



# Hanging a Cabinet Door

*Install butt hinges carefully for a precise,  
non-binding fit*

by Philip C. Lowe



*Begin with the bottom. This edge, planed clean and square, becomes the reference point for the fitting and hanging to follow.*

It's the simple pleasures that make my day. Fabricating a pair of doors, mortising them for good-quality butt hinges and then installing the doors so they function without binding all add up to one of those simple pleasures in furnituremaking—a door that's hung right.

Real technological advances have been made in hinges in the past 20 years. For cabinetwork, you can choose butt hinges of stamped sheet brass bent around a steel pin, hinges of extruded material milled to shape and fitted with either fixed or loose pins, cast hinges milled with stops, hinges with one leaf longer than the other, or hinges with and without finials. For more on these choices and where you can get them, see *FWW* #112, pp. 68-73. All of them, though, depend on careful installation for smooth operation.

### Choose before you build

The best time to select hinges for any project is in the design phase. Here are some of the questions you should ask:

- Is the hinge strong enough to support the weight of the door?
- Where and how will the hinges be installed?
- How many hinges do you need?
- How thick is the material the hinges will be set into?
- What size screws will you need to secure the hinges?
- Will those screws have enough holding power?

For casework, like the cabinet shown in the bottom right photo on p. 72, you will have to decide whether you want the doors to have an overlay or an inset design (meaning that they fit within the frame of the case, as I did with this one). With an inset design, the thickness of the door will determine the size of the hinge. With an overlay design, the thickness of the case, or face frame, will dictate the width of the hinge leaf. Butt-hinge sizes are specified by their length and their width in the open position, which includes the width of both leaves plus the knuckle.

### Fit the door on three sides first

A pair of inset doors will function well only if they fit the opening of the case with enough clearance not to bind;  $\frac{1}{16}$  in. on all sides is ideal for most cabinet doors. After the doors are assembled (I make them a little oversized), I fit them to the case, leaving the two edges that meet in the middle. Those are trimmed later.

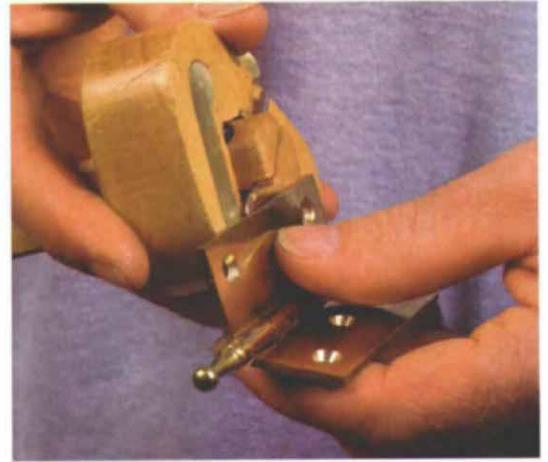
I start by planing the bottom of the door in both directions to avoid tearout on the edges of the stiles (see the photo at left). I find or make some  $\frac{1}{16}$ -in. shims, place them on the case bottom and set the door on top of them to check the fit, as shown in the top photo above. I pay attention to the stile on the hinge side. If it doesn't



**Dry-fit with  $\frac{1}{16}$ -in. shims under the door.** Check and adjust the hinge stile next and the top after that. The joint between the doors is the last edge to befit.



**Score hinge locations with the layout knife.** No shop should be without this knife; it provides a precision unmatched by a pencil or a scratch awl.



**Set the marking gauge for the thinnest part of the leaf.** With extruded hinges, an even spacing between the two leaves will be just right if the hinges are mortised to the depth of the thinnest part of the hinge.

meet the side of the case squarely, I can do one of two things: either plane the edge of the door to follow the line of the case or, if that would take off too much of the stile, plane the bottom of the door on one side or the other to square up the fit. Once the bottom and hinge edges look good, I plane the top edge as necessary to maintain a consistent  $\frac{1}{16}$ -in. gap along the width of the door.

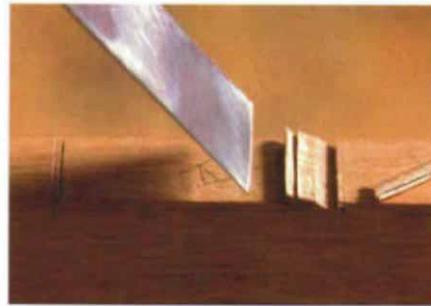
### Locating the hinges on the door

The placement of the hinge will vary with the design of the door. I usually align the top of the upper hinge and the bottom of the lower hinge with the inside lines of the top and bottom rails. But with these doors, I thought the upper hinge would look better centered on the small top panels.

