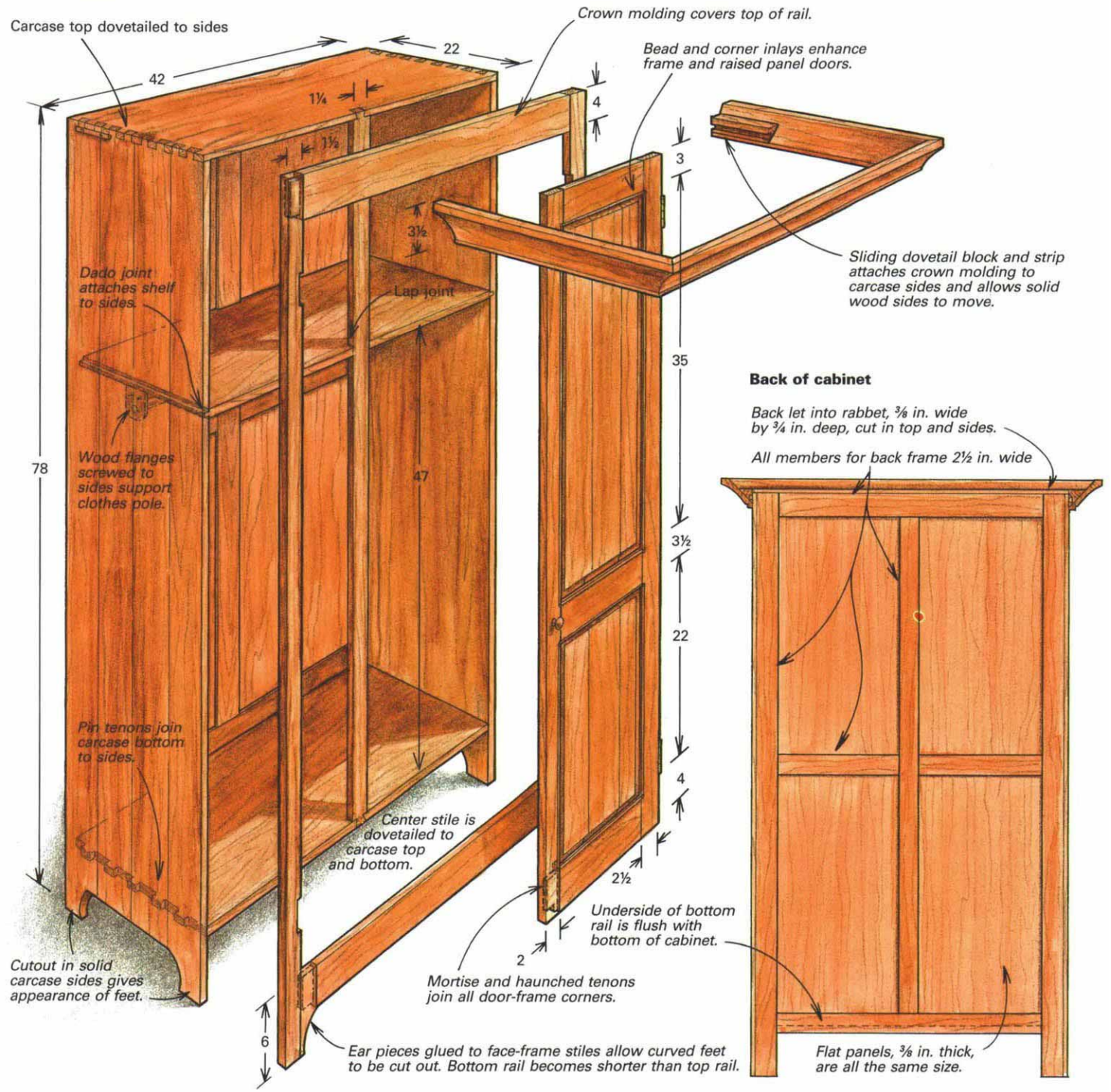
Building a Shaker-Style Wardrobe

Beads and crown dress up a basic cabinet

by Tom Hagood

Fig. 1: Shaker-style wardrobe



I've never been especially fond of period furniture; therefore, the commission I received to build a traditionally styled wardrobe cabinet was quite a challenge. The client did not specify the style, but the piece had to fit into an Early American bedroom dominated by a huge antique mahogany bed—a family heirloom. Because all my previous work had been with contemporary designs, I had some reservations about accepting the commission; a contemporary wardrobe would clearly be out of place in this bedroom. Thus, I set out to find a period style that would be traditional yet allow for some creative interpretation so I could incorporate my own design details. In this article, I'll tell you how I developed my design, worked out the details and built the cherry wardrobe cabinet pictured at right.

