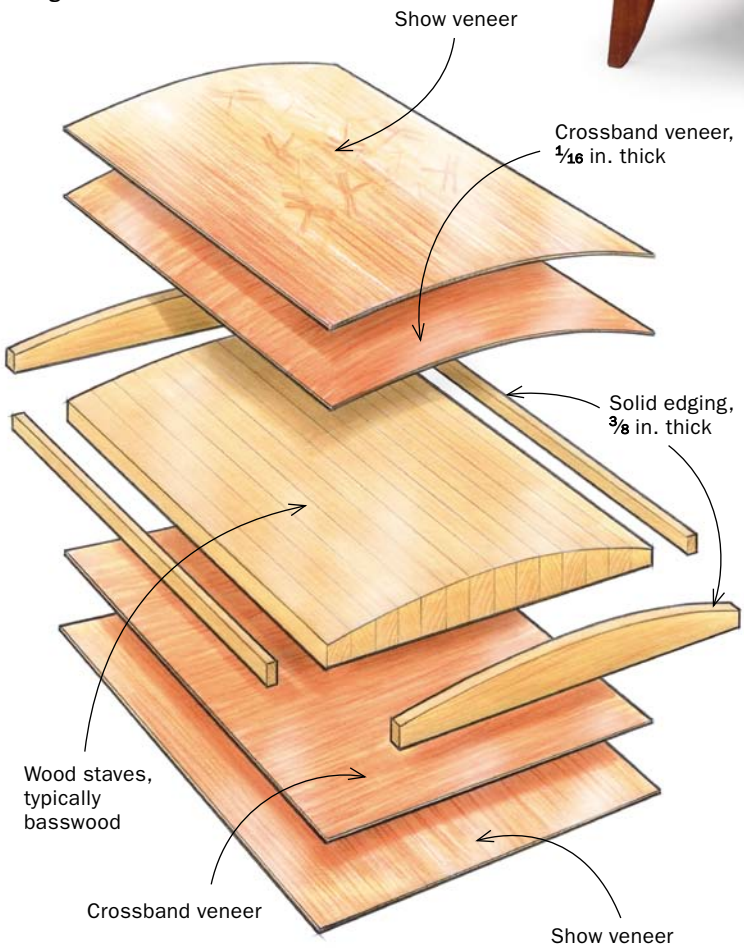
Curved doors, simplified

VENEER OVER SOLID STAVES IS THE KEY TO SUCCESS

BY TIMOTHY COLEMAN

LUMBER-CORE PLYWOOD WITH A TWIST

Coleman's curved-front doors feature a solid-wood core sandwiched between veneers. The first layer of veneer on both sides is oriented perpendicular to the core's grain, which effectively restricts movement of the staves and creates a stable panel. The assembly is edged with solid wood.



Much of my work consists of veneered surfaces. As a substrate for flat panels, I use high-quality veneer-core plywood, but when I am working with curved or tapered surfaces, thick sheet goods don't fit the bill. In the past I have bent multiple layers of thin flexible plywood or resawn veneer over a form to create a substrate. But I often had a difficult time keeping the finished panels from distorting. With close-fitting cabinet doors, even a slight twist is quite noticeable. I am always open to new techniques, but it was an old one—and a step back in history—that led me to an alternative method.

In 2011 I had a commission to re-create two large tables for a Frank Lloyd Wright house. The original tabletops were veneered over a lumber-core substrate, with a thick, mitered solid-wood edge around the perimeter. You'd think that any movement across the width of the top would have broken apart the miter. But on this 100-year-old table, the miters were as tight as the day they were assembled.

This experience convinced me of the stability of lumber-core plywood, and led me to think about the possibilities of using it in my own work. I realized that a solid-wood core could be cut and shaped to suit a variety of curved and tapered forms, and I have since used it successfully on numerous projects.

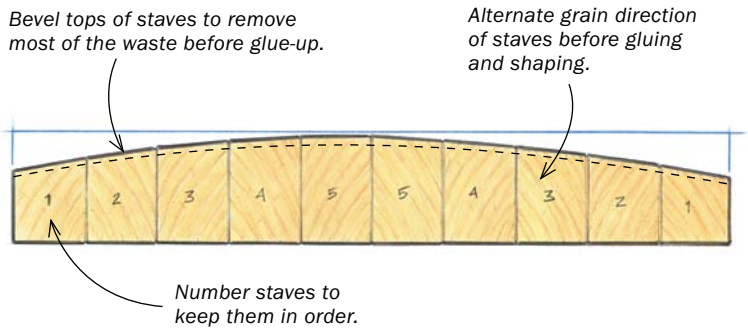
Here I'll illustrate how I make curved doors using shopmade lumber-core plywood. The process is relatively simple, and because only the front of the door is curved, the jobs of fitting and installing hinges are no more difficult than on a flat door.

Timothy Coleman is a renowned furniture designer and maker in Shelburne, Mass.

Top photo: Dean Powell; drawings: Dan Thornton

Build the core

When making the core, Coleman uses a full-size drawing of the door panel's cross section to mill the stock to thickness. He uses that same drawing to guide the shaping and to keep track of parts.

