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- How-to photos with instructive captions.
- Tips to help you complete the project and become a better woodworker.

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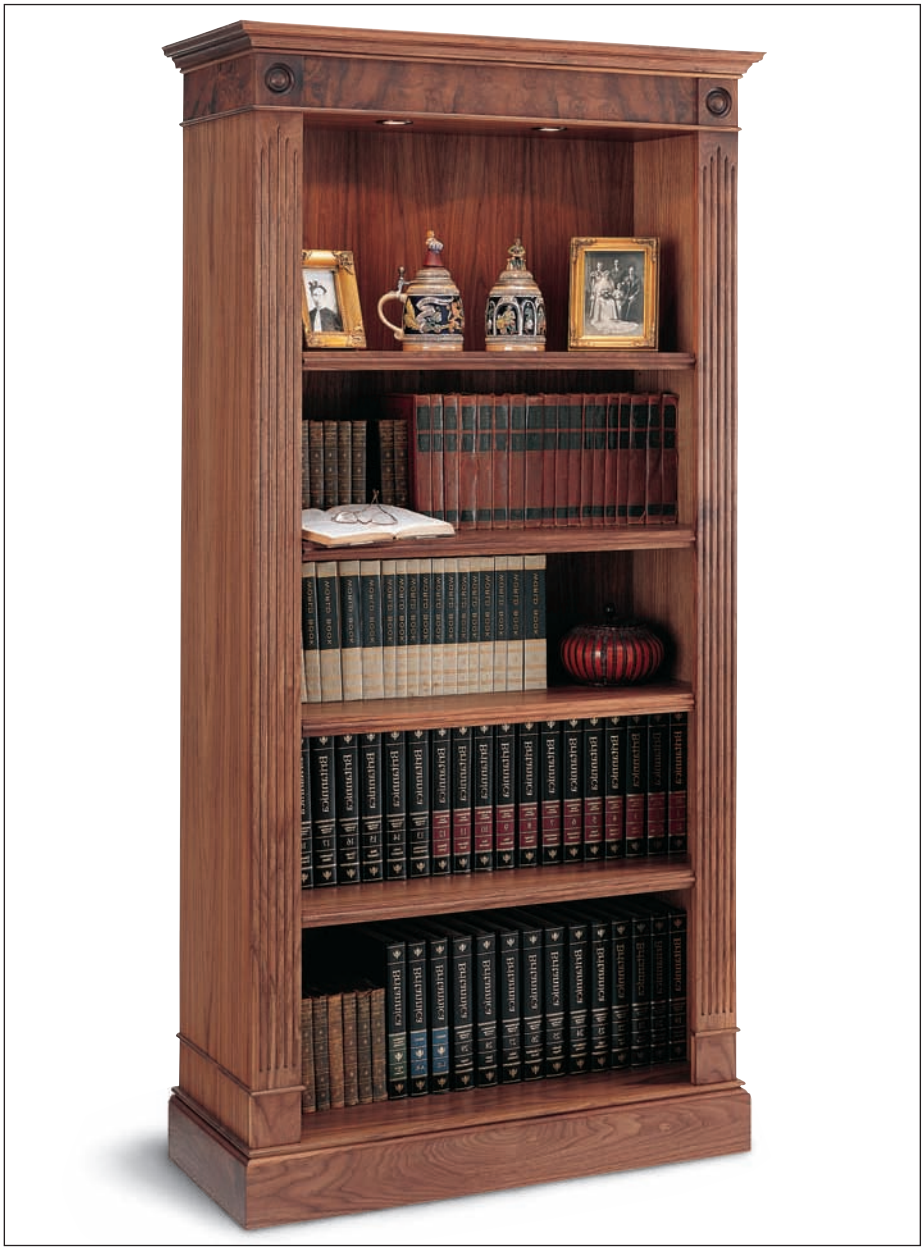
WJ151

Walnut Library Bookcase



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WORLD BOOK
Britannica

Walnut Library Bookcase

You'll add a touch of elegant formality to your den or study when this handsome bookcase adorns a wall. Its built-up crown, fluted styles and rosette accents include all the classic elements. Choose some figured or burled walnut plywood to complete the package. Though it may look difficult to build, appearances are deceiving here. This is actually a straightforward casework project requiring only moderate skills.

