Double Bridle Joint

Twin tenons maximize strength and add decorative flair

BY IAN GODFREY

When I was learning to build furniture at the Inside Passage School in British Columbia, I saw a chair by College of the Redwoods graduate Ben Green that used a double bridle joint. I immediately admired the joint for its strength and understated beauty.

Unlike the standard bridle joint, which is often used in cabinet-door frames, the double bridle joint is better suited to a structural role in furniture. The double mortises and interlocking tenons provide ample glue surface, making the joint incredibly strong even in narrow stock.

With an alternating pattern of end grain and edge grain, the joint is handsome enough. But it also can be dressed up with a mitered inside corner that can be shaped to create a smooth transition from rail to leg. I have been using the joint since I first saw it. It is great for joining a leg and sled foot for a stool, chair, or bench.

Here I'll show you how to cut the basic joint for a tight fit with minimal fussing. Then I'll show you how to cut and shape the mitered corner.

Start with the tenons

I cut the joint at the tablesaw and rely on setup pieces to help dial in the fit. You'll need a pair of them, one for each half of the joint. Use a full-size drawing to transfer the layout for the joinery to these pieces.

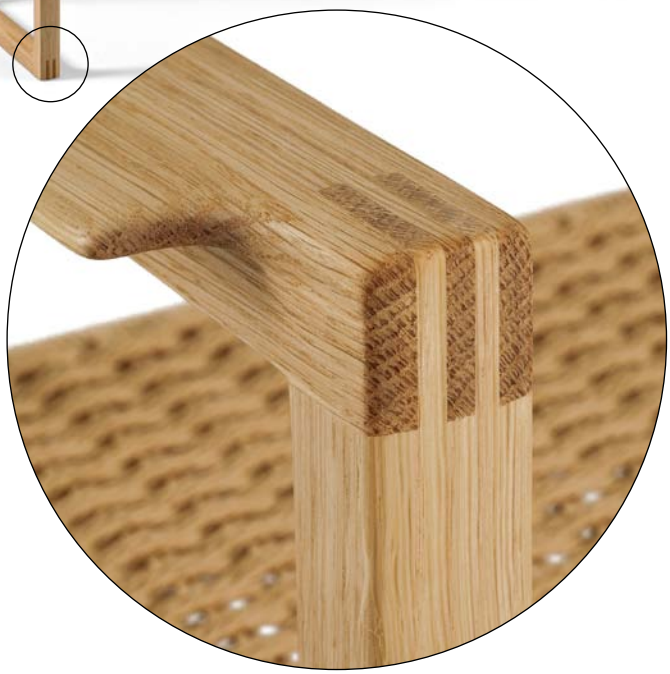
I cut the interlocking portion using a shop-built tenoning jig and a rip blade for a clean, flat-bottomed cut. The blade height will remain the same throughout this process, so get it set precisely using one of the setup pieces.

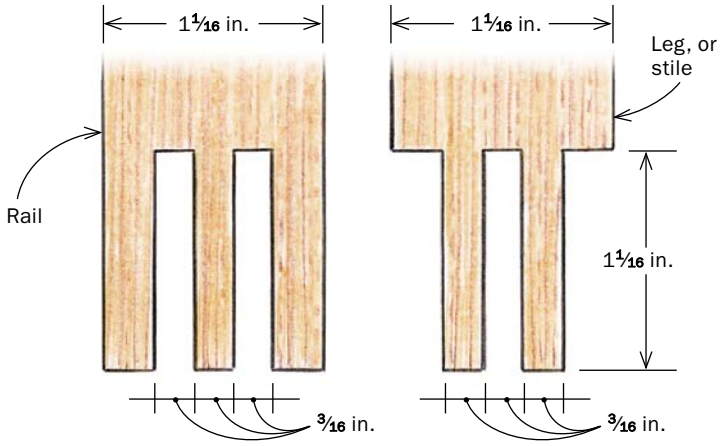
Start with the center mortise on the stile (or leg) and alternate between that

Photos: Steve Scott

Strength and beauty

With its interlocking tenons, the double bridle joint ensures plenty of glue surface for a strong, long-lasting connection. The exposed joint draws the eye and is easily shaped to invite the hand, as on Godfrey's Danish-cord bench.

