

A Small Bureau Built to Last

Opaque finish and applied moldings cloak a flock of dovetails

by Robert Treanor



The dovetail joint's prevalence and persistence is due to its unsurpassed ability to hold pieces of wood together. The painted chest of drawers I made (see the photo at left) illustrates the strength and versatility of the dovetail in a variety of forms. Tapered sliding half-dovetails lock the top to the sides; half-blind dovetails join the sides to the bottom; sliding dovetails link the drawer dividers to the sides; and through- and half-blind dovetails join the drawers (see the drawings on pp. 56-57).

All this dovetailing makes the piece rock solid, but it is hidden strength. The chest has an unimposing scale that suits it to a living room, where it could stand at the end of a sofa and serve as an end table as well as a bureau. The moldings that hide its joinery are clean and simple, particularly the single-arch molding on the front of the chest with its bird's-mouth joints at the drawer dividers and its tapers, top and bottom.

Construction

I began the chest by gluing up material to form the top, bottom and sides. I used ash, a ring-porous, coarse-textured hardwood. Because I intended to paint the piece, I wasn't too careful about the color match of planks. But because the wood's coarse texture would show, I took pains to ensure figure and grain were consistent between the boards to be edge-glued.

A strong, self-locking joint—I used tapered, sliding half-dovetails to join the case sides to the top (see figure 1 on p. 56). This joint is excellent in a situation where one case member runs past or

Dovetails hide behind moldings and paint—This sofa-side chest of drawers (left) packs a robust array of joinery in a small frame.

overhangs another. Its advantages are many: It is self-locking, so it will hold both pieces rigid and flat even if the glue should fail; it won't bind in assembly; and it is strong. The half-dovetail is a variation on tapered sliding dovetails in which the pin seen in cross section has only one wedged side; the other side is simply a rabbet that tapers from one end of the joint to the other.

I made sockets for these pins in two stages. The first cut was

a dado routed with a $\frac{3}{8}$ -in. straight bit along the tapered layout line. I routed the dado to a depth of $\frac{1}{2}$ in. in several passes. With both dados cut, I changed to a $\frac{1}{2}$ -in. dovetail bit, set my scrap-stock fence parallel to the square layout line and routed the dovetail side of the socket in one pass (see the top photo).

I kept the dovetail bit at the same setting to cut the mating tapered half-dovetail pins on the tops of the case sides. I

locked the side in my bench vise and clamped a freshly milled piece of scrap along the top edge to give the router a greater bearing surface. Then, using the router's guide fence, I cut the dovetail along the outside face of the sides. Next I cut the tapered side of the half-dovetail with a rabbet plane. I clamped a fence along the shoulder line and guided the plane against it, as shown in the center photo. I planed down close to the taper line, taking light passes as I neared it. Before I reached the line, I started trial fitting the joint. This type of joint goes together sloppily until it's nearly home. The final inch or so will require firm hand pressure or even light mallet blows to close the joint completely. If you plane off too much, you can glue shims along the tapered edge and plane again to fit.



Tapered socket in two steps—First rout dados along the taper lines, as at right in the photo above. Then switch to a dovetail bit, clamp the fence parallel to the square layout line and cut the dovetailed side of the sockets, as at left in the photo above.



Sliding half-dovetails are finished with a rabbet plane (left). Cutting the taper of a sliding half-dovetail square with a rabbet plane instead of sloped on both sides like a full sliding dovetail makes a joint that's easier to fit. Stop and check the fit frequently as you approach the taper depth line.

Perfecting half-blind dovetails—After clearing waste with a Forstner bit in the drill press (below), the author pares to the lap line between pins of the half-blind dovetails at the bottom of the carcass sides. The board clamped to the workpiece guides the chisel for chopping through end grain.



Half-blind dovetails join the case sides to the bottom. I waited before cutting the bottom to length until I had the sides dry-fit to the top and could get an empirical measurement. I used nine tails across the width of the bottom, but the number or spacing isn't critical.

