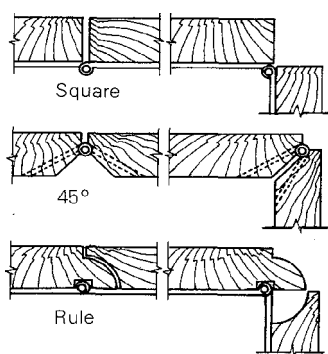


# Drop-Leaf and Gate-Leg Tables

Graceful proportions make all the difference

by Simon Watts

Tables with hinged leaves have been made in America for at least 300 years, although no surviving examples date back to before about 1700. The early tables were often used in taverns and, when not in use, could be pushed back against the wall to make more floor space. The first drop-leaf tables had a square edge between the leaf and the top—simple but crude. The barrel of the iron hinge was left exposed and there was a substantial gap when the leaf was down.



Later tables had a 45° angle cut in the lower edge of each board, with the hinge set in from the underside. At some point an unidentified genius invented the rule joint. This elegant detail allows the hinge to be concealed completely. Special steel table hinges are now made that have one leaf longer than the other. This longer leaf is attached to the

table leaf; the shorter leaf is attached to the tabletop. I rout a short recess for the barrel of the hinge but there is no need to set the whole hinge into the wood. It's just extra work, and results in making the hinge more visible when the leaf is down. The mating edge profiles are best cut with a router, although originally molding planes were used. In my experience it is a mistake to make the joint too snug because crumbs and other debris tend to get jammed in it.

The leaves of early tables were supported by slides or swinging brackets, but when larger tables with wider leaves were made, a swinging leg became necessary. These became known as "gate-leg" tables. For convenience I will call the first kind a drop-leaf and the second a gate-leg.

The leaves of a drop-leaf table should not be narrower than about half the width of the top. I usually make the top 18 in. to 22 in. wide and the leaves 10 in. to 12 in. If the table is much narrower the legs get so close together that it might

overturn when used with only one leaf up. If the table plus leaves is much wider than about 44 in., it will look bulky unless it is made too long for the average dining room. A table 6½ ft. long seats eight comfortably.

The leaves do not have to be rectangular; they can be curved on the long side, with the slight disadvantage of reducing the space available at the end. I don't like oval-shaped drop-leaf tables because the curve crossing the rule joint makes part of the joint project in an unsightly way. Leaves can also drop from the ends of the table instead of from the side, although it is difficult to gain enough length for a whole place-setting without embracing a leg between one's knees.

The table shown in the photos and drawing was made for a family with three small children. I suggested putting a radius on the corners but the parents decided that would detract from its appearance so the corners were left square. By now all three children have met a corner head-on, and one required stitches. I think a furniture maker is obliged to point out this kind of hazard, but should not insist on doing it *his* way.

The choice of wood and the boards selected for the leaves are important. This is because the drop leaves are not restrained, except along their top edges, and if they cup or twist there is no structure to prevent them from doing so. For this reason I use a very stable wood, such as mahogany, and try to use boards whose annual rings run nearly at right angles to the surface (vertical grain). The leaves have to look good when down and should match the top and each other when up. Ideally, one ought to make leaves and top out of boards cut from the same tree.

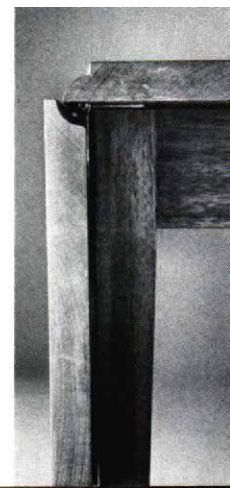
Top and bottom surfaces of the leaves must be finished in exactly the same way. Otherwise, the side of the wood with less finish will pick up moisture or dry out more readily than the other, and the leaf will cup.

EDITOR'S NOTE: For another version of the gate-leg table, see *Fine Woodworking*, Summer '76. For other ways of making tables that enlarge, see "Expanding Tables," Spring '77, "Gaming Tables," Fall '77, and "Designing for Dining," Winter '77. For Parsons tables, see Summer '78.

