

Bowfront Wall Cabinet

Learn 3 solid techniques for curves in one small project

BY MATT KENNEY



SAWN CURVES



BENDING PLYWOOD



BENT LAMINATIONS



This little wall-hung cabinet that I built not long ago is ideal for hanging in a dining room to store small serving ware, spices, or tea. It's also a lot of fun to build.

As a woodworking project, the cabinet is a great way to

learn about curves. There are a lot of them in this piece: in the doors, in the drawer fronts, in the cabinet's top, bottom, horizontal dividers, and shelf. Some of these curves are bandsawn and routed, some are bent in a vacuum bag, but

all are shaped with great accuracy using shopmade templates, so everything lines up perfectly.

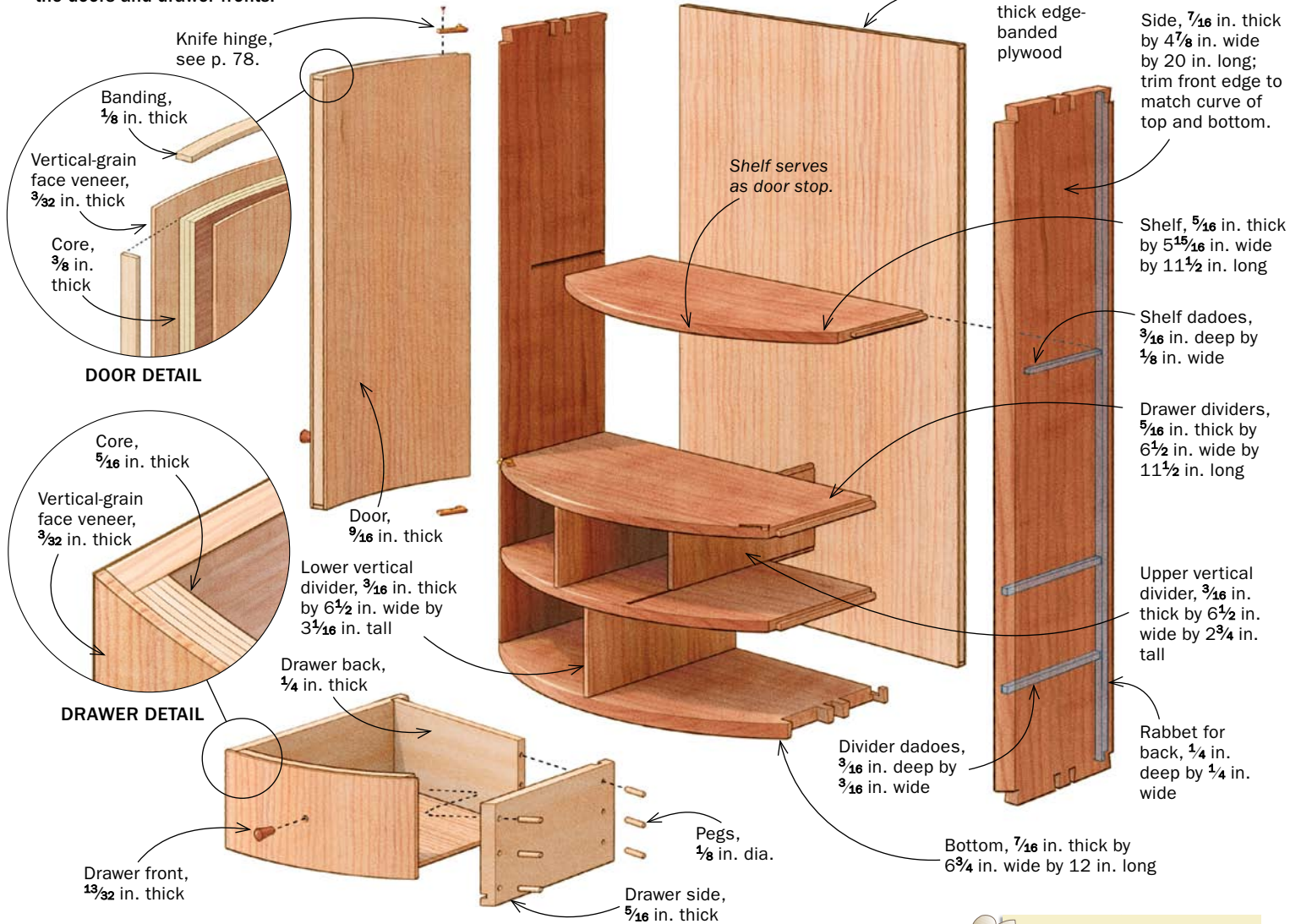
In this article, I'll show you a combination of versatile techniques that have let me take my furniture making to another

level, opening up the world of curves.

