FRETWORK CHINESE VASE DESIGN FREE INSIDE

Hobbies WEEKLY

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How the amateur can construct a useful

HOME-MADE BALANCE

WE have described in these pages how to make a pair of scales suitable for chemistry and other delicate weighing. This week we show a type of weighing machine which is equally accurate and simpler in construction.

The balance about to be described is fashioned along the lines of the old and well-known "steelyard," and is well illustrated in Fig. 1 which is a plain side view of the machine.

Upon a firm base stand two uprights A and B. The forward one A, is made in two parts so the lever or arm D may work freely between each. The upright, B, has a slot at the top of it through which the arm D will protrude as shown.

At a short distance from the forward end of D there is a pivot bar which must work freely in prepared grooves in the top of the uprights A.

Weighing Pan

Then at the extreme front end of arm D a balance weight is fixed, and immediately between this and the fulcrum point a hook is arranged to take the object to be weighed. To the right of the fulcrum there is to be a movable counterpoise weight, F, which traverses the arm D so the exact weight of the object may be registered.

The main point to note is the position of this counterpoise weight in relation to the balance of the arm. At all times, that end of the arm working in the slot in B must "float." That is, it should touch neither the top nor the bottom of the slot, but must stand clear on all sides.

The Marking Lever

The position of weight F along the arm must be marked as "zero" when the stage of perfect balance has been got as mentioned above.

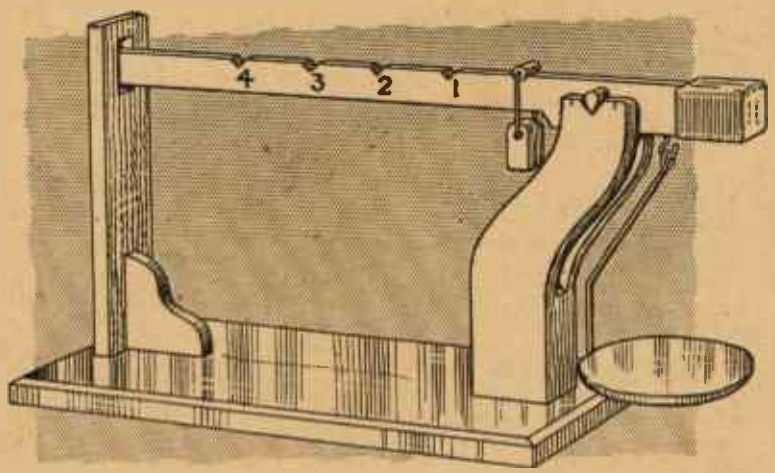
When any weight is put upon the platform G the arm has the tendency to rise at its long end. By running weight F along the arm the latter can be brought down again until it "floats."

The point where the weight rests should be indicated on the arm and a vee cut made in the top edge.

This, then, is the principle upon which the balance works, and it needs only attention to detail and setting out and marking to get a first class useful scale.

The Base

In making the article, the base will, of course, be the first item, and this may be made if desired in two pieces. The lowermost piece may be of ¼in. wood and the upper piece of 3/16in. Both are cut to size 7¼ins. by 3½ins.



At ¼in. from the front edge of the upper or 3/16in. member of the base, cut two mortises running lengthways ¼in. long and ¼in. wide and with ¼in. space between each. Then at ¼in. in again at the other end of the base cut one mortise ¼in. long, but crosswise to the grain.

The latter mortise is to take the tenon on the upright B as in Fig. 1, and as in the detail Fig. 2. The detail on the left in Fig. 2 shows one of the tenons which fit the front mortises.

The Balance Pillar

The upright A in Fig. 1 consists of three pieces two sides and a smaller spacing piece between them, as in the detail in Fig. 2. The two side uprights need to be accurately cut, and at Fig. 3 we give a squared-diagram (¼in. squares) so an enlargement can easily be drawn out.

Cut the two pieces from 3/16in. wood. The filling piece measures 1¼ins. long by 1in. wide by ¼in. thick. Glue the pieces together and glue the whole into the mortises already cut. Piece B will be 5¼ins. long by 1in. wide and with a slot cut ¼in. long by ¼in. wide.

The tenon at the foot of this piece must fit the mortise already cut. For good effect a shaped corner bracket piece C of ¼in. wood might be put into the corner as shown.

Coming back to the uprights A, it will be necessary now to form the grooves to take the pivot which is fitted into the arm D. Make two saw-cuts about 3/16in. deep in the top of each upright (see detail A in Fig. 2), and in them fit the turned-down ends of a piece of strip brass or tin.

Previous to this a vee groove is cut centrally in the top of the uprights and the metal strip should be shaped to this and let in. The pivot pin in the arm may consist of stout wire driven through the arm, a small hole having, of course, been previously bored in it.

The two ends of the wire should be filed to a vee shape as shown in Fig. 1 etc. to overcome friction as far as possible.

Weights

The weight on the end of the arm at E should be of lead, and in two pieces as shown one on either side. The lead can easily be shaped up and can be tacked on the arm. This lead weight is later cut away little by little, to get exact balance when the counterpoise weight has been hung over the arm.

The counterpoise weight should weigh about an ounce, and is made as shown in the detail at F in Fig. 2. A piece of wire can be angled up and a strip of lead put through and hammered flat.

A little roller can be made from a piece of 3/16in. or ¼in. rod with a hole bored through it to take the wire and the weight. Form a vee groove termed "zero" in the top of the arm D close to the upright A until perfect balance is got and the extreme end of D "floats" in its slot in B.

Weighing Platform

The pan or platform G and its wire support has to be made and hung on its hook previous to this of course.

It only remains now to add an ounce weight to the pan G and to move the counterbalance weight along the arm until this latter again "floats." Mark this position on the arm and make a vee groove. Repeat this process adding two, three and four ounce weights in rotation.

