Contemporary Wall Cabinet

Kerf-bending: an elegant solution for curved case sides

BY PHILIP MORLEY

Photos: Jonathan Binzen

A few years ago, I built a long cabinet with tapered sides that curved outward at the top. I made extra parts, planning to build a second identical cabinet. But when I happened to see the extra sides flipped around on my bench, I envisioned instead a smaller wall cabinet with sides that curved inward at the top. I did a rough sketch, working out the asymmetrical arrangement with one section left open, and went right to building it. Since then I've returned to build it a number of times, altering the design slightly with each version.

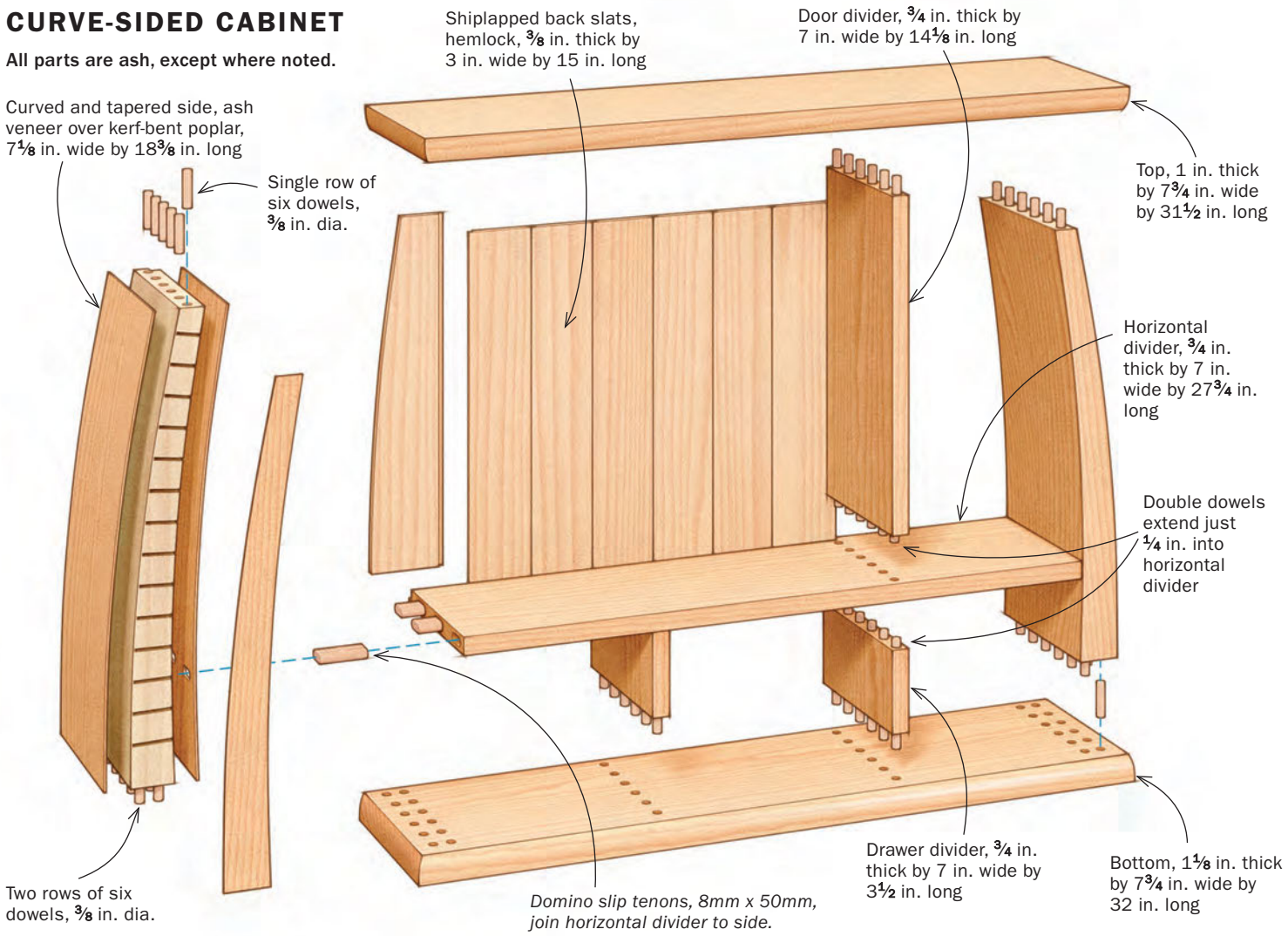
I usually design things and then figure out how to build them. That's what happened with the curved tapered sides. Kerf-bending them came right to mind because as an apprentice I had built stairs with curved risers, and we kerf-bent those. Then I remembered an article by David Haig ("Curved Panels for Furniture," *FWW* #231) that discussed the technique. I followed his method closely and found it very effective; the main change I made was in blocking up the tapered core to make kerfing simpler.

