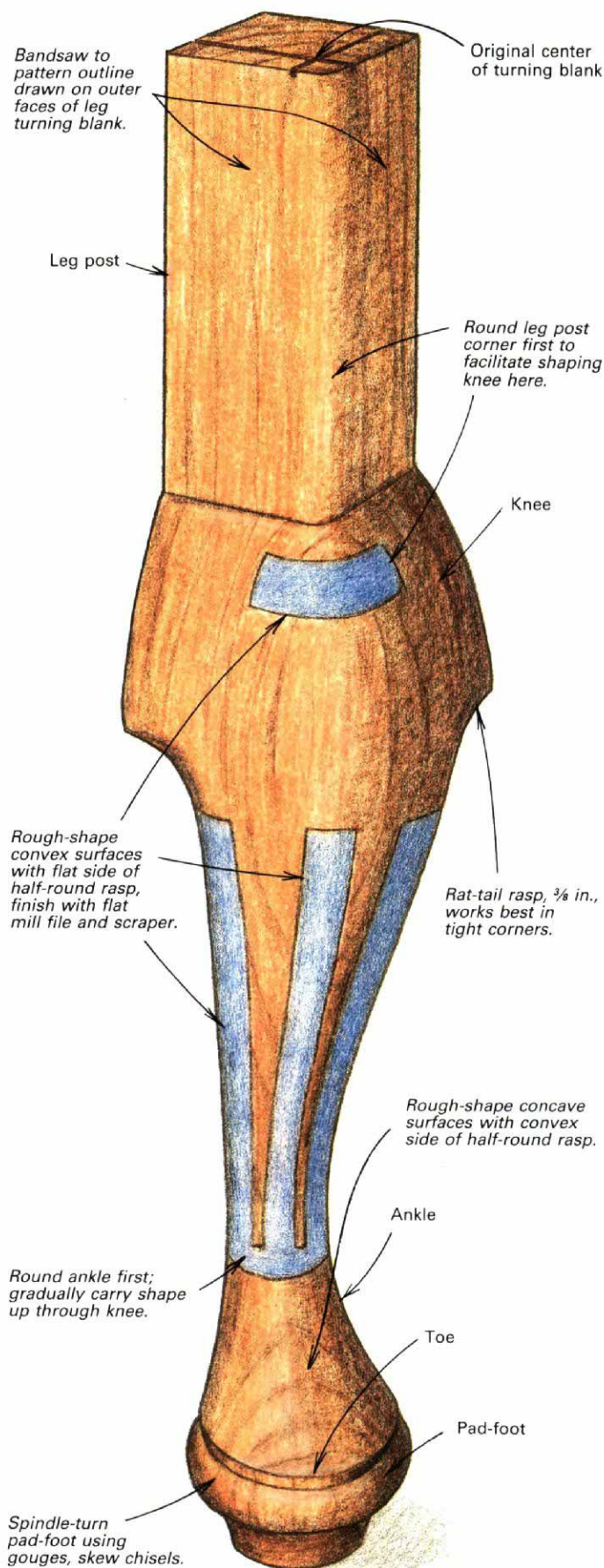


Fig. 1: Cabriole leg anatomy and shaping overview



Shaping a Cabriole Leg

An easy job with files and rasps

by Eugene E. Landon

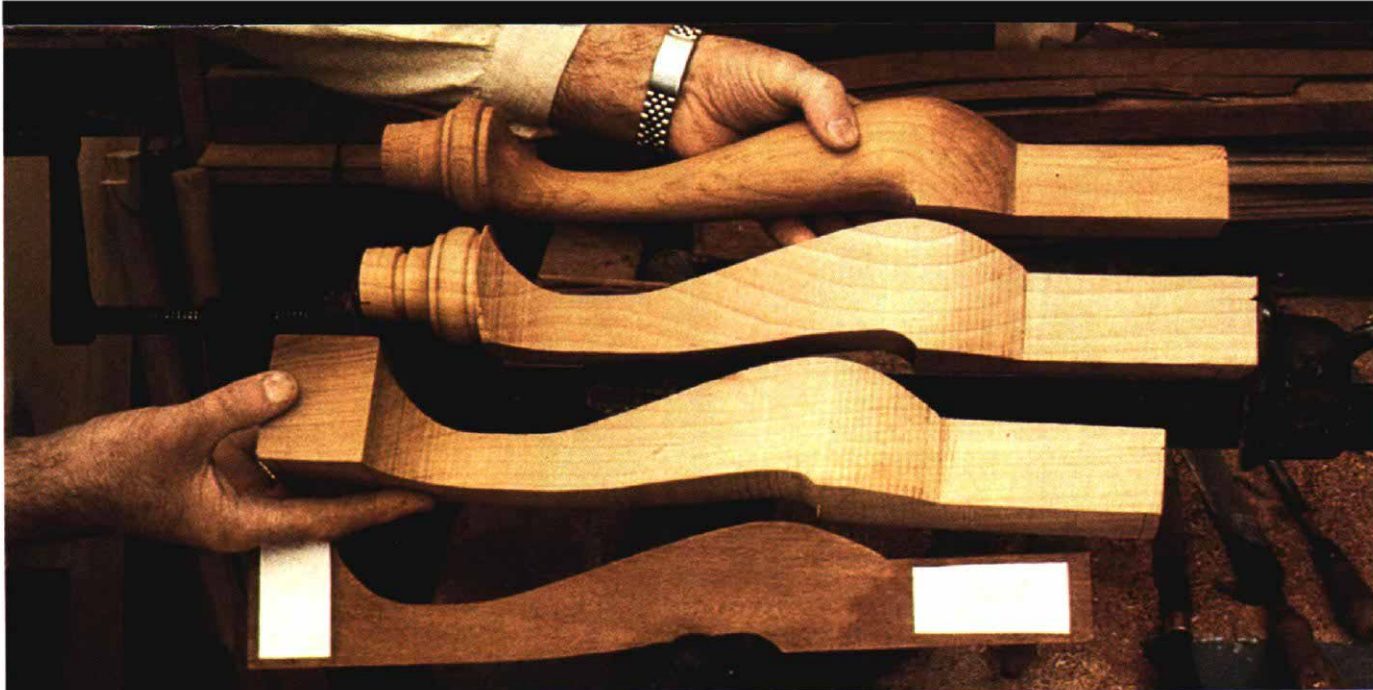
Many woodworkers are afraid of cabriole legs. There's something intimidating about all those graceful inter-connecting lines. And making matching pairs seems to require a touch of genius. In point of fact, however, cabriole legs are a breeze. I had my young helper, Joel Crabtree, feeling guilty for awhile thinking I must have worked incessantly through the night to produce sets of legs for six chairs. Each morning he would find yet another completed set. When he finally discovered I was doing a leg in 20 minutes or so, he felt more sheepish than guilty.

I'm sure craftsmen of the period (1730-1795) worked as quickly. The simultaneous existence of plain and ornately carved styles reflected the European origin and local taste more so than the skill of the woodworker. Economics sometimes dictated the extent of carving; each carved area was charged for separately. Shaping the plain legs for a Queen Anne or Chippendale chair, which I'll describe later, requires only rudimentary skills in spindle-turning and in the use of files, rasps and scrapers. Figure 1 identifies the parts of the leg and will give you an overall idea of how it is made. The dimensions are for the late Queen Anne, early Chippendale chair shown on p. 86, but the legs can be adapted to different chairs, tables and other furniture pieces.

If you have doubts about your ability to make cabriole legs, I invite you to glue up a blank from a cheap, soft wood, such as pine, then go at the job with abandon. There really are not any subtleties or secrets.

