Handy Man's Workshop

HOW TO MAKE CONCRETE POTTERY.—III.

BY RALPH C. DAVISON.

(Continued from the issue of June 26th, 1909.)

The last two articles described the method of making individual pieces by means of modeling or building up on wire frames. This is perhaps the quickest and easiest way when there are but few pieces of a kind to be made; but when a number of duplicate pieces of one design are required, it is too slow a method to be used for commercial purposes. Therefore, when a number of duplicate pieces are wanted, it is best to make up a regular mold into which the concrete or Portland cement mortar is poured in a

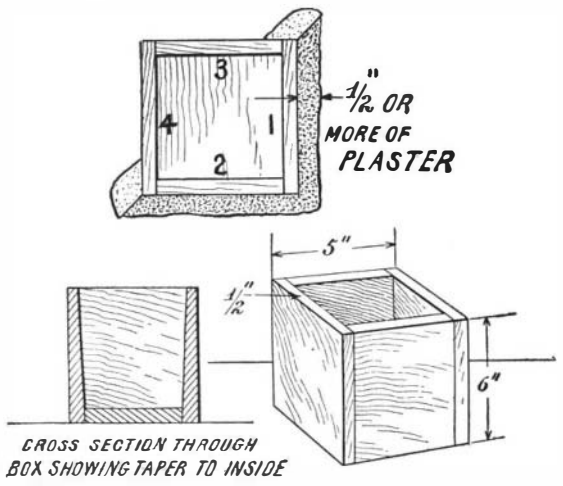


Fig. 8.—THE WOODEN MODEL AND PLAN VIEW SHOWING PLASTER APPLIED.

liquid or almost liquid state. These molds are usually made of plaster of Paris. The method of making them of course differs according to the design of the piece to be cast, but when one has mastered the method of making one or two designs, it is easy to make others, for the reason that the general principles are the same throughout.

In all mold work the first thing required is a pattern or model of the piece which is to be produced. If the design is an original one, having relief work, and is to be reproduced from a drawing, the first thing to be done is to model it in clay, and from this clay model the plaster mold is cast.

If the design is simply that of a square or round box devoid of all ornamentation or relief work, the model can be made of wood or any other material. In many instances, it is desired to reproduce articles of a more or less ornate design, which one has already in hand or which one can procure, such as metal or china ornaments, vases, jardinières, etc. In this case, the mold can be made directly from the piece which it is desired to reproduce.

A plaster mold of a simple piece, such as a square pot, can be made according to the following directions. The model for this can be made of wood. The dimensions indicated in Fig. 8 are used merely as an example; any other dimensions can be used, as the piece can be made as large or as small as desired, or it may be made oblong. When the wood model is put together, it should be well shellacked and oiled. Use fairly heavy oil or vaseline. This is

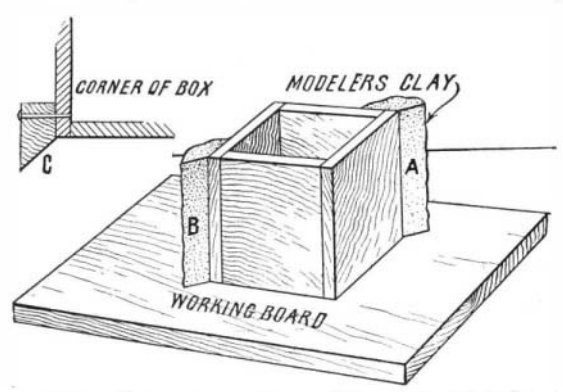


Fig. 9.—SHOWING THE CLAY PLACED AT CORNERS OF MODEL.

done to prevent the plaster from sticking. Now place the model on the working board, which should also be oiled, and then take two pieces of modeler's clay and place them on the model at opposite corners, as indicated at *A* and *B* in Fig. 9. If modeler's clay is not handy or easily obtainable, you can make two strips of wood shaped as indicated at *C*, and lightly tack these in position on the corners in place of the clay. Shellac and oil the faces of these strips. The box is now ready to receive the plaster, which should be mixed as follows: Enameled tin or iron ware makes the best thing to mix plaster in, as it is easily cleaned.

