Mitered Molding Simplifies Traditional Doors

Power-tool technique works for any molding profile

BY LONNIE BIRD

The term "sticking" refers to the decorative molding along the inside edges of traditional door frames. The sticking is commonly a simple molding profile such as an ovolo or a thumbnail. The challenge is joining this molding cleanly at the inside corners.

I use a miter joint that is quick and easy, requires almost no hand tools, works on any molding profile, and allows a full mortise and tenon.

If you are constructing a dozen or more doors for kitchen or shop cabinets, cope-and-stick router bit sets can be an efficient way to produce a large number of doors quickly. These matched bits will "cope" the joint cleanly, sculpting one side to match the other. But these bit sets are expensive, and they deliver only a short stub tenon.

When making a pair of doors for a piece of fine casework, you'll want the greater strength of a full tenon and mortise. And where the sticking intersects in the corners, you'll have two choices, a cope or a miter.

A coped, or sculpted, joint is executed by hand and requires a certain amount of hand-tool proficiency. It also requires a gouge with a sweep that matches the profile of the sticking.

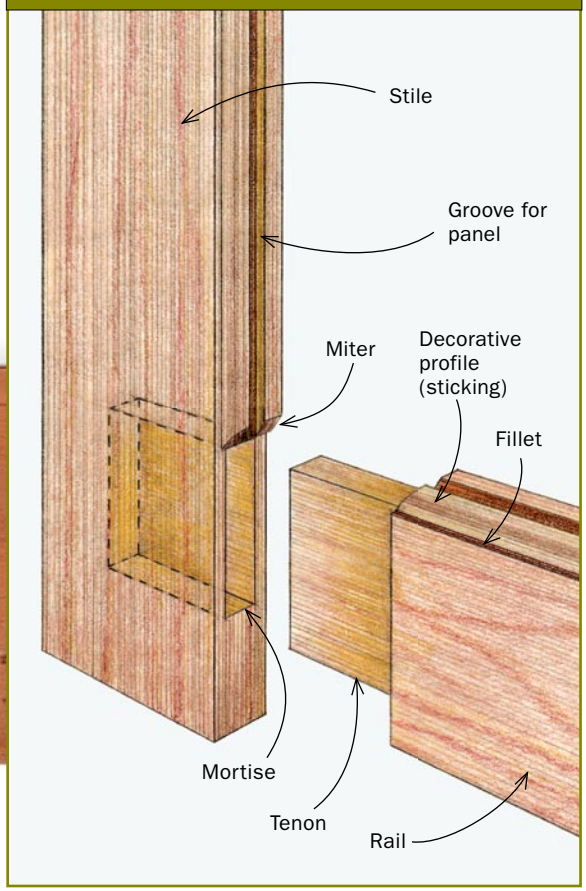
Photos: Anissa Kapsales; drawings: Kelly J. Dunton

The miter is the easier method, bringing any profile together at a clean 45° line. Mitered sticking is a traditional technique that has been used by furniture craftsmen for several hundred years; it is time-tested. You don't need special tools or costly bits. Also, mitering allows the use of profiles that cannot be coped, such as a quirk bead or an ogee.

There may be a concern that seasonal wood movement could cause a gap to appear at the miter and show light. I haven't had this problem because the rails on furniture are typically narrow and the movement is minimal in such narrow pieces.

Traditionally, sticking is mitered using a chisel guided by a block. My method is far less time-consuming: The miters are cut efficiently and accurately with a tablesaw and a

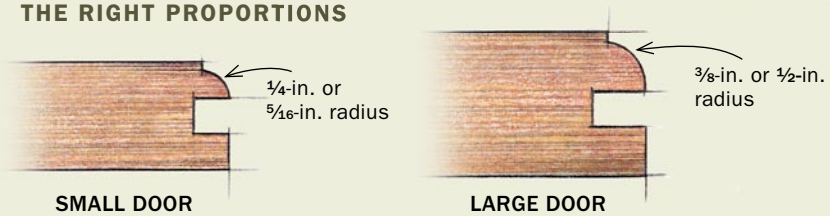
ANATOMY OF A MORTISE-AND-TENON JOINT WITH MITERED STICKING



Design the sticking

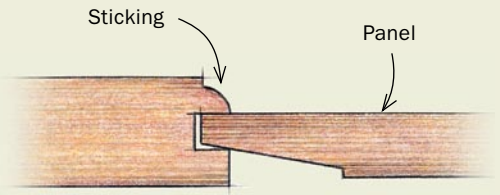
The term "sticking" refers to the decorative profile around the inside edges of doors. Sticking profiles are usually simple, such as the ovolo and thumbnail, and are sized in proportion to the door. For example, large doors for a secretary may have a thumbnail profile of ⅜ in. or a ½-in. radius, while a ¼-in. or 5/16-in. radius looks more appropriate on the small door of a spice cabinet.

