CHAPTER 27

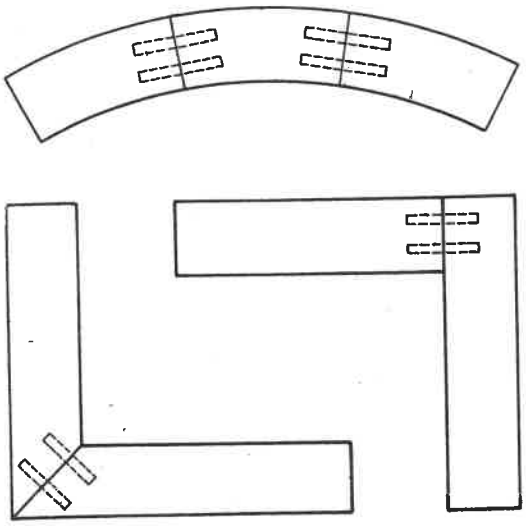
# Using Dowels

A *dowel* is a peg or pin of wood or plastic that fits into two matching holes to strengthen a joint. Fig. 21-1. Dowels are also used for decoration or as parts of many projects. Pegs on a hat rack are an example. Another example is shown in Fig. 27-2.

## TOOLS AND MATERIALS

*Dowel rod* is usually made of birch in 36-inch lengths. The common diameters range from ⅛ to 1 inch, in intervals of 1/16 inch. Sometimes a groove is cut along the dowel so that glue holds better. Small *dowel pins* are made with a spiral groove and chamfered ends. The spiral helps the piece go in easier and the glue to flow. Fig. 27-3.

A *dowel sharpener* points the ends of dowels. Fig. 27-4.



**27-1.** *Some common uses of dowels.*

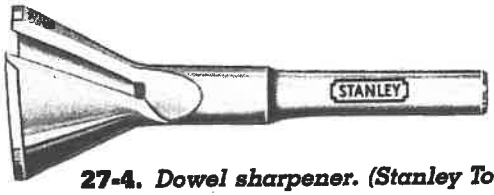
A *doweling jig* will help locate the position of the holes and guide the auger bit for boring. This jig comes with several metal guides in sizes of 3/16, ¼, 5/16, ⅜, 7/16, and ½ inch. Fig. 27-5.

*Dowel centers* are small metal pins used for marking the location of holes on two parts of a joint. They come in sizes of ¼, 5/16, ⅜, and ½ inch. Fig. 27-6.

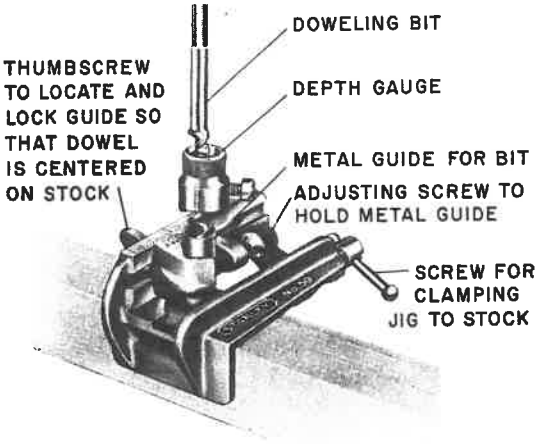
*Dowel bits* are auger bits for boring dowel holes. These bits are shorter than regular auger

**27-2.** *Exposed dowels are used to assemble the box section of this Early American sewing cabinet.*

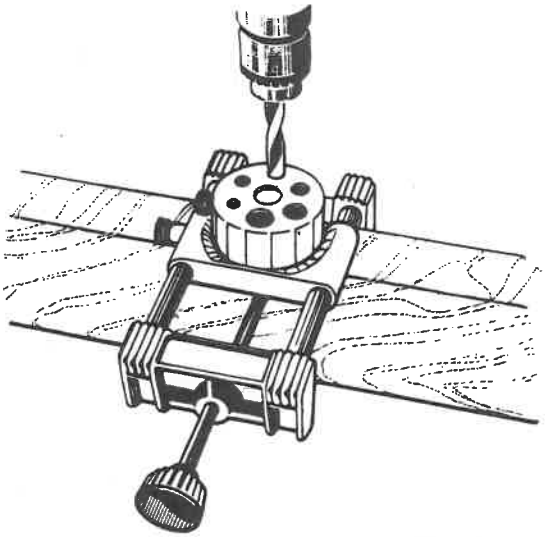
**27-3.** *A dowel pin with a spiral groove.*



