Build a Country Hutch

Router-bit set makes short work of traditional glass doors

BY MARTIN MILKOVITS

Being self-employed as a furniture maker, it's always tough to find time to build a piece for my own use. But my wife and I had always wanted a cupboard to store our collection of dinnerware, so I relented and spent what little spare time I had building a cupboard that fits not only the space available in our dining room but also the overall décor.

The design of this piece germinated while I was building a large cupboard for a client. That piece was twice as wide as this version, and was made of maple with a rather plain frame-and-panel façade. I wanted something a little smaller, with more flair. So I scaled down the size and revised a few details to enliven the piece.

This version is made mostly of cherry, stained to a deep reddish-brown for an aged look. You can leave the cherry natural, and it will darken over time. The glass doors showcase our prized plates and glassware, and are easy to make on the router table. The beaded, painted back slats add texture and contrast, while the custom hand-forged door hinges contribute to the classic feel.

Lower case is a complex assembly

The lower case of the cupboard consists of a frame-and-panel bottom, back, and sides. The legs do double duty as the stiles of the frame-and-panel assemblies. As such, there are a number of mortises and

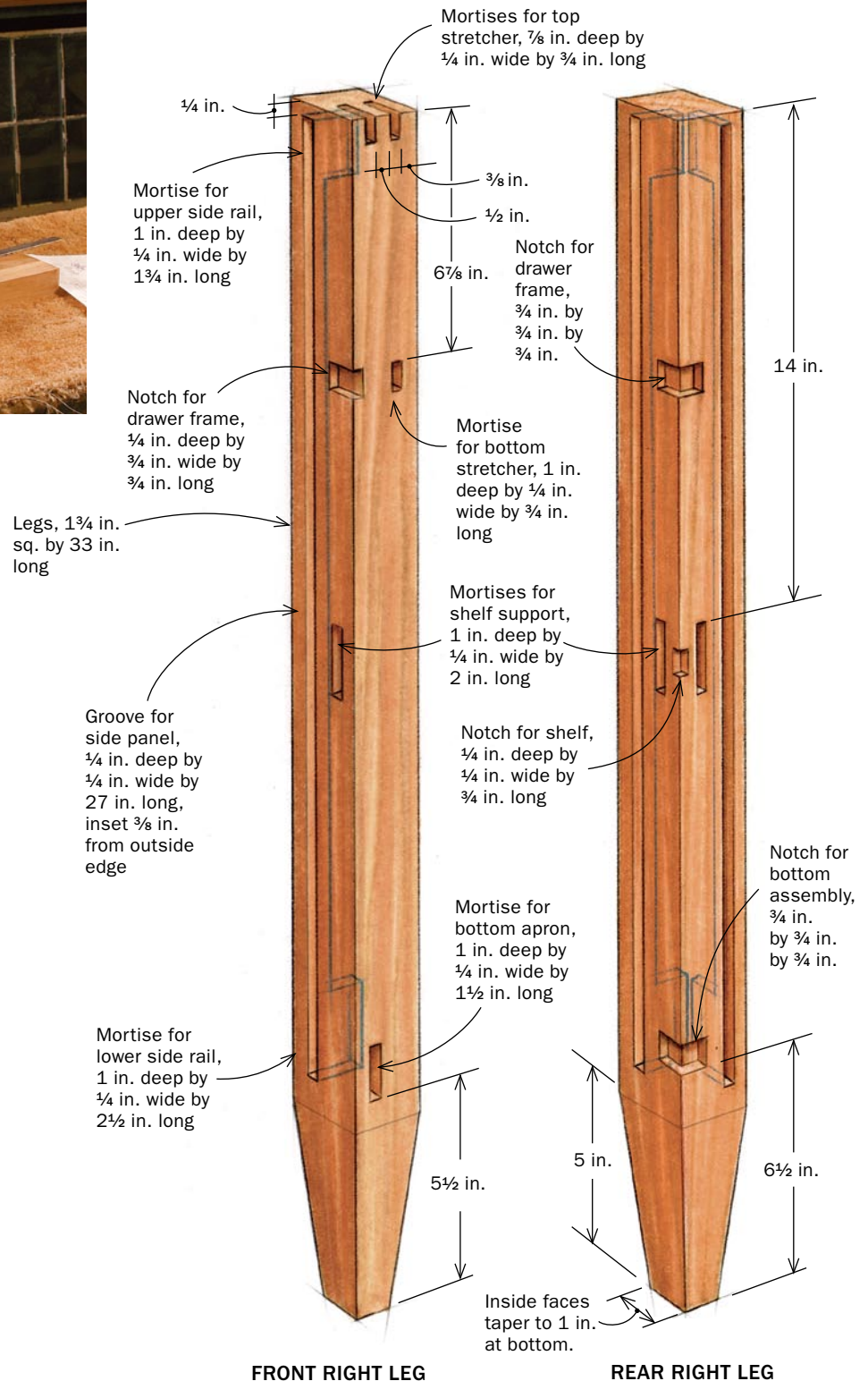Photos: Thomas McKenna; drawings: Bob La Pointe