Because the pins on half-blind dovetails don't go through, it's harder to use them to lay out the tails, so I

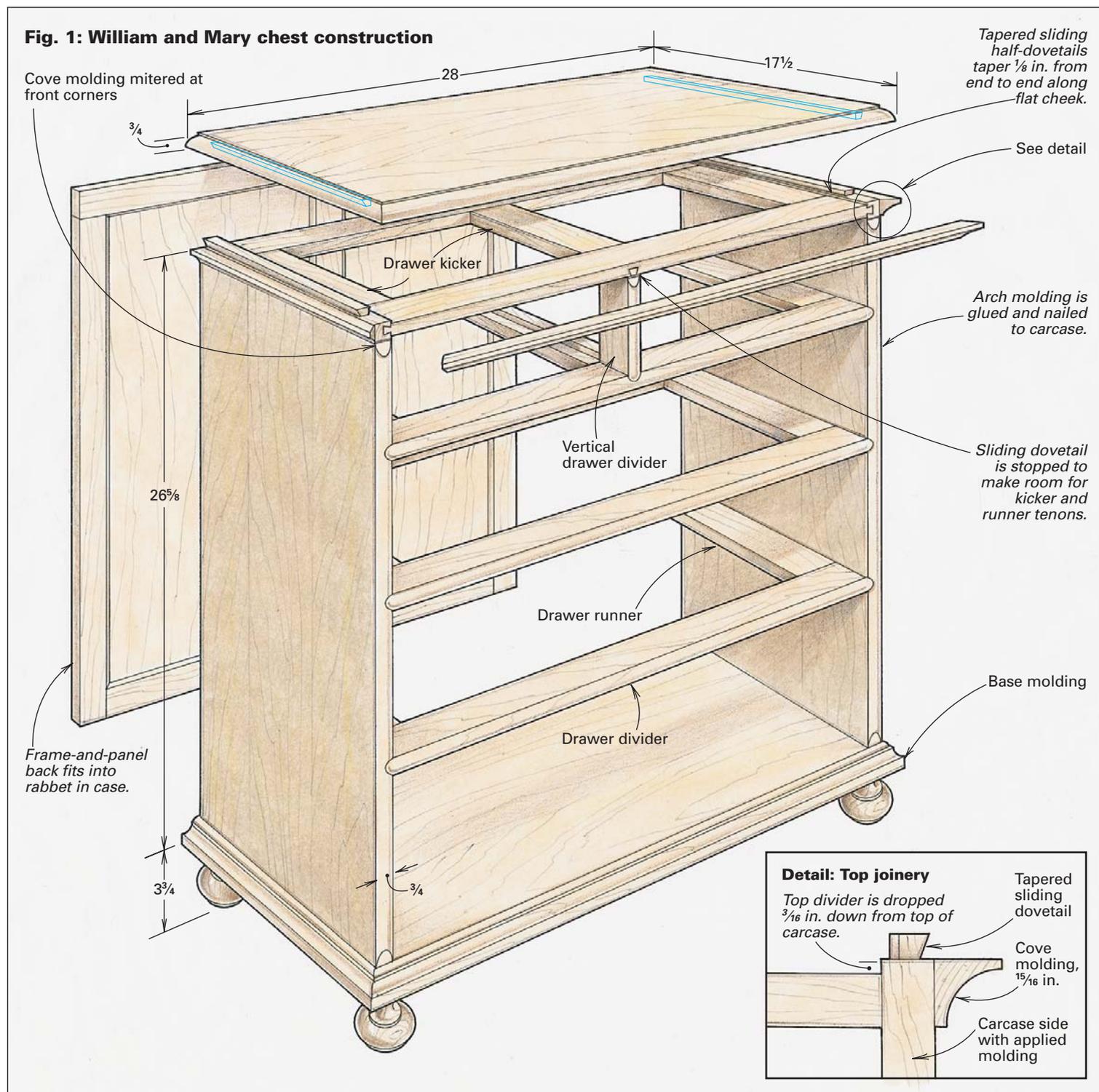
cut the tails first and lay out the pins from them. I do most of my dovetail sawing with Japanese dozuki saws, which are fast, accurate, easy to control and leave only a hairline kerf. After using the tails to lay out the pins in the sides, I cut and chop the remainder of the joint. I often hog out waste between the pins with a Forstner bit in the drill press. That makes the chisel work much lighter (see the bottom photo

on p. 55). These joints won't show, but the more accurately they're cut the stronger the case will be and the closer the case will be to self-squaring. The joints will also provide practice, if needed, for the half-blind dovetails at the fronts of the drawers, the first place many people look when they open a drawer.

