



# Colonial Cupboard

Freestanding cabinet offers a tutorial on hand-cut joinery

BY MIKE DUNBAR

This little cabinet is based on a late-18th-century original owned by a friend of mine. It's a rare piece, and antique dealers regularly pester him about selling it. The dealers want his cabinet for the same reason you will want to make it. There is always demand for an attractive and handy storage space.

The cabinet is interesting for woodworkers for two reasons: First, it's a tutorial on hand-cut joinery. Although a small piece, this cabinet requires nine types of joints. You will get some practice on dovetails, dados, rabbets, shiplaps, coping, miters, panel-in-groove and mortises and tenons (both blind and through-). While some of the work would be more straightforward if it were done on machines, there is value in sharpening your hand-tool skills (and certainly less dust and noise). The choice is yours, of course.

Second, this cabinet is a chameleon. It can be expressed in a host of ways. It's a good example of how a piece of furniture can be dressed up or down (see examples on p. 68).

Another plus is that you can drastically change this cabinet's dimensions to make it fit a particular space or application: My cabinet was designed to house my 8-year-old's videocassette collection. You can even substitute a base molding for the bracket base and hang this cupboard on a wall.

Most of the stock is either  $\frac{3}{4}$ -in.-thick or  $\frac{1}{2}$ -in.-thick pine. The cornice is  $\frac{5}{4}$  stock. I went to a local home center and bought #2 common boards, 1x8x12. There are so many small parts to the cupboard that I was able to work around most of the large knots or place them in shelves or back boards. The dime-sized knots that appear in the carcass and door give me just the look I had want—not too perfect but not knotty pine, either.

As you build the piece, remember to use reference marks to keep track of parts and their positions.

