



*There's more than one way to support a drop leaf. This table uses sliding supports, the author's favorite option, but there are other choices.*

# Supporting Drop Leaves

*Six ways to keep them solid and level*

by Christian H. Becksvoort

A sagging leaf on a drop-leaf table can be a chronic nuisance, to say nothing of the Christmas turkey that could end up in your lap. I've come to rely on six different support systems to keep leaves solidly in place. My favorite is a smooth-acting, pull-out slide that can be sized appropriately for end tables or dining tables. The pull-out slide's simple appearance and operation complements the Shaker-style furniture that I prefer. But no matter what system you choose to support

table leaves, you have to hinge the leaves to the table. Let's take a look at the best way to accomplish that.

## **Drop leaves require a special joint and hinge**

The earliest examples of drop-leaf tables tended to be rather sturdy and often had but one leaf. These primitive tables had butt joints between the top and leaf and used plain butt hinges, as shown in figure 5 on p. 76. A better way is to cut a rule joint

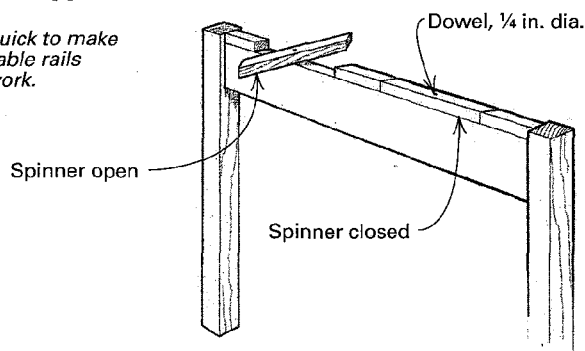
where the leaf meets the tabletop, and use a special hinge made specifically for the job (see "Routing a Rule Joint," *FWW* #80, pp. 48-51).

Drop-leaf hinges, as shown in figure 6 on p. 77 have the barrel on one side and the screw countersinks on the other. One leaf of the hinge is longer than the other to span the gap at the edge of the leaf created by the rule joint.

The rule joint consists of a quarter-round with a fillet along the edge of the top and a

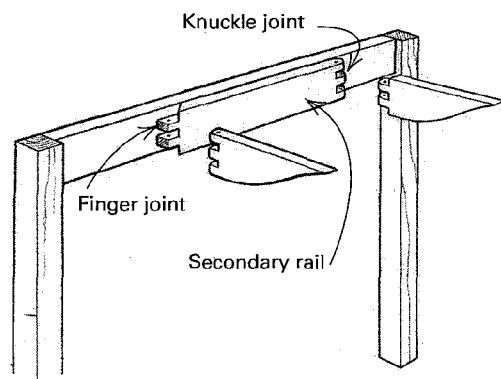
**Fig. 1: Spinner leaf supports**

*Spinner supports are quick to make and easy to install on table rails without a lot of extra work.*



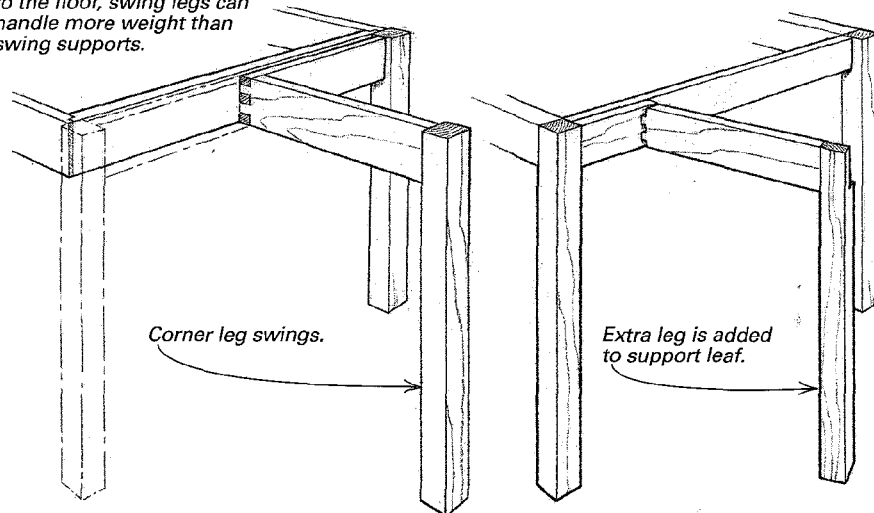
**Fig. 2: Swing arms**

*Swing arms usually are joined to a secondary rail by finger or knuckle joints. These joints require more work than spinners but will hold more weight. And swing arms don't interfere with drawers.*