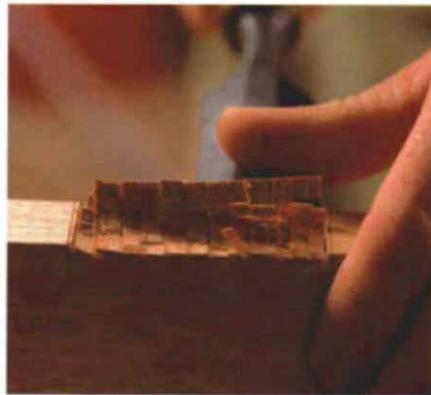
Using a square and a knife, I scribe lines on the edge of the stile to indicate the top of the upper hinge and the bottom of the lower



**Mortising into the door stile**—The author begins the mortising process by cutting a sawkerf just shy of his knife line.



**Feather cuts against the grain**—Striking these chisel blows first makes removing the waste easier.



**Paring strokes remove the waste**. By working to a scribed line, the author cuts a clean mortise in a few easy strokes.



**Final chops to size**—This last chisel cut on the ends of the mortise for the door stile will make a snug fit for the hinge.

hinge (see the bottom left photo on p. 69). With the door held in a vise, I place each hinge on the edge of the door, tight to the scribed lines, and then use the knife to mark the corner at the other end of each hinge. I transfer those marks with a square across the edge of the stile.

At this point, for a good custom fit, I usually number each hinge and door so I won't get any of the hinges mixed up later (you'll find minor variations even in hinges that look identical). I use a pencil to extend the scribed lines to the face of the door. These lines give start and stop marks that keep me from scratching in a line past where the mortise will be cut. I set a marking gauge to the thickness of the hinge leaf (see the bottom right photo on p. 69) and scribe a line along the face of the door between the two pencil marks.

### Cutting the mortises in the door

As long as the width of the hinge leaf is the same or even a little less than the thickness of the door stile, I mortise all the way across the edge. I use a dovetail saw to make a relief cut about  $\frac{1}{16}$  in. away from the scribed lines, down to the depth of the marking-gauge line, as shown in the photos above. With a wide chisel, I chop a series of feather cuts across the edge of the stile, taking care not to go below the scribed line. Then I pare away the waste. For the final depth cut, I place the chisel in the marking-gauge line, flat side down, and cut across the stile. To finish, I place the chisel vertically into the scribed knife lines at the top and bottom of each hinge and chop out the little bit of remaining waste.



**Self-centering bit finds the hole**. This bit, with the hinge held firmly where it belongs, locates pilot holes for the screws.



*With the door in place, mark the hinge locations for the case. After the doors are fit and hinged, the author puts them back into the cabinet and scribes the top and bottom locations with the layout knife.*

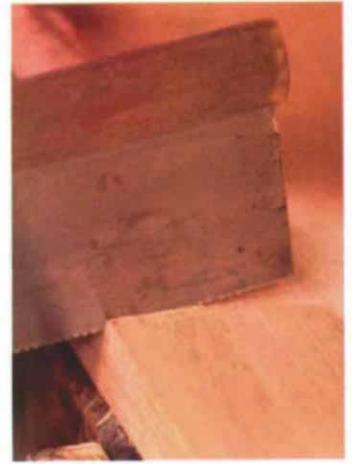
After the mortises are cut, I screw the hinges to the stiles. I find a self-centering bit is a big help (see the bottom photo on the facing page). Some people like to start with just one screw per hinge leaf to check the fit. I prefer to start with at least two, because the door will sometimes pivot and rack on one screw. If the job feels like it's going well, I'll add all the screws.

