of Hand

This is real sleight of hand, but extremely easy to do. When you apparently drop the two top coins, what has really happened is that you dropped the two from one hand but took the coin on the other fingers into the palm. The fallen sixpences are replaced and opening your hand you are able to show three in one hand and only one in the other, one having seemingly jumped the gap.

A handkerchief appearing from thin air is always a popular trick and it can be done as follows. If made of silk, a

handkerchief can be rolled into a very small space and be so held as a light little pack with a pin or rubber band. This can be hidden in the creases of a coat arm at the inside of the elbow, if the arm is kept slightly crooked. The hands are shown empty.

You pull up your sleeves in pukka magician fashion (talking the while) and in doing so take the rolled-up handkerchief into the palm of the hand that pulled up that sleeve. Cup the hands and rub them together. In this way the rubber band or pin comes away and the silk spreading, the handkerchief can be 'blossomed out' from your apparently empty hands.

A Cord Trick

Finally, here is an effective little trick. Get someone to bind your wrists together with a handkerchief, after which let them run a length of cord through your bound arms as Fig. 3, two people standing to either side, holding the ends. A third person now must drape a large handkerchief or other piece of cloth over your hands. You say magic words, movements go on, and with your wrists still bound you shake clear of the rope, which is still held by the assistants.

The trick is shown by Fig. 4. Under the laid-over cloth the middle of the cord is worked down through the handkerchief (which can always be loosened a shade by a steady pressure of the wrists) to the palms as (B). Once made, the loop can be pulled to quite a big size and passed over one of your hands on the outside as (C). A quick jerk how and you are disengaged from the cord, having performed the apparently impossible.

Of course, you will not leave these tricks until you want to perform them, but practice beforehand to make perfect. (225)

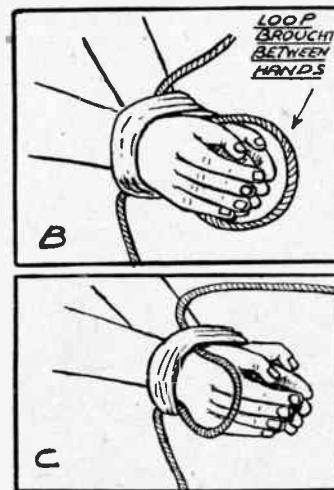


Fig. 3—The cord over tied wrists

Keep your friends intrigued by making the ARMOURED CAR PUZZLE

It cannot be said that this armoured car is on the secret list, but what, to the uninitiated is 'hush-hush', is the way in which it is assembled. It consists of a number of wooden parts, all interlocked. The secret is rather subtle and by no means obvious, especially if the parts are well made and accurately fitting.

A first glance at the diagrams may give the impression that everything is terribly complicated, but, actually, the mass of dimensions only serves to make things easier. The joints involved—lapped halvings—are the simplest of joints to make.

It is possible to make the model twice the size indicated, and if the puzzle is intended to be given to children as a plaything, it is as well to make it as strong as possible. On the other hand, it can be made half the size given. Though stripwood is specified, plastics may be used, especially for the Connectors (part 4) which tend to be a bit delicate.

Base Grooves

The base (1) is 9-ins. by $1\frac{1}{2}$ ins. by $\frac{3}{4}$ in., one part being required. On the top face cut grooves $\frac{3}{4}$ in. wide and $\frac{1}{2}$ in. deep, starting 2 in. from one end and $1\frac{1}{2}$ ins. from the other. These grooves are then divided into three $\frac{1}{3}$ in. divisions and the outer thirds chopped away. As with all other joints, they must be dead accurate and nicely smoothed with glasspaper, wrapping the paper round a suitable stick and using like a file.

Two of the sides (part 2) are required but it is most important to note that these parts must be 'handed' (see Fig. 2).

If cut alike (as 2 in Fig. 1) they would not have outside vertical grooves as in Fig. 2. They are cut from 8-in. lengths of $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. stuff. On the wide side, cut two $\frac{3}{4}$ in. grooves, $\frac{1}{2}$ in. deep as shown, starting $1\frac{1}{2}$ ins. from one end and 1 in. from

the other. As an extension of these grooves on the inner side, cut a $\frac{1}{4}$ in. by $\frac{1}{4}$ in. groove right across.

Parallel with these is another groove, also right across, $1\frac{1}{2}$ in. wide and $\frac{1}{2}$ in. deep on the under side. At right angles to this (i.e. on the other wide side), make a groove $1\frac{1}{2}$ ins. wide and $\frac{1}{2}$ in. deep. Chop off the corner, as shown in the sketch, and this part is finished.

Four uprights (part 3) are required, cut from $\frac{3}{4}$ in. square stripwood, $2\frac{3}{4}$ in. long. The grooves are $\frac{1}{2}$ in. deep. The corner can either be rounded off or chopped off straight (as seen in the assembly drawing). It is an advantage to clamp these pieces together and trim them up together so that they are all alike.

Two connectors (part 4) are required of $\frac{1}{2}$ in. square stripwood, and are shaped somewhat like dumbbells except that the rounded part is not central (see 4a). This rounded part is $\frac{1}{4}$ in. diameter. As will be explained shortly, the whole puzzle depends on this part.

As the middle part is rather delicate, it may be a good idea to make this part from plastic or even of metal but in this case, the guns (part 6) and the wheels had best be made of plastic or metal too, so as not to draw undue attention to the connectors.

One turret (part 5) is required shaped from a piece of 3 in. by $1\frac{1}{2}$ in. section wood, $3\frac{1}{2}$ ins. long. By studying the assembly drawing and also the side pieces (part 2), one can see how the inverted T-shape of the bottom of the turret interlocks. A $\frac{3}{4}$ in. diameter hole is bored for the guns.

The guns (part 6) are either turned on a lathe or whittled down from $\frac{3}{4}$ in. diameter dowel. It will be seen that in the case of the fore and aft guns, the square part is gripped between a pair of uprights (parts 3). The guns for the turret are not dimensioned separately but they are in one piece, at either end of a piece of $\frac{3}{4}$ in. dowel. This part does not interlock and is simply pushed in, friction tight, in the hole in the turret. The wheels are not interlocking either, but are

simply cut from $\frac{1}{2}$ in. plywood and screwed on with round-headed screws. It would not be much extra trouble to interlock these and the turret guns, but there is no point in describing a too-complicated model.

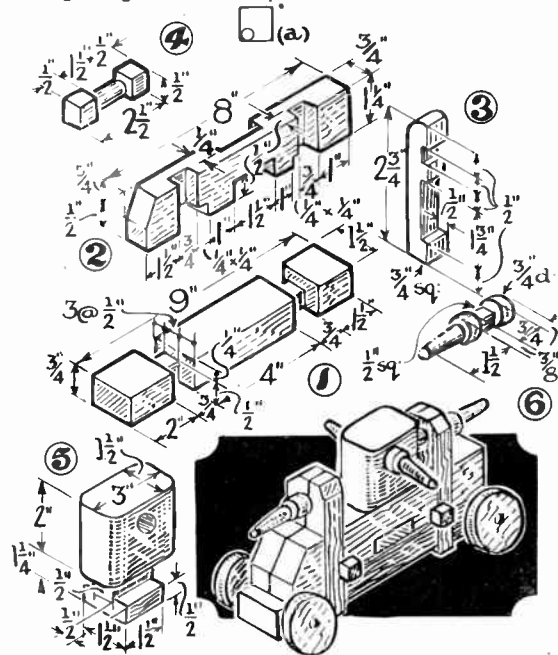


Fig. 1—The parts needed and the assembled puzzle

Lay the two side pieces together as in Fig. 2 but with the turret piece clipped between them. (Incidentally in fitting together, minor adjustments will probably have to be made.) Turn the base the other way up to that shown in the drawing. Stand the three parts just assembled upon it, slipping in the two connectors. Keep the square heads of these turned so that the vertical channels are clear and then press on the uprights.

Before these are right 'home' however, slip in the fore and aft guns. The connector heads are then turned and the whole job is locked together. The turret guns are simply pushed through the hole.

In showing 'how it is done', the turret guns are pushed out and, by implication, the would-be solver is led to believe that the connectors are pushed through. Even if, as is likely, he finds that they turn a little, he may attribute this to a little looseness in fitting and it does not immediately occur to him to give the heads a turn through a half circle.

The small sketch (Fig. 3) shows how the heads may be tapered off so as to afford very little finger grip. Apart from the interest in this model, it is an excellent exercise in cutting and fitting.

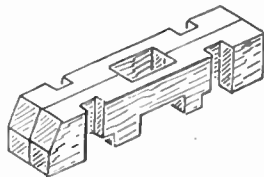


Fig. 2—Left and right side pieces

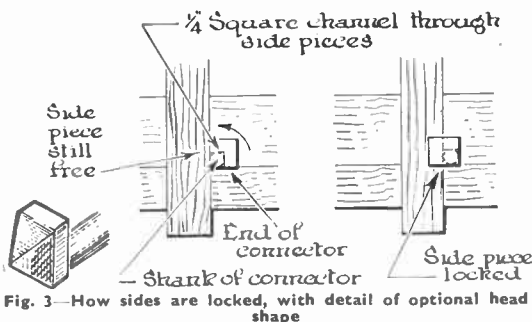


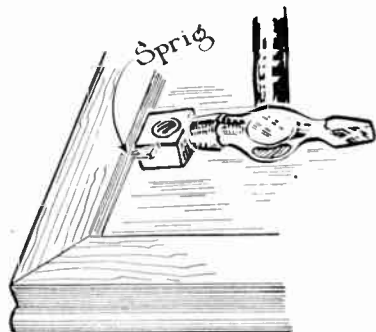
Fig. 3—How sides are locked, with detail of optional head shape

Here are some practical time and labour-saving IDEAS for the HANDYMAN

A Picture Framing Hint

IN a properly framed picture, the glass, picture and plywood are held in place, at the rear, by 'sprigs'—small wedge-like headless nails—which are driven into the frame.

They should, of course, lie in the same straight line as the backing, and in order to drive them in thus, one has to move the head of the hammer over the backing of the frame, and tap very carefully otherwise the glass will crack. It is not always easy to catch the sprig as it



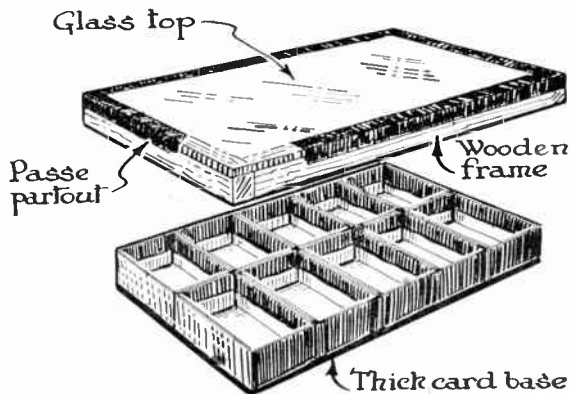
lies flat against the wood with the circular head of the hammer.

Here is a very simple dodge to obviate this trouble. Just get a metal nut—about 1 in. square—and hold it against the sprig. Then tap the opposite end of the nut, and in goes the sprig.

Sprigs are very cheap, but when one needs merely half a dozen, it seems a waste to buy several dozen which may all be lost before they are needed again. A good substitute is used gramophone needles.

A Useful Matchbox Tray

AVERY useful tray for sorting postage stamps, rubber type for printing sets, small screws, clock parts, etc., can be made from the trays of matchboxes, preferably those of the 'Vesta' type. The tray can be as large or as small as one desires.



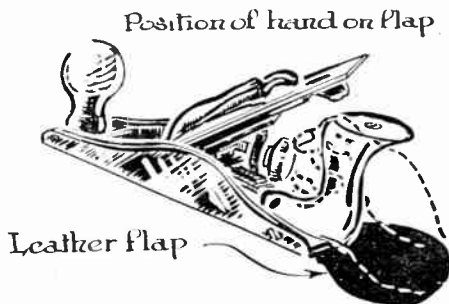
Glue the trays on to a sheet of plywood or stout cardboard, and glue the sides of the trays as they are assembled. The result is quite a strong job—not so 'kiddish' as you would think.

A glass-topped or transparent cover can also be provided, as shown. First make a wooden frame to slip over the nest of boxes, and fix on the glass top by means of *passee-partout* binding. The wooden frame need not be quite so deep as the matchboxes. The top then 'sits on' under its own weight and is dustproof. A sheet of plastic would be even better, if transparent, as it is not so likely to break under workshop conditions, as glass.

A Planing Hint

WHEN using a small iron plane of the type illustrated, it will sometimes, though not invariably, be found that the little finger side of the hand rubs against the wood being planed. When much planing is being done, this causes soreness. There is also a danger of pinching the hand.

The handle cannot be tilted forward because there would not be room for the hand, whilst if the sole of the plane was extended rearwards, the plane



would be too long for a short smoothing plane. Of course, this fault is not found in *all* planes.

The remedy seems to be to make the handle higher, but this is a question for the manufacturers to solve. In the meantime, a simple device will prevent sore hands.

Remove the handle of the plane by unscrewing the bolt which holds it down. Then cut a piece of thin leather (from an old gauntlet glove, for instance) to the oval shape shown. Replace the handle so that the flap is held down and you will have a leather flap on which the hand will rest as it planes, thus preventing actual contact between the hand and the wood.

Save Those Negatives!

CAMERA shutters are now clicking merrily, and the D. & P. merchants are working overtime. What happens to the hundreds of thousands of the negatives of these snaps? Some, it is true, deserve to be destroyed at sight, but the others are well worth keeping carefully, not only as mementos of a jolly holiday but as interesting records.

Moreover, who knows that among your old negatives there may be just



the sort of print that will pull off a prize in one of the many competitions?

Most people buy an album of sorts for their prints but the negatives are usually cast away in some drawer to get scratched, damaged and finally lost. If a particular one is wanted, a lengthy search must ensue.

Buy a packet of cheap envelopes, (or save used envelopes if you are thrifty) and from the corners cut out a cover that will contain your negative. This cover will, of course, be open on two adjacent sides. Number each negative, on the dull side margin, with pencil or ink, and number the cover in the same way.

You can make a long wooden box as shown to take these envelopes. A cardboard boot box can also be adapted to suit. Finally, a register is needed, to facilitate the location of any negative. This need not be very elaborate. A school exercise book is all that is required. It is ruled into columns for the

number of the print, the title and the date it was taken.

In the illustration, a box for *square negatives* is shown, this being the shape used by the writer of these notes, but, obviously, a box of suitable size to take *ones negatives* is made. The lid merely swivels round, though if a dust-proof lid can be managed, this will be an advantage.

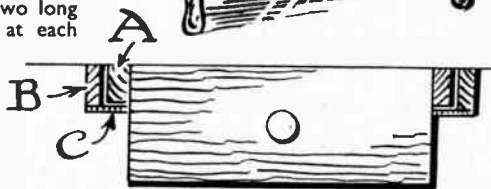
Getting a 'Pram' Upstairs

IT is good to note that in many new blocks of municipal flats, pram 'garages' are being provided. In many homes, however, young mothers who live above the ground floor have to haul their baby's carriage up a staircase—an awkward and tiring job.

One husband of inventive turn of mind found a way to overcome most of the difficulty. He obtained two long planks of wood, and laid them at each side of the staircase. They thus formed an inclined plane at each side on which the wheels of the 'pram' could rest, but leaving a clear space in the centre of the staircase so one could walk up it in the usual way.

The planks were held in position by hinging them to the treads of the stairs. When they are not in use, they are turned upwards, vertically. Arrangements are made to keep these hinged

planks tied or buttoned back when not in actual use to prevent accidents caused by anyone not familiar with their presence.



This plank-incline cannot, of course, be taken round corners and bends in the staircase, but usually the greater part of the staircase consists of a straight flight.

As the planks are painted to match the stairs and balustrades; the whole arrangement is by no means unsightly. The hinges are neatly screwed so when the 'pram' is no longer required, the runways may be removed leaving very little trace behind.

Good Use for an Old Chair

IN many homes there is an old chair, usually minus the back, hanging around. Why not turn it into something definitely useful such as the boot cleaning stool shown here?

On the top fix an inclined board by means of two sloping blocks and at the lower end of this fix another smaller block to prevent the shoe slipping off. The board may be covered with a piece of lino if you have a piece handy.

To the underside of the top of the stool, a drawer is fixed to take the shoe-cleaning materials. You may already have a wooden box holding the brushes, etc., so there is probably no need to make a drawer especially.

The smaller drawing shows how the drawer is fixed. A strip of wood A is screwed each side, to the upper outside edges of the drawer, whilst another two strips B and C are joined together to form an angle, and in turn are fastened to the underside of the stool.

Fix a knob to the front of the drawer and there is your boot-cleaning stool ready.

From The Editor's Notebook—

SOMETIMES get asked by individuals for clubs or firms to recommend the name of a craftsman who can undertake the making of first-class models or toys. A number of names and addresses are already on my register, but maybe there are among the new readers some who would like to have their name added. If so please let me know. You must realize, of course, that the standard of work must be very high, for the satisfaction of yourself and the purchaser of the article. It would, perhaps, help if you could also send a small specimen of work (which would be immediately returned) so I could enter in the suitable category. The worker's ability must cover making and finish—not only good workmanship in construction, but nicely completed with paint or stain, or whatever is usual. Real good model makers can often earn a little in this way, and I shall be glad to hear from any willing to undertake work should occasion arise.

FROM the ingenious ideas and suggestions put up to me from time to time by readers, I know many of them are potential inventors of all manner of gadgets and devices. They will thus probably be interested in the suggestion to form an Inventors' Club, which has been mooted by Mr. G. F. Kaye, of 59 Princess Court, Queensway, Bayswater,

W.2. He is very keen on making gadgets himself and believes a co-operation amongst kindred spirits would be to everyone's advantage. The proposal is intended to encourage the inventive genius which is probably lying dormant for lack of opportunity and knowledge. This appears to be the chance to advance both, and it is hoped to arrange meetings, committees, officers etc.—all on a businesslike footing. A nominal charge of 2/6 for membership is being made, and no doubt readers interested will get in touch with Mr. Kaye for membership or further details.

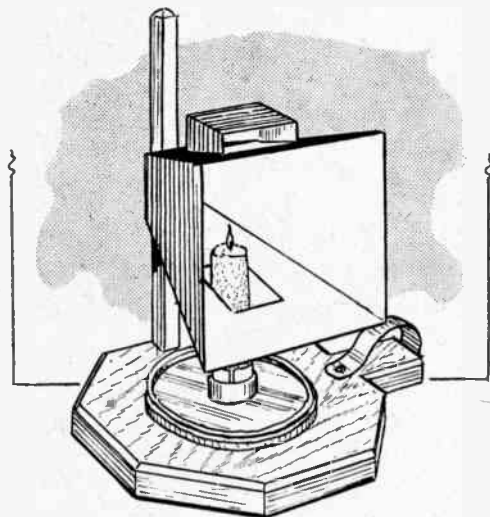
ARE you interested in keeping a formicarium? No, it is not something terrifying, or noisy or messy—just a community of ants in a glass case! And there is more in it than you might imagine, as 15-year-old Tom Walker of Woodfield Avenue, Accrington, has discovered. The colony live in a narrow layer of soil between two pieces of glass and sealed at the sides in the same way. With a magnifying glass you can thus watch the astounding activities and communal life of the ants living inside. There are water stores, food chambers, and even a well defined cemetery. Tom indeed asserts that the ants even have a funeral procession in paying their last respects. The grave is dug by the

workers who spray the corpse with formic acid, which prevents fungi forming and hastens decomposition. Well, well! By the way the name formicarium is simply a derivation of the Latin 'formica'—belonging to ants. So there is another interesting hobby if you want one!

WHAT a pity it is there is at present no possibility of those large design sheets and models we published before the war. I still get a large number of requests for them, but unfortunately most of them are out of print. On the other hand, some fortunate pre-war readers still have their copies and many have made up those wonderful large London Models of St. Paul's, the Tower Bridge, Buckingham Palace, etc. One such reader is Mr. W. C. Wilkes, of Cheltenham Road, Paulsgrove, Portsmouth, who spent 21 consecutive evenings (including Sunday?) in making our Model St. Paul's Cathedral (Kit. No. 240 Special). This was his first architectural model although he had previously completed galleons and the popular Stage Coach. He would like to continue with Buckingham Palace if he could get hold of a design.

The Editor

A handy article for bedside use is this CANDLE READING LAMP



THIS style of lamp was deservedly popular some years ago, but the advent of electricity seems to have forced it into the background somehow. It is a pity, for many people still have to use a candle for bedroom lighting, and the habit of reading in bed has certainly not lost its popularity. A home-made example of the lamp is illustrated, the comparatively feeble illumination being concentrated by the reflector to give a passable light on the printed page, and lessen the strain on the eyesight.

It can be made from the simplest materials, requiring only a piece of some hardwood, 6ins. wide and 7½ins. long, with a scrap of fretwood, and a small sheet of tinfoil. The base, A in Fig. 1, is cut to the octagonal shape shown from the hardwood, a thickness of ½in. being suggested.

The Pillar

In the centre of this a disc of the fretwood is glued and pinned. At B is shown the pillar on which the reflector slides. It is a strip of wood, ½in. square with a ¼in. by ½in. tenon cut at its bottom end. Where shown on the plan view of the base, cut out a ¼in. by ½in. mortise for the pillar and glue it in place. Complete this part of the job by working a ¼in. chamfer on the edges of the base.

Several parts are now shown in Fig. 2 grouped together. For the candle holder C, get a press lid from any conveniently sized tin, about 3ins. in diameter. A piece of 1in. wood rod is required (a piece of broomstick would serve) ¾in. long. Reduce a ¼in. of this at the top to ⅜in. diameter, bore a hole down the centre for a fixing screw and provide a tin disc the same diameter to rest on it, also with a central hole, as at D. This forms the lower part of the candle socket.

For the upper part which grips the candle, cut a piece of tin to size at E, bend round to a circle and nail to the top of D. Probably the end edges of this will not quite meet together, but that will not matter in the least. Now punch a hole in the centre of the press lid, put candle socket on and drive a screw through the lot, including the tin disc of course, into the centre of the lamp base.

Reflector

For the reflector a pattern must be made. This is given in Fig. 3. All four sides of this are alike as regards dimensions so those given will apply to the rest. Draw this pattern on thin paper and gum it to the sheet of tinfoil. Lay it on a piece of hardwood and cut out the square holes in two of the sides with a cold chisel.

The shape can then be cut with tin snips or with scissors, though in the latter case the scissors will probably need resharpening afterwards. Note that two narrow (¼in.) laps are left on two opposite sides for joining up. Now soak the paper pattern off in hot water and dry the tin.

Bend the sides to an angle of 60 degrees, hammer the tops over at right angles and solder to the other sides. About ½in. of the front edges is bent over and hammered down to thicken the edges of the front, the sharp cut edges not being advisable here.

The Light Guard

For the light guard at the top of the reflector, cut from the tin a shape shown at F, in Fig. 2. Bend at the dotted lines to right angles, bend over the ½in. laps each side, and solder to the top of the reflector to cover the ventilation hole.

A simple fitting is now required for sliding the reflector up or down the pillar. For this cut another piece of tin to the size at G, in Fig. 3, and bend it round three sides of the pillar. This part should be soldered to the back of

the reflector and be bent as may be necessary for it to grip the pillar tightly enough for the reflector to stay in whatever position it is slid to. A little careful adjustment here will ensure a smooth action.

The Handle

For a handle, cut another piece of tin to the dimensions given at H, in Fig. 2, allowing ¼in. each side for lapping over. Hammer these laps down flat, then bend the tin to the curve seen in the general view, and fix to the base with two screws.

Now take all metal parts off the base and give the latter a coat of oak stain, and then two of clear varnish, or such other finish as most suits the particular wood employed.

The outside of the metal parts should be enamelled any colour preferred, the metal being cleaned with soap and soda water beforehand to remove dirt and

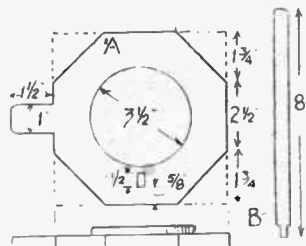


Fig. 1—The base and pillar

grease, such as may have accumulated by handling during the work of cutting and shaping. Test the fit of the candle in the socket, and bend, if necessary, to ensure a good grip.

All being quite satisfactory, rescrew the metal parts to the base. The top of the pillar, by the way, should be rounded off a little to improve its appearance.

The lamp can now be tested and should give a good ray of illumination, the reflector being moved until the flame of the candle is approximately at the centre of the reflector. The reflector is shifted lower down as the candle burns lower.

