# Building an Open Hutch

## *Moldings detail frame-and-panel sideboard*

by Ronald Layport

*This curly maple open hutch, the author's first commission, was based on styles common in America between 1730 and 1840, and was designed to fulfill his clients' desire for a large sideboard. Although the construction is intricate, his one-step-at-a-time approach and the applied detail moldings help make this large project manageable.*

Since this curly maple hutch was my first commissioned piece, I had mixed feelings about parting with it, Although I've been designing and building furniture for myself and family members for about six years, I was uncomfortable with the thought that I might never see this piece again. However, I'm pleased to report that the "letting go" turned out to be a joy rather than a problem. The couple who commissioned the hutch was every bit as delighted with it as I was exhausted upon its completion. I was even granted "Visitation rights."

The open hutch shown here is similar to cupboards that were common in middle America between 1730 and 1840. These pieces were sometimes called hutch cupboards, open hutches, sideboards with hutch tops, and even dressers, and their designs and styles were as varied as the terms used to describe them. I used joinery common to the period, such as pinned mortise-and-tenon, frame-and-panel and dovetailed solid-board construction. I cut tenons on the tablesaw and hand-chopped mortises with a chisel, although I admit that a router is an appealing alternative for cutting the 96 mortises in this hutch. I always hand-cut dovetails because I enjoy the process, and I like seeing perfectly pointed pins running down the corner of a drawer. To create a dimensional effect, I edged the stiles, drawers, shelves and back boards with more than 200 ft. of hand-tooled bead. A wood shaper or router would make short work of forming this bead, but the techniques that I discuss for using a scratch stock provide a lot of satisfaction and an unmistakable hand-crafted quality.

Although I used hand tools to achieve a desired effect, I am not a fanatic on this issue. I could never have built this piece without my jointer, thickness planer, tablesaw and drill press. My power tools handled the bulk of the work and left me with energy for hand-working the details.

Curly maple is sometimes called tiger maple due to its cross-grain stripe. This highly figured wood is said to be found in only one out of every 10,000 maple trees. In fact, I waited a year and a half for this tree to be harvested by sawyers in northeastern Ohio. The hutch could be equally spectacular in walnut or cherry with a simple hand-rubbed carnauba wax finish.

*The back of the hutch is finished so that it doesn't need to be up against a wall. Wood brackets secure the upper carcase to the lower carcase.*

**Designing the hutch**—I've heard that a true hutch must have two doors and a drawer or two on the bottom. But since my clients gave me complete design freedom, I opted for this four-door, four-drawer hutch. Their only guideline was that they wanted "a large sideboard for the dining room, not too ornate but with some dimensional quality." I showed them two rough sketches for style and proportion, and upon receiving their approval, I began engineering the massive 85-in.-high, 62-in.-wide and 20-in.-deep piece to allow for wood movement and to avoid sagging. For instance, the hutch shelves lock into dadoes in the rear stiles for extra support.

I had to make other design considerations as well. In order for the piece to be movable, I made the top and bottom as separate units. Two slide-out cutting boards nearly double the workspace. The back is finished to the same detail as the front, as shown in the photo at left, so the hutch could also be used as a freestanding room divider. I made the bottom high enough off the floor to accommodate modern vacuum cleaners, and the doors, drawers, cutting boards and lower-carcase shelves are all removable to facilitate cleaning and moving,

Because this is such a large piece, I wanted to keep its weight down. Rather than use thick solid stock, I made the back a frame-and-panel assembly with thin, shiplap boards for the panels. The doors carry thin flat panels rather than raised panels, which would double their weight. I also thought that raised-panel doors would look too bulky on an already massive piece.

Old cupboards often appear squatty and top-heavy, in part because the serving surface of the bottom cupboard was usually set close to table height, about 30 in. This may reflect the smaller average height of people in the early 1800s, and so I raised my serving surface to 37 in. to better meet today's needs, increase storage space and achieve a more graceful vertical scale. Two doors, often wider than they were high, also contributed to the squatty look of so many old hutches. By using four doors with two panels in each, I could visually divide the front into a series of vertical sections and eliminate this stocky look. The beaded edges and applied moldings on the face frame further emphasize this vertical effect.

**Building the lower carcase**—Before beginning a large project like this, I like to study the wood for a couple of weeks: turning it, sorting it, viewing it from every angle. I then mark each piece of stock for its intended use and the best display of figure and color. To avoid confusion, I milled the pans for the lower carcase and assembled it before starting on the hutch top.