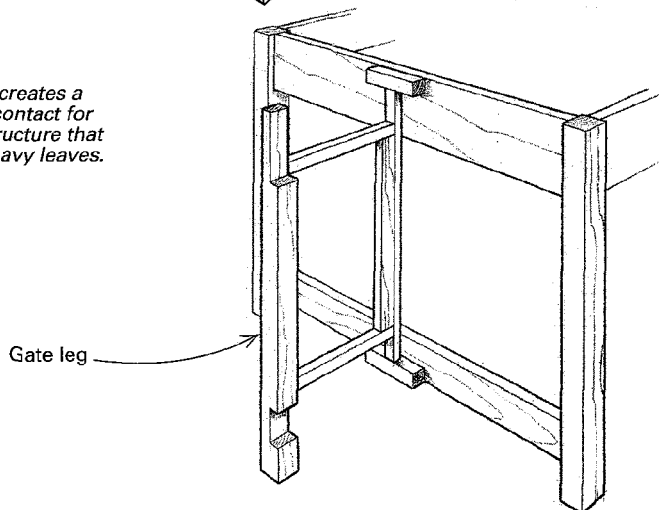
**Fig. 3: Swing legs**

*By transferring the load directly to the floor, swing legs can handle more weight than swing supports.*



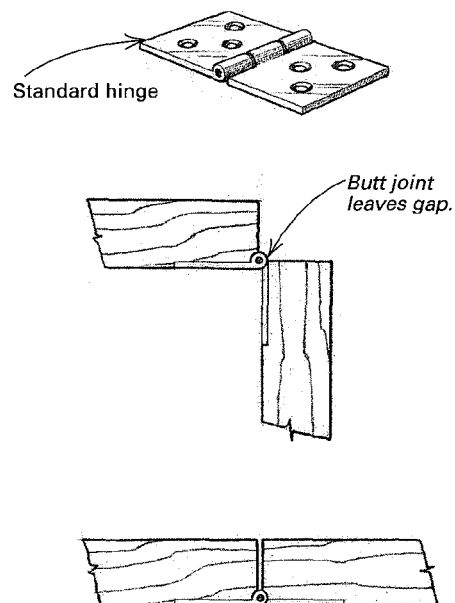
**Fig. 4: Gate leg**

*The lower stretcher creates a secondary point of contact for a sturdy gate-like structure that will handle large, heavy leaves.*



**Fig. 5: Standard hinge**

*A standard hinge leaves an awkward stepped gap between table and leaf when leaf is in the down position.*



cove along the edge of the leaf. The rule joint provides a smooth transition from top to leaf, whether the leaf is in the up or down position. It also discourages crumbs, tablecloths and fingers from becoming caught in the closing joint.

### Six different support systems

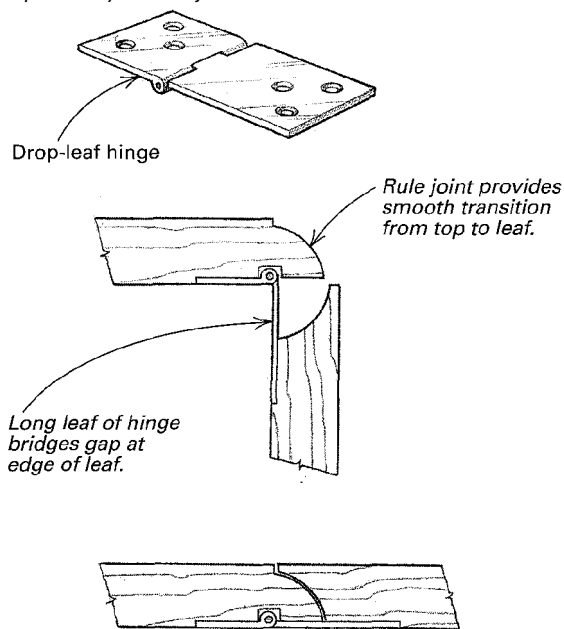
Each of the six support systems has advantages for particular applications. Spinners (see figure 1) are compact, uncomplicated and work well with smaller leaves, such as those on side tables. Swing arms (see figure 2) also are best for small, light leaves. Swing legs (see figure 3) and gate legs (see figure 4) can be used for smaller leaves but are best for heavy loads, such as dining table extensions, because they transfer loads directly to the floor.

