A Smart Edge-Gluing Jig

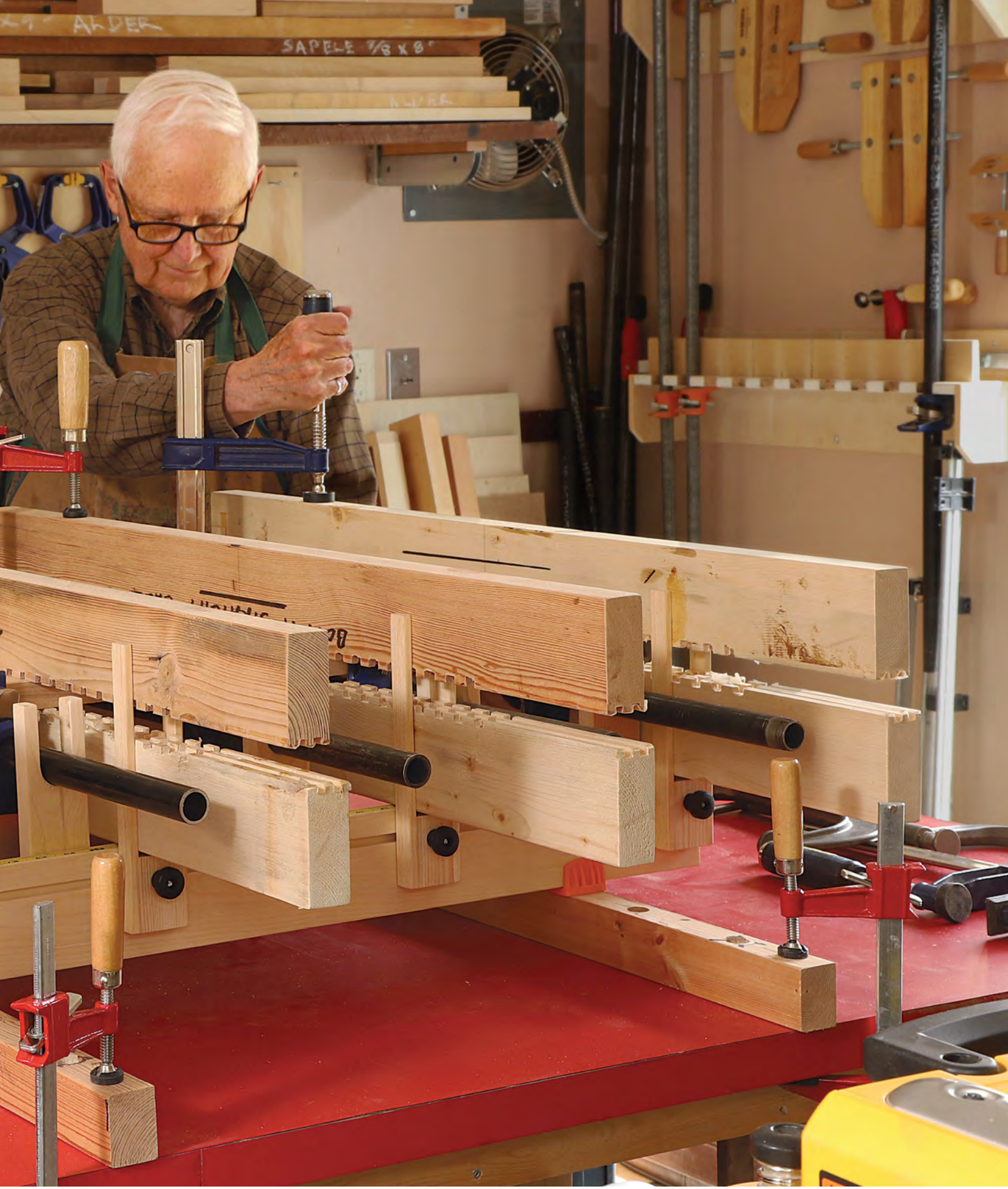
Shopmade clamping station produces fast, flat panels

BY ALAN McIVOR

When I was building a kitchen table recently, I edge-glued half a dozen boards to make the top. It was unwieldy, so I glued up two subassemblies of three boards each, then glued them together. I took all the usual precautions, with careful edge-jointing, clamps above and below the boards, and three pairs of cauls. The results were not good. The boards had shifted, the glue had smeared, and I had days of work trying to get the panel flat and clean. In the end, I thought: There must be a better way to glue up a clean, flat panel! That's when I designed and made this clamping station for panel glue-ups.

