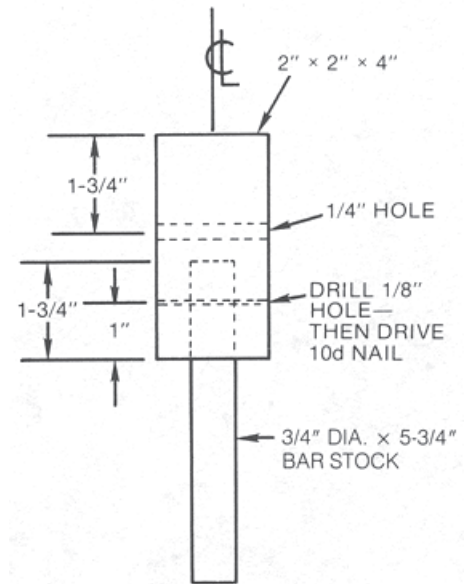
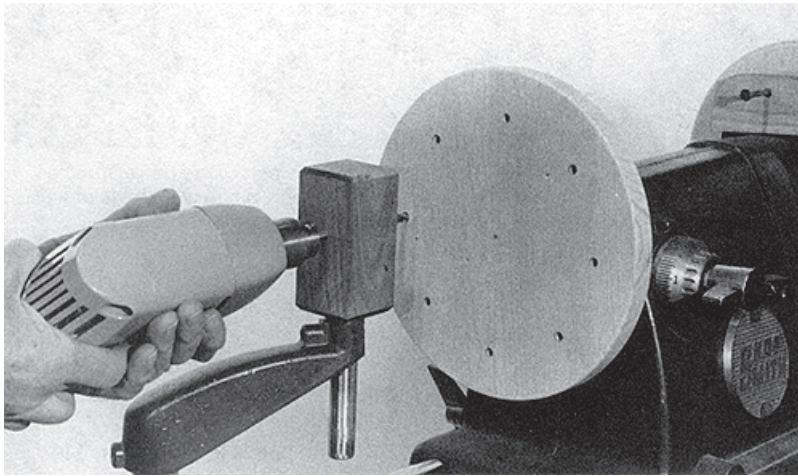


**Figure 12-68.** A typical application for the indexing device. It positions work so radial holes can be equally and automatically spaced. The drill guide keeps the bit square to the workpiece.



**Figure 12-69.** Construction details of the drill guide.



**Figure 12-70.** The indexing device and the drill guide can also be used to automatically space surface holes. The drill guide can also serve as a stop to gauge hole depth.

good idea to coat the dowel with paste wax to minimize friction where the dowel turns in the block.

The dowel turning fixture can also position tiny work for concentric drilling. If the work is very tiny, it can be gripped in a router chuck locked on the main spindle.

### Turning Ovals

The most important part of turning a cylinder into an oval shape is the template for locating the true center and the two off centers (Figure 12-74). If the ridge line is located first, it is easy to position the template at the ends of

the stock and mark the centers with an awl.

Turn the work on true center until it is round. Remark the ridge line.

Mount the work on one of the off centers. Turn it until the cut nears the ridge line. Now it's round on one side, oval on the other.

Mount the work on the remaining off center; turn it down to the ridge line. Now the work is oval. Sand it as illustrated in Figure 12-75.

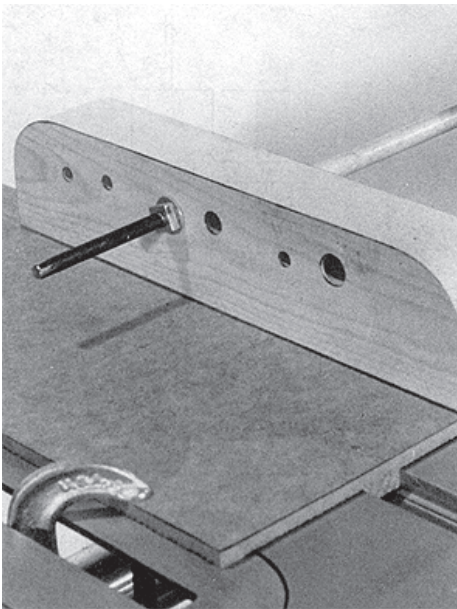
### Turning Spirals

Spiral forming is classified as a lathe job even though most of the

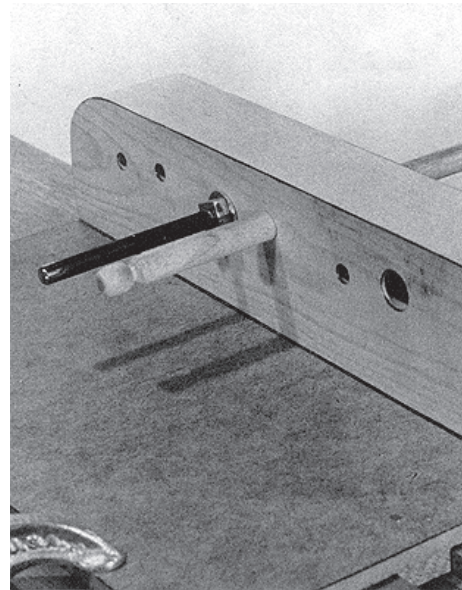
work is done by hand. It is started by mounting stock between lathe centers and turning it to a cylinder.