Dividers and tenons—The joinery for the drawer dividers

at the front and back of the case and the runners between them is a hybrid. The dividers are attached to the sides with sliding dovetails, which keep the sides from bowing and the dividers in place. The runners are tongued along one edge and let into a dado in the cabinet side and are tenoned at each end into the drawer dividers (see figure 2).

I cut a 1/2-in.-wide dado 1/8 in. deep for each of the runners



and for the kickers above the top drawers. As well as housing the runners, the dados index the router jig I use to cut the sliding dovetail sockets for the dividers. The jig is a simple assembly: An indexing bar on its underside fits in the dado, arms guide the router and a center section both limits the router's travel and provides a place to attach the jig to the workpiece with drywall screws (see the center photo

on p. 58). With the jig in place, I waste the bulk of the material with a 1/2-in. straight bit. Then the socket can be cut in one pass with a 3/4-in. dovetail bit.

With the drawer dividers cut to length, scraped and sanded, I cut dovetails on their ends. I cut them on the router table with the same bit I used to cut their mating dovetail sockets. I clamp a high fence to the table to aid in keeping

the pieces stable and run them past the bit vertically. The remaining joinery on the dividers are mortises cut at each end that will receive the tenons on the runners. I rout these with the dividers wedge-locked in a mortising box. I use a plunge router with a straight bit and cut in several passes. Then I square up the mortises by hand.

To fit the runners, I cut a 1/8-in. by 1/2-in. tongue on one

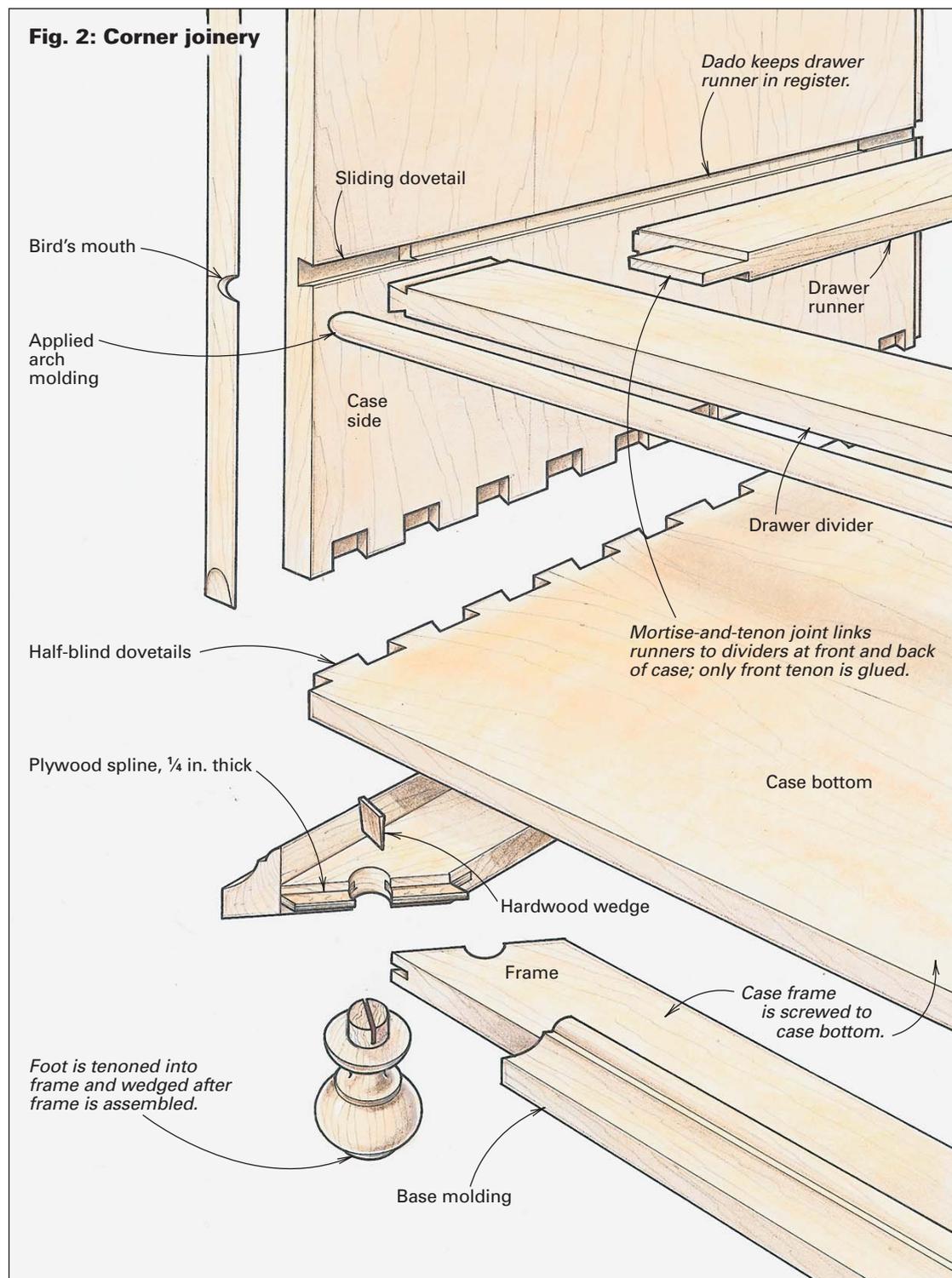
edge and tenons on each end. When the case is assembled, I'll glue the tenons into the front dividers but will leave them dry at the back to allow for seasonal movement of the case. Be sure to leave a gap between the shoulder of the dry tenon and the back divider. The size of the gap will depend on what fluctuations of humidity the piece is likely to encounter.

