



Stickley-Style Legs

A router bit and two jigs yield quartersawn figure on all four sides

by Patrick Nelson

Quartersawn oak is synonymous with Craftsman furniture. The wood's wild ray figure is both beautiful and distinctive. Unfortunately, Mother Nature saw fit to put it only on opposing faces of a board. So on a table leg, for example, the sides adjacent to a quartersawn face should be flatsawn and without figure.

However, if you look closely at much of the furniture built by the Stickleys in the early 1900s, you'll see what looks like a freak of nature: quartersawn figure on all four sides of square table legs (see the photo to left). This figure is the result of a unique leg design used in Stickley factories.

The Stickleys used two techniques. One was to cover the flatsawn faces with quartersawn veneer. The other technique mated four quartersawn boards with trapezoidal profiles. The base of each trapezoid was one face of the leg, and the two adjacent sides were angled at 45°. On one angled side, there was a small perpendicular notch; on the other side was a complementary

tooth. Mating tooth to notch on adjacent pieces lined up the four joints perfectly.

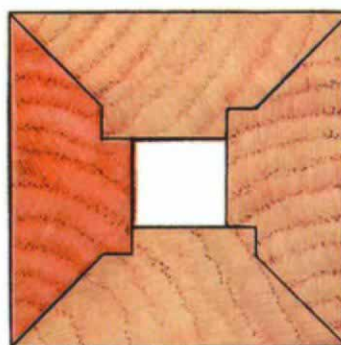
One modern bit does the trick

The shaper bits used to mill the original Stickley design are not commonly available today, but the widely available lock-miter router bit can be used to make these Stickley-style legs. The bit is beveled at 45°, like a large chamfer bit, with a pair of opposing teeth in the middle of the cutting surface. It cuts a profile that's quite similar to the one used by the Stickleys. I bought my bit from Grizzly Imports (P.O. Box 2069, Bellingham, WA 98227; 800-541-5537). They're also sold by a number of other router-bit manufacturers.

The lock-miter bit actually has some advantages over the shaper cutters used by the Stickleys: This bit produces a joint with a larger glue-surface area, only one is needed to cut both sides of the joint, and just one setup is required. Adjusting the lock-miter bit height and the position of the fence to get that setting is just trial-and-

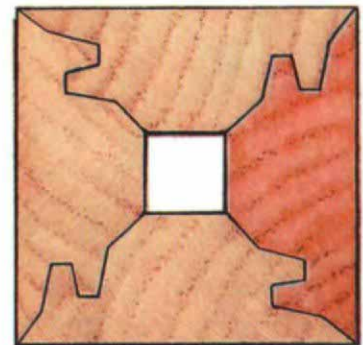
Freak of nature? No, just a bit of technical wizardry. Quartersawn figure occurs naturally only on opposing faces of a board, but the legs on many Craftsman pieces show it all around. The author used one router bit and two jigs to make the leg shown above.

Quartersawn figure on all four sides



Stickley method

On original Stickley pieces, the leg was made up of four pieces. Each of these pieces had two complementary profiles cut into it using two shaper setups.



Author's version

The author's version of the Stickley leg is made up of four identical pieces. The edge profile on each piece mates with the face profile on an adjacent piece.

First jig, first pass

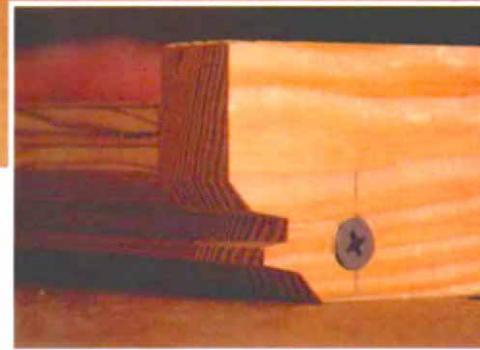
One jig positions workpiece flat on table to cut the profile on edge of stock.

Inside edge rides against shaper or router-table fence.

Offset between two pieces of plywood is width of leg.

Pine end cap

Screws hold end cap in place. Screw in workpiece is positioned out of the way of the bit.



Second jig, second pass

Second jig positions workpiece vertically to cut the profile on the inside face.

