Mark the bad surface of each piece and be sure it faces up when you bore.

Hole spacing can be controlled automatically if you make the hole-spacing guide that is shown in Figure 11-9. The important part of the construction is getting the guide pin holes exactly on the bit's horizontal centerline. To determine dimension "A", assemble the guide and secure it to the way tubes. Then, with a bit secured in the chuck, advance the quill so the point of the bit will mark the guide. Use a square to mark this point across the guide and, on this line, bore the holes for the guide pin.

When you use the guide, the guide pin engages the last hole that was bored and so positions the workpiece for the next hole (Figure 11-10). Hole spacing is variable because of the set of holes in the guide and, since the guide pin has a 3/8" diameter bushing at one end (Figure 11-11), you can bore either 1/4"or 3/8" holes. By making an assortment of guide pins, you can set up the guide for boring holes of whatever diameter you wish.

Boring Dowel Holes in Miters- Miter joints are often strengthened with dowels. The important factor is for the holes to enter at right angles to the cutline. The miter gauge holds the workpiece at the correct angle; the rip fence, with a spacer attached, is set to suit the length of the workpiece. The miter gauge safety grip holds the workpiece securely in position as the hole is bored. When the workpiece is extra-long, use the miter gauge to hold it at the correct angle and a clamp to secure it to the table (Figure 11-12).

FORMING A PEGGED JOINT

This is an excellent joint to use on drawer front to drawer side connections since it has the characteristics of the dovetail, but it is much easier to accomplish. First, cut the side and front of the drawer to size and then set the pieces in position as shown in Figure 11-13A. The miter gauge positions the work square to the spindle; the fence acts as a backup; and the table height is adjusted for edge distance. Bore the first hole and insert a dowel in it (Figure 11-13B) so the parts will be held in correct position for the holes that follow (Figure 1 1-13C). This method can be used for box corners as well as drawers (Figure 11-14).

BORING ODD SHAPES

An odd-shaped piece, like a curved segment, can be set up for boring by simply positioning it correctly and then clamping it in place on the table. However, if you have many similar pieces to bore, you can make a guide that will place each piece in exactly the right position. This lets you work more accurately since it eliminates the possibility of human error. An example guide, shown just to dem-onstrate the concept, is shown in Figure 11-15.

PIVOT BORING

Radial holes into the edge of circular workpieces can be bored accurately by working as shown in Figure 11-16. This procedure is known as pivot boring. A strip of wood, sized to fit the table slot and with a short nail driven through it at an approximate midpoint, is clamped to the table so the nail is aligned with the spindle's center. The workpiece, marked off in degrees for the holes that are required, is centered over the pivot nail and rotated to position it for each hole. Set the depth control to limit quill extension.

CONCENTRIC BORING

A round or a square workpiece, if it is not too long, can be positioned for accurate concentric holes by using the miter gauge and the fence as shown in Figure 11-17. The table height is adjusted so the drill point will be on the workpiece's horizontal centerline. The miter gauge, locked in place, maintains the workpiece's alignment; the fence serves as a backup.

Another method requires the use of a V-block (Figure 11-18) which cradles the workpiece as demonstrated in Figure 11-19. When the workpiece is shorter than the V-block, use a length of scrap wood between the workpiece and the fence. The V-block can also be used to hold square workpieces (Figure 11-20).

For extra-long workpieces, use an extension V-block as shown in Figure 11-21. The V-block is also used to grip short workpieces (Figure 11-22). The V-block, held in place by being clamped to the locked miter gauge or clamped to the extension table, is positioned so the vertical centerline of the spindle bisects the "V." Table height is adjusted in relation to the diameter of the workpiece. Small auxiliary V's are used when the workpiece is too small to be gripped by the basic V-block. Fig-ure 11-23 shows how the extension V-block and the auxiliary V's are made.

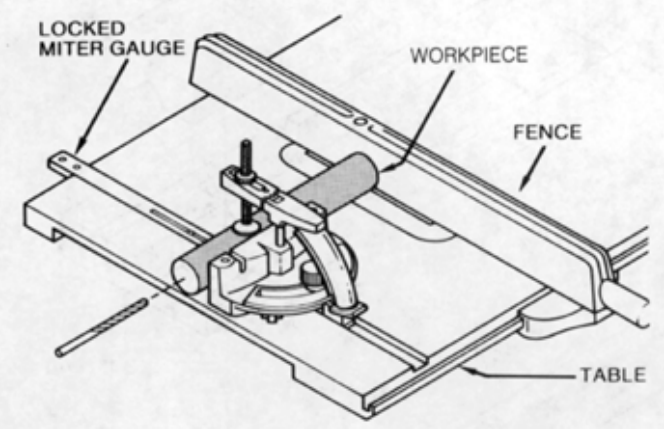

Figure 11-17. A simple way to set up for boring concetric holes.

