Three Reliable Ways to Taper a Leg

Tapers can be cut quickly and accurately with a bandsaw, a thickness planer or a tablesaw

by Gary Rogowski

Table or desk legs that have been tapered top to bottom have a grace and delicacy that square legs just don't seem to have. Shaker furnituremakers exploited this leg style, and so have many others. Although legs may be tapered all the way around, more often than not I cut tapers on two adjoining faces of a leg. The process can be both quick and reliable.

Roughing out tapers is best done by machine; either a bandsaw or a tablesaw is a good choice. Tapers also can be cut by mounting leg blanks on a jig that's passed through a thickness planer, a process that requires very little cleanup. Cleaning up the cuts also can be accomplished in a number of ways—on a jointer, with a router and a flush-trimming bit, or with a handplane.

How much taper a leg gets and which faces are tapered are personal choices best made with plenty of experimentation.

1 TAPERING ON THE BANDSAW

By far, the simplest and safest way to cut a taper is to draw lines on two adjacent faces of each leg and cut just to the waste side of the lines on a bandsaw, making straight cuts (see the photo at left).

The cut is not that difficult to make if your bandsaw is properly tuned and the blade is sharp. Mark out the taper on a milled leg blank, striking a line from the widest point, where the taper starts, to its narrowest point at the foot. If there's a flat near the top of the leg where an apron will intersect it, strike a line across the face of the leg where the taper begins or just slightly below it, The idea is to leave enough material on the leg so it can be cleaned up without making the leg too thin.

If the leg shape is one you might reproduce often, consider making a template of ¼-in.-thick hardboard or medium-density fiberboard. The next time you need to lay out this taper, it will

Bandsawn tapers are safe and simple. *Feed the leg blank slowly with one hand, steering as you go, and use the other hand to help guide the cut. Cut to the waste side of the line.*

Photos: Vincent Laurence

All four legs of a table can be tapered at once. *The author's planer jig is made from a piece of ¾-in.-thick plywood and three angled strips of wood to support the legs. Stops at either end of the plywood keep the legs in place.*

take just a few seconds.

It's easier to sight down the layout line if you lower your head a bit as you make the cut. Use two hands to help guide the leg through the blade, feed slowly and try to compensate for any drift before you wander from the line. With practice, it becomes quite easy to cut a straight line on the bandsaw. But be careful to keep your fingers out of the way. It's easy to run your thumb into a bandsaw blade.

2 TAPERING WITH A THICKNESS PLANER

A thickness planer isn't the first tool that comes to mind for cutting tapers. But a planer will do an absolutely consistent job of tapering leg stock if you use the proper jig—one with a simple carriage that supports the legs at an angle and has stops at either end (see the photo above). The only real drawback is that it's fairly slow.

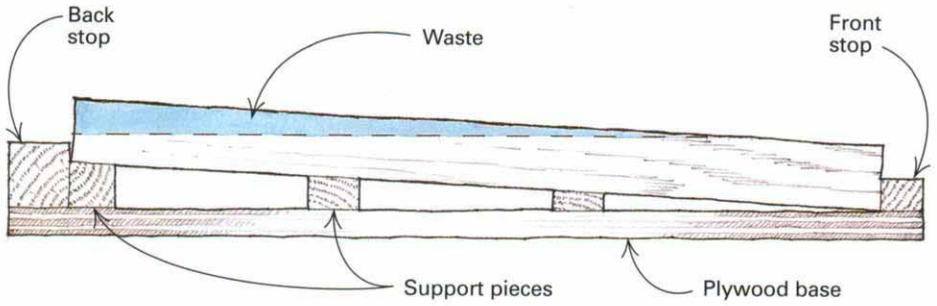
I made my jig from a piece of scrap plywood several inches longer than the length of the legs. To get the taper I wanted, I drew the taper on one of the legs, placed the leg on the plywood base of the jig and raised one end until the taper line was parallel with the plywood. I measured this height near one end of the plywood, cut a support piece to fit there and glued it on. I added a stop just behind it. The narrow end of the legs butt against this stop.

The next step is to cut angled pieces that will support the legs and prevent them from flexing under the pressure of the feed rollers in the planer. With these supports glued to the plywood base, I added another stop at the front end of the jig to capture the legs securely—I didn't want the stock moving around beneath the cutterhead.

