



fig. 6.1. A camp stool in teak with latigo
bridle leather and copper rivets.



CHAPTER 6

FOLDING CAMP STOOL

Three-legged folding stools appear in many Western cultures, including the French, English and American. They have been popular with soldiers, sportsmen, campers and artists for at least two centuries.

This stool is a great introductory project to campaign furniture, especially if you are new to turning or working with leather. There are only three pieces of wood, four pieces of leather and some metal hardware. You can easily build one in a day.

Choosing Materials

I have seen some of these camp stools built using dowels, and they are strong enough to hold most people. However, I like to build them from mahogany, teak or ash that has dead-straight grain. I've had nightmares about getting a stick stuck in my backside from a stool disaster.

If you can build the stool with riven stock (oak or ash are good choices), it will be quite strong. Many original stools used 1"-diameter legs. However, my recommendation is to use stouter stock. I have built reproductions with 1"-diameter legs, and they felt too springy under my 185-pound frame.

You don't need to make the legs baseball bats, but try for something between

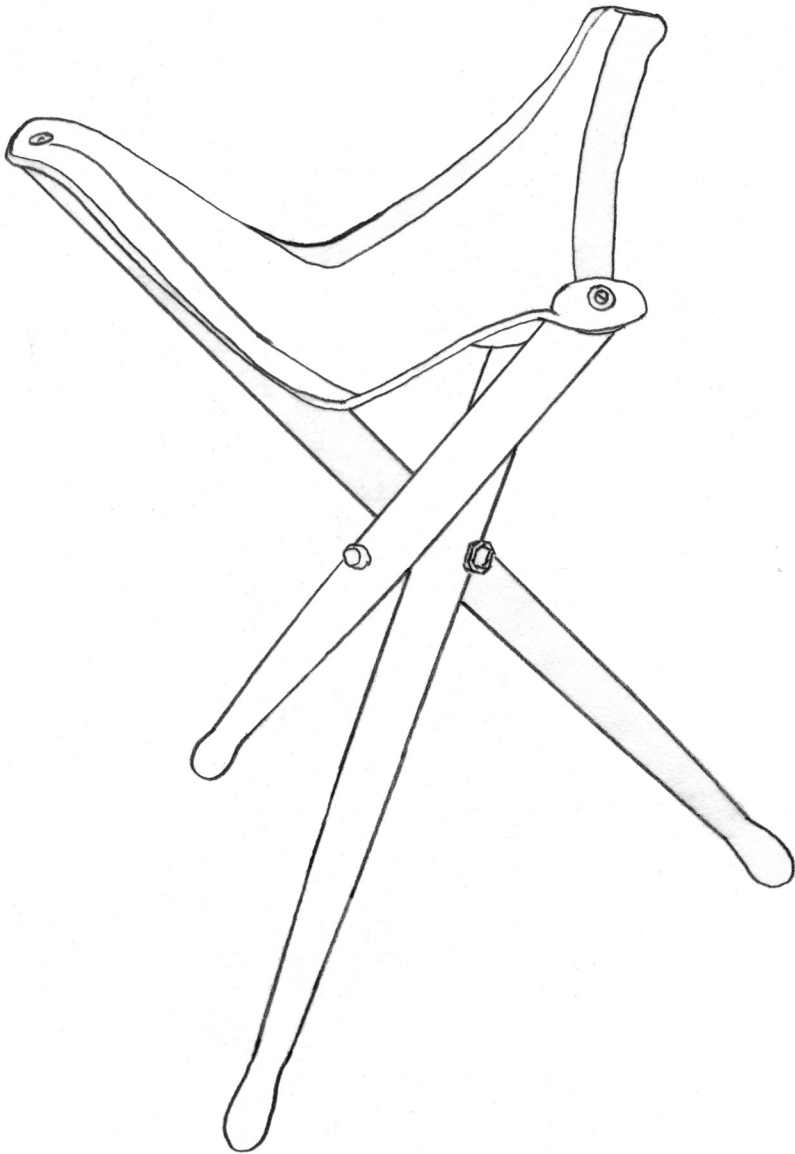


Fig. 6.2 Have a seat. While some of these stools show up with four legs, the three-legged ones are easier to build and are better on rough terrain. This is a drawing of an ash version from the 19th century with a stitched leather seat.

