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Woodsmith PLANS

SOFA TABLE BOOKCASE

FEATURE PROJECT

SOFA TABLE BOOKCASE

A sofa table with built-in storage or a long, low bookcase? Any way you look at it, this is a great project to build.

Setting a narrow table behind a sofa has always seemed like a good idea to me. It's just a nice space for a table lamp and for displaying photos and other items. But many of the sofa tables I've seen have been just that — tables. The space under the top was open and not used in any way.

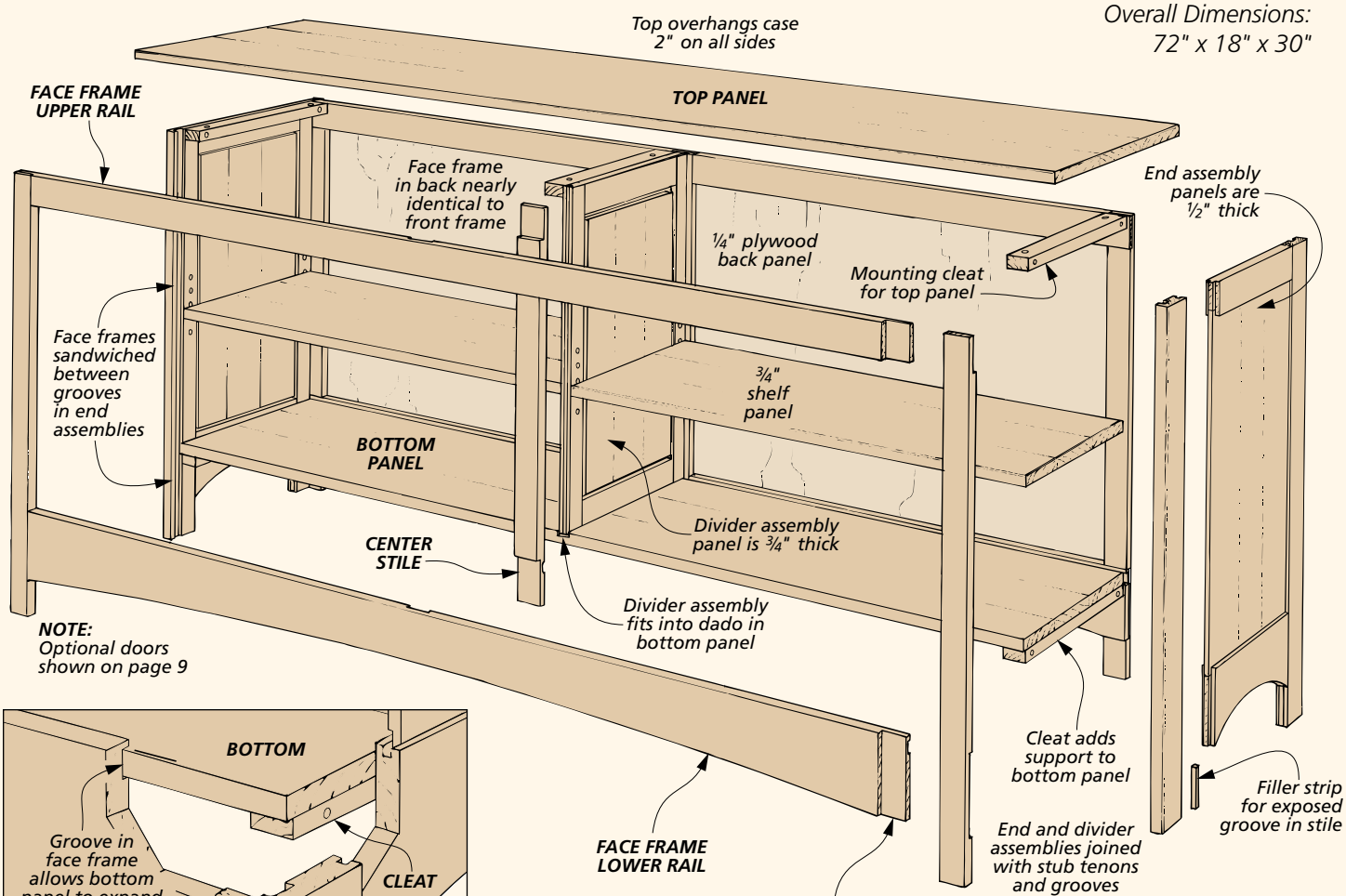
So instead of a table, this is a sofa table *bookcase*. It's designed to make full use of the space under the top. There's still just as much display space on top of the case (maybe a little more since the case is a full six feet long). But now, you have much more room for storing books and other display items.

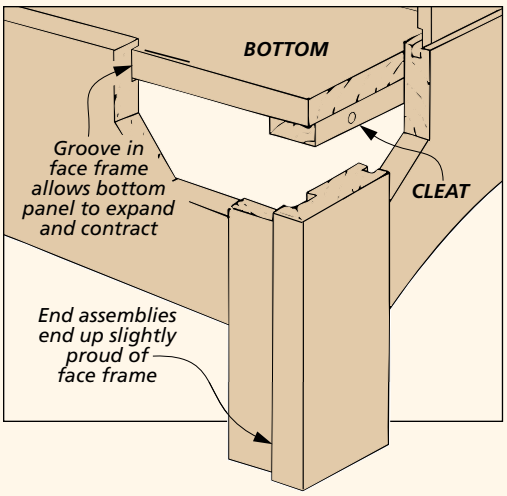
DESIGN OPTIONS. Of course, there's no reason this bookcase has to sit behind a sofa. It'll look great in a variety of settings. In fact, it's a pretty versatile project. And as you can see in the photos on the following page, its look really changes by adding doors. Or to make the bookcase even more formal looking, you can build it out of cherry.

STRAIGHTFORWARD CONSTRUCTION. If you're concerned about the difficulty of this project, you needn't be. The joinery is all quite basic. The end assemblies are held together with stub tenon and groove joints, and the face frames with half laps. (The technique article for half lap joints can be found on page 11.) And believe it or not, when it's time to assemble the case, you won't need a single long clamp.

Construction Details

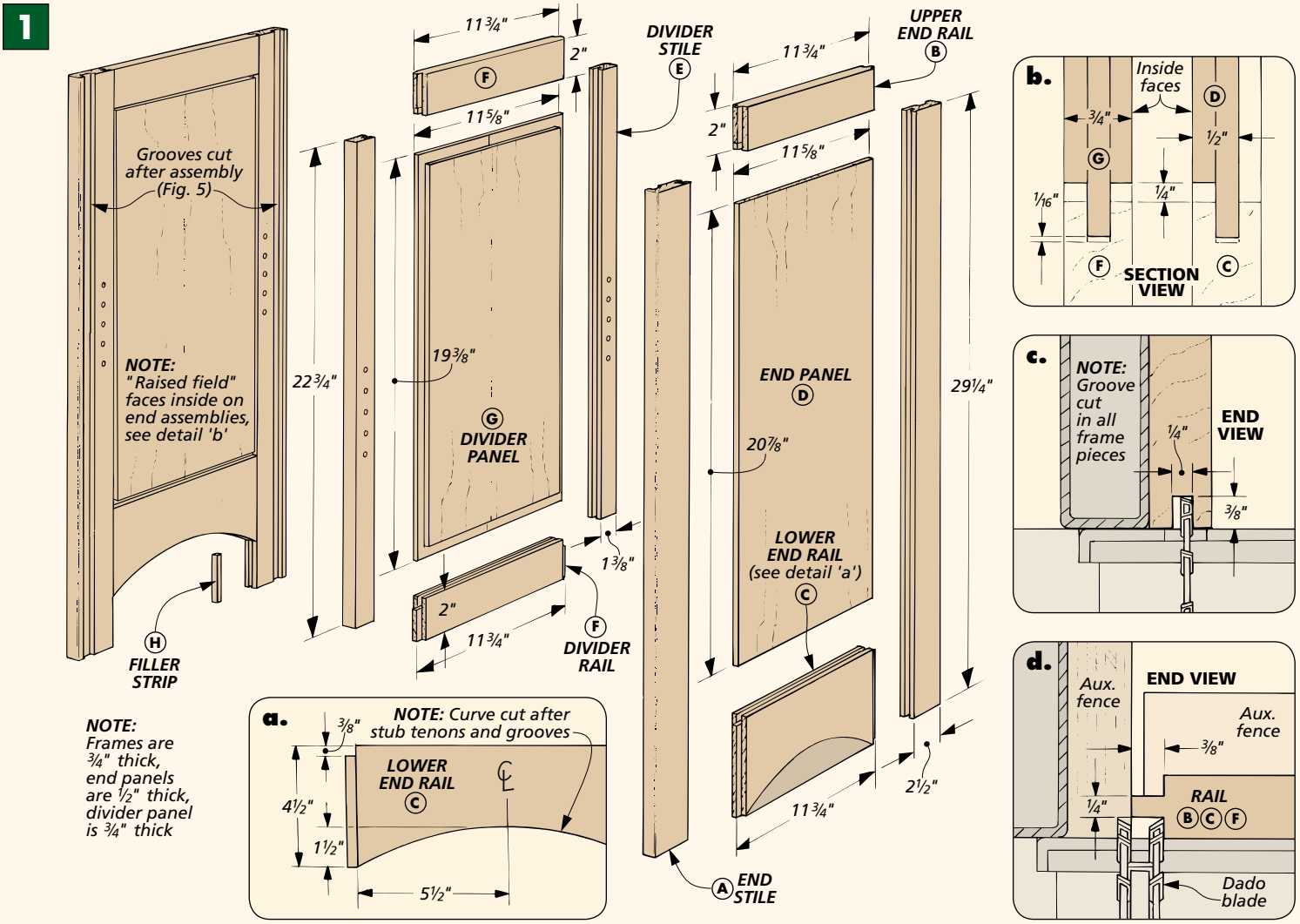
Overall Dimensions:
72" x 18" x 30"





