



Banister back chair. Maple with rush seat. Every part of this chair was made on the lathe. The back consists of split turnings with the flat side facing forward.

Turning Chair Back Legs



Nutting started a factory in Framingham to make what we would call today *museum quality* reproductions, and feverishly collected antiques to use as models. Most importantly for woodturners and furnituremakers, he published many books about antique furniture. The best known is the *Furniture Treasury—Volumes 1 and 2* combined, published by Macmillan—ISBN 0-02-590980-0, that contains over 5,000 photographs, an amazing compilation of photographic documentation for that time (1920). When he died, much of his collection went to the Wadsworth Atheneum in Hartford, Connecticut.

In the late 80s, after deciding to devote myself exclusively to spindle turning, I entered what I call my *Wallace Nutting phase*. I made many pilgrimages to the Wadsworth Atheneum to study the collection of early Colonial furniture previously owned by him. I remember experiencing profound amazement while making close-up inspection of 300-year-old gate-leg tables and wondering what kind of lathes and tools were used to make them. As if through some magical force within this furniture, an ancient woodturner of long ago reached out across the centuries and spoke to me. *You should have been with us*, he said. *It was a great time for woodturners. All furniture design and production depended on us turners.*

I know, I know, I said. *I'm a spindle turner born in the wrong time.*

Don't worry, he said. *We built stuff to last, so some of it's still around, as you can see. Look at it, learn from it, carry on.*

I will.

Turned Chairs—*The Furniture Treasury* contains photographs of hundreds of chairs and most of them are turned chairs, meaning that all or nearly all of the parts are made on a lathe. The Carver chairs from the mid-17th century were made mostly of straight cylinders highlighted here and there with decorative turned details, especially the fancy finials. At the same time the more elaborate Brewster chairs had decorative turned spindles below

It may be hard to believe, but in the 1920s, in a misguided quest for modernism, most people were cleaning out grandma's attic and throwing away all the old furniture. Wallace Nutting of Framingham, Massachusetts realized what was being lost and began his mission to preserve this part of American decorative art history. In doing so he could be credited with single-handedly reawakening America's interest in its heritage of colonial furniture. Today, driving through central New Hampshire on Route 4, it's easy to see why this stretch of road is known as *antique alley*, and the popularity of *Antiques Roadshow* on TV are examples, nearly 100 years later, of the continued influence of Wallace Nutting.

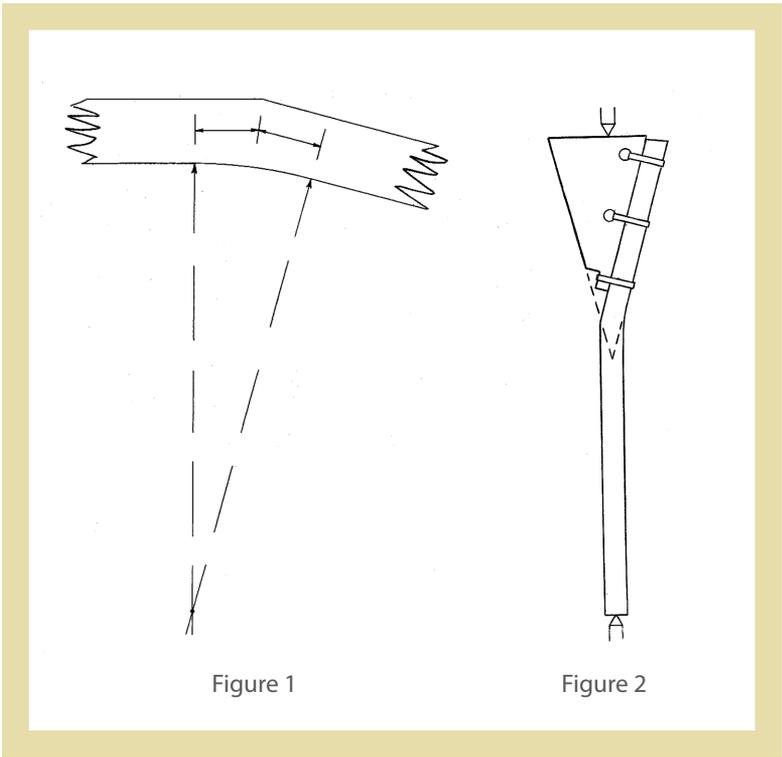
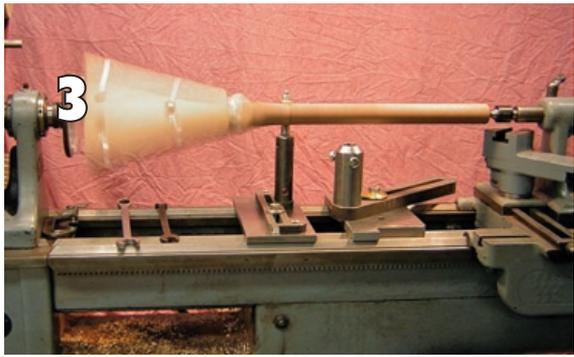
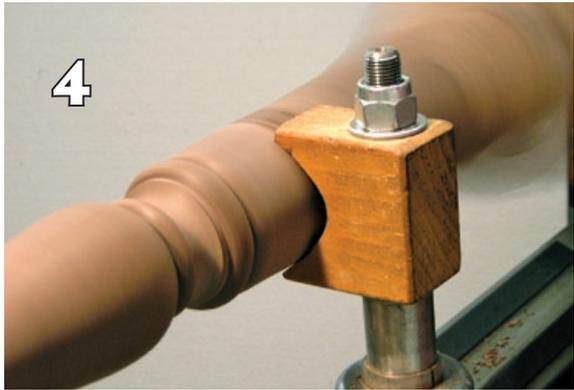