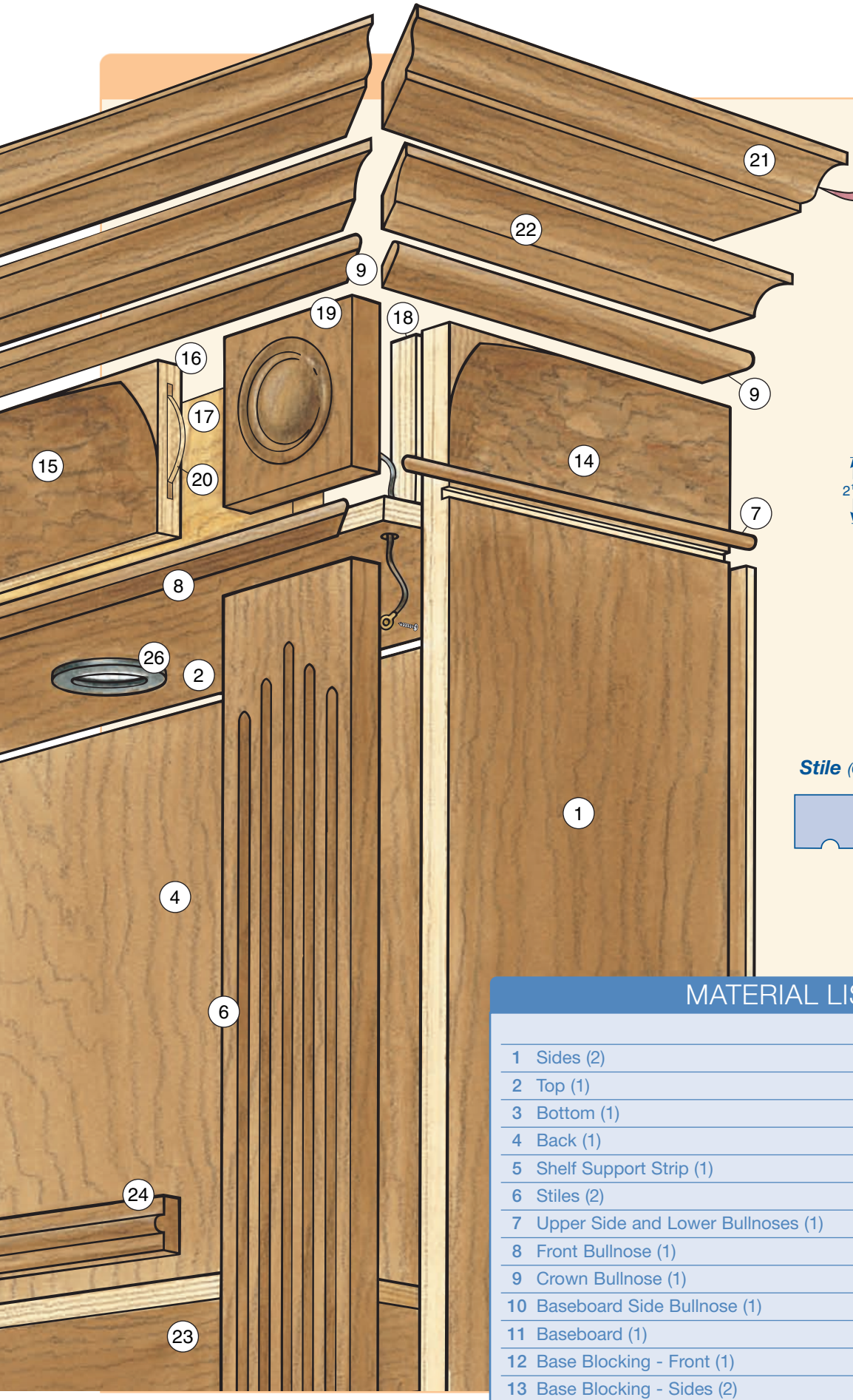
Good woodworking doesn't have to be complicated. When contributing editor Rick White's wife suggested that he build a classic walnut library bookcase, he had visions of spending several months' worth of weekends in the shop. The word "classic" suggested intricate details and ornate accents —Chippendale swirls and Adams carvings came to mind. But the more he thought about it, the more he realized that wasn't really the case. A couple of fluted stiles, a pair of rosettes and a handful of simple moldings were all that was required to capture the essence of a great tradition. Add some solid-walnut stock and a strip of burl veneer, and you have the quintessential American bookcase.

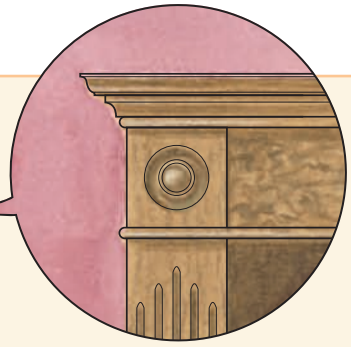
Figure 1: *The number one safety rule in making rosettes is to make sure the workpiece is absolutely secure.*

Beginning with the Carcass

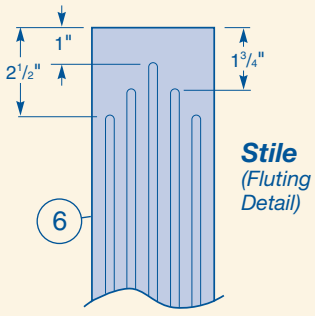
Like any bookcase, our library unit is essentially a dressed-up box made of two sides (pieces 1), a top (piece 2) and a bottom (piece 3). You can begin construction by cutting all of these parts to size (see the *Material List* on the next two pages), then choose the best face of each side to show. Lay one of the sides on a clean surface with the good face down. Make sure the plywood stock you use for the top and bottom is actually a full 3/4" thick, then chuck a 3/4" straight bit in your portable router. Clamp a straightedge to the workpiece and cut two 3/8"-deep dadoes across each side—one for the top and another for the bottom (see the *Side Elevation Drawing* on page 151 or 155 for the locations of these cuts).

Repeat this process on the second side, then switch to a 1/4" bit to cut the groove down each side for the back panel (piece 4). This groove is 1/2" in from the back of the cabinet to allow for the shelf support strip (piece 5) that will be attached to the center of the back panel. When both grooves have been cut, switch to a 3/8" straight bit to cut the three 1/16" dadoes across each outside face for the bullnosed moldings See the *Side (Outside View) Elevation Drawing* on page 155 to locate these shallow dadoes. Dry-assemble the carcass and, if everything fits well, disassemble and glue the top and bottom into the sides, and