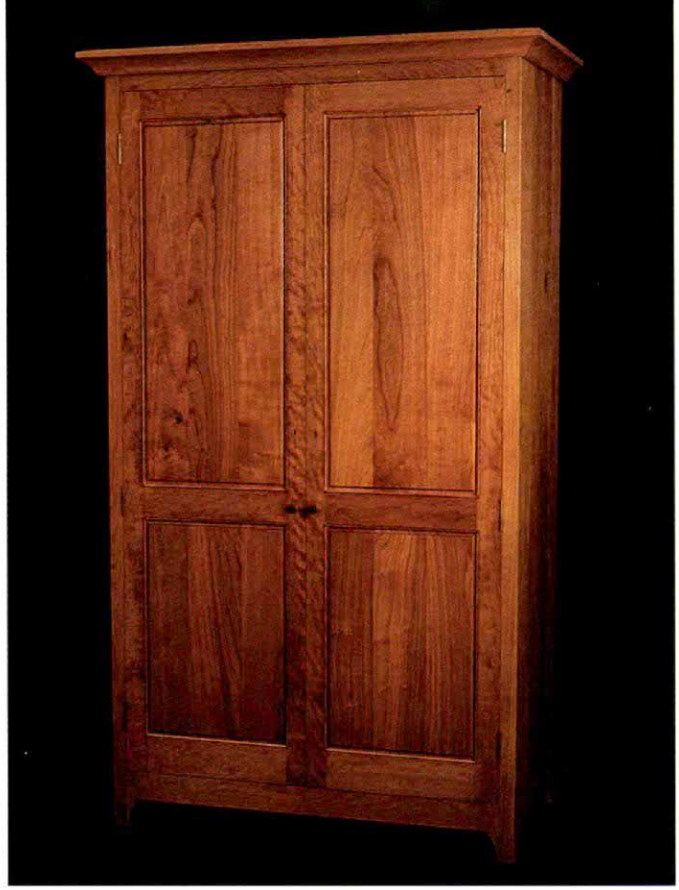
Before I began designing the wardrobe, I searched through furniture reference books for a period piece to serve as a point of departure. In my search, I discovered a reference book called *Chests, Cupboards, Desks and Other Pieces* by William C. Ketchum, Jr. (published by Random House, Westminster, Md. 21157). Although primarily a book for furniture collectors, I find it a valuable resource for furniture designers: The book includes photographs and drawings of a dizzying number of styles, from English and French period pieces to Shaker designs to Wendell Castle stack-laminated work. The book even includes joinery details and dimensions for many of the pieces.

Ketchum's book contains a photo of a simple Shaker wardrobe that seemed to fit my needs. The piece is traditional looking yet plain enough to benefit from the addition of some of my decorative details. I was already somewhat familiar with Shaker furniture and crafts, having at one time manufactured Shaker-style steam-bent oval boxes, and I like the Shakers' straightforward, functional approach to furnituremaking. There are also modern interpretations of the style that I like, such as the work of furnituremaker Thomas Moser of Maine.

It was necessary to adapt the dimensions of the wardrobe to fit the client's room and accommodate the amount of clothing the cabinet would have to hold. To help visualize how the cabinet would relate to its surroundings, I made a perspective sketch of the room, including a view of the ceiling and other bedroom furnishings. I chose to make the wardrobe 78 in. tall and 42 in. wide to fit harmoniously with the client's large bed, and I made the wardrobe 22 in. deep to easily handle bulky winter clothes hung on a clothing pole inside.