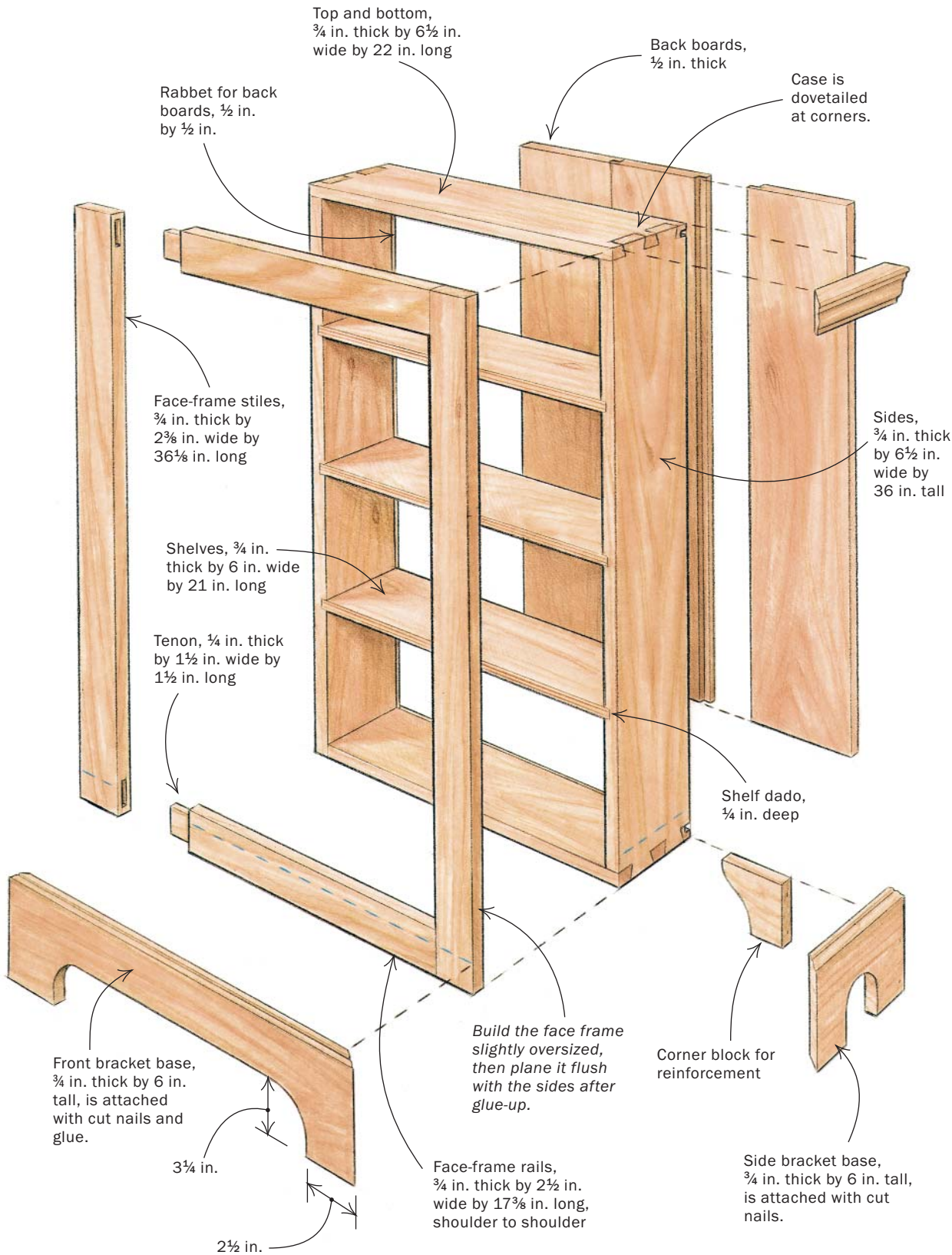
## The carcass comes first

There are two large dovetails on each corner. Although it makes no real difference, my habit is to lay out the pins first. I sized the pins by eye, so each joint varies slightly. Because the dovetails are mostly covered by the cornice or the bracket base, uniformity does not matter.

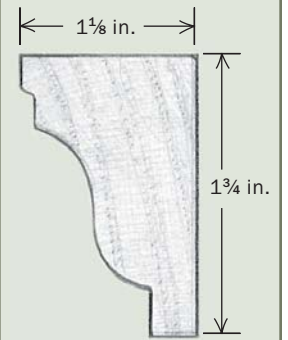
Dry-assemble the dovetails to test their

# A DOVETAILED BOX IS THE FOUNDATION

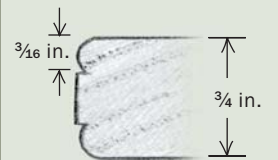
Shelves, back boards, face frame, cornice and bracket base all attach to the dovetailed case. Then, all that's left is the frame-and-panel door.



## CORNICE DETAIL

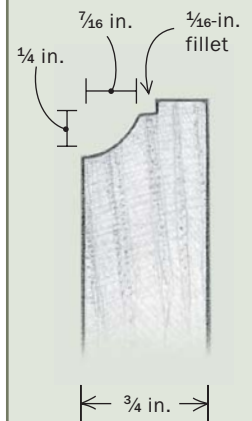


## SHELF DETAIL



**Bead the front edges of the shelves.** The author uses a flat-head screw driven into a dowel to cut a small groove in each edge.

## BRACKET-BASE DETAIL





## QUICK DADOES WITH A UTILITY KNIFE AND CHISEL



**Matching dados.** Butt the sides against each other and lay out the locations of shelf dados (1). Use a utility knife to scribe the edges as deeply as possible (2), then pare out the waste with a chisel (3). Scribe and pare until you reach final depth. If you have one, use a router plane to clean up the bottom of the dado.

fit. Also, check the case for square by measuring the diagonals from one corner to the opposite corner. If the measurements are the same, the case is square.

**Rabbets and dados**—Once the carcass has been dovetailed, rabbet the back to accept the back boards. Cut the rabbets with an adjustable rabbet plane (called a fillister), and clean them up with a shoulder plane. For a neater joint, check your progress with a small square. The four rabbets will leave small, square openings where they meet on the carcass, but these are visible only from the back.