*The drop-leaf table shown in the plan drawing on the next page, has routed rule joints, (detail at right). Each leaf of the table is sup-*

*ported by four hinges—a pair near the ends, and a pair inboard of the slide supports.*

Photos: Richard Starr



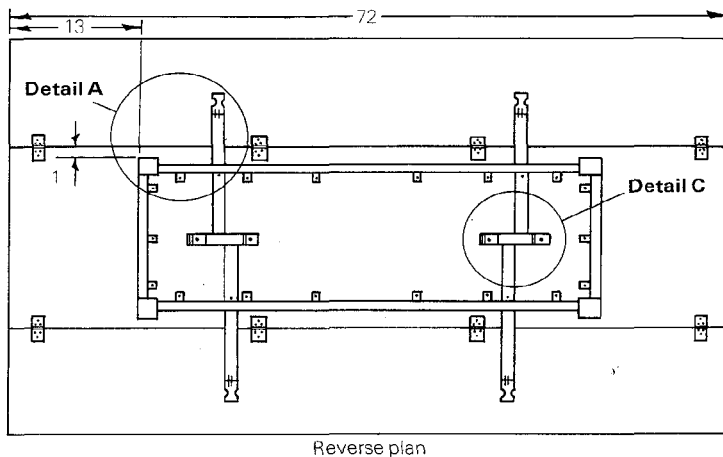
There must be enough knee room for people to sit at the ends of the table. My experience is that a top-to-apron overhang of between one-fifth and one-sixth the length of the table accomplishes this and also looks right. The amount of taper of the legs is also important. Too much taper and the table looks nervous—as if it were about to get up and walk away. Too little taper and the whole piece begins to look clumsy. There are no rules except that what *looks* right generally *is* right. I always put a substantial chamfer around the bottom end of the legs where they meet the floor, especially if the piece is too heavy to lift. Furniture always gets dragged around and the legs eventually wear down. If there is little or no chamfer the legs can splinter.

The most difficult detail on a drop-leaf table is designing the slides so they will support the leaves. Nothing spoils the

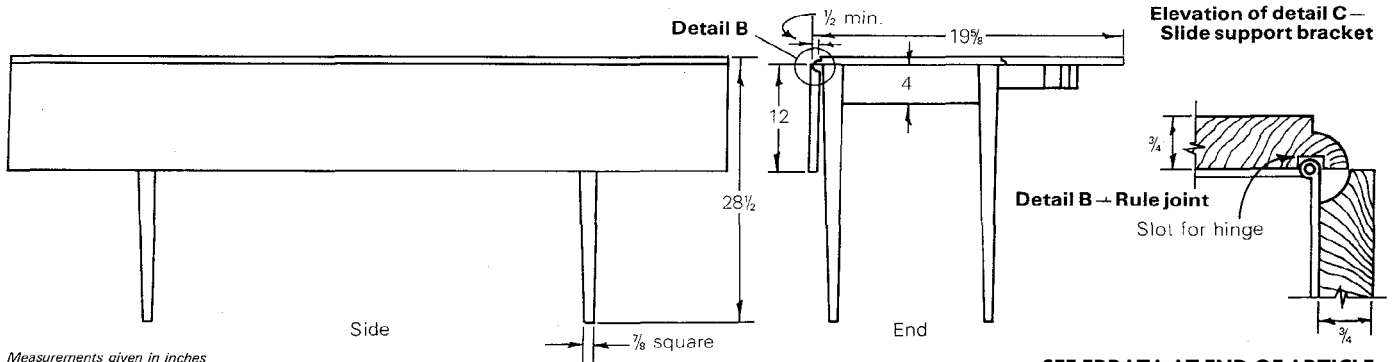
look of these tables more than drooping leaves. I put a small blocking piece between the slide and the underside of the tabletop. This angles the slide up very slightly, and with a bit of adjustment the leaf can be made to lie dead level. If the leaves do begin to droop due to wear, the blocking piece can easily be replaced with one slightly thicker.