The lower carcase is assembled from several mortised-and-tenoned frames, and so I began by milling all the framing members to width and thickness. I planed the rails for the case sides, as well as the rails and center stiles for the door frames, 1/16 in. thinner than the side and door stiles. This was necessary because I planned to run a bead along the inner edges of the side and door stiles (see figures 1 and 2 on the following pages), and I wanted the rails to butt into the stiles below the rounded corner of the bead. I then crosscut the rails and stiles to length on my tablesaw, making sure that all pieces of the same length are precisely cut. Next, I cut the tenons on the tablesaw and chopped out the mortises by hand, as I mentioned earlier.

When dimensioning the frame stock for the case sides and center divider, note that the center divider is 5/8 in. shorter than the case sides to allow the top frame to span across it. The center divider is also 7/8 in. narrower than the case sides because it butts into the back center stile; I allowed for this 7/8 in. by making the divider's back stile narrower than the back stiles on the case sides. You should also note that the 1/4-in.-wide by 5/16-in.-deep panel grooves in the framing members are located differently in the center divider than in the side frames. The center panel is centered, while the side panels are inset 1/4 in. from the outside face of the stiles.

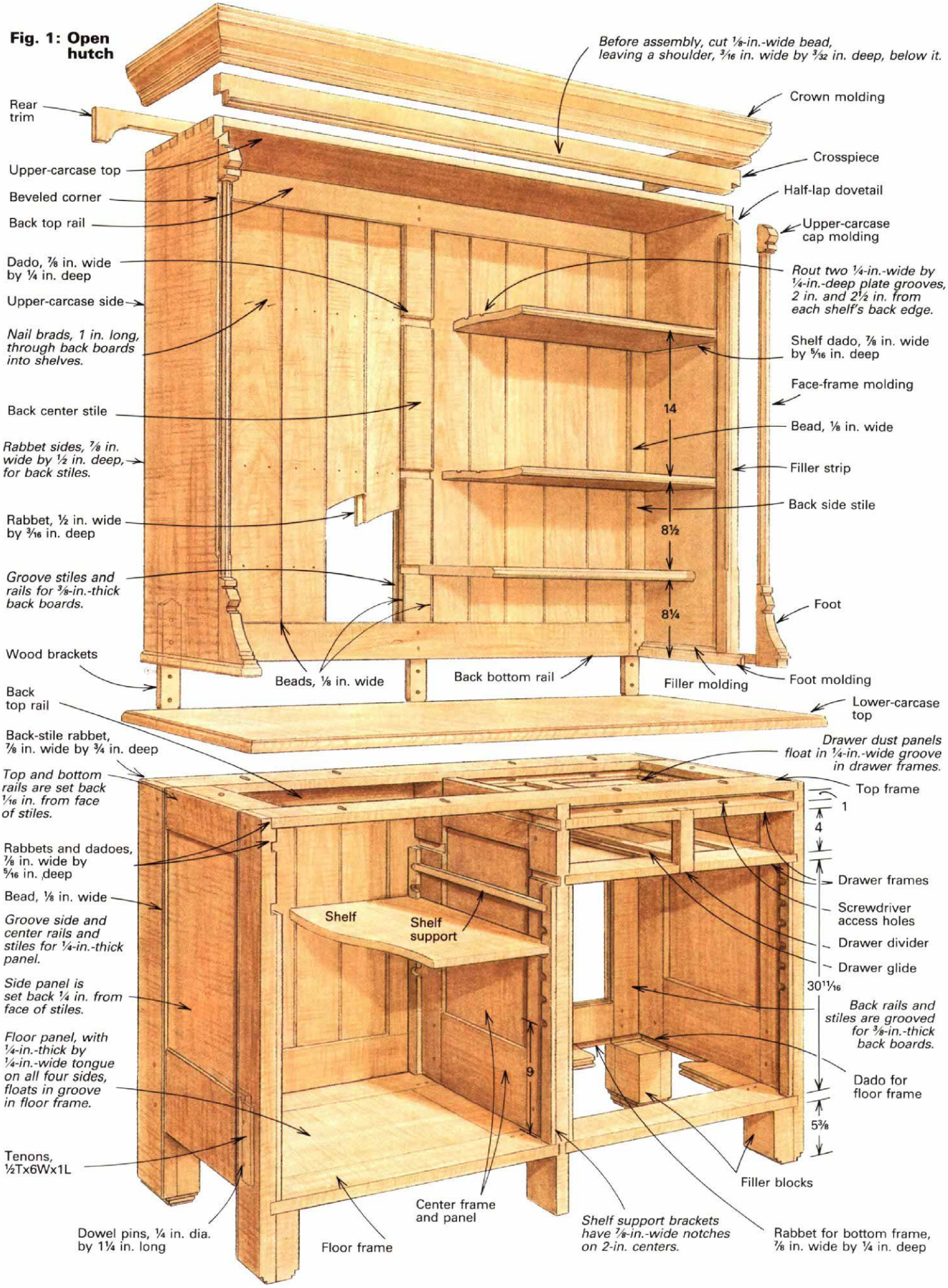
Before assembling the case sides, I used a scratch stock, as shown in the top photo on p. 50, to cut the 1/8-in.-wide bead along the stiles' outside faces. Some time ago, I began making my bead molding with a scratch stock after I became totally frustrated with the results from an antique molding plane. A scratch stock is simply a thin piece of steel with the desired molding profile shaped into its edge. The molding is formed by scraping with the scratch stock. My first efforts at making a scratch stock, from a bifold-door closer and then an electrical-box cover, were crude but effective. Although these tools worked, their soft metal didn't hold an edge and they were hard to control. After that, I heated, pounded, bent and filed old screwdrivers, files and even X-Acto knives to make scratch stocks. Then, one Sunday afternoon, I chanced upon a whole box (a lifetime supply) of tool steel at a flea market; for $5, I couldn't pass it up. I use a jeweler's file, chainsaw file and grinding wheel to shape the tools. The curly maple made it difficult to scratch a straight line, but I overcame this by lightly scoring a guideline along the length of the stile with the scratch stock and then cutting a shallow kerf with a dovetail saw along the guideline. The sawkerf established a straight line that the scratch stock could easily follow, even in this wildly figured wood.