Pleased with the proportions of the cabinet, I went back to the drafting table to work out the small details, such as the cutout base beading around the door frames, the profile of the crown molding and the joinery to hold the cabinet together. Because solid wood would be used throughout, I had to design the cabinet to allow for expansion and contraction. In addition to frame-and-panel doors, this meant making a frame-and-panel back and a sliding joint for attaching the crown molding to the top of the carcase. The top, bottom and sides of die carcase would consist of edge-glued boards joined with dovetails at the top and pin tenons at the bottom. A face frame would be glued to the front of the carcase, and the back frame would be fitted into a rabbet in the carcase sides. I also shaped door, base and crown molding details to give the cabinet individuality.

Carcase construction—I began by building the basic carcase. After edge-gluing several narrow 4/4 boards to make the sides, top and bottom, I cut the dovetails at the top of the case by hand, using a chisel, mallet and dovetail saw. You could also use a router and dovetail template. Next, I laid out and chopped the mortises at the bottom of the sides to accept the multiple tenons on the carcase bottom. These mortises were cut with a straight bit in a router



The design of the author's cherry wardrobe cabinet, above, is based on a traditional Shaker piece that he modified, adding his own details to the doors, base and crown molding.

By changing the position of the two movable rails that guide the router, the author works his way across the bottom of the carcase side, chopping mortises for pin tenons that will join the sides to the bottom of his wardrobe cabinet.

guided by a homemade jig, as shown in the smaller photo above. The jig is a square template made up of two rails and two adjustable fences. A plunge router is set into the square, the bit is plunged and the router is then moved around inside the fenced area (router base bearing against the fences and rails) until the mortise is completed. The two adjustable fences, pinned into place with removable dowels, are repositioned for each of the seven mortises across the width of the two carcase sides. The routed mortises have rounded corners that must be squared up with a chisel.

Next, I cut the multiple tenons on the ends of the carcase bottom. After marking these tenons by transferring lines from the mortises, I bandsawed away most of the waste, then pared the tenons for a tight fit into their mortises. As an alternative, you can use a router to rough-cut the shoulders, then pare them with a chisel. Either of these

Drawing: Mark Kara

The author makes raised panels for the wardrobe doors on the router table. In the first step, shown above, he reduces the thickness of each panel's edge by running the panel vertically by a straight bit. A fingerboard clamped to a spacer provides the pressure needed to stabilize the panel as it's fed. This fingerboard also prevents the climb-cutting bit from self-feeding the panel.

Hagood uses a homemade beading plane to detail the inner edges of the doorframe. The mahogany plane has two nonsymmetrical bead-profile blades, one for cutting in each direction. A piece of quarter-round molding on the underside of the plane guides it along the frame's inner edge for a straight cut.

operations can be time-consuming, but I don't know a faster way to make pin tenons or an alternative joint that has the same integrity.

As with most wardrobes, mine has a high shelf for storing clothing above the hanging garments. The ¾-in.-thick shelf joins the inside of the carcase by sliding into a simple ⅜-in, by ⅜-in. dado plowed into the cabinet sides. The dado is the same depth as the rabbet cut along the back edges to accept the frame-and-panel back. I cut the dado with a ⅜in. straight bit in a router, using a straight board clamped across the cabinet side as a fence. Because die 4/4 shelf must span the width of the 42-in. cabinet, I supported the middle of the shelf with a lap joint on the 1½in.-wide center stile. Dovetails at the top and bottom of the stile connect to the front edges of the carcase top and bottom, as shown in the drawing on p. 58. The shelf is notched so the edge of the shelf is flush with the front of the stile.

Originally, I'd planned to let the base of my wardrobe rest on the floor, with a decorative molding at the bottom edge. However, I saw another base treatment I liked in the Ketchum book and adapted this base to fit my wardrobe. With this new base, the carcase is cut out to make four feet, with gentle convex curves coming up from the floor along the insides of the feet—a pleasant visual effect. Drawing in scale, I experimented with various curves until I came up with one I liked. I scaled up this curve on graph paper to make a full-size plywood template, which I used to mark out the cabinet sides. After roughing out the curve with a sabersaw, I clamped the same template to the cabinet side and routed the final shapes with a piloted straight bit bearing against the template.