1-1/8" diameter to 1-1/4" diameter. The leather can be almost anything 7 ounces (just shy of 1/8" thick) or heavier. Vegetable-tanned leather that you dye yourself is a particularly strong choice.

You also will need rivets to join the leather pieces – unless you are skilled at hand-stitching. While hollow rivets (sometimes called rapid rivets) are inexpensive, easy to find and strong enough, I prefer the look and unerring permanence of solid copper rivets. I used No. 9 rivets with posts that are 1/2" long.

To attach the leather to the wooden legs, you'll need three No. 10 x 1-1/2"-long brass screws plus matching finishing washers.

Finally, you'll need the hardware that allows the legs to open and shut. Traditionally, this was a three-headed bolt that once was easy to find. Now, that hardware is rare in North America. If you are a blacksmith or have access to a good welder, making a three-way bolt is straightforward. I have seen a couple of these bolts for sale in England, but the price with shipping to the United States was more than the cost of the bolt itself.

So I looked for a different way. Luckily, the Internet is good for something other than photos of cats playing keyboards. One maker of custom stools uses some off-the rack hardware to make an effective three-way bolt and shares that information freely on his web site.

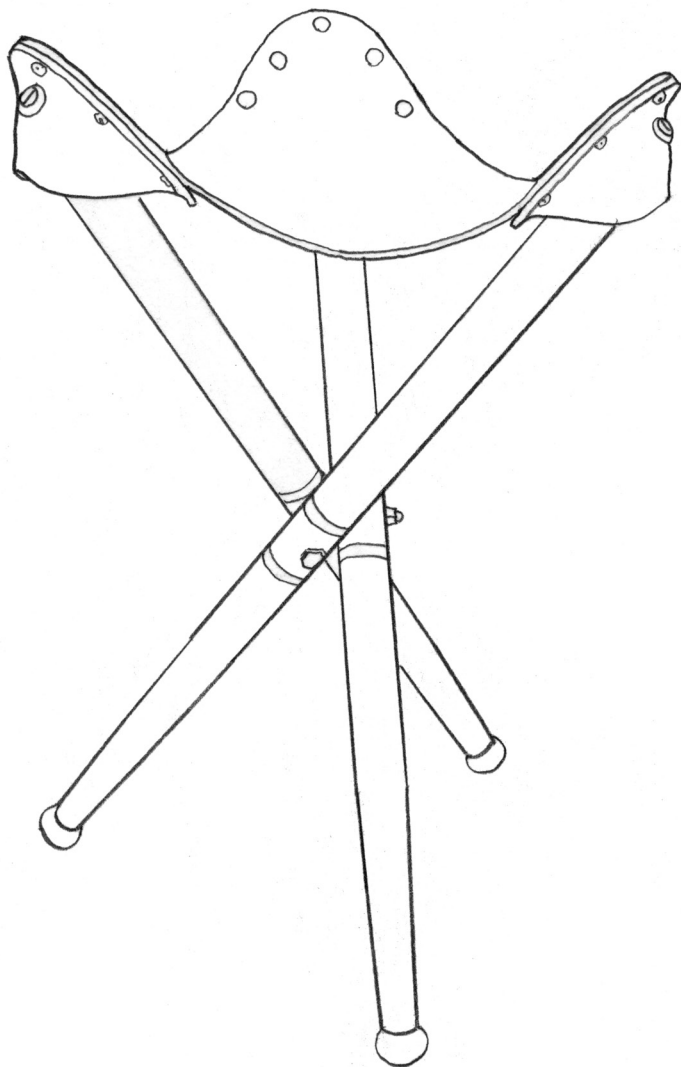
Here's what you need for legs that are up to 1-1/4" in diameter:

- A hex-headed bolt with a 5/16" shank that is long enough to pass through two of the legs and protrude out the other side by 1/2". A 3"-long hex-head bolt will work with 1-3/16"-diameter legs.
- An eyebolt with a 1/4" or 5/16" shank that is long enough to pass through one of the legs and protrude out the other side by 1/4". (Note: You can hacksaw any of this threaded hardware to length. An eyebolt that has a total length of 2-1/2" should be sufficient.)
- Two acorn-headed nuts.
- Three washers.
- 15 No. 9 copper rivets.