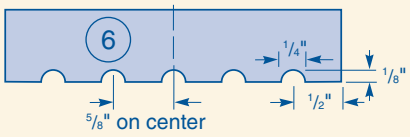


Corner Detail



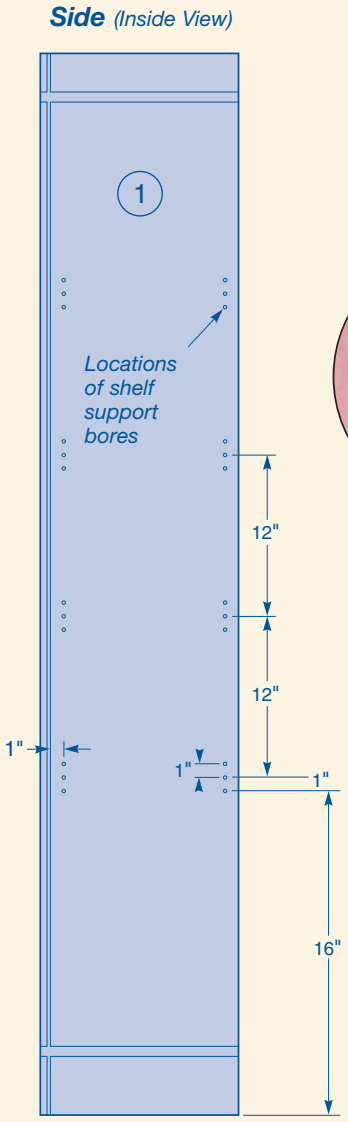
Stile *(Fluting Detail)*

Stile *(Cross section)*

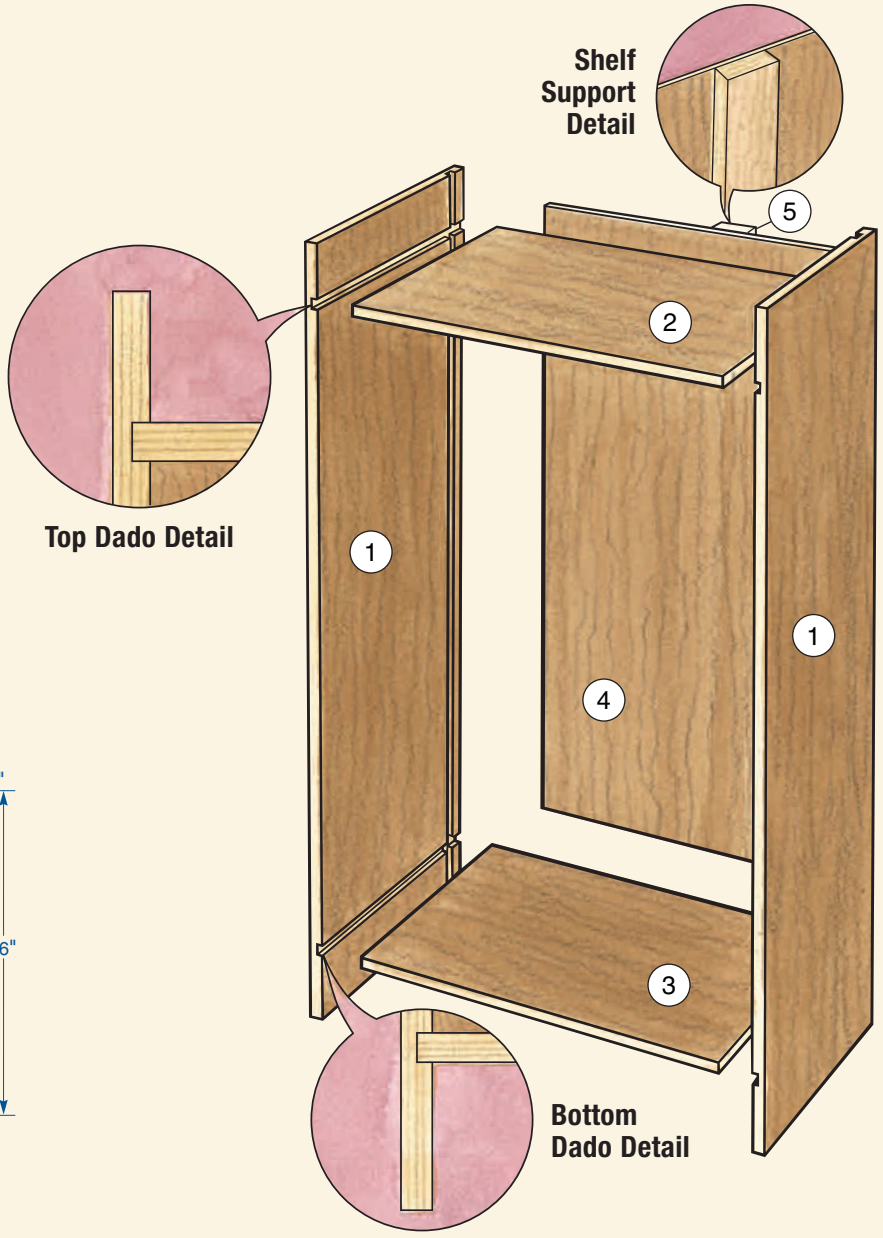


MATERIAL LIST

		T x W x L
1	Sides (2)	3/4" x 14¾" x 79
2	Top (1)	3/4" x 14" x 37¼"
3	Bottom (1)	3/4" x 14" x 37¼"
4	Back (1)	1/4" x 37¼" x 71¾"
5	Shelf Support Strip (1)	1/2" x 3/4" x 71¾"
6	Stiles (2)	3/4" x 3½" x 70"
7	Upper Side and Lower Bullnoses (1)	3/8" x 3/8" x 76"
8	Front Bullnose (1)	3/8" x 1¼" x 80"
9	Crown Bullnose (1)	3/8" x 1¾" x 72"
10	Baseboard Side Bullnose (1)	3/8" x 5/8" x 34"
11	Baseboard (1)	3/4" x 4¾" x 72½"
12	Base Blocking - Front (1)	3/4" x 4⅜" x 38"
13	Base Blocking - Sides (2)	3/4" x 4⅜" x 14"