I assembled the case sides and center divider first, followed by the seven horizontal frames that form the top frame, the drawer frames and the carcase floor. The top frame is simply an open frame that is dadoed at the center to fit over the stiles of the center divider. The solid wood top is screwed to this frame through elongated holes that allow the top to expand or contract with inevitable changes in humidity. Before assembling the four drawer frames, I grooved their inside edges for 1/4-in.-thick solid wood dust panels, and drilled screwdriver access holes through the top drawer frames (see figure 1 on the next page) for later fastening the top. he two bottom frames carry a 7/8-in.-thick

*(continued on p. 50)*

Photos except where noted: Chuck Fuhrer; drawings: Bob La Pointe

**Fig. 1: Open hutch**



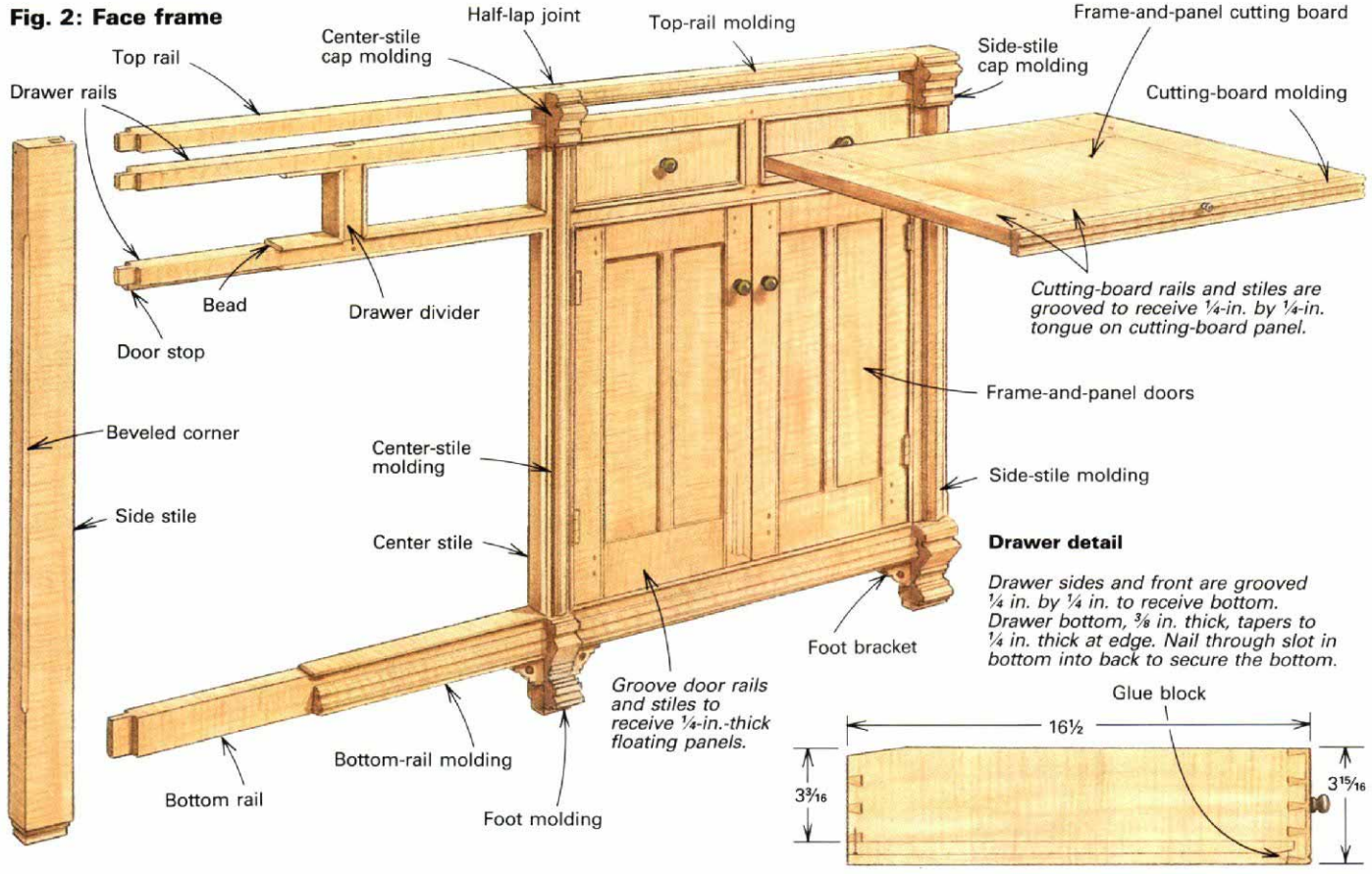
## Bill of Materials

| | Amount | Description | Dimensions |
|---|---|---|---|
| Lower carcase | 2 | Side front stiles | 1¼ × 2⅜ × 36⁹⁄₁₆ |
| | 2 | Side rear stiles | 1¼ × 3 × 36⁹⁄₁₆ |
| | 2 | Side bottom rails | 1³⁄₁₆ × 7¼ × 14¹⁄₁₆* |
| | 2 | Side panels | ¼ × 12⁹⁄₁₆ × 20¹⁵⁄₁₆ |
| | 2 | Side top rails | 1³⁄₁₆ × 3½ × 14¹⁄₁₆* |
| | 1 | Center front stile | 1¼ × 2⅜ × 35¹⁵⁄₁₆ |
| | 1 | Center rear stile | 1¼ × 2⅛ × 35¹⁵⁄₁₆ |
| | 1 | Center bottom rail | 1¼ × 7¼ × 14¹⁄₁₆* |