Turn the Legs

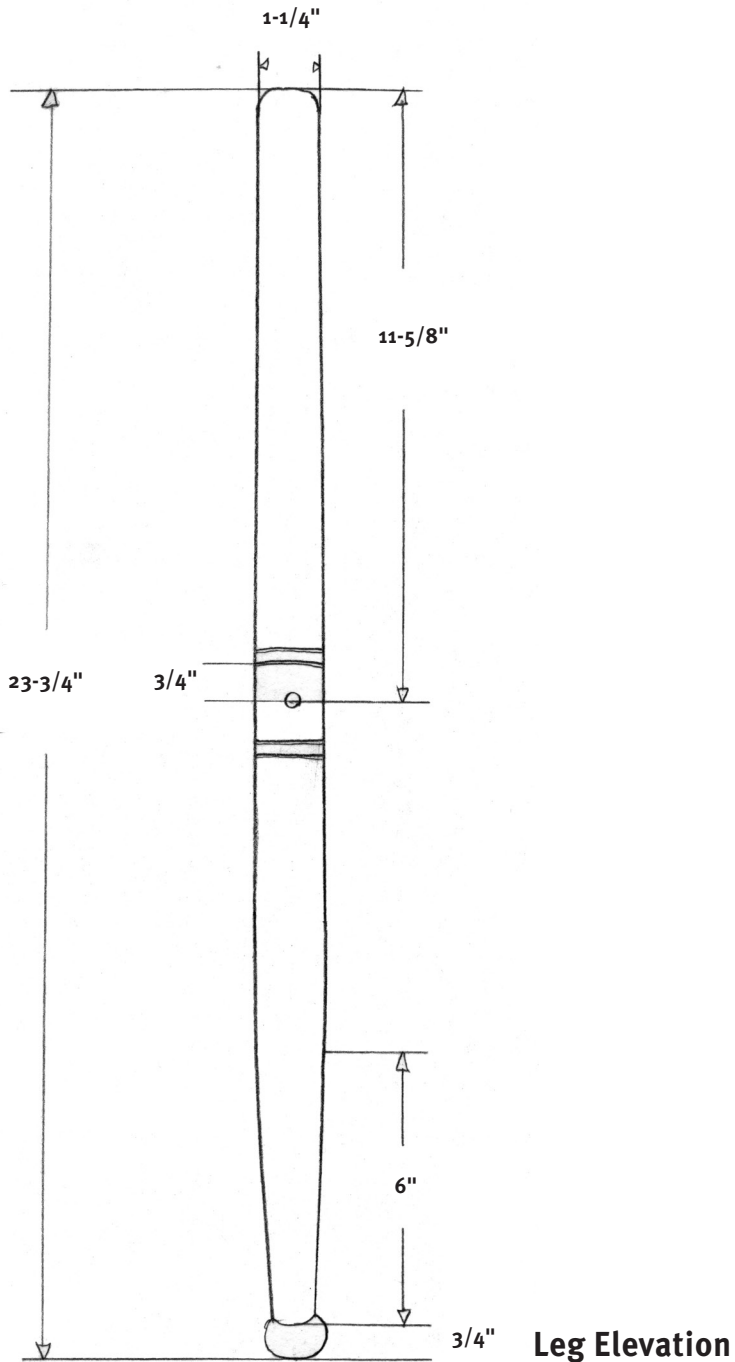
The three legs are easy to turn, even if your favorite turning tool is #80-grit sandpaper. Turn the legs to round using a roughing gouge or carbide-tipped roughing tool. Create a smooth, clean cylinder of about 1-1/4" in diameter with a skew or other finishing tool.