Shelf Pin Detail



MATERIAL LIST

		T x W x L			T x W x L
14	Burl Veneer - Sides (2)	1/32" x 3½" x 14¾"	22	Ogee Molding (1)	3/4" x 2⅝" x 76"
15	Burl Veneer - Front (1)	1/32" x 3½" x 31⅛"	23	Shelves (4)	3/4" x 13¹⁵⁄₁₆" x 36½"
16	Top Rail (1)	1/2" x 3½" x 31"	24	Shelf Edging (4)	11/16" x 1¼" x 30¹⁵⁄₁₆"
17	Crown Blocking - Front (1)	3/4" x 3" x 36½"	25	Shelf Supports (20)	5mm Solid Brass
18	Crown Blocking - Sides (2)	3/4" x 3" x 13⅜"	26	Lights (2)	20-Watt Halogen Puck
19	Rosettes (2)	3/4" x 3½" x 3½"	27	Transformer (1)	12 Volt
20	Biscuits (2)	#0	28	Switch (1)	Dimmer System
21	Cove Molding (1)	3/4" x 3" x 76"	29	Cabinet Levelors (2)	Adjustable

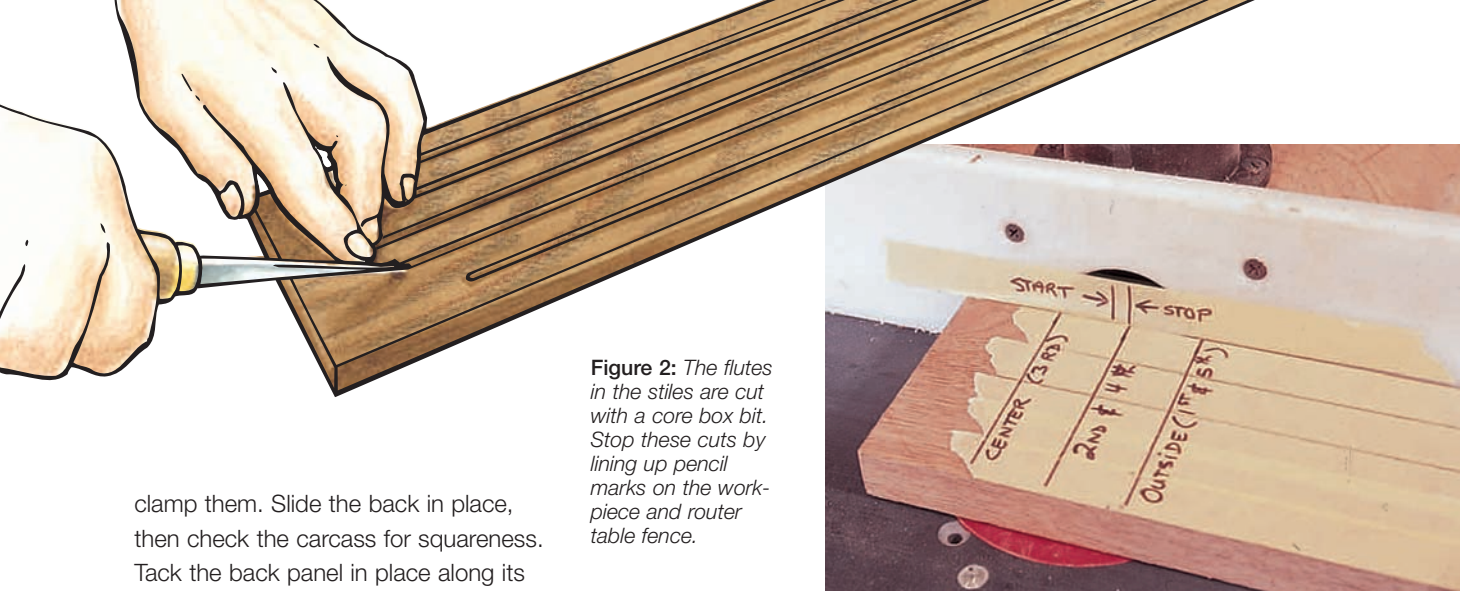


Figure 2: *The flutes in the stiles are cut with a core box bit. Stop these cuts by lining up pencil marks on the workpiece and router table fence.*

clamp them. Slide the back in place, then check the carcass for squareness. Tack the back panel in place along its top and bottom edges with 3/4" brads.

Shaping the Rosettes

Rick used a specialty bit to create the rosettes on this piece. If you don't have one, they're available for about $90 from catalog suppliers. A 3"-diameter bit (see *Figure 1*) fits any drill press with at least a 3/8" chuck. Like most rosette cutterheads, the profile knife can be removed from the head and replaced with a different profile.

Run your drill press at a low speed (about 300 RPM) and clamp the workpiece securely to the table. One clamp just wouldn't do the trick, so we recommend building a simple jig like the one shown in the *photo* to trap the workpiece. There's tremendous lateral force on the workpiece, so go slowly and be prepared to throw away a few setup pieces before you get the knack. To avoid burning, ease into the wood, then release the pressure, repeating this process until the cut is complete.

Making the Front Stiles

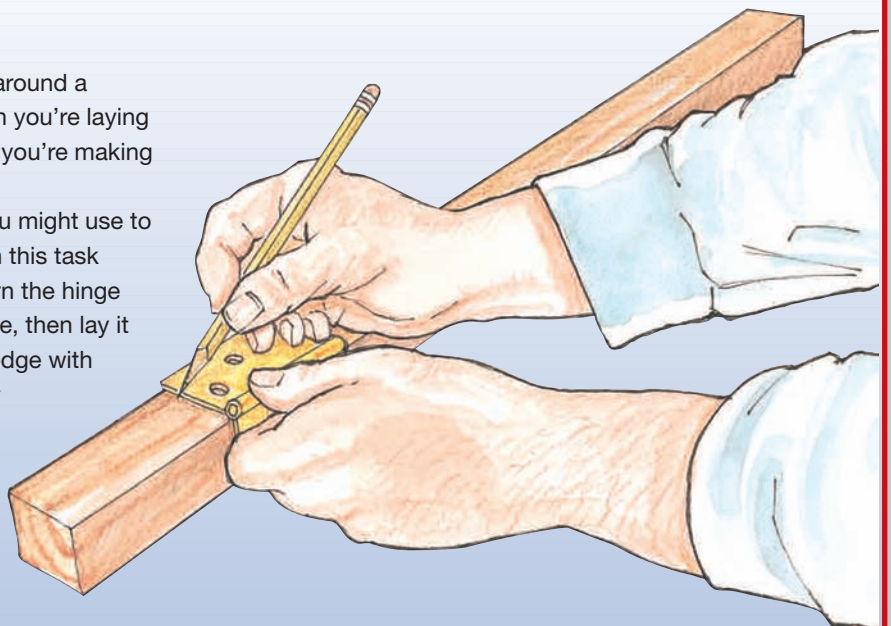
To maintain the classical authenticity of our bookcase, the front stiles (pieces 6) are fluted in the tradition of Greek