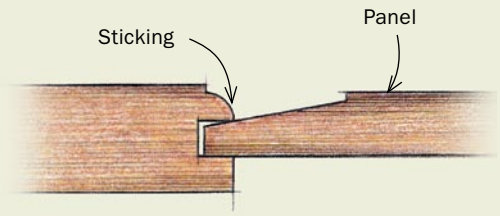
THE RIGHT PROPORTIONS



PANEL OPTIONS

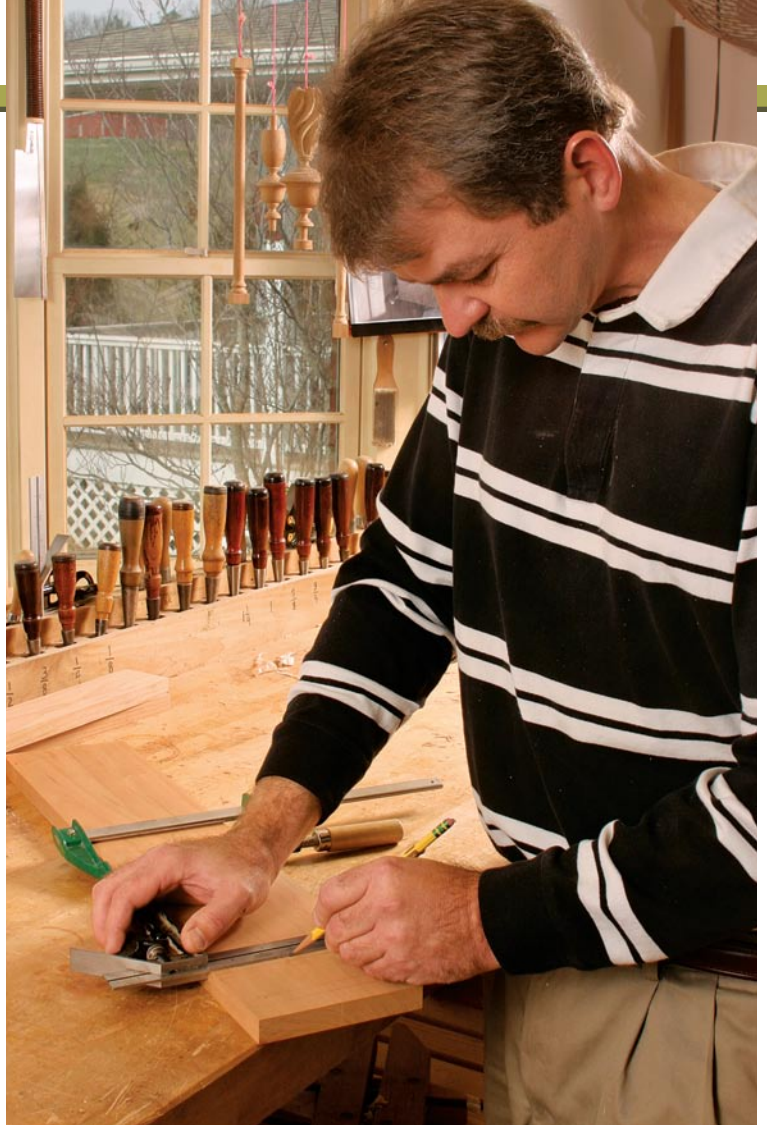
Panels can be flat (above) or beveled along the edges with a raised field (right). When compared to a raised panel, a flat panel appears somewhat plain, which looks appropriate on a simple piece of furniture. Although flat on the outside, flat panels in solid wood are typically beveled on the inside. This allows for a thicker, stronger panel. Either way, panels are a great place to show off beautiful, wide, figured stock or veneer.