Swing and crane supports (see figure 7 on the facing page) are a compromise between swing arms and swing legs. Because the load of the leaf is distributed between the table's rail and stretcher, these supports will hold more weight than swing arms. But swing and crane supports lack the solid support gained by the swing legs' contact with the floor.

Sliding supports (see figure 8 on p. 79) can be proportioned to work well with small, light leaves or leaves that must support heavier loads, as long as the leaf is restricted to half the width of the tabletop.

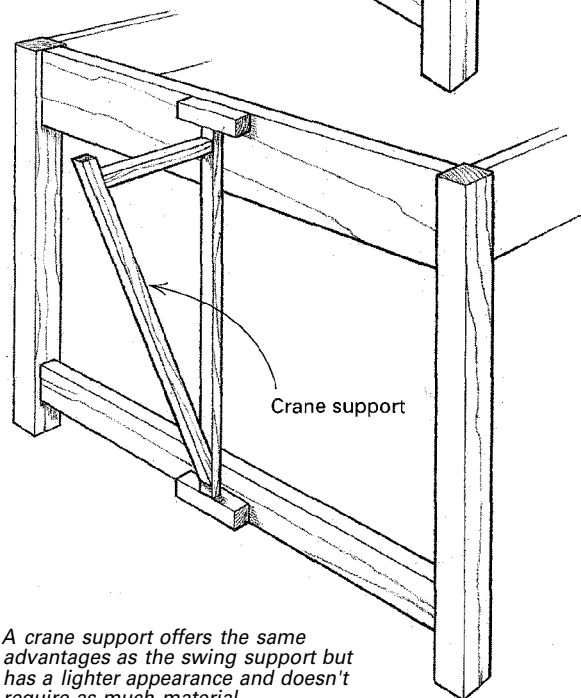
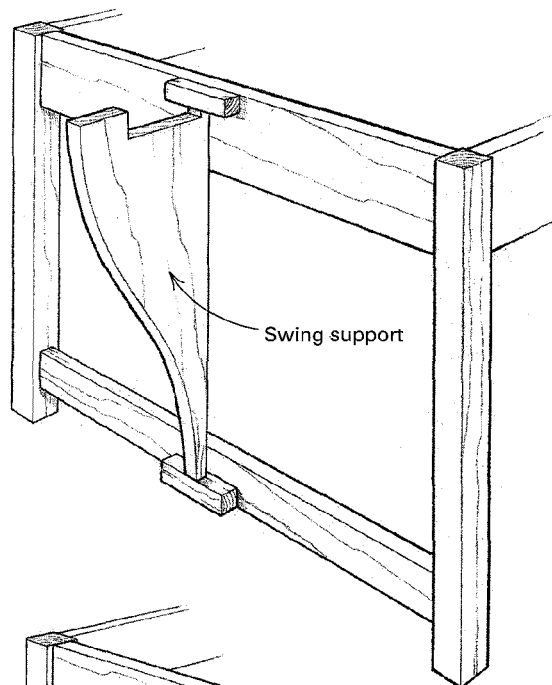
**Fig. 6: Drop-leaf hinge**

For best appearance, drop leaves use a rule joint and a special hinge made specifically for this joint.



**Fig. 7: Swing and crane supports**

A swing support can handle heavy leaves because of the triangulated weight distribution. A swing support is easy to add to a table.



A crane support offers the same advantages as the swing support but has a lighter appearance and doesn't require as much material.

**Spinners**—A spinner is basically a stick that pivots on top of the table's side rail to support the leaf. Because only half the overall length of a spinner supports the leaf, it should be as close to twice the width of the leaf as table width and rail length permit. For example, a 10-in. leaf should have about an 18-in. spinner. Half the spinner supports the leaf while the other bears against the underside of the tabletop.

You make spinners right along with the rails. Just start with stock that's a little longer and a little wider than the finished rail. Rip a 1-in.- to 1½-in.-wide strip from the top edge. Then crosscut the strip at 45° to create the spinners, as shown in figure 1 on the facing page. The 45° cuts let the spinners rotate in only one direction and create positive stops when the spinners are closed.