The jig is designed to allow for maximum flexibility: It can be used for gluing up boards that are wide or narrow, long or short, thick or thin. The clamp holders slide side to side, so clamps can be positioned either close together for narrow boards or farther apart for wide boards. The clamp holders can also be adjusted up and down to position the clamp screws exactly on the centerline of the boards, eliminating the need to put

Photos: Jonathan Binzen



alternate clamps below and above the panel. The jig can handle boards ranging from ½ in. to 3 in. thick.

The setup can be assembled in about 30 minutes and disassembled in about 15 minutes. The disassembled parts take up very little storage space when not in use; I stack the long rails and fit all the other parts in a box that measures about 1 cubic foot. The standard rails I use are 36 in. long; for longer glue-ups I connect them end-to-end to another set of 36-in. rails with dry dowel pins in the end grain. You could make your standard rails any length you think would be most useful.

I made the cauls for my jig 3⅜ in. wide to minimize deflection, so there's no need to camber them. They are dadoed on the edge that contacts the panel to minimize glue smearing. I shift the cauls to locate dadoes above and below the gluelines. This doesn't eliminate the need to wax the cauls or add packing tape, but it does allow for easier cleanup.

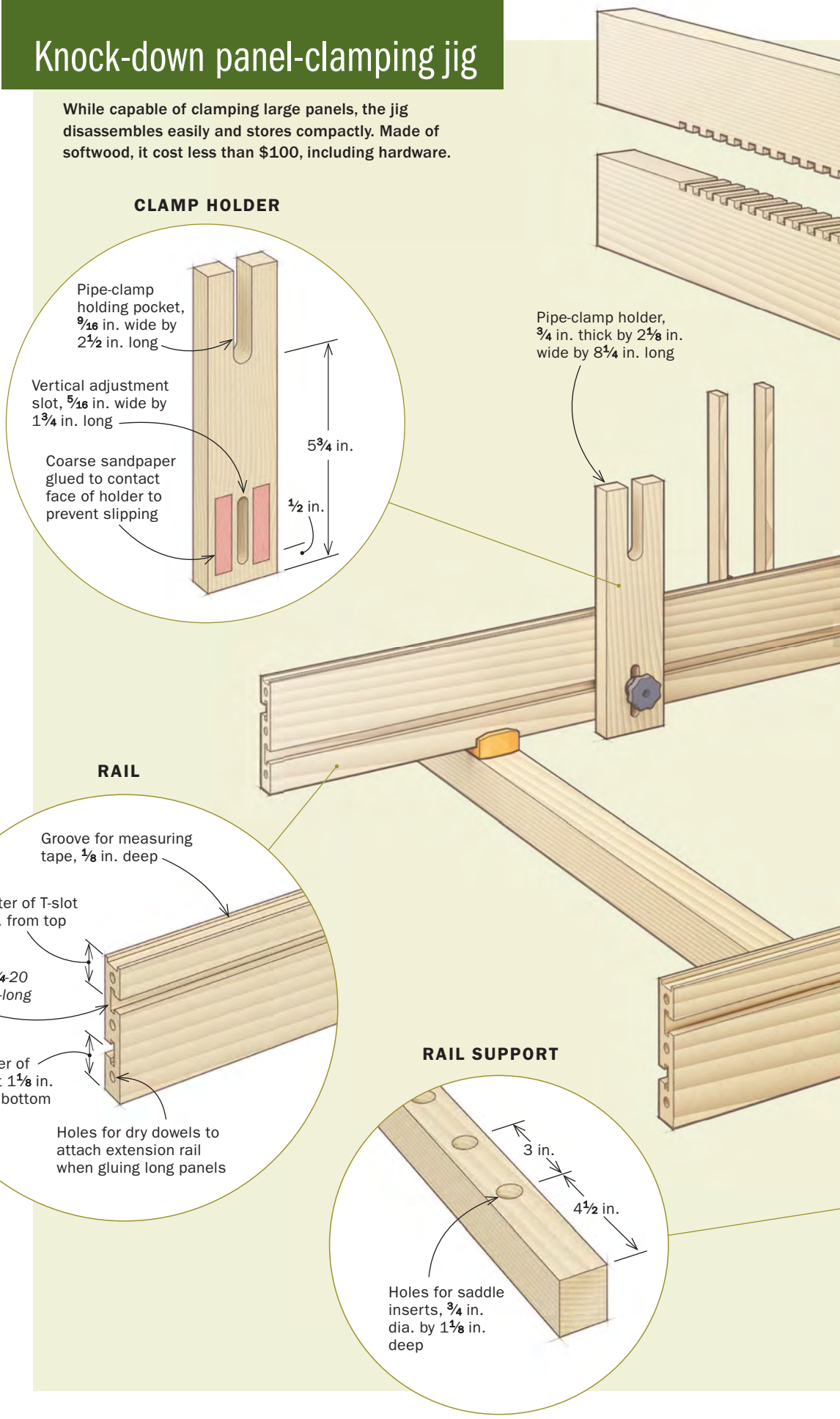
I made the jig with construction-grade softwoods. That's fine, but I recommend making the rails out of maple for smooth, long-wearing T-slots. The T-bolts and clamping knobs are available from most woodworking equipment suppliers, and the cost of all the components (excluding the clamps) was less than $100. The design is based on the use of pipe clamps, but the clamp holders could be modified for bar clamps instead.