Profile cut in first pass

Plywood pieces flush at edge

Inside face of leg

Pine end cap



Rout inside face of leg stock. The piece should be edge up with its outside face against the jig (above). After the second pass, the piece has matching profiles on its edge and inside face (right).

GLUING UP

1. Apply glue to just two pieces of each leg at a time. Then, after you have the two halves assembled, apply glue to the remaining faces, and bring the two halves together.



2. Tack battens down center of each side. These battens will help concentrate the clamping pressure.



3. Tack one end of a bungee cord to the end of a batten.



error. You can get pretty close right from the start, though, by centering one of the teeth on the stock. And once you have the setting right, the actual routing takes just a few minutes.

I mount the bit in my shaper rather than in a router table. The shaper's slower speed is less intimidating than a router with a bit of this size. But if you don't have a shaper, the technique would work using a powerful, variable-speed router set at its slowest speed. The key to the technique is the pair of jigs I made to hold the workpieces as they're fed through the bit (see the drawings on p. 55).

One jig for each pass

The first jig holds the workpiece flat against the table and exposes the edge of



4. Wrap cord tightly around the assembly. Tack the bungee cord at the other end.

the workpiece to the router. The jig is made of two pieces of plywood with pine end caps. The end caps start out as rectangular pieces but take on the lock-miter profile after the first pass. Screws driven through the end caps, far enough back to be out of the bit's way, hold the workpiece in place (see the top drawing on p. 55). The distance from the edge of the narrower piece of plywood, against which the workpiece butts, to the edge of the wider piece, which rides against the fence, is the width of the leg. It's easy to make the legs any size you want.

Stock from $\frac{1}{16}$ in. thick on up to 1 in. or $1\frac{1}{4}$ in. (depending on the make of the bit) can be used with the lock-miter bit, but the thickness of the parts of the jig and the stock you're using for the pieces that will

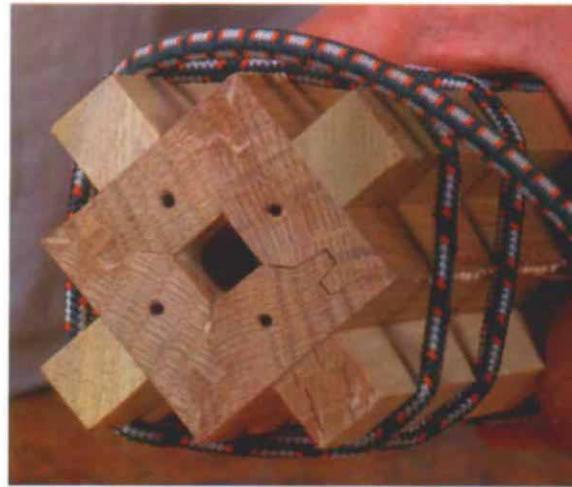
make up the leg must be identical. I dimensioned stock to the thickness of the shop-grade plywood (nominally $\frac{3}{4}$ in.) that I used for the jig. It was easier than building up each layer of the jig from multiple pieces of plywood or milling the pieces of the jig from solid wood. I also crosscut the leg stock and jig stock at the same time, so their lengths are identical.

The second jig looks similar to the first one. But the two pieces of plywood are the same size, and they are flush on their edges (see the bottom drawing on p. 55). The workpiece is held vertically against the edges of the plywood. This way, the inner face of the workpiece is presented to the router bit.

After the workpiece has passed through the router bit in this second jig, the work-



5. Tap along the battens to make sure the joints are seated.



6. The wrapped assembly is set aside to let the glue cure. After a few hours, the leg can be unwrapped and the ends trimmed. This eliminates the screw holes and any slight gaps at the ends where the clamping pressure isn't as great. The leg is now ready to use.

piece will have identical profiles on one edge and on the inside face. Each leg is made up of four such pieces, one edge of each piece mating with the face of the adjacent piece, all the way around the leg. I always make the legs several inches longer than they will be on the finished piece of furniture so that I can trim off the ends after the leg has been assembled.

These legs can be used on many different kinds of furniture, and the process of making a leg is the same, regardless of size or what the leg will be used for. □

Patrick Nelson designs and builds furniture professionally in Fulton, Mo. David Mount, an amateur woodworker in Two Harbors, Minn., assisted in the writing of this article.