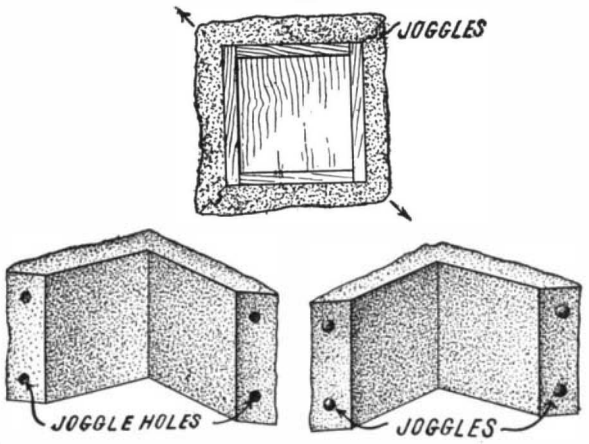


Fig. 10.—PLAN VIEW OF MODEL, ALSO TWO HALVES OF MOLD, SHOWING JOGGLES.

Place a handful of plaster in your tin, and add plenty of water to it; mix it up until it is of the consistency of a thin paste. Dip your hand into this and scoop the plaster up and throw it on the sides of the model. Cover the sides completely, and keep adding plaster until the sides of the model are covered with at least ¾ inch of plaster; if thicker, no harm will be done. This operation will have to be done quickly, for if not the plaster will set or become hard in the tin before you can use all of it. When it has once set before it is used, it has to be thrown out and another mix made.

The piece will now appear as indicated in the plan view, Fig. 9. Let the plaster which has been deposited on the sides 1 and 2 set for about 10 or 15 minutes, and then remove the strips *A* and *B*. Cut holes about ¼ of an inch deep into the plaster on the surfaces formed by the strips *A* and *B*. These are called joggle holes, and are provided so that the plaster mold when finished will fit together properly. Shellac and oil the faces of the plaster as well as the sides 3 and 4 of the wood model, and proceed to deposit the plaster on these as was done on the sides 1

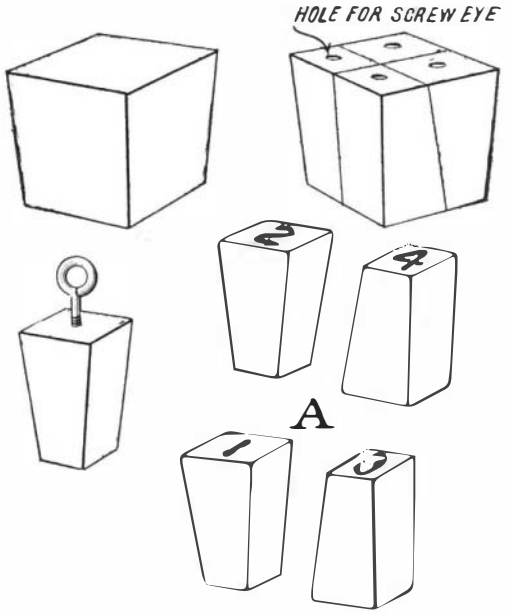


Fig. 11.—DETAILS OF THE PIECE CORE.

and 2. Care must be taken in all of the above operations not to move the model from its original position on the working board. The model and plaster sides should now look as shown in Fig. 10. Before removing the plaster sides level them off to the height of the model. Now lift the whole up from the working board. If care has been taken in oiling all sides of the model, a slight jar will loosen the plaster from it. Then pull apart, as indicated by the arrows, the two plaster sides of the mold.

Lay these aside, and then proceed to make the core or the part of the mold which forms the hole or the inner sides of the box. This is made as follows: It will be noticed that in the wood model of the box, which is shown in Fig. 8, a slight taper is given to the inside. This taper is provided so that the core will draw out more freely than if the sides were perfectly straight. Place your model on the working board. Shellac and grease well the inside of the box, and then mix the plaster as before, and pour it into the inside of the box. Level the top, and let the plaster set for 10 or 15 minutes. Now turn the box upside down and tap it gently. This will loosen the plaster core, and it will fall out. If the core should for any reason stick to the sides, the wood model should be opened a little, so that the core can be taken out without injuring it. The core will then be in one piece, as indicated in Fig. 11. It should now be smoothed up nicely, and all corners and edges should be made round. Where a marked taper has been given to the core, it might be, if well oiled, used solid in the mold when casting the cement.

