

# Three Federal Legs

Power tools  
speed the process,  
banding adds style

BY JEFF GROSS

**1** DOUBLE-  
TAPER LEG

**2** SIMPLE  
SPADE FOOT

**3** COMPLEX  
SPADE FOOT

## CLASSIC LEGS—TODAY'S TECHNIQUES

Slender, tapered legs with beading and applied banding are a hallmark of Federal furniture. Shaping them usually requires a lot of careful work with hand tools. Those shown above are made mainly on the tablesaw, using a versatile shopmade jig.



Three years ago, I had the privilege of participating in the inaugural Three Month Furniture Making Intensive workshop offered by the North Bennet Street School in Boston. In addition to increased knowledge of the craft, wonderful experiences with the instructors, and new friends, I came away with an elegant Federal-style writing desk (see photo, facing page).

Making the square tapered legs required a fair amount of work with handplanes, spokeshaves, rasps, and files. After some experimentation, I figured out how to cut three styles of Federal leg using simple shopmade jigs. Once cut, the legs need only minor cleanup. One leg has a double taper. The other two are variations on a spade foot.

All three styles of leg use the same cutting sequence for the tapers. (For the spade feet, you first drill out sections that form

the flares at the ankle.) Cut the long tapers first, then flip the leg end for end in the tapering jig. Readjust it for the tapers at the foot, then make those cuts.

To make the legs shown here, mill blanks that are 1¼ in. sq. and 18 in. long. Mark the point near the top where the taper begins (it's 3 in. for these legs). Mark the ankle: in this case, 2¾ in. Mark two sets of reference lines on the bottom of the blank, at ¾ in. and ⅝ in. from each face. These will help position the blank to cut the long and short tapers. If you wish to make legs of a different size, a full-size pattern will help you refine proportions and the angles of the tapers.

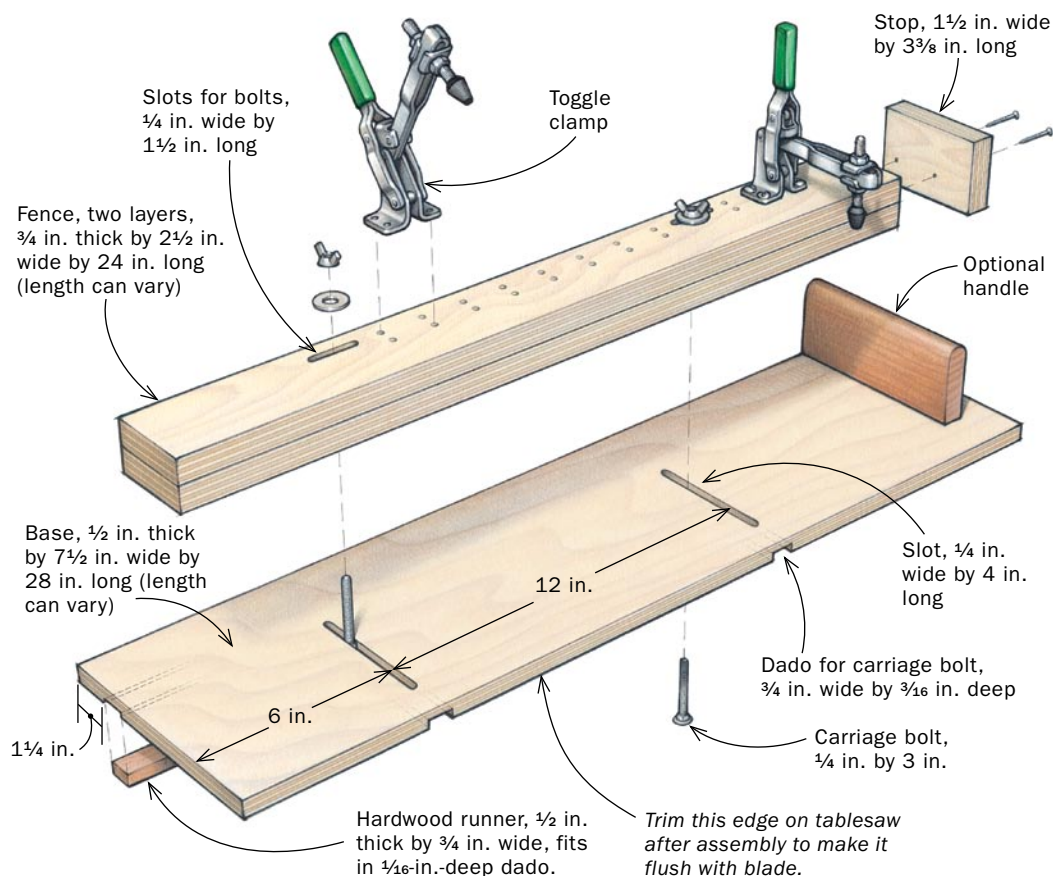
*Jeff Gross is the proprietor of J. Thomas Furniture in Groton, Mass., and a member of the Society of American Period Furniture Makers.*

