Tombstone Doors

Combine machine work and handwork to create arched panel doors with 18th-century style

BY LONNIE BIRD

I've always been intrigued by the close ties between the furniture and architecture of the 18th century. Proportions, shapes, moldings and myriad other details were shared by both house joiners and furniture makers of the period. One of the most commonly shared forms was the arch. This simple, elegant shape has endured since Roman times because of its strength and beauty. In fact, many of today's kitchen cabinets feature arched panel doors, although the distinctive tombstone shape has given way to a more gentle, sweeping arch, which is easier to produce.

Building a Pennsylvania Secretary: Part III of III

The doors play an important part in the aesthetic success of the secretary featured here and in *FWW* #154 and #155. The tall panels give the case its much-needed vertical proportions, and the tombstone arch is visually appealing. As you'll learn, building a true arched panel door isn't that difficult, and it's only a bit more time-consuming than making a door with a sweeping arch.

Use straight-grained stock for the frame

I begin door construction by measuring the opening in the case. Because the doors are rabbeted along the edges to form a lip, they must be constructed to precise dimensions. Although the doors overlap the opening by 3⁄16 in. on top and bottom, they overlap the hinge stile by only 1⁄64 in. With a greater overlap, the lip would bind on the cabinet stile and prevent the door from opening. Also, the wide stile on the left-hand door creates the illusion of a center stile when the doors are shut.

Wood selection for the doors is critical. Using straight-grained stock for the frame adds strength and helps prevent warping. After milling the frame stock, lay out and cut the mortise-and-tenon joints. At this point you're ready to lay out and bandsaw the arch on the upper rail. The curve is easily smoothed with a file or a spindle sander. Once the arch is smooth, shape the 3⁄8-in. thumbnail sticking along the inside edges, then cut the panel groove.