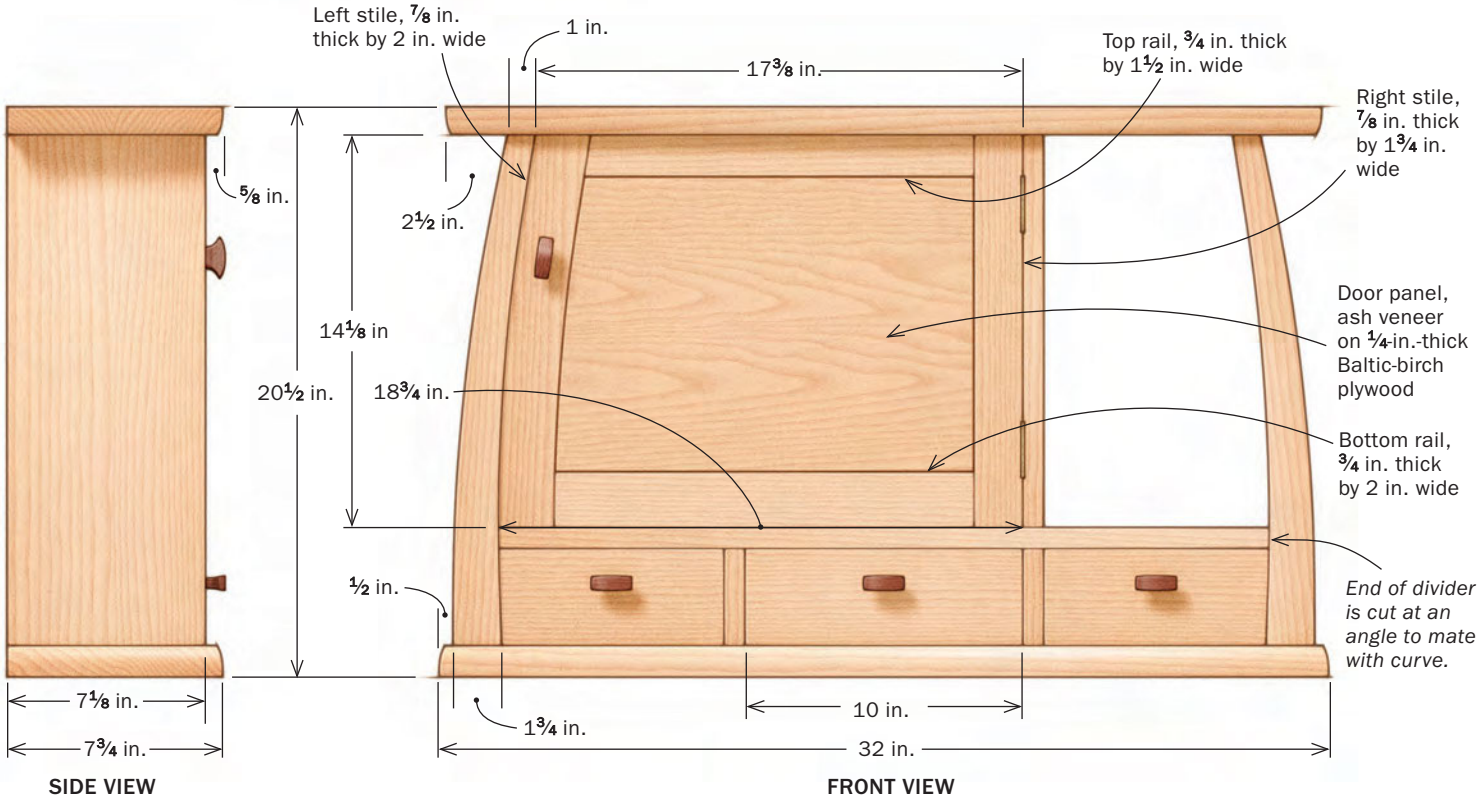
I think of this cabinet as having a slightly Japanese teahouse feeling: as something to make you feel good when you walk into the room. It's a place you might want to display or store favorite pieces of craft or other keepsakes. With that in mind, I leave the drawers without stays, so you can pull them right out of the case to examine what's inside (and perhaps even get a closer look at their dovetails).