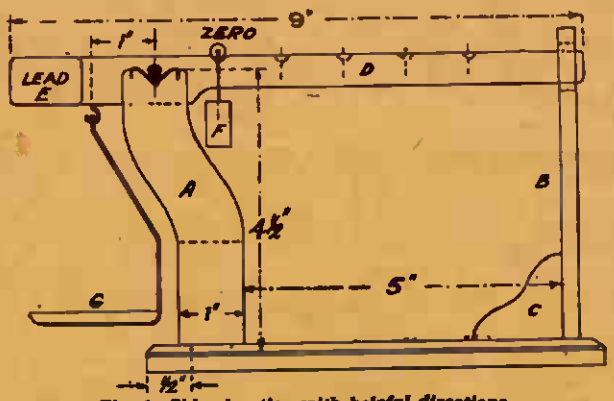


Fig. 1—Side elevation with helpful directions

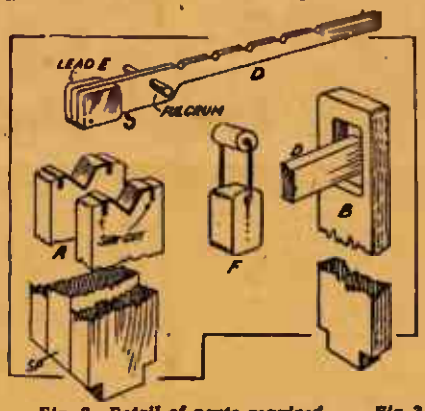


Fig. 2—Detail of parts required


Fig 3—The pillar shape

DID YOU KNOW?——

IT would appear from reliable records that the form of screw as we know it today was in use in Roman Britain 2,000 years ago. There is one in the Reading Museum 4¼ins. long tapering from ¼in. to ¼in., ending in a round point.

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WHITE French Polish is usually made by dissolving 6 to 8 ozs. of bleached shellac in one pint of methylated spirits, or in similar proportions. Make the polish fairly thick and reduce it as required.

• • •

THERE is at present no legal requirement for a cyclist to have a bell on his machine. A regulation relating to it was repealed in 1930. Cyclists should not take advantage of this—for their own sake.

ALL kinds of saws — except fretsaws—must have "set" on their teeth. Each tooth is bent over slightly in the opposite direction. This is necessary to give clearance—insufficient set causes binding and hard work.

• • •

YOU can fix paper to varnished surfaces by mixing one part of turpentine to every three parts of hot glue. The turps bares the wood by dissolving the varnish.

• • •

STARGAZERS will be interested to know that there are 19 constellations north of the celestial equator and 14 south. These were classified by Ptolemy at least 2,000 years ago.

IF you get a burst pipe—water or gas—first turn off the main tap. In the case of water, a small pin hole leak can be stopped by tapping over with a light hammer. For gas, soap plastered over the leak will make a temporary cure. Send for a plumber in either case.

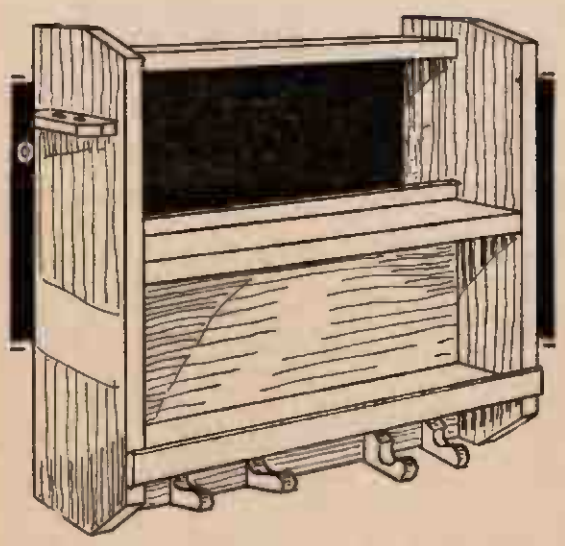
• • •

FOR cementing rubber to leather, dissolve guttapercha in sufficient carbon bisulphide to form a syrupy liquid. Paint both surfaces and hold together until set.

• • •

IF you are thinking of taking up ornamental carving of wood, remember that chip, or surface, carving is easiest. The panel, or relief, carving is harder and the most difficult of all is figure carving.

Keep your tools tidy and compact in a hanging WALL TOOL HOLDER



TOOLS are not easy to replace now, so it is advisable to treat them with care. This is where a tool rack is valuable, as it prevents them damaging each other as is likely to happen when they are bundled together in a box or bag.

The design of rack shown is of the wall type, a very convenient type, as the rack can be hung above the bench and be handy for use.

Scarcity of timber has also been considered, the rack needing a minimum of wood to construct. Those readers who may, however, prefer a rack to stand against the bench, and who have enough wood, can make the sides 1ft. or so longer, keeping the shelves as depicted.

The neck could then stand on the floor. A short width of board nailed across the sides at floor level would then provide a lower compartment for bulky tools.

Suitable wood

Any suitable available wood can be used, a thickness of ¾in. being stout enough. The rack should not be too heavy if of the hanging type. The sides, Fig. 1 are first marked out. Draw out as a rectangle first, then square across the places where the shelves will come. Here cut grooves ¼in. deep for the shelves, then saw off the top and bottom front corners.

The top shelf, Fig. 2, is cut to length and width. The length given need not be too rigidly adhered to. Where the reader possesses quite a good lot of tools it might be a little longer. The holes for the tools should be bored or cut on a pencil line drawn down the board, and be of a size to fit the individual tools, as these vary so much.

The various holes are marked in the diagram so this will be easy. The slot for the blade of the square is shown cut across the shelf to save space. This is rather unusual, but the handle will not then cover a space wanted for other tools as it will extend in front.

Four holes are shown for chisels, but more can be easily bored when a larger number are to be housed. The holes could be closer together or the shelf lengthened if necessary.

The middle and bottom shelves are then cut to the same length as the top one. All are joined to the sides of the rack with glue and nails. A piece of thinner board, say, ¼in. or ⅜in. should be cut and fixed across behind the lower shelves, as shown by dotted lines in Fig. 1.