It is far better, however, to make what is known as a piece core, as this can be removed more readily, and is less liable to break the cement on removing than is the solid core. To make a piece core, cut the solid core shown in Fig. 12 into four parts as indicated at *A*. This can be done with an ordinary wood saw. If the saw binds or sticks, a little water applied to the blade will obviate the trouble. Mark the pieces thus cut 1, 2, 3, 4, as indicated, care being taken to get the proper numbers on the right pieces, as this is the rotation in which they are to be removed from the cast. Piece number 1, which is a decided wedge in shape, should be taken out first, and it is well to provide in the top of this piece, as well as in the other pieces, a straight round hole in which a screw eye of suitable size can be screwed. By passing a piece of wood through the eye of the screw, the piece can be easily pulled out from the mold.

After having cut the core and fitted it together nicely, as shown in Fig. 11, put it back into the wood model. If necessary, tie a string around the pieces to hold them in place. Also before putting the core into the model, place in the bottom of the model a thin strip of wood; about ⅛ of an inch thick will be thick enough. This will allow the core to project ⅛ of an inch above the sides of the model, as shown in

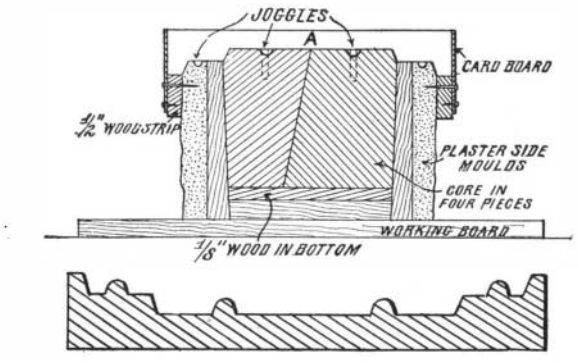


Fig. 12.—PARTS ASSEMBLED FOR CASTING THE PLASTER CASE, ALSO SECTION OF THE PLASTER CASE.

Fig. 12. Taper this ⅛-inch projection of the core as shown, and then place in position, on the outside of the model, the outside plaster molds which have already been made. Tie a string around these to hold them firmly in position.

Now secure by means of brads or fresh plaster strips of ½-inch wood around the outside mold, as indicated, about ¼ of an inch from the top. Taper the edges of the plaster mold from the point where the wood is attached to the top as indicated. This can readily be done by cutting the plaster with a knife.

Joggles or holes should be made in the top of the outside plaster mold, as well as in the top of the pieces of the core as indicated. These will help greatly in holding together as well as in assembling the various pieces of the mold. Now secure to the strips by means of tacks a ½-inch strip of heavy cardboard around the entire outside mold. Shellac and oil well the entire inside of the inclosure thus made. Now mix your plaster as before, and pour it over the top of the core, the model, and the top of the outside plaster mold. The cardboard sides and wood strips already attached will prevent the plaster from running down the sides. Smooth the plaster off level

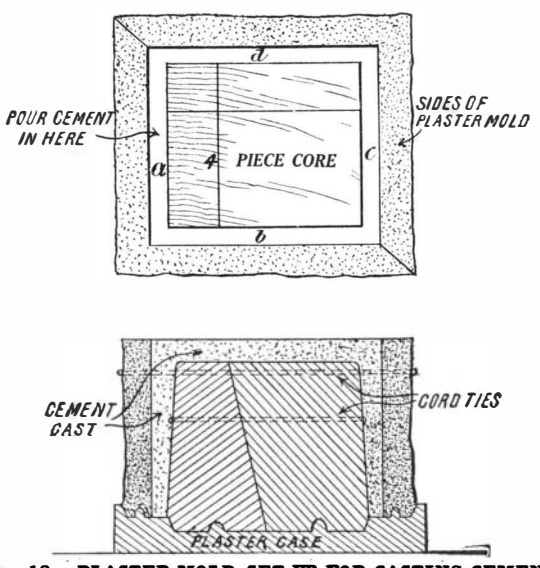


Fig. 13.—PLASTER MOLD SET UP FOR CASTING CEMENT.

with the top of the cardboard, and let it set or harden. When hard turn the whole upside down, and by gently jarring, the piece just cast will come off freely. This piece is called the case. It will have the form shown in section in Fig. 12, and is used as shown in Fig. 13, for setting up the core and outside plaster mold in which to cast the cement box. In fact, it forms part of the mold.