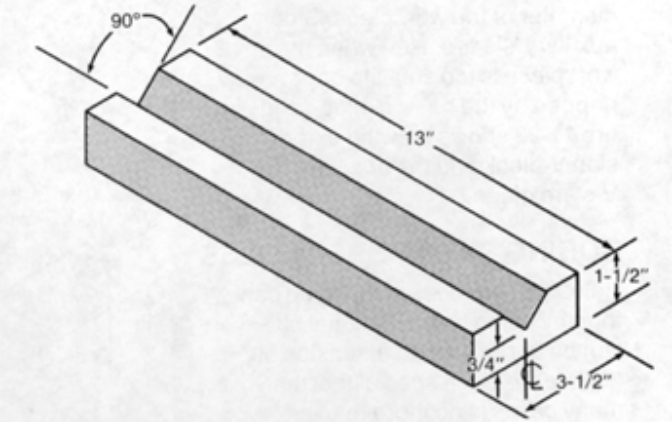

Figure 11-18. A V-block can also be used when doing concetric boring.

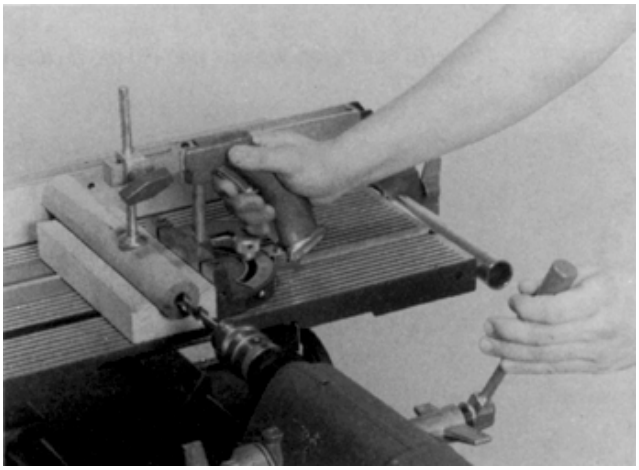

Figure 11-19. A V-block is used to hold the workpiece as shown here. Use the fence as a stop block and use a spacer when the workpiece is too short to reach the fence.

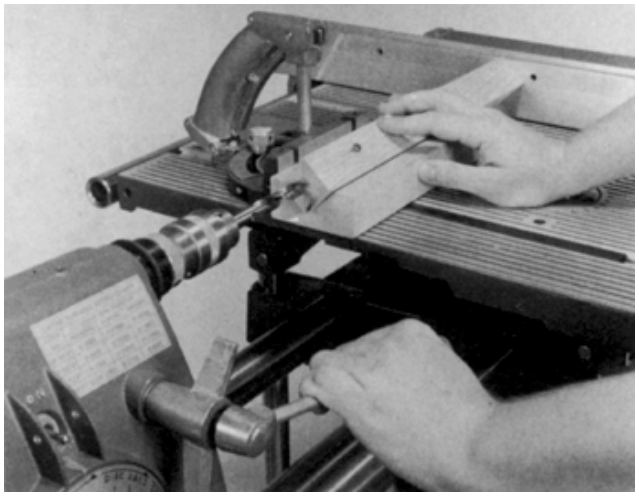

Figure 11-20. The V-block can also be used to position a square workpiece for concentric boring.

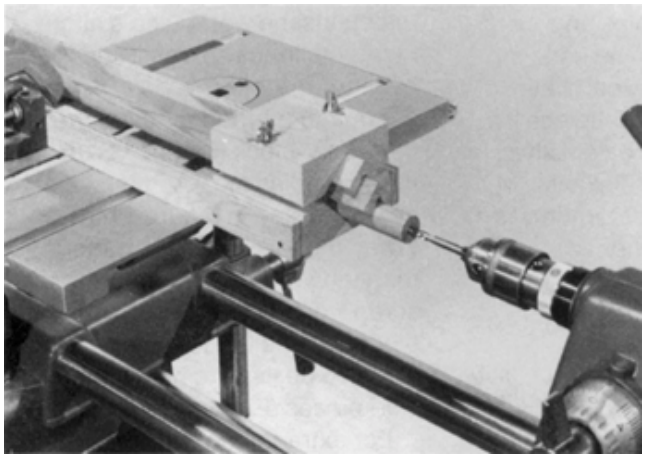

Figure 11-21. An extension V-block is used for extra-long workpieces.

