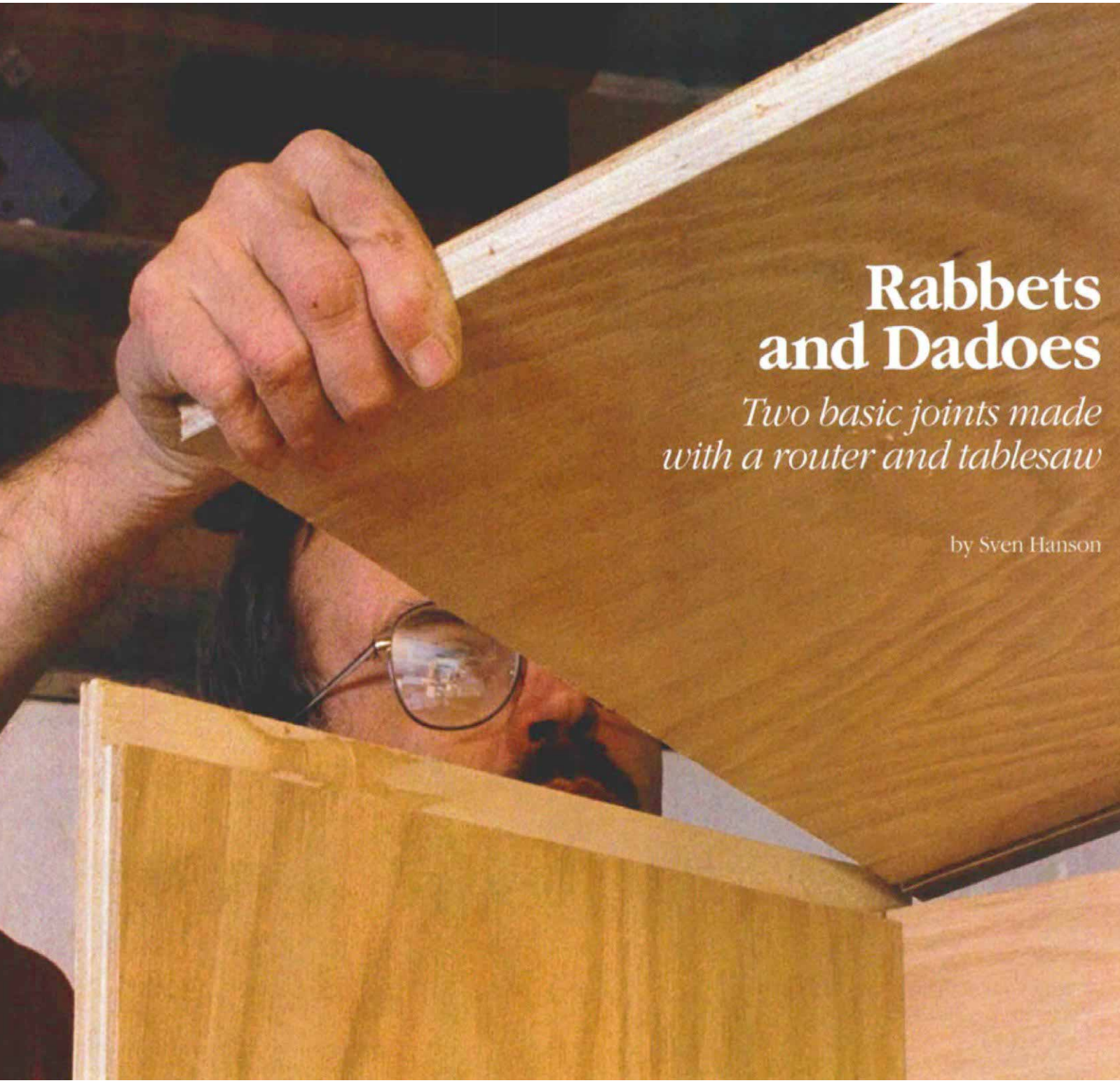


Rabbets and Dadoes

Two basic joints made with a router and tablesaw

by Sven Hanson

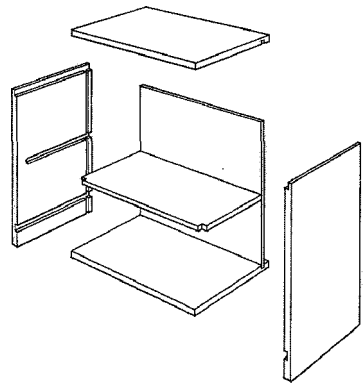
Judging by the attention that dovetails get, you'd think every craftsman cuts 200 of them a week. In reality, the rabbet, a joint with a single shoulder cut at the edge of a board, and the dado, a groove plowed inside the edge, are what many cabinetmakers use to join everyday case work.

On the evolutionary scale of joinery, the rabbet is a step above the butt joint, but it's a big step. The shoulder of a rabbet adds additional glue surface to the joint and supplies mechanical support. A dado has two shoulders, adding even more strength. The shoulders of rabbets and dadoes aid in the assembly of case work. They align the pieces when dry-fitting a case. You can check for size and fit before applying glue and clamps, which is a real boon in a one-man shop. In addition to their many applications in case work, these two joints also can be combined to produce simple but very sturdy drawers.