Assemble the jig and get gluing

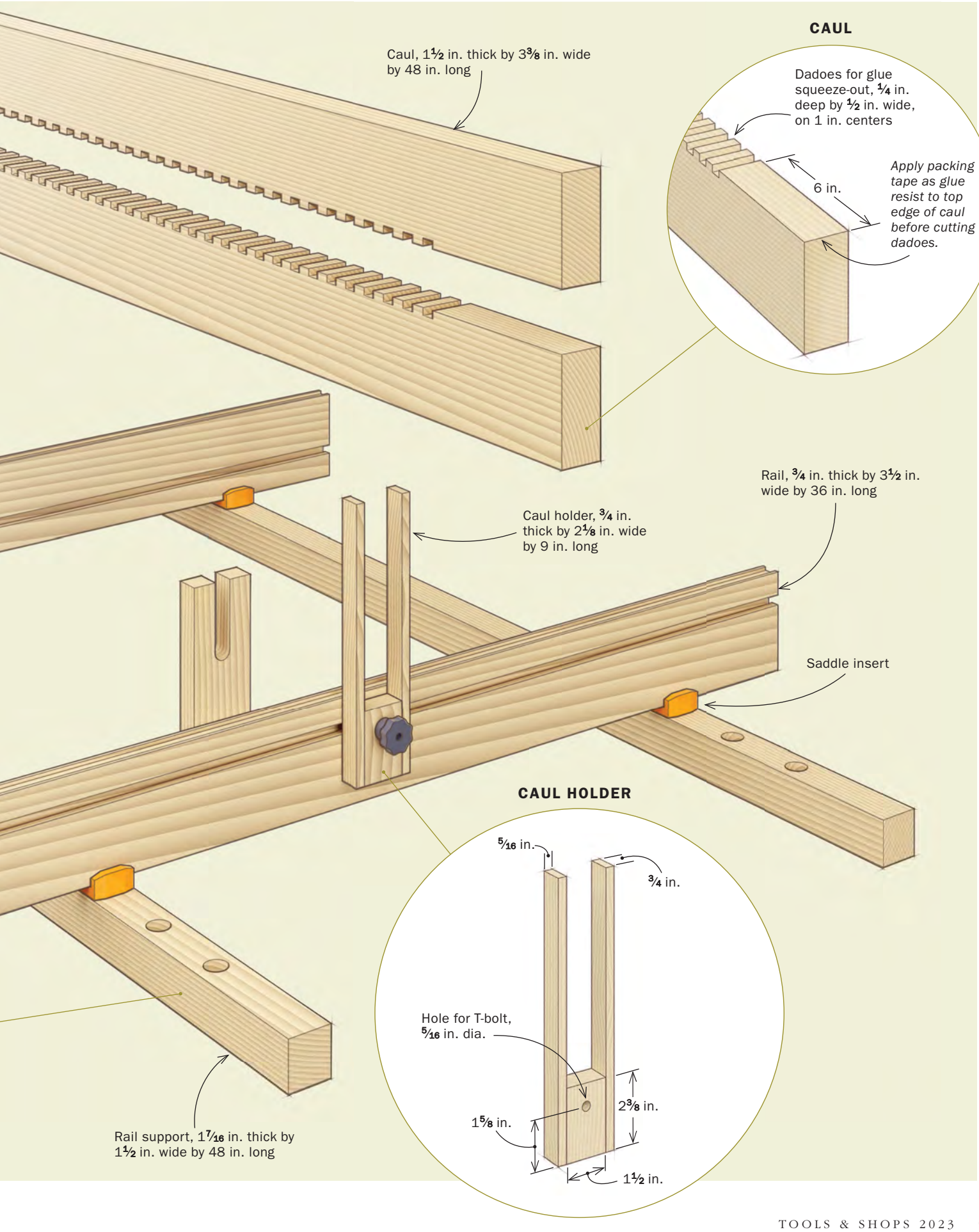
To set up the jig, lay out the rail supports about 24 in. apart on a flat and level table or benchtop and clamp them in place. These supports could be clamped to a pair of sawhorses instead; if they are, they should be shimmed so all four corners are level. Also, if you