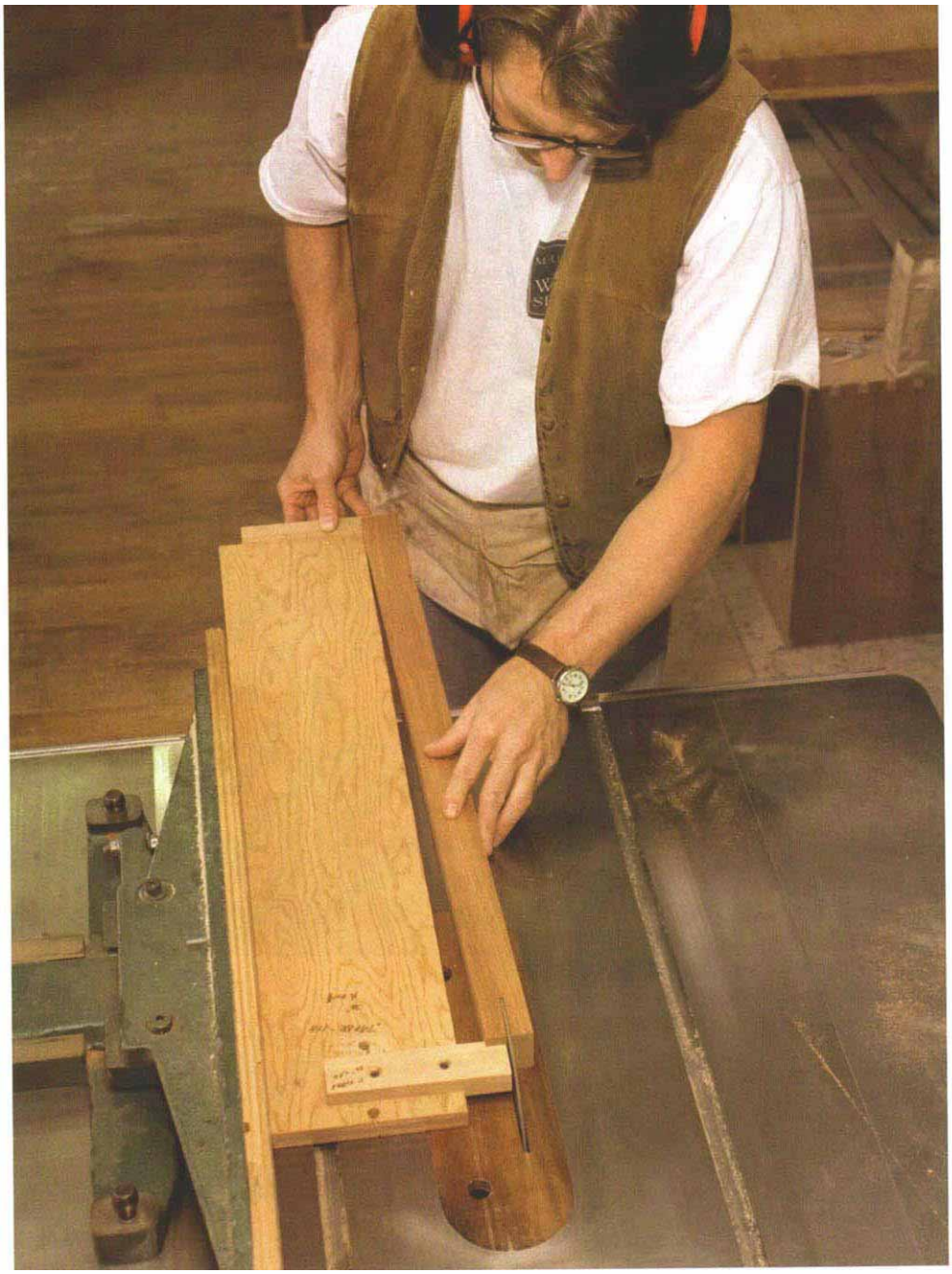
The best thing about this method of tapering legs is that all the legs for a project can be done at the same time. Take light passes, especially at first, to

A tapered sled jig for the planer

Front and back stops prevent the leg blank from moving in the jig. Angled support pieces keep the blanks from flexing.

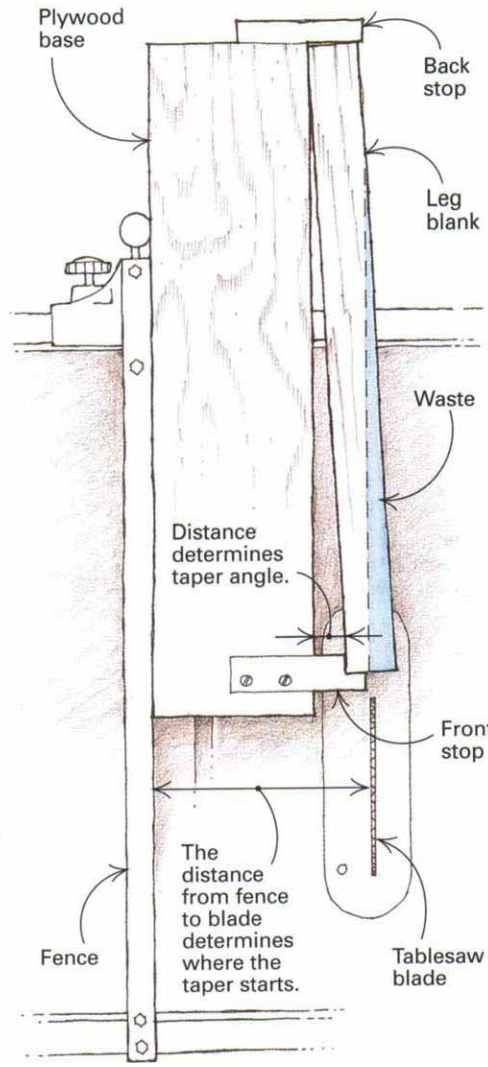


Drawings: Jim Richey



A dedicated tablesaw jig for tapers

The front stop is rabbeted to fit securely against the plywood jig. A second rabbet holds the leg in place. A snug fit is essential.