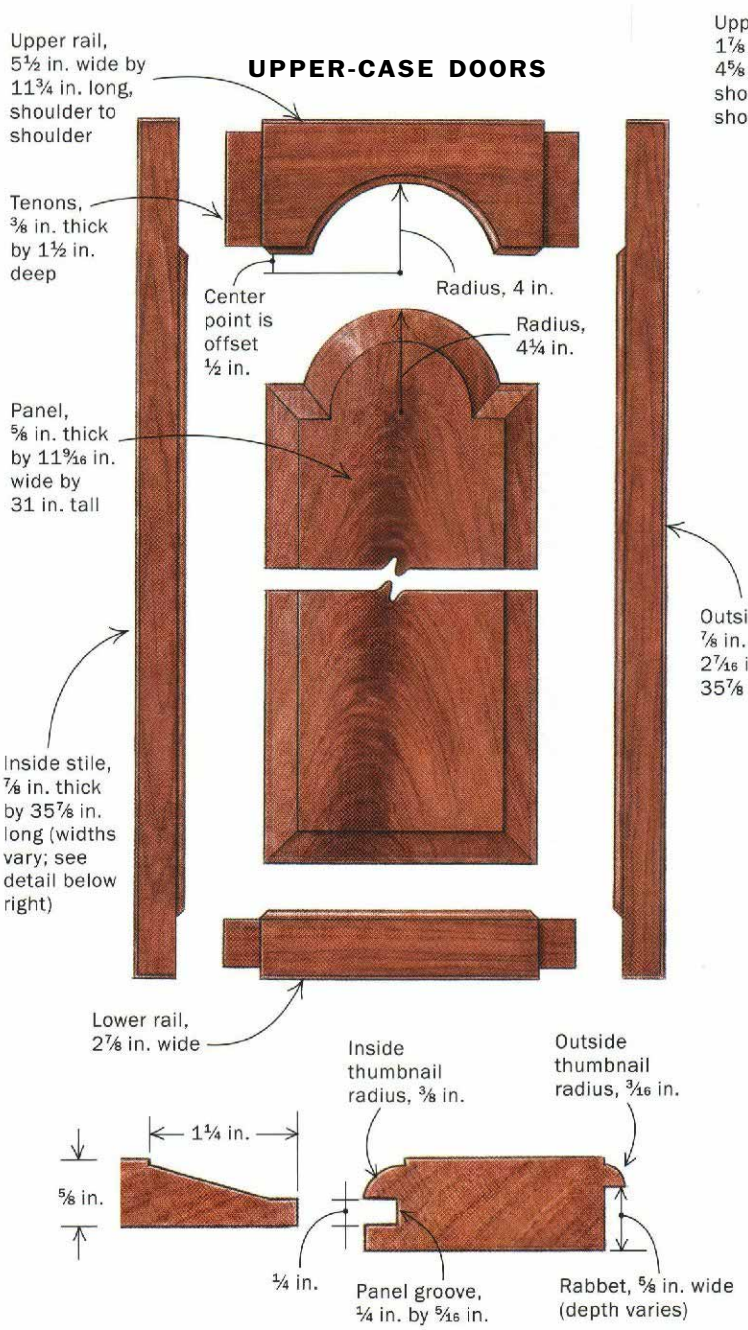
After the shaping has been completed,

Photos, except where noted: Matthew Teague

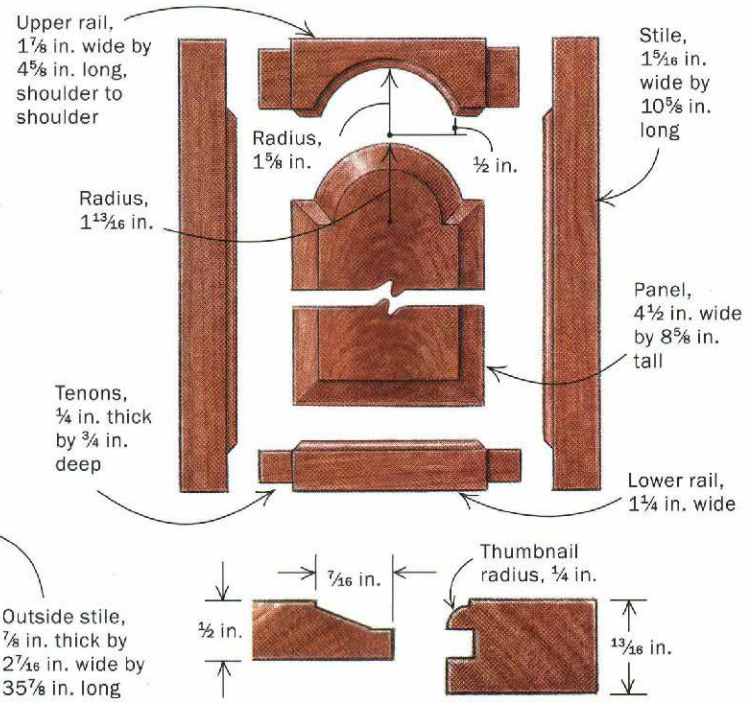
OFFSET, OVERLAY DOORS REQUIRE EXTRA CARE IN SIZING

Bird's tombstone doors are rabbeted tp overlay the frame. They are also offset, meaning they close proud of the frame.

UPPER-CASE DOORS

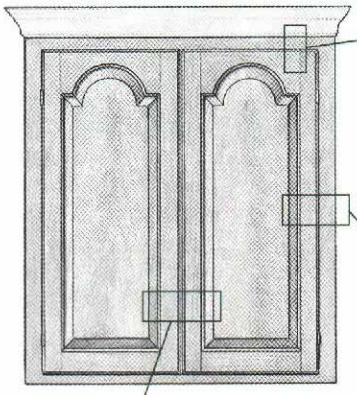


PROSPECT-BOX DOOR

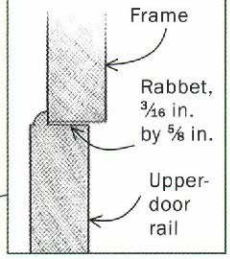


DOOR EDGE DETAILS

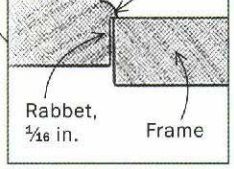
When cutting rails and stiles for offset doors, allow for rabbets and thumbnail profiles wherever doors meet each other or the case.