Preparing the blank—The leg blanks are $17\frac{1}{2}$ in. long (to allow some excess at both ends for later trimming) and $2\frac{3}{4}$ in. square. To ensure strength, choose wood without much grain runout. The leg I'm shown making in the photographs is cherry of the worst-working sort—rock hard and brittle. It probably came from a leaning tree. Even so, the job isn't difficult.

Make a leg template according to the dimensions in figure 2 on p. 87, and trace it onto what will become the two outside surfaces of the leg. Mark the center of the ends of the blank at this time, as a reference for mounting it on the lathe later. Then, carefully bandsaw to the outlines on both sides, using the offcuts from the first cuts to support the leg for the second cuts. You'll get the



The development of a cabriole leg: First, the template at bottom is traced onto two sides of the squared stock. In his right hand, the author holds a blank that has been bandsawn following the template lines. Next, the foot is turned on the

lathe. The top surface of the square section just above the turned foot forms the toe. In his left hand, Landon holds a finished leg that has been rasped, filed and scraped. An experienced worker can do the whole job in 20 minutes.

most precise cuts if you tape the offcuts in place using shims of paper or veneer to fill the bandsaw kerf. After bandsawing, what was the center point in the leg-post end of the leg is now offset. The leg axis extends from this point down through the center of the foot (see figure 2). This clever axis alignment is what allows the leg to be conveniently shaped on the lathe.

Your leg should now look like the template shown at the bottom of the photo above and like the leg I'm holding in my right hand. Chuck this in the lathe with the foot at the tailstock and turn the foot according to the dimensions given in figure 2. Note that the top surface of the square section (just above the turned foot) forms the toe. You should just nick this as shown; if you try to turn any higher up the ankle, you'll ruin the lines of the leg. Your sample should now look like the second leg from the top in the photo.

Rasping and filing—The easiest way to shape cabriole legs is with rasps and files. The initial cuts are heavy ones and are made using a half-round rasp: the convex side for concave curves, the flat side for convex curves. I also use a $\frac{3}{8}$ -in. rat-tail rasp on occasion; it's particularly good for removing small high spots on the top concave surface of the foot (just back from the toe) and underneath the knee. These areas are mostly endgrain, and the wider rasp is more difficult to control through the transition to the long-grain areas.

A 10-in. or 12-in. flat mill file and a round file will remove the rasp and bandsaw marks. A scraper, made from a length of old power-hacksaw blade, will then remove the file marks. The trick to rasping and filing is to smoothly push or pull the tool in a gentle arc to gradually develop the desired shape. If you hold the handle of the rasp in your right hand and its tip in your left, it will cut on the push stroke. Reverse the rasp in your hands and it will cut on the pull, or "draw," stroke (hence the name: draw-filing). Keep the teeth clean, and don't let the rasps and files rub against each other, as this will dull them quickly.

Position the work in a bar clamp held in a vise, as shown in the photos. Since the narrowest part of the leg is at the top of the foot, establish the basic shape here first. Use this as a reference to gauge your progress in developing the shape for the rest of the



The leg is clamped in a vise, above. Landon has already shaped the top surface of the foot and is shown here using the convex side of a half-round rasp to round the corners of the leg. The goal is to remove enough wood from each of the four corners to make the ankle round. The profile of the curve at the ankle should extend up the full length of the leg.



After establishing the basic shape with rasps, the author quickly removes the tool marks with fine files. The key to successful filing is to move the tool smoothly in a gentle arc and gradually develop the final shape. Drawfiling works well here: If the file's handle is in your right hand, you push; if it's in your left hand, you pull. Rotate the leg gradually as you refine the shape, and work in whatever direction that's necessary to avoid tearout.