I used solid cherry and Douglas fir veneer for an understated look, but you could use different woods and more figured veneers to add your own flair.

THREE TYPES OF CURVES

The cabinet blends the sawn curves on the case with two different types of laminated curves in the doors and drawer fronts.



Template routing creates the curves for the case

When doing curved work, it's easier to cut the joinery while the parts are still square. I started by cutting and fitting the case dovetails and then routing the stopped dadoes for the dividers and shelf. I cut the tails at the bandsaw and routed the pins (for more on this technique, see "Half-Blind Dovetails in Half the Time," by Stephen Hammer, *FWW* #219). Afterward, I turned my attention to the curves. The case has sawn curves on the front edges of its top, bottom, drawer dividers, and shelf. To create

FRONT VIEW

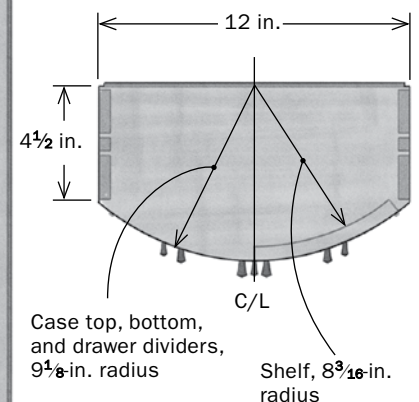


SIDE VIEW



To purchase expanded plans and a complete cutlist for this cabinet and other projects, go to FineWoodworking.com/PlanStore.

TOP VIEW



Sawn curves for the case

Shopmade templates guide the shaping of the curved front edge on the case top, bottom, dividers, and shelf.



a matching curve on each, I made a pair of MDF templates that do two things: First, they provide a measured and perfectly shaped curved edge to which the workpiece can be routed flush. Second, they hold the work securely, from underneath or above, without clamps. I used the templates in conjunction with a flush-trimming bit fitted with bearings both above and below the cutter, so I could flip the template and workpiece to avoid

routing against the grain. One of the templates works for the top, bottom, and divider. The other template, with a smaller radius, is used for the shelf.

To prepare for routing, set each workpiece in the template and trace the curve, then rough out the parts on the bandsaw. Now take the template and workpieces to your router table. Be sure to orient each workpiece in the template in the same way, (i.e., top down) to ensure that the shape

TEMPLATES LEAD THE WAY



Power of the pivot. Since this is a radius curve, a simple circle-cutting jig lets the router clean up the sawn edge, creating perfectly smooth, consistent arcs on the template.



Attach fences. Complete the routing template by gluing on three fences that partially enclose the workpiece and are sized to hold it in place without clamps. Kenney used cyanoacrylate (super) glue.



Bandsaw first. After tracing the template's arc onto the workpiece, bandsaw close to the line to rough out the curved edge.



Rout with the template underneath. The bit's lower bearing rides the template surface beneath the workpiece.



Flip and rout down the other hill. With the workpiece underneath, Kenney lowers the bit so that its upper bearing rides the template.

ASSEMBLY TIPS

is reproduced exactly the same way on each piece.

Because the grain changes direction along most curves, the best way to avoid tearout when routing is to make the cut in two passes—each starting at the top of the curve and traveling “downhill” toward the end of the workpiece. To feed the work into the bit correctly, you’ll need to flip the workpiece between passes. This template design makes it easy—there are no clamps to get in the way, and the double-bearing bit works with the template above or below the work. Start with the top and bottom. I made the first pass on all the parts before adjusting the bit to match the flipped template for the second pass.

The sides must be beveled to match the curve on the front. Dry-fit the case and mark the bevel, which you can then cut on the tablesaw. Next, rout the shape of the drawer dividers and shelf and cut their tongues. Then rout dados in the drawer dividers for the vertical dividers. The design of the knife hinges I used in this case requires that their mortises be cut before glue-up. There just isn’t room to do so afterward. For more on how to do this, see Master Class on p. 78.

Once these mortises are complete, glue the case together. After it is out of clamps, fit and glue in the drawer dividers. Make the vertical dividers and glue those in, too. Don’t glue in the shelf yet.

Bending ply helps the doors take shape

I made the doors using the sturdy bending form shown on p. 34 and following Michael Fortune’s method in “Curved Panels Made Easy” (*FWW* #210). Each door, at its core,



Continue the curves. Dry-fit the case and mark the sides for beveling (left). After sawing away the bulk of the waste, plane the edges flush with the front edge of the cabinet (right).