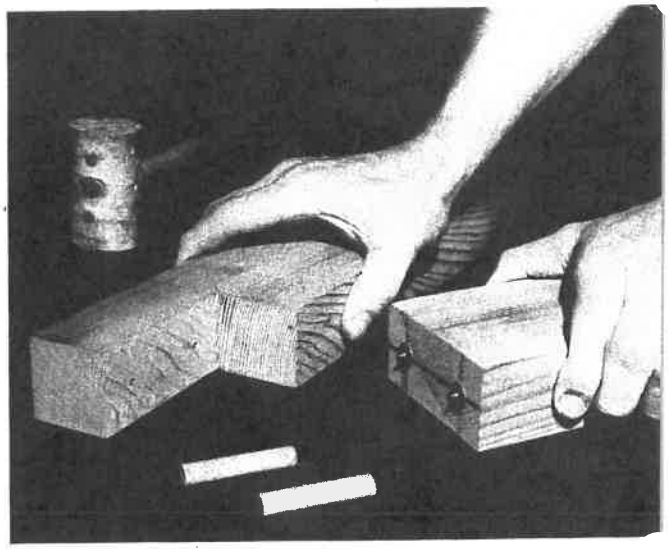

**27-4.** *Dowel sharpener. (Stanley Tools)*




**27-5(a).** *Doweling jig. (Stanley Tools)*



**27-5(b).** *Another type of doweling jig. The top part can be rotated and locked in place. Select the correct size hole for the dowel drill. Rotate the top part until the correct hole is directly over the center of the edge. Clamp the guide to the workpiece.*



**27-6.** *The location of the dowels has been marked on one piece, and dowel centers have been fastened in place. When the two pieces are held together and tapped with a mallet, the dowel centers will mark the location of the holes in the second piece.*

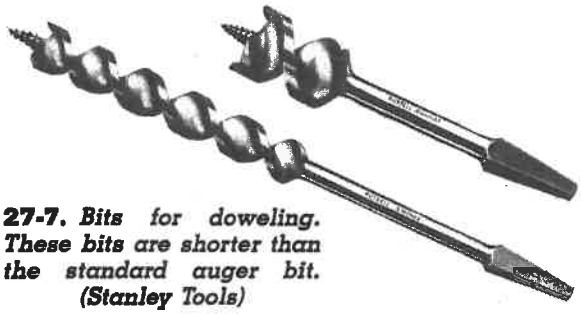
bits. Fig. 27-7. Other tools for making dowel joints include a marking gauge, try square, rule, and pencil.

## MAKING A DOWEL EDGE JOINT

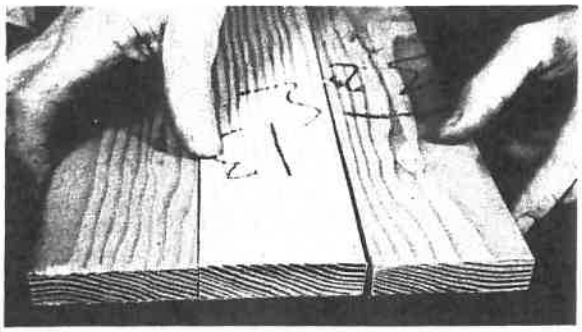
1. Square up the pieces to be joined.

2. Place the pieces on the bench side by side. Arrange them with their grain running in the same direction and their growth rings turned in opposite directions. Fig. 27-8. This will help to prevent warping.

3. Mark the face surface with matching numbers at each joint: 1-1, 2-2, etc.



**27-7.** ***Bits for doweling. These bits are shorter than the standard auger bit. (Stanley Tools)***



**27-8.** ***Turn the pieces so that the growth rings on the ends face in opposite directions.***

4. Check the edges to be joined. They should be:

- Square with the face surface.
- Straight along the length. Use a large framing or carpenter's square to test them.
- Planed with a slight opening in the center and the ends fitting tightly.