The legs of the lower case also work as the stiles of the frame-and-panel sides and back, so there are a number of joints that need to be laid out. You'll also have to mark out notches for the bottom, the shelf, and the drawer guides.

grooves to be cut into each leg, as well as mortises for the front stretchers. The legs also are notched for the bottom and the drawer guides. For strength, the shelf sits in grooves in support members that also are mortised into the legs.

Taken individually, the lower case assemblies are relatively simple to construct. After dry-fitting everything together, begin assembling the back of the lower case. Don't forget to add the rear shelf support before gluing on the last leg. Set it aside to dry, then glue up the bottom frame-and panel assembly. Put together the front top and bottom stretchers and the drawer divider, and attach them and the lower front apron to the front legs. Check frequently for square.
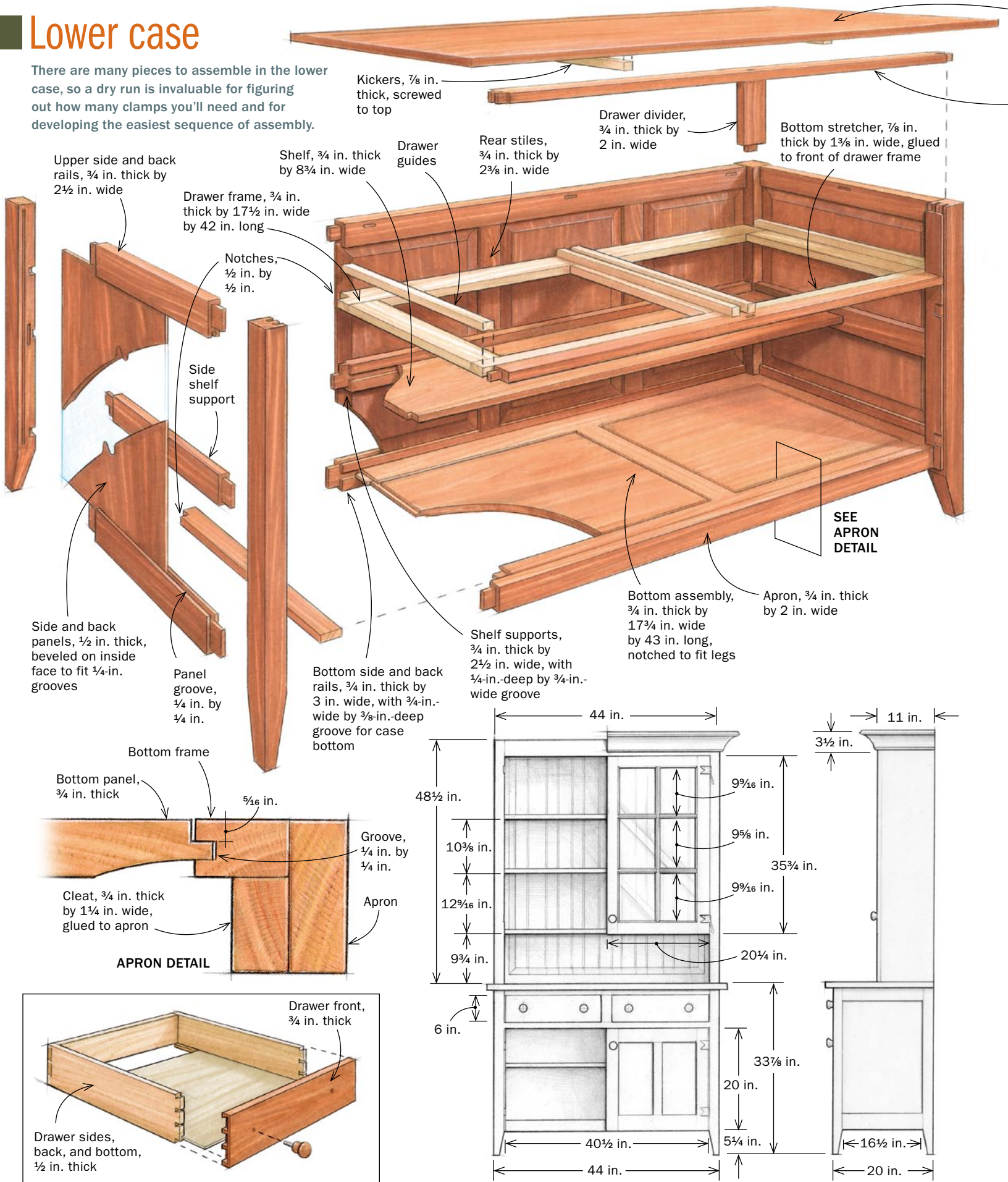
After the glue in the front, back, and bottom assemblies is dry, make up the drawer-guide assembly and glue it to the bottom stretcher. Glue the case bottom to the apron. Place the back assembly on the bench, add the shelf and its side supports (glue the shelf to the rear support only), then glue in the top and bottom side rails and slide in the side panels. When these two assemblies are dry, drop the case front and bottom assembly onto the rear assembly using the dadoes in the bottom side rails as guides. Drive the parts home with a mallet, then lift the case onto its legs and add clamps.