Philip Morley builds furniture in Wimberley, Texas.

CURVE-SIDED CABINET

All parts are ash, except where noted.





Drawings: Christopher Mills

KERFING THE CORES

The heart of this cabinet's design is its curved and tapered sides. I make them by kerf-bending a core of solid poplar and then veneering over it with shopsawn ash. Because I use some of the same veneer for edging, the finished sides really have the look of solid ash. And because the core is solid wood, I can make the other case parts from solid wood and they'll all move together.

Before I begin kerfing, I make an overwide poplar blank and taper it on a jig in the planer. Then I rip two strips off the blank, turn them end for end, and adhere them to the blank. Doing this takes a lot of fussiness out of the kerfing process. Typically, when kerf-bending a tapered part, you need to readjust the blade height after every kerf you cut. But with the two tapered strips beneath the workpiece, I can cut all the kerfs with the blade at the same height, then just remove the strips.

First taper the core. *Morley runs his poplar core stock through the planer on a ramped jig. The blank is oversize both in length and width.*

Rip a pair of wedges. *To simplify the kerfing process, make your core blank overwide and, after tapering it, rip a wedge-shaped strip off each edge.*

Reverse the wedges and tape them to the blank. *Using double-sided tape, attach the tapered strips to the tapered core with their thick end at the core's thin end. Apply clamp pressure briefly along the strip to be sure the tape's grip is firm.*

Cut kerfs in the core. *With the inside face of the core facedown and the blade raised to within ⅛ in. of the outside face, Morley uses a dedicated sled to cut the slots that will allow the core to bend (above). After cutting all the kerfs, remove what remains of the wedges (right) and scrape off any residue from the tape.*

Veneering the core. *Morley glues shopsawn ash veneer to both the inside and outside faces of the poplar core. He sliced the veneers from a riftsawn ash board and milled them to 3/32 in. To get the full width of the side, he edge-glued two veneers.*

Once the core is kerfed, it's super flexible, so bending is a breeze. I made the bending form from ¾-in. plywood. It has six ribs that are curved along one edge; I used small plywood blocks at each end to space the ribs apart. To make the ribs identical I first made a master rib by sawing and sanding to a line, then used that to template-rout the other ribs. After gluing and stapling the ribs and spacer blocks together, I covered the curved face of the form with a piece of ¼-in. Masonite.