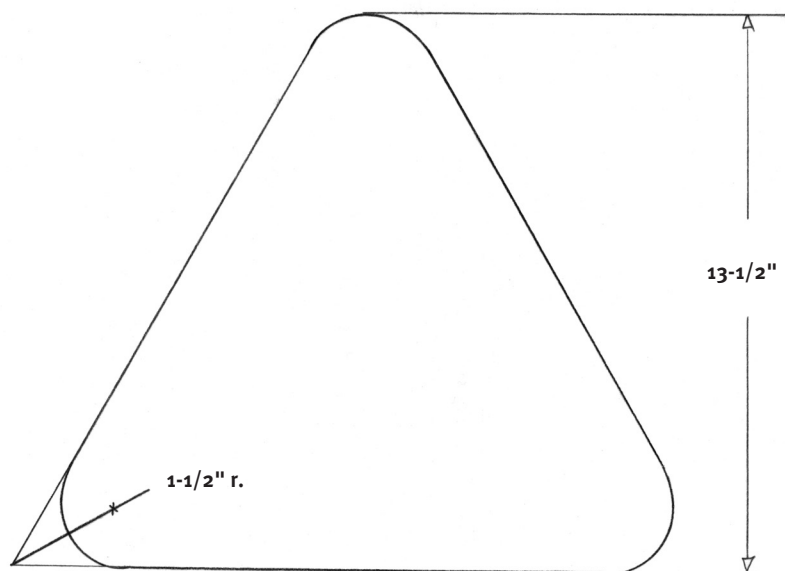
The feet shown are 1-3/16" in diameter and 5/8" tall. Make the feet by turning down the foot. Then turn the ankle to 7/8" in diameter. Round the foot, then taper the rest of the leg down to the ankle. The taper should begin 6" from the bottom of the leg.



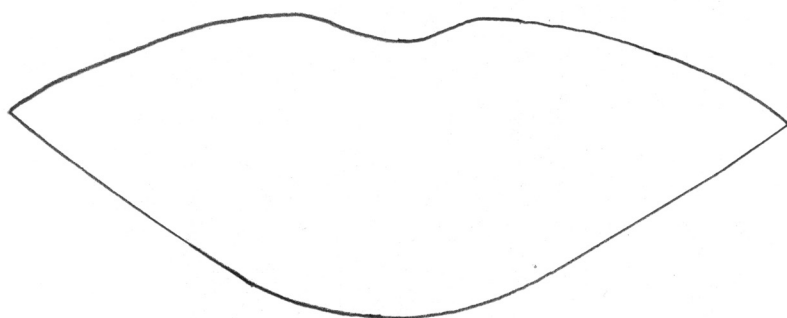
~ FOLDING CAMP STOOL ~

NO.	PART	SIZES (INCHES)		
		T	W	L
3	Legs	1-1/4 dia.		23-3/4
1	Seat	7 oz.	13-1/2	13-1/2
3	Lips	7 oz.	3	8



**Seat Plan**

Scale: $\leftarrow 1" \rightarrow$

**Lips Plan**

I added four small grooves where the hardware holes will go – two above the hardware and two below. Little details such as these grooves and beads make the legs look like something fancier than three store-bought dowels.

Sand the legs to remove any rough tool marks. I finished the legs on the lathe. First I burnished the surface with a “polissoir” (a French polishing tool made from tightly bound broom corn). Then I applied beeswax to the legs with the workpiece spinning. I used the polissoir to drive the beeswax into the pores of the wood (again, while the lathe was spinning). Then I used a rough cotton cloth (I’d like to

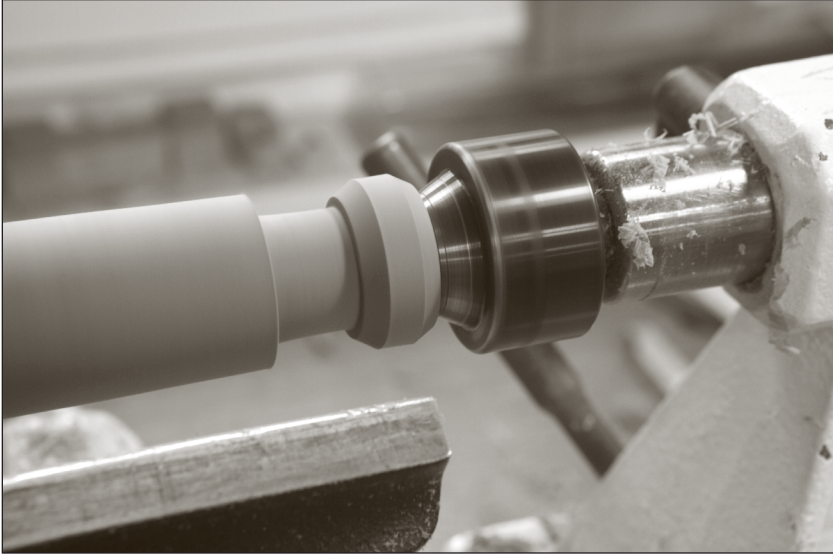


Fig. 6.3 A bulbous foot. The foot can be almost any shape, from a bead similar to the foot of the Roorkee to this teardrop.