Before casting the cement box it will be well again

to shellac and oil all parts of the plaster mold which will come in contact with the cement. Then set up the mold as shown in Fig. 13, care being taken to bind the outside form firmly together by means of string. The mold is now ready to receive the cement mixture, which should be made as follows: Take 1 part of Portland cement and 2 parts of marble dust, if a fairly light color is desired; if not, 2 parts of any good clean fine sand will do. Mix these thoroughly together while dry, and then add enough water to allow the whole to be mixed to the consistency of a heavy cream. Let it be thin enough so that it will pour freely. Pour this mixture in the openings *a*, *b*, *c*, *d*, between the outer plaster mold and the core, until the mixture is flush with the bottom of the core. Lift the mold and gently jar it. This will tend to settle the cement, and will also force out any air that may be in the mold, and thus avoid the trouble of air bubbles or voids in the finished cast. The cement already deposited in the sides will settle, more or less, under this treatment. Now fill the remaining portion of the mold flush with the top of the outside plaster sides and jar the mold again. Repeat this operation until the cement will settle no more. Wipe off the top of the mold with a straight edge, thus removing any surplus cement, and giving to the bottom of the box a good even surface. Then place the mold in a level position, and allow it to stay there without moving for from 24 hours to 48 hours, the longer the better, as the longer it is allowed to remain, the harder the cement will set. After having set for the above-mentioned time, the piece can be removed from the mold. The method of doing this is as follows:

Turn the mold over into the position shown in Fig. 12; tap the case *A* around its edges; this will loosen the case, which is then removed. Now take the screw eye and insert it in the hole in the piece 1 of the core. Pull this out, and then repeat the operation in pieces 2, 3, and 4 of the core. Cut the string which binds the sides together, and then pull them off in the directions indicated by the arrows in Fig. 10.

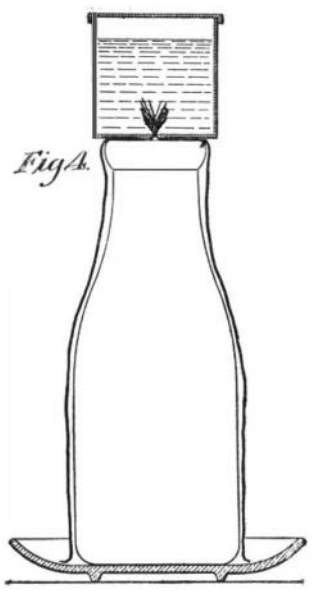
If care has been taken throughout all of the above operations, the result will be a perfect cast. The next step is the curing of the box. This is a simple operation. All that is necessary is to soak it well with water. This can be done by placing the cast directly in water, and letting it stay there for one or two days, or it can be sprinkled or dashed with water three or four times a day for two or three days in succession or longer; the longer the process is kept up, the better the result. By the application of plenty of water, the product produced will become as hard or harder than stone.

(To be continued.)

ICELESS REFRIGERATION.

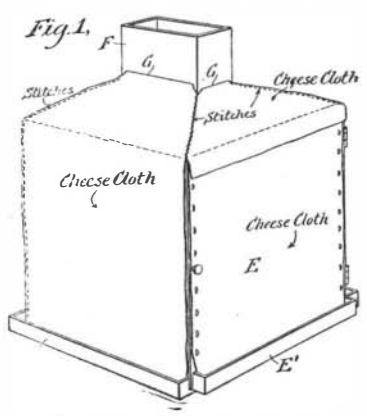
BY EDWARD THORPE.

While the mad race for supremacy between the mercury and price of ice continues, much comfort can be taken in the fact that there are other methods of keeping victuals cool besides that of melting ice in an ice box. If in changing from the solid to the liquid state water absorbs sufficient heat to keep an ice box cool, it is equally true that a change from the liquid to the gaseous state will result in refrigeration, provided, of course, the rate of vaporization keeps pace with the heat which enters the ice box from the outside atmosphere. Under proper conditions it is possible by this method to maintain a sufficiently low temperature in the ice box to preserve food from rapid decay. A simple method of making such an iceless refrigerator is illustrated in Fig. 1. In this illustration the cover of the water tank is removed. The box comprises a frame *A*, which is built upon a wooden floor *B*. The frame *A* serves as a support for a zinc box *D*, which is fastened thereto. The water tank *F* is soldered to the top of the box, while at the bottom is a trough D^1. The door *E* at the front of the box has its own trough section E^1. Slots *G* are cut in the four sides of the tank *F* to receive the ends of a cloth cover for the box. The cover is preferably made up of several thicknesses of cheesecloth stitched together at the corners, and the ends are jammed tightly through the slots into the water tank *F*. The door *E* is provided with its own section of cheesecloth, as indicated in the illustration. In operation the water from the tank soaks into the cheesecloth and by capillary attraction and gravity passes on down to the bottom of the cloth, where any excess of water is caught in the trough. The flow of water through and over the cloth should be very slow, and may be regulated to a large extent by the tightness with which the cloth is stuffed into the slots *G*.