You can use hand tools to cut rabbets and dadoes, but these joints are usually machined with a router or a tablesaw. Each tool has its advantages. By choosing the right tool and using a few shopmade fences and jigs, you can cut these joints accurately and quickly. The techniques are as straightforward and uncomplicated as they are useful.

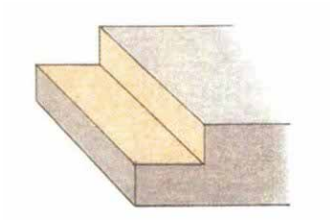
Photos: Anatole Burkin

The router reigns for case work



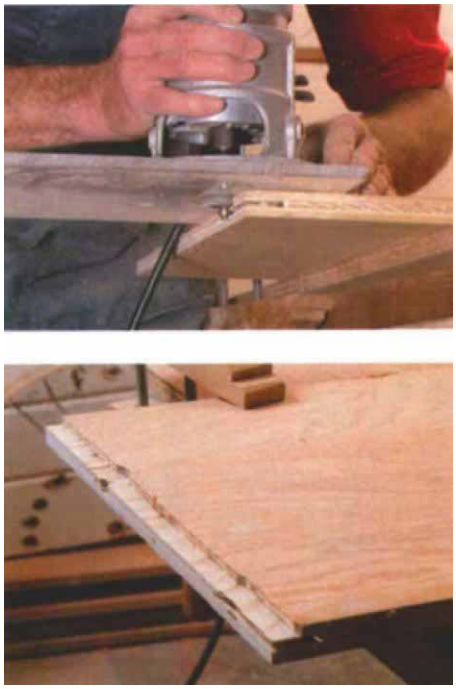
For joining the tops, sides and backs of most case work, I prefer the rabbet joint. It's strong and simple to cut, and rabbets help with the alignment of parts during assembly. Most of the time, the rabbets go across the grain at the ends of vertical cabinet pieces (or ends of the drawer sides). I prefer using a router to cut this joint because the bit leaves a cleaner cross-grain cut than a dado blade would.