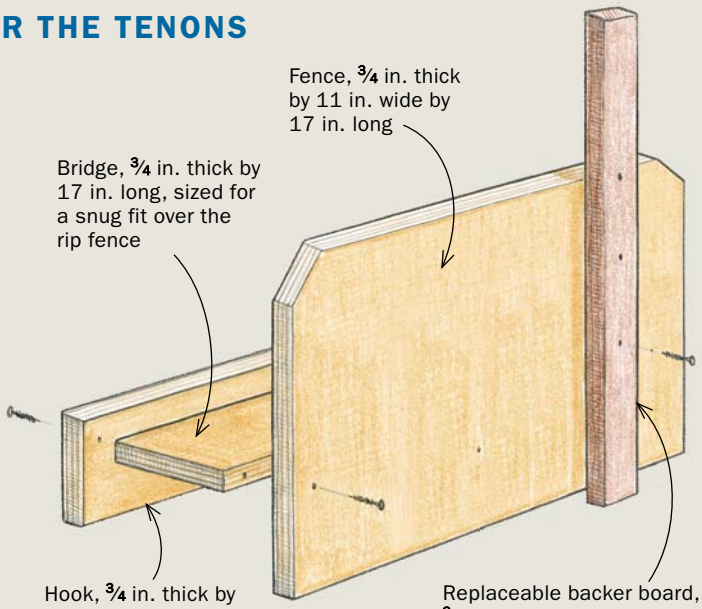




Layout helper. *Godfrey uses adhesive paper to mark the layout on setup pieces. The paper makes it easy to see layout lines and prevents the pencil from wandering on coarse-textured stock.*

SIMPLE JIG FOR THE TENONS

To cut the twin tenons, Godfrey uses a plywood jig that rides the rip fence. A rip blade with a flat-top grind ensures flat-bottomed cuts. A backer board prevents tearout and holds the work squarely to the table (attach the backer with screws so it can be replaced as needed). He coats the bottom of the bridge with wax to help it travel easily along the saw's fence.



Cutting and fitting

1 STILE MORTISE

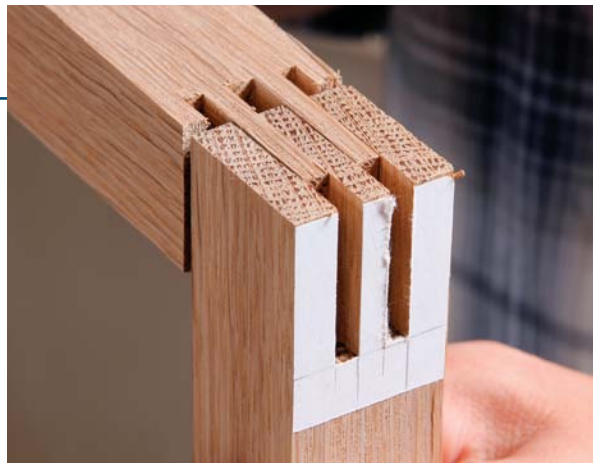
Align the blade to one face of the tenon cheek. Make a cut, then rotate the stock to cut the other cheek for a perfectly centered mortise. The blade height stays the same until you cut the shoulders.

2 RAIL MORTISES

Align the blade to one side of a mortise. Make a cut, and rotate the stock to make the same cut in the second mortise. Adjust the fence and repeat the process to finish the mortises. Eyeball the fit.

3 STILE CHEEKS

Cut the outside cheeks of the tenons one at a time, leaving a tab on each side. Remove most of the tab on the bandsaw so you can check the fit (far right) before trimming the shoulders on the tablesaw.



and the mating rail as you go. To position the fence, align the blade with the layout line of one of the tenon cheeks (see Step 1 above).