Glue the pieces that were between and on the ends of the spinners back onto the rail, using the spinners as spacers. On the drill press, drill a ¼-in.-dia. hole through the center of each spinner. Then clamp the spinners into position on top of the rail, and drill through the spinners and into the rail about 1 in. Remove the spinners, and glue a ¼-in.-dia. dowel about 2 in. long into the rail. Redrill the spinners' holes about ¼ in. larger than the dowel, so the spinners will rotate freely on the dowel. After the rails are cut to length and width,

tenoned and sanded, slide the spinners over the dowels, and trim off any excess dowel length. After the table is completed, glue a small block to the underside of the tabletop to stop the spinners at 90° to the rail in the open position.

**Swing arms**—Swing arms are braces attached to a table's rail that pivot 90° to the rail to support leaves. Swing arms are usually built as part of a secondary rail assem-

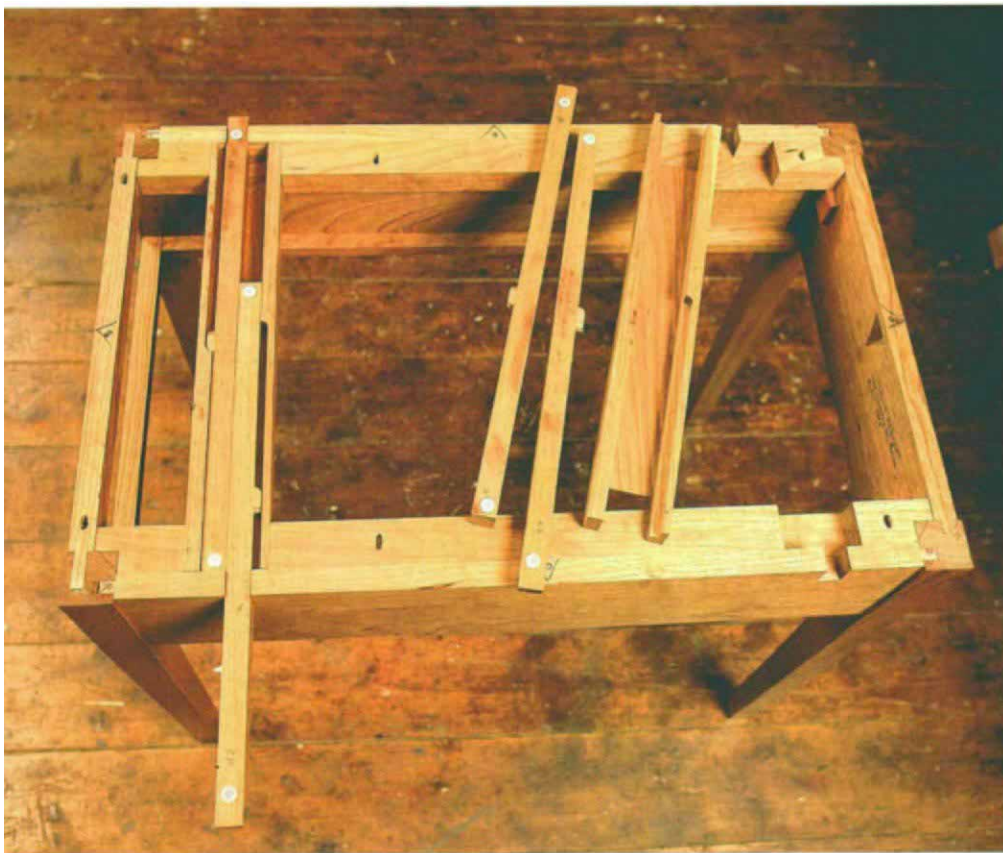
bly that is applied to the outside face of the table's side rails. Swing arms are fastened to the secondary rail with either finger joints or knuckle joints, as shown in figure 2 on the facing page.

Finger joints are probably more common because they are easier to cut. Their interlocking parts are square-cornered like a box joint instead of rounded as in a knuckle joint. If you use a finger joint, undercut between the fingers, and round off the in-





*A sliding drop-leaf support is a neat, clean installation. It provides firm support that won't sag with use. The  $\frac{3}{8}$ -in.-long finger pull at the support's end is all that protrudes when fully retracted.*



*Housings protect the sliding supports from damage or interference by the drawer's contents. The housings drop into mortises in the drawer kickers. Nylon bumpers make for smooth sliding action.*

side corner of each finger for clearance. After cutting the joint, slide the pieces together, and drill a hole for a pivot pin. The end of the support can be shaped as desired, but traditionally, it has an ogee shape.