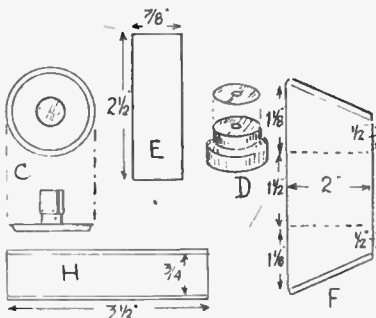


Fig. 2—Various parts for the holder

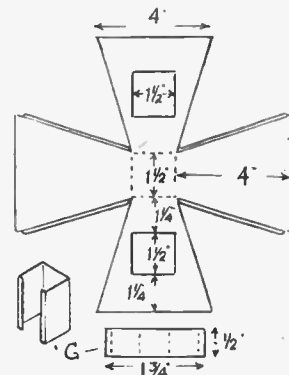


Fig. 3—Reflector and slide shapes

How the amateur electrician can undertake TWO-WAY SWITCHING

In old type houses and, unfortunately, in some of those of more modern construction, the lighting installations are not of the most convenient kind. One opens the front door at night and has to grope around the wall at the far side of the hall to find the switch, or walk up a dark staircase to switch on the landing light. Such inconveniences can easily be overcome by installing two-way switching, and at very small cost.

Safety Rules

Before beginning electrical alterations of any kind it is essential to take every reasonable precaution. Do not in any circumstances work on a live circuit. Always switch off at the main service

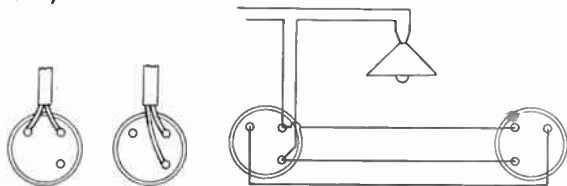


Fig. 1 — The two positions

Fig. 2—One-way to two-way switch

switch or draw the circuit fuses. SAFETY FIRST must be the rule.

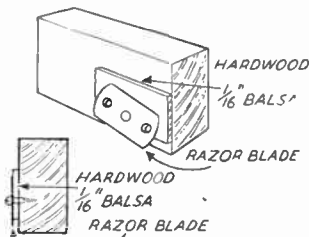
There are also rules governing the generation and supply of electricity in this country laid down by the Institution of Electrical Engineers, and the first of the regulations reads:—'Good workmanship is an essential compliance with I.E.E. regulations'. Do not be contented with a 'lash-up' wiring system or with cheap fittings. Careless wiring may cause a fatality.

Conversion Procedure

A conversion to two-way switching is so simple that it can be made by any amateur at very small cost. All the requirements are: two two-way switches, two switch blocks, a length of 3 way 3/32 or 1/18 cab tyre or metal covered cable long enough to run from the old switch

Model Aeroplane Hint

If you have run out of strip balsa like $\frac{1}{16}$ in. square, procure a piece of hardwood about 2 ins. by 1 in. planed, and about 3 ins. long. Get a piece of balsa $\frac{1}{16}$ in. sheet, 36 ins. long. Drill two holes



position to that of the new switch, and clips to secure it.

It may be necessary to run down the wall and along the wainscote or the corner between the floor and the wall, allowance must be made for such deviations.

First remove the one-way switch and the old wall block and discard them. When the original switch is removed, it will be seen that the two switch wires are in a horizontal position relative to one another. These must now be moved to a vertical position so that one is above the other, as shown in the diagram, Fig. 1.

In most cases two wires will be found twisted together in one of the terminals. These should be left as found, for one of the wires is a loop in from another point and must not be disturbed.

Fix the table clips securely in position at intervals of not more than 9 ins.

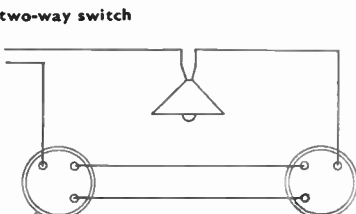


Fig. 3—Normal two-way switching

to take the three cable wires, the holes being marked through the terminals with a small bradawl. To secure the wooden wall blocks it is advisable to plug the wall and use two thin $1\frac{1}{2}$ in. screws. One screw only usually allows the block to twist when the switch is in use.

Colour Cables

A triple cable has distinguishing insulation colours or a coloured cotton running through with each wire. The two-way switch has three terminals with contact screws. Place the red wire of the cable in the position of the original switch wire now moved to the vertical position and place the original two wires in the other two terminals each twisted together with one of the wires of the new cable as shown in Fig. 2.

It should be understood that this method of two-way wiring described is a conversion only, that is, an expedient to overcome a difficulty. If entirely new wiring was being installed a triple cable would not be necessary, the wiring

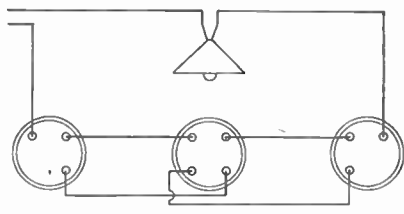


Fig. 4—Two-way and intermediate switch circuit

apart, and then fix the cable in position. When a deviation has to be made at right-angles the radius of the bend should not be less than $1\frac{1}{2}$ ins. If a corner has to be turned, then care has to be taken not to make too sharp a bend or the insulation may crack. It is advisable to chip the corner off the wall, just enough to take the cable at a gentle radius.

The switch blocks can then be bored through end holes in razor blade, into hardwood, have blade pointing down one end slightly. Put a piece of $\frac{1}{16}$ in. balsa in between razor and hardwood. Put two screws through razor blade and through $\frac{1}{16}$ in. balsa, and tighten. There is your tripper. You can cut your strip $\frac{1}{16}$ in. sheet up.

Attaching Railway Wagons

HERE is a tip for attaching toy railway wagons together. Get as many hook and eye fasteners as are required. Nail one of the eye fasteners to the back of the wagon, and nail one of the hook fasteners to the back of another carriage.

would be run and the connections made as shown in Fig. 3.

In some positions where two-way switching is already installed there may be a long passage with another door between the ends at which it would be convenient to have an intermediate switch. This can be installed by fitting a specially constructed intermediate switch and wiring it to the existing two-way switches as shown in Fig. 4.

Earthing

To conform to the I.E.E. regulations metal cable casings must be earthed. At the switch ends of the cable twist a piece of bare copper wire tightly round the metal sheath and connect the other end of the wire to the metal conduit of the service wiring. Where there is a metal switch box it is easier to connect the bare copper wire to earth by clamping it under one of the cover screws.

Earthing difficulties can be avoided by using twin rubber covered cable. This will last many years before showing signs of perishing. Metal covered cable is much more durable and, if properly run and carefully connected, it is absolutely fireproof. Do not ever leave anything to chance.

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How to get real pictorial value and interest in your HOLIDAY "SNAPS"

It is interesting to note that some of our seaside resorts are again running photographic competitions with good money prizes to encourage visitors to use their cameras to advantage. A glance at the literature, which is obtainable on application to the Information Bureau or by request to the Town Clerk of the Corporation, reveals the use of suitable slogans.

For instance, Southend says 'Make Your Camera Pay For Your Holiday' and a similar kind invitation is presented by Eastbourne. It is just possible that the town you are spending or have spent your holiday in is also organizing something on the same lines and would like to have your co-operation in making their advertising a success.

The Reason Behind

The scheme is obviously advertising but not only with the idea of influencing you to visit their town. No one thinks that a photographic competition could possibly carry much weight in that direction. But the publicity department of any place is very concerned to find what the visitors really enjoy most in what is offered them in amusements, sports, scenery, etc. Therefore, every print sent in for the competition is of some value to the authorities, and good use is made of the winning pictures in connection with Official Guides, Posters, etc.

It was recently our good fortune to receive an invitation to an exhibition of prints sent in for one of these com-



The Old Inn at West Wycombe

petitions. As a result of the many surprises experienced, together with some of the specimens seen, we decided to contact readers of *Hobbies Weekly* at an early date and to tell them 'what to do and what not to do' when competing in such a contest.

Disappointing Entries

The winning prints, together with about 100 others were well displayed on the walls, but the remainder were in a pile on a large table. The rules of this competition were extremely simple. Prints could be mounted but this was

not necessary. They could be printed by the competitor or by the chemist or dealer round the corner. Size was immaterial. In fact, the only real condition was that the exposure had to be made in the town and before a certain date.

In conversation with one of the judges the writer learned that so far as the number of entries was concerned the competition was a success. But it was most surprising and very disappointing that the great majority (between 70 and 80 per cent of the entries) were without any pictorial value or what might be termed 'topical' interest.

In view of this judgment the writer was determined to have a look at the 'throw-outs'. But first let us give views on the winning pictures. The 'First' was a very charming figure study. Perhaps study is rather overdoing it, for it was probably just a chance happy snap, of a kiddie playing with spade and pail on the sands. The photographer had waited for the right attitude and expression and, for the right splash of sunlight. The 'Second' was a delightful tree subject with correct lighting for shadow effect and backed by some beautiful clouds. Apparently these two gave the judges their hardest task in deciding which should be awarded the first prize.

All the other winners were quite good examples of thoughtful camera work. They included various types of subjects, many of them typical of what the town offered for the enjoyment or amusement of its visitors. Consequently they appealed to the authorities for future publicity work.

It is doubtful, however, if any print would have been accepted for either of the Royal or London Salon Exhibitions, for although they were very good, they were not outstanding either in originality or pictorial quality. Every one, however, showed careful thought in selection, posing, composition, mounting and 'clean' presentation.

What a contrast to that pile on the large table! No wonder the judges did not trouble to display these on the walls. Quite frankly they did not warrant a second look. It was a surprise to think that anyone should waste time in sending such stuff in or even spend any

money on producing such prints.

There were specimens of almost every fault; stains, movement both of camera and figures, sea horizons running uphill, finger markings, bad trimming and mounting, and plenty of incorrect exposures. Apart from this carelessness it was also surprising to find so many duplications of certain subjects which seemed to indicate that the persons



Excellent Holiday Scene at Blakeney, Norfolk

never moved very far from one spot.

There is no better way of learning and achieving improvement in this hobby than to enter such a competition. Do not get the idea that you are up against better and more experienced workers and that you, therefore, stand no chance. That is a fallacy and it is bad for you to have such a thought, as it definitely tends to cramp your outlook.

Competition Demands

So, if you can enter any competition, please do so and put all you know into your effort. Make sure of the exposure and be careful to note the best position before making the exposure. Be clean in the manipulation of the print, i.e., trimming and mounting. As regards the latter part of the work, do try to leave a rather wider margin at the bottom to include a title written in pencil as neatly as possible.

Some may think all the prizes go to those who make enlargements but this is not quite true. Obviously, if an amateur considers his result is worth enlarging he must have got something that is good. So he will take extra care to make his entry really attractive to catch the judges eye. But it does not follow that a prize will be gained. A small contact print can possess originality and good pictorial quality and will thus compel attention in the judging.

Well, having given some hints on how to, or how not to, select and finish an entry for a competition, you would, perhaps, like to have a few regarding the choice of subject.

You will have realised already that as the competition is being organised by

the corporation it is a form of advertising in connection with the effort to popularise the town as a holiday resort. Secondly, you as a visitor are, in a sense, being asked to let them know, by means of your hobby, what items have attracted and interested you most during your stay in the town.

What is Wanted

Were they the natural beauty spots, places of historical interest, sporting events or amusement centres? These and any other subject will quite naturally have a strong appeal to you on account of your camera work. For, if you are keen, you will always be on the lookout for snaps to take home as mementoes of a pleasant holiday.

Quite a number of visitors, who are not photographers, take back a few picture postcards but the results you collect are or should be something rather better. If that thought is in your mind every time you make an exposure, you can be assured you are doing exactly what the corporation want you to do and your entries are bound to have the judges consideration.

A good Wave Study is always desirable in a holiday collection but it must be a picture of a wave and not of a crowded beach as well. Choose a suitable spot with a full view of the wave breaking against rocks, or with a glorious splash on the sands and do not

forget to include some clouds. Fishing Boats should be snapped just when they are being hauled in or being got ready for taking the water. In either case try to include some of the fishermen in the picture; they make it.

Landscape Suggestions

A Landscape should if possible include a farmhouse or a church or other building well known as one of the beauty spots of the neighbourhood, but before taking the view make quite sure you have selected the best position from a pictorial viewpoint. Always remember that a few yards to the right or left may have the advantage of a better lighting on one or more of the principal details. Of course, the lighting is extremely important, wherever trees happen to be a feature. A country lane on a sunny day makes a charming study if there are some tree shadows across the path or roadway.

Country Scenes

Pastoral Scenes should have consideration, especially if there is a stream or pond in the make-up, and a few cows, some grazing and others lying down. Such a scene is also enhanced if a five-barred gate can be included or, perhaps, a rustic bridge across the stream.

Beach Scenes can be very disappointing and extra care is needed to make such look pictorial. If it is a small sandy

beach situated below cliffs it might be possible to climb out on to some rocks at one end and so include the whole of the beach with a background of cliffs and rippling waves in the foreground. A sailing craft near at hand will help and again do not forget the clouds.

Buildings

Some of our seaside resorts possess very fine buildings such as Town Halls, Churches, Bandstands and possibly one or two very ancient and historic edifices. Any of these is worth a little attention. As a rule they are in a busy part of the town, so early morning may prove the best time for the exposure. If the Parish Church is architecturally beautiful you should certainly try one or two interior studies, but get the Vicar or Verger's permission to do so.

These few suggestions of subjects should enable you to make quite a good collection of negatives and, doubtless, other ideas will present themselves when you are on the spot. The great point to remember, whether you intend to enter a competition or whether you are only making use of your hobby, is that every exposure you make is an aid to your memory of a jolly fine holiday. By keeping a print of each in an album you will be able to live that holiday over again and again in years to come. It will form a book for a pleasant half hour of memory later on.

Some Helpful Replies of Interest—

Animal Models

I AM considering the possibility of making life-sized birds and small animals, but find it difficult to find suitable materials. (C.E.H.—Paignton).

THERE is no cheaper material than sawdust for modelling, and glue is the least expensive of the adhesives. The result leaves much to be desired as a modelling medium, and we do not think you will find anything really more suitable for your purpose than the Pyruma you mention. The most economical method of using this is certainly not to model with the medium solely. Instead, make up a core of rough wood, chiselled to the shape crudely, of course. The core should leave room for about $\frac{1}{2}$ in. of Pyruma to be modelled over it. If a few tacks are driven in, leaving the heads sticking up about $\frac{1}{8}$ in., the Pyruma will not be likely to break away. See the core is quite dry before applying the Pyruma, or else escaping steam may crack the model.

Caravan Painting

I AM building a caravan of aluminium, and dural sheets, and have been told that if I paint it, the brush marks are bound to show. Would you please tell me if this is right? (A.W.E.—Rochester).

THE composition of some of these aluminium alloys makes them troublesome to paint often; about the

best plan is to wash over with strong soda water, then to apply two or more coats of undercoating. On this, apply the paint, giving a second coat if necessary. Any brush marks can be usually removed by carefully rubbing over with powdered pumice stone on a felt pad, using a little water as well. When dry, coat with a clear cellulose varnish. It would be as well to test the paint on a spare panel of the metal first. You might enquire as to the most suitable paint for the job before undertaking the work. Broloc is to be recommended.

Nesting Box Position

I INTEND to place in my garden, a blue-tit nesting box. I understand this box should be placed at a certain height and in a certain position. Could this height and position be given, please? (W.J.M.—Ewell).

YOU should place the nest-box on the ivy-covered bough or trunk of a tree, or upon the bark of a tree, not less than 6ft. above ground level, and not more than 20ft. above ground. The entrance should not face direct south sunshine which would enter the entrance hole, nor should it face due north or north-east to receive cold winds, nor in the direction of the prevailing winds of your district. The box should be placed away from noisy buildings where the birds would see people near them, away from

bird-tables or other places where sparrows would be common all day, and out of the reach of cats. The entrance hole should not be more than $1\frac{1}{2}$ ins. wide, or even $1\frac{1}{4}$ ins. If the birds do not use the nest-box this year, leave it in position so they will be accustomed to it and possibly use it next year.

Cycle Light Control

KINDLY let me know how to make the time-saving process of switching both front and rear light together on a cycle. (E.B.W.—Aberdeen).

AN arrangement whereby both rear and front lamps operate simultaneously from a battery in the front lamp, is sometimes found. No battery is used in the rear lamp, but the screw holder of the bulb is in electrical contact (via the fixing bracket, etc.) with the cycle frame. The front lamp bulb holder is similarly in contact with the frame, and an insulated wire is run from the 'pip' contact of rear bulb to the same contact of the front bulb. When the front lamp is turned on, both bulbs then light together. If the front lamp is not intended for such purposes, the necessary contact from the pip of the front bulb, can be obtained by twisting an insulated wire on to the brass strip of the battery which engages with the bulb when the battery is inserted.

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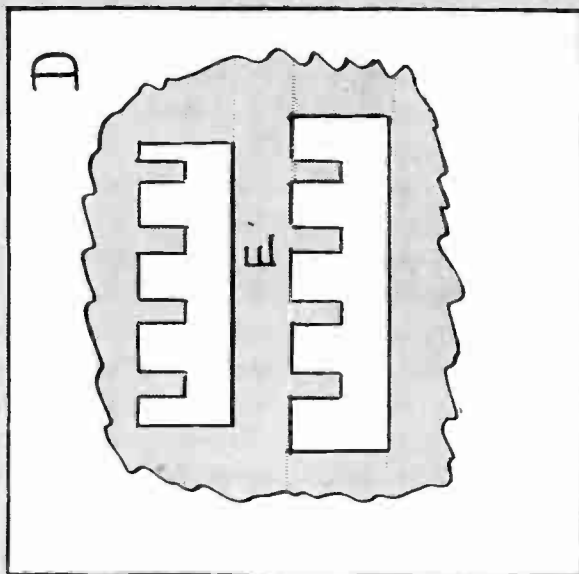
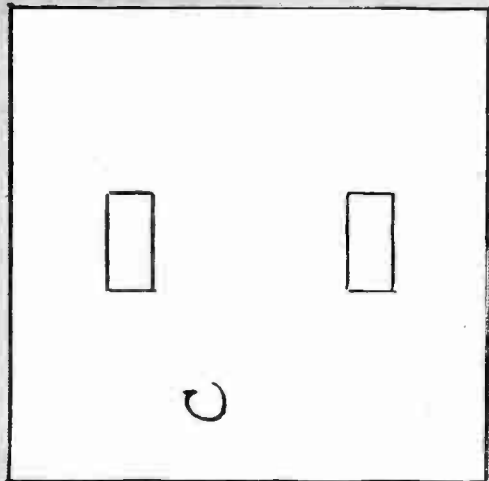
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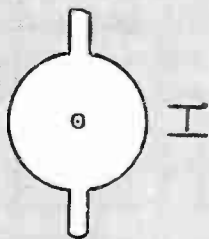
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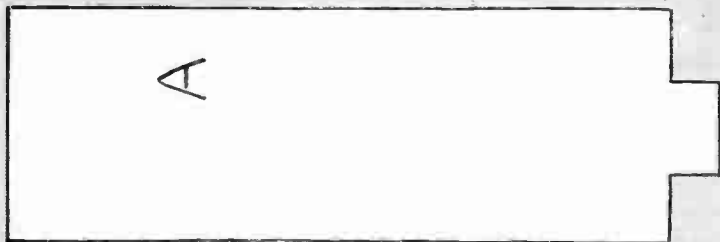
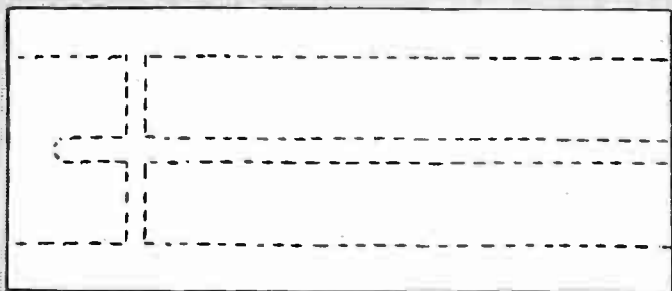
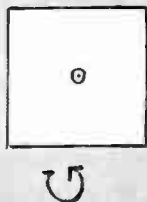
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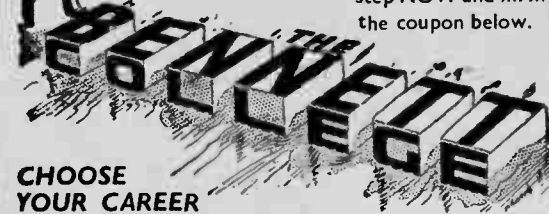


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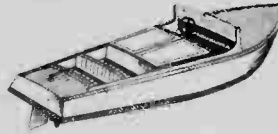
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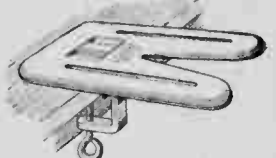
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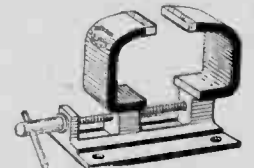
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SUPPLEMENT DESIGN FOR TABLE NEWSPAPER STAND	

August 23rd, 1950

Price Fourpence

Vol. 110 No. 2860

An easy-to-build elastic driven MODEL SPEED BOAT

THE thick square-sectioned elastic sold for model aircraft-making can also be used to drive a model boat. An elastic motor can be fixed to almost any type of hull, but it is best suited to the ordinary shallow draught speed boat. The model described below will run for several minutes, and is certainly a simple enough model to make.

Light Hull

The hull could be carved from a solid block of yellow pine or balsa, but in both cases it would be necessary to spend a

considerable time in hollowing out the hull. For a combination of lightness and economy in wood it is preferable to make the hull on the 'built-up' principle.

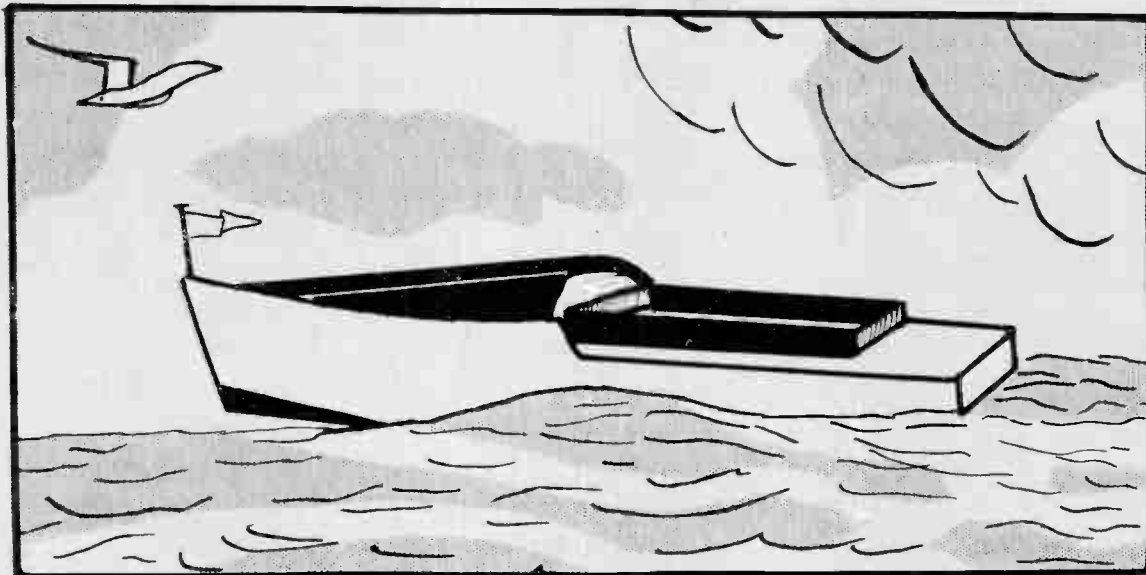
The base and deck piece are each cut from a piece of $\frac{1}{4}$ in. thick wood measuring 1ft. 3ins. long by 4ins. wide. The shape of these is shown at Fig. 1, and it will be seen that from the bow the side curves out gradually to its maximum width at 8ins. from the tip, and then falls back gradually to the stern which is 2ins. long.

To make certain of getting the correct shape it is advisable to draw the outline on a piece of paper and to paste this to

the wood in the manner of a fretwork pattern. The two pieces of wood can be sawn at the one time if they are tacked together temporarily. The cockpit opening (measuring $6\frac{1}{4}$ ins. by $1\frac{1}{2}$ ins., and which is also shown on the drawing) is cut out with the fretsaw on the deck piece only.