Some people make drop-leaf tables with a hinged bracket to support the leaf. This is not good practice because it strains the hinges and twists the apron. The strength of the table is in the joints between the aprons and the legs, so these must fit well and be properly proportioned. I use a haunched tenon joint and offset the mortises. The tenons should not meet inside the leg. If they do they seriously weaken the joint, which can then be split out by an accidental kick.

The top is attached to the base with steel tabletop fasteners



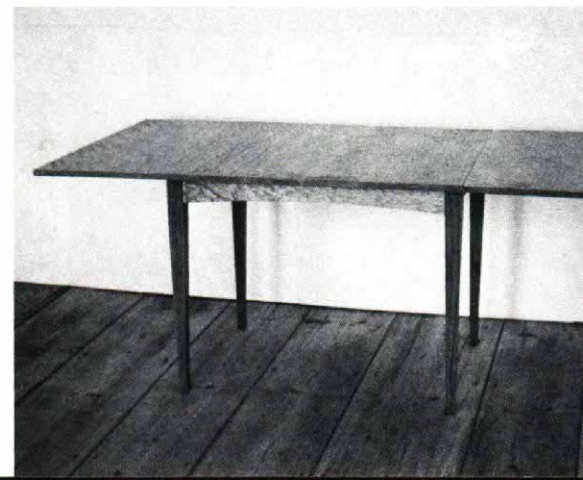
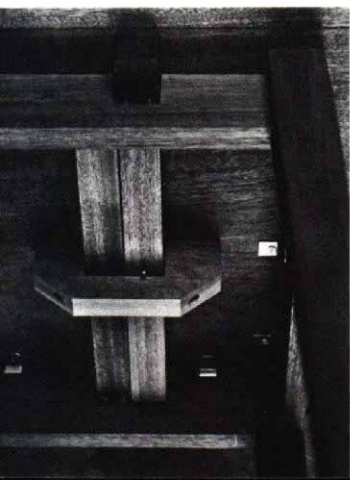
### Drop-leaf table

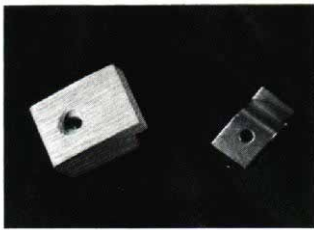


SEE ERRATA AT END OF ARTICLE

Photograph of a drop-leaf table, taken from below, left, shows slides and the support bracket. A brass pin in the slide stops its travel against the bracket when the leaf is down, and against the apron

when the leaf is up. Two variations of the drop-leaf table, center and right: leaf with curved edge, and leaves that are hung from the ends of the table.





*The top can be attached to the aprons with metal clips or with wooden buttons. Either device is screwed to the tabletop and engages a saw kerf running along the inside of the apron.*

that fit in a groove or sawcut around the inside of the apron. They can easily be made in wood but the grain must run at right angles to the lip. The apron should never be screwed or glued directly to the top, as this would prevent movement between the two caused by changes in humidity.

The gate-leg or swinging leg has many similarities.

Since the open leaf is supported by a leg and not by a slide, the middle section can be much narrower than the middle of a drop-leaf. This way a table that is rather large when open can be put against the wall when not in use, occupying very little floor space. However, if you make the middle section less than about 12 in. wide, the table is liable to get knocked over when both leaves are down. The maximum depth of leaf for a table of standard height (28½ in.) is about 25 in. Any deeper and the bottom edge gets too close to the floor and will be kicked. The shape of the top can be square, rectangular, round or oval, but if the length is more than about 60 in. a second gate is desirable, which interferes with seating. It also makes for a heavy leaf, awkward for one person to lift.

The rule joint is the same but because the leaf is deeper the choice of wood is more crucial. If a single wide board cannot be found, a number of narrower boards will have to be joined. Opinions vary, but my own feeling is that the heart side and the sap side of adjacent pieces should alternate. I