Creating the same curved feet on the front of the wardrobe involved modifying the cabinet's otherwise straightforward face frame. I used a typical face frame, assembled with mortise-and-tenon joints, on the front of the cabinet and a frame-and-panel back. But the stiles weren't wide enough for the same curve I had cut on the cabinet sides, so I glued 1½-in.-wide ears to the inside edges of the stiles, providing stock for the curved feet. I cut the bottom rail shorter than the top rail and tenoned it to the ear pieces instead of the stiles. If I'd made the bottom rail extra wide to accommodate the cutout, I would have created a wood-movement problem by joining a 6-in.-wide rail cross-grain to the face frame's stiles.

Gluing up a cabinet of this size was quite a task in my small shop. The cabinet's size stretched every clamp in the shop to its capacity. The carcase dovetails were tight enough that they didn't need clamping, but the pin tenons needed to be pulled into their mortises with pipe clamps. A 2x4 I had carefully bandsawn into a bow shape (convex surface toward the cabinet) was used as a caul to distribute clamping pressure across the sides. After the carcase was dry, I glued on the already assembled face frame.

Though plywood is a suitable and more-often-selected choice for the back of a large cabinet, I decided to stick to the more traditional solid-wood frame-and-panel back. This frame consists of three stiles and four rails mortised and tenoned together, dividing the back into four panels. The panels themselves are flat and only ⅜ in. thick, the same thickness as the grooves in the frame. The entire glued-up back recesses into the rabbet cut in the back of the carcase earlier.

Building frame-and-panel doors—After measuring the face-frame opening, I made a pair of door frames that fit snugly into the opening. The frames are joined with haunched mortise-and-tenon joints, and each member has a 5⁄16-in.-wide groove, cut with a dado blade on the tablesaw, to hold the panel. The bottom door rails are wider than the top rails, to overcome visual foreshortening, which makes bottom rails look narrower than they are. I let the stiles run long to prevent splitting during mortising, then trimmed them to length after the doors were assembled.

I raised my panels with a router, homemade router table and two different bits. The first operation was to reduce the thickness at the panel's edge with a ½-in. straight bit. The panel's edges were routed with the panel on edge and held tight against the fence by a fingerboard clamped directly above the bit, as shown in the top photo on this page. To produce the cleanest cut possible, especially while shaping the panel's endgrain, I climb-cut the panels, feeding them into the bit counter in the same direction it was spinning. If you try this, make sure to take several shallow passes on each edge, to prevent dangerous self-feeding, which can occur when climb-cutting. The pressure of the fingerboard also prevents self-feeding,

and it shields your fingers from exposure to the whirling bit.

After the panel edges were thicknessed, I cut a cove to finish the panel raising. I used a ½-in. core-box bit in the router, shaping the panels on the router table. I laid the stock flat on the table and shaped the cove in a few passes, raising the bit each time until its tip just contacted the flat in the panel edge cut from the previous operation. I then sanded the panels and glued up the door frames with the panels in place.

The next step is to detail each door with a cock bead around the inner edge of the frame. I originally scratched the bead with an old scraper blade filed to the correct profile, but I was unhappy with the fuzzing and tearout. I chose instead to make my own beading plane, shown in the bottom photo on the facing page. The plane is designed to cut into the corners from two directions for work on an already assembled frame. (You can plane the bead in the frame edges prior to assembly, but you need to stop the beads on the stiles where they meet the rails.) One of the plane's blades is a standard cutter from a Stanley #55 Multiplane set. The other cutter, a mirror image of the first, is made by modifying a straight plane blade. Both blades are held in place with removable wedges, making it easy to lower one cutter and retract the other, depending on the direction of the cut. A strip of molding on the underside of the plane body acts as a fence to keep the cutter parallel to the frame's edge as it cuts the bead.