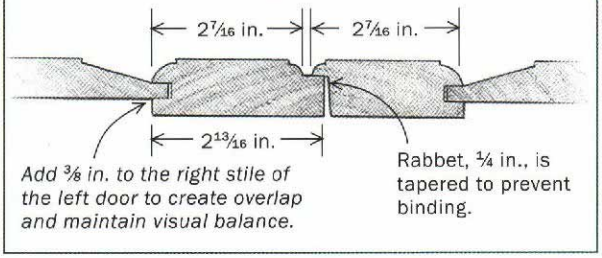
TOP AND BOTTOM



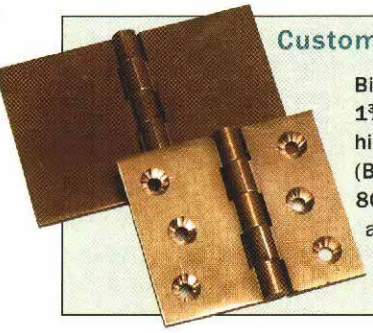
OUTSIDE EDGE



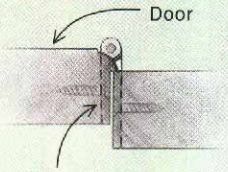
IN CENTER



Custom hinges for offset doors



Bird buys brass 1¾-in. by 2⅝-in. hinge blanks (Ball and Ball; 800-257-3711) and bandsaws them to size.

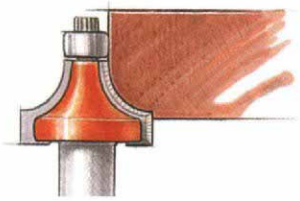


Offset doors require a hinge with leaves of different widths.

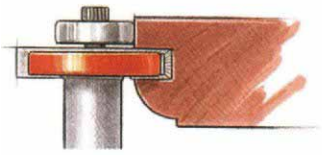
Drawings: Bob La Pointe; photo, this page (bottom left): Michael Pekovich

THUMBNAIL DRESSES UP THE FRAME

The thumbnail profile on the inside edge of the frame requires a miter where the rails and stiles meet.



A ⅜-in.-radius cove bit in a table-mounted router is used to mill the inner faces of the rails and stiles.



A ¼-in. groove is routed along the rails and stiles.

A tablesaw is used to cut miters along both the rail and the stile. *Start by aligning the edge of the blade with the tenon shoulder (left), then establish the miter by crosscutting. Excess thumbnail stock can be trimmed away by using a stopped rip cut.*

Finish off by hand. *Once the thumbnail has been trimmed away at the tablesaw, a little handwork is all that is necessary to clean up the miters.*

miter the sticking profile at each intersection (see the drawings and photos at left). This technique allows the use of deep, strong mortise-and-tenon joinery as opposed to the short, stubby tenons created by cope-and-stick router-bit sets. I miter the sticking on the tablesaw and equip the miter gauge with a backer board to prevent tearout. When trimming the miters on the rail, be sure to account for the thumbnail you removed from the rail.

After mitering, the excess sticking on each stile must be removed before assembly. For speed and accuracy, I rip off the excess sticking on the tablesaw using a stop cut. Then I complete the cut into the corner with a chisel. Finally, I dry-clamp the frames and check the fit.