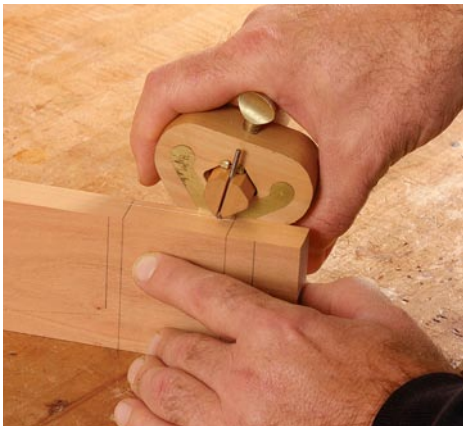


LAY OUT THE STILES

Clamp the pieces together for accuracy. *Mark the length of the finished door on the stiles. Then mark the rail width, the sticking width, and the end of the mortise.*



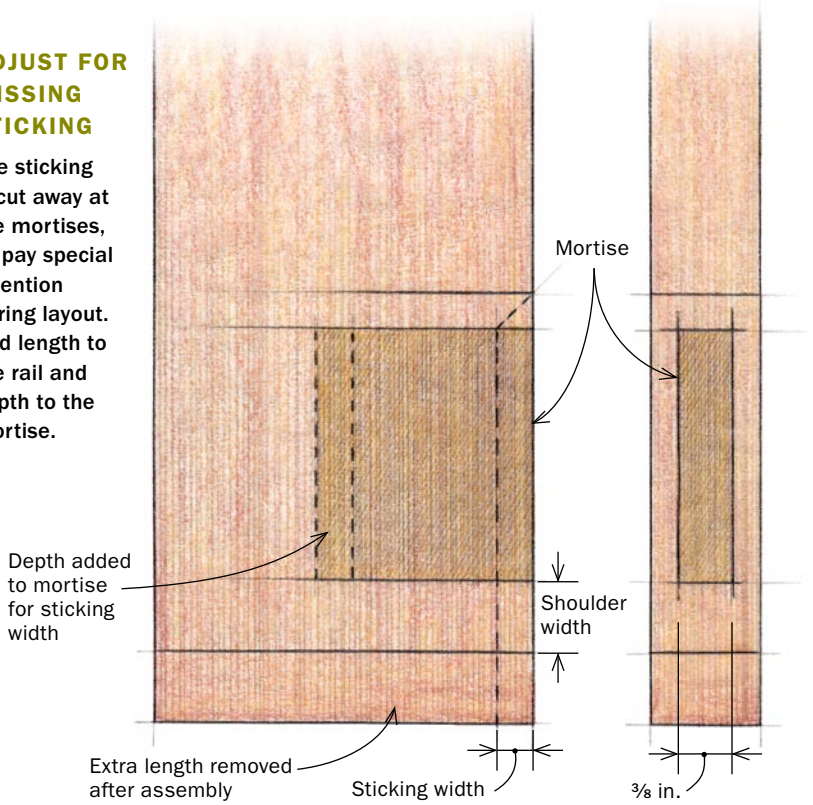
Transfer the lines to the edges. *Use a square to bring the layout marks to the edges of the stiles.*



Scribe the mortise. *A marking gauge makes it easy to score the sides of the mortise.*

ADJUST FOR MISSING STICKING

The sticking is cut away at the mortises, so pay special attention during layout. Add length to the rail and depth to the mortise.



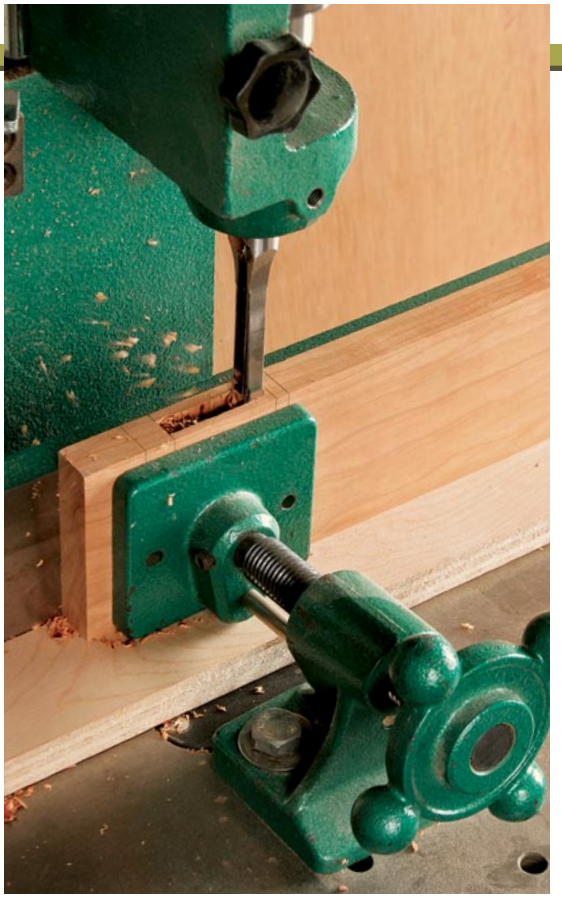
combination blade. Once you've mastered this technique, you're sure to find other uses for it. For example, I use it to apply a quirk bead to the inside edges of cabinet face frames and to join the complex parts of a seat board for a desk gallery. This is a versatile technique that offers a lot of flexibility.