Gluing up the case

The case is now nearly ready to glue up. But before that step, I shaped the edge of the top and routed rabbets in the parts to accept the frame-and-panel back. Because the joinery is all dovetails, I needed very few clamps. I used urea formaldehyde glue because it has a longer open time than the polyvinyl acetates (PVAs), and I planned to assemble the whole main case at once.

I began the assembly by applying glue to the tapered sliding half-dovetail sockets in the underside of the top. If the joint is a tight fit, only a small amount of glue is needed. I carefully slid the joint together, tapping lightly as needed. With the sides joined to the top, I turned the case upside down and glued the bottom to the sides, knocking the joints home evenly with a mallet and a block of scrap. Then I checked for square and cleaned off glue squeeze-out. If necessary, I use bar clamps to square up the case and hold things in alignment as the assembly continues.

I glued in the front dividers next, using glue judiciously and checking for square after each divider was glued in. Then I flipped the case over, so it sat on its front face. I applied glue to the mortises in the front dividers and installed the runners into the mortises and the dados cut into the sides, taking care not to get any glue in the dados. Finally, I glued the back dividers into their dovetail slots, pinching myself to refrain



from gluing the mortise-and-tenon joint that attaches them to the runners.

Dressing the case

To make the arch molding that covers the front edges of the case, I milled a straight-grained board to $\frac{3}{4}$ in. thick. I cut the profile on a router table with a fingernail or half-radius bit. The entire edge is shaped, so I put several layers of masking tape along the out-feed side of the fence to create an offset bearing surface. I ripped the molded edges off the board with the tablesaw.

I applied the arch molding after the cove molding at the top of the case was already in place. Fitting the small bird's-mouth junctions of the arch moldings requires patience and sharp tools. I began by