With the fence set, clamp the stile to the tenoning jig, making sure that it is tight against the saw table, the jig's fence, and the backer board, and make the cut. I typically design the mortise to be a little wider than the kerf of my sawblade. This lets me rotate the piece front to back to make the second cut and create a perfectly centered joint. To cut the twin mortises in the rail, use the setup piece to set the fence. Cut one cheek, then rotate the workpiece to cut the same cheek on the opposite side. Adjust the fence to cut the opposite walls. With this done, switch back to the stile and cut the outer cheeks of the two interlocking tenons. The final step is to remove the tabs of waste left behind when you cut these outer cheeks. First cut away the ends of these tabs at the bandsaw. This way, you can check the fit without altering the tablesaw setup.

When you're sure of the fit, use the tablesaw and miter gauge to cut the tenon shoulders. Reset the blade height so that it just removes the waste and does not cut into the tenons. You'll use the fence as a stop block. Position it to locate the cut in line with the base of the tenons. An added benefit of removing material at

4 STILE SHOULDERS

Trim the shoulders using a miter gauge and the fence as a stop block so the cut is right on the shoulder line. The joint should come together at this point.

5 FINE-TUNE AND GLUE UP

The final step is to fine-tune the fit if necessary and assemble the parts.

TIP

Sanding block for tight spaces. *To ease a too-snug fit, Godfrey carefully sands using P120-grit paper glued to a thin plywood sanding block.*

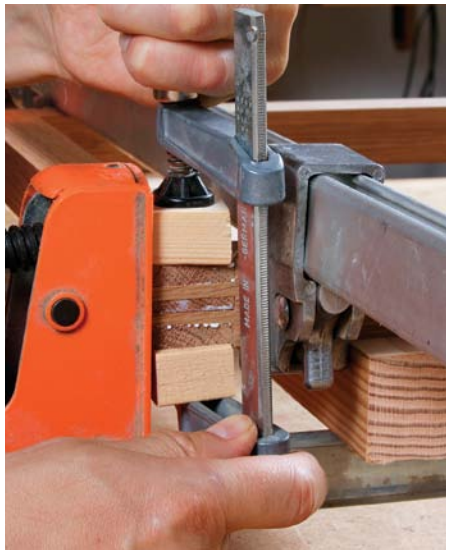
the bandsaw first is that you make the tablesaw cut safely, without binding the waste material between the blade and fence.

The joint should come together under moderate pressure with a snug friction fit. If it's too snug, lightly sand the tenons with P120-grit sandpaper on a flat sanding block. Once the fit is perfect, glue up the joints.

Mitered haunch is easy to do

The mitered version of the double bridle is cut the same way as the standard version. You just have to cut the stock a bit oversize so you'll have enough material to create the miters.

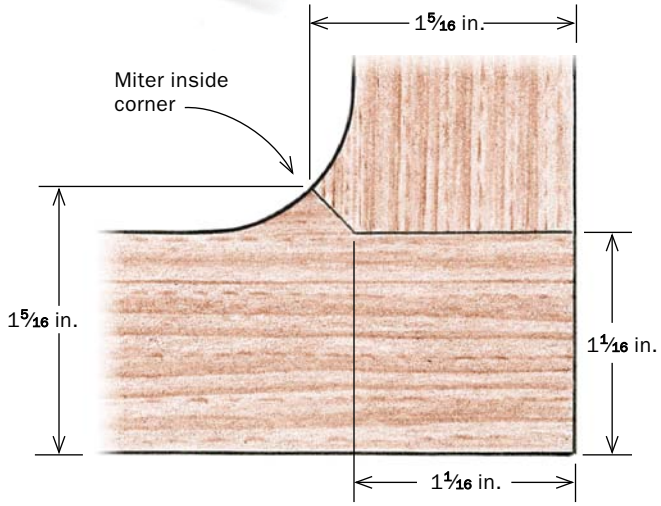
After cutting the interlocking portion of the joint, cut the miter on the inside edge of each workpiece using a crosscut blade, tilted to 45°. Clamp a stop block to your miter gauge to locate the workpieces precisely, dialing in the block's location with test cuts on the setup pieces. The point of the miter must meet the base of