Arrange the shelf placement to accommodate your cabinet's intended purpose. Lay out the dados on one side. Instead of measuring for the dados on the other

side, match up the sides so their inside faces are touching. Then transfer the layout marks from one side to the other. Direct layout techniques are always preferable to trusting a tape measure and your memory.

In the past, every woodworker owned a dado plane. But no one makes them any more, and the originals are expensive. You can use a multiplane like a Stanley No. 45 if you have one, but I find these all-in-one molding planes very difficult to use. You can make these dados with nothing more complicated than a utility knife and a chisel (for more on this technique, see *FWW* #134, p. 52). Score straight lines along each edge of the dado, and pare out the waste between them. Score and pare until you are at the desired depth. You can speed things up by using a router plane (also

called a widow's tooth) to regulate the depth of the dado.

Once the carcass is finished, glue it up and clamp it, measuring diagonals to check for square.

### The face frame

The door is hung inside a face frame joined with blind mortises and tenons. You don't want to risk this frame being slightly smaller than the cabinet, so leave the stiles and rails a little wide: about  $\frac{1}{8}$  in. per side is enough. After the face frame has been applied, you can handplane its edges flush with the carcass. Also, leave the stiles 4 in. longer than necessary. This will result in "horns" on both ends that can be trimmed when you are fitting the face frame to the carcass. These horns make it less likely that

you will split the mortises or break out their tops while chopping them.

Before laying out the joints, mark the front and outside edges as reference surfaces and number the corners. Use a marking or mortise gauge to lay out the mortises and tenons. For accuracy, use a single edge as a reference surface for the gauge's fence. Chop the mortises with a mortise chisel and cut the tenons with a backsaw (for more on these techniques, see *FWW* #142, pp. 50-52). Fit each joint and then test-fit the entire frame. Check for square. If you are satisfied, glue and clamp it. Afterward, trim the horns with a backsaw.

In keeping with the period, I glued and nailed the face frame to the cabinet with 4d cut nails, leaving the heads flush with the surface. The rectangular heads of cut nails are attractive and also less obvious than round heads. I purchase my cut nails from the Tremont Nail Co. (800-842-0560; www.tremontnail.com).

Finally, plane the face frame flush with the carcass.

### Shelves and back boards

The shelf fronts are molded, and if you wish to include this feature, choose stock that is knot-free along one edge. The molding profile—called an astragal—is a traditional way of decorating shelves. If you don't have a way of making this shape, you can run a small bead on each edge with a simple scratch stock.

Cut the shelves to length and fit them into their dados. There is no need to secure them with fasteners or glue because they will be held captive by the back boards and face frame.

The back boards are shiplapped, meaning the boards have two rabbets that overlap. Shiplapped boards allow for seasonal movement without gaps opening. Quick word of caution: If you are making this cabinet in the summer, you can fit the back boards tightly together; however, if you make the piece during the heating season, fit the back boards loosely, giving them room to expand.

### The cornice

You have two considerations when choosing a profile for the crown molding. The most important is that the cornice be in scale with the cabinet. The type of profile is less important; it depends on how accurate you wish to be to a particular peri-

od. The ogee is typical of the 18th century, but other shapes came into vogue during the 1790s and early 1800s.

I used an appropriately sized ogee molding plane to make the cornice. This would be a great time to tune up that antique molding plane you own and learn to use it.

When you run moldings by hand, it is important to use straight-grained stock. Also, it's much easier to mold a single piece of wood long enough for the front and two sides at once.

Today, we usually cut miters with a table-saw or a miter saw. The hand method is to use a miter box and backsaw. The miter box is simple to make. But be careful not to cut the miters going the wrong way.

Draw an angled line showing which way each cut has to go.

If you need to trim a miter to fit, a low-angle block plane is ideal. Hold the tool against your chest and pull the miter over the cutting edge. This method lets you cut precisely and only where you want to.

The cornice is also nailed to the cabinet with cut nails. Add glue between the mitered ends of the molding to stop them from opening up later. The top of the cabinet is visible, so use a handplane to level off the cornice and dovetails.