## Start with a tapering jig

I designed this tablesaw jig for cutting square tapers. Cut the base from ½-in.-thick birch plywood and the fence from a double thickness of ¾-in.-thick plywood. The length of the base and fence can vary. Rout dadoes and slots in the base and fence, as shown, to accommodate a runner for the saw's miter slot and the bolts that hold the fence in place. Screw a stop to the short end

of the fence nearest the front of the tablesaw. Fasten two toggle clamps to the top of the fence. Drill extra sets of holes for the screws holding the clamps; the jig is handier if you can relocate the clamps. I screw a handle to the front of the jig, but it's not necessary.

Secure the runner to the bottom of the base, slide it into the miter slot and the bolts that hold the fence in place, and trim the edge of the base to align it with the blade.

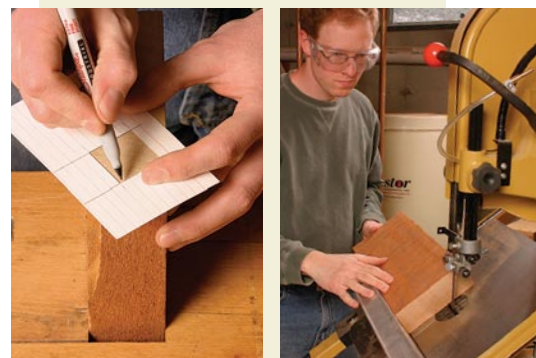


## RIFT-SAW FOR UNIFORM GRAIN



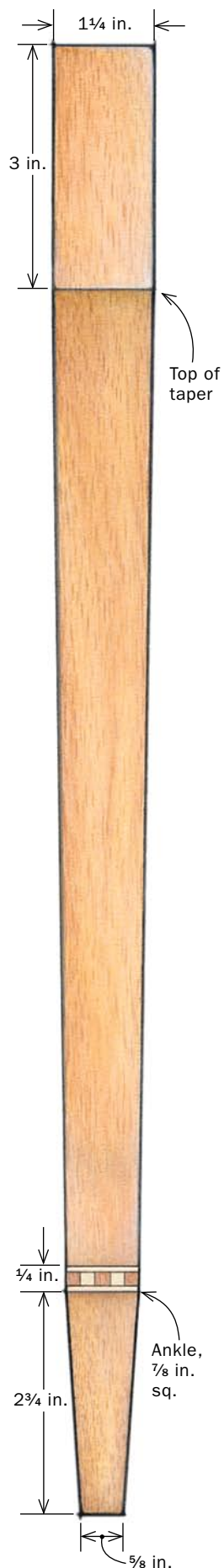
The 19th-century cabinetmakers who created the Federal style favored ma-

hogony, but maple, cherry, and walnut also are appropriate. Use straight-grained stock and resaw it so that the end grain runs on the diagonal. The grain pattern, known as rift-sawn, creates uniform grain lines on the faces of the leg. Use a bandsaw to cut the first face at the correct angle. Use that face to mill the others.



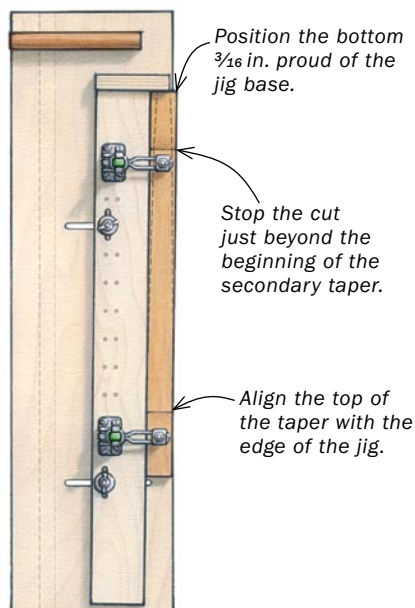
**Line up the grain.** From an index card, cut a window the same size as the leg's cross section. Set the window on the end of the stock and rotate it so that the grain aligns on the diagonal. Mark the window on the end grain. Then tilt the bandsaw table so that the blade aligns with one side of the leg.





# Shaping the double-taper leg

## CUT THE LONG TAPER FIRST



**Set up a stopped cut.** Clamp a hook-shaped stop to the fence so that you don't completely remove the waste from the long-taper cuts.