When the glue has dried, finish building the drawer system and cut the slots

Diagram labels:

Mortises for top stretcher, ⅞ in. deep by ¼ in. wide by ¾ in. long

¼ in.

Mortise for upper side rail, 1 in. deep by ¼ in. wide by 1¾ in. long

⅜ in.

½ in.

6⅞ in.

Notch for drawer frame, ¾ in. by ¾ in. by ¾ in.

Notch for drawer frame, ¼ in. deep by ¾ in. wide by ¾ in. long

14 in.

Mortise for bottom stretcher, 1 in. deep by ¼ in. wide by ¾ in. long

Legs, 1¾ in. sq. by 33 in. long

Mortises for shelf support, 1 in. deep by ¼ in. wide by 2 in. long

Groove for side panel, ¼ in. deep by ¼ in. wide by 27 in. long, inset ⅜ in. from outside edge

Notch for shelf, ¼ in. deep by ¼ in. wide by ¾ in. long

Notch for bottom assembly, ¾ in. by ¾ in. by ¾ in.

Mortise for bottom apron, 1 in. deep by ¼ in. wide by 1½ in. long

Mortise for lower side rail, 1 in. deep by ¼ in. wide by 2½ in. long

5½ in.

5 in.

6½ in.

Inside faces taper to 1 in. at bottom.

FRONT RIGHT LEG

REAR RIGHT LEG

Lower case

There are many pieces to assemble in the lower case, so a dry run is invaluable for figuring out how many clamps you'll need and for developing the easiest sequence of assembly.

Kickers, ⅞ in. thick, screwed to top

Drawer divider, ¾ in. thick by 2 in. wide

Bottom stretcher, ⅞ in. thick by 1⅜ in. wide, glued to front of drawer frame

Shelf, ¾ in. thick by 8¾ in. wide

Drawer guides

Rear stiles, ¾ in. thick by 2⅜ in. wide

Upper side and back rails, ¾ in. thick by 2½ in. wide

Drawer frame, ¾ in. thick by 17½ in. wide by 42 in. long

Notches, ½ in. by ½ in.

Side shelf support

Side and back panels, ½ in. thick, beveled on inside face to fit ¼-in. grooves

Panel groove, ¼ in. by ¼ in.

Bottom side and back rails, ¾ in. thick by 3 in. wide, with ¾-in.-wide by ⅜-in.-deep groove for case bottom

Shelf supports, ¾ in. thick by 2½ in. wide, with ¼-in.-deep by ¾-in.-wide groove

Bottom assembly, ¾ in. thick by 17¾ in. wide by 43 in. long, notched to fit legs

Apron, ¾ in. thick by 2 in. wide

SEE APRON DETAIL

Bottom frame

Bottom panel, ¾ in. thick

5⁄16 in.

Groove, ¼ in. by ¼ in.