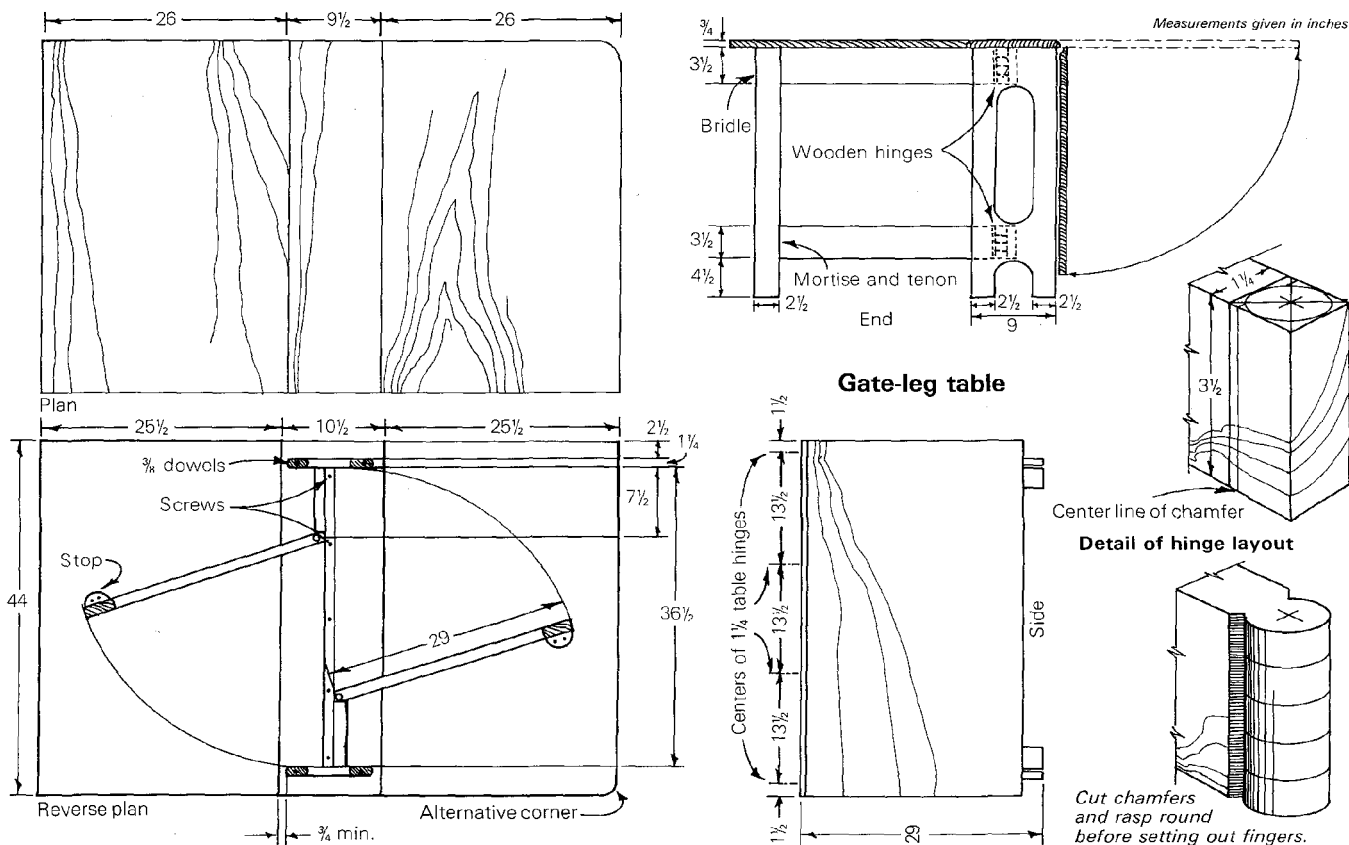
think this reduces the possibility of the leaf curling if it is exposed to the heat from a stove or radiator. If possible, choose vertical-grain stock.

The boards to be joined should not have any twist or wind as this cannot be taken out by clamping. However, a bowed board can usually be straightened by putting it between two straight pieces or by pairing it with a board bowed in the opposite direction. Mating edges can be planed by hand with a long jointing plane or a power jointer. When using a power jointer, run the boards alternating their faces against the fence. Any errors (due to the fence not being precisely at right angles to the bed) will cancel, not accumulate. It is good policy to plane the boards with a slight hollow (less than ⅛ in. over 72 in.) so that their ends are pressed together and there is less chance of a joint opening under seasonal movement. On no account should there be any camber.