Backing Board

This board extends above the middle shelf ¼in. to provide a rim, preventing tools placed on it being pushed off at the back. This shelf provides places for planes and any other tools for which room is wanted—perhaps for the mallet, for example.

A thin strip of wood is now cut 1¼ins. wide, and is nailed across the bottom shelf as in constructional detail, Fig. 3. This, with the back-board, makes the shelf into a kind of long tray, just the place for those particular kind of tools, pincers, pliers, etc., not lending themselves to hanging so well as others.

On the left side of the rack a piece of board, say, 5ins. long and 2ins. wide, is to be fixed, as in Fig. 4, for keyhole saw and hammer to hang from holes being bored in it for the purpose.

This would probably hold a second screwdriver or handled file, too. Fix it with glue and screws—it must be firm, also if fixed fairly high up in similar fitting could be fixed to the same side near the bottom for more tools.

Fig. 4 also shows other fittings to hold tools not already accommodated on the rack. That for the handsaw is to be fixed to the right hand side.

Tool Racks

It consists of a piece of wood of the same thickness as the handle of the saw and of a size to fit easily in the hole of the handle. The saw drops over this and is kept in place by a button of wood or metal. The saw, by the way, hangs with its teeth facing the wall.

For the spoke-shave, cut two pieces to the shape shown from 2in. squares of wood and screw them to the back-board, under the bottom shelf, at a distance apart convenient for the tool to lie in.

The pieces for the brace shown below, are cut from 2in. by 3in. wood. They are fixed similarly, the brace hanging on them by the handle of the sweep. There may be room here between these two fittings for a few hooks to hang smaller tools from.

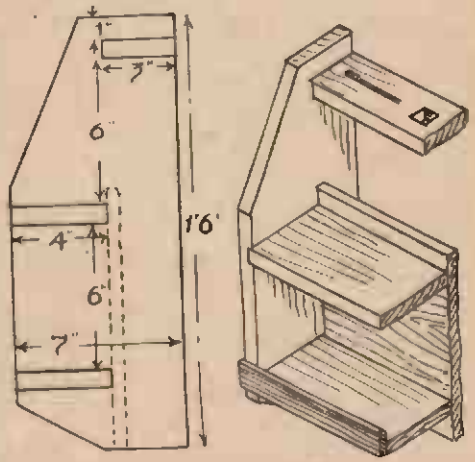


Fig. 1—Side details

Fig. 3—Construction

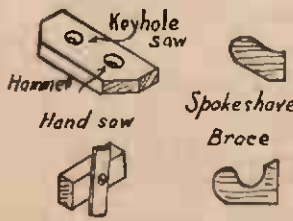


Fig. 4—Tool holder shape

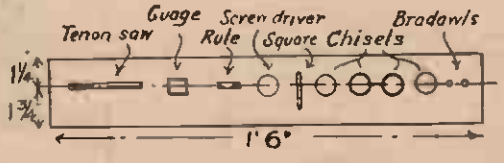


Fig. 2—A suitable rack for tools

Every cyclist will find these interesting notes on

3-SPEED GEARS

"WISH I had a three-speed gear on my bike," is what you probably say with long-drawn sighs. "In fact," you continue, recklessly, "I wish I had a brand new machine, complete with three-speed gear and hub brakes."

Three changes of speed! Low gear for hills, which can be ridden with ease. High gear for long, flat stretches of road, which simply eats up the miles. Neutral gear for the ordinary rate of speed, which is a sort of relaxation.

Being so elusive, the desire for a 3-speed gear mounts up more and more in your heart. You would almost give your last penny to buy such a thing. What are you to do? How can one get such a gear? How much would it cost to fit it on your new bike if you did get it? What would the gear cost? How can one be sure that such an article, bought second-hand as an independent unit, would be in perfect mechanical order?

What Some Fellows Do

Such questions go through one's head, but only experience can supply the answers. Some fellows, to get out of the difficulty, advertise for a 3-speed bike of any make, buy it if fairly cheap, and fit the 3-speed hub to their own new machines, the plain hub being fitted to the old machine which is re-sold.

Others, like the writer, possessing an old machine, seek an exchange, on a cash adjustment basis. This is wiser, as a rule, for one can test the gear mechanism prior to buying. It is one good way to solve the problem of obtaining a 3-speed geared machine, apart from getting rid of the unwanted mount.

New Spokes a Difficulty

You, however, may possess a good, new, light sports bike of pre-war quality which, wisely, you desire to keep. Fitted with a 3-speed gear, it would, perhaps, be worth £12 to £14 today.

But, assuming you manage to pick up a 3-speed gear unit independently, when taking it to a cycle shop for fitting, you might be disappointed to find that the cycle mechanic cannot oblige, the reason being the difficulty of procuring suitable wheel spokes. Your own spokes, naturally, are too long, for the diameter of 3-speed hubs are greater than ordinary hubs.

Shops, or garages, which undertake the job of fitting the gear hub can frequently utilize your original spokes by reducing the length and cutting fresh nipple threads on the ends—all of which is done at a price, of course.

Technical Work

It is a very complicated job, requiring experience and skill; apart from the spoke assembly, too, the correct adjustment of the 3-speed control cable must be set at the correct tension, otherwise, during a change-over in gear, the gear wheels are apt to "grate" or stick, with resultant damage to the teeth.

Incidentally, irrespective of 3-speed gears, there are 2-speed and 4-speed types. There are also 3-speed hubs having a back-pedalling brake mechanism. A majority of cyclists dislike this type of brake, considering it a nuisance, since one is unable to back pedal in the usual, full, carefree manner.

Others accept the additional feature gladly, using it as a third, emergency brake. One great point about it is the fact that it is very effective in action and seldom requires replacements.

The Cyclo Gear

The cyclo gear, or derailleur gear, is less popular than the enclosed type, being exposed to rain and dust. Furthermore, one is aware of an existing "drag" when pedalling—a dragging feeling which is absent in the hub type of gearing.