Cleat, ¾ in. thick by 1¼ in. wide, glued to apron

Apron

APRON DETAIL

Drawer front, ¾ in. thick

Drawer sides, back, and bottom, ½ in. thick

44 in.

11 in.

3½ in.

48½ in.

10⅜ in.

12⁹⁄16 in.

9¾ in.

6 in.

9⁹⁄16 in.

9⅝ in.

9⁹⁄16 in.

35¾ in.

20¼ in.

33⅞ in.

20 in.

5¼ in.

40½ in.

44 in.

16½ in.

20 in.

Top, ⅞ in. thick
by 21½ in. wide
by 47 in. long

Top stretcher, ⅞ in.
thick by 1⅝ in. wide

Hinge stile,
2½ in. wide

Top rail,
2½ in. wide

Tenons, ¼ in.
thick by 1 in.
long

Center stile,
2 in. wide

Panels,
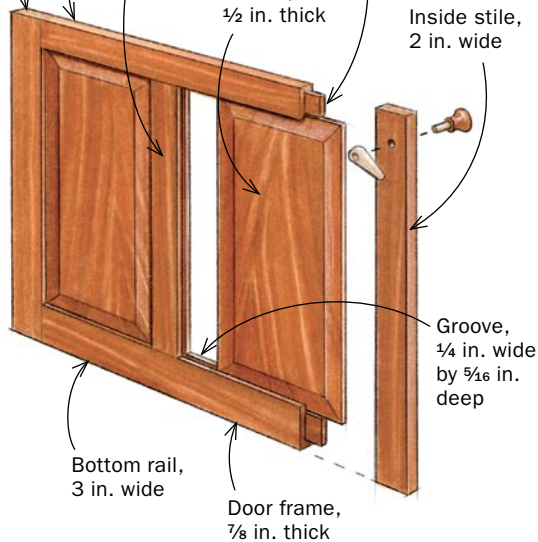½ in. thick

Inside stile,
2 in. wide

Groove, ¼ in. wide
by 5⁄16 in.
deep

Bottom rail,
3 in. wide

Door frame,
⅞ in. thick

for the buttons that will secure the top to the lower case. Once that's done, you can make and install the doors and drawers and cut and fit the top.

Upper case is dovetailed together

A cupboard is designed to hold stacks of plates and other dinnerware, which can put great demands on the structure. For maximum strength, the top and sides of the upper case are dovetailed together, and the shelves mate with the sides via tapered sliding dovetails. The tapered pins and slots add strength through the wedging action and make it easy to slide the shelves home without binding during glue-up.

After cutting the dovetail joint that connects the top to the sides, rout rabbets in the top and sides for the back panel frame and the front face frame. Stop the cuts short of the ends on the top piece to prevent an unsightly gap in the corners when the pieces are put together. Square up the corners after the case has been glued up.

Now lay out the shelf locations so that they will line up with the horizontal muntins in the glass doors. Set up a fence

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ASSEMBLE THE CASE IN STAGES

1. After gluing up the bottom assembly, attach it to the front legs. Put together the stretchers and the vertical drawer divider, and then attach them and the lower front rail to the front legs. Check frequently for square.

2. Glue the rear panels and stiles into the rails. Attach one leg (remember, the panels are not glued to the legs), slide in the rear shelf support, then attach the other leg. Glue in one side shelf support, slide the shelf into place (glue it to the rear support only), then install the other side support.