Knock-down panel-clamping jig

While capable of clamping large panels, the jig disassembles easily and stores compactly. Made of softwood, it cost less than $100, including hardware.



Drawings: Dan Thornton



Making the jig components

RAIL SUPPORTS

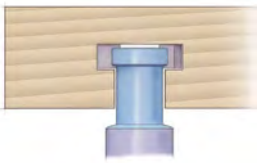
After milling the rail supports, McIvor drills them to accept plastic saddle inserts.

plan to use the jig on sawhorses, I would make the rail supports a bit stouter to minimize deflection.

Next, insert plastic saddles into the holes in the rail supports, and set the rails in the saddles. Slide T-bolts into the grooves in the rails and attach the pipe-clamp holders and the caul holders with their respective clamping knobs. I position caul holders at each end of the panel boards I'll be gluing and put clamp holders close to them. I space other clamp holders between them so the clamps will be on roughly 6-in. or 8-in. centers.

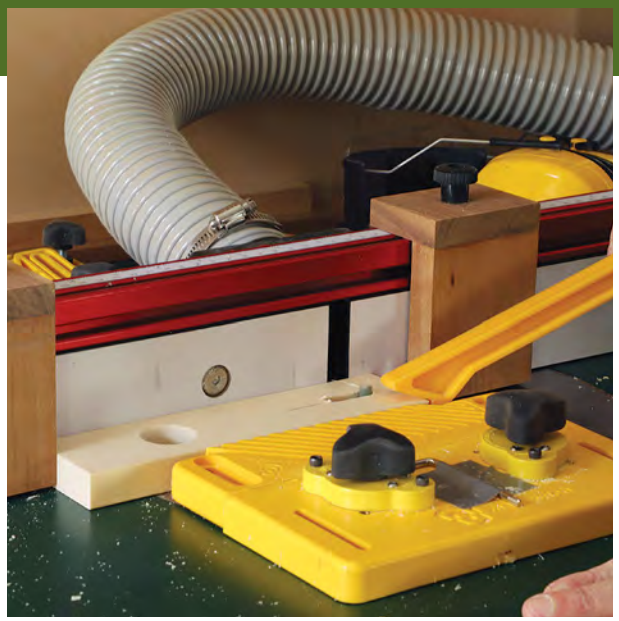
Place the bottom cauls in their holders and adjust the holders so the cauls are square to the rails. Insert pipe clamps into their holders and shift the holders side to side, if need be, so the pipes are square to the rails and equally spaced.