**Swing legs**—A variation of the swing arm is the swing leg. As with the swing arm, one end of the support arm is joined to a secondary rail by finger joints or knuckle joints. However, the arm portion of the support is usually longer, and rather than being free, the opposite end of the arm is tenoned into its own leg. A variety of leg configurations is possible with swing legs, as shown in figure 3 on p. 76. Because of their direct contact to the floor, swing legs can handle heavier leaves than swing arms.

**Gate legs**—A permutation of the swing leg is the gate leg. If the drop-leaf table has lower stretchers between the legs, then the swinging legs also can include a lower stretcher for a two-point attachment at the top rail and at the bottom stretcher. This gate-like assembly, as shown in figure 4 on p. 76, is a sturdy support that can handle large, heavy leaves without racking. A gate leg can be attached to the primary rail and stretcher or to a secondary rail and stretcher, as was done with the swing leg.

**Swing and crane supports**—A swing support is a vertical brace, roughly triangular in shape, that pivots between the table's top rail and a lower stretcher to support a leaf. If, instead of a single vertical piece, the support is made of three separate pieces, as shown in figure 7 on p. 77, it is called a crane support.

Like the gate-leg table, swing and crane supports rely on the extra strength of two pivot points for greater strength and stability. The pivot points could be built into the top rail or stretcher, but frequently, they are added to the face. Swing and crane supports are sturdier than apron-mounted swing arms but not as strong as swing legs, which distribute the load directly to the floor. The size of the stretcher will ultimately determine the strength of a swing or crane support.

### **Slides are less likely to sag**

Of all the methods for supporting a drop leaf, my favorite one is the sliding support. It's a neat, clean installation and provides firm support that is less likely to sag than other options.

Sliding supports, as shown in the top photo on this page, are relatively easy to make. In just a couple of hours, I can make

efficient wooden slides that are a real complement to a drop-leaf table. And if you are not a purist or are pressed for time, you can buy pressed metal hardware that accomplishes nearly the same thing (The Woodworkers' Store, 21801 Industrial Blvd., Rogers Minn. 55374; 800-279-4441).

**Hidden supports slide smoothly**—My approach is to build a U-shaped channel or housing that holds two sliding supports, one for a leaf on each side of the table, as shown in the bottom photo on the facing page. The design easily could be modified for tables with one leaf. The housing fits between the aprons of the table, and each support slides through a slot cut into the apron. Because this table includes a drawer, the housings also pass through the drawer kickers, which are support rails above the drawer that keep it from drooping when opened.

To create mortises in the kickers in this table, I glued 1-in.-thick stock onto  $\frac{1}{8}$ -in.-thick strips, leaving two 3-in.-wide gaps in each kicker to hold the support housings (see figure 8 at right). The glued-up construction let me cut all the parts to size on the tablesaw. And this construction eliminated the need for a special process to cut out the mortises. I temporarily clamped the kickers in place at the top of the table's side rails while I fitted the slide housings.