| | 1 | Center panel | ¼ × 12⁹⁄₁₆ × 20¹⁵⁄₁₆ |
| | 1 | Center top rail | 1¼ × 2⅜ × 14¹⁄₁₆* |
| | 2 | Top frame stiles | ⅞ × 4 × 57⅞ |
| | 2 | Top frame rails | ⅞ × 4 × 10⁹⁄₁₆* |
| | 1 | Lower-carcase top | ¹⁵⁄₁₆ × 19¾ × 62 |
| | 2 | Back stiles | ⅞ × 2½ × 36⁹⁄₁₆ |
| | 1 | Back center stile | ⅞ × 5¼ × 24⁵⁄₁₆* |
| | 1 | Back top rail | ⅞ × 3½ × 54⅜* |
| | 1 | Back bottom rail | ⅞ × 4 × 55¾* |
| | 8 | Back boards | ⅜ × 6¼ × 24⁵⁄₁₆ |
| | 2 | Back boards | ⅜ × 2 × 24⁵⁄₁₆ |
| | 2 | Back-foot filler blocks | 1¾ × 2⅛ × 5⅜ |
| | 2 | Front-foot filler blocks | 1⅝ × 2⅜ × 5⅜ |
| | 8 | Drawer-frame stiles | ⅞ × 2½ × 28⅝ |
| | 8 | Drawer-frame rails | ⅞ × 2½ × 13⁹⁄₁₆* |
| | 4 | Center drawer-frame rails | ⅞ × 2½ × 13⁹⁄₁₆* |
| | 2 | Drawer glides | ⅜ × 1¼ × 15¹³⁄₁₆ |
| | 2 | Drawer dividers | ¾ × 1¼ × 5¾ |
| | 8 | Drawer dust panels | ¼ × 12¹⁄₁₆ × 13⅞ |
| | 4 | Floor-frame stiles | ⅞ × 2½ × 28⅝ |
| | 4 | Floor-frame rails | ⅞ × 2½ × 13¹³⁄₁₆* |
| | 2 | Floor panels | ⅞ × 12⁵⁄₁₆ × 24⅛ |
| | 8 | Shelf support brackets | ⅜ × ⅞ × 22¹¹⁄₁₆ |
| | 4 | Shelf supports | ⅜ × ⅞ × 15¹¹⁄₁₆ |
| | 2 | Shelves | ¾ × 16½ × 28 |
| Face frame | 8 | Drawer sides | ⅝ × 3¹⁵⁄₁₆ × 16¼ |
| | 4 | Drawer bottoms | ⅜ × 11⅝ × 16 |
| | 4 | Drawer fronts | ¾ × 3¹⁵⁄₁₆ × 12⅜ |
| | 4 | Drawer backs | ⅝ × 3³⁄₁₆ × 12⅜ |

