A Curved Panel Niche

Mastering curved details in a shop setting

BY GARY STRIEGLER

Rarely do I build a stock plan for a home without the client making a few changes. Recently, clients asked us to grow the front section of their house by 4 feet to enlarge the master closet and the dining room. This bumped out the gable roof, but aside from requiring additional material, the framing didn't change much. The entry hallway, though, was now long and narrow, a little like a bowling alley. I decided to break up the long hallway wall with a recessed paneled niche that bumped into the dining room, which the added space had made wider.

For a unique look, I designed the niche to have a radius top. The framers built a 46-inch-wide-by-16-inch-deep recess in the hallway wall, and with the 9-foot ceilings, there was plenty of room for a header below the top plate. To let the header conform to the curve of the niche, I asked the framers to add a couple of 16-inch OSB rippings below the structural header to create a hollow "sub-header" that I could cut out later to the curve of the niche. The best part—I would be able to build the niche in my shop and then install it in one piece.

PAINT-GRADE SOLUTIONS

The woodwork in the house was to be painted, so I was able to cut some of the curved parts, such as the casing, out of MDF panel stock. The other curved parts—the curved jamb rails and top rail and molding for the back panel—had to be strip-laminated out of wood. (Note that if the niche had been a stain-grade piece, I would have needed to glue the strips back together in the same order that they were cut from the board).

I cut the profiles for the panel molding for the back wall and for the casing on a Woodmaster Planer/Molder—a machine that can be set up with a knife that cuts molding profiles, instead of the standard straight planing knives. I probably could have purchased radiused flex molding for these trim parts, but making them from scratch gave me more design flexibility.

THE RIGHT RADIUS

To get the proper proportions for this type of arch, I like to use the width of the opening for the radius. The rough opening was 46 inches; allowing room for 1-inch-thick sides along with space to shim, I decided to make the inside of the niche 42 inches wide—so that became the radius for the curved top.

When you're strip-laminating, the more layers you use, the stronger and more stable the curved piece will be. In my experience, five layers work well for making a curved jamb or a panel molding. For the parts for the curved top section that I strip-laminated, I aimed for the total thickness of the five layers to be about $^{13}/_{16}$ inch. After the glue-up, I planed the pieces down to true the edges.

I am not comfortable enough with my bandsaw to cut the strips for the laminations; instead, I resaw the boards on edge slowly and carefully on my table saw. During this resawing, the boards occasionally pinch and bind and I rarely get a perfect cut. So I surface all the strips with a bench-top planer to just under $^{3}/_{16}$ inch per layer to make five layers that stack up to $^{13}/_{16}$ inch.

I screw heavy-duty angle irons to the bench top to make the radiused jig, and laminate the pieces together with carpenter's glue. Even with five layers, there is always a little spring back when I remove the clamps, so I make the parts for the curved top jamb first, and then use that jamb to lay out the curve for the back wall.