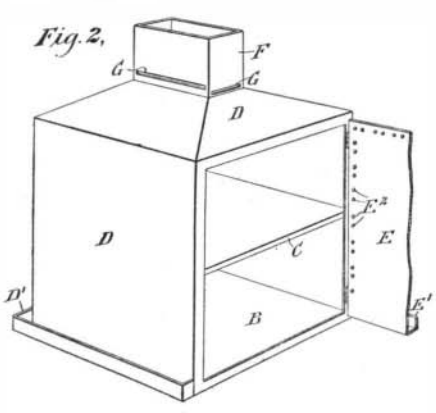


HOW TO KEEP A MILK BOTTLE COOL.

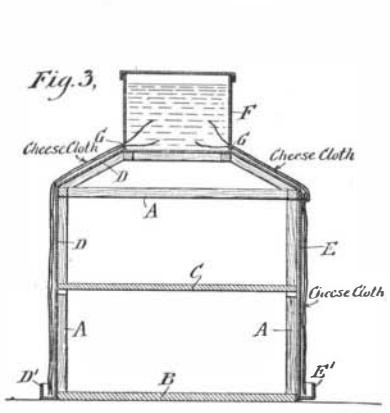
The box is placed on a suitable shelf supported by brackets just outside of the open window on the breeziest side of the house and out of the direct rays of the sun. It is advisable to make the box a couple of inches narrower than the window opening, so that the currents of air passing in and out of the window may have free passage all around the moist cheesecloth. As the water in the cheesecloth is evaporated it absorbs a large amount of heat, much of which is taken from the zinc box, tending to keep the food in the box cool. A modification of this idea is shown in Fig. 4. Here the construction is adapted to cool an individual milk bottle. The cloth covering is placed directly over the bottle, and at its upper end is jammed into a slot in the bottom of the small reservoir. The milk bottle is placed in a saucer, which serves as a trough to catch the excess of water. Instead of the cheesecloth covering, the leg of a sock can be used, as this is already of cylindrical form and is well adapted to hold the moisture. In case the water from the tank does not moisten the cover sufficiently, the trough may be also filled, and the water will be drawn up therefrom by capillary attraction.



REFRIGERATOR COMPLETE WITH TANK UNCOVERED.



CLOTH REMOVED TO SHOW THE ZINC BOX.



CROSS-SECTIONAL VIEW OF REFRIGERATOR.

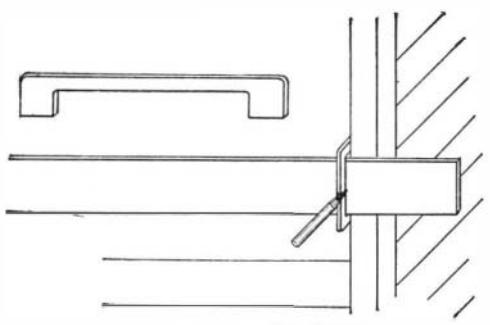
A WEATHERBOARD GAGE.

BY L. G. BAYLEY.

It is customary, when cutting off weatherboarding to fit up against the corner strips of a frame house, to use the long square or carpenter's rule. The square is sometimes held along the edge of the weatherboard, or down the side of the corner strip. Either method necessitates carrying the square along, or fetching it from where it was laid down.

One-quarter the time can be saved, saying nothing of the convenience, by making a little gage as illustrated from a piece of board about 9 inches long and 2 inches wide, which can be carried in the nail or apron pocket. The notch in the piece is 6½ or 7 inches in length and about 2 inches deep.