| | Amount | Description | Dimensions |
|---|---|---|---|
| Face frame (cont.) | 4 | Cutting-board stiles | ⅞ × 3½ × 16½ |
| | 2 | Cutting-board rear rails | ⅞ × 4¼ × 21⁵⁄₁₆* |
| | 2 | Cutting-board front rails | ⅞ × 2½ × 21⁵⁄₁₆* |
| | 2 | Cutting-board panels | ⅞ × 10¼ × 19¹³⁄₁₆ |
| | 2 | Side stiles | ⅞ × 2⅞ × 36⁹⁄₁₆ |
| | 1 | Center stile | ⅞ × 1¼ × 36⁹⁄₁₆ |
| | 1 | Top rail | ⅞ × ⅞ × 56* |
| | 1 | Top drawer rail | ¾ × ⅞ × 56* |
| | 1 | Bottom drawer rail | ⅞ × 1 × 56* |
| | 1 | Bottom rail | ⅞ × 2¹⁄₁₆ × 56* |
| | 2 | Drawer dividers | ⅞ × 1 × 6 |
| | 2 | Door stops | ⅜ × ⅝ × 27¼ |
| | 6 | Door stiles | ⅞ × 1⅞ × 22½ |
| | 4 | Center door stiles | ¹³⁄₁₆ × 1 × 17⅞* |
| | 2 | Overlap door stiles | ⅞ × 2¼ × 22½ |
| | 4 | Top door rails | ¹³⁄₁₆ × 2¼ × 11¼* |
| | 4 | Bottom door rails | ¹³⁄₁₆ × 3¼ × 11¼* |
| | 8 | Door panels | ¼ × 4⅞ × 17½ |
| Upper carcase | 2 | Sides | ¾ × 9¾ × 47¼ |
| | 2 | Upper-carcase top | ¾ × 8⅛ × 58½ |
| | 1 | Back bottom rail | ⅞ × 3½ × 55½* |
| | 2 | Back side stiles | ⅞ × 2¼ × 47¼ |
| | 1 | Back center stile | ⅞ × 3 × 41⅞* |
| | 2 | Back boards | ⅜ × 4½ × 41⅞ |
| | 2 | Back boards | ⅜ × 4⅞ × 41⅞ |
| | 2 | Back boards | ⅜ × 5½ × 41⅞ |
| | 2 | Back boards | ⅜ × 6⅛ × 41⅞ |
| | 2 | Back boards | ⅜ × 6½ × 41⅞ |
| | 1 | Back top rail | ⅞ × 2½ × 54⅛* |
| | 1 | Crosspiece | ¾ × 2⅞ × 58½ |
| | 2 | Top shelves | ⅞ × 8⅜ × 57⅝ |
| | 1 | Bottom shelf | ⅞ × 5⅜ × 57⅝ |
| | 2 | Filler strips | ½ × 1 × 46½ |
| | 2 | Feet | 1¼ × 2¾ × 8¹⁄₁₆ |

* Includes tenons

**Fig. 2: Face frame**



panel that sits flush with the frame to form the floor of the cabinet. The mortise-and-tenon joints of all the frames are through pinned with two ¼-in.-dia. dowels.