◄ *The wood-paneled doors here give the bookcase a solid, cabinet-like feel. And they're easy to build and mount to the case.*

Reeded-glass panels soften the look and give a hint of what's inside the bookcase. You'll find out how easy these doors are to build on page 9. ►



End & Divider Assemblies

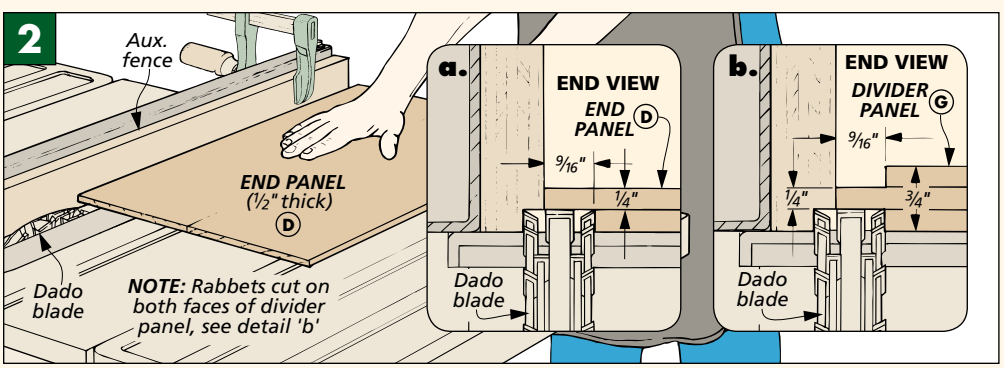
For this bookcase, I decided to build the two end assemblies and the divider assembly at the same time, as you can see in Fig. 1. The joinery is the same, so you can save yourself a lot of set-up time. But the dimensions of the divider pieces are slightly different, so you have to keep the pieces organized and labeled clearly.

FRAMES. The first thing you need to do is cut the frame pieces to size, as illustrated in Fig. 1. The *end stiles (A)* and *divider stiles (E)* are different in width and length, but the *upper (B)* and *lower end rails (C)* and the *divider rails (F)* are all the same length ($11\frac{3}{4}$").

STUB TENONS & GROOVES. With the frame pieces cut to size, you can work on the stub tenons and grooves that join the frames. This is basic frame and panel construction. The only thing to mention is that since the panels are going to be solid wood (instead of ¼" plywood), the grooves (and tenons) can be cut a full ¼" wide, as indicated in Figs. 1c and 1d.

SOLID WOOD PANEL. With the stub tenons and grooves cut, you can glue up the panels that fit inside these frames. From the outside, these are flat, inset panels, as you can see in the margin photos on page 4. But I did not want to end up with large gaps between the shelves and the inside of the case, so the ½" thick solid wood *end panels (D)* have a "raised field" on their inside faces (Fig. 1b). And since the *divider panel (G)* needs to be flush with both faces of its frame, it's ¾" thick and has the "raised field" on both faces.

RABBET. However, these aren't traditional raised panels. The "raised field" is created by cutting rabbets, as in Fig. 2. These form the tongues that fit into the grooves in the frame pieces. (The rabbets are actually extra wide, so the panel ends up with



a ¼" shadow line around its "raised field.") And when it's time to cut the rabbets on the ¾"-thick divider panel, double-check the height of the blade to make sure the tongue is going to fit in the grooves.

LOWER END RAIL. Before you begin gluing up the assemblies, there's one more thing to do — cut a curve on the bottom edge of the lower end rails (Fig. 1a). To lay out this curve, I bent a narrow strip of ⅛" hardboard and traced it on the rail. Then the curve can be roughed out with a band saw or jig saw and sanded smooth. (I used a drum sander.)

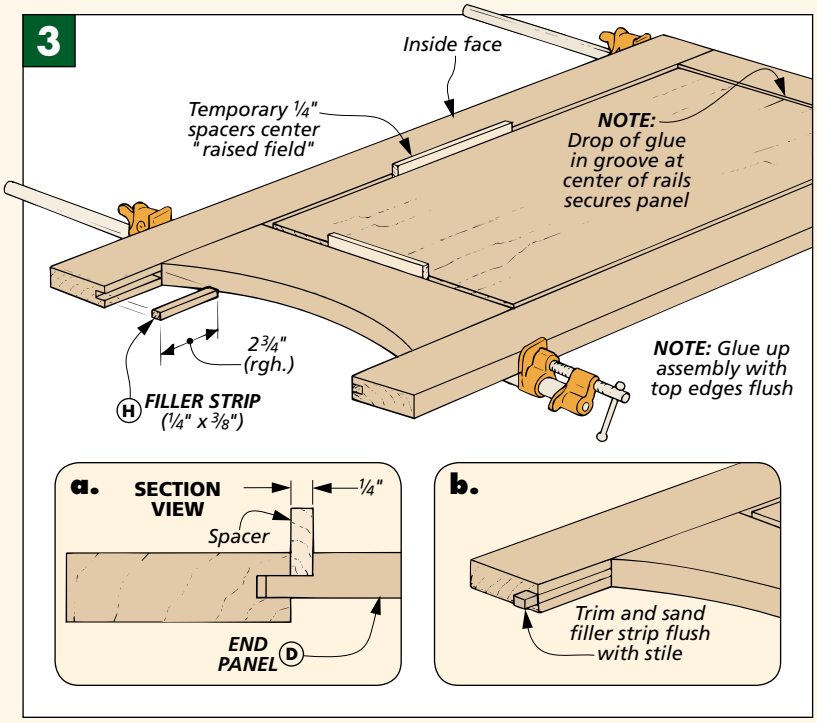
ASSEMBLY. These assemblies are really quite straightforward. But there are a couple of things to note. To "lock" the panel in place while still allowing it to expand and contract, I placed a small dab of glue in the groove at the center of each rail. Then with all three assemblies, I inserted ¼"-thick spacers between the panel and frame, as shown in Fig. 3. This kept the "raised field" of the panel centered in the frame opening until the glue dried.

For the end assemblies, I focused on the top edges, making sure they were flush. Then as the glue was drying, I cut small *filler strips (H)* to fill the grooves below the lower rails, as indicated in Figs. 3 and 3b. You can either glue them in flush or leave them a little long, trim them with a handsaw, and sand them flush with a sanding block.

ODDS & ENDS. There are a few odds and ends left to do before these assemblies are complete. First, on the end assemblies, I routed 1/16" chamfers on all the edges (except for the top edges), as in Fig. 4.

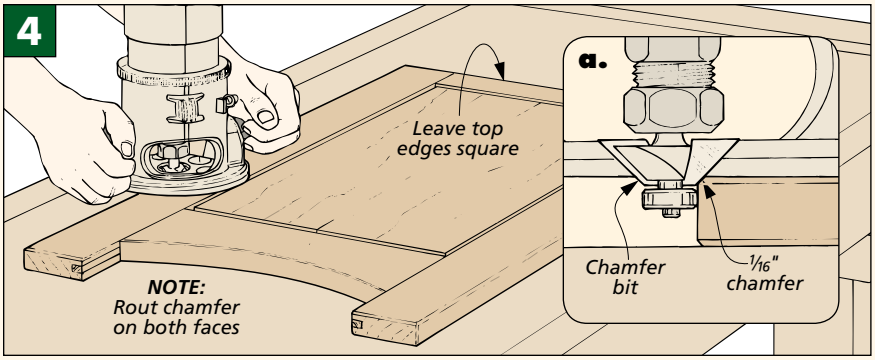
Next, I cut ¼"-deep grooves along the front and back edges of the end assemblies. (I did this at the table saw, as in Fig. 5.) These grooves should be wide enough to hold the ¾"-thick face frames later on.