5. Clamp the first two pieces in a vise with the face surfaces out.

6. Mark lines for the position of dowels across the edges. There should be a dowel every 12 to 18 inches. If three dowels are used, locate one in the center and the others about 2 or 3 inches in from each end. These are the only layout lines needed if a doweling jig is used.

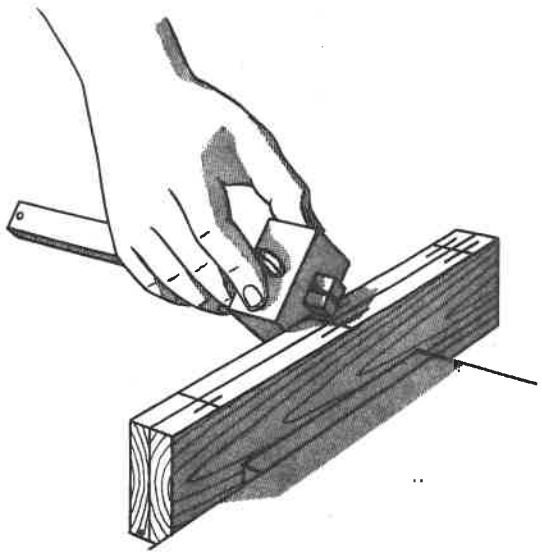
7. If a doweling jig isn't used, mark centers for the holes. Use a marking gauge set at half the thickness of the stock and mark from the face surfaces. Fig. 27-9.

8. Choose a dowel rod equal in diameter to about half the thickness of the stock.

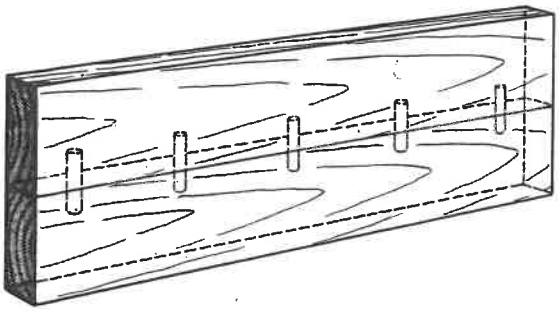
9. If a doweling jig is used, proceed as follows:

a. After you choose the dowel rod, select a metal guide of the same size for the doweling jig. Suppose the rod is ¼ inch. Select a guide this size and slip it into the clamp of the jig. Adjust the guide so that it is centered on the thickness of stock.

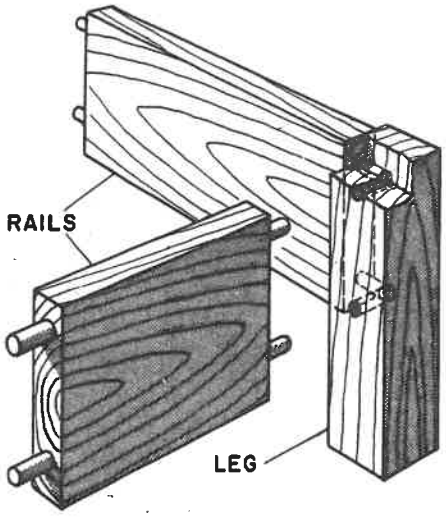
b. Clamp the jig over the stock so that it is lined up with the cross line.



**27-9.** ***Mark the location of the dowel holes with a marking gauge.***



**27-10.** ***Edge joint with the dowels installed.***




**27-11.** ***A rail-to-leg butt dowel joint. Notice that the rails are thinner than the legs. The dowels are centered on the ends of the rails and on the legs. If the rails must be flush with the surface of the legs, then the dowel holes on the legs must be closer to the outside surface.***

c. Place the jig with the solid side against the face surface. Clamp a stop to the bit for the correct depth of hole.

10. Choose an auger bit equal to the size of the dowel. Attach a bit gauge so that the depth of holes will be about 1½ to 2 inches.

11. Use a square to line up the bit. Bore the holes to the correct depth. Make sure the holes are bored squarely and on center. If they aren't, the two parts of the joint won't fit together right.