### Bracket base

The upper edge of the bracket base is molded with a stepped cove. Furniture

## NAIL ON THE FACE FRAME AND BACK



**Attach the face frame with glue and 4d cut nails.** These fasteners are appropriate to the period, and their thin, rectangular heads—aligned with the grain—are less obtrusive than round ones.

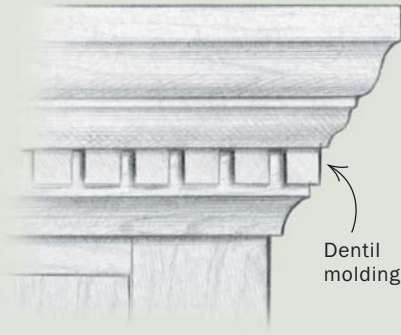
**Shiplapped back boards.** The boards are rabbeted with the fillister to create the shiplap joints. When nailing on the boards, leave gaps between them to allow for seasonal movement.



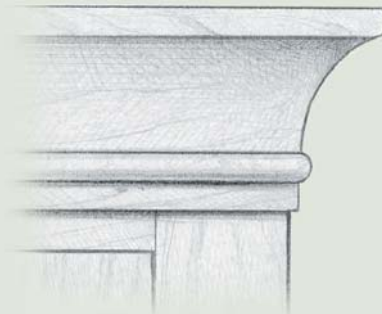
## CROWN MOLDING

### DETAILS MAKE THE DIFFERENCE

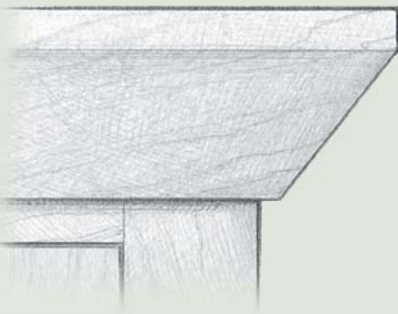
As built, this cabinet contains a fairly standard 18th-century vocabulary. By changing a few of these elements, you can shift the pedigree and overall appearance of the piece.



Make the cabinet more formal by building it of walnut or mahogany and adding complexity, including a dentil molding, to the cornice.



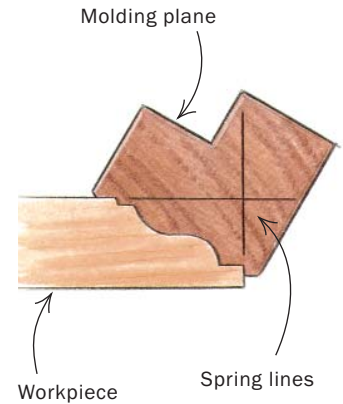
Bring the cabinet into the early 1800s by using a Federal-style molding for the cornice and a flat door panel with either an ovolo or an ogee on the stiles and rails. If you do so, use butt hinges and a later-style catch.



Finally, create a country look by trading the moldings for simple bevels.



**Mold the cornice with an ogee molding plane.** Take all three pieces of the cornice from the same stock. Cut the stock wider than necessary, to handle the cutting pressure.



Many molding planes are designed to be tilted in use. Spring lines offer the user a visual reference for maintaining the proper angle while planing.



**Fit the miters to each other.** Cut the front piece to size and tack it on temporarily. Then trim the miters on each side piece to fit the front piece. A good way to do this is to hold a block plane against your chest and drag the miter across it.

makers borrowed the cove from 18th-century architecture, but they added a small step at the top, called a fillet, to create another shadow line.

After cutting and testing the miters, make the scroll cuts along the bottom of each piece. I use either a small bowsaw or a coping saw. Here's a tip: It is easier to control a coping saw if you set it up to cut on the pull stroke.

Attach the base to the cabinet with cut nails. Then flip over the cabinet and glue in

corner blocks, which will help strengthen the base.

### Raised-panel door

The raised-panel door is your next lesson in hand-tool joinery. Making a simple door with unmolded stiles and rails and a flat panel is pretty straightforward. But add a couple of details, and the level of complexity increases by a surprising amount.