RAILS



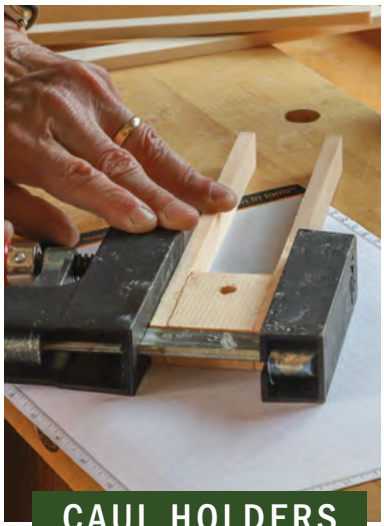
Mill the T-tracks. *The rails have T-tracks routed into both faces for the clamp holders and the caul holders. McIvor cuts them in two steps, first routing a slot with a straight bit (top), then following with a T-shaped bit (bottom).*

Tale of the tape. *To simplify aligning the pipe clamp and caul holders, McIvor epoxies a measuring tape into a shallow groove along the top of both rails.*



CLAMP HOLDERS

Create the adjustment slot and clamp pocket. *Using stops to limit travel, McIvor routs a slot in the clamp holder that will permit vertical adjustment. Having previously drilled a 1-in.-dia. hole in the clamp support, he cuts two kerfs on the bandsaw to complete the U-shaped pocket for the pipe clamp.*



CAUL HOLDERS

Block and sticks. *To make the caul holders, McIvor glues two slats to a block pre-drilled for the T-bolt.*

NOTCHED CAULS

A group of cauls getting dadoed. *McIvor routs a series of dadoes along one edge of his cauls to make it easier to avoid contacting gluelines when assembling a panel.*

Lay one of the boards you'll be gluing onto the bottom cauls and raise or lower the front pipe-clamp holders so the clamp screw lines up with the center of the board's thickness. Adjust the rear clamp holders too, so the pipes are level front to back. Then clamp the holders tight to the rails.

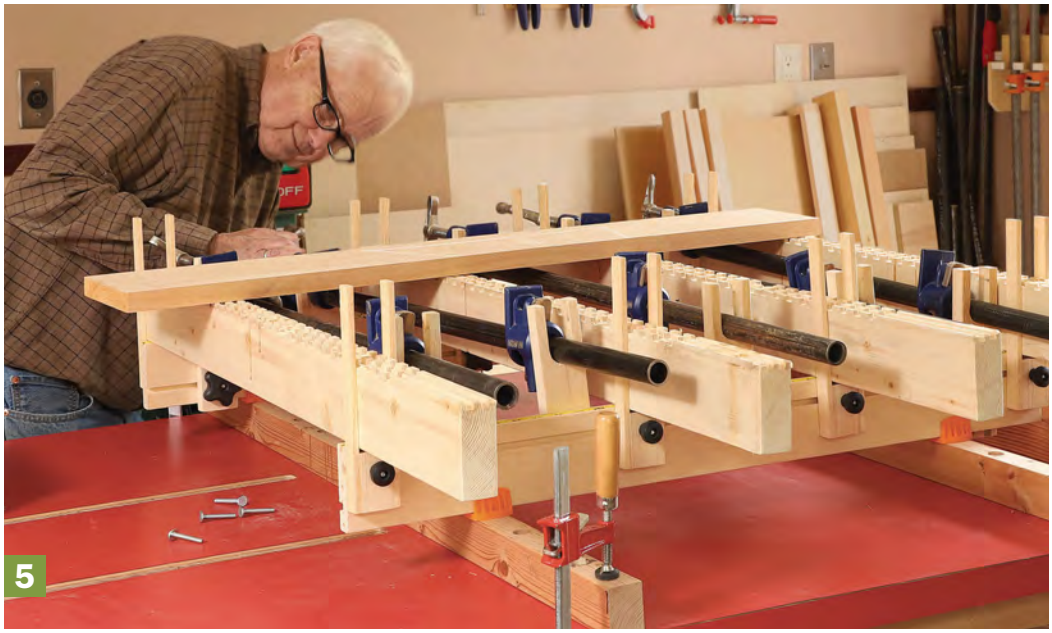
After putting the rest of the boards to be glued onto the jig, slide the bottom cauls fore and aft so their dadoes are located under the edge joints of the glue-up. Depending on the widths of the panel