Elevate the work for glue-up. *Godfrey supports the work on blocks and clamps each joint in both directions, ensuring that the joint fully seats (above). Finally, he clamps vertically across each joint (left) to ensure a good bond.*

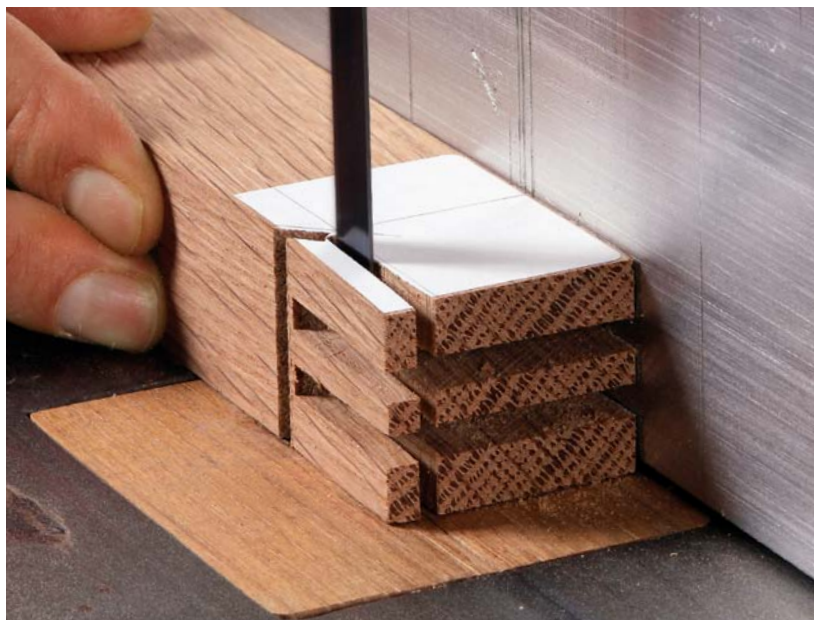
Add a miter for a rounded inside corner

Godfrey's Danish-style rocker features the double-bridle joint at both the armrests and the rockers. Each joint is enhanced with a contoured inside miter.



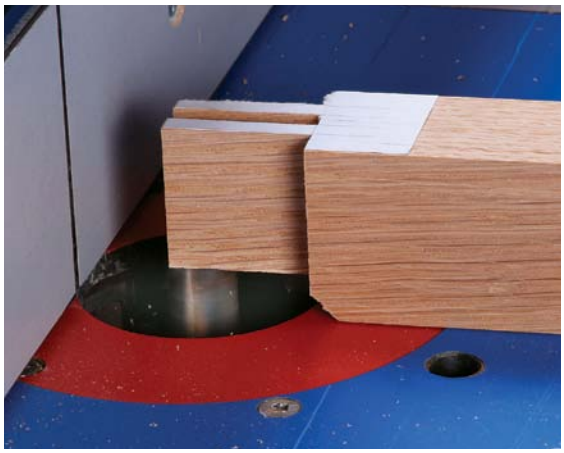
the tenons; otherwise, you will wind up with a miter that comes together before the bridle does, or vice versa. Avoid setting the blade too high or you'll cut into the bridle joinery. Better to leave it low by 1/32 in. or so and then clean up carefully with a chisel. The next step is to remove the short length of extra material along the tenons, between the miter cut and the end of the workpiece. I do this at the bandsaw, with the workpiece riding the fence.