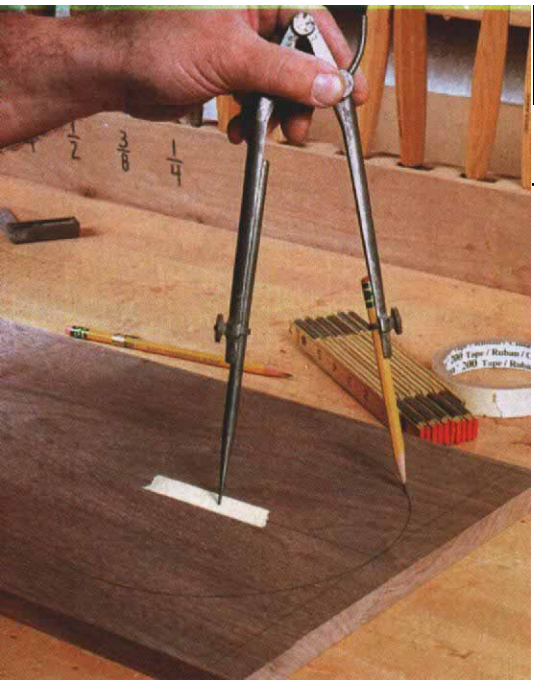
Cut and shape the panel

The nearly 1-ft.-wide panels provide the perfect place to show off figured grain. I never glue up stock for door panels because the seams and mismatched grain become distracting. To help avoid warping, I cut the panel stock oversized and allow it to acclimate to the shop environment. After flattening the panel stock on the jointer and planing it to final thickness, I shape the panel edges immediately and fit the panel within its frame. Allowing the panel to lie around unrestrained by the framework is an invitation for warping. But once the wide panel is trapped within a frame, it can expand and contract with humidity changes, yet it will remain flat.

Before shaping the panel edges, first lay out and cut the arch on the bandsaw. Use the widest blade possible when bandsawing so that you can achieve the smoothest curve possible. Any irregularities in the sawn edge must be removed by hand before shaping.

I typically raise panels on my shaper. If you don't own a shaper, you can use a router table equipped with the appropriate bit. For small panels, like the one in the gallery of the Pennsylvania secretary, CMT makes a scaled-down bit (item No. 800.524.11) with the right proportions and the fillet at the edge of the field to catch light and create a shadowline. I also use the Panel-Loc (www.benchdog.com) to shield my hands from the large-diameter cutter.

The bit rounds the inside corners that flank the arch, so after shaping the panel, some handwork is required. First, lay out each corner with a sharp pencil. Next, in-



cise the shoulder at the field; a #2 sweep gouge works best to incise the curve of the arch. Then, use a skew chisel to carve the bevel into the corner. I have a pair of right- and left-hand skew chisels that are custom-ground for this purpose.

With the carving completed, assemble the doors and pin the joints. Next, cut the rabbet around the perimeter of each door. Remember that the rabbet on the hinge stile is shallow—only 1/16 in. Also, the right stile of the left door is rabbeted on the face, not along the back. After rabbeting, shape the small thumbnail profile, which eliminates the hard, square edge. To shape the thumbnail inset along the edge of the false stile, you'll need a 3/16-in.-dia. roundover bit without a guide bearing.

Mount the hardware

To save time when mounting hinges and locks, I rout the mortises using a laminate trimmer equipped with a straight bit. After routing, square the corners of the mortises with a chisel.

If the lipped doors are to function properly, the barrel of the hinge must be located slightly proud of the door face. Also, because the door is lipped, remember to use a hinge that has leaves of different widths.

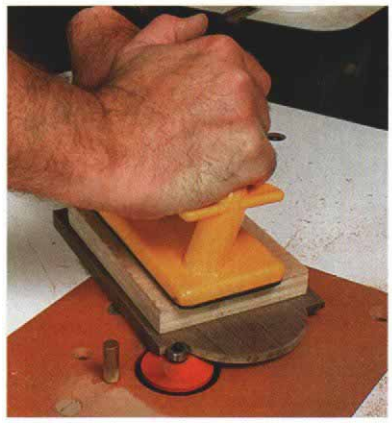
To my eye, the tombstone doors are the finishing touch on my 18th-century secretary, but it's a look that meshes with almost any thoughtful design. □