Bow and Stern Blocks

The edges of the base and deck are thoroughly glasspapered, and they are then fastened together at bow and stern by two shaped blocks $\frac{1}{4}$ in. wide, the bow block being $1\frac{1}{2}$ ins. and the stern block



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

$\frac{3}{8}$ in. deep. These blocks are shaped to fit flush with the edges of the base and deck, and are glued and nailed into place. A view of the partly assembled boat at this stage is given at Fig. 2.

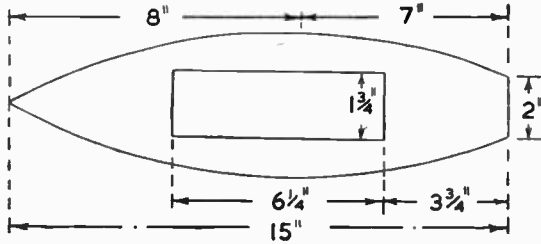


Fig. 1—Plan of bottom and deck

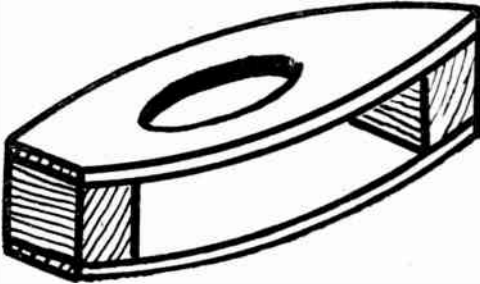


Fig. 2—Showing hull construction

The essential measurements of the sides (which are of $\frac{1}{8}$ in. plywood) are shown at Fig. 3, though the drawing is not true to scale. After being cut to shape and glasspapered, they are fixed round the hull with glue and very fine brass nails, their lower edge being kept flush with the bottom of the base.

When the glue has dried the entire hull should be glasspapered and then made watertight by being given a coat of red lead both inside and out, followed by two coats of ordinary enamel.

A $\frac{1}{8}$ in. wide strip of $\frac{1}{8}$ in. plywood is fastened round the inside of the cockpit opening, flush with the bottom edge of the deck piece. This lining strip should not be enamelled, but should be stained and lightly polished with furniture cream.

The Propelling Mechanism

Two pieces of fairly stout strip brass $\frac{1}{8}$ in. wide will be needed for the brackets, one piece being $3\frac{1}{2}$ ins. and the other $5\frac{1}{2}$ ins. long. The shapes to which these must be bent are shown at Fig. 4, with a sketch of their finished appearance. The

bending of the brass will be found quite a simple matter if a shallow cut is made with a file on the inside of the bend. Holes for the small fixing screws and for the hooks that hold the elastic must be

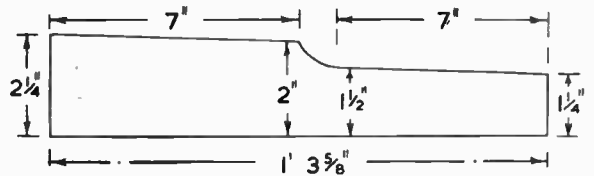


Fig. 3—Dimensions and shape of side pieces

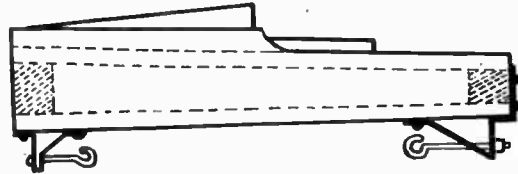


Fig. 5—Sectional view with driving hooks

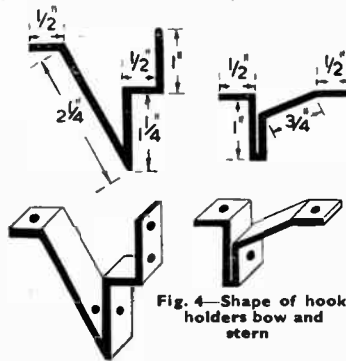


Fig. 4—Shape of hook holders bow and stern

drilled in the brackets. These have been shown on the drawings by means of small black circles.

The brackets must then be screwed into place, using two screws on the bow bracket and three on the stern. They should be carefully positioned and the holes pre-drilled for the screws. Their position is shown on the section of the boat given at Fig. 5.

The hooks between which the elastic is stretched are made from stout brass wire. A fairly large loop is made at one end of each piece of wire, then the bow hook is passed through the holes at the bottom of the bow bracket and is burred over on the end to keep it in place.

Before fixing the stern hook the propeller should be prepared. This is cut from a piece of thin brass or tin measuring $1\frac{1}{2}$ ins. high by $\frac{1}{8}$ in. wide, its shape being shown at Fig. 6. The

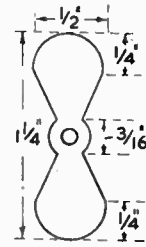


Fig. 6—Propeller size and shape

propeller is given a slight 'pitch' by twisting it throughout its length so that as it spins round the vanes strike the water at

an angle to the centre line of the hull. Or you can purchase a propeller ready made and shaped.

If possible, the propeller should be soldered into place. To do this a short brass sleeve is soldered to the propeller, then the sleeve is slipped over the shaft and soldered there. It is also a very good idea to thread a small glass bead over the shaft between the propeller and the stern bracket, as this will minimize the friction there.

Model aeroplane elastic, $\frac{1}{8}$ in. wide and $\frac{1}{32}$ in. thick, should be used for the motor. Six strands of this will be needed, all strands being looped between the brass hooks beneath the boat. To keep the elastic in good condition it should be wiped over with glycerine, this treatment being repeated at weekly intervals.

This completes the speed boat, but a rapid-winding device can be made by soldering a small hook into the end of an egg-whisk. The hook has simply to be slipped between the rubber bands and the handle of the egg-whisk turned to wind the rubber motor. (235)

Painting

WHAT is the best type of paint for painting galvanized iron on out-houses? Also how may I treat boarded floors on the ground floor to keep them from rotting under linoleum? (C.M.—Co. Cavan).

YOU can paint galvanized iron with a special paint made for the purpose. Enquire at your local dealers. If not obtainable, remove rust with a scratch brush, wash over with weak muriatic acid to provide a grip for the paint, and then paint with a good quality outdoor paint of the usual kind. The boarded floor should be thoroughly cleaned and

coated with creosote before the linoleum is laid. Before coating a damp wall with distemper, remove all the old lime wash, and when as dry as possible, coat the wall with Granger's solution.

Smoke Ejector

WOULD you tell me what kind of material I could use which would slowly smoulder and emit a fairly slow smoke? (J.C.—Dun Laoghaire).

WE suggest you experiment with narrow lamp wick soaked in lubricating oil, the surplus wiped off or wrung out, and then steeped in salt-

petre. When dry, this should act in the manner of a slow match and emit quite an amount of smoke.

Model Aeroplane Dope

I HAVE purchased an aeroplane constructional kit, and I would be obliged if you would tell me how and why dope is used. (N.H.—Co. Cork).

DOPE is used to stiffen the fabric to cover the wings of the aeroplane, and cause it to resist the pressure of the air currents which otherwise would tend to retard a successful flight. It can be applied either with a brush or by spraying.

See the motorist light the signals in this novel ELECTRIC RACE GAME

WE have no doubt that many readers are connected in one way or another with the various activities to reduce the high accident rate on our roads. For them the electrical race game shown here will have an added attraction. Of straightforward construction, it embodies an interesting wiring system which automatically operates red lights at certain points round the track.

It is arranged for two players, and as their mascot cars race each other round the board they encounter squares marked with the danger signs similar to those we meet on the road, and which it is now the duty of all of us to observe more fully.

When a player's car alights on one of these squares his red 'stop' light comes into operation. There he must stay until he throws a 'road clear' reading on the specially adapted dice, whilst his opponent races ahead until he too gets similarly held up.

The Principle

The playing board forms the lid of a shallow case, into which all the parts go when not in use. This board is ruled into two sets of 1in. squares, and each player moves his car round his half of the board according to the number he throws at his turn with the dice. The player who completes his journey first

wins the game, but the obstacles are so placed that it is difficult to say who the winner will be until the game is finished.

Two flat-headed screws are fixed through the board in each of the danger squares, with their heads just flush with the playing surface. These screws are wired into the two circuits in such a way that when both of any pair are joined, one of the circuits is closed and one bulb lights up.

The model cars are fitted with metal bases which can close this gap and so light up the player's 'stop' light if the luck of the dice causes him to alight on one of these squares.

Materials Required

Plywood is best if available, though stout cardboard reinforced at the corners can be used if preferred. The dimensions and the wiring given allow for a board measuring 18ins. by 12ins., with 75 one-inch squares to each half of the board, twelve of each half being fixed into the wiring circuit.

These dimensions can, of course, be varied to suit the reader's own preference—the principle of the lighting remains the same. Care should be taken, however, to ensure that both halves of the board are kept identical, so one does not become easier to play on than the other.

In addition to plywood for case, lamp standards and mascots, the only other requirements are the torch battery

and two bulbs, two small pieces of lead for the base of the cars, and a few feet of copper wire. An ordinary dice and shaking-up box can be procured from any fancy goods shop, or easily made up by the handyman if preferred.

Bare copper wire may be used if care is taken to ensure it does not touch any adjacent strand. This, naturally, makes the wiring-up easier, since it can be quickly twisted round each screw and carried on to the next.

Case Construction

Fig. 1 shows the constructional details of the case. The lid is hinged to one end, and inside the case three pieces are screwed to the base to form a holder for the torch battery. Two slits each 1in. long are cut in the lid, as shown, into which the lamp standards fit.

When in position these lamp standards project down through the lid and touch the bottom of the case. The width of the slits in the board will, therefore, need to be the thickness of the wood forming the lamp standards, plus a clearance for the lamp wires which run down the back of the standards, as shown at Fig. 5.

The Board

The detail at Fig. 2 shows the board ruled up in 1in. squares, and the position

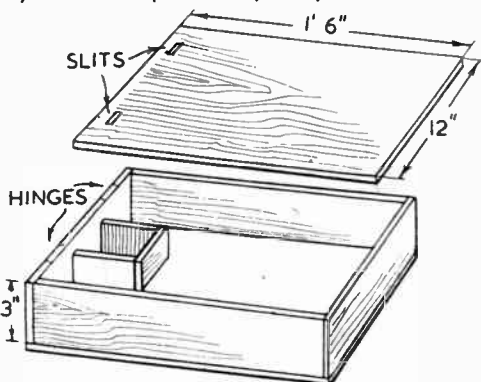
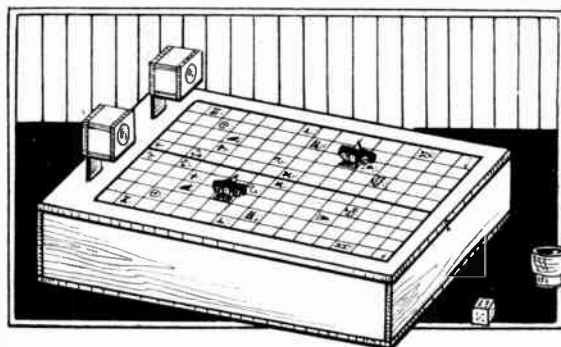


Fig. 1—Constructional details of the case

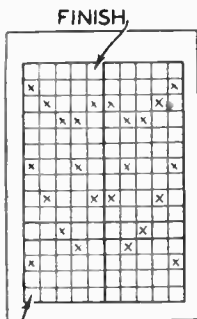


Fig. 2—The board

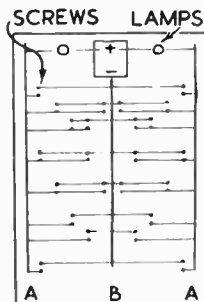


Fig. 3—The wiring

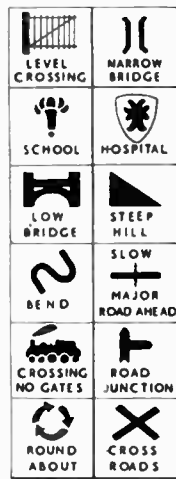


Fig. 4—The obstacles

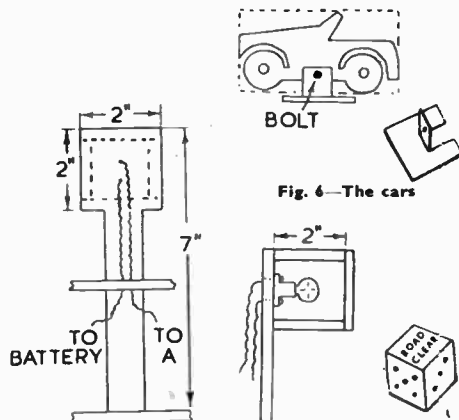


Fig. 5 Lamp wiring, back and side view Fig. 6—The cars Fig. 7—The dice

of the 'danger' squares. The ruling can be done on to a sheet of white paper which is then glued to the board, or drawn direct on to the board itself.

Suggested 'stop' signs for the squares are given at Fig. 4. They can be drawn on to paper with paint or indian ink and glued to the squares, or painted on to the board direct as in the case of the lines. One square is marked for the beginning on each half of the board, and the last square in each marked with a winning post.

The Lamps

The lamps are housed in two small wooden boxes, as shown at Fig. 5. It will be seen that the back is cut narrower outside the lamps, and then forms the lamp standard, which fits through the slits cut in the board. A flash-bulb holder is screwed to the back of each lamp, and the fronts of the lamp boxes are fretted with a hole $1\frac{1}{2}$ ins. diameter, covered with red paper or celluloid.

The Wiring

Put two screws through the board in each of the 'danger' squares and counter-sink them just sufficiently for their heads to be left flush with the top. Each pair should be about $\frac{1}{2}$ in. apart, so they can be easily covered by the metal bases of the cars. Fig. 3 shows how the screws are wired-up into two circuits, on the underneath side of the board.

One terminal of the battery is wired to both lamps and the other terminal on

each lamp is connected to the master wire running down the two outside lengths of the board (marked A).

The other terminal of the battery is connected direct with the other master wire running down the centre of the board and marked (B). It is best to fasten these principal wires down first, by means of short staples at each end.

To complete the wiring, the lower of each pair of screws is joined to the nearest (A) lead, and the upper of each pair to the centre (B) lead. In a number of cases one piece of wire will link up

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No. of pieces	Size	Description
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2	17 $\frac{1}{2}$ ins. x 3 ins.	Sides of Case
2	12 ins. x 3 ins.	Ends of Case
2	7 ins. x 2 ins.	Back of Lamp Standards
2	2 ins. x 2 ins.	Front of Lamp Standards
4	2 ins. x 1 $\frac{1}{2}$ ins.	Sides of Lamp Standards
4	2 ins. x 2 ins.	Top and Bottom of Lamp Standards

several screws, as shown. If it is decided to make the lamps collapsible, for storing in the case when not in use, it is necessary to have breaking points in the wires, underneath the board, and the wires from battery to lamps must be

left long enough to allow for this.

Alternatively, the lamp standards can be left up permanently. In which case the wires can be tighter and require no joints, but sufficient allowance must still be left on the leads to permit the lid to open and close without breaking the connections.

The Model Cars

An outline for the two little race cars is given at Fig. 6, but readers who have one or more favourite makes of their own will, no doubt, have pictures of these that they prefer to copy. Cut them out in fretwood and finish off smoothly with glasspaper. Then take the piece of lead, hammer it out flat and cut it to a rectangle about 1 in. square.

Make two incisions about $\frac{3}{8}$ in. apart and bend up the centre piece to a right-angle, as shown at Fig. 6. Then fasten the wooden mascot to this base with a small nut and bolt, and finish off with bright coloured enamel or paint.

The Dice

If a bought dice is used it needs a little adapting for this game. Glasspaper or file off the dots on one surface (say, the two) and in its place paint the words 'Road Clear' (see Fig. 7). Alternatively a dice can be made from any little cube of hardwood, and then the dots and the 'Road Clear' reading can all be painted on to match. Finish off the case with stain or paint, and add a small fastener to the lid.

(205)

The Craftsman's Notes —

Plain Pleasures

COMMENTING on the changes that have taken place, a countryman went on to tell me how they used to make their own entertainment when his village was really remote—before the days of all these modern amenities, like wireless and cinemas and buses.

He recalled the skill of one chap at local concerts and inns with paper. He would fold up a sheet of paper, snip at it here and there with his fingers, then open it out again to reveal an artistic design as pleasing and intricate as a piece of lace.

Others were fond of whittling, and after the day's work would sit in the evening sunshine carving fancy shapes. One chap specialised in making fans, which looked colourful as well as ornamental after he threaded them with bright wool. These craftsmen with a penknife worked not only in wood, but on such out-of-the-ordinary material as a turnip, converting it into a shapely flower or face.

They were never lost for music at their gay evening gatherings, always quick to improvise. The concertina or fiddle would be a main feature of the band, with mouth organs, jew's harps, and tin whistles in strong support. Improvising amateurs would probably

also add their bit with comb and tissue—a strip of tissue paper along the teeth of a comb held to the lips.

* * *

Weather Lore

IT is good to see a splendid red sunset the evening before we are to set out on a ramble, for as most of us know, it portends good weather—'Red Sky at Night Sailor's delight' as the saying goes. A red sky in the morning, on the other hand, is considered unfavourable.

These natural weather signs are certainly interesting to know, so here are a few others: though, of course, they are not to be taken as infallible guides to the state of the weather ahead.

A grey sky in the morning, swallows flying high, heavy dew, soft delicate clouds, and sea birds flying far out to sea early in the morning, are all said to be signs of good weather. Then there is the old saying that if it rains before Seven, it will be fine before Eleven.

As for the approach of bad weather, well, swallows are supposed to anticipate this by flying low. So do sea birds flying inland, and animals in the fields seeking shelter. A bright yellow sky at sunset may mean wind to follow, whereas a pale watery sky may mean

rain. Unusual clearness of distant sounds is also said to be an indication of bad weather, but—to end on an optimistic note—when rooks build high in the trees the summer as a whole is likely to be good.

* * *

Corrugated Paper for Models

ODDMENTS of strong corrugated paper and cardboard can at times come in quite useful to the model maker, and a small supply kept on hand in the workbox may prove just the means of helping one out of some little difficulty or adding a realistic finishing touch to a piece of work. Here are a few suggestions as to possible uses.

Wrapped around wood or cardboard posts, with the ridges vertical, good ornamental posts or pillars can be obtained for porches at the entrance to houses and other buildings. It also does well for fencing around miniature gardens and railway stations, and is worth considering for model garages and outbuildings where the appearance of a corrugated iron roof is required.

Useful pieces of the material can often be obtained from the wrappings in which electric lamps and various kinds of bottled foodstuffs are sold.

The Craftsman

How to fit your doors and windows with BURGLAR GUARDS

SHOULD you have had any burglars in your district (or even if you have not) it is good to take extra precautions against intrusions of this sort when you go away on your holidays. It is quite impossible to safeguard your house against highly-skilled thieves, but these seldom work private houses, and the kind of sneak-thief you are most likely to encounter is the type who will be quite put off by a window that absolutely refuses to open or a lock that just will not be picked.

Sash Windows

To secure windows of the sash type the best thing is to bore a fine hole through the one sash and partly into the other where they overlap. Into this is run a long, narrow screw (as Fig. 1) with the head countersunk. A large nail would do equally well, but there is

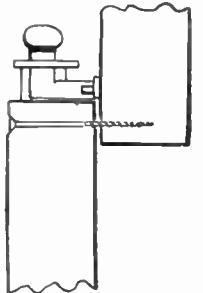


Fig. 1—Section of sash with screw through

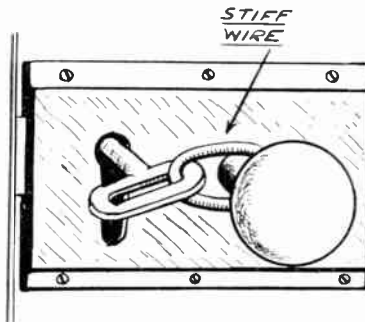


Fig. 2—Key and handle lock

always the chance of this being shaken out. With this method of securing, even if the thief breaks a pane it is a thousand to one his discovering what is still holding the frame.

Lattice windows cannot be so readily dealt with, but can be secured with a screw against the haft of the catch so it cannot be turned up by a knife from the outside. A screw through one of the holes of the adjusting bar makes things double sure.

Door Locks

With regard to doors. Keys should be left in the locks but given a half-turn, so the projections at the end are lying inside the lock. A piece of stiff wire or a short bar of metal is then run through the ring at the end and secured in any convenient way (Fig. 2).

Thus the key cannot be pushed right out as its end is caught up on the inside of the lock, neither can it be turned on account of the wire. A lock so prepared will stop any but the most determined house-breaker. In the combined 'lock and knob' type of door fastener the guard wire can readily be taken round the shank of the knob.

Should the door have bolts also, these can be made secure by a well-placed

screw. The bolt is pushed home and its end then pushed up or down as convenient and a screw driven home beside it. This will prevent the end coming forward by any manipulation on the main shank.

Letter Boxes

Letter-boxes in front doors should receive attention and be temporarily covered with, say, a wire grating. If you have one of those letter baskets or other type of 'catcher' fitted, this, of course, will serve the purpose of a guard.

While looking round before locking up, give a general eye to all things like garden and backyard door hinges, latches and the like and reinforce where

ground-level window. The ends of a softish metal bar, which any blacksmith would supply, are bent to right angles and then given a slight turn out. These ends are then set fairly deeply into prepared openings between bricks and surrounded by cement.

Alarm Bell

You will probably have some arrangement with the people next door to keep an eye on your house while it is empty, but if you wish it is not hard to fit up a burglar alarm which will ring if any important door is opened and which in smaller property would readily be heard through a dividing wall. The main point about an alarm of this sort is that it must ring continuously once started.

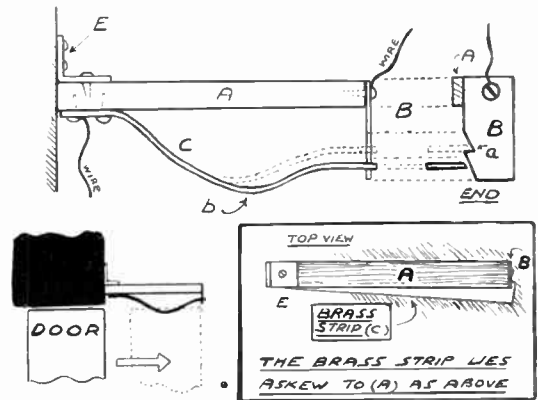


Fig. 3 The catch and fitting for an alarm bell

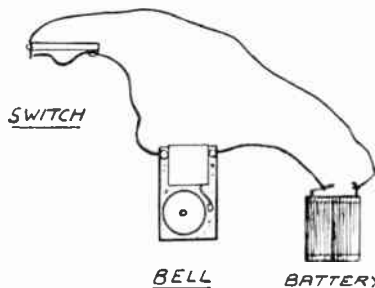


Fig. 4—The bell wiring of an alarm

necessary. While looking all right, these items out in the open have a knack of corroding, when they would come away whole with a steady pressure from the outside.

Small Windows

A house-breaker often attempts to make an entry through some small little-noticed window, as, say, the type fitted to pantries in the newer properties. These should receive especial attention. Often in large property this type of window is fitted with bars to circumvent marauders.

It is, of course, not a hard job to fit a bar across any small really tempting

To this end the special switch as shown is made. The rest of the circuit is simple, because for a front door bell, the wire is being taken to the terminal of a bell and cycle lamp battery, as indicated.

The special switch (Fig. 3), which is secured to the top of the jamb by a simple bracket (E) is composed of the pieces of wood (A) and the two pieces of strip brass (B) and (C). The first is attached to the end of the wood and is slightly notched as (a). The second piece (C) is long and bent and lies slightly askew to the wood as indicated.

When anyone enters the room the top of the door pushes against the loop (b) which causes the end to slip over the notch. The circuit is closed, of course, when the piece (C) touches (B) and the bell rings, and continual contact is maintained by the end of (C) slipping into the notch.

This is a very simple and effective switch of its kind. The circuit of the bell wiring is shown at Fig. 4.

None of the precautions above take very long—indeed a much shorter time than they take to describe. So the handyman of the home should get busy just before going away. A much happier holiday will be spent by all if you know that everything is really secure. (226)

Hours of amusement from an old box turned into A CHILD'S TOY SHOP

HERE is something to amuse the children. It can be made in a few hours, and will give a great deal of pleasure to the fortunate girl or boy who possesses it. The materials used are cheap, and the entire shop and fittings, together with the electric lighting system, should cost only a few shillings.