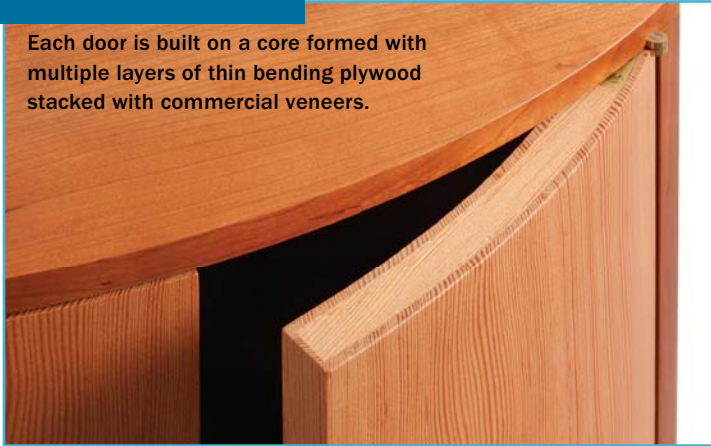


Leave the dividers proud. After gluing them into their stopped dados (left), use a block plane to trim the front edges flush with the rest of the cabinet front (below).



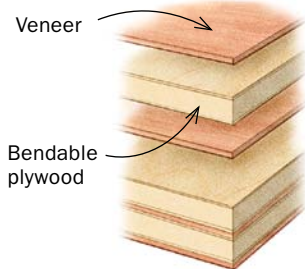
Bending ply for the doors

Each door is built on a core formed with multiple layers of thin bending plywood stacked with commercial veneers.



GLUE UP THE CORE

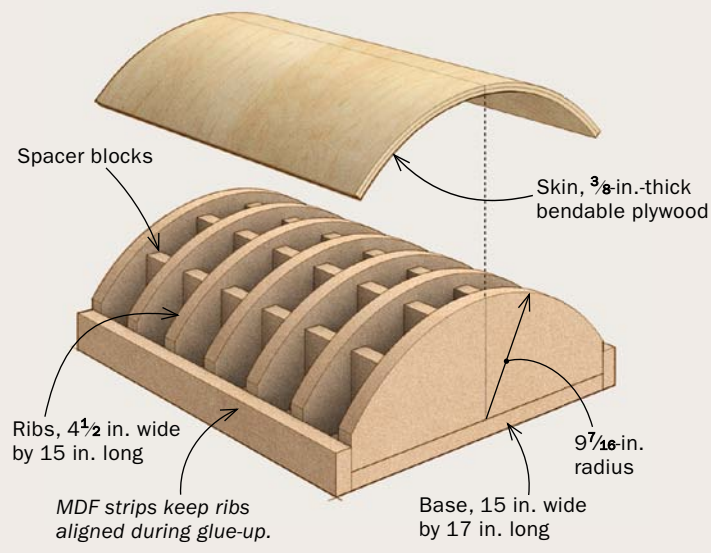
Secure the glue-up on the form. Stack the core as shown below. Small nails driven into the centerline of the glue-up at both ends hold the panel steady while securing it with packing tape (right).



Into the bag. The form and the glue-up go into the vacuum press. Leave the assembly under pressure for at least six hours.

STRONG, SMOOTH BENDING FORM

The form is made from $\frac{3}{4}$ -in.-thick MDF ribs and spacers covered with a skin of bendable plywood. The base is glued up first and then the curved cover is clamped with the vacuum bag. Afterward, cover the plywood with packing tape so that glue won't stick to it.



is made from alternating layers of thin, flexible plywood and commercial veneers. Each layer is set with its grain at 90° to its neighbors—a pattern that locks in the bend when the panel is glued up. This rigid foundation is eventually skinned with beautiful shopsawn veneer.

Start by gluing up an oversized sandwich of inner-core layers, using the vacuum bag to press them into shape on the bending form. Make this panel long and wide enough to yield a pair of doors. I rout the top edge square, then use my tablesaw crosscut sled to cut the panel in two, and rip each door to width, factoring in the thickness of the edge-banding.

After those cuts, attach edge-banding on each door's top

and bottom edges with yellow glue. Leave some excess thickness to plane away when fitting the door in its opening, which you should do before gluing on the face veneers. That way you can fix a mistake by gluing on more banding and trying again. With the doors fit top to bottom, glue bandings onto the sides and plane them flush. Now it's time to glue on the face veneers.