### Marking and cutting the case

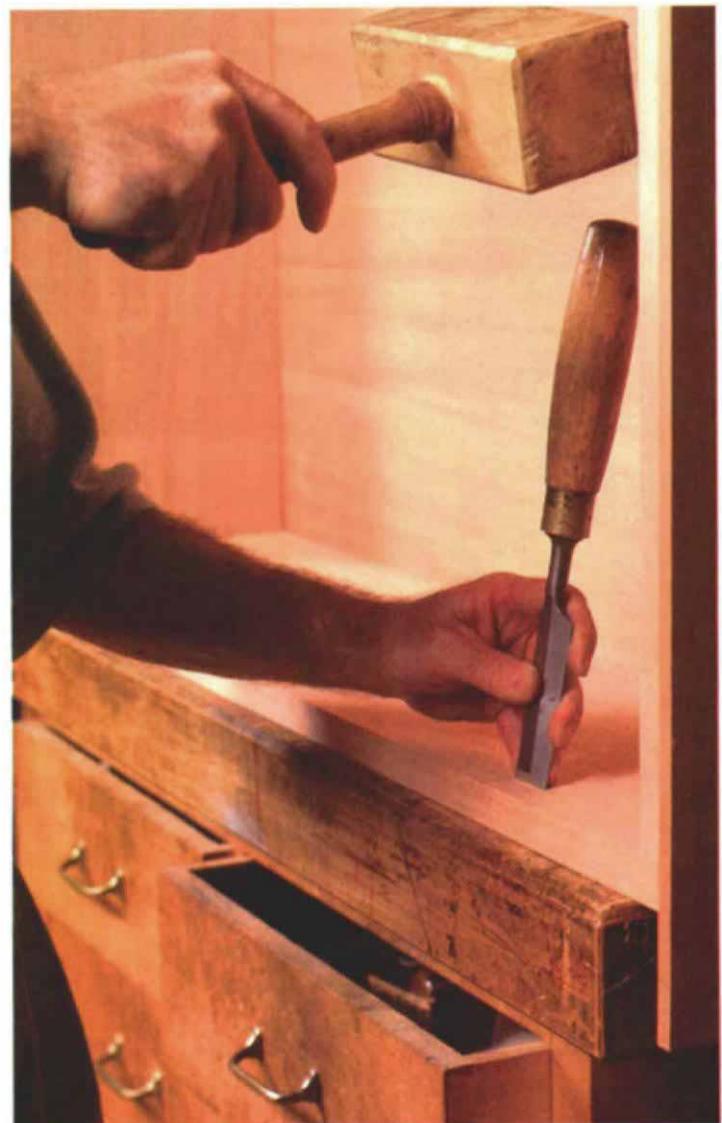
I set the door back in the case, on top of the shims. Then I mark the top and bottom of each hinge on the inside corner edge of the case side with the layout knife, as shown in the top left photo above. Again, using a square and a knife, I scribe the lines into the case as far as the hinge leaf needs to go for the door face to sit flush with the front of the case (see the top center photo above).

The marking gauge should still be set for the thickness of the hinge. I scribe that line into the front edge of the case, reset the gauge to the width of the hinge leaf and scribe that line parallel to the front edge of the case. If the size of the cabinet will allow it, I place the case on its side on my workbench. That makes it easier to do the work that follows.

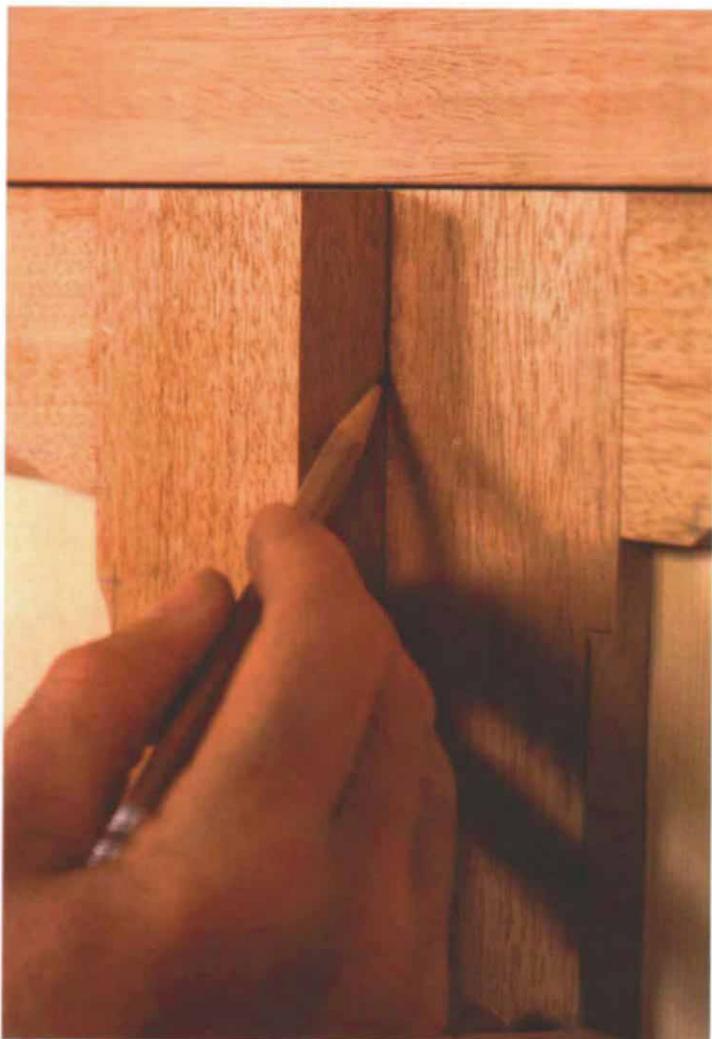
With a dovetail saw, I make relief cuts  $\frac{1}{16}$  in. inside the finished top and bottom scribed lines, as shown in the top right photo. I hold the saw on a slight diagonal to stop the cut at the back and bottom lines of the mortise. I define the back line of the mortise with some firm chisel strikes (see the photo at right). Just as I did with the door, I stay  $\frac{1}{16}$  in. away from the outside lines, chop feather cuts down to the line made by the marking gauge, and relieve