First obtain a box 19½ ins. by 12 ins., with a depth of 10½ ins. (The writer got an apple box this size from the green-grocer, and paid 3d. for it). Take the lid from the top, knock out the bottom, and place the box on its side.

The wood taken from the bottom is used to form the roof, which is strengthened by placing two 1 in. strips of wood down each side. These strips are 9½ ins. long. Then get two hinges, and use them to fix the roof to the top front edge of the box.

Roof Front

When this roof or lid is let down, it should cover the front of the shop leaving 1 in. opening at the bottom. Next, nail a wooden strip 1 in. by 19½ ins. along the bottom to fill this gap (Fig. 1).

For the chimney, the wood should be 1½ ins. square, and 9½ ins. long. Fix it to the top of the box with two screws. Place a cycle lamp battery in front of this chimney, and enclose the battery in a box made with four pieces of wood,

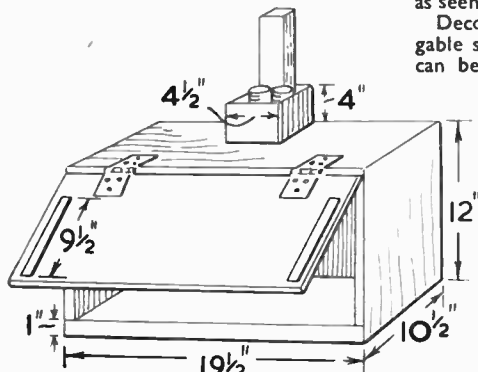


Fig. 1—Parts in the construction

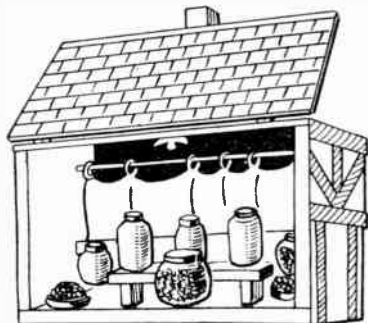


Fig. 3—Suggested interior work

each 4½ ins. by 4 ins. Screw the box to the chimney (Fig. 1).

Next, place a small electric lamp holder, with home-made shade, in the centre of the ceiling, and put a switch in the top right-hand corner.

A piece of flex, 24 ins. long, should then be connected to the lamp-holder, and carried to the switch and battery. The detail at Fig. 2 gives the wiring diagram). Fix the flex to the ceiling with staples.

A curtain, 18 ins. by 8 ins. is placed at the back of the shop. Six 1 in. rings should be sewn to the top of it, and these should run on a ½ in. rod, measuring 18 ins. This rod must be nailed at both ends to keep it in position (Fig. 3).

The Shelving

For the shelves, use wood ½ in. thick. Take a piece 17½ ins. by 5½ ins., and on this in a central position (leaving a space of 3 ins. at each end) at right angles nail another piece 11½ ins. by 6 ins. On this base nail a shelf 9½ ins. by 2½ ins., standing on supports 2 ins. by 1½ ins. (Fig. 4).

The two side shelves measure 6 ins. by 3 ins., with a raised portion 3 ins. by 3 ins., as seen in Fig. 5.

Decorate the two ends of the box, gable style, with ½ in. wooden strips, as can be seen in the photograph of the finished article.

Take out the shelves before painting the shop, also the curtain. The interior should

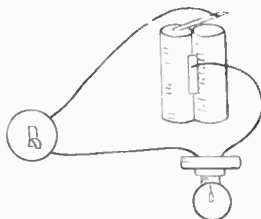


Fig. 2—The wiring for lighting

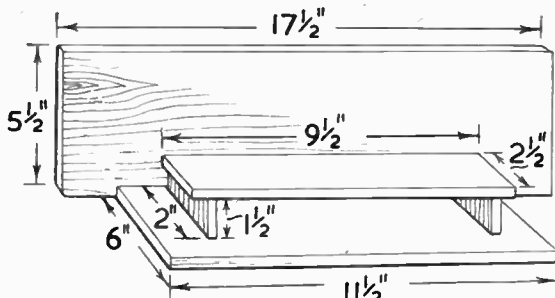
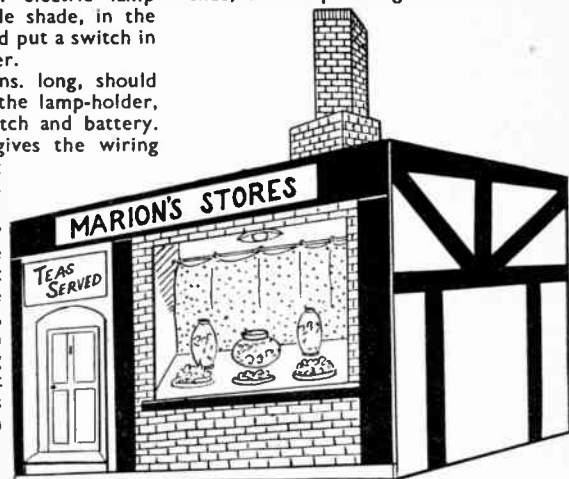


Fig. 4—The display counter for the inside

be white, with cream around the outer edges. Cream is also used for the two ends, the strips being brown and the



shelves white.

Open the lid, and, leaning it against the chimney, paint the roof red. When dry, use a small camel hair brush, and draw lines in indian ink to represent tiles. The chimney and the box covering the battery, are also painted red, and they are finished off with the ink in narrower lines, to produce a brick-like effect. Paint the top of the box red.

Painted Front

When dry, bring down the lid, and glue to it a piece of cardboard 19½ ins. by 11 ins. On this cardboard sketch a door and a window, using poster paints. The child's name, together with the word 'Stores', is placed above the door and window.

Empty meat jars, with the screw caps painted red, blue, or yellow, can be used for the sweets and any other delicacies that you can manage to procure. A helpful suggestion for the shop is shown by the picture of the interior.

The shop is now ready to be handed over to the shopkeeper, and you may be sure that this important little person will take a special delight in serving you with goods. (160)

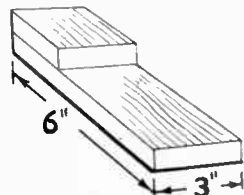


Fig. 5—The side shelves

For fitting into a small hull, make this REVERSIBLE BOAT MOTOR

THIS motor is long and quite narrow and can accordingly be fixed in a model motor boat, together with a suitable dry battery. It can also be used for driving other models, of course, and it may be reversed by simply altering the polarity of the supply—that is, changing round the battery connections.

The armature is especially easy to build and none of the constructional details is in any way critical, though the motor will run efficiently at high speed.

Magnet and Bearings

It may be desired to make use of a magnet already to hand and the sizes of the other parts can be arranged accordingly. A magnet about 1½ ins. between the poles is, perhaps, the most suitable for a small motor.

A baseboard about 1 in. by 2½ ins. is cut from ¼ in. thick wood and the magnet is secured to this by a square of wood which passes over the pole resting on the base, and is held by four screws. Figs. 1 and 2 show this. So this cross-piece of wood may provide a firm mounting for the one bearing two small strips the same thickness as the magnet pole are placed each side (see Fig. 1).

The bearings (E) and (F) in Fig. 3 are

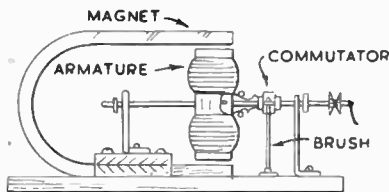


Fig. 1—Side view of the motor

now cut out from some fairly stout metal. One bearing will need to be rather taller than the other and they are made so the axle which will be passed through the holes lies centrally between the magnet poles. Final adjustments may be made by shaving a little off the baseboard or inserting packing under the bearings, if necessary.

Axle and Armature

A length of steel knitting-needle is, perhaps, best for the axle. To avoid drilling, the armature can be made up from two pieces of iron, as shown at (D), Fig. 3. Small grooves are filed across the inner faces of these pieces so when the axle is placed in these grooves and the two pieces bound with thread, the whole is secure. If desired, solder may be added.

Get the armature to balance nicely, filing a little away

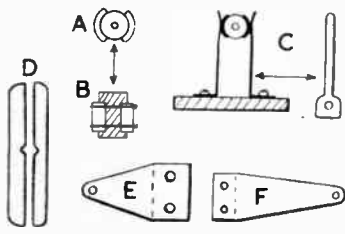


Fig. 3—Armature, commutator, etc.

from one end if necessary. Its overall length should be such that it will turn between the magnet poles without touching them.

Take a length of insulated wire and wind half on one pole. Afterwards take the wire across to the other armature pole and wind the remainder on, as shown in Fig. 1. All turns must be in the same direction. For a 4.5 volt battery, something around 26 S.W.G. wire is best.

For extra power (but increased battery consumption) use 22 or 24 S.W.G. wire. For very economical running, with a reduction in power thinner wire (about 30 S.W.G.) can be used. The more turns of any wire put on, the lower will the current drain be.

The commutator consists of an insulated centre piece with two small segments of metal, and is shown at (A) and (B) in Fig. 3. Wood, ebonite tubing, or glued tape can be used for the centre. The segments can be bent from a little brass or tin, or a small piece of copper or brass tubing can be sawn in two. The segments are held in place by

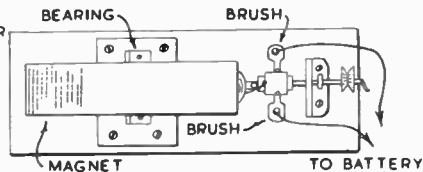


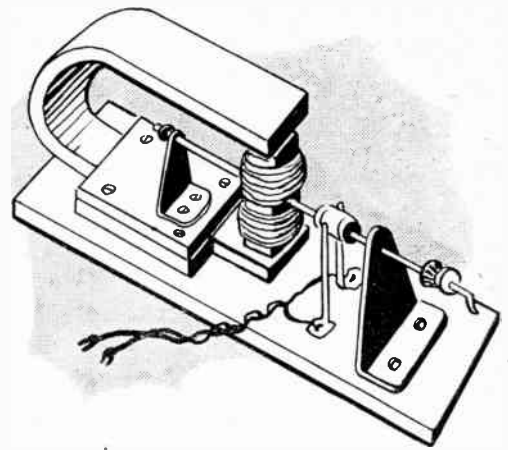
Fig. 2—Top view showing brushes, etc.

binding tightly with glued thread, and the commutator is a tight push fit on the axle.

Join the beginning of the armature winding to one segment, and the ending to the other. Soldering is the simplest method.

The brushes consist of thin metal strips, cut as shown at (C) and screwed to the baseboard. They should bear lightly on the commutator, running between the securing threads. From the screws holding them take two flexible leads to connect to the battery.

End-play of the axle is prevented by washers soldered on. Turn the armature



so that its ends are opposite the poles of the magnet and—holding it in this position—turn the commutator on the axle so the segments are just breaking contact with the brushes. The best running position can easily be found by turning the commutator a few degrees one way or the other.

The motor should run at high speed and without undue vibration. The windings may be varnished to hold them secure. Reversing the battery connections will make the motor run in the opposite direction. Good results should be obtained immediately and final adjustments of the brushes and commutator can afterwards be made.

When the motor is used in a boat the easiest method of driving the propeller is shown in Fig. 4. A small finger projects at the end of the motor axle, and this engages with a small crank on the propeller spindle. This operates satisfactorily even if the spindles are not in line.

So that water cannot come up into the boat the propeller spindle passes down a small metal tube, which is glued in a hole in the bottom of the boat. As the top of this tube is above the water level water cannot come in, even if the spindle is a loose fit, as it should be.

Stout wire, carefully straightened, will do for the spindle and propellers may easily be cut from tin. A small one about 1 in. in diameter, with two or three blades, is probably best. Twist the blades slightly so that the boat is driven forwards when the motor is running.

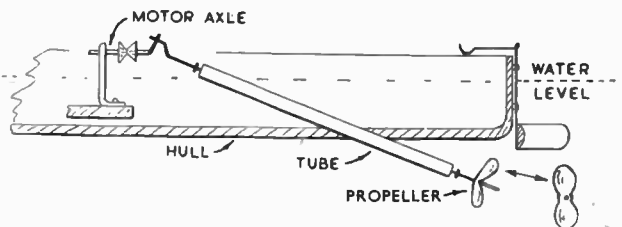


Fig. 4—Section showing arrangement of propeller drive

Model Railwaymen will be interested to make SMALL STATION SIGNALS

SIGNALLING on even the most simple model railway layout, is a very interesting operation, and, providing proper prototype practice is followed, there is no limit to which realistic train working can be carried out to the proper signal indications.

The decision as to whether the finer details of prototype signalling, or a simple skeleton system is carried out, depends largely upon the amount of time—and money—the reader is able to devote to achieving his ideal.

Common Layout

In Fig. 1 is depicted the track layout of a simple through station such as will be found by the hundred all over the Country, either as shown, or slightly modified or reduced in siding capacity. Very frequently only a single siding may be found on either the up or down road, or, perhaps, there may be both an up and a down siding. The type is largely determined by the class of merchandise generally handled and also by the amount of land available.

In the diagram two sidings are shown

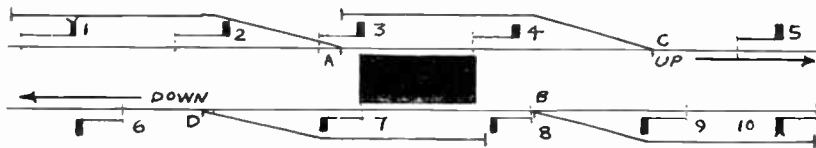


Fig. 1—The track lay-out of a through station of usual type

on each road so that the disposition of the appropriate signals may be lucidly explained.

Taking the signals in numerical order, No. 1 is the 'up' distant, No. 2 the 'up' outer home, No. 3 the 'up' inner home, No. 4 the 'up' starter and No. 5 the 'up' advanced starter. On the 'down' road, No. 10 is the 'down' distant, No. 9 the 'down' outer home, No. 8 the 'down' inner home, No. 7 the 'down' starter and No. 6 the 'down' advanced starter. The four siding points are lettered A, B, C and D.

Operation Example

As an example of train operation on the 'up' line, signal No. 1 can only be pulled off when No. 2 is off, whilst Nos. 3 and 4 are workable independent of each other and of Nos. 2 or 1. Nos. 4 and 5 are also individually operative.

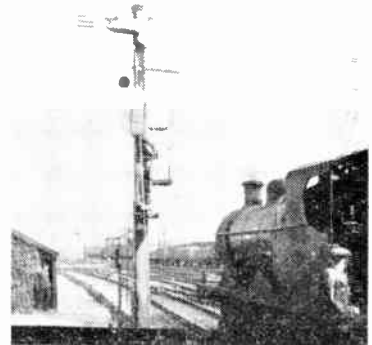
Signal No. 2, however, is interlocked so it cannot be pulled off if the points at

'A' are set to the siding. Similarly signal No. 4 is locked with points 'C', though shunting operations may be made past signal No. 4 and point 'C', up to signal No. 5; which remains at danger, or 'on'. A train which has been drawn ahead, past the starter signal, up to the advanced starter, may then be backed into the siding via point C; without having to be signalled into the next 'block' ahead.

General Running

Similarly a train may be drawn past signal No. 2, and up to No. 3 before being backed into the other 'up' siding via point A. Both the 'down' sidings are entered and left in the same manner, and it will be observed that no siding can be entered other than by backing against the normal direction of the main-line traffic nor can a siding be left by a train in any other direction than that of the traffic on the main-line.

This direction of entry and exit from sidings is very important, the main reason being that, by being arranged as depicted in Fig. 1, there are no facing points on either 'up' or 'down' main



with No. 9, 'C' with No. 4 and 'D' with No. 7, no derailments can take place if the trains are duly run according to the signals; which is, of course, the right procedure.

In prototype practice it is usual to have all points diverging from, or converging into the main-lines indicated by appropriate ground signals, the latter,

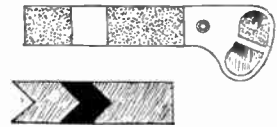


Fig. 2—Full size diagram of 'O' Gauge arms

in model form, could be arranged to go 'off' when the points are set for the siding concerned.

Signal Arms

In Fig. 2 are shown M standard lower quadrant arms, which are drawn full-size for 'O' gauge. The left-hand arm (with the spectacle) is painted red (dotted) with a white band, whilst the other is yellow, with a black band. In both cases the spectacle housing and pivot point (shown white) is painted black.

The red arm is used for signals Nos. 2, 3, 4, 5, 6, 7, 8 and 9; whilst the yellow fish-tailed arm is used for the distant signals Nos. 1 and 10.

The method of making these signals in 'O' gauge has already been described fully in this series of articles, and appeared in *Hobbies Weekly* of about October, 1948. (227)

line; so it is impossible for a through train to be inadvertently switched into a siding dead-end.

To make the goods working at the station more effective, and to give transfer facilities from 'up' to 'down' sidings, and vice versa, it will be necessary to add a crossover road from approximately point 'D' to 'A', and/or from 'B' to 'C'.

Triple Points

If triple points are available, these could combine the crossover and siding switches, but failing this the crossovers should be placed so the points are located between 'C' and signal No. 5, and between 'B' and signal No. 9. At the other end of the station the crossover points should be located between 'D' and signal No. 6, and 'A' and No. 2; in both instances these additions are shown by dotted lines.

By interlocking 'A' with No. 2, 'B'

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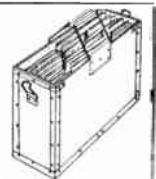
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You can make a lasting joy for a youngster with this PULL-ALONG TROLLEY

HERE is an attractive little pull-along cart, just the thing to make for one of the youngsters. It is strongly made and comparatively simple in construction and finish. Another point, too, and one that is at present most important, it can be made from any sort of wood from $\frac{1}{2}$ in. thick to $\frac{3}{4}$ in., whichever is available.

The boards from which the parts are to be cut need not be very wide, in fact, ordinary pieces of floor board about 6 ins. or 7 ins. wide might well be used, as they can be planed up and glue-jointed to get the wanted widths.

The Floor First

Our illustration, Fig. 1, gives a good idea of how the cart will look when finished and painted. These are two sides, a floor and the front and back board. In Fig. 2 the dotted lines denote the positions of these in relation to the sides.

Make the floor first, and cut off two

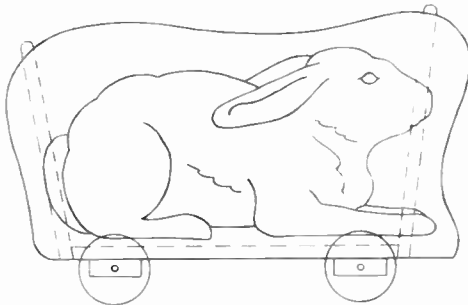


Fig. 2—Side view with dotted lines of truck parts

pieces 16 ins. long and 6 ins. wide. Plane the edges and make a glued joint and finish the width to 10 ins. Stiffen the floor by nailing across two $\frac{3}{4}$ in. pieces 11 ins. long by 2 ins. wide. These form the bearers for the wheels, which will later be attached by round-head screws with thin washers each side.

Now make the two sides, and from the

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squared diagram, Fig. 3, the correct outline of one of these can be drawn, the squares being 1 in. sided. The outline of the rabbit can also be obtained from this diagram when the time comes for reproducing it in paint on the wood.

Make the outline of the side and that of the rabbit on a sheet of light brown paper, the squares being drawn in with a faint line just sufficient to be able to see them and follow them through. The inner detail of the rabbit should be included so this can, later on, be transferred to the sides for painting.

Two pieces of wood should be joined for each side and after the shaping has been done with the fretsaw, the edges, except the lower edges which join with the floor, must be rounded and made

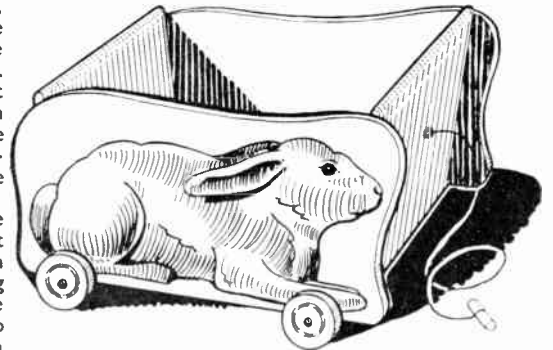


Fig. 1—A simple truck with painted animal

In the detail, Fig. 4, is shown how a strong joint may be made between the uprights and the sides of the cart. Tenons are cut as shown and corresponding mortises made in the sides. When all is glued up a much firmer joint results than if made with screws or

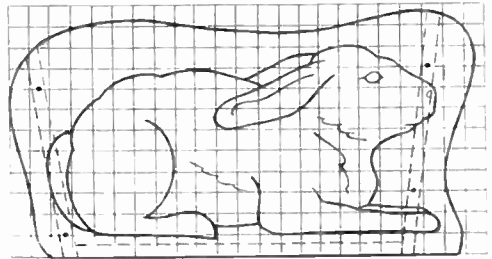


Fig. 3—Squared outline of side and rabbit shape

smooth with coarse and fine glasspaper.

The front and the back boards of the cart can next be made, and here again two pieces of $\frac{3}{4}$ in. or $\frac{1}{2}$ in. wood is jointed up. The length of the pieces is 10 ins., and the width 12 ins. and 10 $\frac{1}{2}$ ins., respectively. Round off the top edges of the pieces after trimming them down to the correct widths.

Front and Back

The position of the front and back board having been drawn on the pattern of the sides according to the dotted lines in Fig. 3, the holes for the screws or nails can be bored and the sides then attached easily. First lay the edges of the front and back boards in line with the dotted lines and the hole positions marked on the thickness of them. Plane off the ends of the floor to a slight chamfer so it will drop down and fit against the front and back boards and flush up against the sides where it can be nailed or screwed.

All the woodwork may now be cleaned with glasspaper and given two coats of paint, or one coat of paint and one of enamel. Keep the colours bright and attractive.

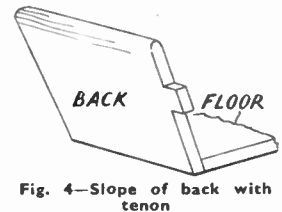


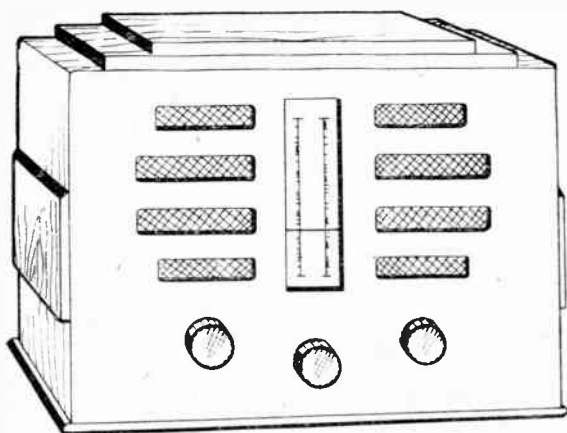
Fig. 4—Slope of back with tenon

nails. All the tenons and mortises need to be carefully marked out before the cutting is done, as a tight fit is absolutely essential.

The picture of the rabbit may be transferred to the painted side by means of carbon paper. Remember that the head of the rabbits must face the same way, that is towards the front, in each case. As far as possible use natural colours for the rabbits, and get depth of tone by light and heavy shades of brown.

Wheels from 3 ins. to 5 ins. in diameter may be put on the cart and stout round-head screws used as fixing. Put metal washers each side of the wheels as previously suggested, and a touch of oil on each for smooth running. A stout cord with cross hand bar will finish the job.

Constructing a moving type scale for a set with a CORD-DRIVE TUNING DIAL



Suggested design for a modern type of cabinet

A MODERN type of tuning dial with a vertical or horizontal tuning scale is quite easy to construct and will improve the appearance of many home-made receivers. The usual way in which such dials work is shown in Fig. 1. The position of the tuning knob spindle will depend upon the layout of the controls, as will the shape and size of the tuning scale, but the method of construction remains essentially the same.

Tuning Scale

After deciding whether this is to be vertical or horizontal, determine the approximate distance it is desired the pointer should move. This may depend upon the cabinet design; an average movement is about 4ins. but this will be less for a small set and larger in some big receivers. A scale about 4ins. long gives ample space for the station names to be indicated.

Multiply the scale length by two, and divide by $3\frac{1}{2}$ th. This will give the diameter of the drum necessary to move the pointer over the length of the scale when the tuning condenser makes its customary 180 degrees rotation.