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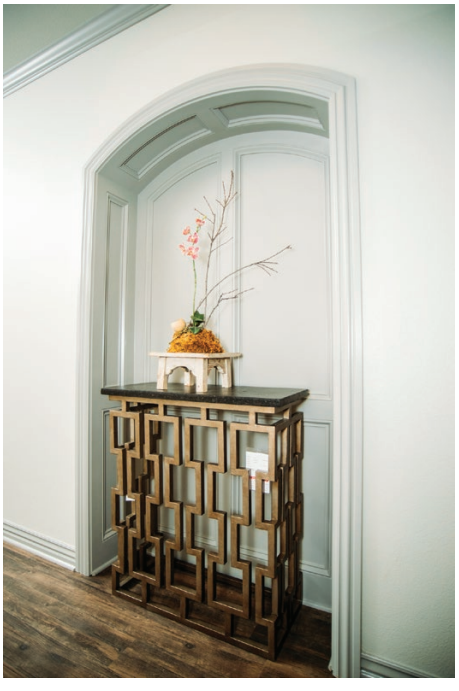
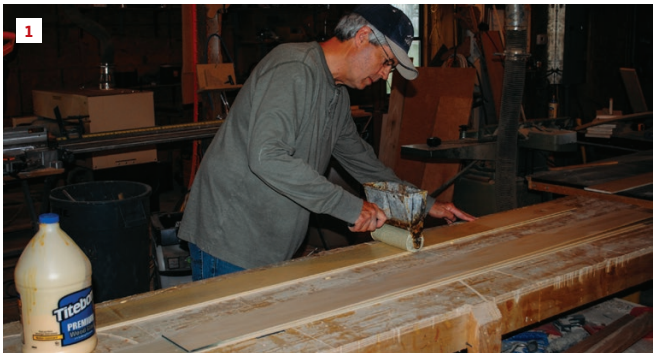
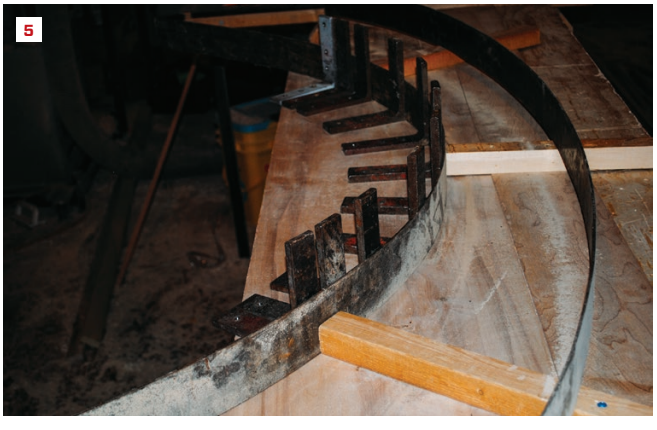
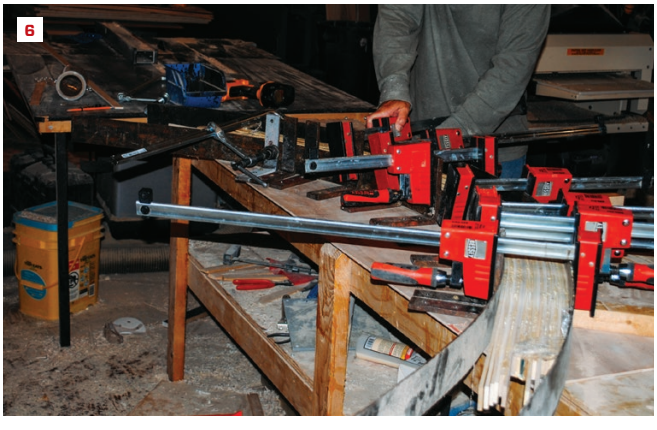