3. Glue the front to the back. Place the back assembly on the bench. Install the side panels, then hoist the case front and drop it down on the rear assembly.
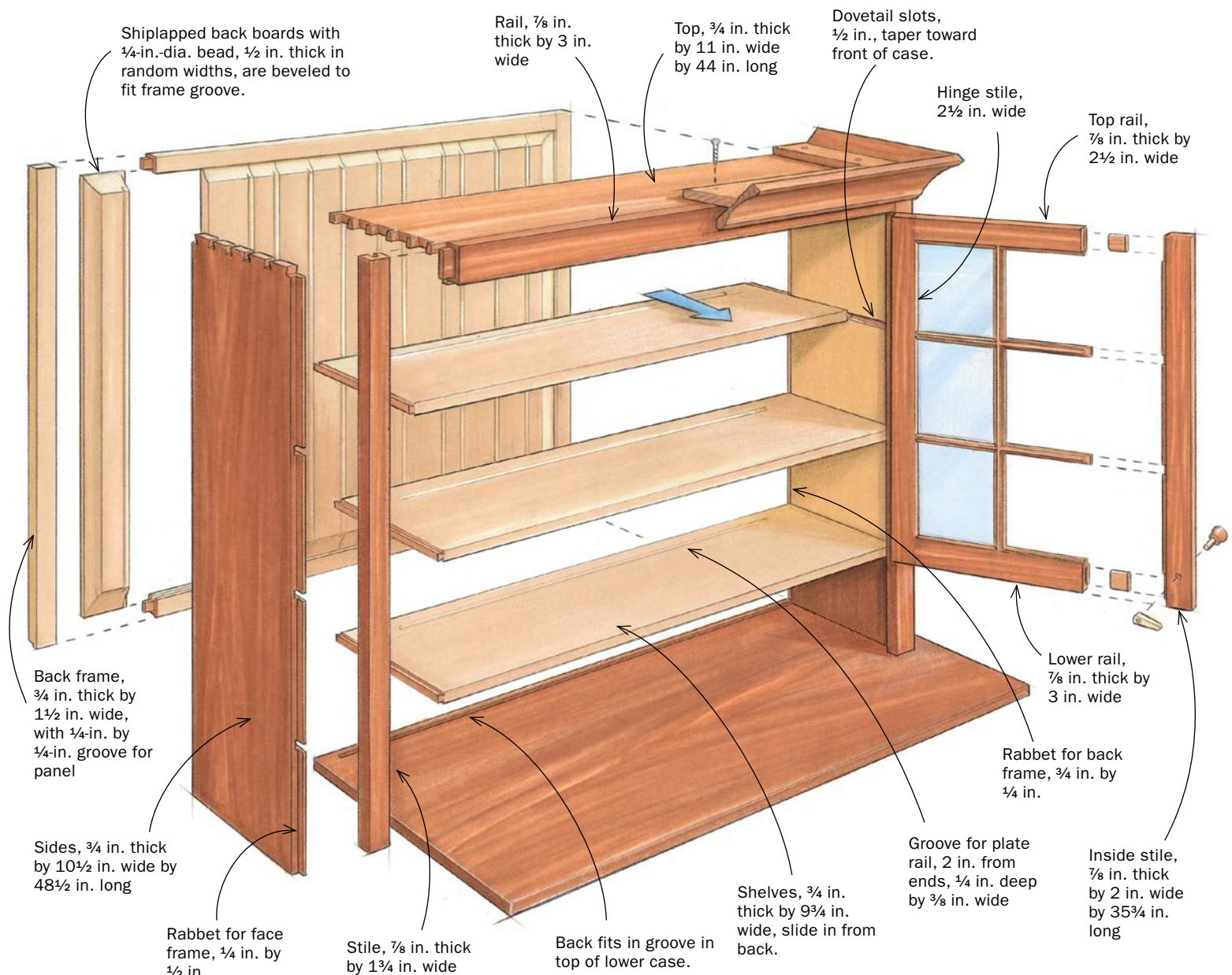
Upper case

The top case is a bit simpler to glue up than the lower case. The top and sides are dovetailed together first, then the front face frame is added. The shelves mate with the sides via tapered sliding dovetails, and the back assembly sits in a rabbet.

Connect the top to the sides. *To ensure that the assembly remains square, the author clamps square sections of plywood into each corner.*

Add the front face frame. *For a good fit, rip the rail and stiles so that they're a hair proud of the case, then plane the frame flush to the sides after the glue dries.*

Shiplapped back boards with ¼-in.-dia. bead, ½ in. thick in random widths, are beveled to fit frame groove.

Rail, ⅞ in. thick by 3 in. wide

Top, ¾ in. thick by 11 in. wide by 44 in. long

Dovetail slots, ½ in., taper toward front of case.

Hinge stile, 2½ in. wide

Top rail, ⅞ in. thick by 2½ in. wide

Back frame, ¾ in. thick by 1½ in. wide, with ¼-in. by ¼-in. groove for panel

Lower rail, ⅞ in. thick by 3 in. wide

Rabbet for back frame, ¾ in. by ¼ in.

Sides, ¾ in. thick by 10½ in. wide by 48½ in. long

Rabbet for face frame, ¼ in. by ½ in.

Stile, ⅞ in. thick by 1¾ in. wide

Back fits in groove in top of lower case.

Shelves, ¾ in. thick by 9¾ in. wide, slide in from back.