**T**his is the simplest style to make, because you use only the tapering jig. Banding at the ankle highlights the transition between the tapers. Stopped cuts for the long tapers keep the end of the foot intact, which simplifies the setup for subsequent cuts.

Start by loosening the jig's fence and snugging the leg blank against it with the foot against the fence's stop block. Align the blank to cut the long taper (see drawing, above).

Transfer the pencil line marking the leg's ankle to the edge of the jig base and take the blank out of the jig. Raise the sawblade as high as you can and slide the jig forward until the sawblade is about 1 in. past the pencil line on the base. Clamp a hooked stop to the tablesaw fence (see photo, above), then clamp the leg blank back in the jig and make the first cut. To keep the waste wood from splintering, shut off the saw and let the blade stop before sliding the jig back. Cut the next two sides, rotating the leg toward the fence each time. For the last cut, remove the stop and cut the full length of the leg.

Now cut the second taper, from the ankle to the bottom of the leg. Redraw the reference line for the ankle on the last face you cut. Keep that face toward the sawblade and flip the blank end for end so that the top rests against the jig's stop block. Bring the ankle reference line flush with the edge of the jig. Pivot the leg and the fence until the reference line

on the foot is flush with the edge of the jig, leaving the foot 1/8 in. proud of the base. When everything is lined up, tighten the fence, clamp down the leg, and cut the taper on two faces.

To taper the third face, rotate the leg toward the fence and butt the untapered portion tight against the fence and the stop block. Align the reference line on the bottom and the ankle reference line with the edge of the jig. Clamp the leg to the jig. Adjust the jig's fence so that it meets the leg along the long taper. Tighten the fence, clamp down the leg, and make the third cut.

Rotate the leg and butt the long taper against the fence. Cut the last side. The last taper will be slightly different from the others because the last cut is referenced to the long taper. Nobody will notice.

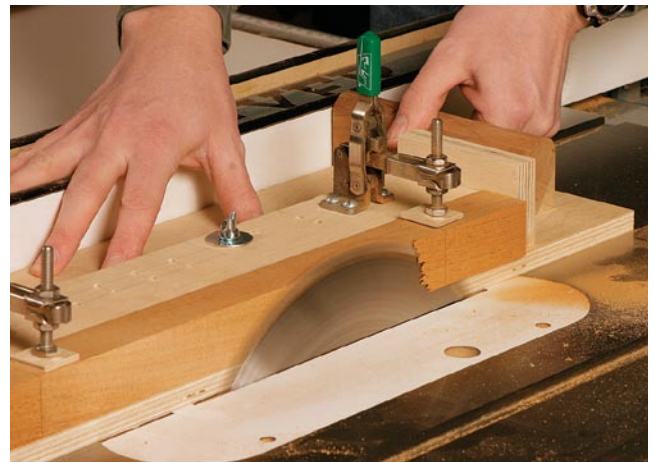
Use a block plane to even out the line where the long taper and the foot taper meet. Don't worry too much about cleaning up the point at the top of the leg where the long tapers begin.

You'll have to hand-cut the recess for the banding at the ankle. To set the correct angle for the recess, lay a square against the square part of the top of the leg. On the opposite face, hold a bevel gauge against the long taper. Adjust the blade of the gauge until it butts the blade of the square. Then slide the bevel gauge down to the ankle and mark two sets of lines for the recess. Remove the wood with a chisel or a router plane.



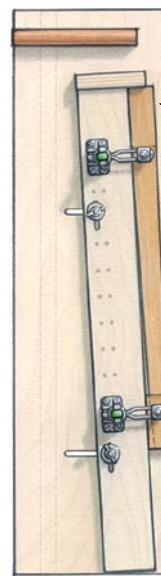


**Saw the long tapers.** These cuts remove only a small amount of wood. You may need to adjust or reposition the toggle clamps to hold the stock firmly.



**Pause at the end.** Leave a chunk of waste here to help when setting up for subsequent tapers. Let the saw coast to a stop before moving the jig.

### CUT THE SHORT TAPER LAST



Flip the blank so the top is against the stop.

Angle the fence so that the blank is flush with the jig base at the ankle and is aligned on the inner reference mark at the base.



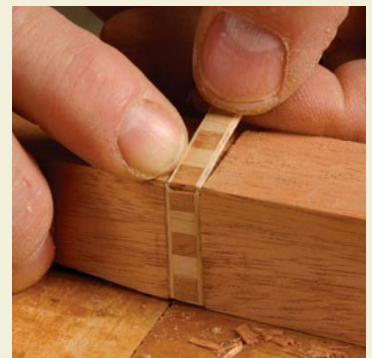
**Short cuts clear up the leg.** Cutting these tapers removes waste from the first set of cuts. The finished leg should need only a minor touch-up with a handplane.