Figure 1

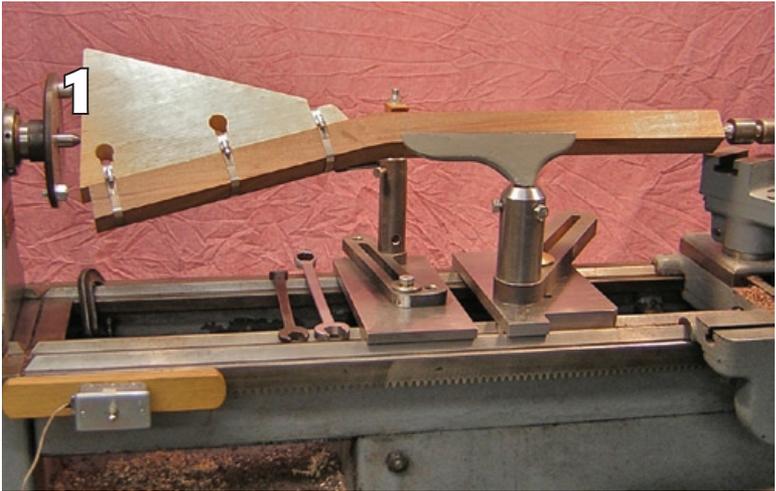
Figure 2



The work (top half) has been turned to rough size and the steady rest applied.



A view of the steady rest.



The workpiece has been attached to the jig with the hose clamps and mounted between centers on the lathe.



The marking jig has notches to locate the pencil, and marks are drawn while the work is rotating.



The assembly is located on the centers, and driven by a loose fitting pin.



After reducing the diameter in the middle area, the marking jig is used for a second time (jokingly referred to as "making a remark").



the seat. Corner chairs (now extinct?) and multitudes of slat backs are depicted in *The Treasury*. All of these chairs had back legs that were straight, and this simple but not very comfortable design persisted into the 18th century. But then chair design took a great step forward with the advent of curved or angled back legs. This feature allowed the back of the chair to recline while still giving the chair proper stance to keep it from falling backward. Woodturners responded by developing turning methods to produce multi-axis back legs for chairs. This article describes the method I use to make these legs, some of which is gleaned from old books, and some I invented.

Preparing the Stock—In this example, the angle of the bend is 16 degrees, and the angle is distributed more or less equally to the top (back of the chair) and the bottom (leg). The stock is first planed, and then cut on a band saw about 1/8" larger than the finished size.

There is a short curved section where the turnings meet. Measure 1" or 2" above and below the intersection point (measure on the center line), and where these normal lines intersect is the center of curvature (Figure 1). This results in a curved section that is usually 2" to 4" in length, but it could be any length. Remember *not* to cut the inside bend to a sharp angle, but follow



A spindle roughing gouge shapes the work quickly.



This is the appearance of the work before sanding. Sharp tools + careful work = less sanding.

the curvature of the inside radius. Cut the bottom of the foot at the angle of the inclination of the leg. Leave about one diameter extra material at the top to cut off from the finial (Photo 11).

Construction of the Jig—The type of jig that I use (which I nicknamed the *gunstock jig*) is easy to make and easy to attach to the workpiece. It is designed on the following principles:

1. The jig should be constructed in the shape of an isosceles triangle (Figure 2) from wood that is the same thickness as the work so the assembly will be balanced automatically (Photos 1 & 12).
2. The jig should extend as far up the leg as possible to add rigidity to the work.

A series of stainless steel *hose clamps* passing through mortises in the triangular jig provide easy attachment.

After centering the assembly, I had a choice of driving the work with a spur center or mounting between centers with a dog. I chose the latter, because I wanted the minimum tailstock pressure. Of course, I did not want the tailstock pressure to cause the workpiece to slip in the jig, but also less pressure helps reduce workpiece vibration. The photo shows how the jig is dogged to the faceplate by a stud in a loose fitting hole (Photo 2).



The Second Jig—If your leg is turned below the seat as well as above, then you need a second jig that is similar but slightly different

The finial is the last part to be turned.



This is one of the rare times you will see me scraping a spindle turning.



11

After sanding is complete, it's time to cut free.



Notice how the second jig is lined with leather to protect the finished part.