The derailleur gear, however, is cheaper to buy and not so difficult to obtain. Besides, one has not to change rear wheels or introduce a suitable hub. It is, undoubtedly, far better than no 3-speed gear at all.

In pre-war days, one could buy a new 3-speed gear unit for about 25/-. Second-hand units cost about 35/- today. It might also interest you to know that while one cannot purchase a new 3-speed unit, one can obtain new replacements for old parts easily enough.

Advantages of gears

And now, perhaps, you might desire to know the advantages of a 3-speed gear. Frankly, the low gear is just as tiresome as the average, normal gear, when travelling uphill, more particularly, as you will find, after you have been riding for some hours. What one gains in ease, one loses in speed, with greater, tiring, pedalling action.

Regarding high gear, the momentum is a strain to work up, but a definite asset once you get properly going. One experiences an odd, pleasant sensation, whizzing along without effort, apparently, with the pedals moving around slowly or, at least, more slowly than those of a companion's machine travelling along with you at the same speed on the neutral (average) gear.

The Difference in Pedalling

The amount of difference in pedalling, plus speed, can be readily judged from the following data, worked out by the application of a simple test:

Lever Position	Pedal Movement	Wheel Movement
Low gear	1 rev.	2 revs.
Neutral gear	1 rev.	2½ revs.
High gear	1 rev.	3½ revs.

If one uses a drive wheel of smaller diameter than the normal size of drive wheel, which is 7½ins. diam., both the pedalling and speed is considerably affected. For example, the pedalling is easier, but quicker, whereas there is a big reduction in speed.

If, therefore, you find that the normal size of drive wheel gives you hard pedalling, a 6½in. diam. wheel will be more suitable for you, and you might, in fact, prefer it to going the expense of a 3-speed gear.

OUR CHINESE VASE DESIGN

This week's free design (No. 2556) is for making the useful and decorative Chinese Vase illustrated. The necessary wood for it is obtainable from Hobbies Branches for 4/4 or sent post free for 4/11 from Hobbies Ltd., Dereham, Norfolk.

Several reasons why you should make this

NOVEL SALT BOX

Fig. 1—The Holder complete, and open

SALT boxes are, in most hardware shops, rather conspicuous by their absence these days. If, therefore, you have been asked to make one (as happened in the writer's case the other day), here's a new type worth following, as it is neat, handy and dust-proof, without the need for hinges, which rust and break after a time, due to the damp effects of salt.

When salt is required, it is only a matter of drawing out the container, which swings on special wooden pivots. Now, the outer casing, like the container, is made from ½in. wood throughout. It should be built first and, to go ahead, prepare the side pieces, using two pieces of wood 11ins. long by 5ins. wide.

Scribe the top and bottom shelf positions with pencil and set-square, then compass one corner to shape, as can be seen at Fig. 2, finally marking the pivot disc hole positions. You can either just mark the centre point and then bore ⅜in. diameter holes, or alternatively, scribe the diameter and cut out the holes with the fretsaw.

You now need a top shelf and bottom piece 7½ins. long by 4¾ins. wide. These are nailed between the sides to be quite flush at the front edges, this leaving a ¼in. space for the thickness of the back piece measuring 7½ins. long by 11ins. wide. The back can, of course, be made up from several narrow widths of ¼in. wood.

A strip of ½in. stuff 7½ins. by ¾ins. is fixed between the sides on top of the bottom piece to be flush at the front edge. This strip of wood serves as a stop for the container which, when loaded with salt, has a tendency to swing outwards at the bottom.

The Container

Now to make the container. As can be observed from the side view at Figs. 2 and 3, the end pieces are first cut to shape, then the front and back pieces nailed on the edges of the sides. Mark out the shape on pieces of wood measuring 8½ins. by 3¾ins.

The pivot position must be accurately marked as it is also the centre point for the compasses when scribing the top shape. This shape is absolutely essential.

When the sides are cut to shape, nail a front (8½ins. by 7½ins.) to the fore edges of the sides. A bottom piece (7½in. by 4¾ins.) is attached to the sloping edges and trimmed so the other back piece (the same size) lies flat, following which the bottom piece (7½ins. by 2ins.) is attached and trimmed with the plane. All trimming angles are shown in the diagrams.

Pivoting the Container

At this juncture the container can be affixed in its casing. To do so, cut out two ⅜in. diam. discs from ½in. wood and try them in the holes cut in the casework. The discs must turn neatly, but freely, in the holes.

A strip of coarse glasspaper, held on a flat piece of wood, will serve much the same purpose as a rasp and enable you to fit the discs truly. By the way, ½in. long piece of ⅜in. dowel rod would also serve.

Having fitted the discs, bore a hole in the centre of each to take a ⅜in. by 6 roundhead brass screw. Set the container in the casing and bring the pivot hole position into view so that it is central with the hole. Drive the screw into the disc so the point projects about ½in. Smear a little tube glue on the joining side of the disc and proceed to screw the disc to the container; first "feel" for the pivot screw hole position with the screw point so it enters the wood correctly.

Attach the other disc to the other side similarly. The container should swing in and out easily, with no undue rubbing.

An Overlay

It is worth while cutting out a special overlay for the front of the work, same bearing the word "SALT." Two examples are shown at Fig. 3, each being plotted in 1in. squares. It is only a matter of ruling full-size 1in. squares on a piece of ¼in. wood and following the outline with a pencil.

Cut out the overlay neatly, then glue it centrally on the front of the container, as shown. For preference, a piece of plywood should be used, but plain wood serves, only one must work carefully in case the wood splits.

To complete the work, the case and face of the container can be enamelled light green with lettering white.