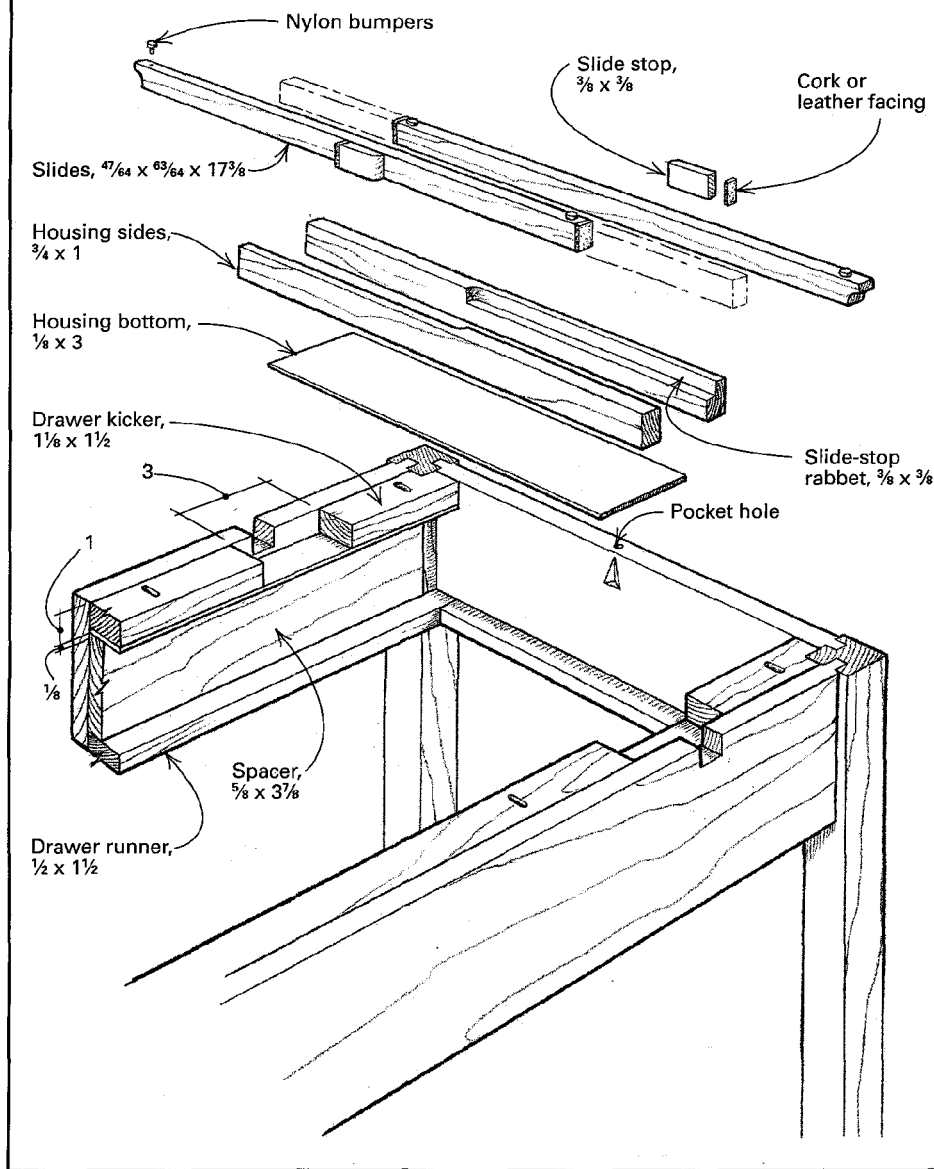
I also made the U-shaped housings by gluing the sides onto  $\frac{1}{8}$ -in.-thick bottoms, leaving enough space between the sides for the slides to bypass each other smoothly. I routed rabbets for the slider stops into each of the side pieces (see figure 8). The housing's sides are long enough to span the table's side rails; the housing bottoms are shorter to fit between the kicker bottoms. The housings fit snugly into the gaps left in the kickers.

**Tight clearance provides smooth action with no play**—The slides have about  $\frac{1}{64}$ -in. clearance for a snug fit inside the housings. The maximum length of the slide is determined by the distance between the side rails, plus the thickness of one side rail, plus  $\frac{3}{8}$  in. for a finger pull that extends beyond the outside of the rail.

With the supports cut to size, I laid them in position in the housings, with one end extending over the table's side rails, and scribed the intersection on top of the rails with a sharp knife. Then I sawed and chiseled out the slots to allow the supports to extend through the rails. Next I glued stops in the appropriate locations on the sides of each support, and I drilled for and inserted thin, nylon stem bumpers (which

**Fig. 8: Sliding drop-leaf supports**

*Slides that support table leaves fit together in a housing when not in use. Supports should be sized according to the size and weight of the leaves. These are suitable for leaves measuring 10 in. by 32 in.*



are available from The Woodworkers' Store) on both ends of the top of the supports. The bumpers make the supports slide much easier.

Finally, I disassembled and finished all the parts and drilled screw holes through the kickers for attaching the tabletop. Then I glued kickers and support housings into place (see the bottom photo on the facing page), positioned the sliders and attached the tabletops with leaves that were already in place. □

*Christian H. Becksvoort builds custom furniture in New Gloucester, Maine, and is a contributing editor to Fine Woodworking.*

## Sources of supply

The following companies manufacture or supply machined-brass drop-leaf or rule-joint hinges.

Whitechapel, Ltd., PO Box 136, 3650 W. Highway 22, Wilson WY 83014; (800) 468-5534

Garrett Wade Co., Inc., 161 Avenue of the Americas, New York NY 10013; (800) 221-2942

Woodcraft Supply Corporation, 210 Wood County Industrial Park, PO Box 1686, Parkersburg WV 26102-1686; (800) 225-1153