QuickTip

Butt Hinge Aids in Layout

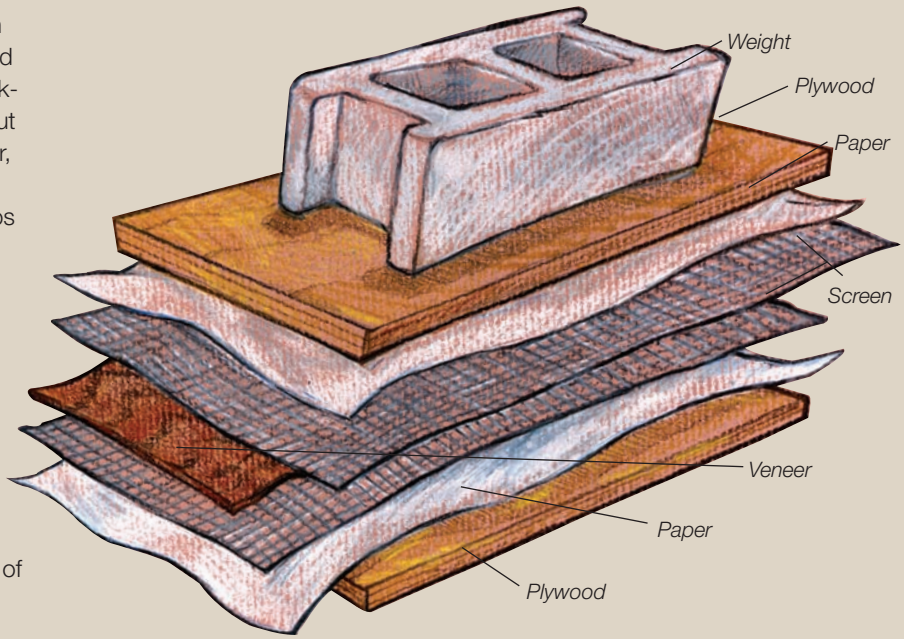
Do you have need to draw a line around a corner? This might come up when you're laying out a table leg design — or when you're making mortise and tenon joints.

A heavy-duty hinge, such as you might use to hang a door, can help accomplish this task quickly and accurately. Simply turn the hinge backward to provide a sharp angle, then lay it on the work and mark along the edge with your pencil as shown. It's an easy way to make your markings turn the corner!



TREATING AND APPLYING BURL VENEER

Before the crown molding assembly can be installed, a ribbon of walnut burl veneer (pieces 14 and 15) is applied to the top of the bookcase. On the sides, this is simply cut to size and glued in place. However, burl veneer is often too wrinkly or wavy to glue and clamp, so the pros like to treat it with a glycerine-based veneer treatment. Simply brush on the treatment, then sandwich the veneer in a home-made drying press like the one shown here. It's made with two squares of mesh bug screen (to allow a little air circulation), some folded sheets of newspaper (to absorb the water in the glycerine compound) and a couple of pieces of scrap plywood to keep everything flat. Lay a cement block or similar weight on top of your makeshift press and let the veneer dry for a couple of days. Once dry it's critical that the veneer be applied within hours or it may start reverting to its former unworkable shape. Glue and clamp slightly oversized pieces of veneer to the plywood top rail (piece 16) and the sides of the case. (Note: We used two pieces for the front, book-matching them in the middle.) Make sure that pressure from your clamps is applied evenly over the whole surface, beginning at the center and working to the outside. When the glue dries, trim the veneer — a veneer trimmer works best, but a sharp knife and a straightedge works fine too.



columns. These are topped off with the rosettes. The fluting is done with a 1/4" core box bit on a router table. It's important to test the setup for each cut on scrap before milling the actual workpiece, as any error will be quite obvious.

Check the two *Stile Detail Drawings* on page 150 for the locations and dimensions of these flutes. They can be started and stopped at the appropriate locations by matching up pencil lines on your router table and workpiece (*see Figure 2* on page 152). You can achieve cleaner flutes if you take multiple passes and pare the ends with a chisel. Once you've completed the flutes, dry-fit the stiles to the bookcase carcass — the bottom of each stile must line up exactly with the top surface of the bottom panel. Now locate the 3/8" dadoes you cut earlier on the outside faces of the sides. Use a pencil to extend these lines across the fronts of the stiles. Remove the stiles and use a fine-tooth blade in your table saw to nibble the dadoes that will house the bullnose strips. (Note: These dadoes go across the face and two edges; see the *Stile Elevation* on page 156.) Glue and clamp the stiles in place.

Making Bullnose Moldings

The only difference between the bullnose moldings in this project is their width. (Note: When everything is milled to length you'll have 15 pieces.) All four moldings are 3/8" thick with identical profiles, so you can make them with a single router setup. The widest molding is 1¾"; we recommend starting with this width and then ripping the smaller ones to size later. Rip four six-foot lengths of 3/8" x 1¾" stock, enough to make the upper side and lower bullnoses, the front bullnoses, the crown bullnoses and the baseboard side bullnoses

(pieces 7 through 10). Check the *Exploded View* on page 150 and the *Bottom Bullnose Detail* on page 156 for the molding locations.