Photos by Gary Striegler

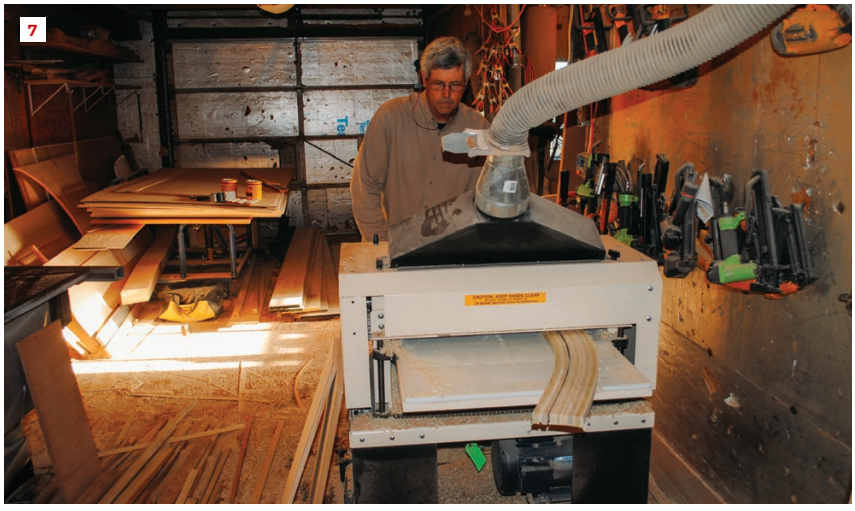


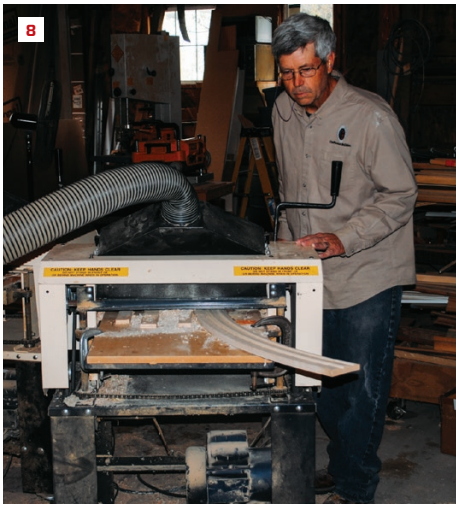
Arched jamb lamination. After resawing and planing five strips 5 inches wide by just over 1/8 inch thick for the arched jamb of the niche, the author applies carpenter's glue to each layer **(1)**. For the glue-up, he screws angle irons to the bench top 6 inches on-center at the proper radius. The strips are sandwiched between two 1/8-inch-thick strips of steel. The author then squeezes the assembly together with bar clamps on the angle irons, using a drill to quickly tighten the jaws of the clamps **(2)**.