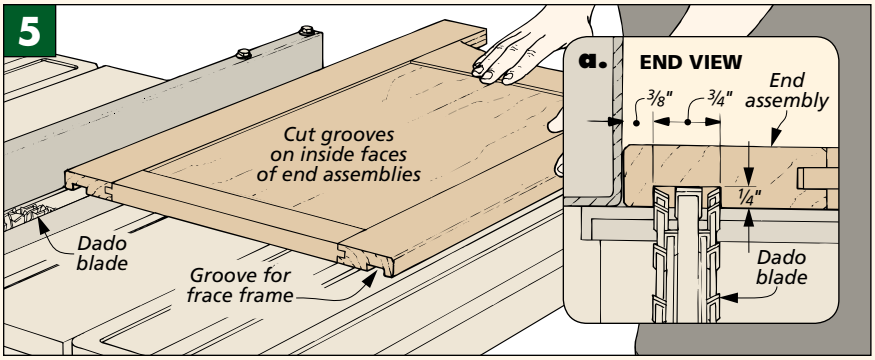
Finally, lay out and drill the holes for the shelf pins, as in Fig. 6. The holes in the end assemblies are ⅜" deep. But the holes in the divider go all the way through.

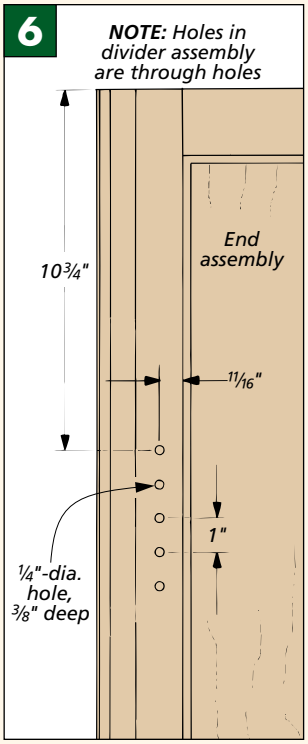


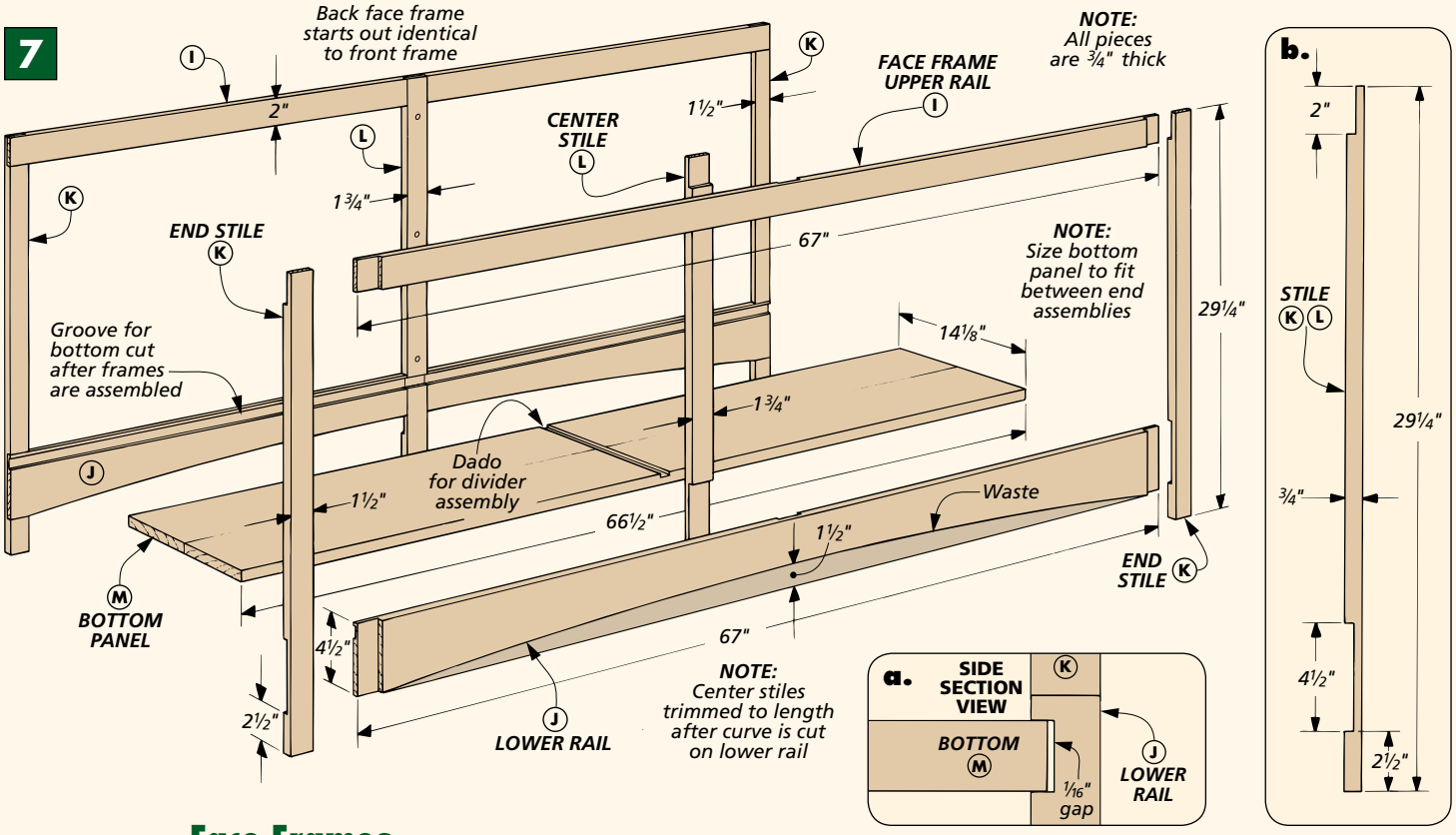
▲ *From the outside, these look like flat panels…*

▲ *… but their inside faces have been rabbeted so that the frames and panels are flush inside the case.*









Face Frames

As woodworking joints go, half laps are pretty basic. But cutting them on long pieces can be a challenge. Turn to page 11 for a few tips you can use when building these face frames.

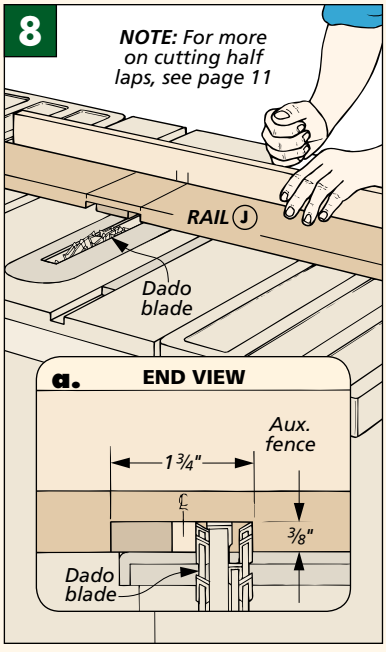
At this point, the end and divider assemblies can be set aside while you work on the face frames that will be sandwiched between the assemblies.

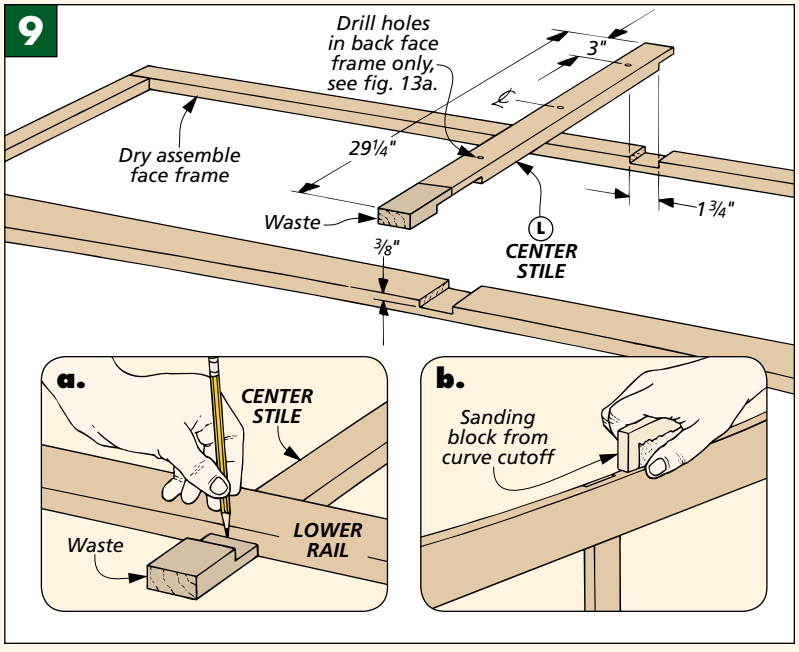
RAILS AND STILES. The first thing to do is cut the frame pieces to size, as in Fig. 7 above. You'll need two *upper (I)* and two *lower rails (J)*. And when cutting the *end stiles (K)* and *center stiles (L)* to size, I made them all the same length (29¼"), as in Fig. 7b. The final length of the center stiles will depend on the curves you'll cut in the lower rails. But making them all the same length now will save you an extra setup when working on the half laps next.