Layout of the spiral divisions is shown in Figure 12-76. First mark off the length of the spiral. Divide this into equal spaces, each approximately the diameter of the cylinder. Draw four lines along the length of the stock, connecting common perpendicular diameters at each end. Now divide each space into four equal parts and, with a heavy piece of paper as a guide, pencil-mark diagonal lines across each one as shown.

Now follow the sequence detailed in Figure 12-77. Use a saw



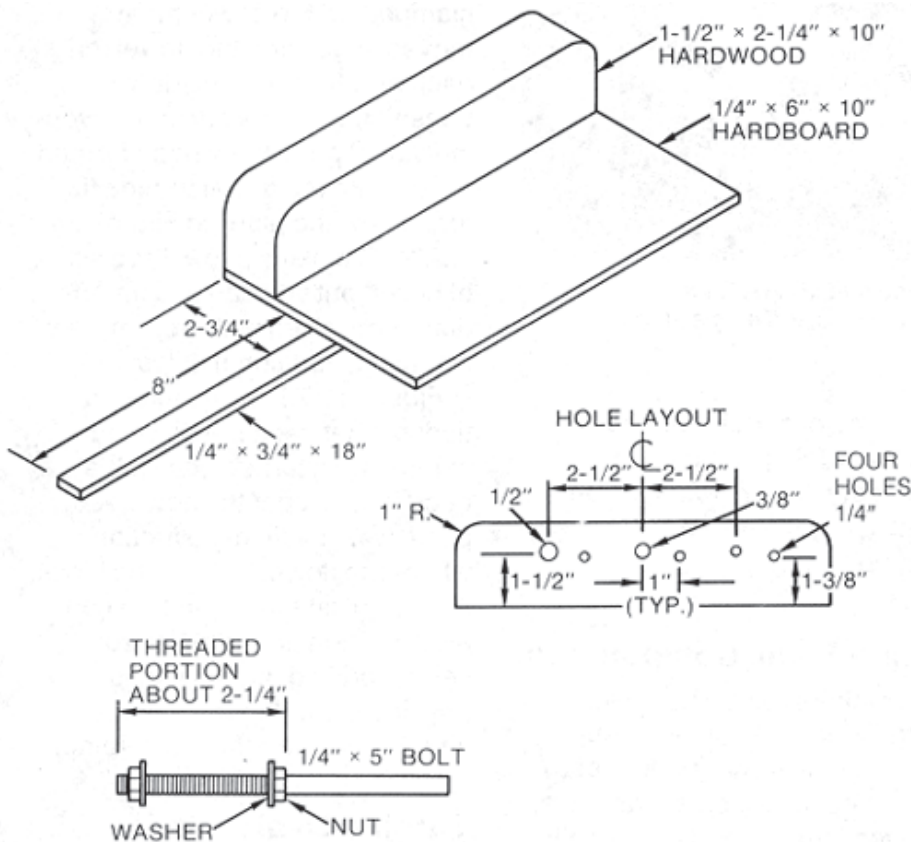
**Figure 12-71.** A dowel turning fixture makes it easy to turn small parts from dowel stock.



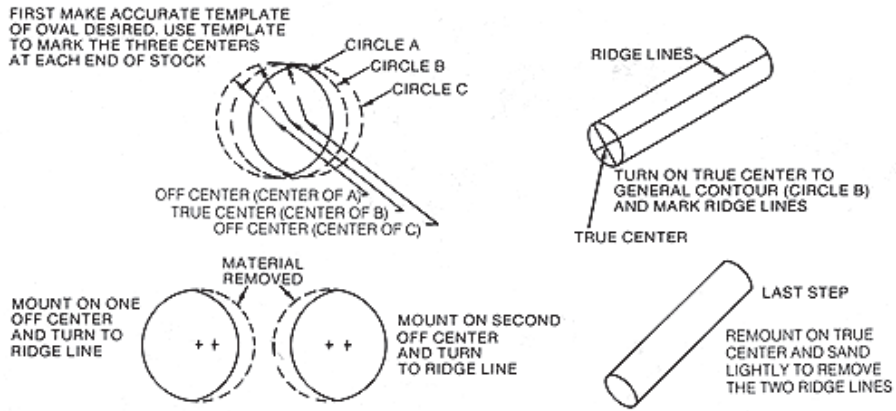
**Figure 12-73.** The bolt, which is part of the dowel turning fixture, serves as a tool rest. Apply paste wax to the dowel so it can turn with minimum friction.

to cut along the spiral line to the depth needed (Figure 12-77A). This depth is easily controlled if a keyhole saw is used. If a backsaw is used, clamp a block of wood to it to act as a depth guide.