Lay out the door height, the molding profile, and the mortises

The first step to producing a door with mitered sticking is to mill the stock so that all the frame members are the same thickness. Differences can make it difficult to align the sticking where it joins in each corner. I always mill a couple of extra pieces of stock for use when setting up the tablesaw and router table.

Once you've milled the frame stock, you're ready to lay out the joinery. Although the layout process is pretty straightforward, there are a couple of things to keep in mind. First, because the sticking at the mortise is removed after mitering, the rail length between the shoulders of the tenons must be increased to compensate for the dimensional change. The increase in length is equal to the size of the sticking times two. Also, the mortise depth must be increased by the stick-

CUT THE JOINERY



Chop the mortises. *A hollow-chisel mortiser is a quick and efficient way to tackle mortises.*

Use a dado set to cut the tenons. *The miter gauge, in conjunction with a few graduated crosscuts ending at the rip fence, allows you to cut the cheek and establish the shoulder at the same time.*

Complete the shoulder. *Keeping the tablesaw fence in the same position, raise the blade and flip the stile on edge to cut the remainder of the shoulder.*

ing width to compensate for the loss of depth after mitering (see drawing, facing page).

I begin layout with the stiles left too long. In fact, I leave the stiles long until I have finished the frame and I actually am ready to fit the door to an opening. This ensures that the ends of the mortises don't blow out while I am cutting them and assembling the joints. First, I mark the overall height of the door. This is the most critical dimension if the door is going to fit. Next, I mark the width of the top and bottom rails. Finally, I mark lines for the haunch and the width of the rail sticking where it intersects the stile.

As a general rule, I don't lay out the rails. Instead, I use the stiles themselves and some simple math to calculate the overall length of the rails. Then I can set up the tablesaw to cut the tenons with no layout needed.

Cut the mortises first, then move on to the tenons

My mortise-and-tenon methods are fairly routine. A hollow-chisel mortiser makes easy work of the mortises, but a drill press or router and chisels are good alternatives. I use a dado set on the tablesaw to cut the tenons. Once the mortise-and-tenon joinery is complete, you are ready to shape the sticking profile on the stiles and rails.

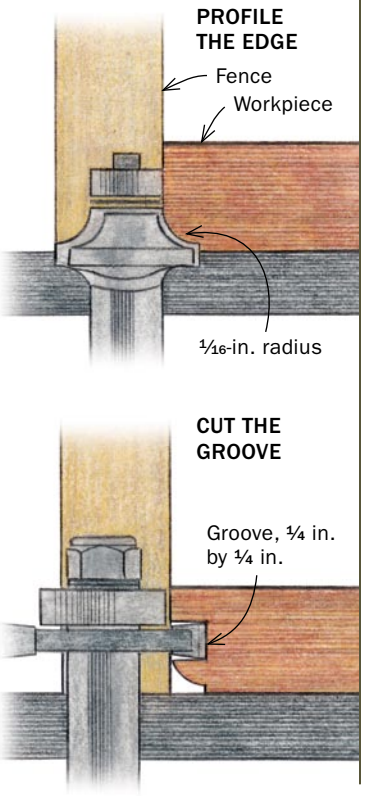
Shape the molding profile and cut the grooves

I cut both the sticking profile and the grooves on the router table. With the sticking, to ensure the correct

Create the decorative profile. *Leaving the fence in place but adjusting the bit height, Bird makes two passes. The first scores the profile so the final cut can be made without tearout.*

Groove the rails and stiles. *Using a slot-cutter, run the groove all the way through on the rails. But on the stiles, be sure to stop and start the groove in the mortise.*

ROUT THE PROFILE AND GROOVES FOR THE PANEL



CUT MITERS ON THE TABLESAW

1 SET THE BLADE HEIGHT

Make test cuts on a setup piece that has been shaped with the sticking profile. The tip of the sawkerf must be set precisely to the width of the sticking.