Chuck a 3/16"-radius roundover bit in your table-mounted router, as shown in *Figure 3*, page 157. (Note: You have to use a fence for these cuts or your bearing guide won't have a square surface to ride on for the second cut.) After shaping the edges, rip all the moldings to their correct widths (see the *Material List*). In the case of the thinner moldings, it's safest to set the square edge against the fence and have the molding fall away from the blade. Install the lower bullnose with glue and clamps, mitering the corners and wrapping the molding all the way around each stile. Don't use so much glue that it squeezes out of the dado.

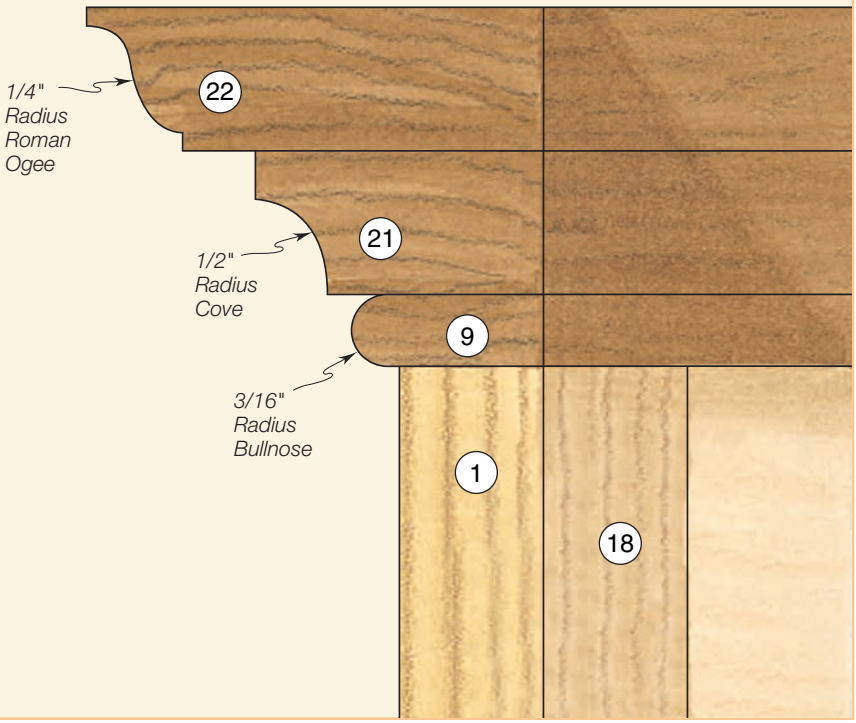
Assembling the Baseboard

The top edge of the baseboard (piece 11) is formed on a router table with a beading bit (see *Figure 4*). Mill this edge in several passes for a nice clean cut, then miter the baseboard on your table saw. Install the base blocking (pieces 12 and 13) with glue and screws (see *Base Detail*, page 156). Now cut the miters on one of the front bullnoses (piece 8) and the baseboard side bullnoses (pieces 10). Dry-fit the baseboard and moldings, checking the miters, then glue and clamp them to the bookcase sides and the front base blocking. With that done, refer to the *sidebar* on the preceding page for instructions on treating and installing the walnut burl veneer.

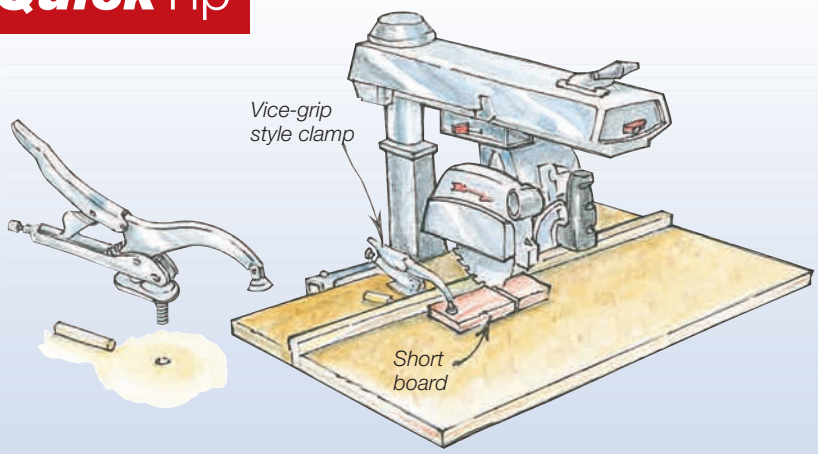
Adding Crown Moldings

Screw and glue the crown backing (pieces 17 and 18) in place, then attach the rosettes (pieces 19) to the ends of the top rail with biscuits (pieces 20) and