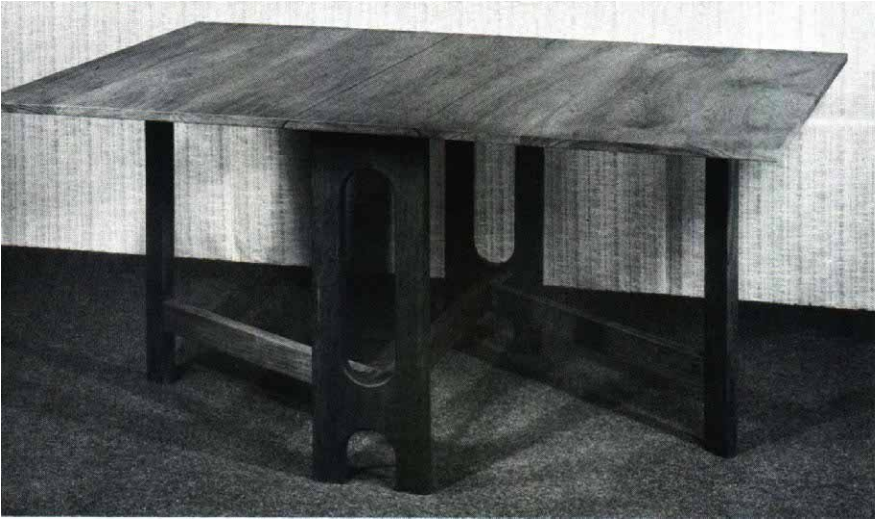
I always glue up stock on edge vertically, holding the bottom board in a vise or standing it on sawhorses. If you try and do it on the flat the glue always runs down to the lower edge and you get a starved joint. I also dowel with ⅜-in. by 2-in. hardwood pins on 8-in. centers to keep the edges from sliding on each other when clamping pressure is applied. Of course some use a spline for the same reason, but unless its groove is stopped near the ends, it will show.

Before gluing, the boards should be set up dry in final sequence. They should be placed on each other vertically and should sit fair without any rocking. Check one side with a straightedge to be sure the surface is flat, then mark and drill the dowel positions. A quick way to close up the joints before

*Simon Watts makes furniture in Putney, Vt.*







*Gate-leg table in open and closed positions, as shown in the drawing on page 64. The gate-leg principle can also be applied to the more conventional leg-and-apron understructure, by adding a low rail between the legs where the gate can attach.*

putting on clamps is to stand the whole assembly on the bench, pick up one end and then drop it—hard. Then pick up the other end and drop it too. It makes an awful racket but is far quicker than winding up the clamps one by one.

The clamps should be alternated from front to back of the assembly, and if the wood is not to be replaned, slip waxed paper or plastic under them to avoid staining the wood. A clamp over every dowel is good practice, and always put one at each end. Bar clamps are rigid but pipe clamps, if threaded at each end, can be made up with couplings to any length required. I like to keep some of each, but bar clamps over 6 ft. long are unwieldy. There should always be plenty of glue squeezing out of the joints, but beware of too much pressure—you can squeeze out too much and starve the joint.

The traditional wooden hinge can be mastered by anyone with a bit of patience who is willing to make one or two practice sets. This example pivots through 180°, but it can be stopped anywhere by varying the chamfer behind the knuckle itself. Square up the stock, then lay out the joint by gauging the stock thickness all around the ends of both pieces. Draw in the diagonals on both edges, to locate the center of pivot, and with dividers scribe the circular shape. The circle crosses the diagonal at the bottom of the chamfer; extend these

points to the sides of the wood and square across. Now add pencil lines where the circle runs out on the faces and ends. The lines mark the point where no wood will be removed.