After all the frames were glued up, I cut the rabbets and dadoes needed to assemble the frames into a cabinet. First, I rabbeted the inside back edge of the case sides to receive the back stiles, and routed rabbets for the top frame and dadoes for the bottom frames and drawer frames, as shown in figure 1. Then I dadoed the center divider for the drawer frames and bottom frames. Finally, I cut the dado in the top frame so it would fit over the center divider.

The next step is to dry-assemble the internal frames, sides and center divider, If you're like me, there's never an extra pair of hands around when you need them. I've found that pregluing the back stiles to the sides makes this assembly easier and helps square everything when clamped Before gluing the back corner stiles to the sides, I chiseled out the mortises for the back bottom rail, ripped the grooves for the shiplap back boards and routed the dadoes for the bottom frames. Then I glued the stiles into their rabbets on the case sides, and dry assembled the carcase by aligning everything at the front and clamping the carcase together.

While the carcase is clamped up, I marked and cut the tenons on both the top and bottom rails of the back. The bottom rail has full-length tenons that are glued and pegged into the mortises in the back stiles. However, the top rail has stub tenons, ⅜ in. wide by 5/16 in. long, that slide into the groove in the back corner stiles to cap off the back boards. After ripping a groove along the inside edges of both the top and bottom rails to receive the ⅜-in.-thick shiplap back boards, I then clamped the bottom rail in place and measured for the back boards. I resawed the back boards from 1½-in.-thick stock on my tablesaw, book-matched them and then ripped rabbets on them to form the shiplap joints.

After fitting the back boards, I broke down the dry assembly and began gluing up the carcase. I started with half of the lower carcase, aligning and gluing both the drawer and bottom frames between the left side and the center divider; then I added the remaining frames and the right carcase side, gluing the back bottom rail in place also. Next, I glued the top frame into the rabbets in the sides and screwed it into the tops of the center divider's stiles. I clamped across the face and back of the carcase and then checked to make sure it was square. When the glue was dry, I removed the clamps, slipped the back boards into their grooves without glue, and nailed them to the bottom drawer frame with 1-in.-long brads. Then I glued and clamped the back top rail in place. To finish up the lower carcase, I notched the drawer frames and glued vertical drawer dividers in place; added drawer glides behind these vertical dividers; and installed adjustable shelf support brackets, as shown in figure 1. To ensure uniformity of the shelf support brackets, I drilled a series of holes with a Forstner bit along a 1⅞-in.-wide board's centerline and then ripped the board on the centerline to form two opposite brackets.

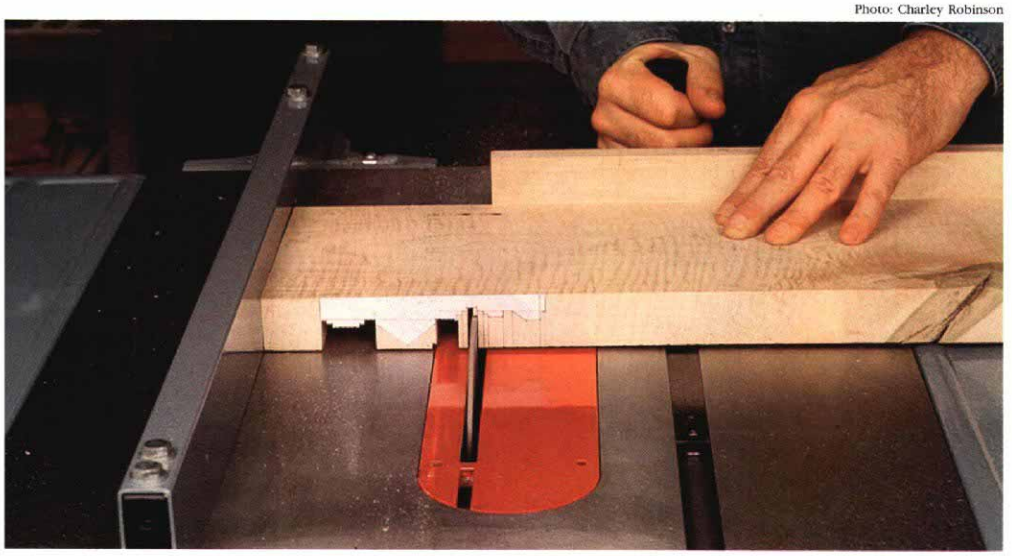
**Detailing the carcase**—I made a separate face frame for my hutch and then applied moldings to add a sense of dimension. The four face-frame rails are tenoned into the side stiles, and the center stile intersects the rails with half-lap joints, as shown in figure 2 on the previous page. I assembled the face frame and glued it to the carcase in one operation. Because I'm not a carver or turner, I designed the various moldings with straight lines and beveled faces to take best advantage of my skills and equipment. The highly polished, simple shapes blend well with the lines of the hutch. First I roughed out the moldings by making multiple passes on the tablesaw (see the bottom, left photo); then I refined the shapes with chisels, files and sandpaper before gluing the moldings in place.