12. Bore all the holes on both parts of the joint. Countersink the holes so that the dowels will start easily.

13. Cut the dowels about ⅛ to ¼ inch shorter than the combined depth of the two holes. Chamfer or point the ends.

14. Insert the dowels in one edge and then assemble the joint to check if it fits. Fig. 27-10.

15. Take the assembly apart. Remove the dowels. Dip the dowels one-third of the way into glue and drive them into one edge with a mallet.

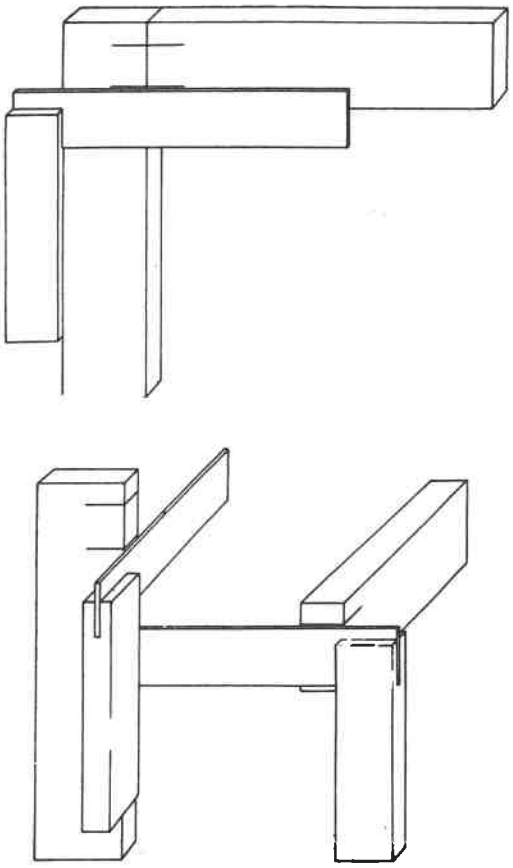
16. Apply glue to this edge and to the exposed dowels.

17. Put the two edges together and clamp them. (Clamping is discussed in Chapter 32.)

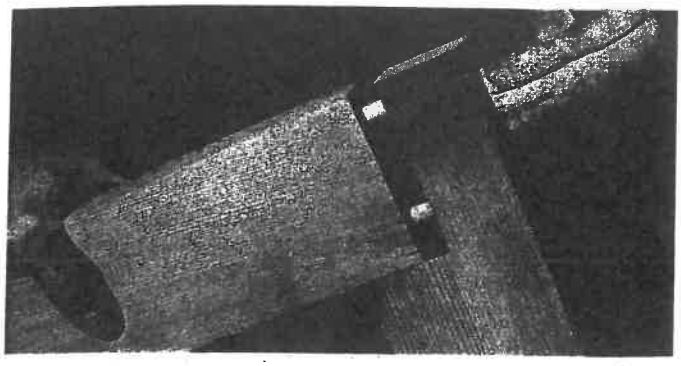
## MAKING A RAIL-TO-LEG BUTT DOWEL JOINT

This joint can be used in place of a mortise-and-tenon joint on tables and chairs. Fig. 27-11.

1. Locate the position of the dowels on the leg and in the ends of the rails. The rail may be flush with the outside of the leg or set back some distance. Remember, the dowels are centered in the ends of the *rails.* The position of the dowel holes in the *leg* depends on how far back the rail will be from the edge of the leg. Fig. 27-12.



**27-12.** ***Mark the location of the dowels. Continue the lines across the edge and end of the pieces.***



**27-13.** ***Gluing a dowel joint. To make the frame more rigid, a rabbet has been cut in one piece.***

2. After the holes are located, the joint is made the same way as described above.

## MAKING A FRAME WITH DOWELS

1. Cut all pieces to the same thickness and width. If the frame is square, all pieces are the same length. If not, the two pairs of matching pieces must be equal.

2. Locate the position of the dowels in the ends of two pieces and the edges of the other two pieces.

3. Complete the joint as described above. Fig. 27-13.

## QUESTIONS

1. What is a dowel?
2. Of what is a dowel usually made?
3. What is the difference between dowel bits and auger bits?
4. What diameter dowel would you use on ¾-inch stock?
5. How long should the dowels be?
6. Tell how to make a dowel edge joint.
7. Tell how to make a rail-to-leg butt joint with dowels.