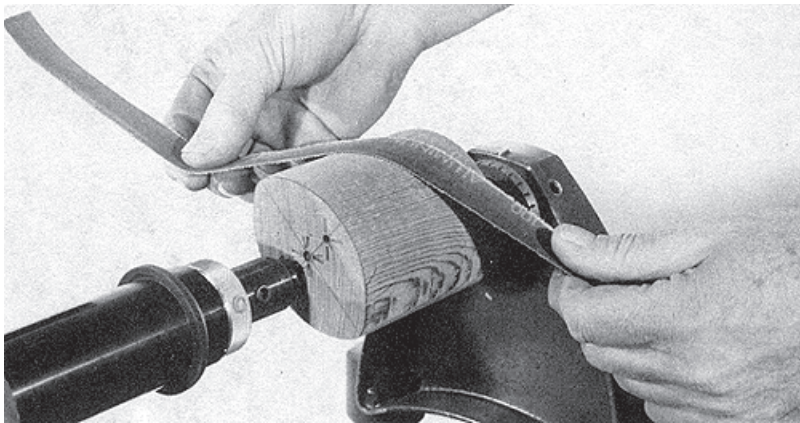
Next use a round file to form a groove to the depth of the saw cut (Figure 12-77B). Open up the groove with a square file (Figure 12-77C). Shape it with a half-round file (Figure 12-77D). Use sandpaper to do the final shaping and smoothing.



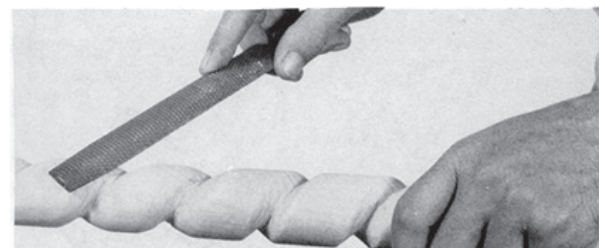
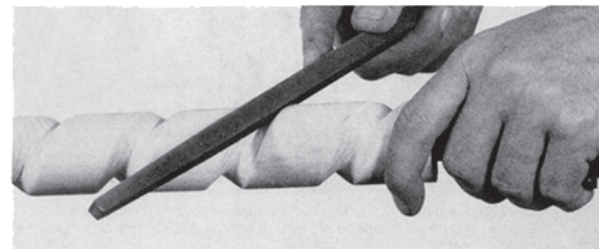
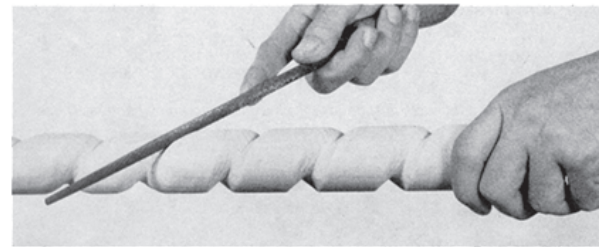
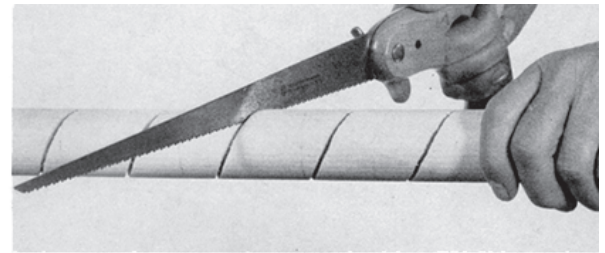
**Figure 12-72.** Construction details of the dowel turning fixture for 1/4", 3/8", and 1/2" dowels. Additional holes for other sizes of dowels can be drilled.



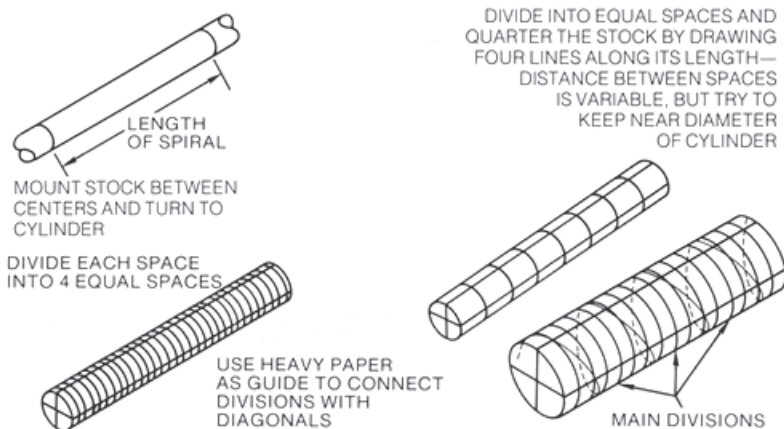
**Figure 12-74.** You can turn cylinders with an oval cross section if the work is shaped while it is mounted on off centers. These drawings show the procedure to follow.



**Figure 12-75.** When the oval is complete, use sandpaper to smooth the project and to remove the ridge line. The shape of the oval will depend on how far apart you space the off centers.



**Figure 12-77.** To form spirals: (A) Use a keyhole saw or backsaw to cut on the spiral line. (B) Start the shaping with a round file. (C) Continue the shaping by using a square file. (D) Finish the shaping with a half-round file. Then work with strips of sandpaper to achieve final smoothness.



**Figure 12-76.** This is the kind of layout you must use to prepare stock for spiral forming.