Groove for plate rail, 2 in. from ends, ¼ in. deep by ⅜ in. wide

Inside stile, ⅞ in. thick by 2 in. wide by 35¾ in. long

Slide in the shelves. *Flip the case onto its front to install the shelves. You should be able to drive each shelf home with only a few light blows of a mallet.*

Drop the back panel in place. *Remember to rout the rabbet on the bottom of the frame to mate with the groove in the top of the lower case.*

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Take a tour of the finished project with Milkovits, and learn how to produce the tapered sliding dovetails.

for the router to cut the dovetail slots and adjust the fence so that the slot tapers toward the front of the case. Cut the tapered pins on the shelves using a router table, working one shelf at a time to allow for any differences in the slot widths.

After cutting the pins on the shelves, rout a stopped groove in each one for a plate rail, which is handy if you simply want to display fancy plateware. Now glue up the top and sides of the upper case and slide in the shelves (see the sequence in the photos above).

Once that is complete, build the front face frame, which will hold the glass doors, and the back assembly, which is basically a series of shiplapped boards that float in a frame to allow for expansion and contraction.
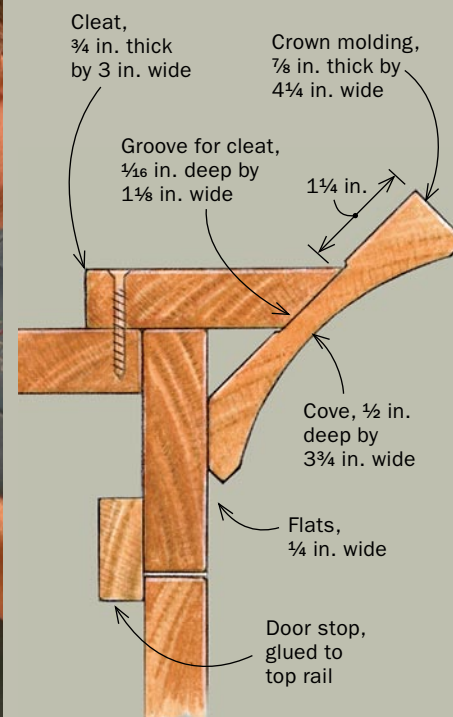
The case is topped off with a simple crown molding cut on the tablesaw. (For a detailed explanation of how to make crown molding, see *FWW #168*, pp. 68-73.)

Glass doors add interest and elegance

To simplify construction, the frame of the glass doors in the upper case is assembled with loose mortise-and-tenon joints. Mill the rails and stiles to size, cut the mortises


A SIMPLE WAY TO ATTACH THE CROWN

Cleat, ¾ in. thick by 3 in. wide

Crown molding, ⅞ in. thick by 4¼ in. wide

Groove for cleat, 1/16 in. deep by 1⅛ in. wide

1¼ in.

Cove, ½ in. deep by 3¾ in. wide

Flats, ¼ in. wide

Door stop, glued to top rail

Install the crown molding. *Screw and glue the side pieces. Then scribe and fit the front section for a perfect miter.*