I sawed the face veneers from vertical-grain Douglas fir, cutting each veneer about $\frac{3}{32}$ in. thick and leaving them long enough for the doors and the drawers beneath. The grain runs vertically and flows from the drawers up into the doors. Glue the veneers in place, one face at a time, in the vacuum bag.

Lay out and rout hinge mortises on the doors, then hang them to check the fit. Adjust by planing the inside edge of each door, then rehang and recheck. Repeat until the doors close with a gap between them that matches those on the outside, top, and bottom.

With the doors fit, you can glue in the shelf. Its center should touch the back of the doors (where they meet in the middle) and act as the door stop. Put some glue in the dado and slide in the shelf. Make sure that the doors are flush with the outside of the cabinet when they are resting against the shelf. Clamp across the width of the cabinet to hold the shelf in place until the glue dries.

For drawer fronts, bent-lams are a solid proposition

I make the curved drawer fronts from five plies of 1/16-in.-thick solid stock, laminated and bent to shape in the vacuum press with a layer of face veneer added in a second step. I used the same bending form used to make the doors.

The drawer fronts aren't as thick as the doors, so mathematically they should need a bending form with a slightly larger

CUT IT TO SIZE

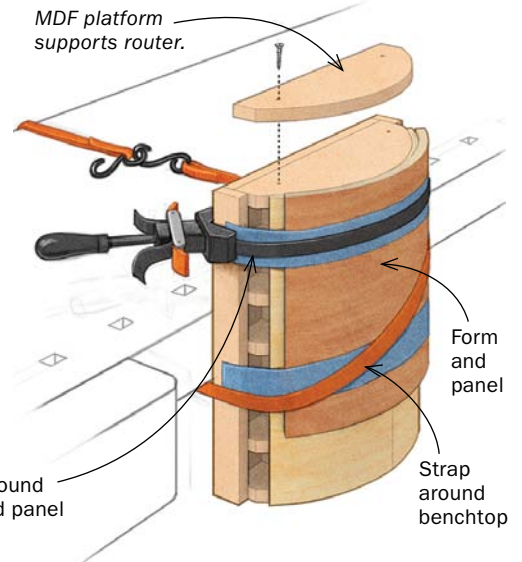


Clean up one edge. With the panel slightly proud of the bending form, a straight bit trims one end square.

radius. But laminations from solid stock will “spring back” slightly toward straightness after glue-up. This will leave the fronts very close to matching the curve of the doors. The solid fronts can also be handplaned after assembly (but before the face veneers go on) to remove any remaining variation.

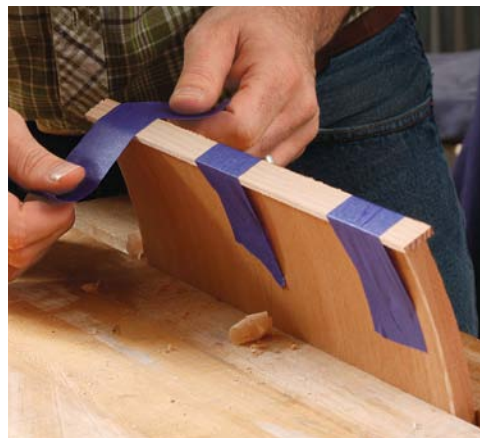
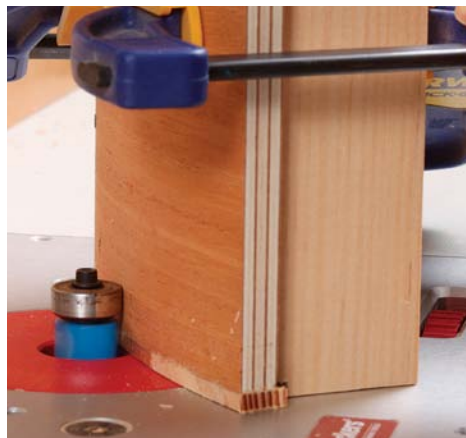
Glue up two separate laminations, one for each bank of drawers. That's because I've found that a blank wide enough to yield both banks tends to warp a little after coming out of the vacuum

To rout one end of the panel square, Kenney stands both form and panel upright against his bench, supports them underneath, and straps them in place. He then screws an MDF platform atop the form to support the router.