I made the ⅛-in.-thick by 1-in.-wide bead that frames the drawer and door openings in 8-ft. lengths from scraps trimmed from other

Photo: Charley Robinson

***Cutting the bead*** *with a scratch stock made by filing a piece of tool steel to the desired shape imparts hand-crafted quality to the piece. A sawkerf helps establish a uniform shoulder before final shaping.*

Photo: Charley Robinson



***Tablesawn moldings***—*Layport first shapes his moldings on the tablesaw, working with stock that is large enough to keep his fingers away from the blade. After refining the details with hand tools, he cuts these large blocks into the individual pieces required.*

***The finished molding,*** *such as the piece that helps define a foot (right), adds dimensional qualities to the face of the hutch, yet keeps carcase construction as simple as possible.*

boards. To make the narrow bead with a scratch stock, I clamped the bead stock between two ¾-in.-thick boards in a bench vise for stability, and ran the scratch stock gently along the edge of the bead. I increased pressure as the bead started to form, and used a lighter touch on the last few passes, for a cleaner cut. After shaping the bead, I trimmed it to length, mitered the corners to fit the openings, and glued and clamped it to the face frame. Finally, I screwed the solid top to the top frame, working through the predrilled access holes in the top drawer frame.

Now only the drawers, doors and cutting boards were required to complete the lower carcase, Drawer construction is straightforward: through dovetails at the back and half-blind dovetails at the front. The bottoms are solid, ⅜-in.-thick panels, beveled to slide into ¼-in.-wide by ¼-in.-deep grooves in the sides and front. Each bottom is secured with a brad driven into the drawer back through a small kerf in the center back of the bottom panel. This allows the bottom to move at the back, while a small glue block holds the front in place. I made all the drawer fronts from a single ¾-in.-thick piece of curly maple to maintain the continuity of grain and color across the width of the carcase; the rest of the drawer parts are made with straight-grained maple. After all four drawers were completed, I scratched a bead along the top and bottom edges of the drawer fronts.

The mortised-and-tenoned door frames are ¾-in.-thick and carry ¼-in.-thick panels, similar to the carcase sides, but with a center stile. As with the case sides, the door rails and center stile should be 1/16 in. thinner than the outer stiles so they will fall below the beads on the stiles. I made the cutting boards the same as the floor of the carcase: a ⅞-in.-thick floating panel inside a mortised-and-tenoned frame. I put moldings on the front of the cutting boards (see figure 2 on p. 49) to serve as stops and to visually tie the cutting boards into the dimensional scheme of the cabinet front.

**Building the upper carcase—**Most of the tops on old hutches were built with a bottom board that rests on or just above the serving surface. Many also were divided in the center to support short shelves. However, I wanted long, uninterrupted shelves and an open bottom that would not disrupt the beauty of the serving surface. The pinned mortised-and-tenoned back frame adds rigidity to the upper carcase, and the shelves are dadoed into the back frame to prevent twisting and sagging.

After dimensioning the stock to the sizes given in the bill of materials on p. 49, I began cutting joints. First, I hand-cut the dovetails to join the top and sides. The top is narrower than the sides so the back boards could be slid into place from above. Next, I routed dadoes in the sides and back stiles to receive the shelves and rabbeted the rear edge of the sides for the back frame. After crosscutting the shelves to length, I scratched ⅛-in.-wide beads along the top and bottom of the shelves' front edges. I also routed ¼-in.-wide by ¼-in.-deep plate grooves, shown in figure 1, to accommodate various-size plates and platters.