Glass doors

To ease construction, the door frames are assembled with loose mortise-and-tenon joints. The muntin stock and the inside edges of the frame can be completed quickly using a router-bit set consisting of a sticking bit, a cope bit, and a rabbeting bit.
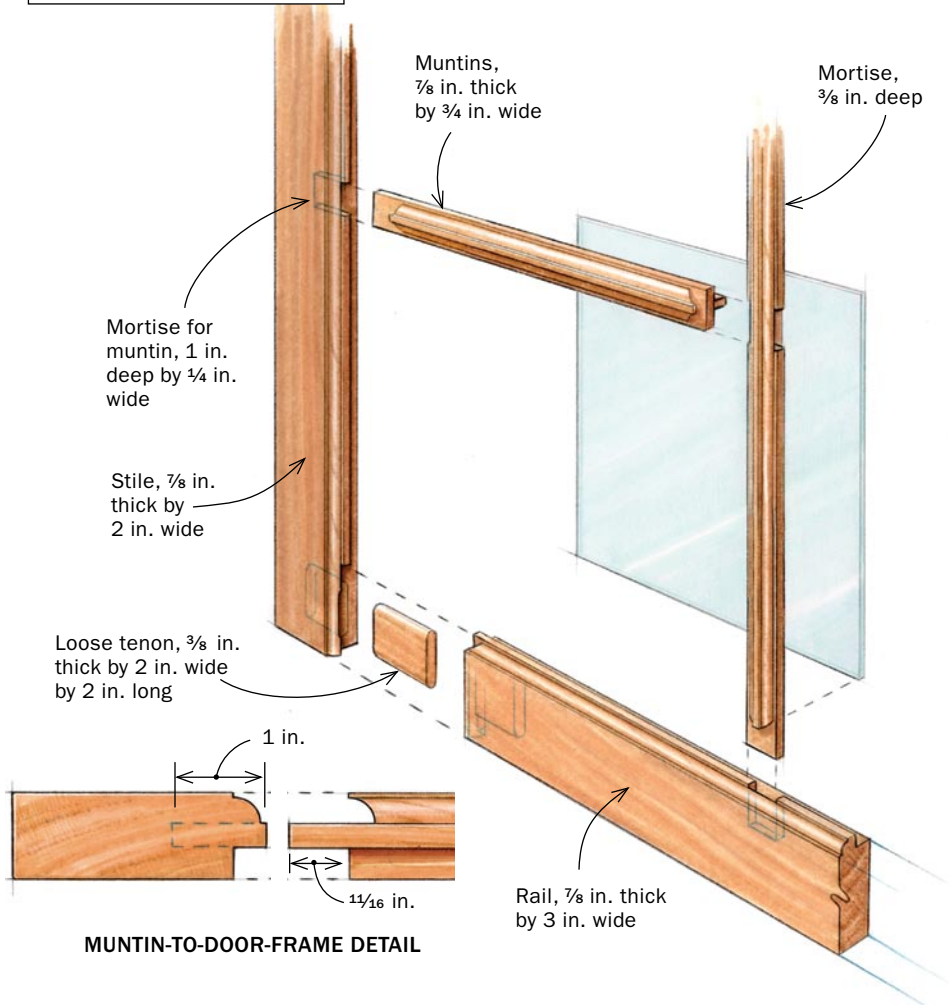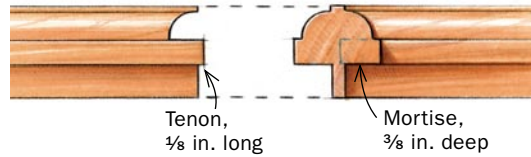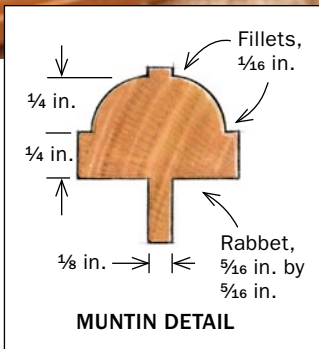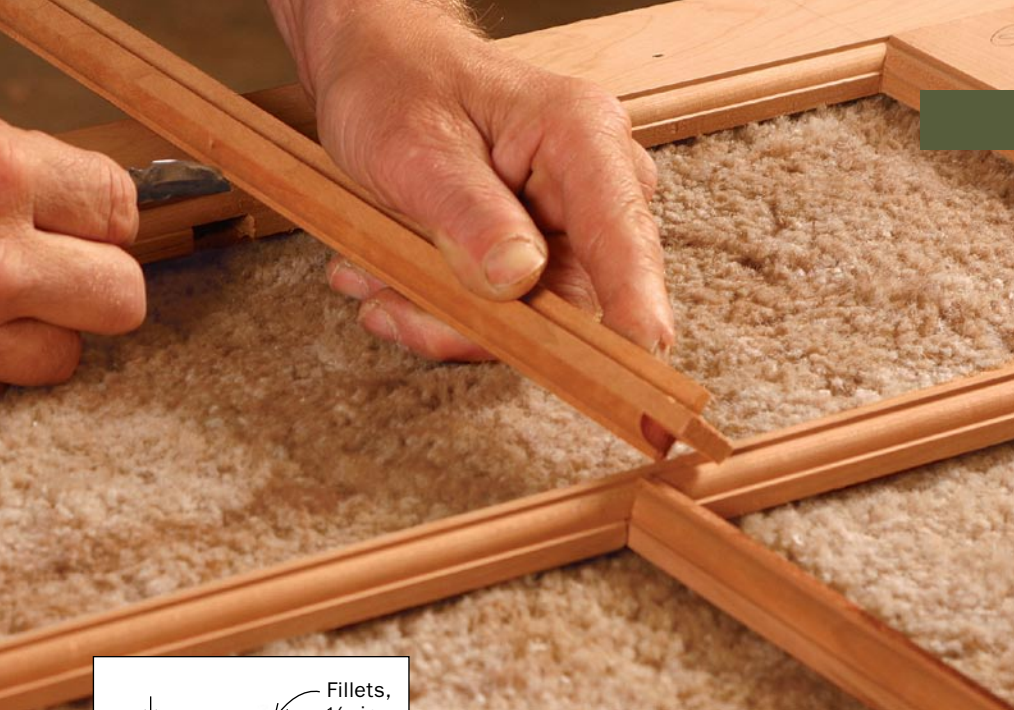
SHAPE THE MUNTINS