*Mortising into the case—The author follows the same procedures as he did for the door-stile mortises. He starts with scribed knife lines (left) and follows that with relief cuts made with the hacksaw (right).*



*Score and clean out the mortises with a chisel Sharp tools make this job quick and accurate.*



the waste with the flat of the chisel. After that, I finish the mortise by chiseling out the small bits of waste left along the outside lines.

### Hanging the doors

I place a few battens (the same thickness as the side of the case) on the workbench to support the door and fit the hinge leaves into the mortises. Just as I did with the doors, I bore holes with a centering bit, pilot bit and a bit for the screw shank. Keep in mind that you may need to use a shorter screw in the side of the case. I secure the doors in place. Then I put the case in an upright position so the doors can swing freely.

**Final fitting**—The last adjustment needs to be made at the joint where the two doors meet (see the photos at left). The object is to remove the same amount of material from each door and to end up with a  $\frac{1}{16}$ -in. gap in the middle. So with the doors closed and one overlapping the other, I mark and measure the overlap, divide that by two and add  $\frac{1}{32}$  in. That tells me how much to remove from the first edge.

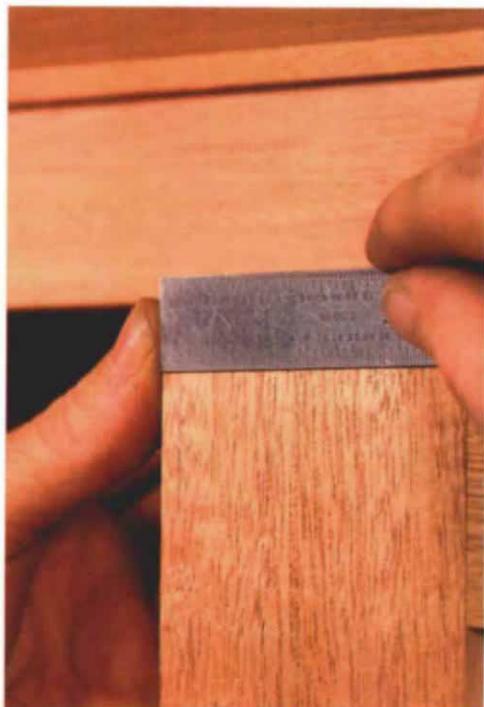
Then I mark that dimension in pencil along the stile of the first door, move it to the vise and plane to that line. I secure the door in its place, close it in position, overlapping the other door, and mark a pencil line at the joint. I add another  $\frac{1}{16}$  in. to that line, move the door to the vise and plane to the finished line. I like to put a slight bevel to this inside edge, removing a little more material from the back side, so that the doors clear one another more easily when they open and close.

I hang the door and check that the spacing is consistent top to bottom, making any final adjustments before the final sanding and finishing stages. At this point, it doesn't hurt to take a moment to step back and appreciate the result of your efforts.

*Philip Lowe is a furniture maker in Beverly, Mass., who gets the chance every once in a while to build something for himself.*

### Getting the center gap right

Mark the overlap of one door to the other (above). Get a precise measurement of that overlap (right). To end up with a  $\frac{1}{16}$ -in. gap between the two doors, divide the overlap distance by two, add  $\frac{1}{32}$  in. and remove that amount from the first door. Trim the second door to fit.



**A finished fit**—Gaps around doors are almost perfectly consistent in this mahogany and Sitka spruce cabinet.