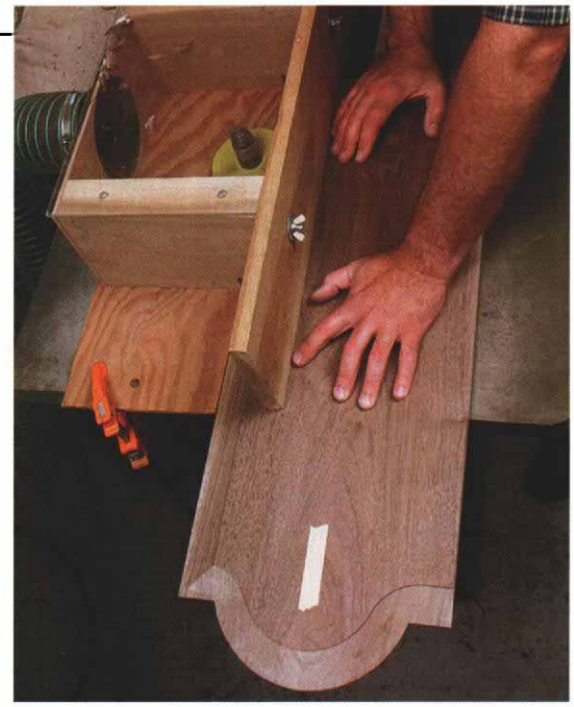
Lonnie Bird conducts classes from his shop in Dandridge, Tenn. To obtain a list of classes, e-mail him at lonniebird@earthlink.com.

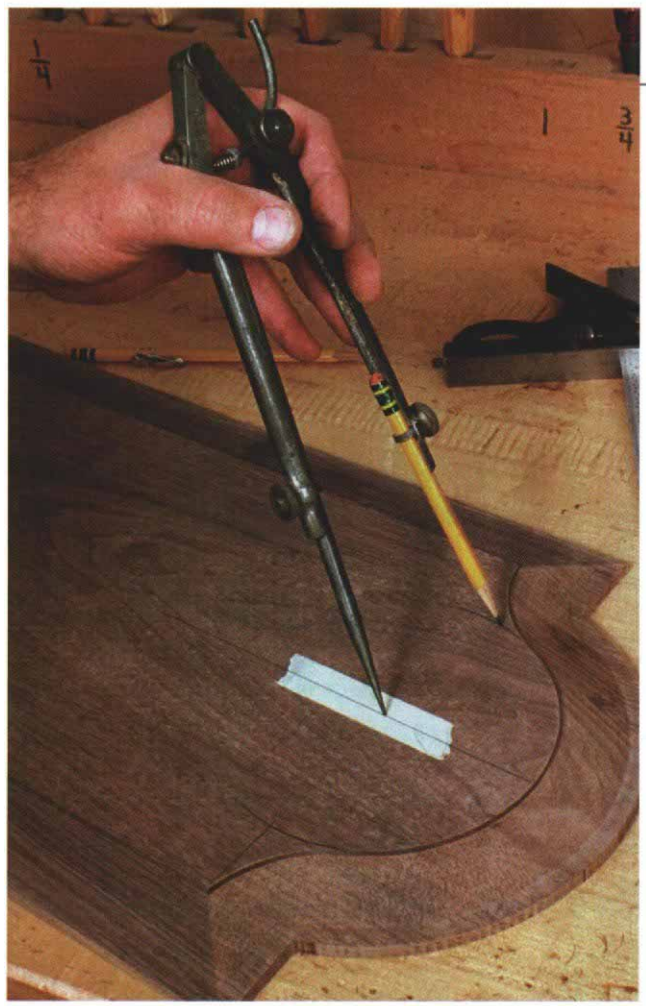
TOMBSTONE PANEL REQUIRES HANDWORK

LAY OUT AND SHAPE

Begin by marking out the panel arch (left). To avoid marring the panel surface, locate the center point over a piece of tape. After bandsawing to shape, Bird uses a shaper to raise the upper-case panels (right) and a router table for the prospect-door panel (below).







CARVE THE CORNERS

Use a square and compass to mark out the corners of the arch (left). Scoring with a knife provides a solid reference line. Bird walks a chisel across the area to be removed, leaving less room for error (above). Use a skew chisel to get into the corners (below).