HALF LAPS. The half laps that join the face frames include end laps and cross laps (Fig. 9). Both can be cut quickly on the table saw, as shown in Fig. 8 and the article on page 11.

LOWER RAIL CURVES. With the half laps cut, you can create the curve on each lower rail just like the end assembly rails. Only this time, I saved a small section of the cutoff piece. Then after assembly, you can trace and cut the curve on the center stile (Fig. 9a) and use the cutoff to sand the stile flush (Fig. 9b).

When gluing up the two face frames, I concentrated on the rails





and end stiles first. Then you can glue the center stiles in place.

BOTTOM PANEL. Next I began gluing up the *bottom panel (M)*, as shown in Fig. 7. This is a long panel, so to help keep the pieces aligned, you may want to use splines or biscuits.

When cut to length, the panel should fit between the end assemblies. It's best to dry assemble the case for this measurement.

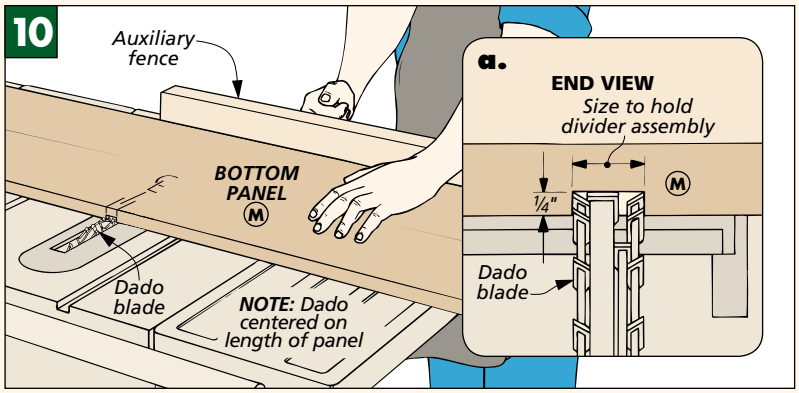
To find the panel's width, first measure between the face frame grooves on an end assembly. Then cut the panel 3/8" *wider* so it'll fit into 1/4"-deep grooves that will be cut in the face frames, as illustrated in Figs. 7a and 11.

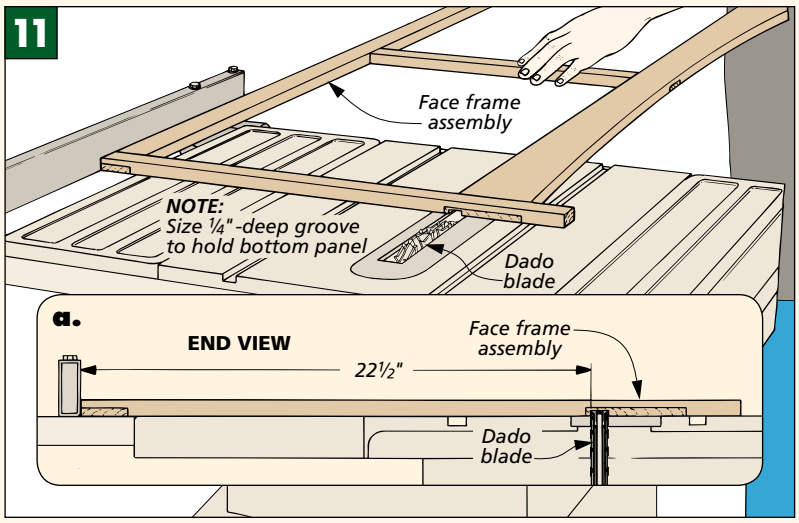
The last step for the bottom panel is to cut a centered dado 1/4" deep to hold the divider assembly. To do this, I used the table saw with an auxiliary miter gauge fence to support the piece, as shown in Fig. 10.

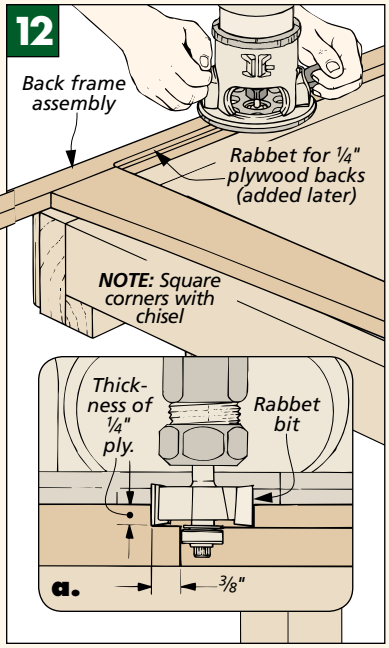
Now there are just two steps left before the case can be assembled. First, I cut a groove along each lower rail to hold the bottom panel, as you can see in Fig. 11. Then on the back face frame, I routed 3/8"-wide rabbets to hold the 1/4" plywood backs later, as in Fig. 12.

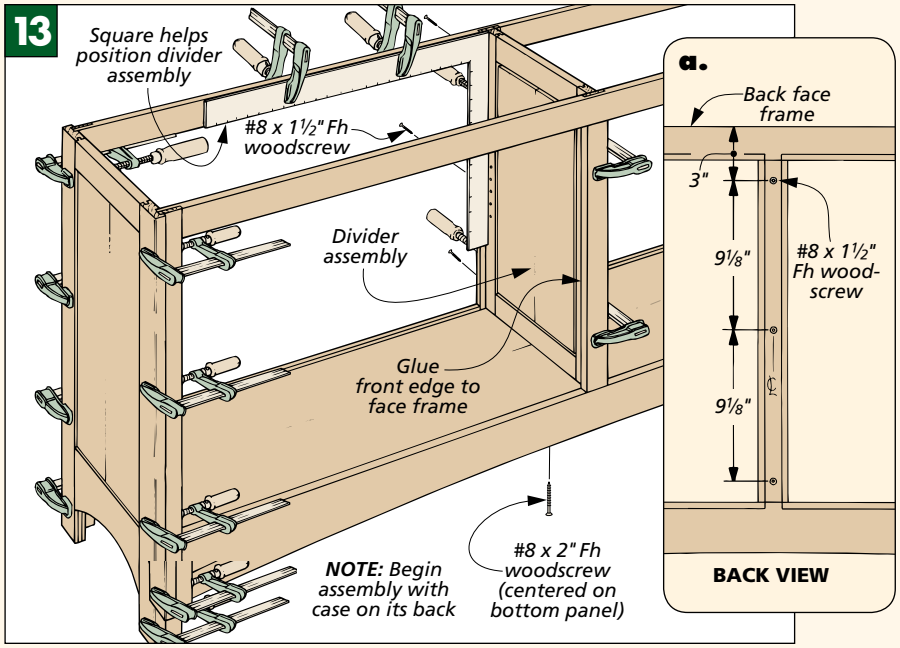
CASE ASSEMBLY. I put the case together in two stages, starting with the assembly on its back. First, the back face frame is clamped between the end assemblies. Then you can add the bottom panel (without glue) and the upper face frame.