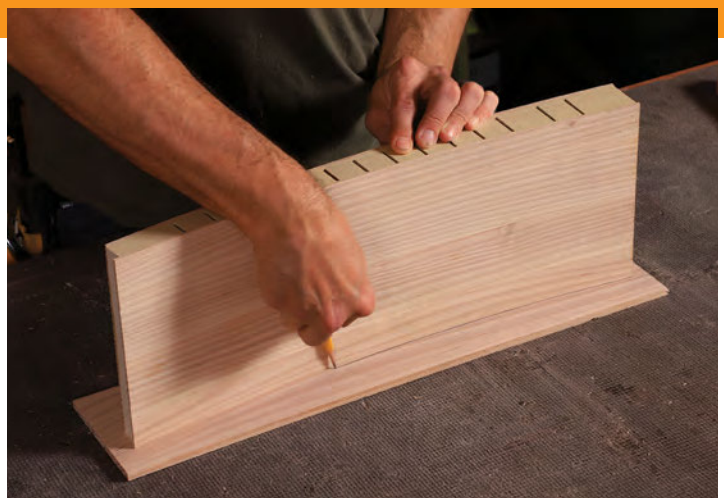
When I was ready to do the bend, I used stretch wrap to clamp my front and back veneers to the core and then used more of it to clamp that sandwich to the bending form. Then I put the whole package into the vacuum bag.

Once it was cured, I cut the core to width and glued on the edge veneers. Crosscutting the completed sides to length was a little tricky, since there were no flat reference surfaces to work from. I laid out the cuts in pencil and used support blocks to elevate and stabilize the workpiece at just the right position for the cut.

Clear clamps. *Bind the veneer tightly to the core with stretch wrap, and then wrap the whole thing to the bending form.*

Gaining an atmospheric advantage. *Morley puts the wrapped package—core and bending form—into his vacuum bag to apply final, even clamping pressure.*

Clean the curved edges. *Once the kerfed bend is cured, joint one edge (left). With the convex side down and the jointed edge against the tablesaw fence, rip the side to width (above).*



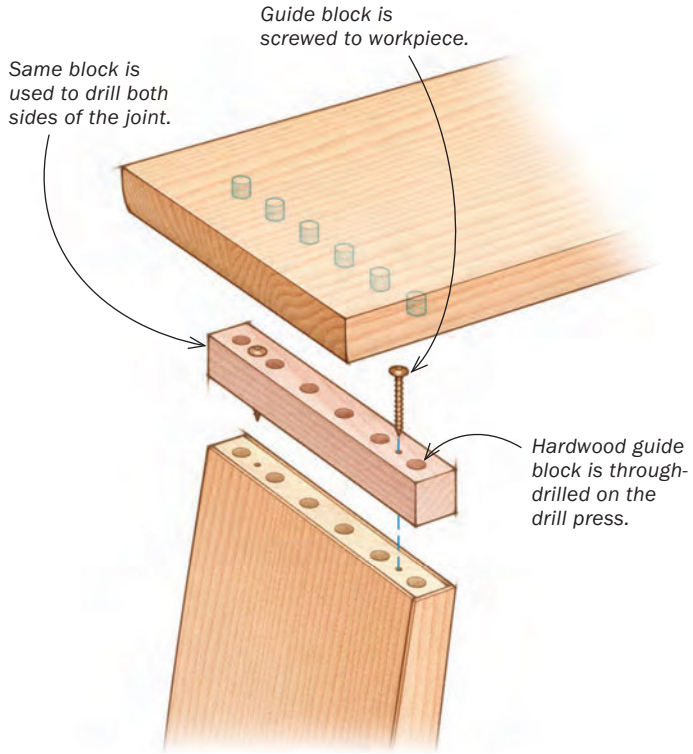
Size up the edging. *With the pencil's tip spaced away slightly, Morley traces the curves of the side onto a sheet of veneer. Before gluing on the edging, he cuts to the lines at the bandsaw.*

Trim the perimeter. *After gluing, Morley cuts off the excess edging at the router table with a flush-trimming bit. He'll tune up that trimming later with a handplane or scraper.*

Custom crosscuts. *With scrap blocks tucked underneath to support the side, Morley adjusts the blocks and the workpiece until his layout line is parallel to the square and aligned with the path of the blade, then makes the cut.*