Traditionally, the corners of a beaded frame were carved so the beads look mitered into one another. This is because the beading plane or scratch stock can't shape the bead all the way into a corner. Instead, I glued an end-grain dowel precisely into each corner, to serve as a return for the bead detail and to give the cabinet an original touch, as shown in the photo above, right. I made a drilling guide by boring a hole through a scrap and gluing a tiny triangle to the bottom to reference against the frame's inside corner. Clamped in place, the guide established the precise location of the hole and kept the bit straight as I bored each ¼-in. corner hole with a hand drill. A tape flap stuck to the bit told me when the hole was deep enough. The dowels for the corners were made from cherry scraps, using a plug cutter in the drill press. Each dowel was glued in with epoxy, then trimmed and sanded flush with the surface of the door frame.

Crown molding-For this highly visible detail, I chose the fanciest piece of cherry I had. To shape the crown's cove profile on the tablesaw, an improvised fence was diagonally clamped across the saw table and a length of stock long enough for the entire crown was passed over the blade, which is raised a little at a time. By varying the angle of the fence and depth of cut, you can produce many different cove shapes. I experimented until I had a profile that mimicked the curve of the feet. After coving, I angled the molding's edges as detailed in the drawing on p. 58.

The bead detail where the crown molding meets the cabinet is the same as the bead on the doors, adding visual detail and making any irregularity in the seam between the cabinet and molding less obvious. To hold the molding at the correct angle for beading, I first cut some small plywood triangles and hot-glued them to the bench in a straight line. I then hot-glued the noncoved side of the crown molding to the triangles so the molding's bottom edge was facing up and level. The narrow edge gives the beading plane little support, so it is a bit tricky to get a straight bead. To stabilize the plane, try laying one hand on the molding alongside the plane as you walk down the length of the molding taking the cut. It'll take several passes to get the full bead profile, but in the end, this great-looking detail makes it all worthwhile. After scraping the cove smooth with a curved scraper blade and sanding its show surfaces smooth, I cut the length of crown molding into three pieces and joined the mitered corners with splines and epoxy glue.

The beaded inner edges of the door frame and inlaid corners, as well as the cove-and-bead crown molding, provide the author's wardrobe with a distinguished degree of visual interest.

Crown molding has been traditionally nailed or glued on old cabinets, but this can create problems. The molding, attached cross-grain on the cabinet sides, loosens over time because of expansion and contraction of the cabinet's sides. To compensate, I attached the assembled crown to the cabinet's side with a sliding dovetail joint, as described in "Cross-Grain Constructions," *FWW #72, p.* 80. This allows the cabinet sides to move while holding the molding securely to the cabinet.

The crown is fastened to the cabinet sides with two 3-in.-long male dovetail strips-one screwed to each cabinet side. These strips slide in female dovetails cut into angled blocks glued to the back of the molding. After the male strips were in place, an assistant held the molding while I screwed the front molding on from the inside of the cabinet. Then, I applied hide glue to the female dovetail blocks and slid them onto the dovetail strips from the back. I held the components in alignment until the glue set. This procedure is not as difficult as it sounds, especially if you're good at cutting sliding dovetails. In addition to alleviating wood-movement problems, this method avoids difficult clamping procedures and ensures that the molding is perfectly aligned. The whole crown is removable: This makes finishing the cabinet sides easier and lightens the heavy wardrobe, in case it needs to be moved.

After final sanding and finishing (I used Watco oil to bring out the cherry's color, but you can use any finish you like), I attached the knobs, mortised in the locks on the doors and hung the doors on the cabinet. Keeping with the Shaker style, I turned two small, plain cherry knobs. Each has a dowel turned on its back that is glued and wedged into a hole drilled through the door stile. I used standard 2½-in.-long butt hinges to hang the doors, three per door, and mortised them into the door frame and face frame for a clean fit with very little gap around the doors. Finally, I mounted a removable clothes pole inside the cabinet just below the shelf.

My client is pleased with the wardrobe, and so am I. The adaptations I made to the design seem to mediate well between the room's ornate furnishings and the cabinet's simple Shaker origins. While the extreme austerity of original Shaker designs is not always completely satisfying to me, I enjoyed reinterpreting the Shaker wardrobe design. But, I'll always acknowledge the Shakers' basic premise: "Keep it simple." □

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