The weatherboard is held in position, the end not shown being set firmly against the last board in the same row, the other end extending beyond the corner strips. The gage is slipped over this end of the board,



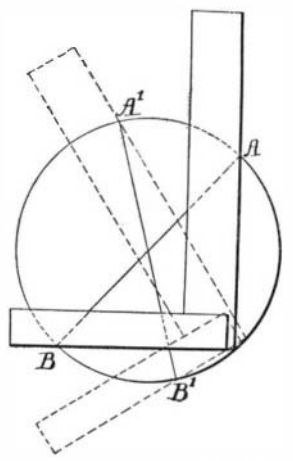
A WEATHERBOARD GAGE.

and held fir[illegible] strip, while a pencil [illegible] board as it is held against the [illegible] is made a little inside the pencil mark.

QUICK MEANS FOR FINDING THE CENTER OF SHAFTS.

BY ALBERT PRATHER.

In the illustration the circle represents a section of a shaft, the center of which it is desired to find. The corner of a square is placed on any point of the circumference. The points *A* and *B* are the intersections of the outer sides of the square with the circumference. Draw a line from *A* to *B*. Now shift the square a little, as represented by the dotted square, and with the corner on any other point mark the intersections *A'* and *B'*, then connect *A'* and *B'*, and the intersection of *A B* and *A' B'* will be the required center. It is necessarily the center, for it is the intersection of two diameters.

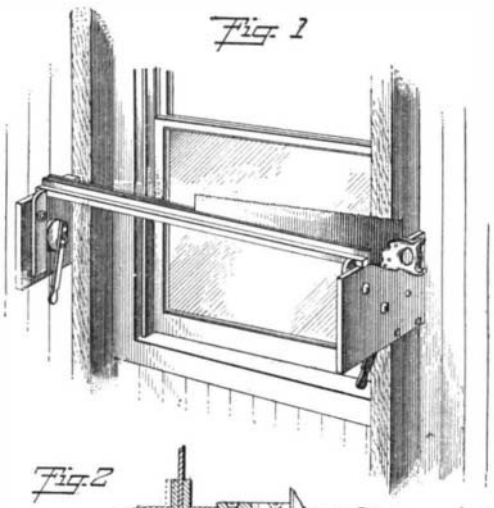


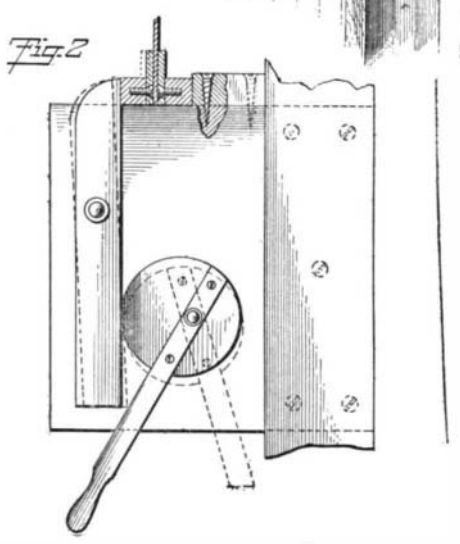
METHOD OF FINDING CENTER OF A CIRCLE.

A HOME-MADE SAW VISE.

BY JAMES G. NEWLAND.

Desiring a saw-filing vise that would allow an ordinary saw to be filed or set from end to end without change and without chattering, to hold the saw rigidly and yet so that it could be instantly released, the writer made a device as follows: In the barn loft there was a south window with a good light. To the 3 x 4 studding at each side of the window and at right angles to it, at a convenient height two pieces of wood 1 x 12 x 12 inches were firmly nailed, thus forming two brackets. Two pieces of straight 2 x ¼-inch flat iron, long enough to go across these brackets, were found, also two straight pieces of 1 x 1-inch iron (discarded square-bed carriage axles with stubs off). The latter pieces were faced with the flat iron by means of a couple of countersunk-head stove bolts. Two pieces of 2 x 2-inch angle iron would have done as well. These made the two jaws of the vise, and they were





A HOME-MADE SAW VISE.

placed across brackets in front of the window, with a wooden strip between the inside jaw and the studding to take the file thrust. On the inner side of each bracket a lever of 1¼-inch square hardwood was pivoted with its upper end bearing against the outer jaw. Two circles of wood were cut and mounted on bolts in the brackets, but an inch off center, so that they could be used as cams to press against the lower ends of the lever and force the upper ends firmly against the outer jaw, thus clamping the saw firmly in place. A handle was secured to each cam, with which to tighten and release the vise.