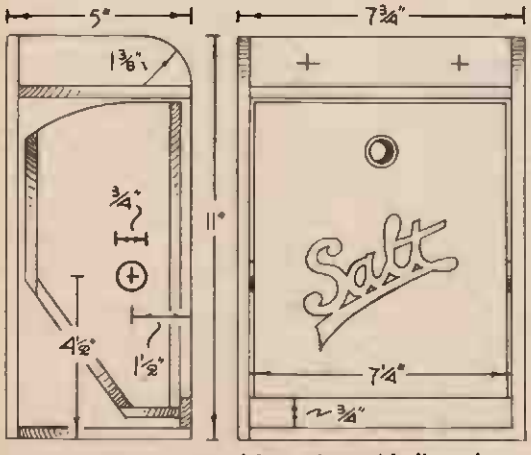


Fig. 2—Side section and front view, with dimensions

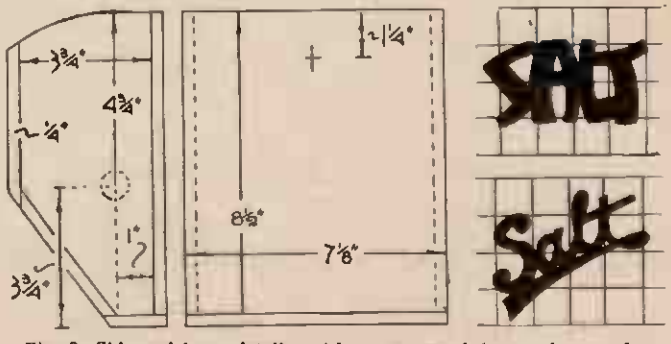


Fig. 3—Side and front details, with two types of letters for overlay

Hints how the home carpenter can ensure

GOOD BUTT JOINTS

THE butt joint is probably one of the commonest used in normal carpentry, and in the various designs for models and fretwork shown in these pages. It is not, however, the easiest to undertake, nor does it provide the safest joint unless it is properly constructed.

The same process, of course, applies in both cases where the work is on a tiny model or on a piece of woodwork in which two or three large boards need to be joined. In carpentry, of course, it is used to make a wide surface of wood where a board the complete width is not obtainable.

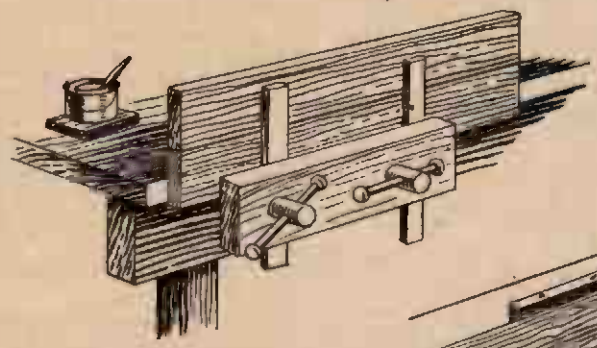


Fig. 1—Hold and support the wood in a bench vice.

It is also used in making rightangle corners or, indeed, corners at any other angle. The process is of joining two pieces of wood flat to each other with the surfaces glued together as in the corner of a box.

Obviously the thicker the wood the greater the surface for gluing, and in consequence, such a joint is best used in large work. In fretwork and small models, the wood is thinner and the joint should not be used more than absolutely essential. Whenever it is used, however, certain points should be noted, and care taken in order to procure a strong lasting joint.

An essential point

The great point, of course, is to see that the two joining edges are perfectly smooth and straight. There must be no air gaps which will loosen the hold provided by the glue. The edges must accordingly be planed perfectly level. This can best be done by putting the boards together in the vice and planing both as a complete flat surface at the same time.

The glue should also be warmed and applied to the two surfaces at once, whilst the boards are still in the vice. They are then taken out and the two parts rubbed together to ensure a complete joint over their whole length.

In doing this, fix the lower board in the bench vice and stand the other one on it, moving it slightly to and fro to equalise the glue, to press it into the fibre of the wood, and to get a complete grip the whole length of the work.

A steady hold

To prevent the board sliding sideways, a couple of upright splines can also be fixed in the vice (as shown in Fig. 1). When the two boards are fitted together like this, take them out of the vice but remember to handle only the bottom one and no attempt to lift them out by the uppermost one. If you want to add a third board it should be put on the opposite edge of the first one.

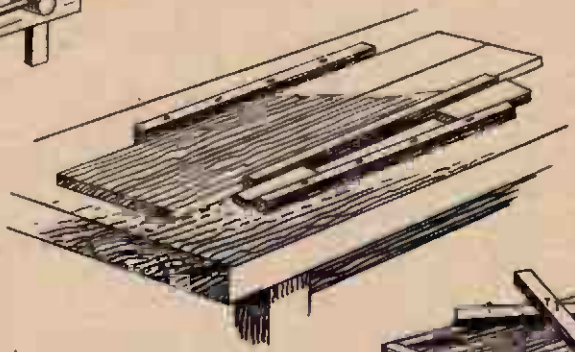


Fig. 2—Wedging the boards together

If you have no vice you can do the same work flat on the bench. In this operation the point to watch is that the boards do not lift, but are kept perfectly flat during the operation. One means of tightening them, of course, is by the use of a sash cramp which is a long bar with a head extendable to the width required. Failing a sash cramp, nail a couple of odd pieces to the bench, and then wedge up the boards between as shown in Fig. 2.

Corner Joint

If the butt joint is being used for a corner, the same rubbing process should be undertaken for the joint, but of course it is a little more difficult to provide a vice grip for the completed work.

If you wish, and do not spoil the look of the job, nails or screws can be added. For the former, use panel pins so the heads can be sunk right into the wood. If screws are being used, bore the hole for them—with its countersunk top—before the actual gluing is done.

In either case, hold one board in the vice so you can get sufficient pressure in adding the second and the glued piece; this will also provide a firmer hold whilst nails or screws are being driven in.

Of course, the ideal butt joint is in the use of tongue and groove wood, and if you are fortunate enough to possess a plough plane, you can use this to form a groove and add a thin spline between the two parts where a flat butt joint is required.