Alternatively, the length of the scale may be made to suit the drum, the pointer movement equalling half the circumference of the latter. About $\frac{1}{2}$ in. free space is left at both ends of the scale so the rectangular window cut in the cabinet should be this much larger.

Drum Drive

A stout tin lid can be used for the drum with a bush with $\frac{1}{4}$ in. diameter central hole soldered to it. The drum should be about $\frac{1}{2}$ in. wide to assure the cord does not come off and two small holes should be drilled in its rim and

factory.

Cord Drive

After the tuning condenser and knob spindle have been mounted in convenient positions on the front of the receiver panel, or on a rectangular piece of 3-ply bolted to the receiver chassis, the small wheels guiding the cord should be added. These will be placed so that the cord is run straight along the edge of the scale, and are pivoted on small bolts. The latter should have nuts locked tightly against each side of the panel.

The cord is now passed through one of the holes in the drum and several knots made. It is then taken to the tuning knob wheel and given a complete turn round this. From there it goes over the pulleys and round the drum. The end is passed through the second hole and tied to a fairly strong tension spring, which is stretched a little and

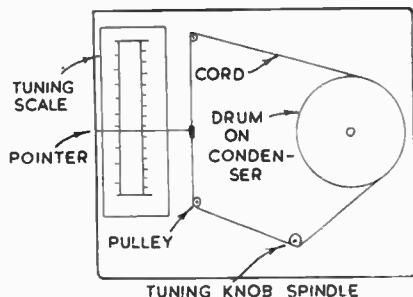


Fig. 1—Front view of mechanism

hooked on to a small bolt projecting inside the drum, as shown in Fig. 2. This takes up any slack in the cord and assures that the drive will work indefinitely without attention.

For the cord, thin, good-quality fishing string can be used, or stout fishing line. Tighten up the bush set-screw, assuring that the condenser can move to the fullest extent each way without the

their edges filed smooth. The ends of the cord pass through these, as shown at (A) in Fig. 2.

The tuning knob spindle has a wheel about $\frac{1}{2}$ in. in diameter and is pivoted in a strong bracket. These parts can be devised quite easily from oddments which may be to hand, or can be bought cheaply, as can the tuning drum, if desired. The relative sizes of the wheels will govern the reduction ratio, of course, and a ratio of between about 5:1 and 10:1 is usual, though other ratios are satis-

points where the cord is fixed being reached in the unwinding process which takes place as the drum is turned.

Pointer and Scale

The pointer is shown at (C) in Fig. 2 and consists of a stout, straight brass or tinned-copper wire soldered to a small piece of tin. The latter is bent double with pliers and nipped on to the cord. If a very accurate type of pointer is wanted, a narrow strip of celluloid with a hair-line scored down its centre can be used.

The tuning scale is cut from stout paper or thin card and drawn up according to the wavebands in use. Different colours are normally used for the different wavebands, e.g., red, green and black for Long, Medium, and Short Waves.

Stations can be marked by tuning them in accurately and then marking the scale, and if this is done carefully the result will be much more exact than with mass-produced commercial receivers. The wavelengths between stations can be filled in by dividing the scale equally, or a wavelength graph can be drawn.

Cabinet Details

Such a dial can be made to suit almost any cabinet, and the illustration shows a type of cabinet which is easy to make, yet which has a good modern appearance.

When the receiver is pushed in from the back the scale comes up behind a suitable rectangular cut-out, and the control spindles project through fairly large clearance holes in the cabinet front.

The speaker fret is cut both sides to obtain a balanced appearance, but the speaker itself is situated at one side only. If the drive is made up as shown in Fig. 1, the tuning condenser will come behind the right-hand section of the fret, and the speaker can be secured at the left-hand side.

Speaker fabric or similar material is glued over the frets on the inside and to

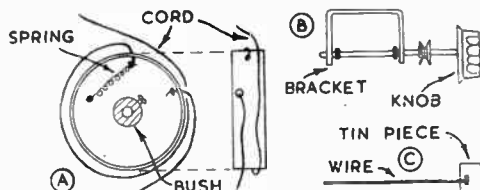


Fig. 2—Details of controls

obtain a proper finish the scale rectangle should be covered on the inside by means of celluloid or glass glued or screwed in position. If a strip of glass is cut four small screws with cardboard or fibre washers under their heads will hold it securely. The pointer should extend completely across this 'window' and the method of operating will, of course, be unseen.

The first of a practical series for the amateur on BOOKBINDING

It is always a problem to know what to do with the numerous booklets which accumulate in every household. Books like the Highway Code are always worth keeping, yet invariably become tattered and neglected. If they are kept in the bookcase, they rapidly get 'dogeared' and untidy and sooner or later make their way into the dustbin when spring cleaning fever invades the home.

These books are bound to suffer this fate since they are usually only staple-bound in flimsy paper covers which fall off at the least provocation. The method of binding here described solves the difficulty since it enables the discerning handyman to bind such material into permanent stiff boards, making useful and handsome additions to the bookcase.

Method and Preparation

The book is first stripped of its wire staples. If there is none, and the booklet was originally machine sewn, it is advantageous to leave this intact during ones first attempt at binding. Later when practice has given confidence, this sewing should be removed for subsequent attempts.

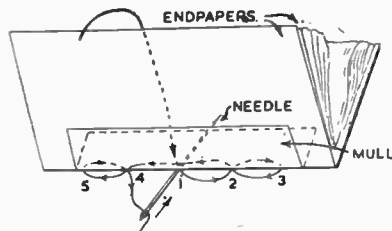


Fig. 1—The five-hole stitch

will later be pasted down and it will not matter if this becomes a trifle grubby.

It is now necessary to make a hinge upon which the boards will be pasted. This is best made of bookbinders' mull pasted to cartridge for strength. If mull is not obtainable, a piece of 3in. bandage will suffice, or alternatively, butter muslin or ballet muslin will do.

The size of the hinge depends on the size of the book, but it should be about 1½ins. shorter than the book and at least 3ins. wide. A glance at diagram (A) will show how to check the size.

Sewing

The dry hinge is folded over the spine, as indicated in Fig. 1 and the booklet is sewn with strong white linen thread. A darning needle is suitable if bookbinders' needles are not at hand. A five-hole stitch is used, and as far as possible any existing stitch holes should be used again for neatness. The diagram at Fig. 1 shows the stitches in detail and the reader will notice that the ends of the thread meet at the centre inside the booklet.

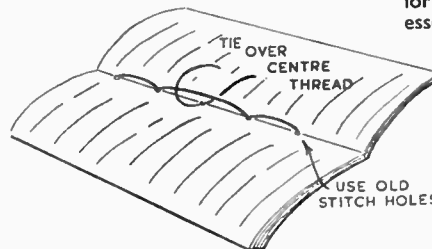


Fig. 2—Tying inside the book

Two boards are cut from cardboard about ¼in. thick, the same width as the book, but ½in. longer.

The boards are pasted to the hinges to fit, as shown in the detail and allowing ½in. overlap at top, bottom, and fore-edge. The ½in. at the fore-edge is obtained by placing the boards ¼in. off the spine. Before placing the book in a press to dry, a few measurements are taken to facilitate the measuring of the cloth used for covering.

Measure the overall length and width (open) of the book and also the distance around the spine from board to board. The best method is to take a piece of newspaper and fold it around the spine, marking the edges of the boards upon it with the thumb nail. Take the paper off and measure across the two marks (see Fig. 4).

A piece of cartridge is cut to this width and to the length of the spine. This will serve to strengthen the cloth at its weakest point, i.e., the spine.

Cutting and Measuring the Cloth

The cloth is measured to the size indicated in Fig. 5. Remember to allow for the distance around the spine. It is essential, too, that the ¼in. overlap all

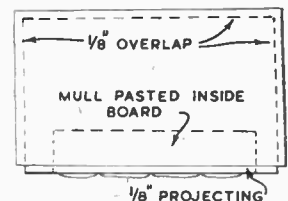


Fig. 3—Fitting the boards



Fig. 3—Measuring round the spine

The book is opened flat, and two sheets of cartridge paper are cut out to the exact size of the whole covers. These sheets are folded at the centre and placed over the original cover as if to form two additional ones. If the original cover contains no information relevant to the book and is full of advertisements only, it should be removed and discarded. If it has an attractive picture or design, however, or contains necessary information, it should be left in its place.

End Papers

The cartridge papers are to form end papers for the new binding and should be kept quite clean during the ensuing operations. The outside of the outer one

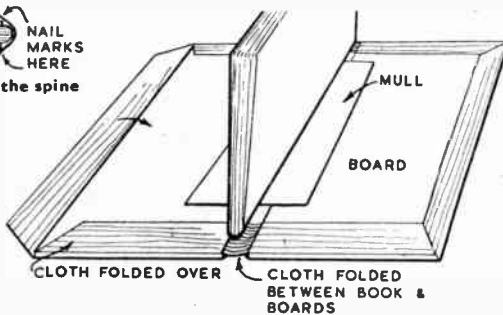


Fig. 6—Folding in the cloth overlap

These ends are tied together carefully in a tight reef-knot, care being taken to pull in any slack thread first. It is most important that the ends are tied over the top of the length of thread which passes across the centre hole inside the book, as shown in Fig. 2. This will prevent the knot slipping through the hole to the outside with a consequent looseness in the thread.

The drawing at Fig. 3 shows the sizes of the boards relative to the book.

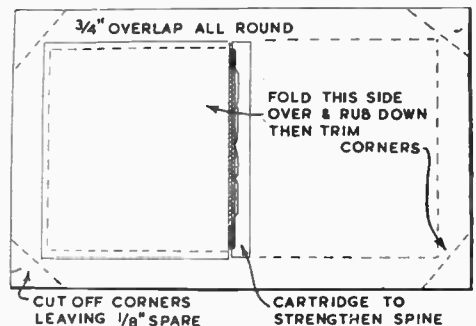


Fig. 5—Pasting cloth and trimming corners

around, shown in the diagram, be allowed for also. This will be used for folding in when the cloth is pasted on. The measurement formula for the cloth is:—Length equals length of book plus 1½ins.

Width equals width of open book plus 1½ins. plus width around spine.

Covering

When the book is removed from its

(Continued foot of page 333)

A PHOTOGRAPHIC ALPHABET

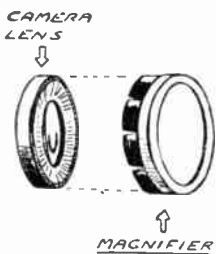
The amateur photographer finds these short notes most helpful, as full of practical knowledge, and helpful hints. We shall complete the whole range of letters from A to Z

M for—

MAGNIFIERS

Bseldom allow of items being nearer than 10ft. or 15ft., as within this range everything is fuzzy. This means that with these instruments as they are, you can never take 'head and shoulder' pictures or attempt small subjects like dogs or cats.

By means of an extra lens known as a magnifier, however, the trouble can be overcome. A magnifier is a simple



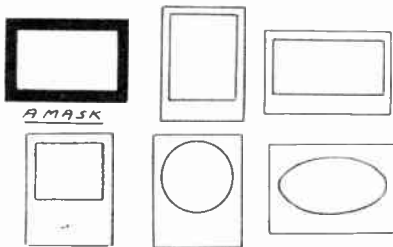
piece of glass, not unlike one of the eye-pieces of a very weak pair of spectacles and it is clipped on in front of the ordinary lens. The effect of the attachment is to bring things up to

about 3ft. away into sharp definition with all the advantage of this shorter range. A Magnifier is not expensive to buy, costing only a few shillings and is such a thin piece of glass that it does not increase the length of exposures. It is quite worth getting and greatly increases the scope of any fixed-focus camera.

MASKS

MOST snaps you get from the chemist are surrounded by a thin white border. This is produced by a thin but opaque frame placed between the negative and sensitive paper while printing. This frame is known as a 'mask'.

Masks are sometimes made of thin celluloid but can be quite well cut from the thinner varieties of black paper found round plates. In cutting a mask an



extremely sharp point must be used (say, the sharpened tip of a pen-knife blade) and care must be taken to cut just up to and not beyond the corners. A steel edge should be used for the purpose and the desired shape lightly pencilled in before starting.

We have become so accustomed to the thin white border of the commercially finished print that the art of beneficial masking as used some years ago seems to have become lost. Actually most pictures have a definite shape in which they look best, some suiting a circular surround, others an oval, etc. Most pictures look better masked, so that there is a broader white band at the bottom than the top—a masking which is commonly used on the Continent, but not here.

A major use of a mask is to delete parts of a picture not required and to concentrate interest on the more important items. Indeed, with care a mask can turn a poorly exposed picture into a pleasing effort.

'M Q'

WHEN you remove a film from the camera after the snaps have been taken it looks exactly as it did when put in—not the least sign of a picture anywhere. To bring up the image (i.e., to make it visible) the film has to be placed in a solution known as a 'developer'. There are literally scores of kinds of developers about, each of which has some special characteristic, but the most all-round one for amateurs to use is known everywhere as 'MQ'.

The 'M' stands for 'Metol', the 'Q' for 'Quinol' and it is recognised as the best balanced formula for general work. It can be bought in fourpenny packets from any chemist and can be used to develop films, plates, gaslight paper or bromide paper. For plate and film and bromide paper the powders in the packet are dissolved in 10ozs. of water, but only 4ozs. of water are needed for gaslight.

Practically all the main photographic manufacturers turn out an 'MQ' developer of their own, but invariably the letters 'M' and 'Q' are shown big on the front of the packets.

N for—

Negative

ONE of the most important things in photography is the negative. As described in an earlier paragraph, the film we put in the camera is coated with a light-sensitive emulsion. That is to say it is affected at any point in a manner directly proportional to the amount of light falling on that point.

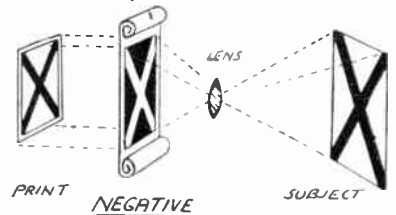
The lens throws a picture of the subject on this sensitive surface which is then recorded by the relative areas of light and shade.

The action of the light is to make the emulsion capable of becoming black in a

'developer' and the more light within certain limits, the blacker it will go. Hence the image is recorded in reverse, areas of high light showing up black and dark areas where there has been little action, remaining light.

This, then, is the negative.

Fortunately, the situation can be



changed by putting a similarly sensitised sheet of paper behind this reversed rendering and exposing once more to light. Again the areas receiving the most light go the darkest, but a moment's thought will show that as the light is coming through the negative everything will be turned round once more—which is what we want—and so a positive print obtained.

O for—

Over Exposure

THIS is a fairly common negative fault at the present time with the very fast films there are about, and also it is a common error of amateurs making their first time exposures.

Over exposure means that light has been let play for a too long time on a plate or film.

Now you might think that as the picture is made by the action of light on the sensitive layer of the roll, the more light the better the picture.

Up to the point of correct exposure, additional light does give a richer impression, but beyond this point it has the reverse effect. More light then cancels out contrast and makes the picture flat. Too much over-exposure and the picture becomes almost a ghost image only—at the same time the negative being thick and heavy—or with some materials, blackening right in.

Over-exposure then can be identified from other faults by heaviness and flatness. To ensure the correct exposure a chart should always be used, especially if time exposures are being attempted.

If you are developing your own film, and by the way, the picture shoots up and blackens in, you can see it is over exposed, the thing is to keep on developing for longer than the correct time. The negative will be very black, but by this means you may get enough contrast to obtain a passable print.

A novel Cigarette Box made as an old-time TREASURE CHEST

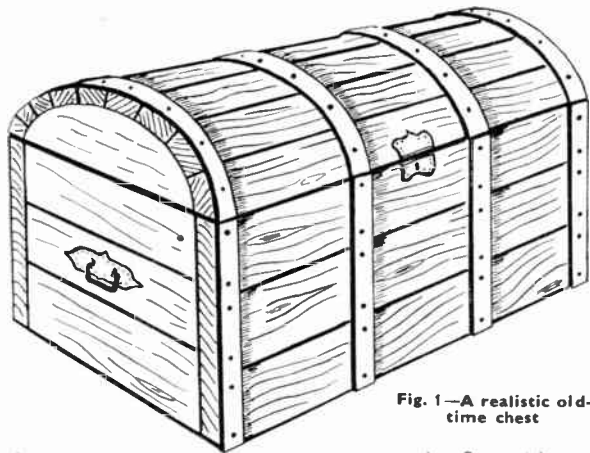


Fig. 1—A realistic old-time chest

If you can get any cigarettes to put inside, the box illustrated at Fig. 1, is just the thing for the sideboard or mantelpiece. It is novel, attractive and useful, and is not difficult to construct. The total amount of wood used is small, and any odd pieces can be brought into service.

As the wood to be used is only $\frac{1}{4}$ in. thick, it should be of a kind that is not liable to split easily, when nailed. Oak is excellent for the purpose.

Make the body first, joining the back, front and two sides with panel pins. Fig. 2 shows the plan of the body. Next fix on the base, which should be a true rectangle, otherwise the shape of the chest will not be correct. When cutting out the base, leave sufficient wood for planing off.

Lid Construction

Now construct the lid. First cut out the two end pieces with a fretsaw, to the shape shown in Fig. 3. Along the top of these side pieces have to be nailed $\frac{1}{4}$ in. wide strips of wood, in order to obtain a curved surface, and to give a realistic chest construction. The strips are all $5\frac{1}{2}$ ins. long.

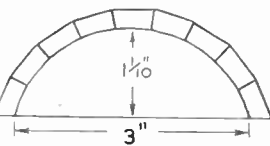


Fig. 3—End of top

too deeply or the hinges will pull and soon become loose.

To give the effect of 'plank' construction to the body, make straight cuts

Start by nailing one of the strips to the back and one to the front, at the lowest part. Then test the lid on the body to make sure of a perfect fit.

Each strip of wood for the top should be slightly wedge shaped, and fitted so that the tops come flush with each other. Fig. 3 is an end view of the lid, making the construction quite clear. It is advisable to shape all the strips, and fix them in position first without pinning.

With careful work with plane and glasspaper a tight fit can be obtained. File the edges, then fill in the spaces between the strips and the side pieces with plastic wood.

Fixing Top

Next fix the top to the body with the hinges, using extra small hinges and screws. This is an operation requiring precision, and the services of an assistant will be required. Sink the hinges in recesses cut in the lid and the body, but take care not to cut the recesses

across it, in the places shown in Fig. 1. Use a marking knife or similar tool.

Now, all the best treasure chests are metal bound, and have locks and handles. For the metal bands, cut strips of thin metal $\frac{1}{4}$ in. wide. Brass or copper is best, but tinplate will give quite a good effect if you coat it with black lacquer after fixing. An old pair of scissors comes in useful for cutting thin metal, if you have not proper shears, or you can use a metal fretsaw blade.

Pin these strips of metal along the chest in the positions shown, making holes for the pins previously. Do not forget to do the back as well.

Picture Lock

Next cut out the imitation lock, as in Fig. 1. Make the key-hole, using a drill and file, and fix on. Small sized cobbler's brads are ideal for pinning on these metal parts. For the handles, cut out the two plates, then make recesses for the wire by bending the plates over a nail of suitable thickness.

To prevent the lid from falling too far back and so injuring the hinges, use a small length of tape, attaching one end to

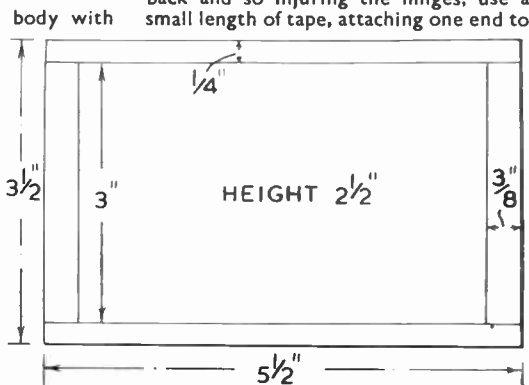


Fig. 1—Plan of chest sides

the lid with a drawing pin, the other end to the body. Finish off by glasspapering all over, lacquer the metal parts if necessary, and stain the wood. (202)

Bookbinding—(Continued from page 331)

press for covering, a glance inside the boards is needed to ensure that the endpapers have not adhered to any paste squeezed past the hinges. If this has happened the endpapers must be carefully freed. The cloth is then laid out flat and pasted all over. Do not cut off the corners yet.

The spine strengthening piece of cartridge is placed centrally and the book placed flat on one side of the cloth so the spine lies adjacent to and over the centre piece, as seen in Fig. 5. The book is firmly pressed into position and the opposite half of the cloth turned over to rest in position on the top of the book. A rub down each side with a clean piece

of rag is necessary to ensure that all air bubbles between the boards and the cloth are removed.

The cloth may now be trimmed at the four corners across-wise (shown in Fig. 5) cut to leave $\frac{1}{2}$ in. cloth spare at each corner of the boards. The overlapping cloth edges are now folded in, and pressed on to the insides of the boards, as shown in Fig. 6.

The Endpapers

The first sheet in the book is now pasted down to the inside of the front board so as to hide all but a neat $\frac{1}{2}$ in. border of cloth on the inside. If the sheet is pasted first and the cover is

allowed to close, the endpaper will fall automatically into the correct position and will merely require smoothing with a clean piece of rag to exclude air bubbles or creases. The operation is then repeated with the last sheet in the book and the back cover.

The book is now complete but must be placed in a press to prevent any warping. When it is dry in all respects it is removed and the final touches are added simply by neatly printing the title on the cloth spine in a suitably coloured waterproof ink.

A further article will deal with other aspects of Bookbinding, of particular interest to the handyman. (196)

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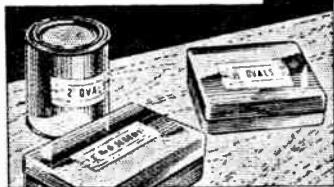
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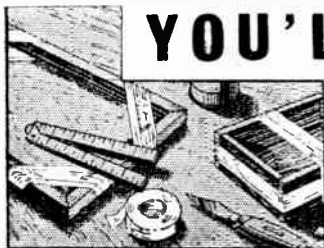
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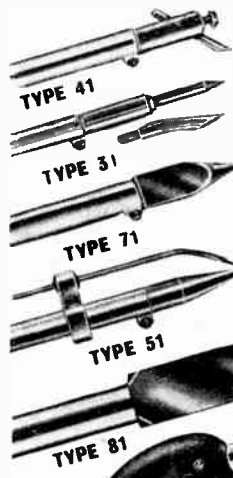
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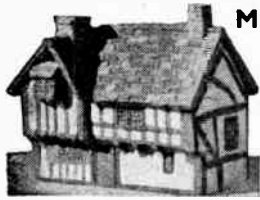


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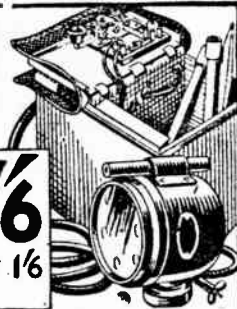
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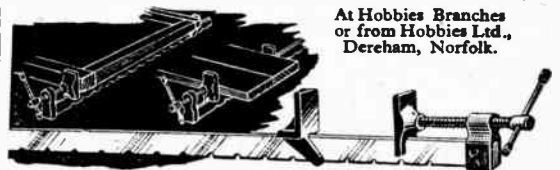
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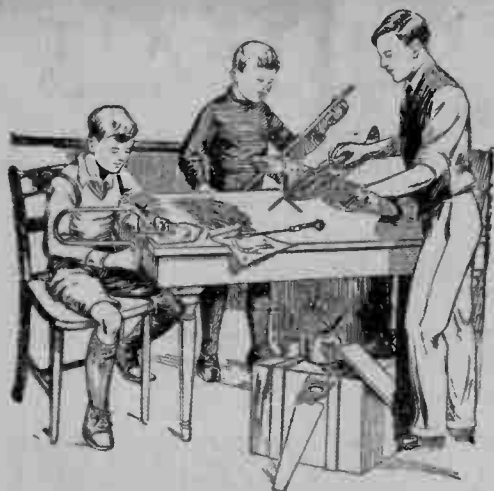
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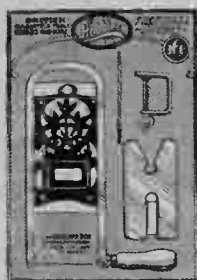
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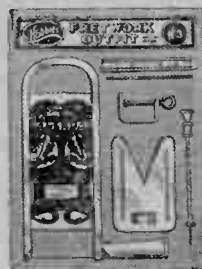
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Hobbies

WEEKLY

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August 30th, 1950

Price Fourpence

Vol. 110 No. 2861

A PRACTICAL DOG KENNEL

MANY people keep their dogs indoors nowadays, but even for these dog lovers, however, there may be times—such as when he is changing his coat—when his presence in the house causes trouble.