These stiles and rails have a typical 18th-century thumbnail molding, and the panel



is raised, or “fielded.” Begin by numbering the ends of the mating stiles and rails and then marking the reference edges. As with the face frame, it will be a disaster if your door is too small, so make the stiles and rails oversized. And once again leave the stiles 2 in. longer on each end to support the mortises.

**Cut the through-mortises first**—Eighteenth-century passage and entryway doors were typically through-joined, with the joints pinned and wedged rather than glued. These are very effective techniques for preventing sagging. When you lay out the mortises and tenons, you can use the same setting on your marking gauge that you used for the face frame. Again, use a single reference surface. Lay out the ends of the through-mortise, and with a square, continue the lines over one side and onto the other edge.

Chop the mortise only about halfway through. Then flip over the stile and finish the mortise from the other side. If you are careful to hold your chisels in line with the workpiece, both cuts should meet in the middle. Wait to cut the tenons.

**Plow the grooves**—In the 18th century, grooving was done with a plane called a plow. These were and still are made in wood, like mine. They were also made in cast iron. A plow plane features a depth stop and an adjustable fence to control the placement of the groove. Plow planes come with sets of cutters of graduated widths. Be sure to fence the plow against a corresponding face on each rail or stile; otherwise, the grooves may not line up at the corners.

Cut your tenons as you did for the face frame and test their fit. Leave the tenons short of the stile’s full width by exactly the depth of the groove. They will not fit all the way through until the molded edge has been cut and coped.

**Cut and cope the molding**—I have a molding plane that makes a thumbnail. However, you can also use a rabbet plane to create the fillet and a block plane to round the profile (see *FWW* #134, p. 53). Use a small profile template to ensure consistent results.

The thumbnail moldings will not come together unless you cope them and cut away the mortise’s front edge to the depth

of the groove. Coping is a way to make moldings come together at an apparent miter without the problem of the miter opening with seasonal movement. Cope-and-stick router bits undercut the entire tenon shoulder. However, in hand work, it is only necessary to undercut one corner.

To cope the joint you need a gouge close to the same radius as the thumbnail. If the gouge is ground along its inside curve, you can make a clean plunge cut. The thumbnail on the rails and stiles is ½ in., so measure back ½ in. from the shoulder along the molding to locate the top of the cope. The

bottom will be at the intersection of the fillet and the shoulder. If your pine is at all crumbly, a straight plunge cut can crush some of the molding and leave a ragged miter. I avoid this by using a slight slicing motion toward the tenon (see “Coping the Corners” on p. 70). Assemble the joint. If your miter is ragged or uneven, you can clean up the coped edge with a sharp chisel. Cope the remaining joints and dry-fit the door. Test for square.