Above: Bandsaw marks remaining on the flat surfaces at the upper part of the leg are removed with a flat mill file. Rounding the post corner first creates a step in the top of the knee and gives you enough room to shape the knee properly. Below: Landon's favorite scraper, made from a length of power-hacksaw blade, polishes the fine file marks away. A light touch with supermarket-variety green Scotch-Brite, which traditional-minded Landon refers to as 'sharkskin,' will yield a uniform surface ready for finishing. The occasional tiny scraper chatter marks on the final surface resemble those found on 18th-century work.



leg. Begin by rasping the top of the foot down into a fair curve that blends into the ankle. At the ankle itself, the goal is to remove each of the four corners in turn until the ankle is round. The profile of the curve at the ankle extends through the length of the leg. It is easy to check the width and uniformity of the curve by eye as you proceed.

Begin the shaping by rotating the leg by 90°, working each corner in turn. It may take several complete revolutions before you are satisfied with the rough shape. Continue this procedure, but reduce the rotation angle to first 45°, then 22 1/2°, and so on until the profile is shaped fair. Orient the leg as you wish, working in whatever direction that's necessary to avoid tearout.

At the outer corner of the top of the knee, it will seem at first that there is not enough wood to allow a curve; rasping one would lower the front of the post. This problem, however, takes care of itself if you round the outer corner of the post first, which creates a step in the top of the knee. Because the area is endgrain, I generally shave it with a chisel for better control, but rasps and files will work here, too.

I finish the legs using a scraper, as mentioned, followed by green Scotch-Brite (available in your local supermarket). The final surface, with its occasional tiny scraper chatter marks, looks just like the surface I frequently find on 18th-century work. Set the legs aside for the moment; you'll have to do some fine-tuning later, after the legs are assembled into the chair frame.

Eugene Landon builds reproductions of period furniture in Montoursville, Pa. You may find additional suggestions for chair construction in his article in FWW #60. Mack Headley's instructions for carving the shell in FWW #61 should also be helpful.

Photo below: Terry Wild



Above is the original chair from which the templates and dimensions were taken for the drawing on the facing page.