In this type of work also, it is helpful to use a headless nail with a point filed at both ends. Half of it is driven into one board and the other half into the other. Drive the nail in half way first, then nip off the head and file that end to a sufficient point. You must, of course, get it central into the thickness of the wood and be careful to drive the other board on direct and straight to make a good joint.

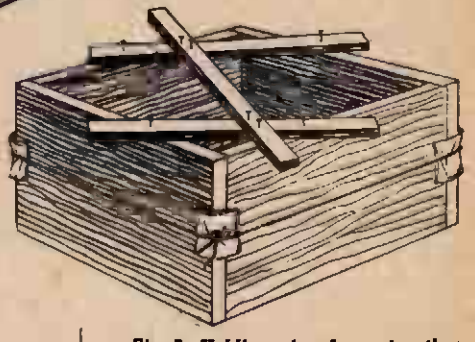


Fig. 3—Holding a box frame together

If you are forming a small box, using the butt joint only, pair off each of the sides, resting them to ensure accuracy of size and straightness before fitting together. Stand them upright in the form of the hollow box, and test out accuracy and then make a loop of fairly thick string which will go around, and which you can pull tight when the glue has been added.

Be careful in doing this that the whole framework does not collapse. You can possibly prevent this by temporarily nailing splines across the top as shown at Fig. 3. Then when the string is put round, prevent it

from cutting into the corners by a pad of folded paper.

Of course, in fairly thick boards you can make a stronger joint by adding dowels. These are short lengths of round rod glued into each of the boards concerned. This is shown at Fig. 4 where you have the one piece with the holes bored in it, and the other piece with the projecting dowels ready to fit into the appropriate holes.

Size of Dowel

In this work the dowels must not, of course, be anything like the thickness of the wood. In a ½in. board a ¼in. dowel is suitable, whilst ⅜in. dowels could be used for ¾in. wood and upwards. The great point is to get the positions opposite each other and for this purpose careful marking with the gauge and rule must be undertaken.

In boring the holes, too, it is essential to keep the brace and bit upright and to cut the hole clean to the depth required. Clean it at the top also with a countersunk bit. The dowel rod need only sink into the board a little way—about ¼in. to 1in. according to size.

The dowel should be the same diameter as the holes themselves, but in order to prevent an air lock underneath a tiny V-groove should be cut along the length of the dowel itself, otherwise it will be impossible to force the dowel in to make a good joint. Chamfer off the end of the dowel slightly before driving it into place. See it goes to the bottom of the bored hole and projects just the right length to fill up the appropriate hole in the other part.

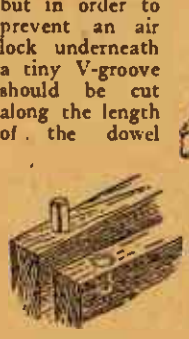


Fig. 4— Dowel joint.

Fig. 5—Correct boring position

When the two boards are together, notice they are perfectly flat and have no twist in them. This is very hard to overcome, but will not arise if the dowel pins are driven in straight and accurate with each other.

Hint on Boring

In boring, by the way, you will want all the holes the same depth and you can ensure this by pasting a strip of paper about 1in. wide round the boring bit. Fix it so that its bottom edge is the depth of the hole required from the cutting blade, and see it does not move in the operation of drilling.

Another point in the use of the brace and bit is illustrated at Fig. 5. The boring should be done if possible from the end of the work rather than at the side, for in this way you are more likely to keep a vertical direction with the brace and bit.

Numismatics

WHERE could I obtain a current list of world currency or possibly a catalogue of coins of every country in the world, to assist me in my sideline hobby of numismatist? (*B. T. W.—Walsall*).

WE are not aware of any catalogue of coins now in circulation or publication. A number of books or currencies, old coins and the like, have been published and could possibly be obtained secondhand from Foyles Ltd., Charing Cross Road, London, or other secondhand booksellers. There are also catalogues of the coins in the British Museum and other museums, which can be had from H.M. Stationery Office, Kingsway, London—average cost is 2s. 6d. for each section.

Speaker Attachment

I HAVE a morse buzzer and key, but would like to fix a loudspeaker to it. Could you advise me how I would fix it and if I would need any other equipment? (*J. C.—Kirkconnel*).

WE presume you wish to use the loudspeaker to increase the audibility of the Morse signals. This is readily done by inserting the speaker in series in the circuit with the buzzer and key. If the speaker has a permanent magnet field, no other connections will be needed, but it may be advisable to increase the battery voltage. Should, however, the speaker have a coil winding or "pot" winding, which will be evident by the terminals on the speaker, you must connect the pot winding to a separate battery of, say, 6 to 8 volts or more. This circuit should have a separate switch on it, and be switched off the moment the speaker is not required, as the current will flow the whole time the switch is on. Furthermore, if the pot winding is of low resistance, it will be necessary to put a resistance of 1,000 ohms or so in series in the battery circuit to prevent an undue flow of current.

Lifting Gas

IS there any kind of gas which, if you put it in a type of life jacket would be capable of lifting a human body? (*D. B. L.—Wakefield*).

THERE is no known gas capable of lifting the weight of a human body under the conditions you suggest. Provided there is a sufficient volume of a gas (for example, coal gas) contained within a convenient envelope such as a balloon, it is, of course, quite easy to lift a human being. It is the relative lightness of the gas compared to an equal quantity of air that determines the lifting power of the gas. Taking the specific gravity of air as 1. The specific gravity of coal gas is about 0.438, while Hydrogen has a specific gravity of only 0.069; and can be considered as the lightest commercially practicable gas, although helium is lighter. Thus you will realise that you would need several hundred cubic feet of gas to lift a human body, whereas any practicable life jacket could only amount to a volume of say, 12 cubic feet as a maximum.

Charging an Accumulator

PLEASE tell me if there is any way of charging a 2-volt accumulator off the house mains (A.C. 230 volt.) without a trickle charger? (*P.B.—Chester*).