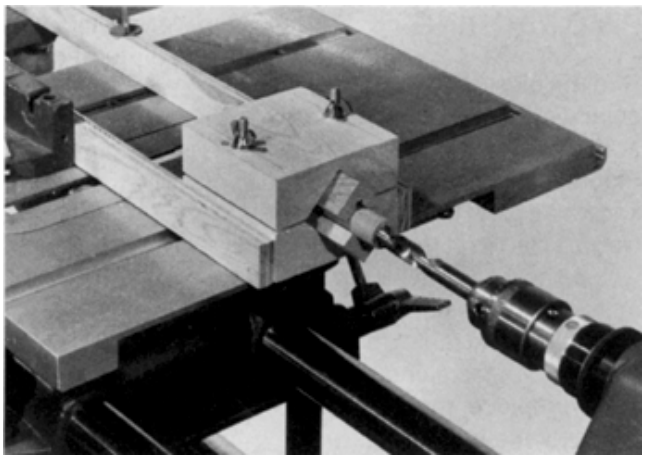

Figure 11-22. The extension V-block can also be used to grip short workpieces. Auxiliary V's are used when the stock's diameter is too small to be gripped by the basic V-block.

BORING EXTRA-DEEP HOLES

Holes that are deeper than you can form by using a conventional bit can be bored with an extension bit (Figure 11-24), a special tool that in many cases is no more than a regular drill bit that has been brazed onto a rod. The procedure is to bore to the quill's maximum extension and then, after retracting the quill, to move either the table or the power plant so the drill will reach the bottom of the hole. Thus you can deepen the hole by again extending the quill. Since the rod part of the extension doesn't have flutes, you must retract frequently to clear waste chips from the hole.

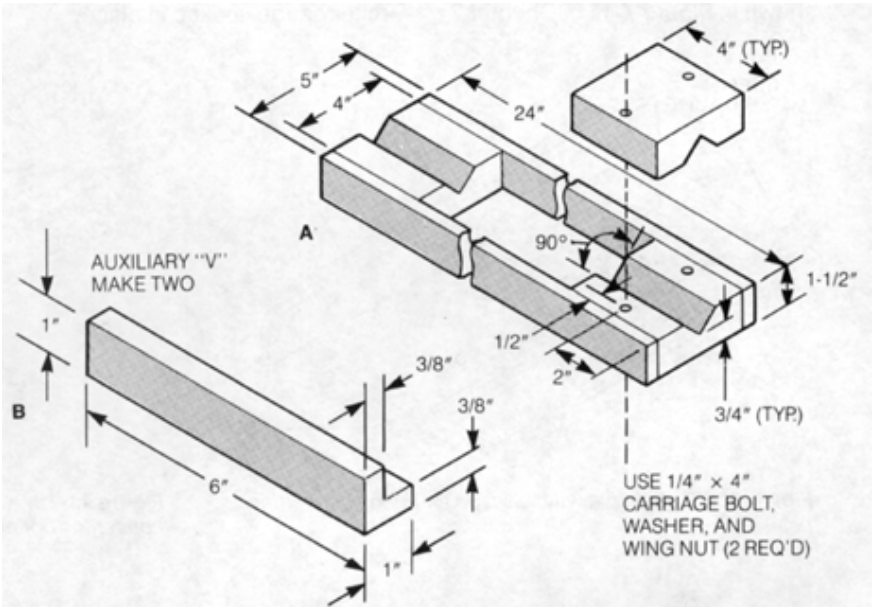

Figure 11-23. Construction details of the (A) extension V-block and (B) the auxiliary V's. The shape needed is acturally a rabbet cut.

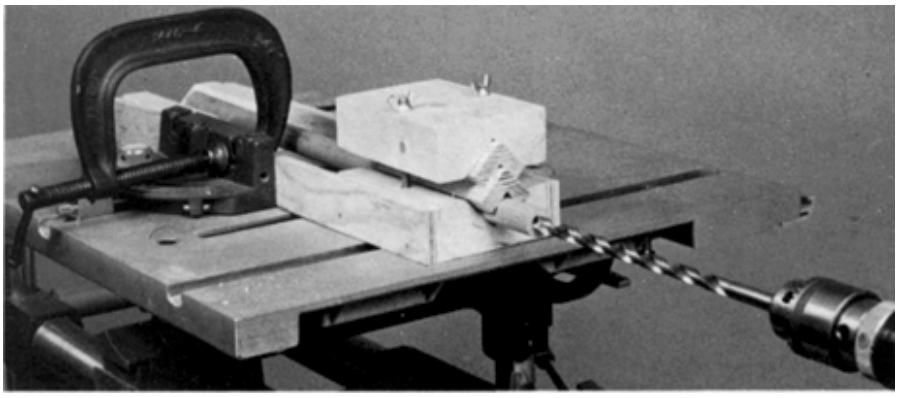

Figure 11-24. Using an extension bit to form an extra-deep hole.