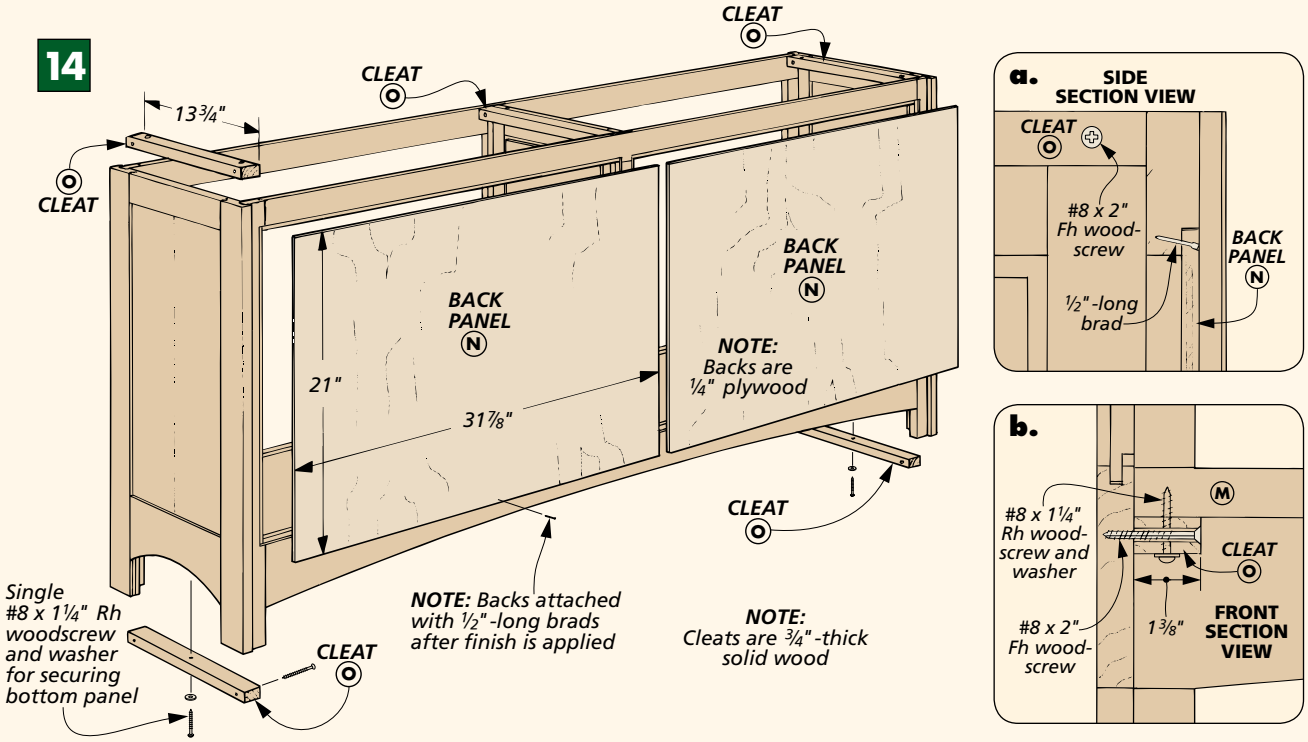
Before the glue dried, I set the case upright and started on the second stage, as in Fig. 13. All you need to do here is add the divider assembly. The dado in the bottom is the only thing that positions the divider, so I used a square to make sure the divider was vertical. Then I secured it with screws through the back and the bottom. (Use only a single, centered screw in the bottom so it can expand and contract.)











Backs, Top, & Shelves

Unless you plan to build the optional doors (page 9), all that's left to add are the backs, top, and shelves. The two backs are ¼" plywood. The top and shelves are ¾" solid wood panels.

BACK PANELS. The back panels fit into the rabbets that are already cut in the back face frame. (The rabbets had to be routed before assembly because the overlapping end panels prevent you from routing them after assembly.) As you can see in Fig. 14, I simply cut the *back panels (N)* to fit into the rabbets.

The backs will be attached with ½"-long brads, as in Fig. 14a. But it's a good idea to leave the panels off until after you've applied the finish to the bookcase. This way, you can apply the finish from both the front and back of the case.

CLEATS. Before working on the top panel, I decided to add some mounting *cleats (O)*, as shown in Fig. 14. These cleats are simply 1⅜"-wide pieces cut to fit between the two face frames inside the case.

I made five cleats in all. Three will secure the top panel. (The center cleat can be attached to either side of the divider assembly.) The other two cleats add support to the ends of the bottom panel, as in Fig. 14b.

The only thing I need to mention about these cleats is that the mounting holes for the top and bottom panels aren't exactly the same. The bottom panel is trapped at the front and back by the grooves in the face frames. So the bottom cleat gets a single, centered mounting hole.

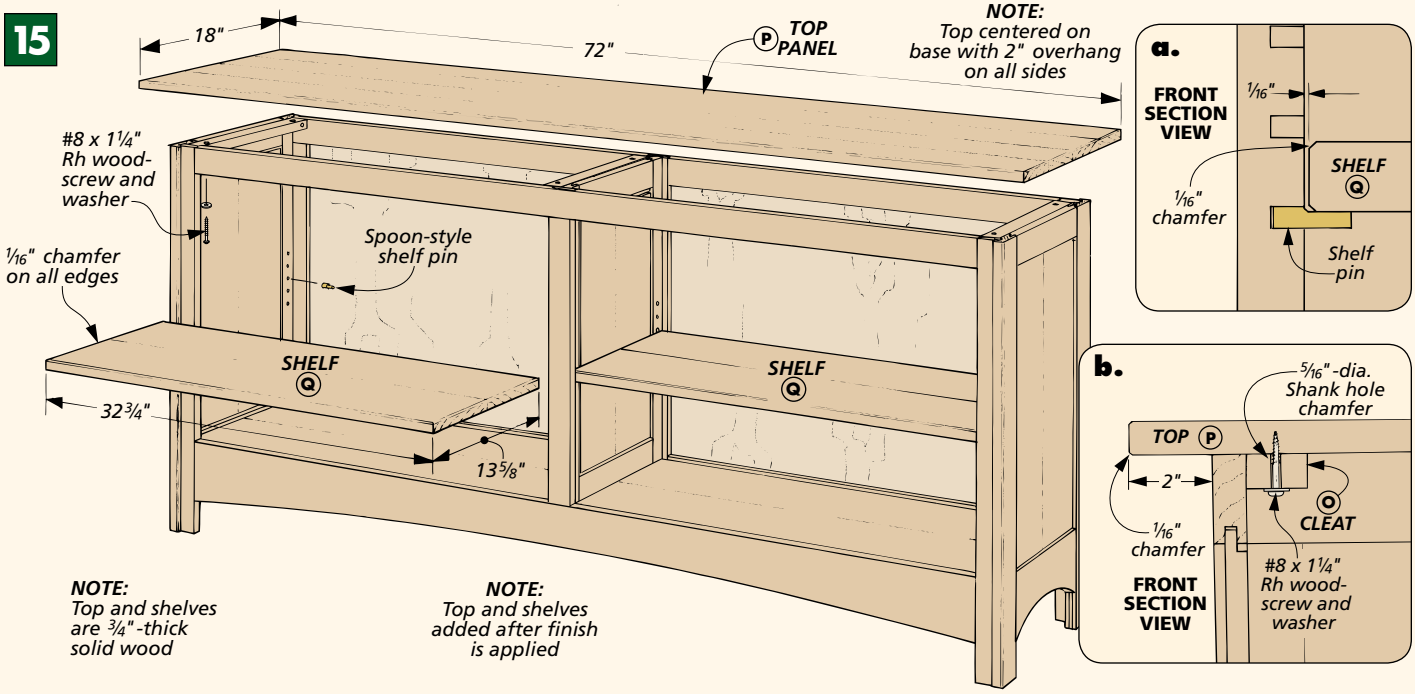
On the other hand, the top panel just rests on top of the case. So to secure this panel and help hold it flat, I drilled mounting holes at the ends of each cleat, as in Fig. 15b. Just be sure that these holes are oversized so the solid wood panel will still be able to expand and contract freely. (I drilled 5/16"-dia. mounting holes here.)

TOP PANEL & SHELVES. The last bit of work to do is to make the solid wood panels for the *top (P)* and the two *shelves (Q)*, as you can see in Fig. 15. Like the bottom panel, using kerfs or biscuits to keep everything

MATERIALS

A End Stiles (4)	¾ x 2½ - 29¼	**M** Bottom Panel (1)	¾ x 14⅛ - 66½
B Upper End Rails (2)	¾ x 2 - 11¾	**N** Back Panels (2)	¼ ply. - 31⅞ x 21
C Lower End Rails (2)	¾ x 4½ - 11¾	**O** Cleats (5)	¾ x 1⅜ - 13¾
D End Panels (2)	½ x 11⅝ - 20⅞	**P** Top Panel (1)	¾ x 18 - 72
E Divider Stiles (2)	¾ x 1⅜ - 22¾	**Q** Shelves (2)	¾ x 13⅝ - 32¾
F Divider Rails (2)	¾ x 2 - 11¾		
G Divider Panel (1)	¾ x 11⅝ - 19⅜	• (11) #8 x 2" Fh Woodscrews	
H Filler Strips (4)	¼ x ⅜ - 2¾ rgh.	• (3) #8 x 1½" Fh Woodscrews	
I Face Frame Upper Rails (2)	¾ x 2 - 67	• (8) ¼" Spoon-style Shelf Pins	
J Face Frame Lower Rails (2)	¾ x 4½ - 67	• (8) #8 x 1¼" Rh Woodscrews	
K Face Frame End Stiles (4)	¾ x 1½ - 29¼	• (8) #8 Flat Washers	
L Face Frame Center Stiles (2)	¾ x 1¾ - 29¼	• (1 pkg.) ½"-Long Brads	

NOTE: Materials and supplies for optional doors are listed on page 10.