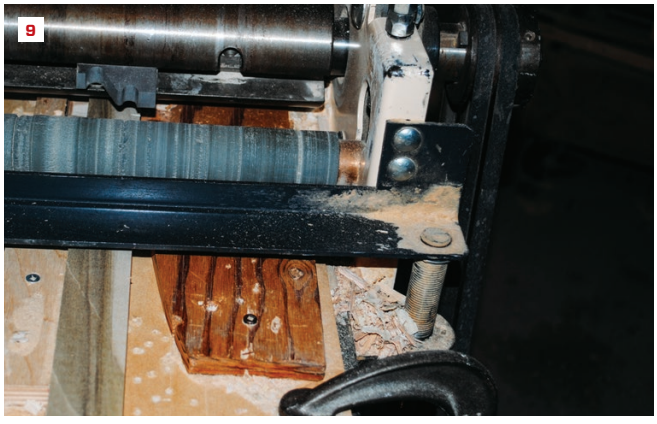


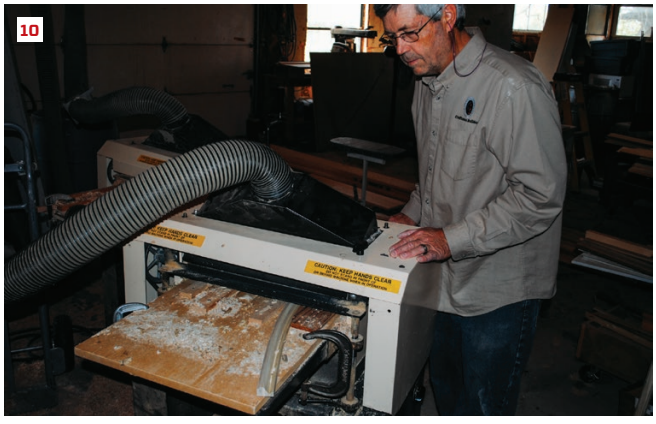


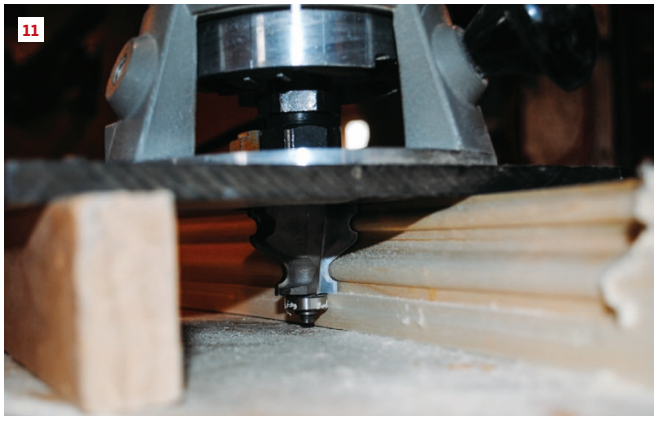
Back-panel rail and molding. After cleaning up the curved jamb, the author uses it as a template and scribes an arc 3 1/2 inches (the width of the back-panel rail) from the inside for the radius of the rail and the panel molding **(3)**. Angle irons screw in along that curve **(4)**. The rails for the back panel are glued on the flat, and 2x2 blocks raise up the strips to minimize the area of contact for the strips as the glue sets **(5)**. After milling the strips for both the rail and the molding, the author applies glue to each set of strips (with a dry layer between the two sets) and then places them together in the jig for the glue-up **(6)**.



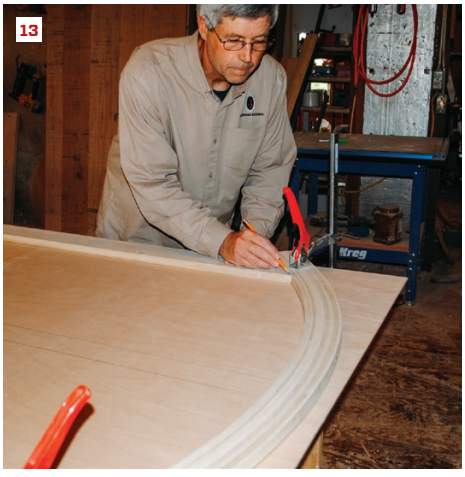




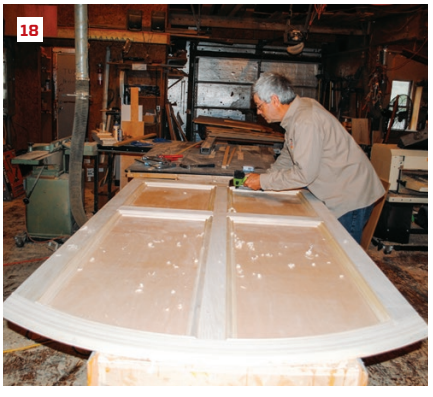




Milling the molding. The author planes the blanks for the curved rail and the panel molding with a Woodmaster Planer/Molder **(7)**. He attaches cutting knives to the machine and takes a pass to create the profile **(8)**. The cover is removed from the machine to show the setup for the panel moldings (both curved and straight) for the back panel **(9)**, which had to be profiled on the flat **(10)**. To cut the profile for the top curved molding on edge, the author chucked a bearing-guided profile bit into a router **(11)**. A plate attached to the router rides on a block at the same height as the trim stock to stabilize the router **(12)**.