Crown Top Detail



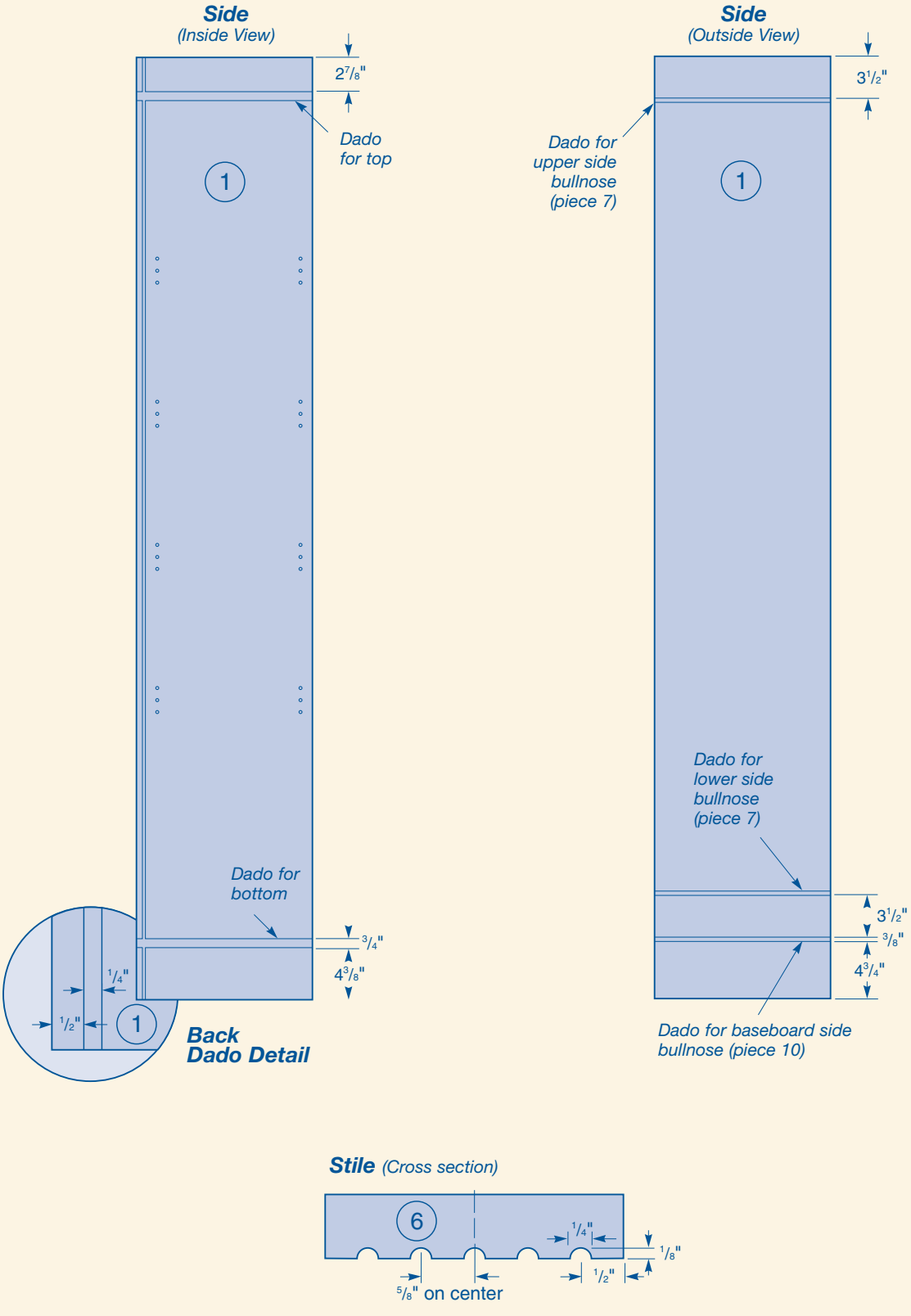
QuickTip

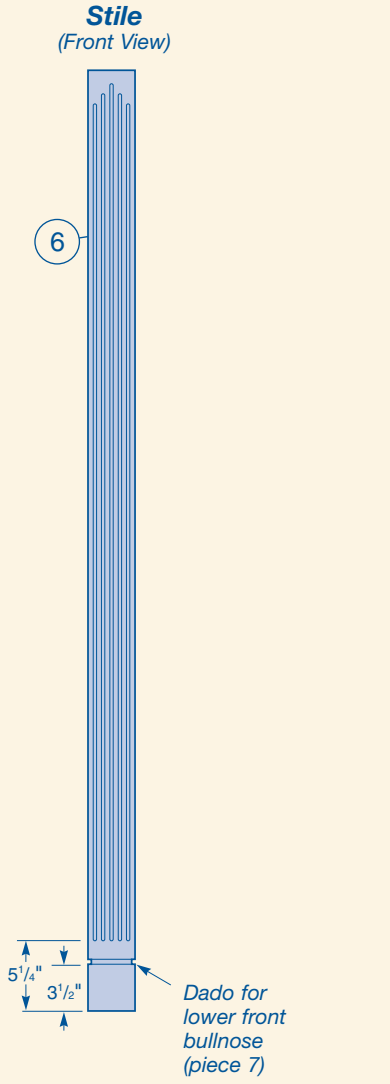


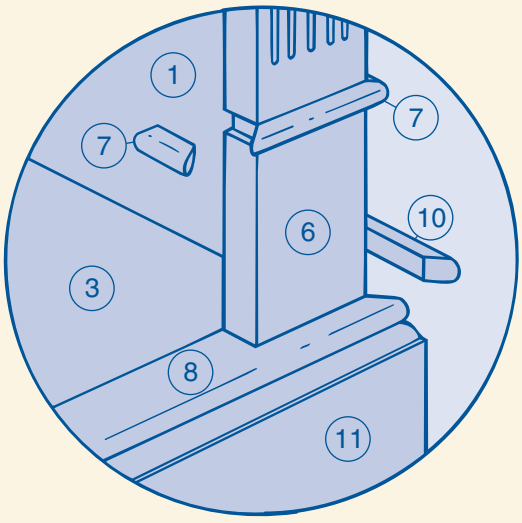
Radial Arm Saw Clamp

Cutting small pieces with a radial arm saw is inherently dangerous without pushsticks because you have to put your hand too close to the blade. One solution is to use a vice-grip style clamp that bolts to the tabletop. Drill a hole adjacent to the saw blade, just large enough for the threaded part of the clamp. Sideways pressure keeps the clamp in place so you may not have to use the clamp's nut, but for safety's sake, you probably should. Plug the hole with a loose dowel when not in use to keep the sawdust out.