2 DRAW A REFERENCE LINE

Once the blade height is set, attach a fresh fence on the miter gauge and run a cut through it. Draw a reference line from the tip of the kerf straight up and over the top edge of the fence.

cutting depth, I align the fence with the guide bearing on the bit for the final pass.

Once I have cut the profile on all the rails and stiles, I cut the grooves for the panel. For most work, I cut a ¼-in.-wide groove at a depth of ¼ in. These measurements provide a snug fit for the edge of a solid-wood panel while allowing 1/16 in. on each side for seasonal expansion.

Miter the sticking

The next step is to miter the sticking on the tablesaw using the miter gauge. To cut the miter, I tilt the blade to 45° and position the stiles and rails on edge. But first, to ensure that the miters will be precise, I take a few minutes to set up the saw carefully.

First I check the angle of the blade by mitering two pieces of stock at 45° and placing them within the legs of a square. If the blade is set precisely at 45°, the miter will close and create a 90° assembly.

Next, I adjust the blade height so that it exactly matches the profile width. Several test cuts may be necessary to get the correct height.

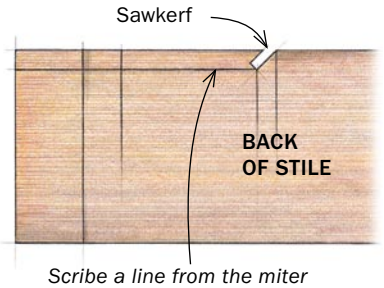
The last step to completing the tablesaw setup for the miters is to fasten a backup board to the miter gauge. Make a cut in the backup board and mark a fine line from the tip of the sawkerf up and over the top edge of the backup board. This mark serves as a reference when aligning the workpieces to cut each miter, so it is very important that the cut is the correct height and that the mark is made accurately.

3 MAKE THE MITER CUTS

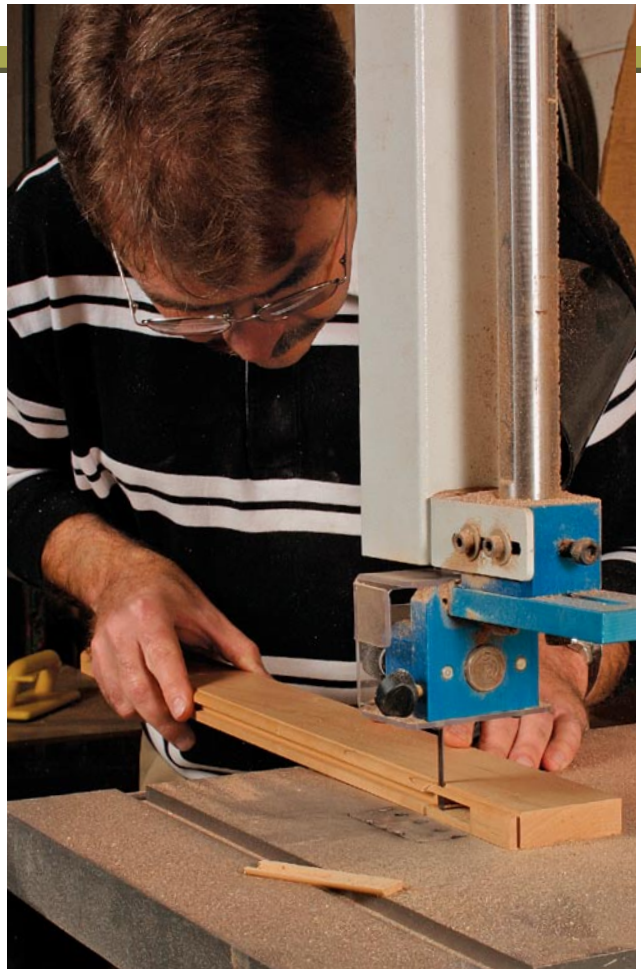
Use the reference line to make cuts. When mitering the stiles, match the reference mark on the backing board to the inside sticking line on the stile. To miter the rail stock, align the shoulder with the reference mark on the backing board.