Fig. 6.4 Not original. These little grooves add some visual interest to the joint. However, they're not a detail I found on any original stool. So skip them if you are going for authenticity.



Figs. 6.5 & 6.6 Dead center. The holes for the hardware need to be bored through the middle so the leg isn't weak. A cradle helps hold the legs for drilling, no matter how you make the hole. Drill the hole so the brad point of the bit barely pokes through the leg (right). Rotate the leg so the tiny hole left from the brad point is facing up. Finish the hole.



be fancy and say it was muslin, but it was an old bag that held corn grits) to buff the wax. Then I applied another coat of wax and buffed that.

If you want to add a little age to the wood, apply a coat of black wax and push it into the grooves and pores. Let the wax set up then buff it.

Wax is not a permanent finish, but it is easily renewed or repaired if your stool is for the drawing room instead of the campsite.



Figs. 6.7 & 6.8 Common hardware. The bolt, eyebolt, washers and nuts are all items found easily at a half-decent hardware store.

Bore Three Holes

All three holes are located in the same spot on each of the three legs and should be the same diameter – just big enough to allow the hardware to pass through. The holes are located 11-5/8" down from the top of the legs.

The best way to bore these holes is with a drill press or hand-powered post drill. You want the hole to be dead straight and pass through the middle of the leg. If you are a whiz with a hand drill or cordless drill then go for it.

Install the Hardware

Strip the hardware of its zinc if you like – I use a citric acid solution for this. Here's how the hardware goes together:

- Put a washer on the bolt. Push the bolt through one leg.
- Place the eyebolt on the post of the bolt. Put the other leg on the bolt.
- Add a washer to the end of the bolt, then drive on the acorn nut.
- Push the post of the eyebolt through the third leg. Add a washer and acorn nut.

Drill pilot holes that are deep enough to receive the No. 10 screws into the top ends of the legs.

Leather Seat

The seat is four pieces of material: a triangular seat and three pockets that look a bit like lips when you cut them out. When I cut out leather, I make patterns for my pieces from thin MDF or hardboard – usually 1/4"-thick material.

Put the patterns on the leather and cut out the seat and three lips using a sharp utility knife.

You can hand-stitch the lips to the seat. If you aren't up for stitching, rivets work well and give the project a military flair.

Secure each lip to the seat first with one rivet at one of the tips of the seat. Punch a snug hole for the rivet through both pieces of leather, drive on the washer or "burr," snip off the excess and peen the post over the burr.

Now bend one end of the lip up and rivet the end to the seat about 1/4" from the end of the lip. Repeat for the other end of the lip. Finally, add two more rivets between the three existing rivets. Repeat the whole process for the other two corners.

One quick note on neatness: Be sure to put the burr so it faces the floor for all these joints.

After the pockets are riveted, use a sharp utility knife to trim any little bits of the pocket that aren't flush to the seat.

If you purchased undyed leather, finish the leather with a dye, oil and



Fig. 6.9 Knife work. You will probably make more than one stool, so make plywood patterns of the seat parts and cut them out using a sharp utility knife.

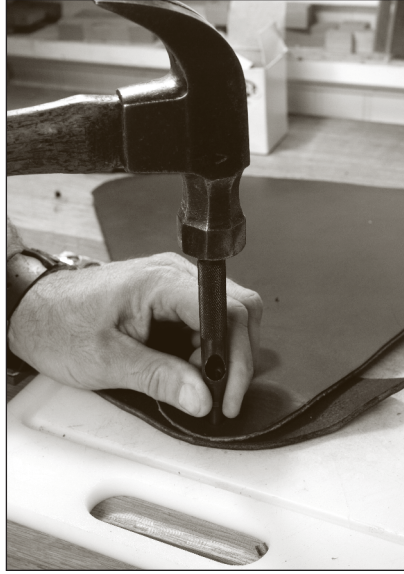


Fig. 6.10 First punch. Using a leather punch, make a hole through the seat and pocket piece. I'm using a kitchen cutting board as a backer.