Drilling for dowels. *After screwing the guide block in place on the bottom end of the side, Morley drills two lines of six holes with a 3/8-in. titanium twist bit. Afterward he removes the jig and uses a chamfer bit to break the edge of each hole. To drill for the dowels in the top of the side, he uses a different guide block, with just one row of holes (see drawing at right).*

DOWEL BLOCKS GUIDE THE DRILLING



Spacer aligns the jig. *To cut mating holes in the cabinet bottom, Morley uses the block with two rows of holes, aligning it with a long spacer (which is centered on the bottom) and an additional small spacer (left). To cut holes for the dowels that will link the side with the cabinet top (above), Morley uses the narrower guide block. He uses the same long spacer but does not need the small spacer.*

Dominos, not dowels. *Where the horizontal divider meets the curved sides, Morley uses Domino joints instead of dowels. For mortising into the side, he builds a right-angle platform to support the machine (left). And since the curved top of the Domino's fence won't seat squarely against the curving cabinet side, he attaches a straight scrap to the fence with double-sided tape. For mortising into the ends of the horizontal divider (right), a long piece of stock beneath the workpiece provides easy registration.*

Suss out the assembly sequence. *Using just a few dowels in each joint, Morley does a dry assembly, first connecting the drawer dividers to the horizontal divider, then adding the sides, and then the bottom.*

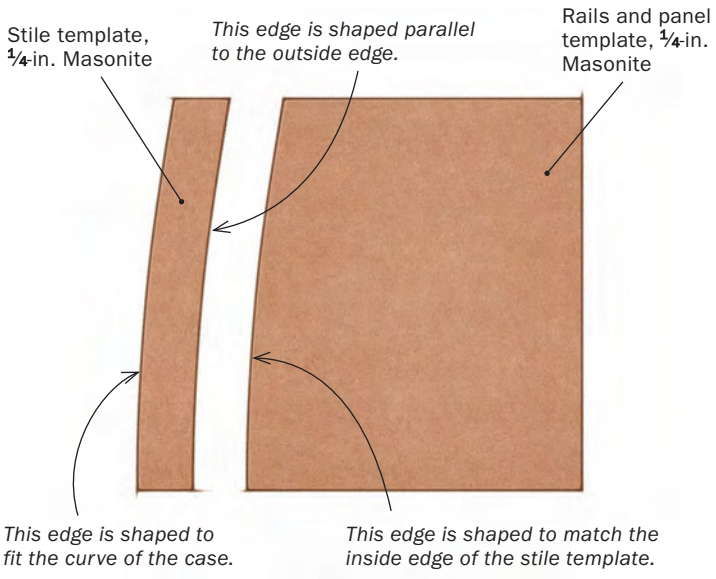
Bringing it all together. *After the dry-fit, Morley disassembles the case, masks off the joinery with tape, sprays finish on the parts, and advances to the glue-up.*

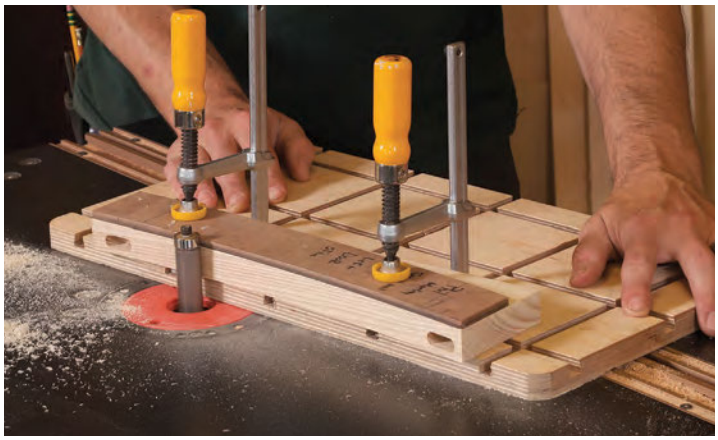
I used dowels for nearly all the case joints, making three different doweling blocks to guide the drilling. Where the horizontal divider meets the case sides, however, registering doweling blocks would have been complicated because of the curve, so I chose to cut Domino joints there. For the cuts into the side I built a quick L-shaped riser to hold the Domino level and at the right height. I also taped a straight scrap to the Domino's fence so that it would seat squarely against the cabinet side.