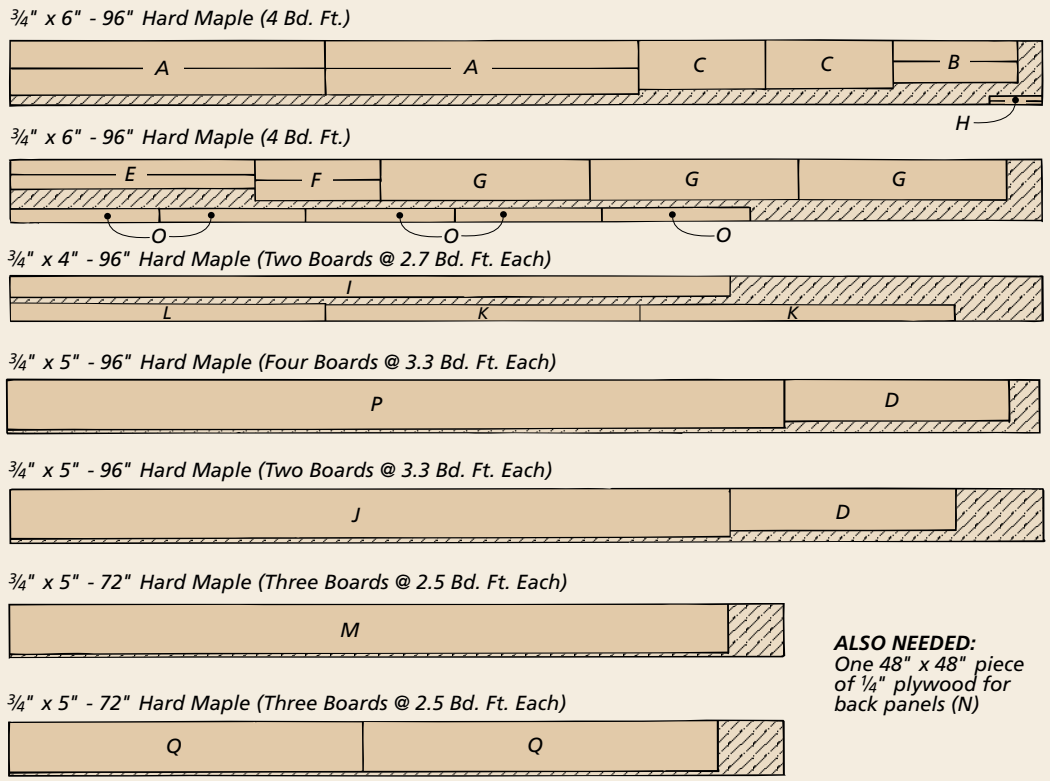


aligned will probably save you some planing or sanding later on. And when you have the panels flat and cut to length, all that's left is to rout a 1/16" chamfer on all their edges, as indicated in Figs. 15a and 15b.

The shelves simply rest on spoon-style shelf pins (Fig. 15a). The top panel is screwed through the mounting cleats you added earlier.

But before adding either of these to the case, you'll want to build the doors. That's because doors are easier to mount if you have access from the top. Plus, it's generally best to apply the finish before you attach either the doors or the top. (I simply brushed on several thin coats of a varnish, but you could use a polyurethane or water-based finish too.) In fact, the top will be less likely to warp if you apply the same number of coats to the underside of the panel before screwing it in place.

CUTTING DIAGRAM



ALSO NEEDED:
One 48" x 48" piece of ¼" plywood for back panels (N)

▲ *These doors are easy to build whether you use glass (above) or wood (page 7) for the panels. The doors here feature 3/16"-thick reeded glass that was purchased at a local glass shop.*

Optional Doors

With many projects, adding doors increases the level of complexity. The joinery is different from the rest of the project, and getting the doors mounted correctly can be difficult.

Not here. These doors are built just like the end and divider assemblies you made earlier. And when it's time to mount them, you'll find that these overlay doors are relatively easy to attach to the case — but more on that later.

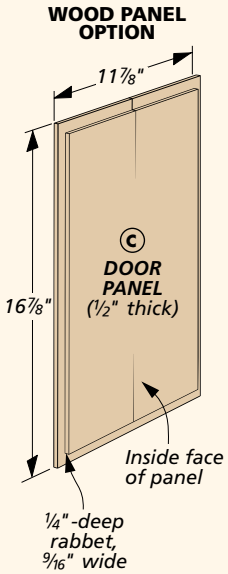
FRAME PIECES. To build the doors, the first thing to do is work on the frame. They're sized to overhang the case 1/4" on each edge with a 1/16" gap between the doors, as in Fig. 1b. (My doors were 15 3/4" x 20 3/4".)

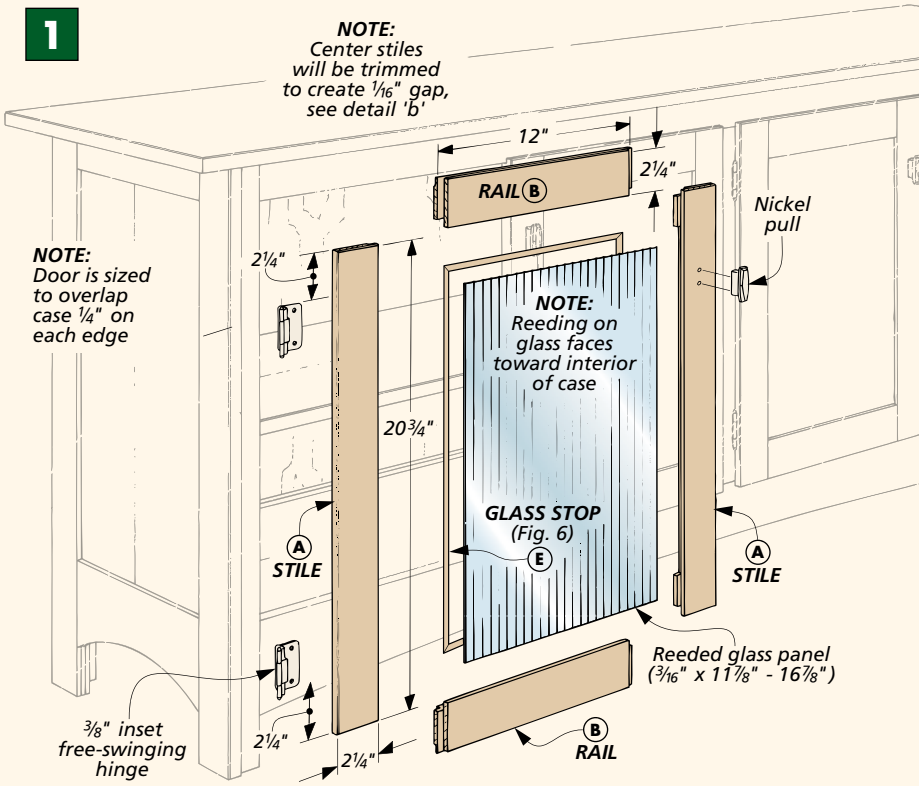
The length of the *stiles (A)* is easy to come up with. Just add 1/2" to the height of the case opening. The *rails (B)* are a bit more work. You have to take into account the widths of all four stiles, the stub tenons on the rails, and the 1/4" that the door overlaps the case. (At this point, I didn't worry about the 1/16" gap between the doors. I like to trim the edges between doors after they've been mounted to the case.)

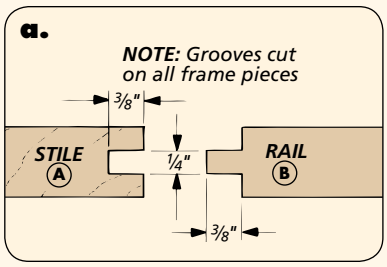
GROOVES & STUB TENONS. With the frame pieces cut to size, the grooves and stub tenons can be cut, as in Fig. 1a. And as I mentioned earlier, this is identical to those you cut on the end assemblies, refer to page 3.

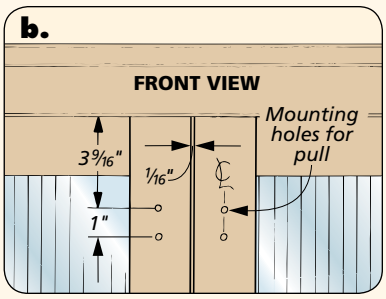
PANELS. If you're building the wood panel doors (shown on page 2), then now's the time to make the *panels (C)*. (The dimensions for these are given in the margin at left.) For glass doors, it's best to order the glass *after* the frames have been assembled so you can have the panels cut to match the actual openings (minus 1/8" in each direction).