Fig. 6.11 Insert the rivet. Put the rivet through the holes. The flat face of the rivet should be on the top surface of the seat.



Fig. 6.12 Like a washer. The "burr" part of a traditional rivet is what pinches the leather. Place it over the post. Then drive it on the post with a rivet setter.



Fig. 6.13 Snip it. The post of the rivet should extend about $1/16$ " or so from the burr. I use nail pincers to snip the post to length.



Fig. 6.14 Peened. Some people peen the rivet freehand with a hammer. I use a rivet setter, which makes a tidy dome. It's personal preference.



Fig. 6.15 Five rivets. Each pocket is secured with five rivets. One at the peak of the curve. Rivet the ends of the lips, then fill in with the rivets between.



When Reproductions Fail

When I build a reproduction, I am loathe to make a significant change to its design until I've built one as close to the original as possible.

It's easy for the modern mind to feel superior to a dead brain. And often we make changes that are unnecessary or reduce the functionality of the original.

When I built my first campaign stool, I stuck to an original pattern that used 1"-diameter legs. They looked spindly, but I didn't condemn them until I had sat on an exact repro. So I turned up six 1"-diameter legs for two mahogany stools. The grain was dead-straight.

I assembled the first stool, put it on the shop floor and sat down as gently as I could. As soon as my weight shifted from my feet to my butt I heard a snap. I stood up with visions of a trip to the emergency room for a stick-ectomy.

One of the three legs had snapped where the hardware penetrated the leg.

Despite this failure, I assembled the second stool with the remaining 1"-diameter legs and tested it. Those legs held together fine, which led me to think that perhaps the one broken leg was a piece of brash wood.

But I didn't like the feel of the stool with 1"-diameter legs. It was too springy. So I went back to the lathe and turned legs of varying diameters, from a shade more than 1" to 1-1/4". After assembling these stools and asking people to sit on them, I found that 1-1/4" was the diameter I liked best. I'm 185 pounds, and people heavier than me (up to 250 pounds) felt comfortable on the stool.

If you don't believe me, the good news is that this stool uses little wood and can be knocked out quickly. Give it a try yourself. But if you opt for skinny legs, make sure your health insurance is paid up.



Fig. 6.16 Finishing washers. The brass washer gives the screw head some extra bite into the leather – and it looks nice, too.

wax. Burnish the edges with a piece of wood and a little spit (water will do nicely as well).

Attach the seat to the legs. Punch a clearance hole through each lip that will allow a No. 10 screw to pass. Screw the leather to the legs with a finishing washer under the head of each screw.

That's all there is to it. You can make the stool easy to transport by making a belt that will go around the girth of the closed stool and screwing that belt to one leg. Or you could make a canvas bag embroidered with your football team's logo. After all, when going into battle, it's always best to fly your colors.





Make a 3-way Bolt

As I was finishing work on this book, woodworker Mike Siemsen sent me a clever three-way bolt he had made from off-the-rack hardware. According to Siemsen, here's how to make it. Hardware needed:

- A 1/2"-13 heavy hex nut. (Regular nuts will not work well; get low carbon, not hardened.)
- Three 5/16"-18 x 2-1/4" bolts (machine screws, get low carbon, not hardened.)
- One 5/16"-18 nut (for cutting off the bolts to length).
- Three 5/16" washers.

You will also need a 5/16"-18 tap, a drill for the pilot hole (F-size bit which is .257"; 1/4" will probably work) and a drill press.

Center punch the center of every other face on the 1/2" heavy hex nut, put it in a drill press vise and bore the pilot holes for the tap. You can then either run the tap by hand or put the tap in the drill press and turn it by hand, no power! Keep things square to the face being drilled.

Next take the three 5/16" bolts, screw the nut on them all the way up to the unthreaded portion and saw off the excess end. Remove the nut and file or grind the burr off. It is important that the unthreaded portion be around 1-1/4" long.

You can blacken the hardware, or remove the hardware's zinc coating using a citric acid solution and let it patinate naturally. The hole in the 1/2" nut is a nice place to add a wooden cap or a small turned finial.