Rout a rabbet for the back. *To simplify rabbeting for the back, Morley waits until after final assembly and does the job with the whole cabinet riding on the router table. Before routing, he flushes up all the joints on the back of the case.*

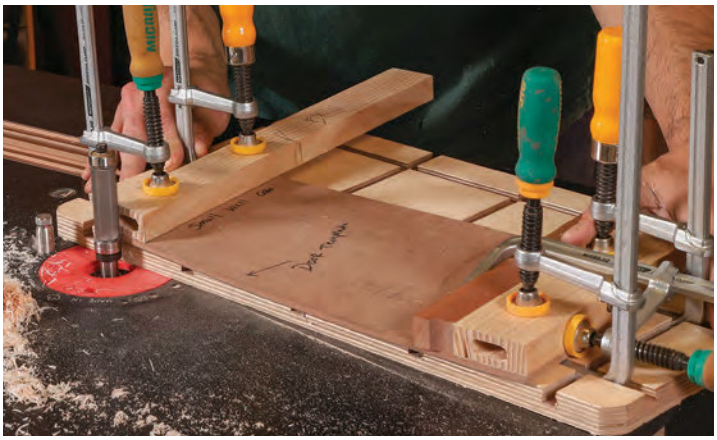
Marking the rails. *Using the narrow template, Morley lays out the curved crosscuts on the left end of the rails.*

TEMPLATES SHAPE THE DOOR PARTS





Template-rout the stile. *After routing mortises for slip tenons and then bandsawing the door stile's curved inner edge, Morley template-routs the curve to finished shape.*



Rails get a trim, too. *After cutting the mortises in the rails, Morley routs the ends to a curve, following the wide template. The rails are attached to the template with double-sided tape and firmly clamped to the sled.*

Curve the panel. *The door panel, a ¼-in. Baltic-birch plywood substrate veneered with ash on both faces, gets trimmed to final shape with the large template. The template is adhered to the panel with double-sided tape.*

The door's last curve. *Having parallel edges is a clamping advantage, so Morley waits until after the door is glued up to bandsaw out the door stile's outer curve. He'll dial in its fit to the cabinet side with a stationary belt sander and hand tools.*

Intentional asymmetry. *Morley builds the cabinet's left drawer with its left side overthick. Having shaped a piece of ¼-in. MDF to the curve of the drawer pocket, he transfers the curve onto the drawer. He does the same with the right drawer.*

Shape to the line. *Rocking the drawer side against a belt sander does a smooth job of creating a curved side to match the cabinet.*

Getting the frame-and-panel door, with its curved left stile, to fit snugly to the curve of the cabinet side takes a little doing. I use a pair of nesting Masonite templates to guide the process.

First I make a template to the shape the left stile will be. I cut a piece of Masonite to the full height of the door opening and set it in place. Then I use a compass, opened a couple of inches, to follow the curve of the cabinet side while tracing onto the template. After sawing and sanding to the line, I cut a parallel curve 2 in. away on the right edge of the template. Then I make the second template, with a convex curve that is a perfect mate for the concave curve of the first template. These two templates guide the layout and trim routing for the left stile, the two rails, and the door panel. It's important to note that the mortises for the slip tenons that join the door frame are cut while the rails and stiles are still square.

Making the left and right drawers match the curve of the sides is far simpler. I make the drawer boxes with one side extra thick and then shape that side to the curve at a stationary belt sander, or else with a handplane.

Half-blind dovetails, after the fact. *Once the drawer side is fitted to the curved drawer pocket, Morley glues a piece of ash veneer to the front, converting through-dovetails into half-blinds. He builds the other two drawers the same way.*

Final trim. *Once the glue has cured, the front veneer can be flush-trimmed to the drawer box.*