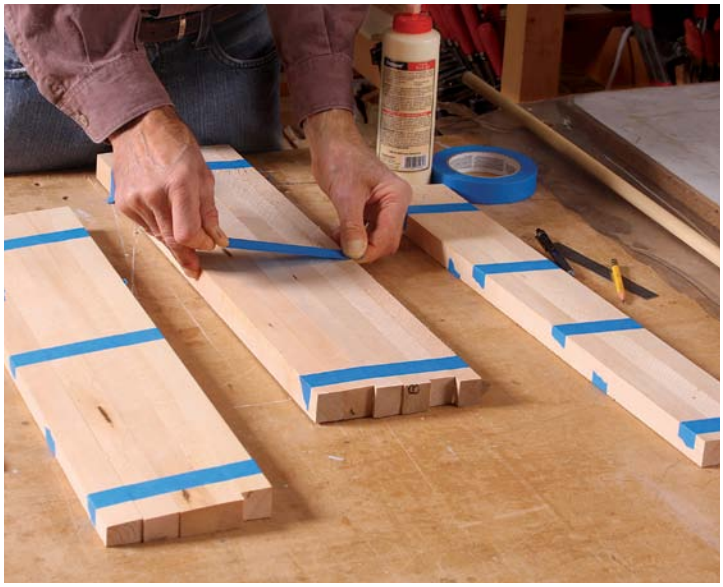


Rip 'em. *After milling the stock to thickness, cut enough 1-in.-wide staves to make the door panel. Rip plenty of extra staves and discard any that are excessively bowed or twisted.*

Get an angle on the staves. *Set a bevel gauge to closely match the curve along the top of each stave.*

Each one gets a mark. *Transfer the bevel angle to the end of the stave. Number the stave at this time to match the drawing.*

Remove the waste. *After marking all the staves, get a head start on the shaping by beveling each one at the appropriate angle.*



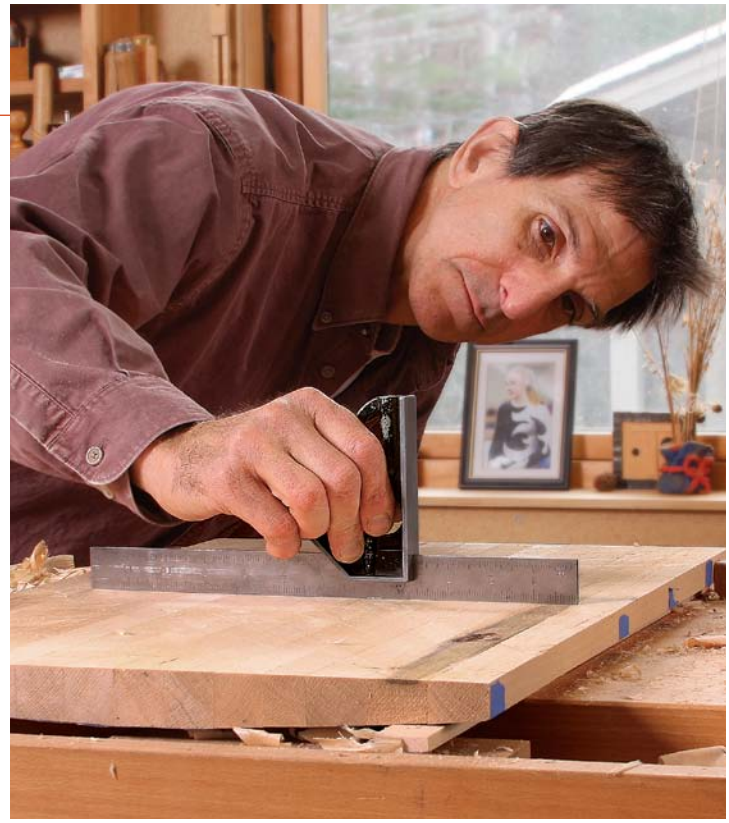
No clamps needed. *Coleman glues the staves together with just a few small beads of glue and uses tape rather than clamps. This method leaves small gaps, which allows for fractional movement between the staves. He works quickly, assembling the panel in smaller sections by stretching the tape across the joints. Then he glues the subassemblies together.*

Photos, except where noted: Thomas McKenna

Create the curve with hand tools

To flatten the back and to shape the curve in front, Coleman uses a combination of handplanes, spokeshaves, scrapers, and coarse sandpaper. The curve and thickness must be right on the money, because once the crossband layer goes on, no further shaping is possible.

Flatten first. *Use a smoother or a jack plane to flatten the back. To keep the core from rocking, Coleman places shims under both sides. Don't worry about getting a perfectly smooth surface; it just has to be flat. Check your progress with a straightedge (right).*



Fair the face. *Use handplanes to shape the curved face of the core. For smaller panels like this one, Coleman uses a block plane. Then use coarse sandpaper (80-grit) to finish it off.*

Feel for high spots. *You don't need a glass-smooth surface but there can't be any high spots or bumps. The best way to check for these imperfections is with your hand.*

Check for consistency. *The panel's thickness along the edges must be consistent to avoid problems when you hang the door. The most accurate way to check them is with calipers.*

Veneer the core

Once the panel has been prepped, Coleman adds crossband veneers and then the edge-banding. After that's done, the panel is ready for the final show veneers.

Crossband comes first. *Veneer both sides of the panel, with the veneer's grain running perpendicular to the core. If you have to join several pieces of veneer to make this sheet, don't worry about perfect edge joints. This isn't a finished layer, so a few spots of glue and some blue tape for clamps will suffice.*

Bag it. *Clamp the veneer to the panel using a vacuum press. Leave the assembly in the bag for a few hours, then take it out and let it cure overnight. Stand it on edge to allow air to get at all sides.*

Band it. *After the assembly cures, trim the edges of the crossband veneer and apply the solid edge-banding to the core with yellow glue. Coleman uses blue tape as clamps for the job.*

Trim it. *Use a block plane to trim the edging flush. Then lightly sand the surfaces to remove any ridges in the crossband veneer seams. Now you're ready to apply the final face veneer to both sides.*