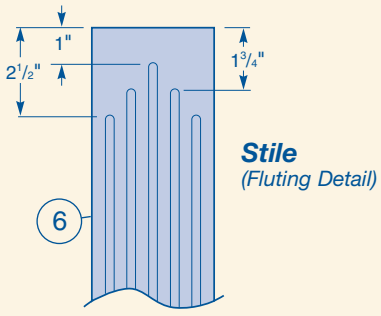
Technical Drawings



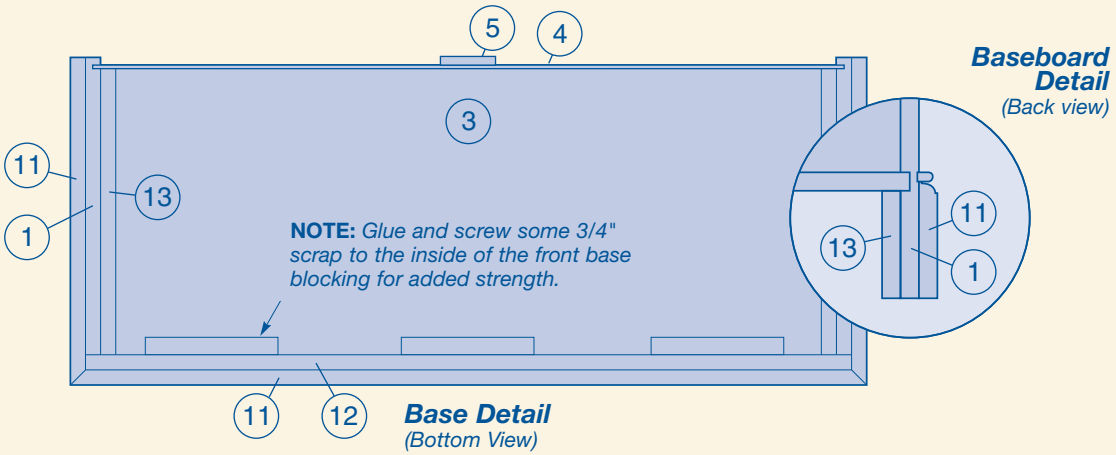




Bottom Bullnose Detail



Stile
(Fluting Detail)



Baseboard Detail
(Back view)

Base Detail
(Bottom View)

glue. When the glue dries, miter the upper side bullnoses (pieces 7) and the front bullnose (piece 8) to length and dry-fit them, along with the top rail subassembly. When everything fits, secure these pieces with glue and clamps. Now follow the same procedure with the crown bullnoses (pieces 9).

The last two pieces of the crown assembly are the cove molding and ogee molding (pieces 21 and 22). These are made with a 1/4"-radius Roman ogee bit and a 1/2"-radius cove bit. For the latter, set your fence and bit depth to leave the 1/4" reveal shown in the *Crown Top Detail Drawing* on page 154. Now miter both of these moldings to fit, and glue them in place.

Figure 3: *All the project's bullnose moldings can be machined at once, then ripped to width and mitered to fit.*

Completing the Shelves and Applying Finish

There's not a lot to making the shelves (pieces 23). Just cut them to size and add the shelf edging (pieces 24) to the front edge. This molding (see the *Exploded View Drawing* on page 150) is cut with a beading bit on the router table in four passes: Cut the bottom half of the profile, then flip the workpiece to cut the top half. Raise the bit and repeat the process with two more passes to complete the shape. Now glue and clamp the edging in position.

The finish Rick used on the bookcase requires a little more work. After thoroughly sanding everything down to 280 grit, apply a poly/oil finish in four coats. After each of the first three coats dries, rub the surfaces down with 400-grit wet/dry paper, then wipe with a tack cloth to clean off the dust. Add a fourth coat to produce a deep, warm finish that will enrich the walnut's natural color with a satin glow.

After the finish dries, drill holes for the shelf supports (pieces 25). See the *Side Elevation Drawings* on page 151 or 155 to locate the shelf pin spacing. You don't want to do this any earlier because these small 5mm holes may get clogged with finish, and you'll just end up drilling them twice.

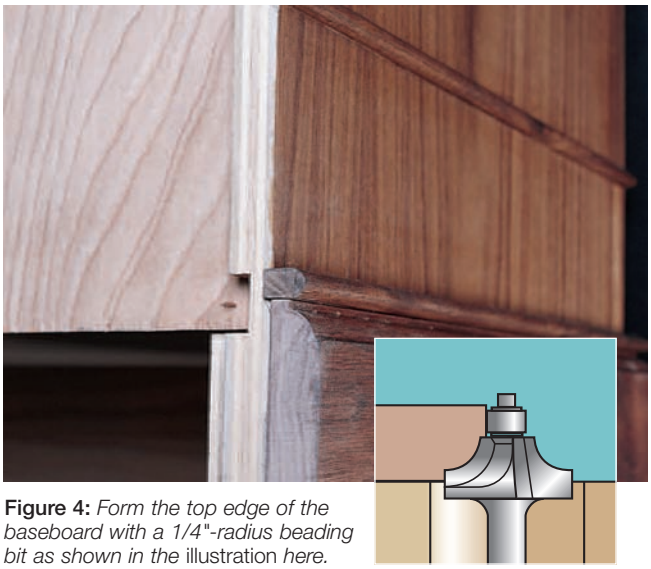


Figure 4: *Form the top edge of the baseboard with a 1/4"-radius beading bit as shown in the* illustration *here.*

Installing Halogen Puck Lighting

The top shelf in our bookcase makes a perfect illuminated display space if you add a couple of fixed-beam puck lights (pieces 26). Bore two 2⅛"-diameter holes with a hole saw, and insert the friction-fit units (see *Figure 5*).

The lights plug into a transformer (piece 27) and a switch (piece 28). Conceal both pieces of hardware behind the crown. Train the switch wires down behind one of the stiles. Touching this wire dims or brightens the lights. With that done, screw two cabinet levelors (pieces 29) in place behind the baseboard, level the unit, and tuck your favorite books into their new home.

Figure 5: *After drilling holes, the halogen lights are pushed in place for a friction fit, then plugged into their transformer and switch.*