A Different Approach to Frame-and-Panel Doors

A three-layer sandwich takes the place of complicated joinery

BY GARY STRIEGLER

A good carpenter can make almost any wooden thing that goes into a house. However, I've learned that just because I can make something doesn't necessarily make it profitable or in my client's best interest.

This principle came to mind recently when a client asked me if I could make a couple of frame-and-panel doors with a panel detail that matched the beaded design in some of her cabinets. Doors are typically built in specialty shops, and for good reason. Most frame-and-panel doors are cope-and-stick joined, where the pattern molded inside the rails and stiles holds the panels in place and the ends of the rails are machine-coped to butt to the stiles. Dowels reinforce these joints.

Mortise-and-tenon joints are an alternative, but neither method lends itself to small jobs. Cope-and-stick doors call for a shaper and some expensive cutters, and mortise-and-tenon doors take either lots of machines or lots of time.

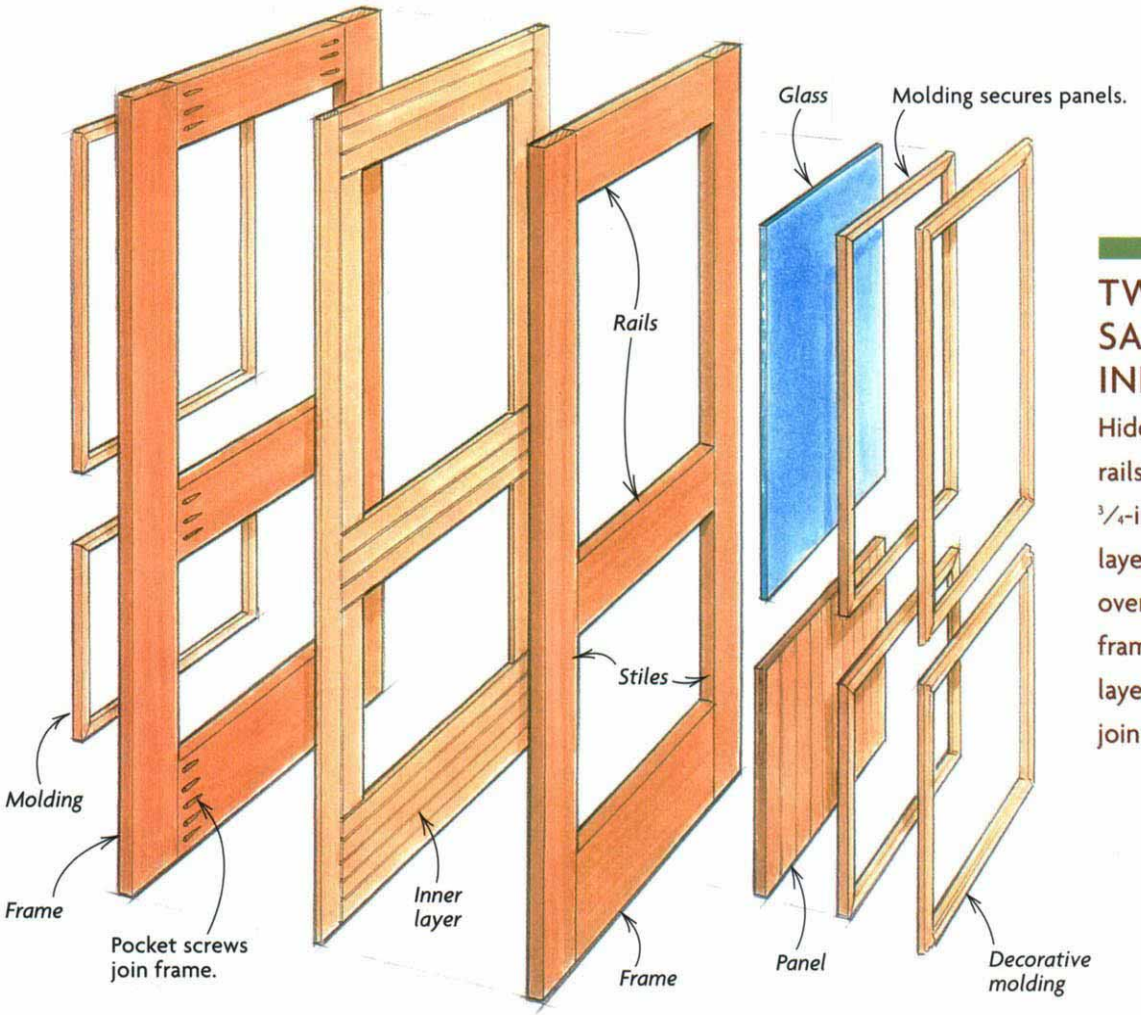
However, I've used a third method that requires minimal tooling to build doors. Using this method, a front frame and a back frame are glued together around a thin inner layer that acts as tenons to join the stiles and rails of the two frames. Because only a few doors were involved in this project, my client's unusual detailing would have made using a door manufacturer expensive. In this case, my unconventional method made making doors both profitable and in my client's best interest. □