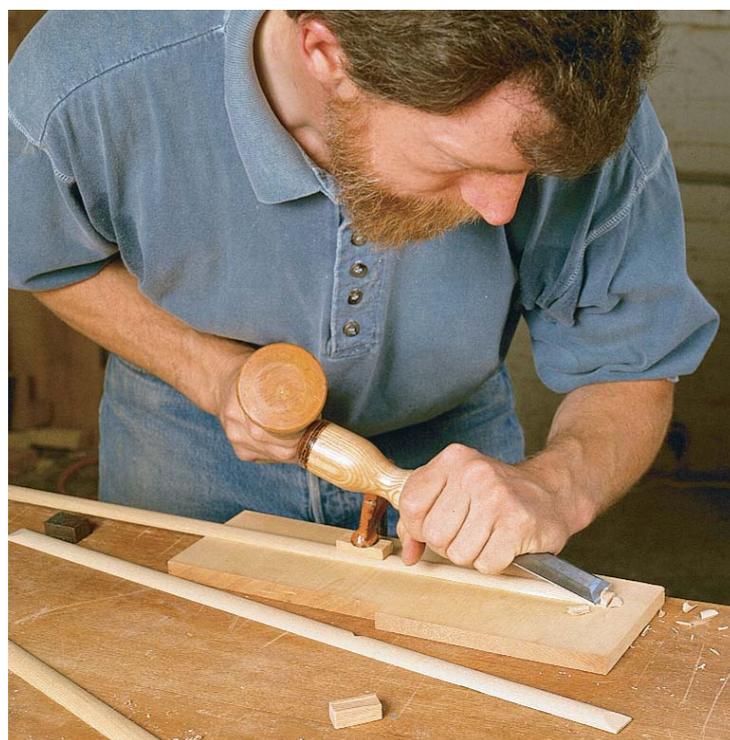
cutting the vertical pieces of molding to length and taping them to the front edge of the sides. Then I carefully marked the locations of the drawer dividers on the moldings, removed the moldings and laid out the bird's mouths on their back faces. I cut the waste away with a fine toothed backsaw and cleaned the cut by paring the remaining material with a sharp chisel, working up to the line with light cuts. Then I taped the moldings back onto the case and



Paint pronounces the texture—On a coarse-textured wood like ash, an opaque finish brings out the grain while hiding the color (above). The author left the ash case and drawer fronts unprimed to keep from filling the pores. He used painter's tape to mask the drawer sides and drawer openings. The interior finish is shellac.

A good jig is easy to locate (right). The drawer-runner dadoes across the case sides double as an indexing slot for the simple router jig, which cuts the stopped sliding dovetail sockets for the drawer dividers.

Scarfs cut by eye—A few mallet taps produce the scarf detail at the ends of the vertical arch moldings (below). The author keeps his first scarf in view and approximates the angle on the other cuts.



took measurements for horizontal moldings. I cut the horizontal moldings to length with a backsaw and a miter box. I glued and nailed the moldings to the case after all the joints had been fitted. I scarfed the ends of the moldings to meet the cove molding at the top of the case and the frame molding at the bottom. It's a small detail, but one that gives the piece its feeling of simple refinement. I made the cut by eye with a chisel, as shown in the bottom photo.



A painted finish is in keeping with the early 18th-century origins of this chest of drawers. I like the finish for the bold field of color it provides from afar and for the way it emphasizes the texture of the wood when seen up close. I used Fancy Chair Green, a latex finish that simulates milk paint (it is one of the Williamsburg Paint Colors made by the Stullb Co.; I bought mine from Primrose Distributing, 54445 Rose Road, South Bend, Ind. 46628; 219-234-6728). To prepare for painting, I wet down the surface with a damp rag to raise the grain. When the case was dry, I scuff-sanded the whiskers that had been raised. On the drawers, I put strips of painter's masking tape just behind the lap of the half-blind dovetails, creating the detail shown in the far left photo. I applied the paint with a natural bristle brush directly to the bare wood. I skipped a primer coat because I wanted to avoid filling the grain. I let the first coat dry overnight and rubbed down the surface with 0000 steel wool. When a second coat had dried completely, I finished the case with a coat of satin varnish to make the color richer and to give the surface more depth. I finished the drawers and the inside of the case with three coats of a thinned shellac. Shellac cannot be used as a topcoat on the painted surfaces because it tends to lift the paint. With the finish completely dry, I mounted the period brass pulls (available from Horton Brasses, P.O. Box 120, Dept. F, Cromwell, Conn. 06416; 203-635-4400), glued and wedged the feet to the base frame, and screwed the base frame to the case. □

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