The rabbet

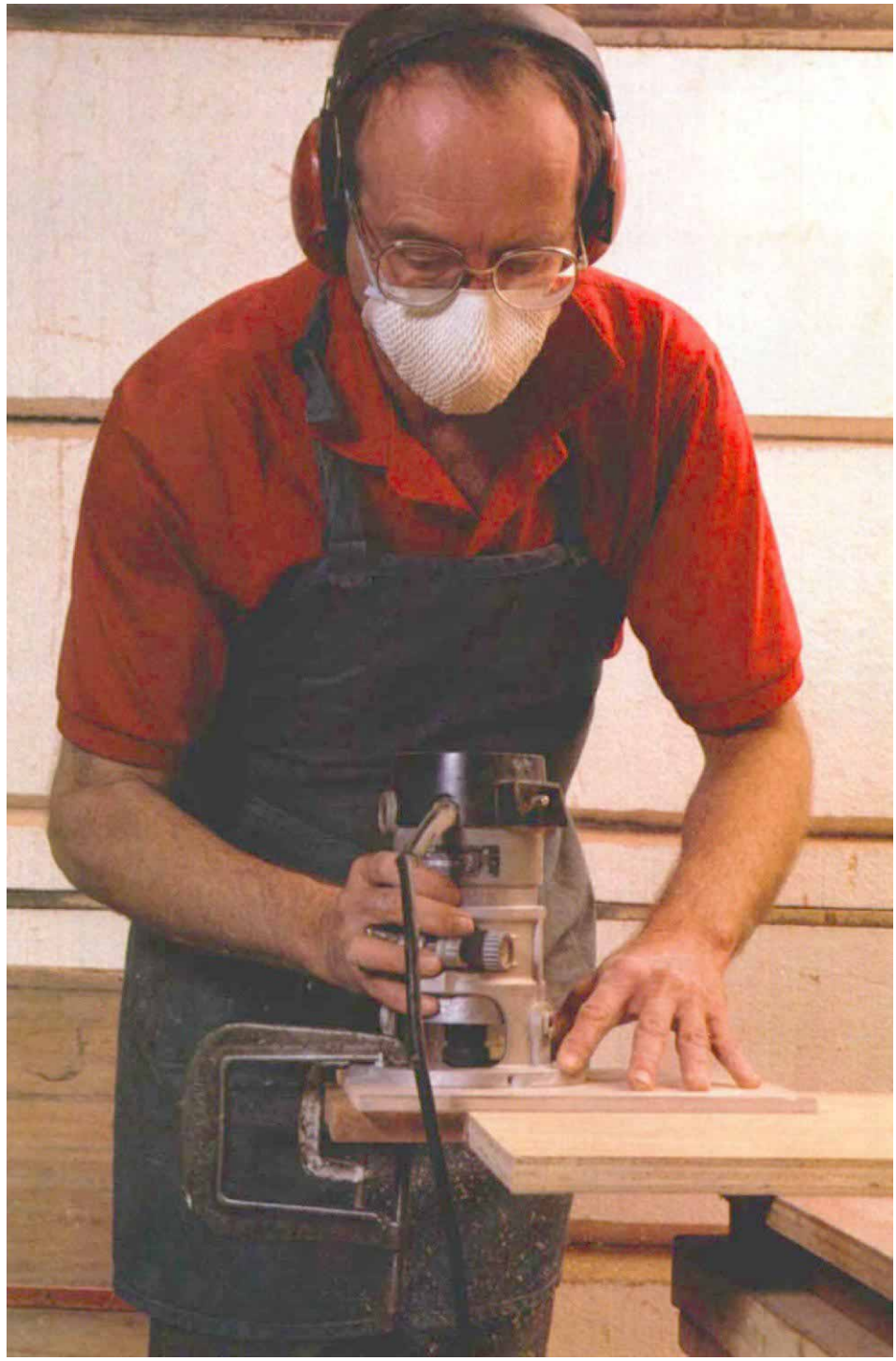


Maneuvering components smoothly over a tablesaw or a router table can be difficult when building large cases. Additionally, any slight cup of the workpiece will prevent the blade or bit from cutting to its full depth. That's why I like using a hand-held router for cutting rabbets in the tops and bottoms of cases (see the photo at right). A router bit cuts cleanly and leaves a sharp, square inside corner that gives a very good surface for gluing.