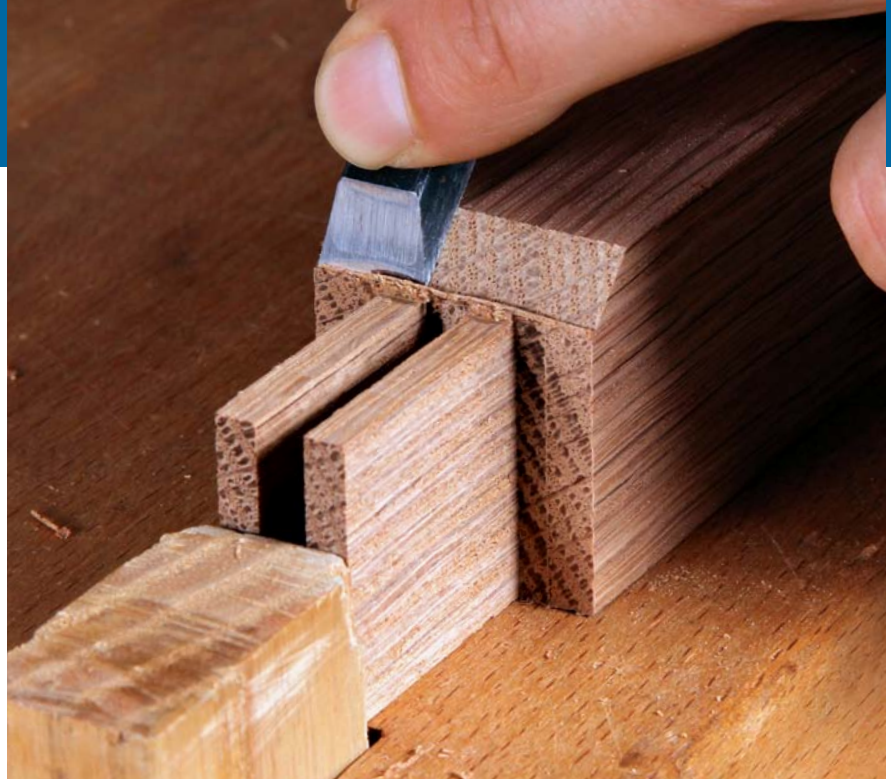
To clean up the bandsawn surfaces and adjust the miter's fit, I use a router table and my widest straight-cutting bit raised so that it just touches the raised portion of the bandsawn surface. Use the fence on your router table and again make sure that you do not cut into the miter. You may have to make multiple passes. Check the fit as you go. Afterward, use a wide chisel to pare a crisp intersection between the miters and the bridle portion of the joint.



Angled cuts make the miter. *Leave the blade a fraction low, to avoid cutting into the bridle joinery, but position the workpiece so that the miter's point will meet precisely with the bridle's shoulder (above). Trim the excess at the bandsaw (right), guiding the cut with the fence.*

Drawings: John Tetreault





Fine-tune the fit. *Godfrey uses a straight bit at the router table to trim the ends of the tenons (above). The table's fence is set to stop the cut at the bridle joint's shoulder. Then pare the miters so that their faces meet the shoulders of the bridle joint (right).*

Shape the inside curve. *Dry-fit the joint and lay out the curved profile (left). Bandsaw the waste on each part before glue-up (below) and fair the curve with a rasp and file after the joint is assembled (bottom).*

If the miters are tight but there are gaps in the bridle joints, you'll need to remove material from the miters, recutting them at the tablesaw or paring them slightly. If the bridle joints are tight and flush but the miters have gaps, use the router-table setup to take a little more material off the edges of the tenons.

Now it's time to shape the inside corner. With the joint dry-assembled, mark the final thickness of the parts and use a template to trace the radius of the inside corner. Take apart the joint and use the bandsaw to trim the parts to width and to rough out the radiused portion. Clean up the sawn surfaces using a handplane, rasp, or sandpaper. (You could also pattern-rout the parts to save cleanup time.) After gluing up the joint, fair the adjoining surfaces with rasps, files, and sandpaper.

You now have some visually interesting, robust joinery that looks a lot more complicated than it actually is. □

Ian Godfrey makes custom furniture in Roberts Creek, B.C., Canada.