Tablesawn tapers are fast and accurate. *A dedicated jig like this one produces consistent results but is limited to a single angle and leg length.*

minimize deflection of the stock. Also, make sure the legs don't rock on the support pieces. If they do, you'll see some vicious sniping.

3 TABLESAW TAPERING

The most commonly used tool for cutting tapers is the tablesaw—and why not? It's fast and, if the saw is well-tuned, very little cleanup is needed. You can either make a dedicated jig every time you need a different taper, or you can use a hinged, universal tapering jig to cut many different tapers. I prefer using dedicated jigs because I often reproduce designs (see the photo above). With a dedicated jig, I'm assured of getting the same results every time.

The base of the jig is a straight, flat, piece of plywood just a few inches longer than the leg stock. I cut it so its sides are parallel and its ends are square. Then I screw a back stop to one end to catch the wide part of the taper (see the drawing above). A front stop, near the other end of the jig, captures the leg and cants it from the plywood at the correct angle for the desired taper.

To set up for the cut, measure from the inside edge of the jig to the widest part of the taper—either the corner of the leg if it's a full-length taper or a few inches shy of the comer if you want to leave a flat section on the leg for an apron. Use this measurement to set the distance from blade to fence. Keep the jig firmly against the fence, and feed steadily as you make the cut, running the narrow end of the leg into the blade first. For the second taper on a leg, rotate the leg blank 90° clockwise in the jig. By rotating the leg this way, a square, untapered face will rest on the tablesaw.

THREE WAYS TO CLEAN UP THE CUTS

Some cleanup is almost always required after you've cut the basic tapers. Even a planer can leave mill marks. Here are three simple methods for cleaning tapers.

Jointer: This tool does a great job of cleaning up sawmarks (see the bottom photo). I generally go straight from the bandsaw to the jointer. I set the infeed table for a light cut and use a push stick.

To avoid tearout, you should cut with the grain. That usually means the narrow end of the leg is last to go over the cutterhead. Inspect the taper first, though, checking for grain direction as well as for any high spots that may need to be taken down by hand before you joint the whole length of the taper.

Check, too, to see if one end or another needs more wood removed, You may be able to take slightly more off one end than another by varying the amount of hand pressure you apply. Make sure the tapers are well marked so you can tell when you're finished. Feed slowly to minimize cutterhead marks.

Router: A flush-trimming bit mounted in a router table is another quick way of cleaning up tapers, especially if you don't have a jointer (see the top photo). This technique also guarantees that all the tapers are precisely the same. Both top-bearing and bottom-bearing bits will do the job, and you can use the same templates here that you used to lay out tapers for the bandsaw. Double-faced tape works well to attach the template to each leg. For a production run, a jig with attached toggle clamps is better and faster.

Jointer cleans up tapers quickly, A *few light passes over the jointer should clean up any mill marks or other surface irregularities left after roughing out a leg by machine.*

When a bottom-bearing bit is used in a router table, you will have to make a tapered template for the second taper so the router bearing (which is at a fixed height) has something to ride on. You'll need thicker stock for this template.

Cut and clean up the first taper. Then mark the second taper on the template stock by placing it on the tapered leg and setting them both on a flat surface, like a bench or jointer bed. On the template stock, mark a line that's parallel with the bench or bed. Then cut and clean this second side. The template is ready for use.

Make sure the tapers have been cut close to the template shape; there shouldn't be more than 1/16 in. of wood to clean up with the router. Set the height of the bit so that the bearing rides firmly against the template. Start the cut back just a little from the end of the leg. Work from the widest part of the taper to the narrowest. Rout the full length, and finish up with one smoothing pass.

Handplane: On wood that's not particularly gnarly, a well-tuned handplane can be used to clean up tapers straight off the bandsaw, planer or tablesaw. A plane also is a good choice for tapers that have been cleaned up with a jointer or router but still need a little more polishing.

Generally, you'll want to plane downhill (from the wide part of the taper down to the narrow), but you should check the grain direction of each face you're planing to be sure. The grain may surprise you. Make sure your stop or bench dog won't interfere with the plane at the end of its stroke. Mark a line across your stock at the start of the taper, and take lighter passes as you approach it. □

Template routing ensures consistent results. *Both bottom-bearing bits (shown above) and top-bearing bits work. Double-faced tape secures the template to the legs.*

Handplane cleans tapers efficiently. *A plane leaves a surface that's ready for finish, but take care to plane with the grain to avoid tearout.*

Gary Rogowski designs and builds furniture in Portland, Ore., and is a contributing editor to Fine Woodworking.