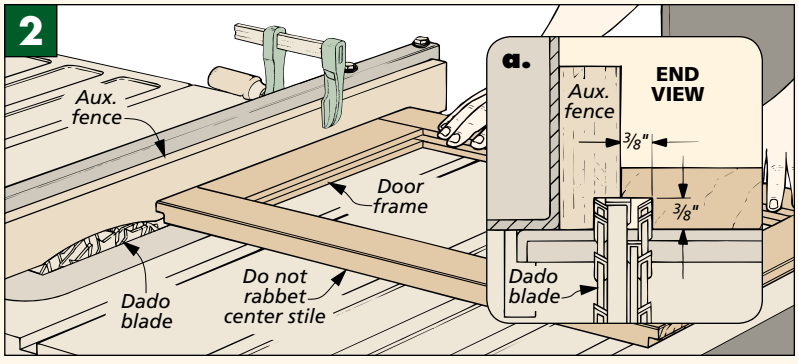
ASSEMBLY. At this point, the door frames can be assembled (and wood panels, if you're using them). But before installing the doors, you need to cut rabbets on three edges of the door to allow it to fit into the case, as in Fig. 2. (The center edges where the doors meet should

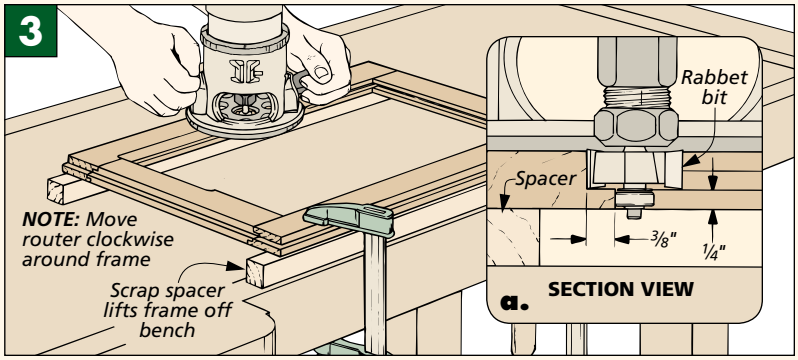












be square.) It's probably good to note that these rabbets are oversized so there's some "breathing room."

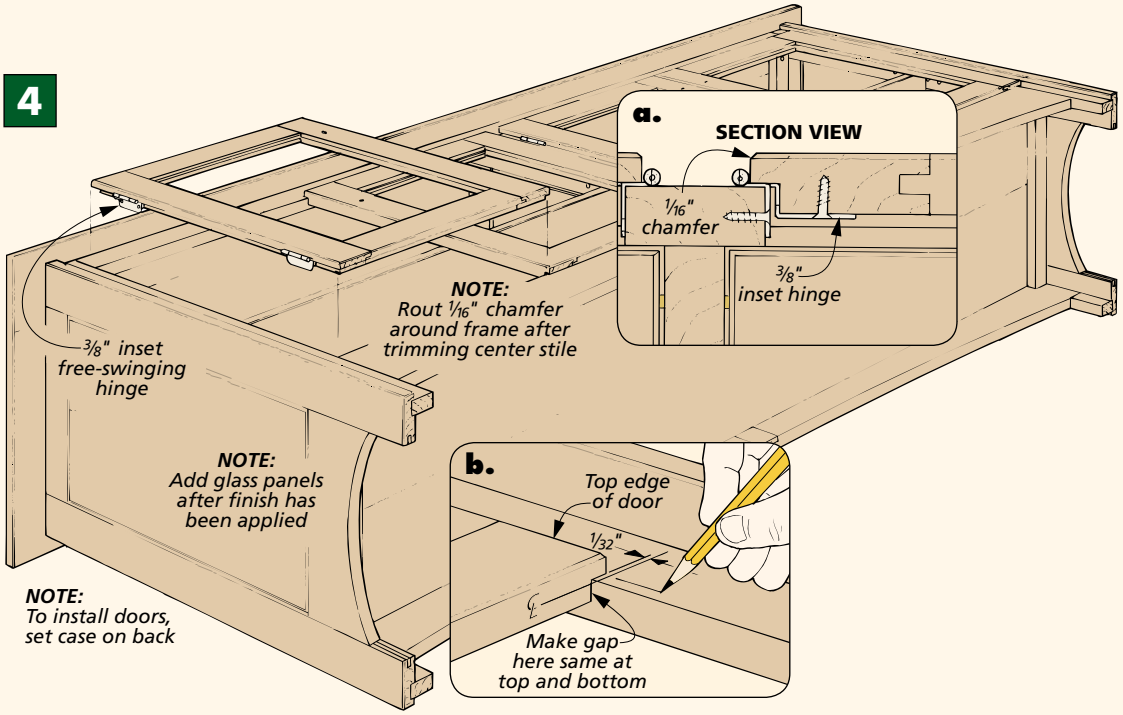
For the glass-paneled doors, you also need to rout a rabbet around the inside of the frames, as shown in Fig. 3. This just removes the inside shoulder of the groove, so you can install the glass later (Fig. 3a).

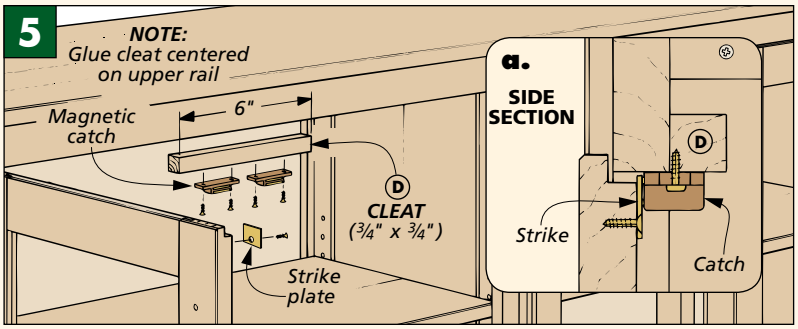
MOUNTING DOORS. Now the doors are ready to be mounted to the case. As you can see in Fig. 4, I set the case on its back so I could just lay each door in place. Then I marked the center of the case opening.

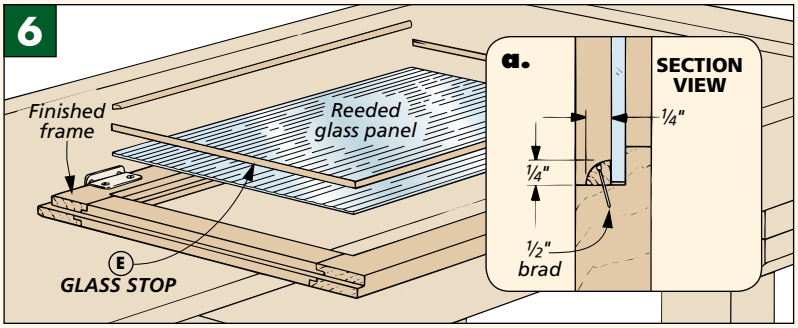
After attaching the hinges to a door, set it on the case and make sure the gaps at the top and bottom are the same, as in Fig. 4b. Then you can reach inside and mark the position of the hinges on the case.

But before removing the door, take a minute to lay out a few marks. First, you can transfer the center of the case to the door stile (top and bottom). This will help you create the gap between the doors later on. Second, it's also a good idea to mark the position of the door on the case, as in Fig. 4b. This way, it'll be easy to align the second door to the first.

After you've trimmed the center stile of each door, you can chamfer the edges of the doors (Fig. 4a). Then the finish can be applied, and the hardware added. The magnetic catches are mounted to a small *cleat (D)* that's glued into the case, as in Fig. 5. The glass is held in place with small pieces of *glass stop (E)*, as shown in Fig. 6. And finally, the knobs can be added to the inside stiles (Figs. 1 and 1b).







▲ *Nickel hinges are hard to come by, so for this bookcase, I bought brass hinges, scuffed them with 400-grit sandpaper, and spray painted them silver.*

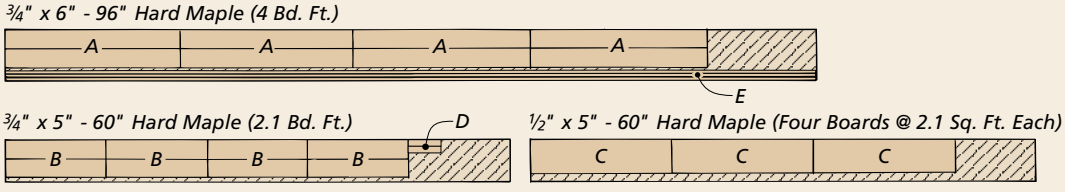
MATERIALS & CUTTING DIAGRAM

A	Door Stiles (8)	3/4 x 2 1/4 - 20 3/4	
B	Door Rails (8)	3/4 x 2 1/4 - 12	
C	Door Panels (4)*	1/2 x 11 7/8 - 16 7/8	
D	Door Catch Cleats (2)	3/4 x 3/4 - 6	
E	Glass Stop**	1/4 x 1/4 - 260 ln. in.	