Rabbeting bits come with guide



Router bits with bearings have limitations. *A bearing-piloted bit (top) will dip into voids and round corners. The result is a sloppy rabbet (bottom).*



A block of wood and two clamps make a fence. *An auxiliary fence helps create a clean rabbet by spanning dips that a bearing would follow.*

Drawings: Vince Babak

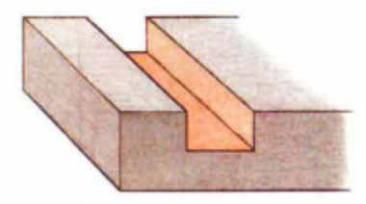
bearings, but I usually remove them and guide the tool with an auxiliary fence. Bearings follow every dip in the wood, which could round the corner at the start or end of the cut (see the photos at left on p. 75).

My fence, which is nothing more than a straight block of wood clamped to the router base, provides a secure surface from start to finish, and it gives me an infinite range of adjustment. A fence also gives me the option of using straight bits to cut rabbets. When I make case goods, I usually make the depth of the rabbet half the thickness of the stock.

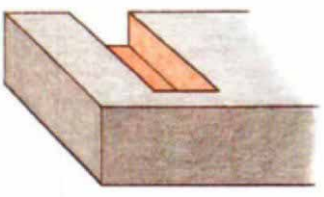
A cut begins with the bit well away from the work. I wiggle the router to check that the fence is snug to the edge of the board, and then I take a slow, steady pass. At the beginning of the cut, I press the front of the fence against the workpiece. Near the end of the cut, I push on the rear of the fence.

If there's no block clamped to the far side of the workpiece to combat tearout, I stop the cut an inch from the end, lift the router past the end of the board and carefully back the cutter in to complete the cut. A second pass along the rabbet ensures a good cut.

The dado



The stopped dado



Shopmade T-fence for cutting dadoes—*Screw two strips of plywood together at right angles to make a guide fence for cutting dadoes with a router.*

Tall cabinets, such as entertainment centers, require internal structural support to prevent racking. Here's where I use the dado joint. A fixed shelf or panel dadoed into the sides near the center of the case adds a lot of rigidity. I cut the dadoes as deep as the corner-joint rabbets. For a snug fit, use a straight bit whose diameter matches the thickness of the panel that will be captured by the dado. If you're using sheet goods, you can order slightly undersized bits. They come in odd sizes such as $^{23}/_{32}$ in., which is the actual thickness of most $^{3}/_{4}$-in. plywood (for more on selecting router bits, *see FWW* #116 pp. 44-48).

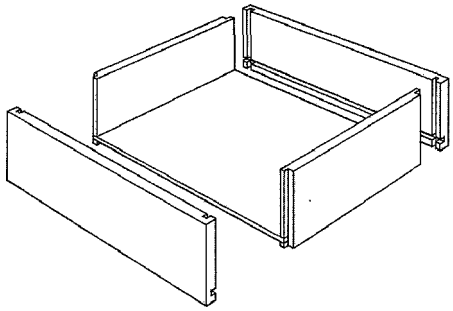
To guide the router, I use a shop-built T-fence (see the photos above) clamped to the workpiece. A dado slot in the top of the fence provides a reference point for positioning the jig. When using it, I install a square base on my router. Round router bases tend to plow sawdust into the fence and then ride up on the dust bank. I prevent tearout on the far side of the cut by clamping a backer block of hardwood where the bit will emerge.

A dado plowed right through the edge of a case side is not a pretty joint. I usually stop the dado before it comes out the front edge. Cutting a stopped dado with the T-fence and router is easy because I can see the layout marks.

The tablesaw dominates for drawers

Nothing cuts a dado faster than a tablesaw equipped with dado blades. Dado blades can be of the stack variety (see the photo at left), with two outside cutters and various-sized internal chippers and shims, or wobble-style (see the photo at right), with one or two blades and a hub that allow you to dial in different settings. Stack dadoes tend to cost more but usually give you a smooth, flat-bottomed cut.