THERE is no practicable way of recharging 2-volt accumulators from A.C. mains without a trickle charger, except by the use of more expensive and elaborate apparatus. The essential is a rectifier to convert (or change) the alternating A.C. current to unidirectional or direct current, and for this a trickle charger, which contains a rectifier, is the simplest and best for your purpose.

Driving a Dynamo

I HAVE obtained a 6-volt car dynamo, but have no means of driving it. We have no electric or gas. Could you suggest a suitable motive power, as I cannot afford a very big outlay? (*D. J.—Totnes*).

THERE are numerous ways in which you could drive a 6-volt. car dynamo, the most suitable you must decide according to circumstances. The least expensive would be by water wheel, something about 6ft. diam. if an undershot wheel is used, would be suitable. A small petrol or oil engine of about ¼ h.p. would be very suitable, the amount of fuel required would be very small. Another alternative would be to drive the dynamo from any available farm machinery. A windmill about 4ft. diam. mounted on the roof or elsewhere could be used.

MISCELLANEOUS ADVERTISEMENTS, etc.

The advertisements are inserted at the rate of 3d. per word or group of letters prepaid. Postal Order and Stamps must accompany the order, and the advertisements will be inserted in the earliest issue. Fretwork goods or those shown in Hobbies Handbook not accepted. Orders can be sent to Hobbies Weekly, Advertisement Dept., as below

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MODEL Engineers' Sundries for Sale. Copper and brass tubing, copper rivets, B.A. screws, taps, dies, drills, Swiss files, sheet copper, bench drilling machines, model-makers' lathes, electric locos., Silver Jubilee coal fired loco. (exhibition model), Basset Lowkes Enterprise steam loco., stationary engines, casting moulds (new designs). Stamp for list (Paper Control Order). —Roberts, Engineer, Tai Bach, Maenan, Llanrwst, North Wales.

MAKE A MODEL FORTRESS (non-flying) from Hobbies Patterns No. 2405, price 4d., (postage 1d.). Or a Boston Bomber (No. 229 Special) price 6d.—From Hobbies Ltd. Dereham, Norfolk, or Branches.

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LONELY? Join Friendship Circle. Details 6d. Secretary, 34 Honeywell Rd., London. S.W.11.

BOOKLET and Blueprint on long-distance Morse buzzer sets (Morse and speech), 1/6—Phillimore, 2 Castle Drive, Whitby, Ches.

FOR SALE — one secondhand Hobbies Gem fretmachine, good condition. Any offers? — Apply Carter, Pound Cott., Graffham, Sussex.

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CHINESE VASE

THE ornamental box-like vase illustrated the other side is of a typical Chinese design, and whilst it can be used purely as an ornament, it will provide a more practical purpose as a tea caddy or holder for sweets if nicely made and finished.

Whilst the main portion is plain, the ornamental fretted work is seen in the overlays on the side and in the tall supporting feet below the box floor.

Apart from the cutting of these there is a good deal of constructional work to do, but the detailed drawing on the reverse side of this sheet, illustrates clearly how the parts are put together and simplifies matters considerably. Each part, of course, is cut with the fretsaw, cleaned with glasspaper and rounded off where necessary to give it the shapely appearance of the finished article.

Work is commenced on the four pieces forming the fretted base. These are cut and then halved together at the open joints of A, B, C and D. Glue them firmly as one solid part, and if necessary, add fillets in the inside angles upright to stiffen. You can also add thin fancy material behind the frets if you like.

The box portion is next made. Cut out the two narrow sides and the front and back. The former are of ¼in. thick, the latter 3/16in. The narrow parts go between the wider ones and the floor piece is glued inside. Before putting together you should also cut out the piece forming the top of the body.

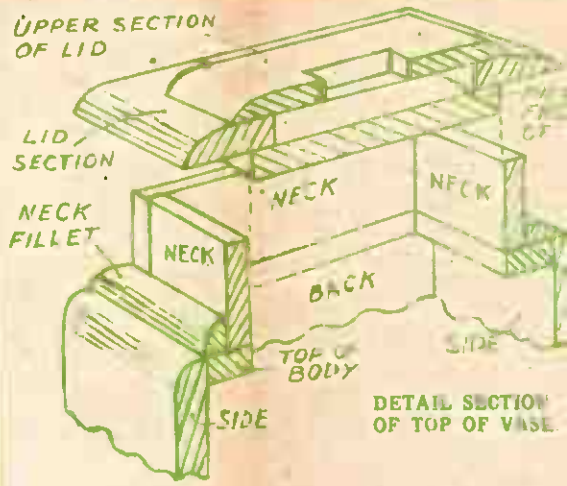
From this the central square of wood is also cut away to be used later on the lid. This hollow frame of the top is glued flush with the top edges of the sides, and the floor is glued in flush with the bottom edges.

The whole box should now be quite a firm structure. It is, therefore, more easy now to round off the top and bottom edges so they are the shape shown in the finished drawing and in the detail on the sheet. The detail of the top of the box shows how the adjoining pieces are added.

Four narrow neck strips are glued around the opening in the top and the space between them and the actual sides is filled in by a rounded fillet mitred. at the corners to fit neatly. A projecting lid extends over this neck, but is held in place by having glued beneath it the square of wood cut from the top of the body.

The piece taken from the lid provides the wood for the handle which is fixed into its corresponding mortise at E before the whole piece is glued down to the main portion of the lid.

The completed body work can finally be glued on to the fretted feet. To provide strength, quarter-round fillet strips are glued in the angle under the base of the box to the feet themselves. The dotted line on the pattern of these fretted sections shows position.