* Needed for Wood-Paneled Doors

- (4 pr.) 3/8" Inset Free-Swinging Hinges (painted silver)
- (4) Satin Nickel Door Pulls
- (4) Magnetic Catches, Strikes, & Screws
- (1 pkg.) 1/2"-Long Brads**
- (4) 3/16" x 11 7/8" - 16 7/8" Reeded Glass Panels**

** Needed for Glass-Paneled Doors



TROUBLE-FREE HALF LAPS

▲ *Two face grain surfaces make these half laps strong enough for any project. Plus, you can have your saw set up and ready in no time.*

Need to build a quick, strong frame? Then a half lap joint is exactly what you're looking for. It's very quick — all you need is *one* basic setup on the table saw for both halves of the joint. And it's very strong — all that face grain to face grain contact is perfect for a solid glue joint.

STOCK THICKNESS. There's nothing fancy or tricky about a half lap. Half the stock's thickness is removed from the pieces so they overlap and their faces end up flush. But for this to work, the mating pieces have to be the *exact* same thickness.

No big deal, right? Well, I've gotten "tripped up" before by forgetting that my thickness planer often "snipes" the pieces, making them slightly thinner on the ends. It usually takes several frustrating minutes trying to set up the saw before I realize the problem. So keep this in mind when preparing your stock.

Also, it's a good idea to have a few test pieces planed to this thickness so you can use them when setting up the table saw, as in Fig. 1.

BLADE SETUP. With the stock thicknessed and the pieces cut to length, it's time to set up the table saw. Here you need a dado set. I like to set mine as wide as possible so there are fewer passes to make. Also, you'll want to attach an auxiliary fence to the miter gauge. This supports the workpieces *and* allows you to add a stop block for establishing the shoulder of each half lap.

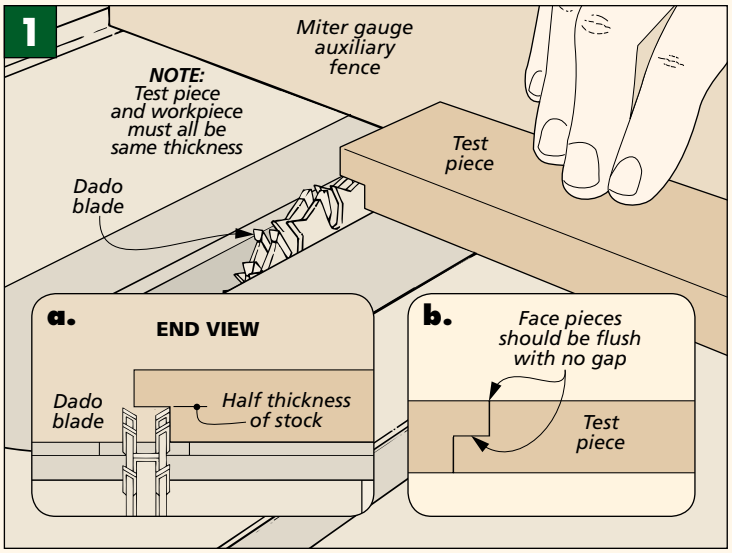
For now, though, the focus is going to be getting the dado blade set at the right height. This means raising it exactly half the thickness of the stock. I start by simply drawing a layout line centered on the thickness of one of the pieces. Then I raise the blade so the teeth are flush with this line.

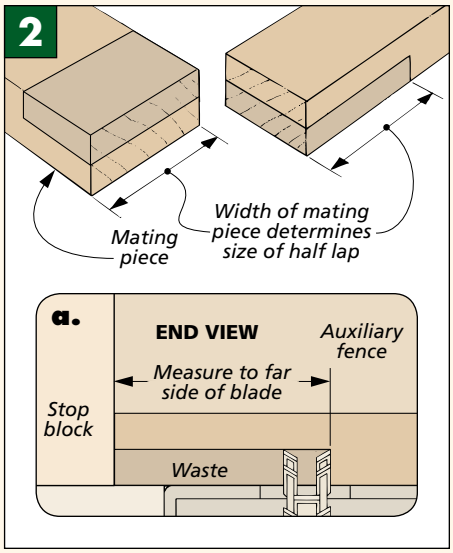
Of course, this is only a start. The real test is cutting half laps on the ends of your test pieces, as in Figs. 1 and 1a. There's no need to fuss with the width of these half laps yet. Just concentrate on getting the height of the blade right so the faces end up flush, as in Fig. 1b.

Most of the time, I find the faces are off only a fraction, and the trick is to adjust the blade exactly *half* the difference. Just be patient here. You may need to adjust the blade height a few times before the faces end up perfectly flush.

FENCE SETUP. Once the blade is set, all that's left is to establish the width of the half lap by clamping a stop to the auxiliary fence. The position of this stop will be determined by the width of the *mating* piece, as in Fig. 2. Just remember to measure to the outside edge of the blade, as shown in Fig. 2a.

If the two workpieces are the same width, then one setup is all you'll need to make. If they're different widths, you'll need to reposition the stop for each piece. Either way, it can be done pretty quickly.

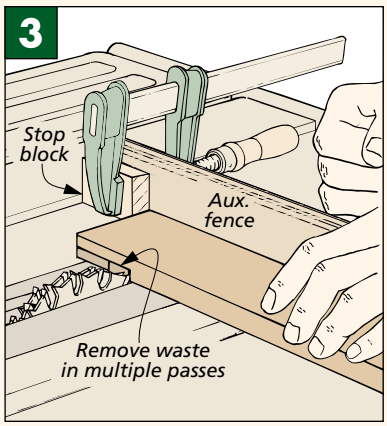


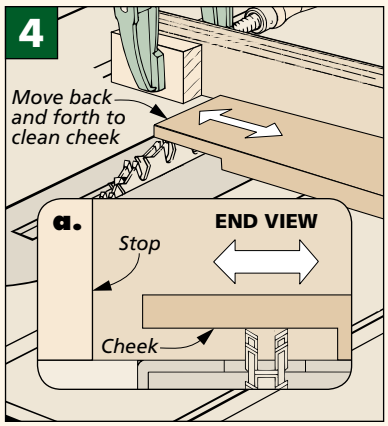


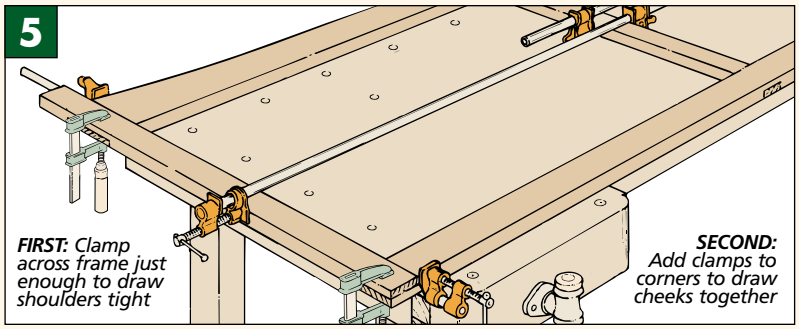
MULTIPLE PASSES. Now you're ready to cut the half laps on the workpieces. This will require making multiple passes, and I usually start with the piece pushed all the way against the stop, as illustrated in Fig. 3.

CLEANING THE CHEEKS. With the half laps cut, I like to inspect the cheeks to make sure they're as smooth as possible. (It makes for a stronger glue joint.) If they're not, you can try sliding the workpiece back and forth across the blade, while you slowly push it forward, as in Fig. 4.

ASSEMBLY. When all the half laps are ready, you can assemble the frame, as shown in Fig. 5. This is a two-step process. First, you want to draw the shoulders of the frame together with pipe clamps (or band clamps). Then you can add a small clamp to each corner.







HALF LAP TIPS FOR LONG WORKPIECES

You can't beat a half lap when you need a strong, simple joint. But when the pieces get long (like the face frame rails on the sofa table bookcase), there are some unique challenges.

GETTING A GRIP. When cutting the half laps on the ends of the rails, the first thing I had to figure out was how to hold these long workpieces. Clamping them to the auxiliary miter guage fence would have meant re-clamping them with each pass. Instead, I created a simple hold down by screwing a cleat to the front of the auxiliary fence, as you can see in Fig. 1 below. This hold down keeps the workpiece from tipping up but still lets me shift the piece without too much trouble.

CUTTING TO A LINE. When cutting half laps in the center of the long rails, working with a stop just wasn't practical (without making the auxiliary fence over six feet long). Instead I worked to a line, as in Fig. 2. And to make it easy to see what I was doing, I laid out the half lap on both faces and drew lines on the auxiliary fence to show where the dado blade was cutting. Then all you need to do is carefully sneak up on the final width of the half lap, testing the fit with the mating workpiece.