**Raise the panel**—Cut your panel to size. Remember, this wide panel is intend-

## BUILD THE BRACKET BASE



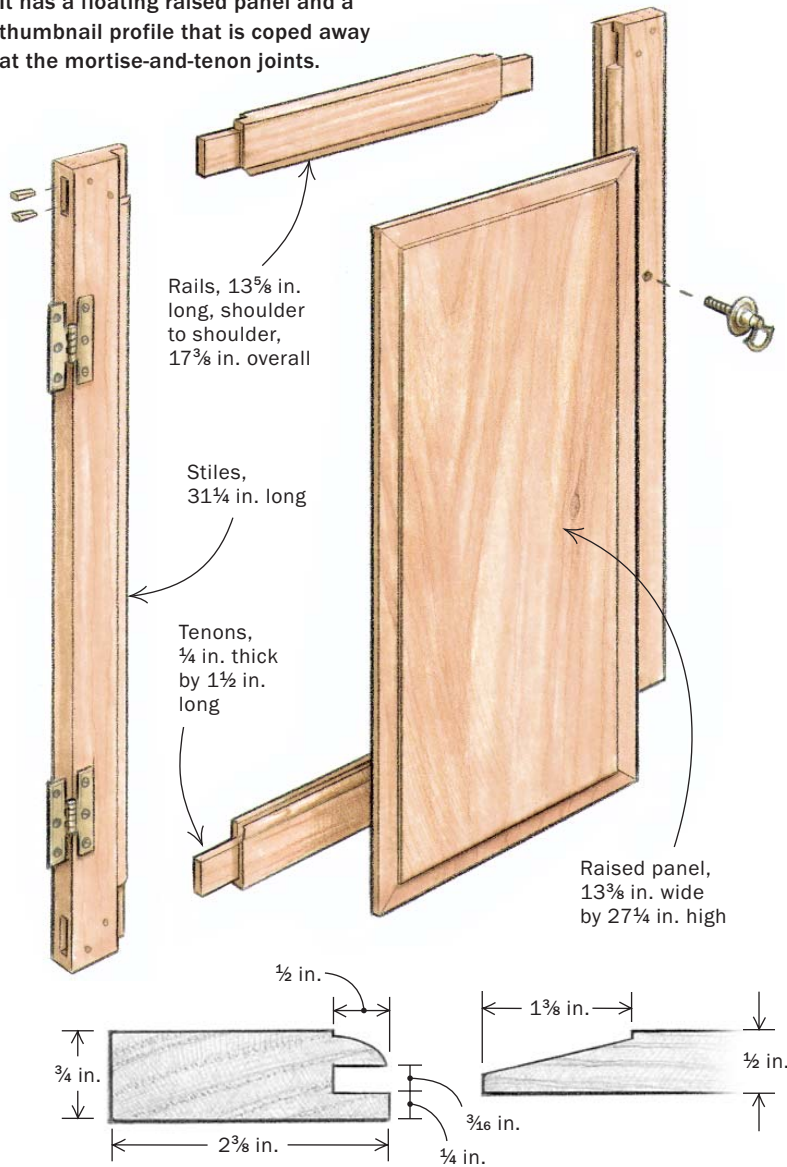
**Make the scroll cuts in the bracket base.** Templates are used to lay out the simple cuts, and a coping saw makes short work of the job. The bracket base is molded, mitered and attached in much the same way as the cornice.

**Send in the reinforcements.** Corner blocks are nailed and glued on the back to strengthen the base.



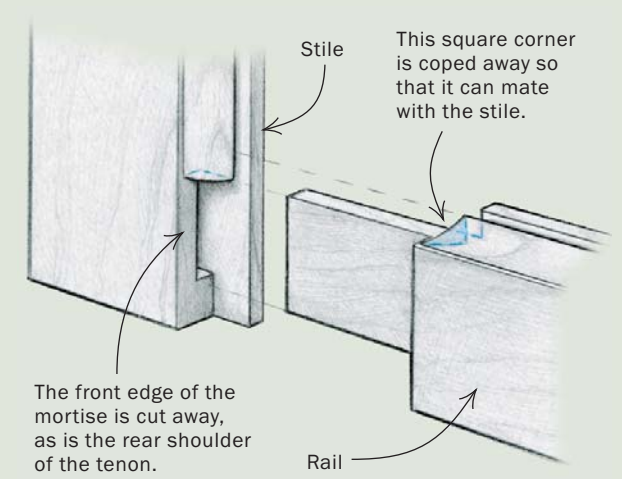
## FRAME-AND-PANEL DOOR

The door is the most challenging part: It has a floating raised panel and a thumbnail profile that is coped away at the mortise-and-tenon joints.



### COPING THE CORNERS

Two edges of the mortise-and-tenon joint are relieved. Then a small amount of the thumbnail edge is coped so that the joint can close.



**Plunge down with a gouge to cope the joint.** Pick a gouge that is close to the radius of the thumbnail and ground along its inside edge.



**Cut the thumbnail profile.** Cut the small fillet with a rabbeting plane, and then round over the thumbnail profile with a block plane, working to a line.



**Sight down the spring lines of a panel-raising plane to maintain the proper angle.** Cut the cross-grain sides first. Place a waste strip along the back edge to avoid tearout.