DETAIL SECTION OF TOP OF VASE


NECK FILLETS CUT FROM 2 16in. AND SHAPE TO SECTION

Hobbies DESIGN

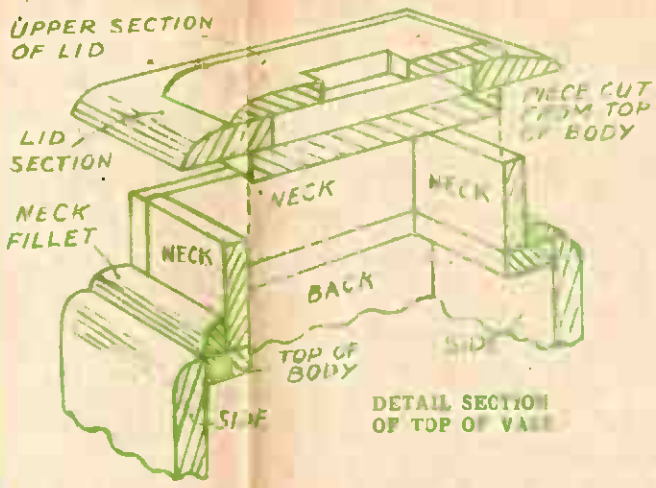
No. 2556 11.10.44

SUPPLEMENT TO HOBBIES No. 2556.

CHINESE VASE

COULD BE USED AS A TEA CADDY.

SIZE
10ins. HIGH.
5ins. WIDE.
3ins. DEEP.



DETAIL SECTION OF TOP OF VASE

PANELS OF WOOD REQUIRED FOR THIS DESIGN

ONE G2, ONE H3, ONE J4

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The arrows indicate the direction of grain of wood.

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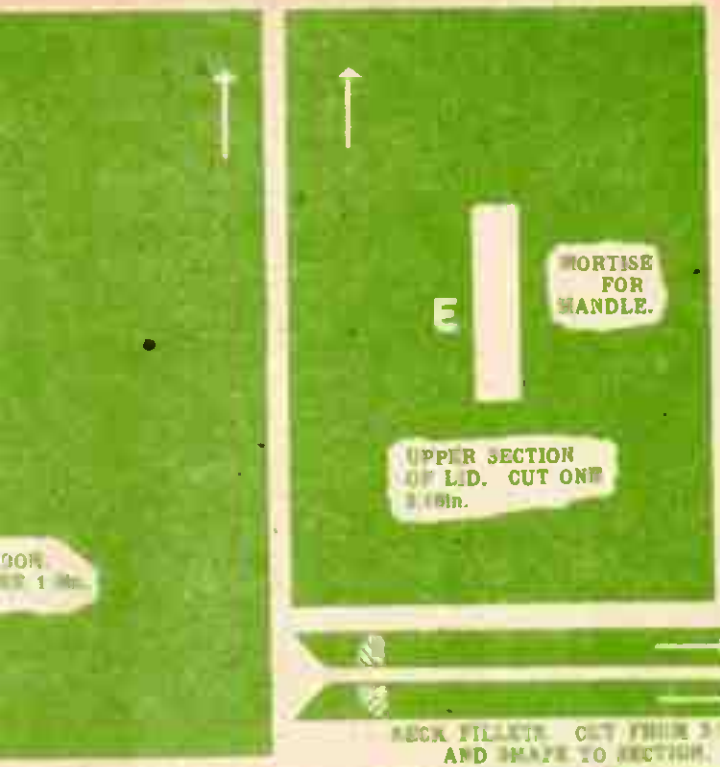
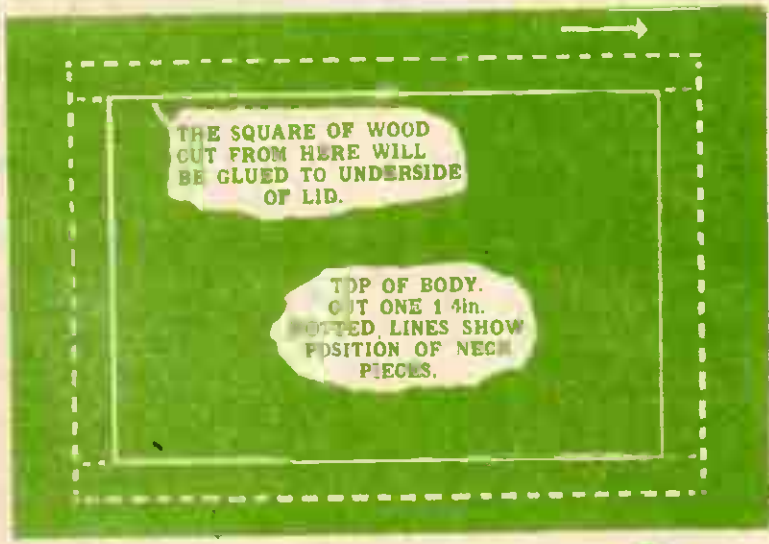


NECK FILLETS. CUT FROM 3 16in. AND SHAPE TO SECTION.



BASE
SECTIONS.
CUT ONE
OF EACH
1 4in.
THICK.

HANDLE.
CUT ONE
1 4in.

NECK PIECE.
CUT TWO 8 16in.

PRINTED IN ENGLAND.

PANELS OF WOOD REQUIRED FOR THIS DESIGN

ONE G2, ONE H3, ONE J4

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The arrows indicate the direction of grain of wood.

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SIDE OVERLAY. CUT TWO TOGETHER 1 8in. THICK.

SIDE. CUT TWO 1 4in.

USE THIS WASTE WOOD FOR HANDLE.

LID SECTION. CUT ONE 1 4in. AND SHAPE ON ALL FOUR EDGES TO SECTION.

UPPER SECTION OF LID

NECK FILLET. CUT FROM 3 16in. AND SHAPE.

THE SQUARE OF WOOD CUT FROM HERE WILL BE GLUED TO UNDERSIDE OF LID.

TOP OF BODY. CUT ONE 1 4in. DOTTED LINES SHOW POSITION OF NECK PIECES.

STRENGTHENING FILLETS BENEATH FLOOR CUT ONE OF EACH 1 4in. AND SHAPE AS SECTION.

B

STRENGTHENING FILLET

D

C

STRENGTHENING FILLET

E

HANDLE. CUT ONE 1 4in.

NECK PIECE. CUT TWO 3 16in.

NECK PIECE. CUT TWO 3 16in.