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Sometimes, building a door makes sense. This site-built door, with a beaded panel that matches the cabinets, would have cost hundreds of dollars more at a millwork shop.

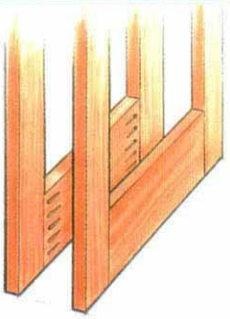
Photo this page: Rick Green



TWO FRAMES SANDWICH AN INNER LAYER

Hidden pocket screws join the rails and stiles of a pair of ¾-in. thick frames. A center layer of ¼-in. thick material overlaps the joints in the frames. Once glued in place, this layer acts much like a tenon to join together the door.

BEGIN BY BUILDING TWO FRAMES



It's critical to select dimensionally stable, straight, flat wood for the frames. For paint-grade work, the author prefers poplar. Precise rail and stile cuts make a square door, so double-check your saw settings.







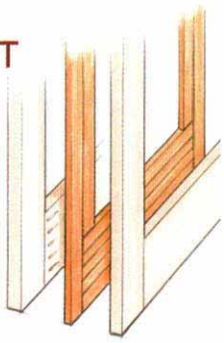
Flat doors are built on flat tables. By checking level diagonally from each corner, the author ensures a flat table. Because the door will be glued and clamped on this table, its flatness is critical.

Pocket screws make sturdy frames. A jig (Kreg Tool Co.; www.kregtool.com; 800-447-8638; $140) guides the drill that bores holes for screws that join the stiles and rails from behind.

Locking pliers align the rail and stile faces. Screws driven into the bored pockets tighten the stile-to-rail joint in a way that's analogous to toenailing.

Drawings: Dan Thornton

HERE'S THE CHEATING PART



A layer of thin stock glued between the frames effectively creates tenons that lap the stiles. Outer strips that run parallel to the stiles hide the tenon layer's end grain.

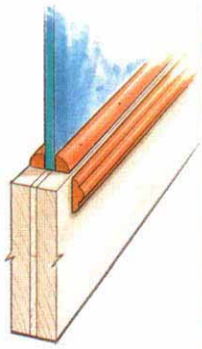


Brads keep the splines from sliding on the glue. The inner layer is composed of multiple strips ripped from scrap. As long as enough are used, their width doesn't matter much.

Marrying the frames. With the inner layer glued and tacked, the second frame is placed atop the first.



HOLDING IN THE PANELS



One of the complications of traditional frame-and-panel doors is that the panels are captured by the frame during glue up. Inadvertently gluing the panels to the frame can cause them to crack. The author avoids this trouble by holding the panels in place with moldings.

An applied quarter-round molding holds the panels in place. Using a combination square, the author maintains an even reveal as he affixes molding to frame with a brad gun.







Air-powered impact driver speeds clamping. Hex nuts welded to clamp screws accommodate the driver. A few brads keep the frames from sliding out of place.



A quick pass with a flush-trimming router evens up the edges. Most of the glue squeeze out had been scraped off to avoid fouling the bit's bearing.



Beaded-plywood panel drops into place. Other panel styles—raised panels or tongue-and-groove boards, for example—easily can be substituted for plywood.



Additional face layer of molding is a Southern colonial touch. A flat panel and a simpler molding could give this door a Craftsman look. Whatever the molding, it holds in the upper glass panel as well.