**After glue-up, the joints are pinned and wedged.** Drive the pins all the way through the door frame before cutting them flush. Then wedge the tenon ends to lock the joint.

ed to float in its frame, permitting seasonal movement. Place a rule in the groove in one stile and measure to the fillet of the opposite thumbnail. This is the maximum width of the panel. If you're building this piece in summer, make the panel about  $\frac{1}{8}$  in. narrower on each side. In the winter, I suggest  $\frac{1}{4}$  in. per side. The height only needs to be left about  $\frac{1}{8}$  in. short at each end, regardless of the season.

It is difficult to raise a panel with a standard bench plane; a panel-raising plane makes the job much easier. Antique examples are expensive, but a number of modern makers still produce them (Harris, Crown Plane, Todd Hurley). I have four old models, and each raises a slightly different sized and shaped panel.

A panel raiser is simply a big molding plane that cuts a raised-panel profile, so it is used the same way as a molding plane. It has a fence and a stop. Keep cutting until the stop comes in contact with the panel. A panel raiser has skewed cutters, which allow the tool to cut cleanly across end grain with a minimum of tearout. Still, choose the best straight-grained pine you have for the panel.

Plane the end grain first, holding the panel between dogs. Place a backer strip at the far corner to prevent break-off. Raising the sides is easier, because you are cutting with the grain.

The trick here is to make each corner come out with a nearly perfect 45° angle. You can make this happen by trimming from one side or the other. You also can make small adjustments in the fit with a shoulder plane.

Place the panel in the frame, and pull the door together with clamps. The panel should not lift up any of the grooved edges. If it does, it is too tight and needs to be planed thinner. Do this by planing the back surface so as not to affect the front.

**Assemble the door**—Secure all of the joints. The mortises and tenons are pierced by two thin pins. Cut square lengths of pine and whittle them round with a wide, shallow gouge. The slight facets left help lock the pins in place.

The ends of the tenons are wedged at the top and bottom. Again, make squares and whittle the wedges with a gouge. Use a chisel to begin small splits in the tenon ends. Put a very small spot of glue on the wedges and tap them into place. Then saw

and plane the wedges flush. These wedges close up the outside of the joint and are an attractive touch.

Trim the horns and plane the door to fit its opening. In the winter, remember to allow for the small amount of expansion that will occur across the stiles.

### Two finish options

I wanted my cabinet to look as if it had some age. The color I had in mind was the pale tan that raw pine turns to after about five years. However, I did not want to use a stain. Stains darken the softer latewood and leave the harder earlywood lighter in color, which is the opposite of the way pine darkens with age.

I achieved the look I wanted in one afternoon by using nothing more complicated than tea. I made a really strong mixture by steeping three bags in a cup of hot water. When it had cooled, I brushed the strong tea onto the wood, darkening the surface very slightly. I allowed this application to dry and sanded any raised grain. Each subsequent coat of tea darkened the pine further. It took four coats to give me the look I wanted. You can follow with varnish, or if you want to tweak the color slightly—to make it a bit less yellow, for ex-

ample—use a topcoat of shellac tinted with aniline dye.

Milk paint is another attractive option, and is probably the finish this cabinet would have received in the 1700s. The Old Fashioned Milk Paint Co. (978-448-6336, [www.milkpaint.com](http://www.milkpaint.com)) is an excellent source for powdered mixes and provides good instructions for their use (for more on milk paint, see *FWW* #136, pp. 64-67). A key is to finish the painted surface with linseed oil, which evens out the color.

### Hardware

I hung the door with solid brass H-hinges, which are appropriate for an 18th-century design, and I secured the door with a brass pendant latch. Both of these items came from Ball and Ball Hardware Reproductions (800-257-3711; [www.ballandball-us.com](http://www.ballandball-us.com)). While more expensive than the brasses sold at hardware stores and home centers, the prices were not prohibitive. I have always thought it a shame that a woodworker would invest so much in a piece but then install cheap hardware. □

*Mike Dunbar is a contributing editor. This article is his third in a sequence of hand-tool-oriented projects (see *FWW* #134 and #142).*



**Options, options.** At far left is the cabinet finished with Lexington Green milk paint, with a linseed-oil overcoat. The other version is finished with four washcoats of concentrated tea followed by a tinted shellac.