## BANDING ADDS A HIGHLIGHT

John and Thomas Seymour, masters of the Federal style, often used decorative banding on their legs. Two of these designs do the same. In both,  $\frac{1}{4}$ -in.-wide or  $\frac{3}{8}$ -in.-wide banding is glued into a dado.



**Mark the leg for banding.** Use a bevel gauge and knife to mark the position of the banding (above). Cut the slot with a router plane or chisel (right).



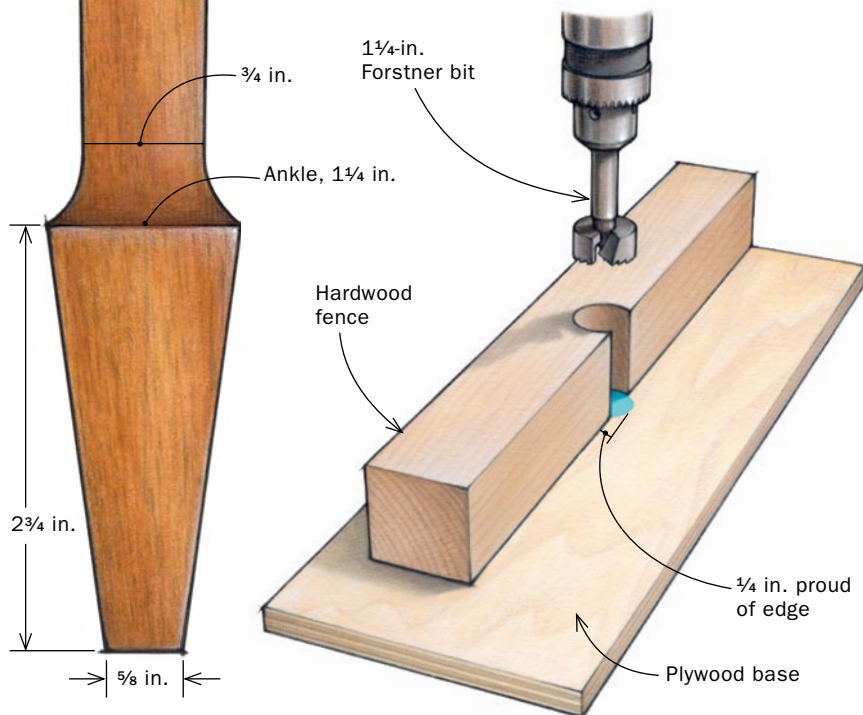
**Fit the banding.** Trim the banding to length and glue it into the recess. Match the pattern where the banding turns corners.



# Shaping the simple spade foot

## MAKE THE CURVES ON THE DRILL PRESS

Screw a 2-in.-thick by 2-in.-wide length of hardwood scrap to a scrap plywood base. Position a 1¼-in.-dia. Forstner bit with its edge ¼ in. proud of the wood, and hollow a section of the hardwood.



**Drill hollows in the leg.** Clamp a leg blank against the hardwood fence, aligning the ankle with the drilled-away edge of the fence. Drill a hollow in each side of the blank.

**M**ake the jig shown in the drawing above, clamp it to the drill-press table, and bore the holes. (You can make the jig at any time, but it's easiest when you're ready to cut the legs. This way you don't have to line everything up more than once.) You'll also need a short length of 1¼-in.-dia. dowel to help register the drilled leg blank on the tapering jig. I use a cutoff from a curtain rod.

To align the hollows, clamp a stop block to the drilled-out fence, then clamp the leg in place. Turn the leg blank toward you after drilling each hole so that the jig base backs up all but the last cut.

Now saw the long tapers. These will be stopped cuts, ending just short of the deepest part of the hollow. Put the blank in the tapering jig with the foot against the stop block. Pivot the blank and the fence until the point at the top where the long taper begins is flush with the jig's base. Fit the short length of dowel in the hollow and pivot the leg until the dowel touches the side of the jig base. Remove the dowel

and mark the base where the deepest part of the hollow touches it. Set up the stop block on the tablesaw fence so the cut will end ¼ in. shy of the mark.

Saw the tapers as for the double-taper leg, but leave the stop block in position for the last cut.

Cutting the short taper requires only one setup. Flip the leg blank so that the top rests against the stop block. Adjust the jig so that the cut begins at the reference mark on the bottom and ends about ¼ in. shy of the hollow. This setup leaves a small flat on each face, just below the hollow, which helps keep the leg in alignment as you cut the tapers.