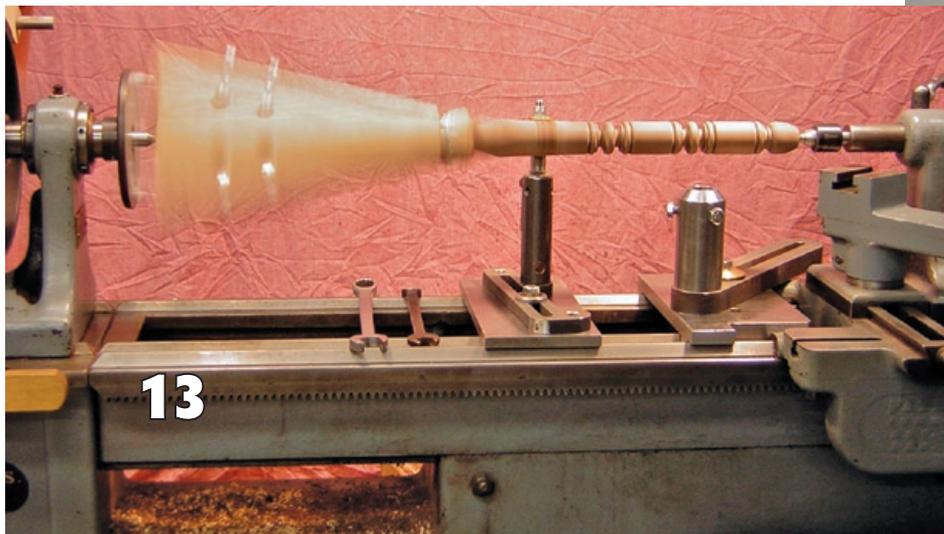
The two turned sections merge into a ridge on the outside of the bend, while the inside is essentially finished.



12



15



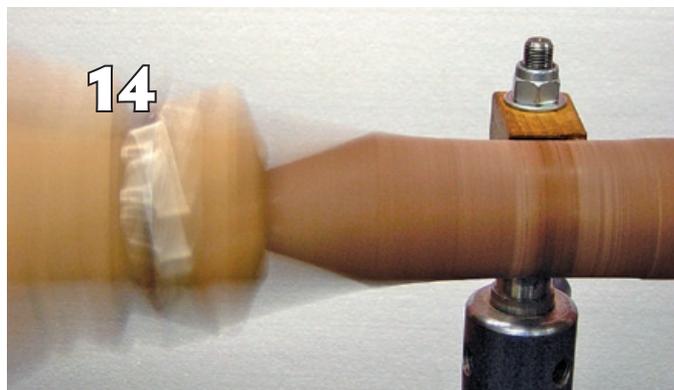
13

Lower part of workpiece has been turned and sanded.



16

A block plane works well on the outside of the bend, always planing away from the ridge line.



14

At the transition, the turning flares into a "trumpet" shape.



17

A spoke shave works into the curve on the inside of the bend, working toward the ridge line.

from the first one. The second jig has a vee-groove to accept the finished round upper part of the leg. This keeps things in alignment, as long as the jig and the leg are adjusted so that they lie in the same plane (Photo 12). When using the second jig, it is necessary to pad the surfaces of the groove and the clamps so that they do not damage the finished surfaces.

Making Adjustments—After the jig and the leg are assembled and placed on the lathe, the centering is tested and adjustments are made until it runs true. Adjustments are accomplished by making slight alterations in the position of the workpiece in the jig. To move the knee outward, pull the work further out of the jig. To move the piece laterally, slip the work to a slightly skewed position in the jig. With the second jig, it is not possible to skew the piece, because it rests in a groove, so the same effect is obtained by rotating it slightly. I like to put the work into the jig slightly long, because it is possible to adjust to a shorter position by loosening the clamps, and moving the work by tightening the tailstock until it slips. If it is necessary to make it longer, this requires removing the assembly from the lathe.

The Steady Rest—I always use a steady rest placed just outside of the transition area (Photo 4). The type of steady shown here consists of a soft wood shoe that has freedom to swivel on the vertical axis but has no movement up-and-down. I invented this type of steady, but it was inspired by the types shown in Frank Pain's book that utilize a wooden contact surface. The shoe touches the work at two points, and presses only from the back. This dampens the vibration and counteracts the pressure of the chisel. Because the front of the workpiece is unobstructed, this type of steady does not interfere with the tool rest, the woodturner's hands or the movement of the chisel.

Working the Transition—It is very important that the *inside* line is sawn carefully to the circular arc, because this is the line you will follow while turning to generate a *trumpet* shape (Photo 14), and if carefully done, this will leave you with the minimum amount of hand work to do after the turning is complete (Photo 15). The outside line is simply left as a sharp ridge where the planes intersect. This serves as a reference point from which to take measurements. In theory the inside line can be finished right off the lathe, but some hand work is required with plane, spoke shave and files to smooth the outside of the transition area after the turning is done (Photos 16 - 21). ■



Frequent checking with a circular template keeps everything smooth.



A stiff sanding belt (about 150 grit) removes any remaining lumps.



Final hand sanding in the direction of the grain. →

← A double-cut file further refines the surface.



An assortment of back legs made for various projects over the years. Woodworkers