Setting up the jig

Foundation. *After clamping the rail supports to the assembly table, McIvor lays his panel boards in place to rough out their spacing, then presses in the saddle inserts.*

Caul holders. *With the rails in place, McIvor slides caul holders into position along the T-slot.*

Clamp holders, then cauls. *Next, the clamp holders are installed, using the T-slot on the opposite face of the rails. Then the bottom cauls are dropped into their holders.*



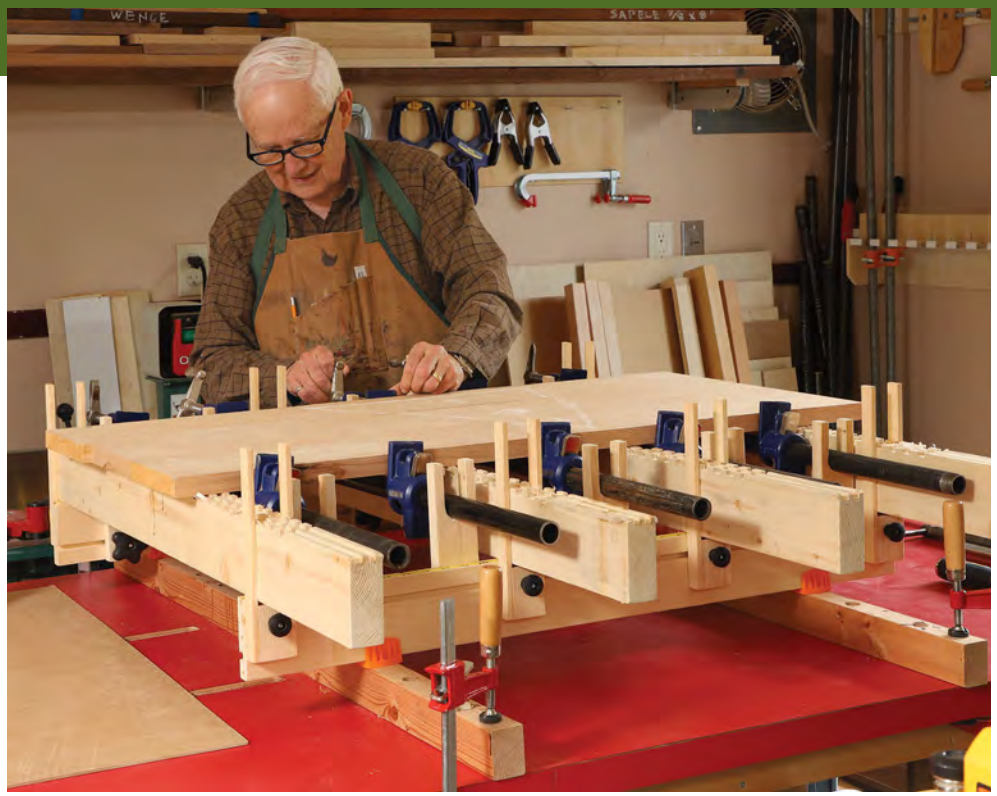
Vertical adjustment. *With one of the panel boards laid across the bottom cauls, McIvor adjusts the height of the clamp holders so the clamp screws are centered on the thickness of the plank.*

boards, it may not be possible to align all of the gluelines; just align as many as you can. Finally, set the top cauls across the panel boards and be sure there is sufficient space to insert the caul clamps.

Now, if all looks good, you're ready to roll on the glue and apply some light, uniform pressure with the pipe clamps, starting at the center. Lightly tighten the F-clamps on the cauls, again working from the center to the ends of the panel. Check for panel flatness under the end cauls, and then tighten the pipe clamps all the way, again working from the center out to the ends. □

Alan McIvor is a retired pulp and paper engineer and an avid woodworker in Vancouver, B.C., Canada.

Gluing a panel



Pressure and adhesion. *After applying glue to the edges of the boards, McIvor flips them down and gently tightens the pipe clamps, beginning at the center and working outward.*

Clamping all cauls. *McIvor positions the top cauls so their dadoes are aligned with the glue joints and then uses F-clamps to hold them in place. Then he'll finish tightening the pipe clamps on the panel.*