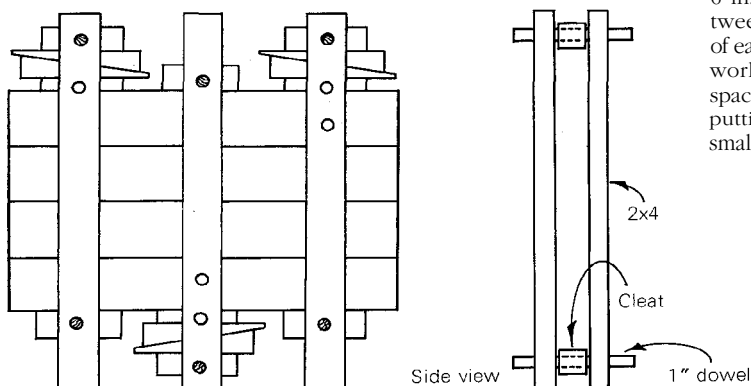
The layout completed, I saw the chamfers and the bulk of the waste with the table saw set at 45°, then finish the rounds with a rasp and sandpaper. Divide the width of the wood into four or five fingers, saw in on the waste side of the lines, and chisel out the waste from both sides, just as for dovetails. You can get at the inner hollow on the ends with an in-cannel gouge, but between the fingers the waste has to be removed with a chisel, bevel downward. Finally, fit the joint together and drill through both pieces at once for the pin. I usually use a brass pin, peened over at both ends so it can't fall out.

Make the end pieces of the table by cutting a board in half lengthwise; then bandsaw the waste and finally dowel and rejoin the two halves. A saber saw or a small frame saw could make the cutouts without splitting the board, but the finishing tends to be tedious. The frames and gates can be left square, chamfered or radiused. I prefer some rounding.

Any dry, reasonably stable hardwood can be used for these tables. I like walnut, cherry, teak and mahogany. I don't think they look as good when made out of blond woods such as oak or maple, but that's just an opinion. □

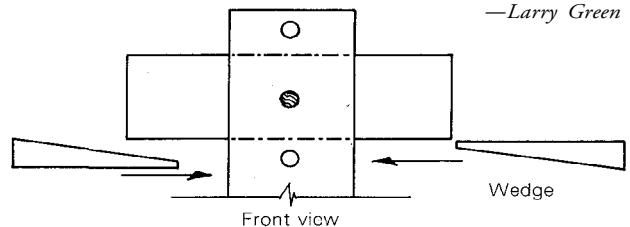
## Cheap clamps

I don't like pipe clamps because the pipes bend under load and mar the work. I can't afford long bar clamps, so I make the 2x4-and-folding-wedge clamps shown in the drawing below.



The materials bill for each clamp is an 8-ft. or 10-ft. utility stud crosscut in half, a foot of 1-in. hardwood dowel, and some scrap for cleats, blocks and wedges. Avoid twisted 2x4s, although a little bow doesn't matter. Make the wedges about 12 in. long, tapering about 1 in. over 9 in., for slow, firm squeeze. Keep the dowel holes about 6 in. apart and span intermediate widths by adding spacer blocks between cleat and wedges. I usually take the clamps apart and use half of each as an assembly bed, then put them together right around the work. Add blocks until the narrow end of both wedges just fits the space, then drive the wedges in together. Keep the joints in line by putting hand-screws across them at the ends, and fine-tune with smaller wedges driven between the clamps and the tabletop.

—Larry Green



## ERRATA

I have just read Simon Watts' article, "Drop-Leaf and Gate-Leg Tables," in the Sept.'79 issue and am very impressed with his work. However, in studying the drawings of the drop-leaf table, there is an error in the measurement of the tabletop in the end view. If Watts generally makes his tops from 18 in. to 22 in. wide, and his leaves 10 to 12 in. wide, there is no way the width of the top and one leaf could possibly add up to  $19 \frac{5}{8}$  in.

I was wondering if Watts has done or considered making the end of the table shorter and placing a drawer in the end, as the Shakers have done.. . .

—*Ralph E. Huss, Okemos, Mick,*

Simon Watts replies: The top and one leaf should be  $29 \frac{5}{8}$  in. Yes, I have put drawers in on occasion. With a drop-leaf table the overhang has to be kept small or the drawer is too far back under the tabletop. This can interfere with seating. Without leaves you can put the drawer anywhere you want but aprons deeper than about 3 in. can get in the way of people's knees. This means the drawer cannot be much deeper than  $2 \frac{1}{2}$  in.