This leg requires more cleanup with hand tools. Use a handplane to work the short tapers until the small flat disappears. Then carefully saw away the waste wood so that the long taper blends into the flare. A flush-cutting saw or a Japanese-style cross-cut saw works well. Use a chisel to pare away any remaining wood, and a cabinet file to blend the flare into the taper.





**Keep the blade out of the hollow.** Stop the long-taper cuts just short of the deepest part of the hollow. The waste helps keep the blank square in the jig.

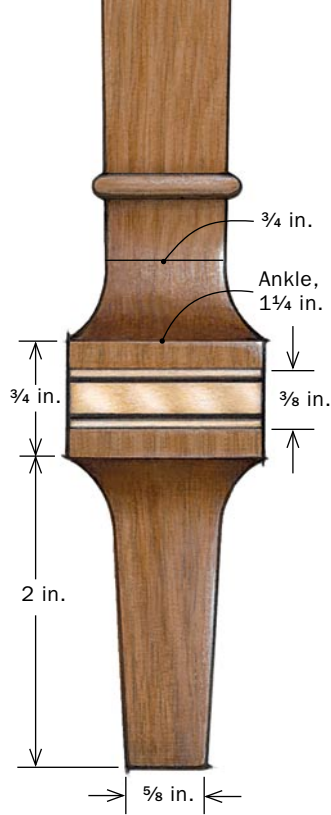
**Short cuts.** Short taper cuts begin at the bottom of the leg, with the taper stopping just short of the hollow.



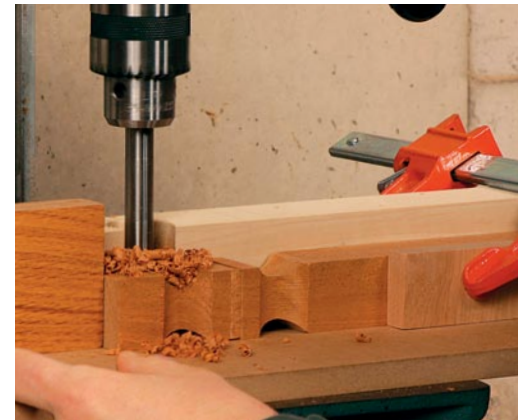
**Saw away waste wood.** With the leg clamped to the bench, carefully saw away the waste. Use a light touch to ensure that the sawteeth don't mar the flare.



**Blend the taper into the flare.** A little work with a chisel and a file will blend the taper into the flare at the ankle.



## Shaping the complex spade foot



**Use the dado to center the hollows.** On the drill jig, mark the edges of the dado for the decorative banding. Always align the leg on those marks to keep the dado centered.

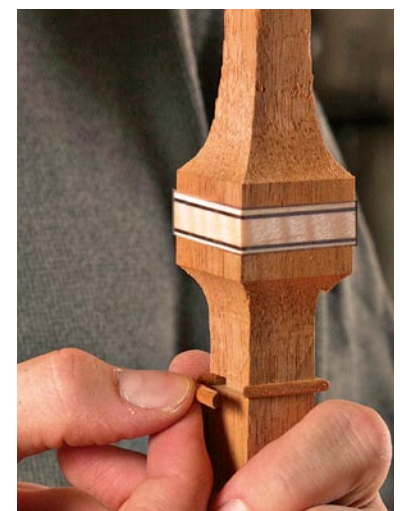
**B**egin by cutting the slot for the bead that's applied just above the ankle. Use a full-size pattern to locate this dado and set its depth. Then cut the shallow dado for the decorative banding that's centered on the square section at the ankle.

Next, drill the hollows above the square section. Mark the fence of the drill jig with the location of the dado for the decorative banding. This will ensure that the banding is centered in the square section. Remove the stop block from the fence, flip the leg end for end, and line up the dado with the marks you've made on the fence. Clamp the leg blank in place while you reattach the stop block, then drill the second set of hollows.

The long tapers are cut the same way as for the other styles of feet, ending just short of the top set of hollows. The easiest way to cut the second set of tapers is to flip the jig around without moving its fence and use it on the other side of the sawblade. Unscrew the runner from the jig's base. Move the saw's rip fence to the left side of the blade, setting it so that the jig's base just meets the blade. Cut to the lower hollows, then remove any waste wood still attached.



**Switcheroo.** To cut these short tapers, remove the runner from the jig, move the rip fence to the opposite side, and align the jig with the blade.



**Finishing touch.** Shape the beading with a scratch stock, then miter the ends to fit in the recess.