REMOVE THE STICKING AT THE JOINT

Transfer the sticking line. *On the front of the stock, the profile is the reference, but you can use a marking gauge to scribe that line on the back of the stock.*



Scribe a line from the miter cut to the end of the stock.



Cut close to the sticking line. *Cutting freehand on a bandsaw, you can eliminate almost all of the sticking.*

Finish by hand. *Use a chisel to pare the rest of the sticking away.*

With the setup complete, you can make the miter cuts on both the rails and the stiles. When mitering the stiles, align the sticking layout mark with the line on the backing board. For the rails, line up the shoulder with the line on the fence. When making multiple doors, I clamp a thin stick to the backing board to serve as a stop.

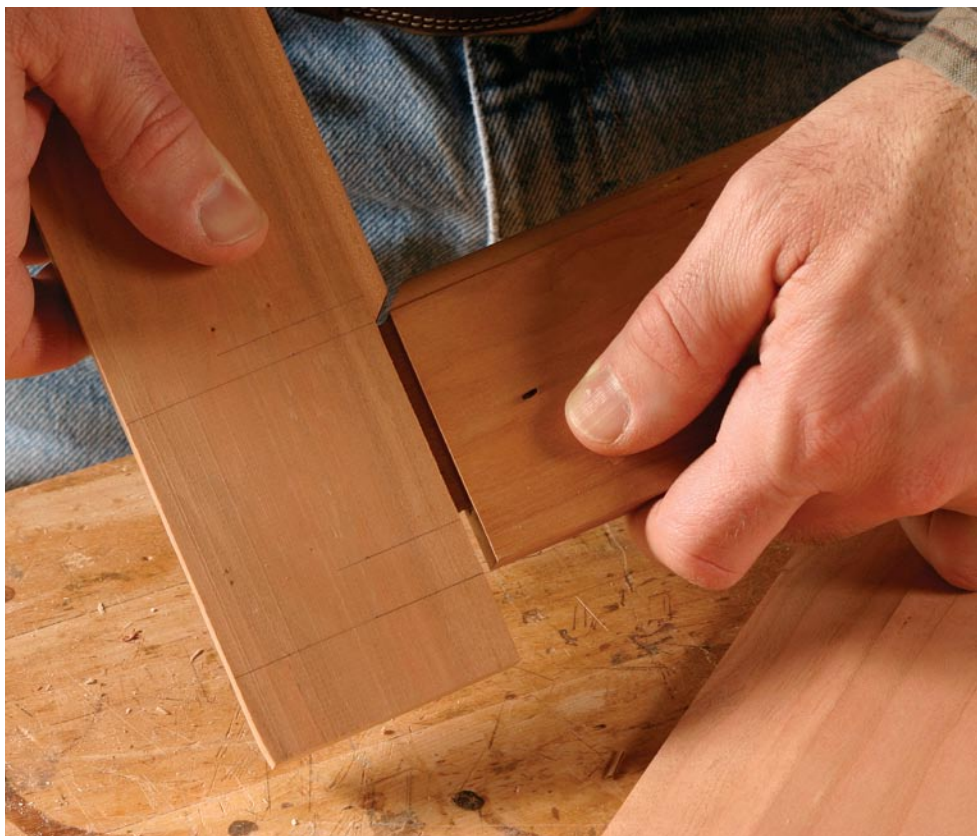
Eliminate sticking at the joint

Before assembling the door, you'll have to remove the sticking where the joint comes together. I scribe a line with a marking gauge on the back of the stock to serve as a reference mark.

On the face of the stock, the inside edge of the sticking serves as a reference point. You can cut away most of the sticking with a bandsaw and finish the cut by carefully paring to the line with a chisel.

At this point, if you have completed your cuts and layout carefully and accurately, the stiles and rails should come together perfectly. Once you have glued up the door, you can trim it to fit the carcase opening. □

Lonnie Bird teaches woodworking in Dandridge, Tenn. You can view his class schedule at www.lonniebird.com.



Slide the rails and stiles together. *A beautiful fit depends on accurate layout, precise tablesaw setup, and careful chisel work.*