For such times, and for those who prefer to keep their doggy pals outside, this kennel has been specially designed. Often, indeed, is a dog said to be man's best friend, and in return for canine affection and companionship, a snug, clean home—as well as good food—is an obligation.

With Hinged Roof

From the picture of the completed kennel, it will be seen that the overhanging roof protects the entrance and that the extension of the floor in front will help in preventing your dog padding water inside, as well as providing a place where he may sit or eat.

For easy cleaning, the roof of the kennel is hinged, as illustrated in the sectional drawing, so that it may be lifted forwards. Stooping to clear out old bedding through the entrance used by the dog is troublesome to say the least, and is thus made unnecessary.

Framework

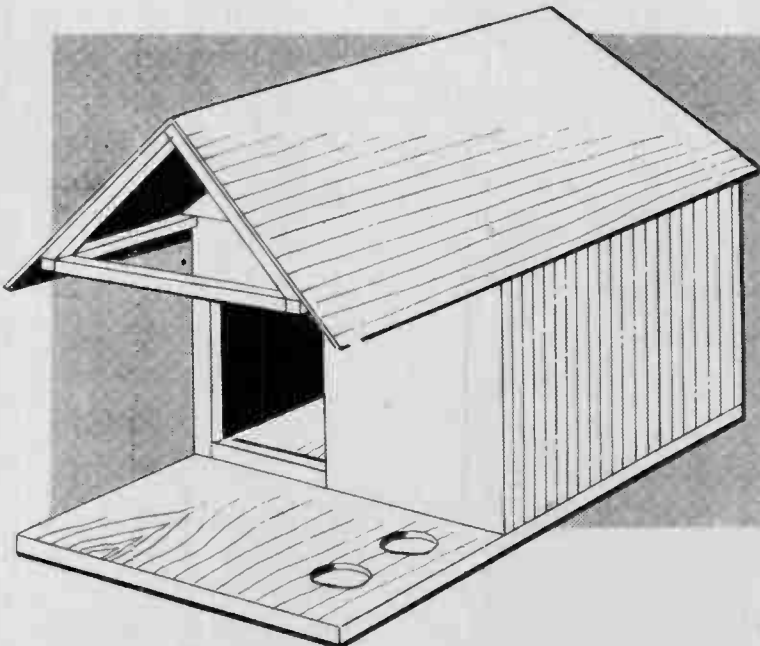
The framework illustrated is designed for minimum expense and trouble. Measurements are given for 1in. square wood. Thicker wood may equally well be used and will make a stronger job, but will be more expensive. 1in. square wood is recommended as being the minimum size easily worked. You will probably have to buy this and will have

to pay according to size. One useful point to remember when buying is that it will often be cut to the lengths you require without extra charge.

Suitable jointing may be used if you wish, but as all joints are out of sight inside, and as the covering fastened upon the framework will give rigidity, no special joints need be attempted. The wood lengths may simply be nailed together.

The floor should be constructed first. Having made the framework, planks should be nailed upon it before starting to make the kennel body. The framework is sufficient to keep the kennel off the stones of a yard, but bricks or legs should be provided for additional support if the kennel is to be placed upon grass or bare soil.

Tongued and grooved boards are best for the floor. But should planks be the



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

only thing available, it is a good idea either to fill in the cracks with tar, putty or plastic wood, or to tack roofing on to the underside. Draughts coming up through the floor can make a dog very sick.

Before going on to the kennel body, you may care to make provision for

MATERIAL NEEDED

All wood lin. square.	
Base Frame.	2 of 4½ ft.
	3 of 1ft., 10ins.
Kennel Body.	2 of 3ft.
	3 of 1ft., 10ins.
	and odd pieces to complete entrance frame.
Roof.	3 of 5ft.
	3 of 1ft., 10ins.
	6 of 1ft., 6ins. (which must be shortened and have one end cut diagonally, as illustrated).
Summary; Lengths.	5ft. 3.
	4½ft. 2.
	3ft. 2.
	1ft. 10ins. 9.
	1ft. 6ins. 6 and odd pieces.

your dog's water and food bowls on the floor extension. This may be done either by cutting holes to fit them or by nailing on wood strips.

Whichever method you use, you will find it an advantage not to have your dog pushing them away as he licks at a tit-bit stuck on the side of his bowl.

The framework of the kennel body may now be put together on the completed floor. The wooden bar at the foot of the kennel entrance is to prevent rainwater from being blown inside of the extension.

The Best Position

The side chosen for the kennel entrance should, if possible, be against a wall, and it is an advantage if the kennel can be placed with its back to the north and sheltered from strong winds.

The roof should be made as a separate unit, care being taken to make it fit flush upon the body of the kennel. If it is not made true and square, there will be a draught. Countersinking the hinges is an important point for this reason. Strips of roofing felt may be tacked along the top edges of the kennel framework with advantage.

Last y, sides and roof may be completed satisfactorily in several different ways, all of which have points to commend them, according to the materials you are able to obtain. For cheapness and efficiency, second-hand planks may be nailed on and then covered with roofing felt.

Tongued-and-grooved boards are, of course, excellent, though rather expensive, and may be tarred or merely given a few coats of good paint to render them quite weather-proof. Asbestos board is clean-looking and can be bought cut to size from many firms. Holes may be drilled in it and screws will hold it in place with a minimum of construction effort.

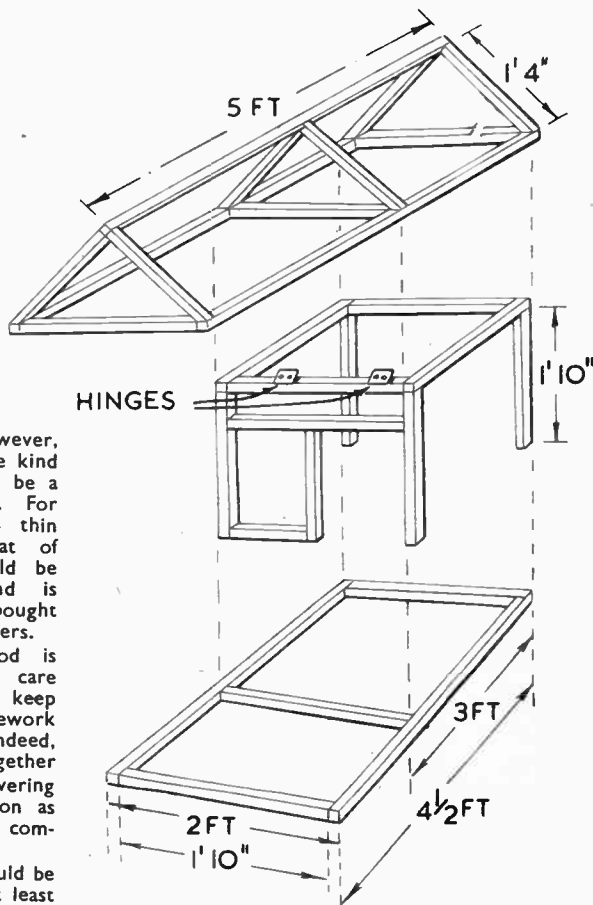
It may be painted to improve its appearance. It is, however, cold stuff, and some kind of wood lining will be a necessity for winter. For this purpose rough thin wood, such as that of orange boxes, would be quite suitable, and is sometimes easily bought from many shopkeepers.

Whichever method is decided upon, great care should be taken to keep the kennel framework square. It may, indeed, be partly fitted together and the outer covering nailed or screwed on as far as possible before completion.

The roof itself should be made to over-hang at least a few inches, on either side. When filling in the triangle of the roof back, this may be made to overlap the covering of the kennel body a ½ in. or so, so

water will run over the joint without entering.

A summary of the lengths of wood required to construct the framework of such a kennel, 3ft. by 2ft. wide and high (about 3ft. to ridge) and for a roof projecting over the front 2ft. and for a front feeding extension of 1ft. 6ins. is given here.



The total of 60ft. may seem a lot, but remember that a single plank 1in. thick 1ft. wide and 6ft. long will give you more wood than you will require. (187)

From the EDITOR'S NOTEBOOK—

I HOPE readers now realize that *Hobbies Weekly* is obtainable by all who want it. Earlier in the year paper restriction prevented us printing sufficient to meet the demand. Now, however, paper is 'free' (at least so far as periodicals like this are concerned) and no newsagent need say he cannot get a copy. Our circulation is higher than it has ever been during the 50 years we have been publishing, and more and more copies have to be printed each week. If your friends do not know this fact they should be told, and any newsagent will be pleased to take an order for supplying a copy every Wednesday.

NOT all builders of buildings need worry about permits for materials or plans passed by half-a-dozen authorities. If you are a matchstick builder you please yourself what you do—and that does not often happen nowadays! You can even emulate Joseph Ward of Ninth Avenue, Limeside, Oldham, who completed a replica of the House of Commons with 18,000 matches. That, I think, must be his record, although he had previously built the Queen Elizabeth (with 7,000) and the Lancastrian. At any rate such models are always an attraction at any exhibition and probably repay the time and labour involved in their construction.

I AM always happy to congratulate readers with outstanding merit, and I am sure Master Andrew Read of Glade Road, Marlow, Bucks, comes in that category. You see, this 10 year-old enthusiast did not let a disability of having no right hand prevent him entering the Slough Arts Festival recently. Here he won a first class certificate with his entry of our Design 2784 of a Travelling Circus Lion's Cage—quite a good achievement. Which just snags that difficulties can be overcome if you have the right spirit. Congratulations, Andrew and may you gain many more awards.

The Editor

Set yourself a time for a smoke with this NOVEL CIGARETTE BOX

THE useful little cigarette box shown here is certain to arouse interest and admiration wherever it is shown. Because, in addition to the sense of good hospitality that a tasteful cigarette box always gives, there's a catch to it! It is made in the shape of a modern time-piece, but the lid can only be opened when the clock hands stand at one particular time. Unless that position is known—no cigarette!

Making the box provides an interesting piece of wood and metal work, but requires only oddments such as are often left over from larger work. The compartment to hold the cigarettes has been kept small because nowadays, with the price of cigarettes higher than it used to be, many smokers prefer to obtain their supplies fresh, in small quantities, and seldom wish to keep a large number in stock, even if they can get them!

Materials Required

The measurements given allow of wood $\frac{1}{4}$ in. thick being used, but this can, of course, be varied as required. For the clock spindles two fine-threaded bolts are required, one about $2\frac{1}{2}$ ins. long and $\frac{1}{8}$ in. in diameter and the other a piece of a $\frac{3}{16}$ in. bolt about $1\frac{3}{8}$ ins. long.

It is best, however, to procure bolts longer than this, and leave the actual

cutting down until last, since their actual length depends upon the thickness of the nuts to be used. Four thin nuts are required to fit each bolt. The hands and lid fastener are cut from thin sheet metal, either brass, or, better still, thin iron plate which will not bend as brass sometimes will.

Make a start by cutting out the case; Fig. 2 shows the design for front and back. Dimensions for the rest of the case as given in the cutting list, and it will be readily seen from Fig. 3 how these are assembled. The inner compartment holding the cigarettes is fixed between two partitions, as shown, but do not assemble this until the work on the spindles has been done.

It will be found more convenient, too, to leave the cutting of the bottom piece of the cigarette compartment until later, since its exact width will depend on the amount of space to be taken up by the 'works'. This, naturally, varies a little according to the thickness of the nuts used on the spindles.

The Discs

Two wooden discs are required, as shown at Fig. 4. They each have a slit cut in them all the way round, into which the catch on the lid engages. The opening in the slits is to allow the catch

to be released in one particular place only. It will be seen from Fig. 5 that one disc requires a centre hole to take the larger spindle, and one a hole for the smaller.

The Spindles

The head of the larger bolt is cut off, and then this bolt is drilled down the centre to allow the thinner bolt to fit inside it. Take care when putting the bolts in the vice to use wood on either side of them, so the thread is not damaged.

The hole down the centre of the larger bolt needs to be just big enough to allow the smaller spindle to turn inside it. So it is quite a good plan to try out the bit it is proposed to use, on an oddment of scrap wood, pushing the smaller bolt into the hole to make sure it is neither too large nor too small for it. When drilling the actual bolt, it is usually safer to drill half from one end and half from the other, to keep the hole down the middle quite parallel.

The hands are cut from strip metal with metal-cutting fretsaw, and finished off with a fine file. It will be seen from

Fig. 6 that the bases of the hands must be left big enough for them to be drilled for the spindles, one fitting on to the outer and one the inner spindle, in the manner of real clocks.

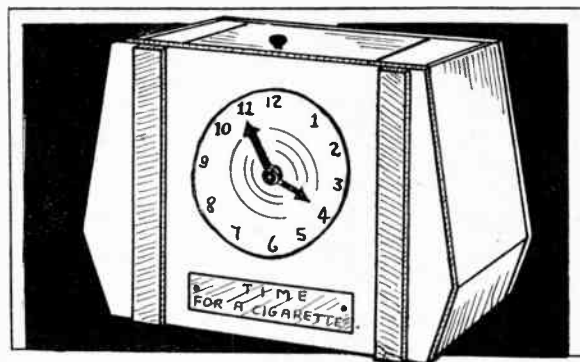


Fig. 1—The completed clock and case

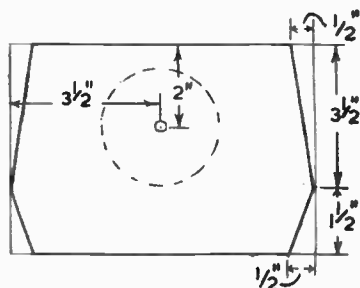


Fig. 2—Shape of front and back

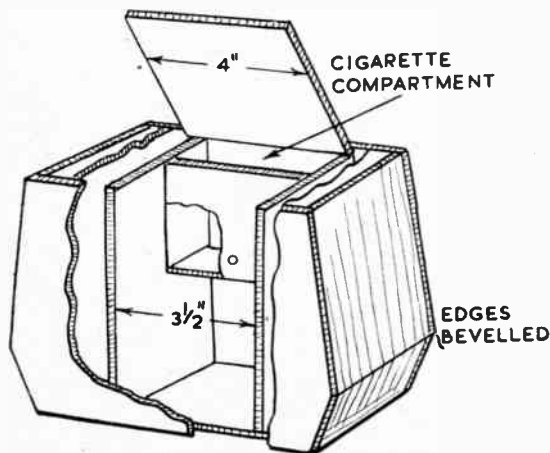


Fig. 3—Cut away view showing construction

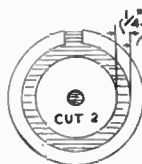


Fig. 4—Wooden discs



Fig. 8—The tablet

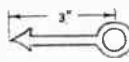


Fig. 6—The hands

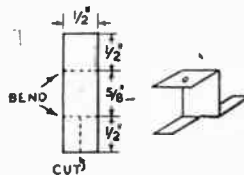


Fig. 7—The Catch
339

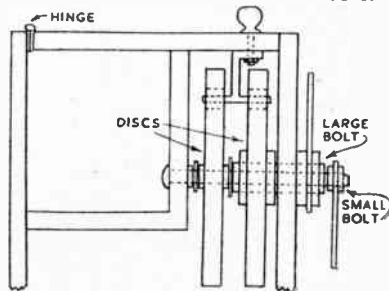


Fig. 5—Section showing mechanism

Use as strong a metal as possible for these hands, since they are turned to the 'opening' position with the finger and the appearance of the finished model is marred if the hands get bent after a little use.

Before assembling the cigarette compartment inside the case, fit on the spindles in the manner shown at Fig. 5. A hole is drilled in the front of the compartment, through which the thin bolt goes. The order for the rest is then: small nut, washer, another small nut, one disc, small nut, washer, and then the larger piece of spindle.

On this larger thread are screwed first a nut, then the second disc, another nut, then the front of the case followed by two more nuts with one hand in between them. The other hand is then held between two nuts on the end of the inner spindle.

If the pieces are assembled in this order, and screwed finger tight, tedious work inside the case is avoided and it will be readily seen just how long the

spindles need to be, before finally cutting off. Placing the whole fitting in to the case, with the front in position, will also show just the right width for the bottom piece of the cigarette com-

Cutting List		
No. of Pieces	Description	Size
2	Front and Back	7ins. by 5ins.
2	Bottom and Top (cut again for lid)	5½ins. (tapered) by 3½ins.
2	Sides, Top	3½ins. (tapered) by 3½ins.
2	Sides, Bottom	1½ins. (tapered) by 3½ins.
2	Partitions	4½ins. by 3½ins.
1	Compartment Front	3½ins. by 2½ins.
1	Compartment Bottom	3½ins. by 2ins. (approx.)
2	Discs	3ins. diameter
2	Strips for Front	5ins. by ½in.
1	Inscription Panel	3ins. by ½in.

partment, which can then be marked and cut off right first time!

Fig. 7 shows how the catch is made. It is held to the lid by the same bolt that holds on a little knob, and it engages in the slits cut out of the discs, as shown at Fig. 5.

To 'set' the clock, choose whatever time it is required to work the 'open sesame', and put the two hands to this position. Then, holding the hands still, turn the discs until the opening in the slits is just right to set free the catch.

It will be seen from Fig. 7 that the two discs will not be exactly level with each other, but one turned on slightly further, to allow both sides of the catch to be released at once. When this has been done, tighten up the nuts on either side of the discs, to hold them firmly in position.

Fig. 8 shows one simple design for an overlay of the inscription, but handymen who are good at lettering might prefer to paint this also direct on to the front of the case, which gives greater scope for decoration and ornament.

(238)

Full size patterns on page 351 for these TWO NOVEL BOOK-ENDS

THIS week we are giving our fretworkers two novelties to make up, novelties which would appeal to all if they were given as Xmas or birthday gifts. They are, too, useful gifts, and simple in construction and finish.

Book-ends are ever popular with our workers, so here are two designs of a similar nature regarding the actual book-ends, but it is the added novel decorations which make for the contrast. Looking at Fig. 1 we have clearly shown how the figure of a lamb is made to stand between the ends of two hurdles. On the second design we have represented the open end of a kennel with a well-bred terrier standing on guard.

Full Patterns

Both these designs should be effective if well cut and coloured realistically. The maker of these book-ends will be pleased to note that we have included in this issue—on page 351, full-size patterns of all those parts which need individual attention in the way of detail cutting with the fretsaw. We have shown there the patterns of the hurdles and the lamb, and the kennel end and the terrier.

On this sheet also is given a clear outline diagram with suggested sizes for the book-end which should, of course, be made from ½in. wood. Cut two pieces as (A) of oak, or some such hard wood, or, of course, one of the softer woods would answer almost as well.

The top of the piece can be cut to the shape shown or to a simple curve, or again the corners may be just rounded in a similar way to piece (B) to which the upright is screwed from beneath. Use long countersunk screws, the heads

being filled afterwards with putty or better still a mixture of glue and sawdust.

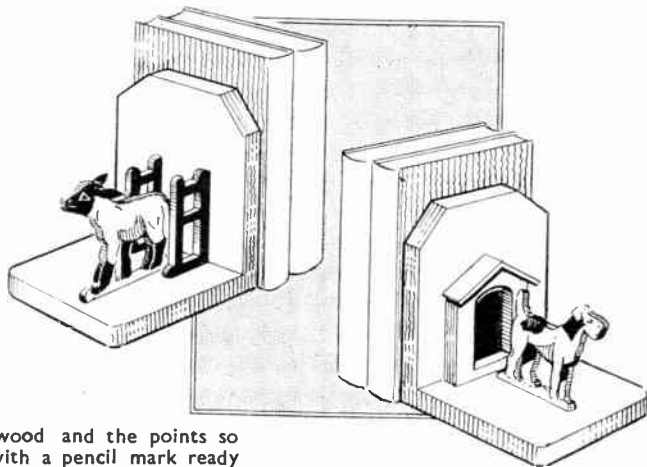
The pattern (C) for the front of the kennel can be cut from ½in. or ¾in. wood and the pattern may be either stuck down direct to the wood or the outline may be pricked into the wood and the points so made joined with a pencil mark ready for cutting out.

The piece should be glued to the upright and the two roof slopes (D) then marked out and cut from ½in. wood. One short end of each piece must be chamfered, as shown in the section on the pattern; this is made so the pieces may join at a point of the roof, as shown in the sketch.

Kennel and Dog

Apply a little glue to the edges of the kennel overlay at the top, and also put some glue on one of the long edges of each roof piece. Then press into place, putting in one or two fret pins for strengthening the joint as it is to the end grain the jointing will be made.

The pattern of the dog is simply stuck down to ½in. wood and cut round to outline and the two interior frets afterwards made. Certain parts may be carved away and rounded to make a



realistic looking terrier. The base of the dog is well glued to the base (B) and finally white and black paint will nicely finish it off.

The Lamb

The other book-end, with the lamb, is carried out in a similar manner to that just described for the dog. The uprights (E) are carefully cut also, the patterns being stuck down to the wood or transferred to it by means of carbon paper. When gluing them to the base and upright, space them 1½ins. apart and then glue the lamb centrally between them.

In this case it would be best to colour the lamb before gluing down, or glue the lamb down and finally add the two side uprights. A piece of green baize can be glued to the base of the book-ends to get grip with the polished surface of table or sideboard.

How to build a simple Fixed Focus PHOTOGRAPH ENLARGER

THE ambition of every keen amateur photographer (as against the mere 'press-the-button' merchant), is to own an enlarger. Apart from the satisfaction of having larger prints, one is able to enlarge special parts of a picture, and by lopping off dead wood, so to speak, make a much more satisfactory composition.

But a vertical enlarger costs a good deal of money, and to make one at home demands, in addition to the necessary lens, etc., work of a high standard.

But quite a lot of fun can be obtained, at very little cost in time and materials, with a box enlarger of fixed focus. Obviously it will not give such accurate results as the very expensive professional enlargers but, if well made, will give quite good postcard enlargements from the popular small-size negatives, and this is the largest size that most amateurs will care to undertake at the present cost of photographic paper.

A Suitable Lens

The lens used comes from a watch-maker's eyeglass, of the type illustrated in Fig. 6, and does not cost more than a few shillings normally. Ask for a $5\frac{1}{2}$ inch glass, which means that it has a focal length of $5\frac{1}{2}$ inches. A lens of any other focus will affect the dimensions given in this article. The mounting (telescopic), is usually of spun metal. The trumpet-shaped piece may be disregarded, and we are left with one piece that contains the actual lens and another short tube-like piece.

The distance between the lens and the negative (see Fig. 1) is thus invariably ($5\frac{1}{2}$ ins.) but that between the lens and

the print (i.e., between frames C and D of Fig. 2) varies. Unless we are going to have an adjustable (sliding) frame and a bellows, we have to decide in advance on what size of film we wish the enlarger to take.

The most popular sizes of film appear to be: Nos. 27, 20 and 18.

For a No. 27 ($1\frac{1}{8}$ ins. by $2\frac{1}{2}$ ins.) negative, make distance (x) i.e., between the surface of the lens and surface of the post-card equal $11\frac{1}{8}$ ins.

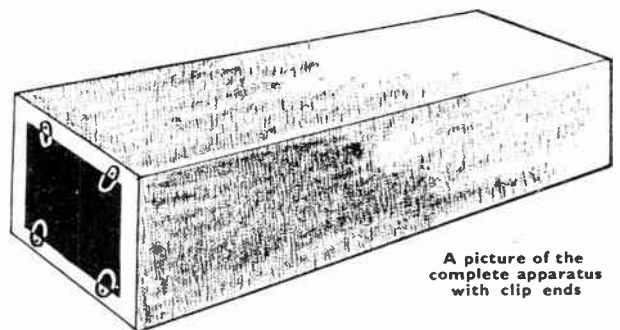
For a No. 20 ($2\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins.) negative, make distance (x) i.e., between the surface of the lens and surface of the post-card equal $8\frac{1}{2}$ ins.

For a No. 18 ($4\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins.) negative, make distance (x) i.e., between the surface of the lens and surface of the post-card equal $6\frac{1}{2}$ ins.

This will enable the distance between frames C and D of Fig. 2, to be calculated and, in turn, the total length of the base board.

Base Details

The base (A) of the enlarger is $6\frac{1}{2}$ ins. wide. It can, for the smallest-size negatives, be cut about 17 ins. to 18 ins. long and any waste trimmed off afterwards. The actual thickness can vary, but $\frac{1}{2}$ in. minimum is recommended. A plank of soft wood can be used, but great care should be taken to see that it



A picture of the complete apparatus with clip ends

is not in winding or warped. A piece of 5-ply would be useful if available.