Building a Chippendale chair

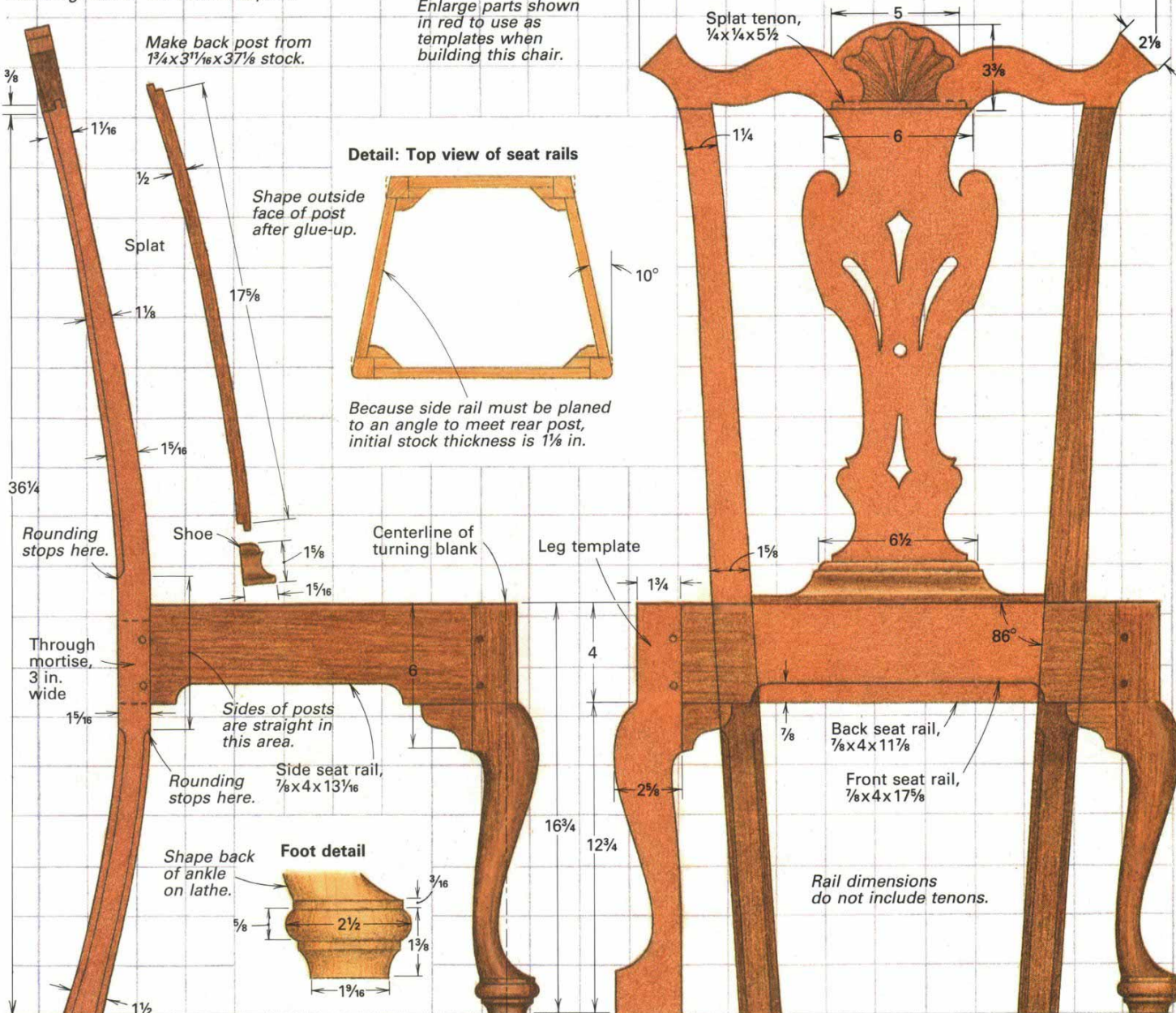
Now that you know how easy it really is to make a cabriole leg, you may be itching to give it a try. On the facing page are the measured drawings you'll need to make the chair shown in the photo above. The first step is to scale the templates up to full-size and cut them out. Because chairs are almost always built in sets, make the templates from a durable material. Label them clearly, as in years hence, you may want to use them again. Write down angles, thicknesses and other technical notes on the templates as well.

After cutting the joints, assemble the chair in sections, which will ease the problem of getting it square. If you try to glue up a whole chair at once, the job may get out of hand. Begin by gluing up the rear posts, the crest rail and the rear seat rail. Take care that everything is plumb, flat

Fig. 2: Chair plans

1 sq. = 2 in.

Forward position of tenon allows rounding back of crest rail and post.



and square. Note that the shoe, or saddle, which is mortised to receive the tenon at the bottom of the splat, is not glued in place until the back is assembled. You want the splat tenon to fit tightly into the shoe. If the splat were glued in place, it would most likely split because of seasonal wood movement. Therefore, cut its tenons after the rest of the back has been glued up solid. As a last resort for a splat that turns out too short, you can modify the shoe's height to compensate. Also, before fitting the shoe, it's easiest to glue the back glue blocks in place against the back rail, then plane them flush with the front surface of the back posts after the glue has dried. If you see a chair with some other glue-block arrangement, chances are it isn't original.

When the back is dry, the remaining rails and the legs

can be glued in place. Once you know the back is straight and square, you can devote your full attention to squaring the rails and legs. Dry-fit the pieces first, just in case you have to modify the shoulder lines or adjust the mortises and tenons. When all is correct, mark the bottoms of the legs, remove them, and then cut them to length. After the assembly is dry, saw off the excess length from the top of the front legs.

The final step in construction is to fine-tune things: Reshape the outsides of the leg posts so they angle back in line with the side seat rails. I use rasps and files for this job as well. At the same time, reshape the top of the knee to follow suit. Lastly, you'll need to chisel a notch in the top of the post for the corner of the seat frame, which should be cut and planed to fit.

—E.L.