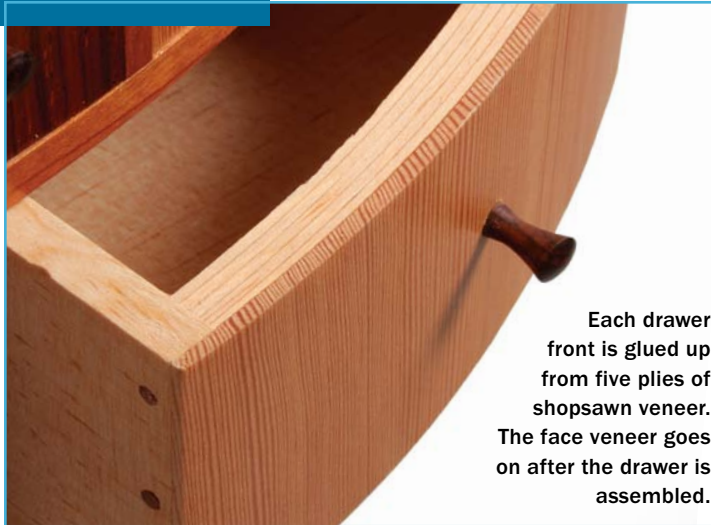
Rip the panel in half. With the trimmed end against the sled's fence, Kenney centers the panel on the sled's kerf and rips it in half. A loose batten on either side keeps the piece from rocking.

EDGE AND VENEER THE DOORS



Bandings before veneers. Glue on the solid-stock top and bottom bandings, then trim them flush at the router table (left). Fit the door to the case vertically, and then add the side bandings (center). The veneers on the front and rear faces (right), are glued up separately in the vacuum bag.

Bent-lams for drawer fronts



Each drawer front is glued up from five plies of shopsawn veneer. The face veneer goes on after the drawer is assembled.

bag. Leave the laminations in the bag at least four hours (the glue dries more slowly in the bag than it does on a bending form in open air).

Take each blank from the bag, scrape the glue from one edge, and joint that edge. Then run the jointed edge against your bandsaw fence to rip the blank to width. To rout a groove for the drawer bottom in each blank, I used a slot-cutting bit buried in a steeply curved fence on the router table. I used the same setup

to groove the straight drawer sides. Another curved fence, this one attached to my table-saw's miter gauge, was used to cut the drawer fronts from the long blanks for each row. The fence holds the blanks in the correct orientation to the blade so that the end grain is cut at the correct angle. To keep the workpiece oriented properly on the jig's centerline, start with the cuts on the outside before separating the drawers in the center. This ensures that the ends of the drawer front

MAKE THE CORE FOR THE FRONT



Start at the bandsaw. Resaw the plies for the drawer fronts at $\frac{1}{16}$ in. thick (left). Joint the face of the board after each cut. Secure the blank with two nails (center), cover with a caul, and pull the ends down with packing tape. After jointing one edge of the glued-up blank, trim the blank to width at the bandsaw (right).



Final touches. A curved fence at the router table makes it easy to cut the groove for the drawer bottom (above). At the tablesaw, a curved auxiliary fence for the miter gauge holds the workpiece securely and ensures that the end grain is cut at the correct angle (right).

BUILD THE DRAWER BOX



Mark the front's location. Working from a full-size drawing, mark the drawer sides for the location of the drawer front.



Attach braces and apply clamping pressure. A couple of pieces of thin stock backed with double-sided tape prevent the drawer front from pivoting as the clamp tightens.



Pegs reinforce the joint. Kenney seats three shopmade pegs in holes drilled on each side, then trims them flush with a pull saw and chisel.



Attach the face veneer. Painter's tape holds the veneer in place (above) until the glue-up is secured with clamps and shaped cauls (right). Thin packing foam helps distribute the pressure.



will mate squarely with the drawer's sides.

The assembly is still a little difficult to clamp because the canted orientation of the drawer front makes it want to pivot under clamp pressure. So I used a couple of braces—thin pieces of scrap attached to the drawer sides with double-sided tape—to keep the front from shifting. After gluing up, pegging, and fitting the drawers, slide each one into its opening and mark the front of each side for trimming with a handplane. With the sides trimmed, check that the curve of the drawer front matches that of the case. If it doesn't, trace the cabinet onto the front and plane the front down to the line.

To ensure that the grain flows nicely from the drawers to the doors, you must take out the full width of the vertical dividers when cutting the drawer front veneers to length. Otherwise, all those nice growth ring lines won't line up. Glue on the veneers using curved cauls and plane them flush to the drawer front. For the end grain, which is on the top and bottom of the drawer, work in from both sides so that you don't tear it out. Finish the drawer construction by cutting, rabbeting, and installing the drawer bottoms. I secured the bottom with just a touch of glue in the front rabbet. □

 Matt Kenney is a senior editor .



Install the bottom. The curve on the bottom's front edge (below) is cut at the bandsaw after tracing the profile from the glued-up drawer.