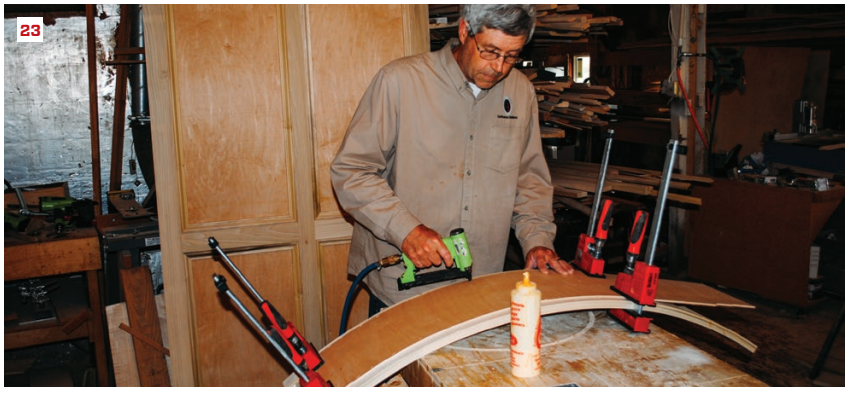


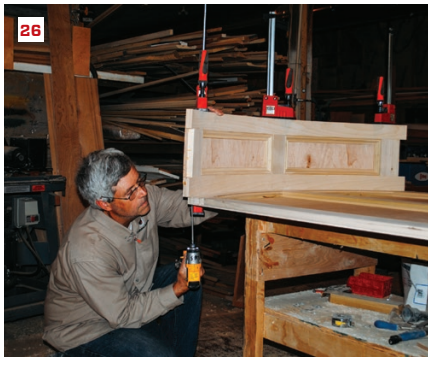
Assemble the back panel. To build the back panel, the author first scribes the tops of the stiles to the curved top rail **(13)**. Pocket screws and glue connect the frame pieces for the back panel **(14)**. When the panel frame is assembled **(15)**, the author cuts the tails off the curved top rail. He then glues the frame to the plywood back, flips the assembly over, and cuts off the excess plywood with a router.



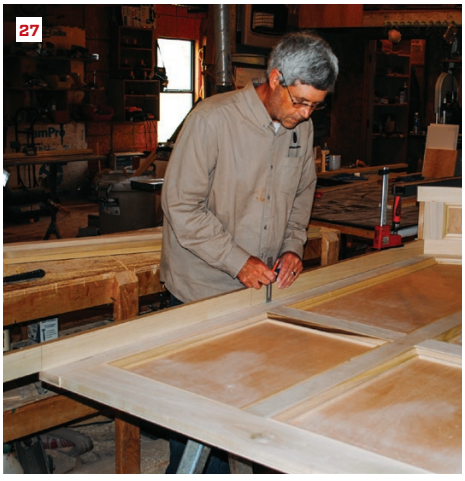
Trimming out the back panel. To apply the panel moldings to the back, the author first scribes the curved intersection of the molding using a short scrap **(16)**. This allows him to measure and cut the intersecting angles precisely. Clamps hold the curved moldings in place while he nails in the rest of the panel molding around the top sections **(17)**. Panel molding around the bottom sections completes the back panels **(18)**.

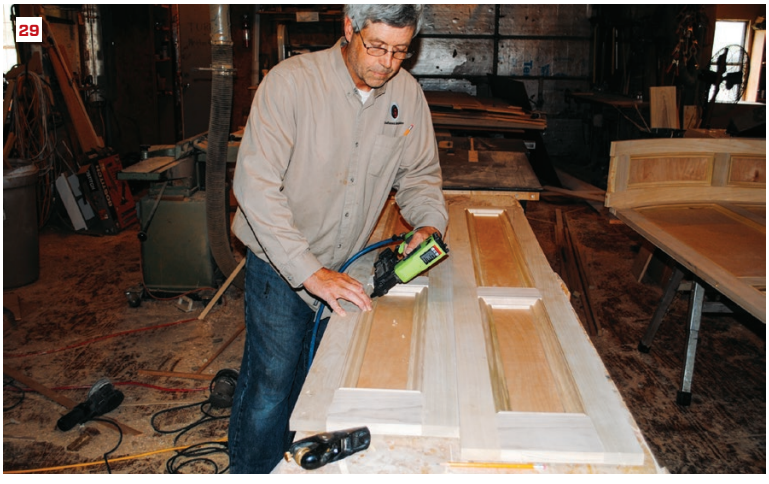
Curved jamb layout. The author positions one of the rails for the curved jamb on the back panel, measuring to a precise distance at all points **(19)**. He then marks out the positions for the center stile **(20)**, along with the positions for the side stiles. These marks also provide a side-to-side index of the rail to the back panel for aligning after the arched jamb is assembled. Stacking the second rail on top of the first, he draws the marked positions on both curved rails **(21)**.