Three frames (B) (C) and (D) are mounted on this base by screws from below. They all measure, overall, $6\frac{1}{2}$ ins. by $4\frac{1}{2}$ ins., but their arrangement varies.

Frames

The end frame (B) which holds the negative is shown separately in Fig. 4. Stripwood $\frac{1}{8}$ in. thick is used for the main frame, $\frac{3}{8}$ in. wide for the top and bottom and $1\frac{1}{8}$ ins. wide for the sides. A really conscientious craftsman would mitre the corners, as shown, but simpler methods are shown on the main sketch (Fig. 2), i.e., simple butted strips (as at C) or simple lapped halving (as at B).

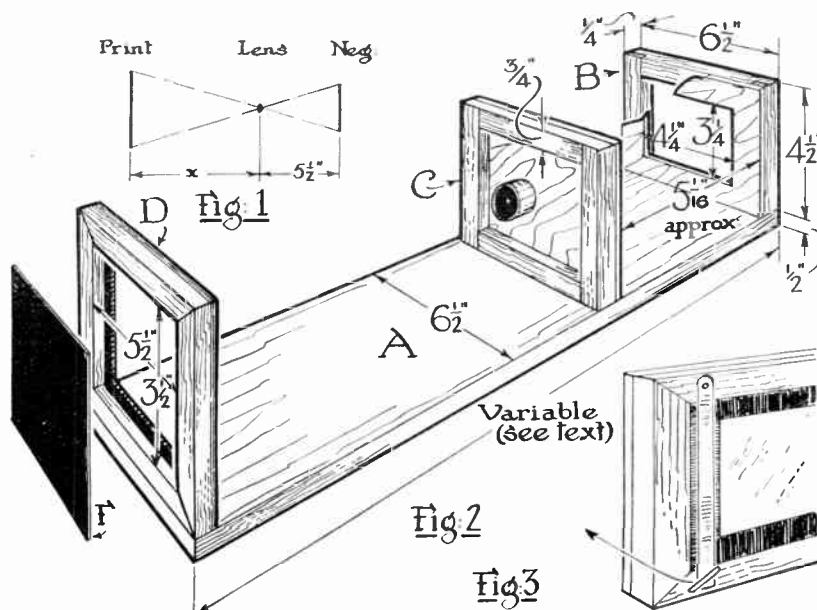
A piece of plywood, $\frac{1}{8}$ in. thick is cut as dimensioned in Fig. 5. When the main frame (B) is glued to it, there will be a $\frac{1}{8}$ in. rebate all round, as clearly seen in Fig. 4. In Fig. 2, a corner of the frame (B) has been cut away to show the construction.

Film and Plate Sizes

The main (rear) opening will be $4\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. This is regular half plate size, and it may be possible to get two old plates in order to make the negative-holder (E). Just soak the plates in warm water for a while and the emulsion can then be rubbed off easily. Otherwise use picture glass of good quality. Two pieces $4\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. are required, but ordinary window glass will not do.

For smaller sizes of film than half-plate, paste strips of black paper to one sheet of glass (Fig. 4) so that your negative can be centred on the glass. Another piece of glass is hinged to the first by means of a strip of passe-partout so that the two pieces of glass open book fashion for the insertion of the negative.

When closed, the negative is held stiff and flat. To keep the glass in tightly against the rebate, curved strips of whippy brass are used, as shown in Fig. 3. These are similar to the clips on the back of wooden printing-frames, whence further details can be obtained. Take care that these clips are kept clear of the clear glass opening. Fig. 3 shows a



corner of frame (B) with the negative holder clipped in position.

Negative Holder

The negative holder, however, can be laid aside for a while whilst frame (C) is made. It is possible (perhaps, even best) to use solid wood for this, though a framed construction is shown. This can be $\frac{3}{4}$ in. wide all round and $\frac{1}{4}$ in. thick. It will be best to start off with the plywood piece and then mount the frame on it.

Find the exact centre of the plywood panel by ruling diagonal lines and then make a hole to take the lens and stop. As the wood is too thin to take a brace bit (unless solid wood is used) the hole should be cut with a fretsaw. The lens mounting has to be a tight forced fit, so cut the hole a trifle on the small size and gradually enlarge it with glasspaper. In Fig. 2 we see the tube part of the lens. The lens itself is on the other side, facing part (B).

A Stop Tube

This tube will require a 'stop' to limit the amount of light and to secure better definition. This is a piece of card, opaque, plastic or metal made to fit in the end of the tube (see Fig. 2) and having a clean hole a little over $\frac{1}{8}$ in. punched in it. A fuzzy-edged hole will give poor results.

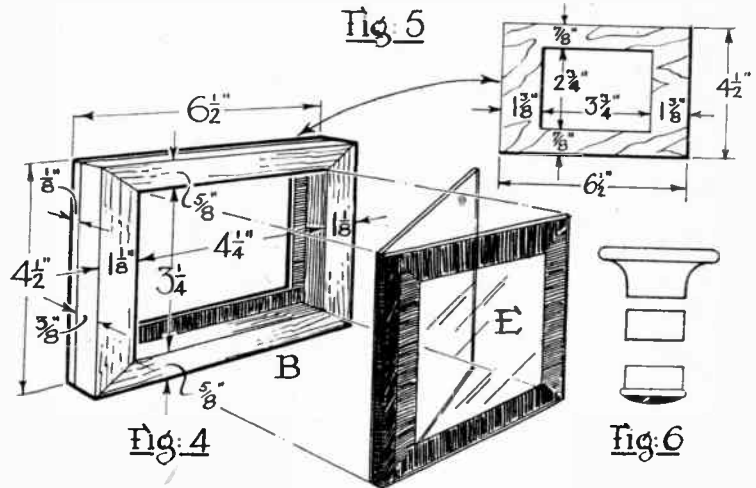
Frame (D) is somewhat similar to frame (B) except that the main opening is $5\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. (postcard size), so that the opening in the plywood will be 5 ins. by 3 ins., this giving a $\frac{1}{2}$ in. margin all round.

A piece of cardboard (F) is cut so as to go in the rear of frame (D). It is held in place by small turnbuttons (seen in the picture of the completed box on the previous page) or brass clips similar to those shown in Fig. 3 may be used.

The frames may now be mounted on the base (by screws from underneath). It is most necessary to observe that all frames must be square with each other

and to the base. The middle frame (C) is so arranged that the distance from the negative to the face of the lens is $5\frac{1}{2}$ ins. This is not necessarily the distance between the faces of the frames themselves. The distance between the face of the lens and the surface of the postcard has already been given. Here again, it is necessary to point out that this is not necessarily the same as the distance

The greatest care must be taken to ensure that the box is (apart from legitimate light coming via the negative) perfectly light-proof. The smallest pin-hole or cracks between frame (C) and the sides will have unfortunate effects on the print. Thus all joints should have several thicknesses of brown paper glued over them. The enlarger is finally covered with



between the faces of frames (C) and (D). Study Fig. 2 carefully for the arrangement of the frames.

Ply or Card Covering

Preparations can now be made for boxing in the whole lot. This is a very simple job, as all it means is that one piece of, say, $\frac{1}{4}$ in. plywood exactly the same size as the bottom is tacked to the top and then thinner sides fitted of, say, $\frac{1}{4}$ in. ply or even good cardboard. Before the boxing-in is done, however, all internal surfaces must be painted with a dull egg-shell black (a glossy black enamel will not do).

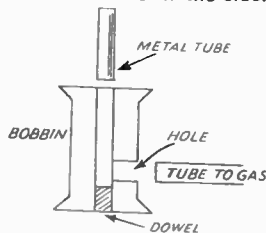
leatherette paper or something similar.

It is a good idea, however, to postpone final nailing down and finish until the enlarger has been tested. It may be necessary to shift, very slightly, the position of the lens frame (C), or vary the marks slightly. Temporary joints can be formed with panel pins, gummed paper, plasticine, etc.

In use, the negative is placed between the glasses (E) (taking care that they are clean) and this is clipped into position. The dull side of the film will be towards the inside of the enlarger. In a dim light or photographic safe light, place a bromide postcard into the end frame, 'business side' inwards, and press home the cover (F), buttoning it down.

A Bunsen Burner

A SIMPLE bunsen can be made in the following way. Find a large bobbin and drill a hole in the side.



shown in the section drawing, and you will have a fine bunsen burner.

Cleaning a File

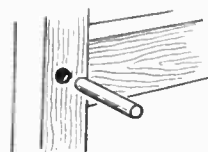
IF you are lacking the usual card file, procure a piece of heavy copper wire. Flatten one end slightly and rub it to and fro along the direction of the teeth. This method will clean a file clogged with sawdust or solder.

Carbon Paper

FOR duplicating paper, melt together 5 parts castor oil and 1 part cerasin, stir in 5 parts drop black (lampblack), remove from fire, add 10 parts petroleum ether. Brush on to thin paper.

Repairing Clothes Horse

IF the joints of a clothes horse show signs of coming apart, drill a hole through each with a $\frac{1}{4}$ in. drill bit, and

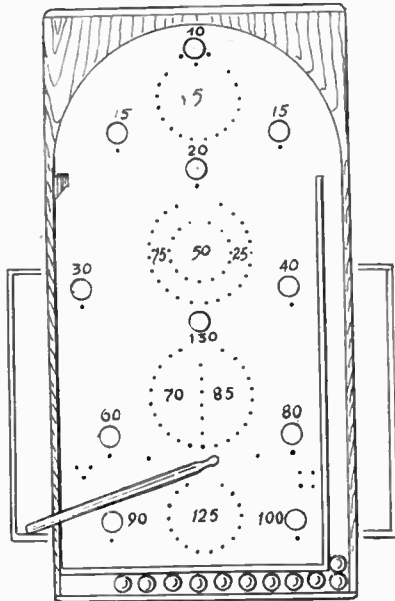


insert a well glued piece of $\frac{1}{4}$ in. dowelling. After the glue has set, clean off the protruding ends of dowel. The joints are now a firm job at just the cost of the dowelling and a tube of liquid glue.

Exposure Times

The length of exposure will depend on several factors such as the intensity of the light (daylight, by the way, is the best and speediest) and the density of the negative, and also on the speed of the paper used. Practical experiment is needed. A good method (and one that saves wasted material) is to cover up, say, two-thirds of the negative and expose the remaining third for, say, 20 seconds. Then expose two-thirds of the negative so that the original third gets an extra 20 seconds, and finally expose the whole negative, so that one strip (the last exposed) has had 20 seconds exposure, the middle one, 40 seconds and the third, 60 seconds. On developing, note which strip gives the best result, and note, too, the quality of light that prevailed. Never point the enlarger directly to the sun. Instructions for developing, etc., are to be found in all the standard manuals and in the free literature issued by photographic manufacturers.

A popular and pleasing game is enjoyed with a PIN BAGATELLE TABLE



THIS is a popular indoor game, simple to make up and well worth the little trouble involved.

The baseboard should be made of plywood, the thickness of the wood should be $\frac{3}{8}$ in. to $\frac{1}{2}$ in. to provide a solid enough bed for the balls and sufficient thickness for the pins to grip in.

The pins are brass ones, 1 in. in length, and can be bought at most hardware shops. The position of these is shown in the general view of the finished board, a plan view being given for that particular purpose. The pins are spaced $\frac{3}{8}$ in. apart, and should be symmetrically placed, guide circles being drawn on a pattern to assist in this.

Baseboard

Make a start with the pattern. This is seen in Fig. 1 and should be drawn out on white paper. The top part is semi-circular and should be trimmed to that with scissors. Strike the 4 circles on a centre line, and put in as pencil dots the position of the pins and cup centres.

Now, from a piece of the plywood, cut out the baseboard to the size of the pattern, and clean up the edges. In the commercially made article the baseboard is provided with a rim, but as bending this round the semi-circular top involves some steaming, and is sometimes a little troublesome, readers can make the baseboard as a rectangle, as shown, and provide a curved run for the balls in the following simpler way.

Cut a piece of $\frac{3}{8}$ in. thick board to the size given in Fig. 2. The grain of this should run in the direction shown, so two or more pieces of the board will have to be glued together to make up the width. Run a line along the bottom,

$\frac{1}{2}$ in. up, and in the centre of this strike the semi-circle shown. Cut out, then glue to the plywood at the top, allowing $\frac{3}{8}$ in. each side to overhang.

The sawn curved inside edge, by the way, should be glasspapered to smoothness. Cut two strips of wood, $\frac{3}{8}$ in. thick, $\frac{3}{8}$ in. wide and 8 $\frac{1}{2}$ ins. long, and glue these to the edges of the plywood, each side, to bring the edges of the baseboard level with the glued-on piece. Make a close fit here, then the joint will scarcely be perceptible, after finishing.

Rim Pieces

Two rim pieces for covering the remainder of the sides will be required, 1 $\frac{1}{2}$ ins. wide. These extend from the bottom of the baseboard to the glued-on top piece. A similar strip is glued across the bottom, to complete rimming in the whole board. The corner edges of this are neatly rounded off, as in detail (B) in Fig. 3.

Cut another rim piece for the top edge, this being 1 $\frac{3}{8}$ ins. wide, so that it will extend below the board $\frac{1}{2}$ in. and give it just the necessary tilt to send the balls rolling briskly down the table. Trim off the bottom corners of this piece, as at (C).

Now take the paper pattern, pin it to the table, and with an awl prick holes as a guide for the pins and cups. Remove the paper then with a $\frac{3}{8}$ in. centre bit, bore the cup holes just $\frac{1}{8}$ in. deep. It will be found that a few turns of the brace will cut the wood deep enough, then the waste can be removed with a chisel and leave a flat recess.

Finish to Woodwork

At this stage any finishing of the woodwork can conveniently be carried out. The cup holes look better if stained black. The bed of the table can be just varnished or waxed. The rim portions look more effective if stained oak colour before varnishing.

At point (A) on the board, a tempered steel pin can be driven in, failing the pin, a block of wood, $\frac{3}{8}$ in. wide and 1 $\frac{1}{2}$ ins. long, shaped as at (D) in Fig. 4, can be substituted. This is glued in position, and has a piece of thickish rubber glued to its upper end to act as a spring, pitching the ball forward for its run down the board.

An alley way is provided by nailing a strip of wood $\frac{3}{8}$ in. wide, and $\frac{1}{2}$ in. thick and spaced $\frac{3}{8}$ in. from the side. This starts at $\frac{3}{8}$ in. from the bottom, and

finishes just below the commencement of the upper curve.

A second strip of similar wood joins this, and is nailed across the board, providing a space for the balls before they are brought into use. These strips, like the board, can be left plain, and be varnished or stained as preferred, to match the rim pieces.

WOOD REQUIRED

Plywood—2ft. 6ins. long and 1ft. 3ins. wide
Rim pieces (2)— $\frac{3}{8}$ in. by 1 $\frac{1}{2}$ ins. by 1ft. 10 $\frac{1}{2}$ ins.
Rim pieces (1)— $\frac{3}{8}$ in. by 1 $\frac{1}{2}$ ins. by 1ft. 3 $\frac{1}{2}$ ins.
Rim pieces (1)— $\frac{3}{8}$ in. by 1 $\frac{1}{2}$ ins. by 1ft. 3 $\frac{1}{2}$ ins.
Alley way, etc.— $\frac{3}{8}$ in. by $\frac{1}{2}$ in. by 3ft. run
Curved top piece— $\frac{3}{8}$ in. board, approximately 1ft. 6ins.

The pins can now be driven in their respective positions. Drive them in firmly, and see sufficient room is allowed for the balls to enter the circles. It will be noticed that the pins are used, right and left, near the bottom, to form an angular and square box, as it were. When the balls enter these, all balls on the board which have failed to score can be used again. The numbers against the cups and circles, can now be put in with paint and fine brush.

For the game 12 steel balls will be needed, $\frac{3}{8}$ in. diameter, and a cue. The latter is sketched at (E) in Fig. 4, and can be easily shaped up from a length of $\frac{1}{2}$ in. round wooden rod.

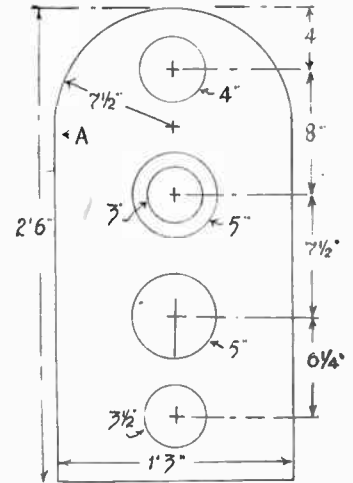


Fig. 1—Plan of board with pin circles

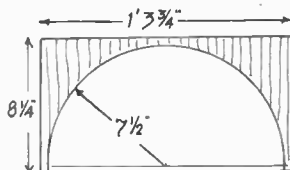


Fig. 2—For a rectangular top

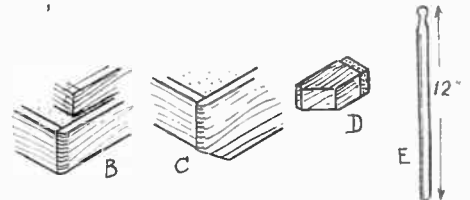


Fig. 3—Corner joints

Fig. 4—Tip and cue

Amateur angling should include BREAM FISHING

BREAM provide many anglers with much enjoyment. Not every river contains these fish, for they prefer slow-flowing waters, canals, sluggish waterways, ponds, meres, lakes, and ancient moats. Perhaps their choicest haunts are in those beautiful sheets of water known as the Norfolk Broads. The drains of Lincolnshire and the Fenlands generally are to their liking, and thereabouts they thrive wonderfully, roving up and down the reed-fringed water-courses in huge shoals.

How to Identify

The bream is easily identified by its great depth of body, its long and markedly-forked tail, its blue or dusky fins, large scales and bronze colour. In the words of Izaak Walton, the bream is a 'stately fish'. Bream attain good size; one of 12lb. 12oz. was caught at Startops End Reservoir, Tring, in 1931. Before that event, the biggest English bream seems to have been one of 11lb. 3½oz. from the Ordnance Pool, Enfield. Another Tring fish weighed 11lb. 2oz. and was caught in 1930. The Thames has yielded bream of 10lb. 13½oz., and 9lb. 14½oz., in addition to many fish ranging from 5lb. to 8lb.

In addition to the Thames, the Broads, and the Great Ouse, there are many fine bream waters, as the River Axe, in Somerset, and the Lincolnshire Witham and the Glen.

For sport these fish are all right, especially if you drop across a big lot at their breakfast time. In these bigger shoals the fish run an average of 2lb. to 3lb. An occasional larger fish is met with.

Tackle and Outfit

The tackle required consists of a light cane rod of 12ft. to 14ft. in length, a Nottingham reel, with a fine dressed line, just a trifle thicker than is used for roaching, a 2yd. cast of fine undrawn gut, and 'crystal' hooks, Nos. 8, 9, or 10. The float may be either a medium-sized porcupine or a swan-quill.

When fishing very deep water you will do better with a 'slider' float. When angling for bream in the daytime, it is advisable to have but two or three small split-shot nipped on the cast about 18in. above the hook. Some anglers squeeze small pellets of ground-bait round the shot; this flakes off gradually, leaving the cast free, and helps to attract the fish.

Ground-Bait

Popular ground-baits for bream include bread and bran, soaked and well kneaded together, brewer's grains, worms, maggots, greaves ground-up, potatoes, etc., etc. Some old regular bream-fishers believe in baiting up for several days before fishing a 'swim', throwing in huge quantities of ground-bait.

However, you need not go to all that trouble. You need but to carry a small bag of soaked bread and bran (stale bread will do), and a tin of red worms or brandlings. Setting out for the 'swim' where you desire to try your luck you should keep an eye open for signs of bream—muddied patches of water tell the tale of roving bream.

They have a habit of roaming to and fro—here today and gone tomorrow, as it were. We have known them in abundance one day, but a few days later that same shoal might be a mile or two downstream or upstream in another deep spot. As they travel they root on the bottom for food. We have seen whole stretches of Lincolnshire waters milky in colour because of the travelling bream, churning up the mud.

Suitable Positions

Given such a clue, the angler should make the most of it, selecting such a spot and throwing in his ground-bait to keep the shoal working around thereabouts. The float should be adjusted so the baited hook just drags the bed of the stream.

Bream are sensitive, and you need to set about your task quietly—and keep quiet all the time. No jumping around on the bank. On waters like the Broads, where bream are often in shallow parts, it is needful to cast a long line from a moored boat to where the fish are feeding. The shallow, clear water, beloved of bream inhabiting Broads and meres, makes casting from a distance imperative.

There is much fascination in watching the float when breaming. Sometimes, when a fish bites it will be dragged under immediately. At other times the quill will be noticed to rise in the water and lie flat on the surface, and if you wait a little while it will sink under. This happens when a fish rises with the bait in its mouth.

The Time to Strike

Bream have a way of blowing out the

baited hook if they feel the slightest resistance of the line. When the float slides under in a kind of sidelong movement—strike! Bream will frequently suck off the bait—especially wasp-grub—so quietly that you cannot discern it until too late—when you do strike you miss the fish! Some anglers advocate a worm threaded on a three-hook tackle when bream behave in that manner.

Sporty Play

Big bream give capital sport. They are hefty, pull hard, nose-dive for the muddy bottom, or plunge around, tugging strongly the while. But play the fish carefully and he will yield up the gage of battle. Be sure and take a long-handled landing-net with you, for you may have to fish from the top of a steep bank. It is hard luck having to lift a wallop into the air before you can get him on the bank—and to lose him in the process. Have a net that will reach well down.

Once you have located a feeding shoal, ground-bait judiciously—little and often whilst you are actually fishing—to keep them there. If the shoal moves on, follow. If the water is clear, take cover behind reeds, etc. Fish the bait on the bottom. Let your tackle be reasonably fine.

Best methods to adopt include 'stret-pegging' or 'laying-on' and ledgering. The bait must be well on the bottom. Best baits include red worms, brandlings, dew worms, tail-end of lobs, wasp grubs (in summer), caddis grubs, pastes, boiled wheat, white greaves. Red worms, lively and well scoured by keeping them in clean moss for a few days, are as good a bait as any. September and October are good months for bream-fishing, provided the weather is favourable.

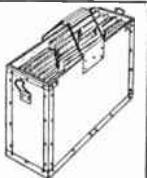
Types Caught

The common bream (*Abramis brama*) is most numerous in our rivers and still waters, but there is a smaller species known as the silver bream (*Blicca bjoernka*) often alluded to as 'tin-plates' or 'flats' that average around 1lb. to 1½lb., though specimens up to 2lb. or so have been recorded.

Like the common variety they feed on the bottom or near it, and swim in shoals. Baits and methods for these bream-flats are similar to those employed for catching the common species; silver bream are not very sport-giving, but at times they may be had in quantity.

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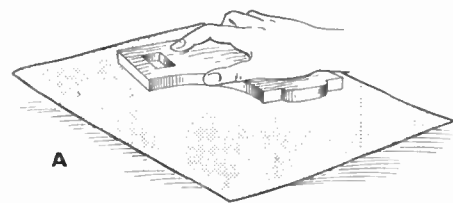
MORE and more people, particularly craftsmen, are realising the value of the fretsaw frame and the complementary tools which go with it, and the wider sphere of use to which all these can be put. Whereas originally, of course, it was intended for use in fretwork, it has now extended its value for almost all kinds of light woodwork.

In consequence, the variety of suggestions in these pages has increased, but in most of them the use of the fretsaw will be an important tool which accounts probably for the fact that more and more of these fretwork frames and fretmachines are being sold, and their usefulness is being appreciated not only for producing articles of decoration, but in practical light woodwork about the home.

Saw Points

There are now obtainable, a whole range of saws for a variety of work. These vary from the very fine multi-toothed blade to the heavy $\frac{3}{16}$ in. wide saw so essential to solid work such as toy making.

The beginner who has the use of the fretsaw frame is apt to forget this range of blades which he can use, and in consequence undertakes work unsuitable and causes himself endless worry and labour. Obviously, if you are cutting thin wood and want a very fine line as in jigsaw puzzle cutting, then you should have a fine sawblade. This is of the grade known as 00.



From there, the grade progresses up to No. 6 which is a coarse one used for more or less rough work of outlines or light woodwork. Apart from that, there is the wide-faced blade nearly $\frac{3}{8}$ in. across from back to front, with proportionately coarser teeth. This is just the blade for cutting thick wood such as used in toy making or the odds and ends of useful work about the house. By using the proper blade you save yourself a lot of trouble.