The drawerjoint



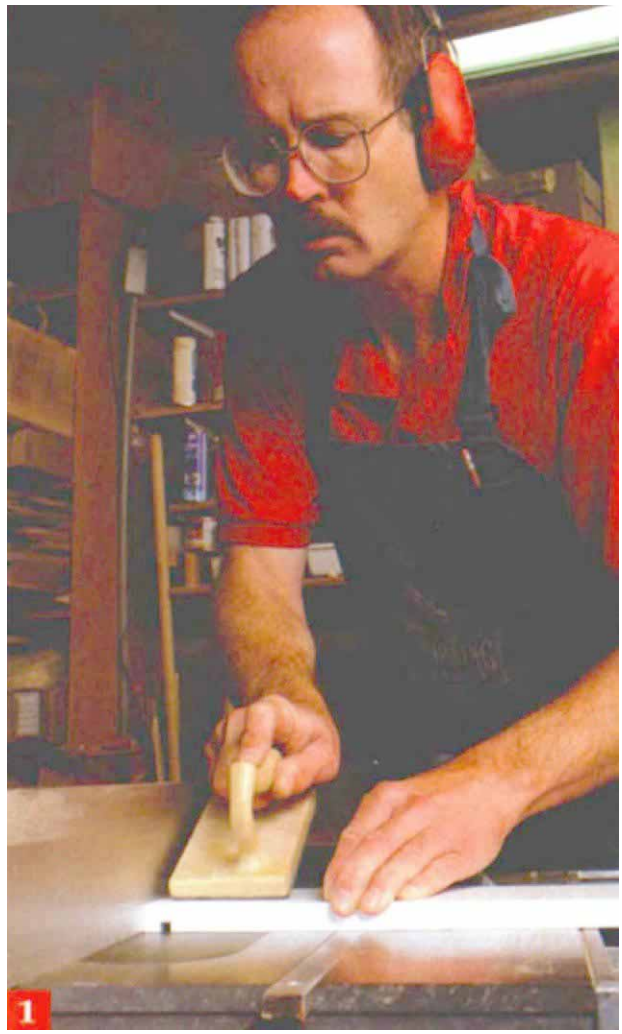
Around the time the tablesaw was invented, woodworkers figured out how to make this strong joint without the fuss and time required for dovetails. The simplified version of the drawer joint combines dadoes cut in the drawer sides with tenons cut on the front and back pieces.

Before beginning, make a custom throat plate for your tablesaw. It will reduce tearout by supporting the wood fibers on the edges of the cut. I create the opening in the plate by lowering the blades below the insert, turning on the saw and raising the dado blades through the insert to a predetermined height. Instead of starting and stopping the saw to measure the blade height, I mark the depth of cut on my rip fence and slowly raise the blade to that mark.

I begin this joint by first crosscutting a dado on the insides of the sides using the tablesaw's miter gauge and rip fence for guides (see photo 1). I position the dado so that when the drawer is assembled the sides will be proud of the front by just 1/32 in. That way, when you fit a false drawer front, it will fit snugly against the ends of the sides. For the drawer to end up nice and square, I make sure the rip fence is parallel to the blade and the miter gauge is square to the rip fence.

To make a matching tenon on the drawer front, I set up my saw for a rabbet cut. I set the rip fence so the dado head is partly buried in it. Because that's incompatible with hardened aluminum extrusion, I keep surplus 3/4-in. melamine-surfaced particleboard on hand for making disposable fence faces. I set the fence so the exposed portion of the dado head equals the width of the rabbet. The exact width of the dado head doesn't matter as long as it's wider than the intended rabbet. The depth of the rabbet is set by the height of the blade. The stock is again guided by a miter gauge and a rip fence (see photo 2). It's a good idea to run some scrap stock the same size as the workpiece to check settings. The joint should be snug. If it's too tight, the short-grained sections of the mortises could break off during assembly. □

Sven Hanson builds custom cabinetry and furniture in Albuquerque, N.M.



1. Cut the mortise first. *Guide a drawer side against the rip fence using a miter gauge when cutting the mortise.*

2. Next cut a rabbet to create a tenon. *Make this cut in a piece of scrap first, and check the fit.*

3. You want a snug, not tight, fit. *You should be able to squeeze the joint together by hand.*