Safe way to profile the thin muntins. Rout the ovolo profile on a wide piece of stock (top), then rip to width on the tablesaw. To keep your hands clear of the bit while cutting the rabbets, mount the pieces in a wide cradle profiled to fit the muntin (bottom).

COPE THE ENDS

For a clean cope, use a jig and backer board. Place the stock in a sled that rides in the miter slot of the router table (above). Clamp the muntin between a fence and a backer block to prevent blowout. (left).

MUNTIN DETAIL

Fillets, 1/16 in.
1/4 in.
1/4 in.
1/8 in.
Rabbet, 5/16 in. by 5/16 in.

MUNTIN-TO-MUNTIN DETAIL

Tenon, 1/8 in. long
Mortise, 3/8 in. deep

Muntins, 7/8 in. thick by 3/4 in. wide

Mortise, 3/8 in. deep

Mortise for muntin, 1 in. deep by 1/4 in. wide

Stile, 7/8 in. thick by 2 in. wide

Loose tenon, 3/8 in. thick by 2 in. wide by 2 in. long

MUNTIN-TO-DOOR-FRAME DETAIL

1 in.
11/16 in.

Rail, 7/8 in. thick by 3 in. wide

and tenons, then rout the profile on the inside edges.

To shape the profile on the frame and the muntins, I used a divided-light door router-bit set from CMT (item No. 800.525.11). The set has a sticking bit to cut the profile, a cope bit to shape the mating profile on the muntin and rail ends, and a rabbeting bit to cut the recesses for the glass panes.

To make routing the narrow muntin stock safer, I did a few things. First, I routed the ovolo profile on wider stock, then ripped the pieces to width. To rout the rabbets on the back of the thin muntins, I mounted the pieces in a cradle, simply a 3½-in.-wide piece the same thickness as the muntin stock, with one edge shaped in the negative image of the ovolo profile. The cradle holds the piece securely and keeps my fingers clear of the rabbeting bit.

To hold the thin stock for coping, I used a sled that rides in the miter slot of the router table. The muntin is clamped between a fence and a backer board to prevent tearout as the bit exits the cut.

Once you have completed all the profiling, chop the mortises in the stiles and rails and the vertical muntin using a hollow-chisel mortiser or chisels. When the frame is glued together and the door is fitted to the opening, add the glass panes, securing them with brads and glazing putty.

I used hand-forged iron butterfly hinges, which can be a bit tricky to install. I align the bottom edge of the hinge with the inside edge of the top or bottom rail. Lay the hinge backward on the stile with the back flap on the edge of the stile and the back side of the butterfly flap facing out on the face side of the stile. Locate the center hole and install a screw, making sure that the butterfly flap is still flat on the stile. Remove the screw, and place the hinge in the normal position, reinstall the screw, and then scribe around the back flap. Chop in the hinge mortise and install the rest of the screws. If done correctly, the back side of the butterfly flap should be in the same plane as the door and stile face.

Finish gives an aged appearance

For final sanding, first wet the piece to raise minor dents that happened during construction. Power-sand to P180-grit, wet the piece again to raise the grain, then hand-sand with P150 and P180 grits.

To add an antique patina, I used 100 drops of TransTint dark walnut #6005 dye per 1 pint of denatured alcohol as a wash-coat, followed by General Finishes candlelight stain and several coats of Minwax Antique Oil and wax. The back panel and upper case interior are painted an ivory color. □

Assemble the door frame. *Drive the horizontal muntins into the stile mortises, then install the vertical muntins in the rails (above). Elevate the frame so you can get clamps underneath, then bring all the parts together (right).*