I assembled the upper carcase by gluing and clamping the top, sides and shelves together. Next, I glued and pegged the back bottom rail to the back side stiles, and glued and clamped this assembly to the top, sides and shelves. The back center stile is tenoned into the top and bottom rails, but is not secured until the back boards are in place. After inserting the back boards and nailing them to the shelves with 1-in.-long brads, I glued and clamped the back top rail to the back stiles and pegged the center stile to the top and bottom rails. To complete the upper-carcase structure, I glued the beaded crosspiece to the top's front edge and into half-dovetail notches in the sides (shown in figure 1).

The upper-carcase molding, like the detail molding for the lower carcase, was also roughed out on the bandsaw and tablesaw, and refined with hand tools and sandpaper. I glued and clamped the trim to the front edges of the sides, and then attached the crown molding with screws through predrilled holes in the beaded crosspiece.

Because I sanded everything as I went along, just light scraping and minimal sanding were needed before finishing. I applied two coats of hot linseed oil and two coats of tung oil, rubbing each coat out with 0000 steel wool before buffing on a final coat of paste wax. When the finish was dry, I drilled holes for the three wood brackets, shown in the photo on p. 47, so I could secure the upper carcase to the lower carcase after the hutch had been delivered to my clients. □

*Ron Layport designs and builds one-of-a-kind furniture in Pittsburgh, Pa.*

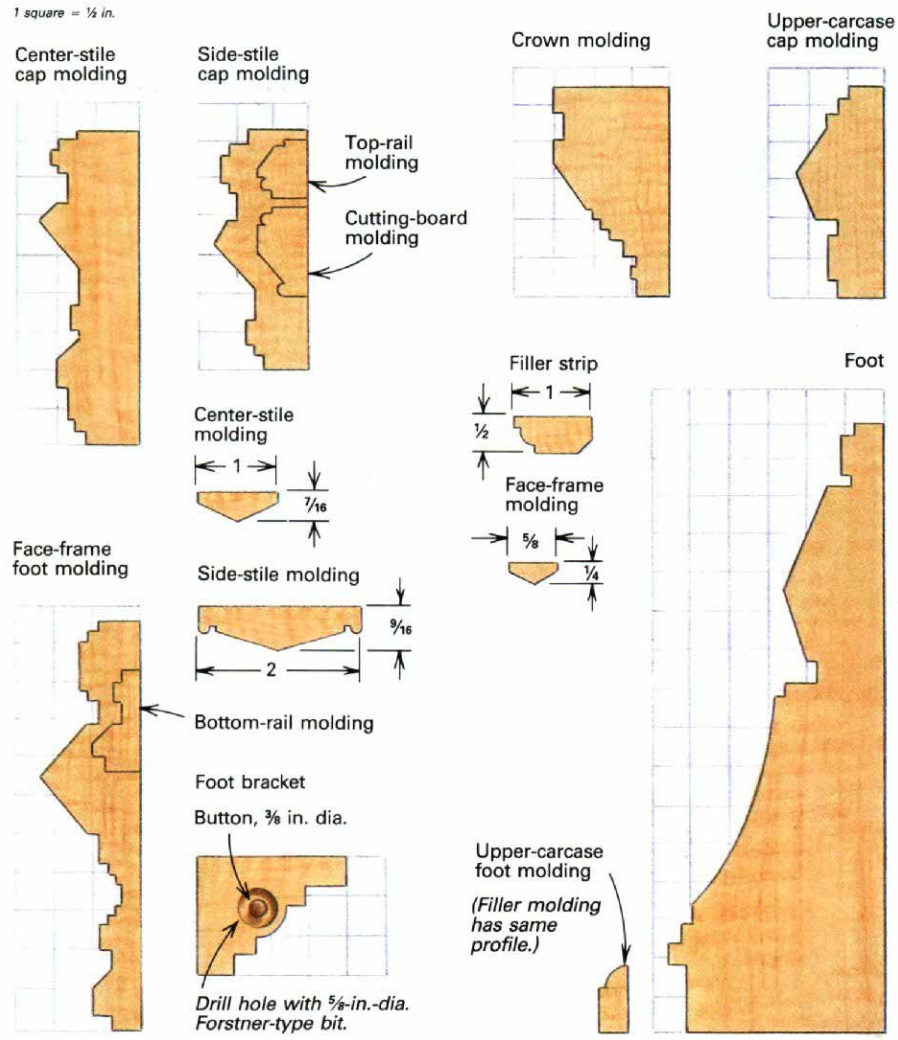



**Fig. 3: Molding profiles**