One point which generally arises with some beginners is that they forget that the cutting is done on the down stroke. The teeth of the blade, therefore, must point downwards. This direction can be seen, but the easiest plan is to run a finger and thumb along the edge of the blade (see Fig. 1) and you can soon tell. Do not, of course, grip the blade tightly

or you may tear your skin, but by lightly running the thumb along you can tell quite easily that the teeth point downwards in one direction.

Another point which may be of interest and assistance is in cleaning—glasspapering the work either as you go along, or when completed. This is apt to be a procedure largely overlooked and

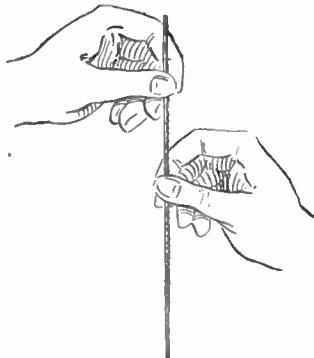


Fig. 1 — Testing direction of saw teeth

hurried. Actually, of course, it should be the finishing touches to produce a clean smooth and shapely piece of work.

In undertaking small parts, their cleaning is sometimes difficult, and here are two suggestions which may help you out. Both are illustrated at Fig. 2 and almost explain themselves. Instead of using the glasspaper on the work in the ordinary way, reverse the process and rub the work on the glasspaper.

rubbed round until the finished surface required is obtained.

Flat cleaning surfaces

At (B) Fig. 2 you have the suggestion for a similar piece of work. This, as you see, is cut from the piece of wood to leave a solid framework, thus for cleaning the little piece of fretted work can be replaced in its original board and thus leave the whole flat surface suitable and simple for cleaning with glasspaper. The board can be pinned to the table for fixing if you wish.

This procedure is particularly useful in preventing those slightly rounded edges which is an unfortunate result obtained by some workers. It is not the easiest thing to keep glasspaper flat on a small piece of work, and in consequence very often the edges of the wood are slightly thinner than the rest. Wherever possible, of course, you should use the glasspaper on a hand block, or better still, on one of the special spring-handled glasspaper blocks which Hobbies Ltd. supply.

Shaped Aids

If you are doing a lot of small work in models, then large pieces of glasspaper are often awkward and unsuitable. At Fig. 3 you have the suggestion for simple little cleaners which can be easily made, and which prove ideal for a number of awkward corners or parts which cannot otherwise be reached in the ordinary way. Small pieces of wood are shaped as shown, and glued to a

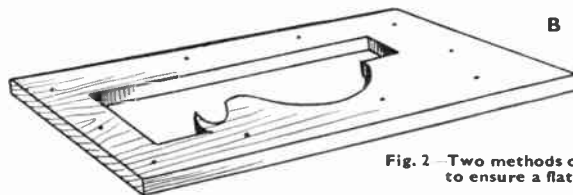


Fig. 2 — Two methods of glasspapering to ensure a flat surface

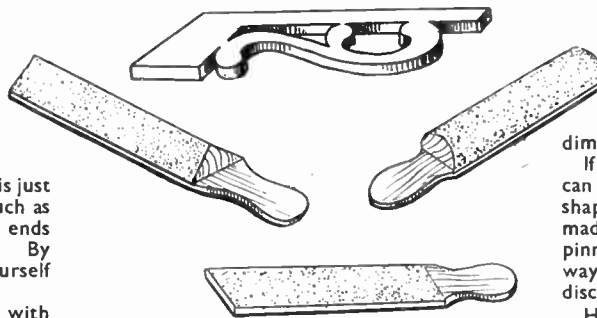


Fig. 3—Handy small glasspaper holders can be made like this

A sheet can be laid flat as (A) Fig. 2, or lightly pinned to the bench with drawing pins, if it is likely to cockle. Then the small piece being cleaned is laid on the glasspaper, and with a circular motion is

handle piece, then the glasspaper can be glued round these parts, so forming a home-made file of suitable shape and dimensions for almost all occasions.

If you prefer, the glasspaper can be just carried round the shaped surface of the home-made file, with overlapped edges pinned on the flat back. In this way, the used paper can be discarded and replaced with new.

Having completed a satisfactory model, there is no better way of showing it off than by having it fixed upon a suitable base. Those you see on display in exhibitions are finished in this way with a fairly thick board and have a base nicely finished in a dark colour, usually black, with shaped rounded edges for neatness.

Baseboard Hints

Remember that this baseboard should always be fairly heavy to provide an apparently solid foundation upon which the model is resting.

If you have, say, a ship apparently at sea, then the imitation waves are on the upper board and a thicker and larger board fitted beneath to form the actual base itself. If you have a locomotive model, then the sleepers are fitted to a secondary base before that in turn is finally put down to a larger one. The lowest base should be polished black and not in bright colours so it will detract from the actual model itself.

If, too, you are adding any display card showing the name of the model, it should be quite a neat small one fitted to this base either against a piece of triangular wood, or resting against the model itself. Do not spoil the whole thing either by having the title or particulars of the model just simply in pencil or even in ordinary ink. You probably know some friend who could print the wording nicely for you on, say, the back of a visiting card, to add to the completely attractive result.

The base can be left with its edges

straight if you wish, but a much nicer effect is produced by rounding the upper edge slightly to give a beaded effect. You

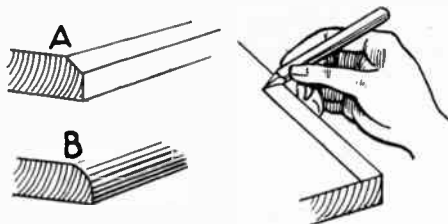


Fig. 4 Pencil mark the edge before shaping

see the result shown in (B) at Fig. 4.

The Shaped Edge

This nicely curved edge not only adds to the attractiveness but also apparently reduces the thickness of the wood which might otherwise look clumsy and heavy. You can get this nicely rounded edge by first taking off shavings with a small plane, and finishing with glasspaper. A similar effect is also obtained with the use of the fairly coarse file, but in such cases, be careful not to let it bite too far into the wood so that scratches show

after final cleaning. In thin wood with small beaded edge you can, of course, get the effect with first a coarse grade of glasspaper, and then a smooth one.

A good plan—indeed, it is essential to get the right finish—is to mark your pencil line along the surface of the wood (see Fig. 4) to show the extent of your curve when the rounded portion is finished. The pencil point is drawn along with the finger pressed close to the edge, thus maintaining a straight line—providing the actual edge itself is straight. Then you can plane down some of the unwanted wood until you get a slope or chamfered edge, as you see at (A) Fig. 2.

From there, you take off the two angles provided, gradually rounding it until you have finished a perfectly smooth curve such as shown at (B). Keep an even pressure with the glasspaper, and work the length of the wood rather than across it. Finish up with a very fine grade and clean away any fine dust with a clean rag. The wood is then ready for whatever finish you are putting upon it.

A simple apparatus which will make an efficient AQUARIUM SYPHON

If you possess an aquarium you will probably realise the need for some method of aerating the water. Fish, insects and plants living in the water cannot live without air. Water contains dissolved air which the creatures breathe, but an aquarium with only a small surface area can soon become exhausted of air unless the water is frequently changed or aerated.

The apparatus described here is by no means original, but it is so useful that we feel it should become more widely known and used.

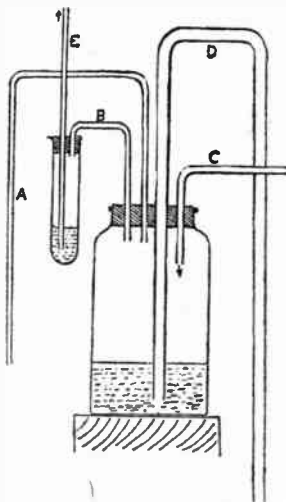
Besides being useful for the aquarium, it can be made just for the purpose of watching its action. Children and grown ups spend literally hours looking at it, and wondering how it works.

The Large Jar

The sketch shows the layout. The centre of the whole apparatus is a large jar, such as a fruit jar. This should have a tightly fitting stopper of cork or rubber. In the stopper you should bore four holes, one for each of the tubes shown. Use a piece of red-hot wire to bore the holes.

The tubes should be made of glass, but you can probably improvise with rubber tubing, if you are careful to avoid kinking. The actual entrance through the stopper must be made of glass (or metal) tubing. Pipe (D) should have a larger diameter than the others.

You can obtain glass tubing from suppliers of chemistry materials (addresses on request), and you can bend it



by heating it gently in a gas flame to a red heat.

An Air Valve

Pipe (B) leads to a test tube, a substitute for which could be a small bottle with a fairly wide mouth. This test tube acts as an air valve. It should contain about 1 in. of water, so the bottom of the

lower glass tube is well covered. Tube (E) must be about 2ft. long.

It works like this. Water flows from the tap through pipe (C) into the air-filled jar. The air which the water displaces bubbles through pipe (A), aerating the water of the aquarium. Gradually the jar fills with water, until there is no more air left to displace.

The Syphon Action

Since the water is still entering the jar from the tap, this rises in pipe (D) until it overflows down the longer arm. Once the water starts to flow down this pipe, a syphon action takes place, and the jar is emptied of water by this means, air being drawn down pipes (E) and (B) to take the place of the water.

When the jar has been emptied, the syphon action naturally ceases, and the process of filling up the jar with water begins again. And so it goes on, hour after hour. The action is fascinating to watch.

Make sure that the water from the tap enters neither too slowly nor too quickly—a little experimenting will show you the best setting. Another point to watch is that you have the lower end of tube (D) about 6 ins. lower than its fellow, or you will not get a good syphon action.

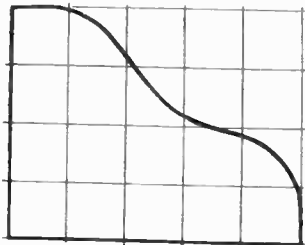
If the stoppers do not fit correctly, or the holes for the tubes are too large, seal them with candle wax, so no air leakages occur. (240)

A handy Continental type of household tidy is this TALL FLOOR DUSTPAN

It is said that woman's work is never done, but with this dustpan, easily made in an evening, a good deal of stooping is obviated. Such a contrivance is extensively used in many parts of the Continent, where it is employed in conjunction with a straw broom. However, an English-type broom will serve quite well. The rubbish on the floor is just swept into the wooden dustpan without having to stoop down to hold the usual English-pattern dustpan.

Suggested Sizes

The size and dimensions need not be too rigidly fixed. Naturally, the bigger the box, the more rubbish it holds, but,



2" Squares



The side is squares and a simple decoration at the same time, the heavier it will be to carry about—a disadvantage that would cancel out its other advantages. A too fragile model, however, would not stand up to hard use and would probably be top heavy. The model should stand upright on the floor by itself.

Sides and Base

Merely as a suggestion we show a side 10ins. long and 8ins. deep, to be cut in $\frac{3}{8}$ in. plywood. Two sides are, of course,

required, and may be cut together if a fretmachine is available. Otherwise one may be cut, the other traced off from it and then the two clamped together for glasspapering.

The bottom should be about 8ins. to 9ins. wide (according to the width of plank available) and, of course, 10ins. long. It should be about $\frac{3}{8}$ in. thick so the fore edge can be bevelled down towards the open end of the box, to allow rubbish to be swept in.

Suitable Wood

A hardwood such as oak is best for this part, as it will better stand up to wear. Many readers will probably be able to fit a metal plate bottom and this is certainly an advantage if stiff enough.

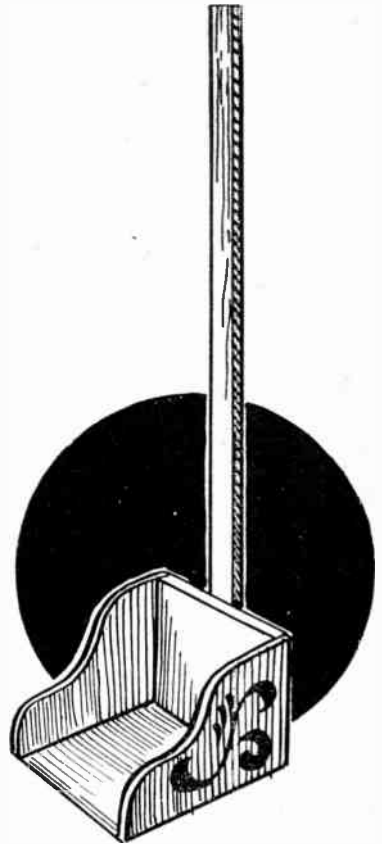
The back is easily fitted, and should be about $\frac{3}{8}$ in. thick and securely fixed so that the handle, in turn, can be firmly fixed. This handle is 4ft. or so long, and can be somewhere about 1in. by $\frac{3}{8}$ in. section or a little wider. Screw it on firmly, the handle extending, at the back, right down to the bottom of the box.

In the diagram, the handle is shown rectangular throughout, but towards the top it may be rounded off (with rasp, glasspaper, etc.). A great thing is to avoid anything that will splinter.

Decoration if Desired

In an article of this kind, no decoration is really necessary, but since the very dawn of civilisation, Man has decorated his tools and appliances. In parts of the Continent today, too, many things are decorated with simple 'peasant art' decoration. Especially if this dustpan is intended as a present, decoration in moderation has a powerful psychological attraction.

The whole job, after glasspapering, can be given one or two coats of pale green paint and a simple peasant-art motif, as illustrated (or any other design to your choice) painted on. The most important thing about peasant art is that the motifs are drawn boldly with



simple brush-strokes: no careful outlines and then filling in. The decoration could be done in a darker green or in yellow.

When this is dry, a coat of hard spar varnish will give a 'super' effect besides serving the very utilitarian purpose of protecting the job. Or as an alternative you can even put on a smaller fretwork overlay part taken from one of our design sheets.

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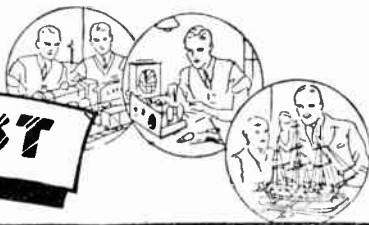
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REPLIES OF INTEREST



A selection from replies to readers' letters which we receive on a variety of subjects relating to Hobbies generally.

Decorating Earthenware

I HAVE two glazed earthenware jars I would like to adapt to use as table lamps, but would like to paint same and decorate with flower transfers. What paint or enamel should I use, and what treatment is needed to make it adhere successfully to the glazed surface? (D.S.—Denton).

ANY good quality artists' oil paints will normally go well on any clean, glazed surface, and if treated carefully transfers will also adhere satisfactorily, though in some cases thin shellac or similar colourless varnish may be used to dampen the transfer instead of water. To preserve, a final complete coating, applied after thorough drying, of megilp or other colourless varnish is usual.

Metal Aquarium

I HAVE a bare metal waterproof box which I wish to turn into an aquarium. Could you please tell me how to prevent it from rusting? (N.T.—Newcastle).

YOU could paint the outside of the tank with any kind of anti-corrosive paint, to prevent rusting, but we would not advise painting the inside at all, as most lacquers, paints, bitumen, etc., contain acids and other matter that would doubtless be harmful to fish life. But why not make or buy a proper aquarium? It would be more satisfactory.

Aquarium Fish Breeding

CAN you let me know how tiny fish newly hatched in an aquarium should be fed? F.C. (Slough).

THEIR natural food—for which there is no good substitute—is microscopic water-life called animalcula. As these minute, single-cell creatures are impossible to catch, except by taking quantities of pond water—a troublesome action—they are best bred artificially. Fortunately this is easy to do. Glass jars are filled with water, whips of straw or hay is put into them and they are stood in the sun. After about two weeks—less if conditions are good, a slight fermentation will have taken place and the water will be swarming with animalcula—which, however, you will only be able to see under a microscope. A few spoonfuls of this, added to the aquarium water daily, will feed those of the fish family which you have selected as worth trying to rear until they are large enough to attempt maturer foods.

A Cold Box

WITH the warmer weather, I have been trying to find out from my more technical friends, the design and structure of a 'cold box'. Can you help, please? (G.B.G.—Widnes).

YOU can make a good cold box without the slabs, which may be hard to get. Make a double box, and fill the space between with cork dust. Provide two zinc trays for the box, one at the bottom and one resting on battens at the top. Lay a strip of soft butter muslin in top tray, and let the ends hang down the sides of the box into the bottom tray. Two slatted shelves for food should be fitted in between, and a close fitting door provided like that on a safe. Keep the top tray fitted with crushed ice or cold water to lower the inside temperature.

Frosting Glass

WOULD you please furnish me with details for a simple home method of frosting glass? (F.A.C.—London, E.3).

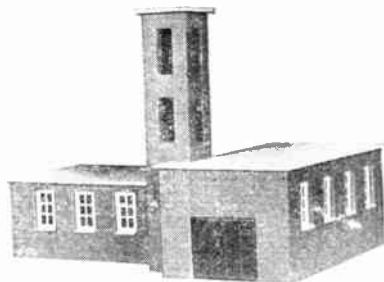
GLASS is frosted commercially by various processes, including sand blasting—that is, blowing a stream or jet of fine cutting sand over the glass. To frost a job such as you describe, by hand, all you need is a supply of medium grade carborundum powder, and some flour emery. First cover the part of the glass that is to remain clear, by pasting on it a piece of stout paper. Next take some of the carborundum powder and mix it to a paste with water, and use a leather or linen pad to rub it over the glass. Use a rapid and fairly heavy circular stroke, working gradually over the whole area. Wash off and inspect, even up any clear patches, then 'fine' the job by using the flour emery. The job is easily done, but there is a knack in getting an even colour, so make a few trials on an odd piece of glass first.

Electricity and Concrete

MY workshop has concrete walls and floor, and I would like to know if it would be safe to install an electric fire in it. Some friends say it makes no difference, and others say it does. (B.O.—Dalkey).

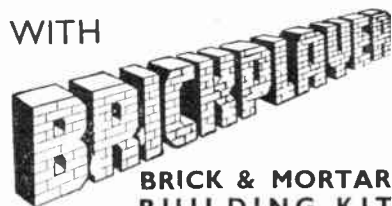
CONCRETE, especially when damp, is a fairly good conductor of electricity. If it was reinforced by wire netting or metal bars during erection, its insulating properties will be almost zero. Because of this, a person touching any bare leads, bare switches, or other units connected to the mains, may receive shocks when standing on such a floor. This means that particular care should be used in installing any fire or

other apparatus. All leads should be of good rubber-covered cable; switches should be the type with insulated covers, and any metalwork (e.g., frame of the fire) should be soundly earthed to the proper earth socket provided (large plug on mains power point). If no earth is available on the power supply plug, then it is advised the fire be fixed where metal parts will not be touched, and the mains plug should be withdrawn before the fire is handled.



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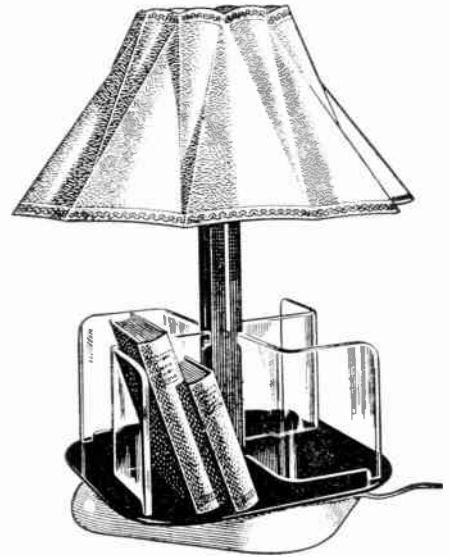
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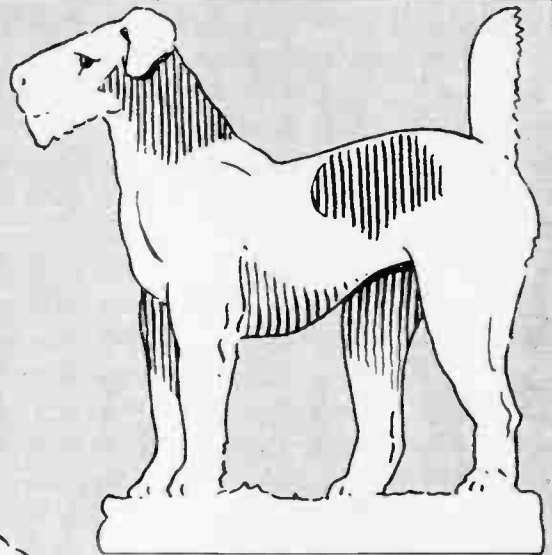
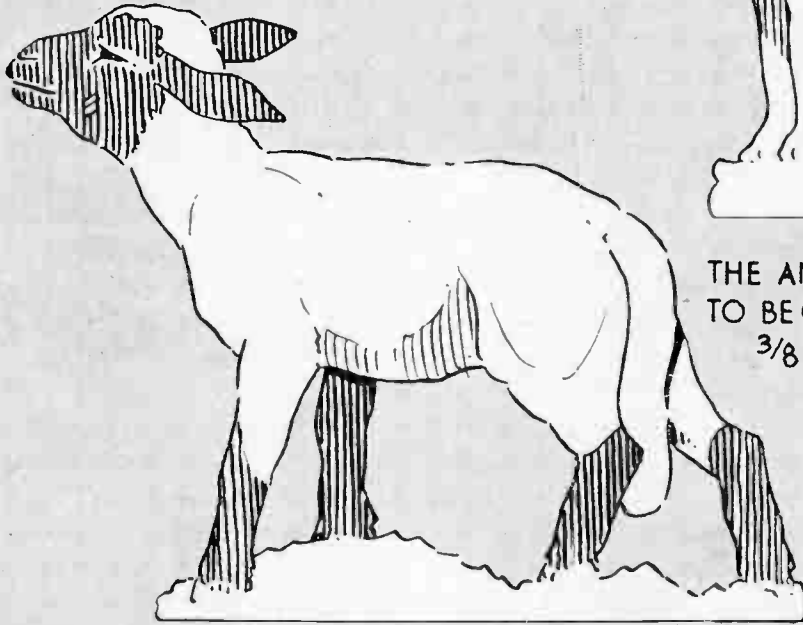
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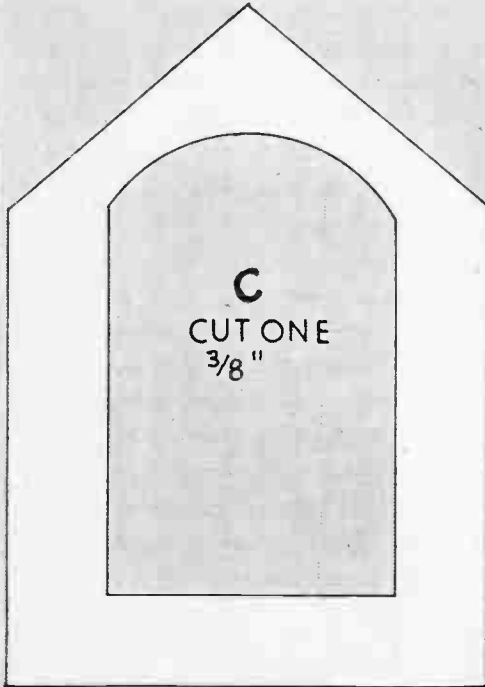
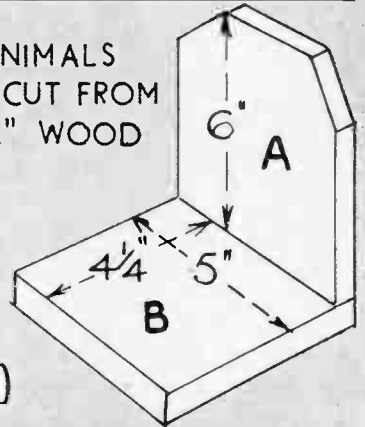
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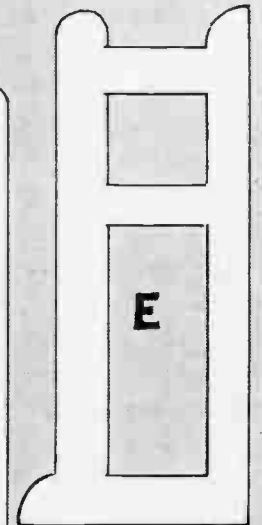
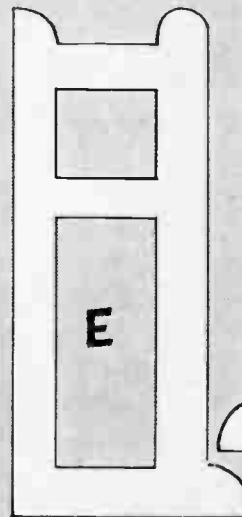
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