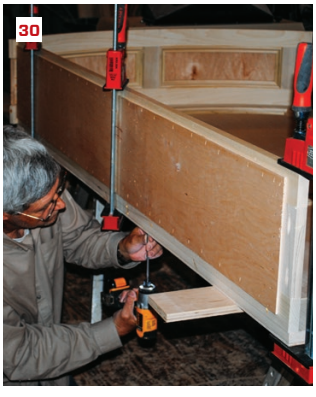


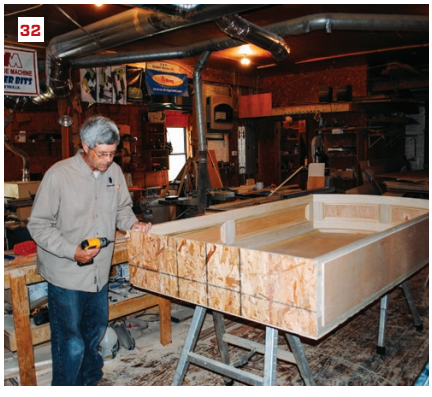
Curved jamb assembly. Pocket screws join the end stiles to the curved rails for the curved top **(22)**. With those in place, the author flips the assembly and attaches the plywood back using glue and staples **(23)**. Next, he cuts and fits the panel molding for each side, using the center marks as guides **(24)**. He leaves the middle stile for last so that he can test-fit the molding as it is being installed **(25)**. After placing the completed curved top on the index marks, he screws it to the back **(26)**.



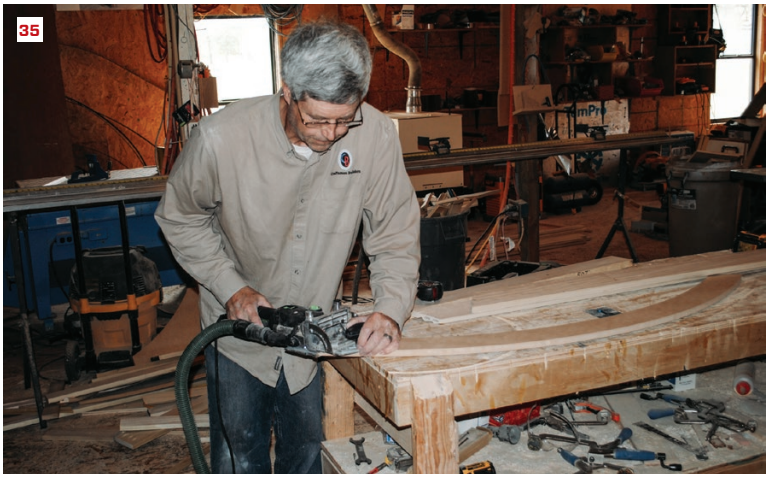


Building the side jambs. For the sides of the niche, the author angles the end of one of the rails to fit against the curved top and then indexes its position on the back. On this rail, he marks the location of the bottom and the position of the center stile **(27)**. As he did with the top, he transfers his marks to the second rail **(28)**. Assembly of the flat sides is straightforward. After pocket-screwing the frames together and attaching the plywood backs, the author glues and tacks in panel molding around each of the rectangular sections **(29)**.





Attaching the side jambs. The author positions the sides of the niche on the back and clamps them in place. He then attaches the sides with screws driven from the back **(30)**. Before joining the top to the sides, he aligns them with a framing square to make sure they join at a precise right angle **(31)**. To keep the bottom of the niche stable for cutting the trim and for transportation, the author screws a piece of OSB to the bottom edges of the sides and back **(32)**.



Prep the casing pieces. Temporary winglets attach at right angles to the sides to support the casing while the pieces are cut and fit **(33)**. The author can then fit the curved top casing (made from MDF for this paint-grade project) to the sides on a stable, flat surface **(34)**. The author will join the casing together with dominoes after he installs the niche, so he cuts those slots while still in the shop **(35)**. The casing pieces are then taken to the jobsite unassembled along with the completed niche.

Niche installation. The author slips the completed niche into the prepared hole and then plumbs the assembly and shims it in place much like a prehung door frame **(36)**. After attaching the niche to the framing on both sides of the opening, he nails on the jamb casing **(37)**. Next, he applies glue to the casing joints, inserts dominoes, and slides the curved top casing into place. A sliding clamp aligns the casing precisely before it's nailed into place (see "Installing Arched Casing," Mar/16) **(38)**.