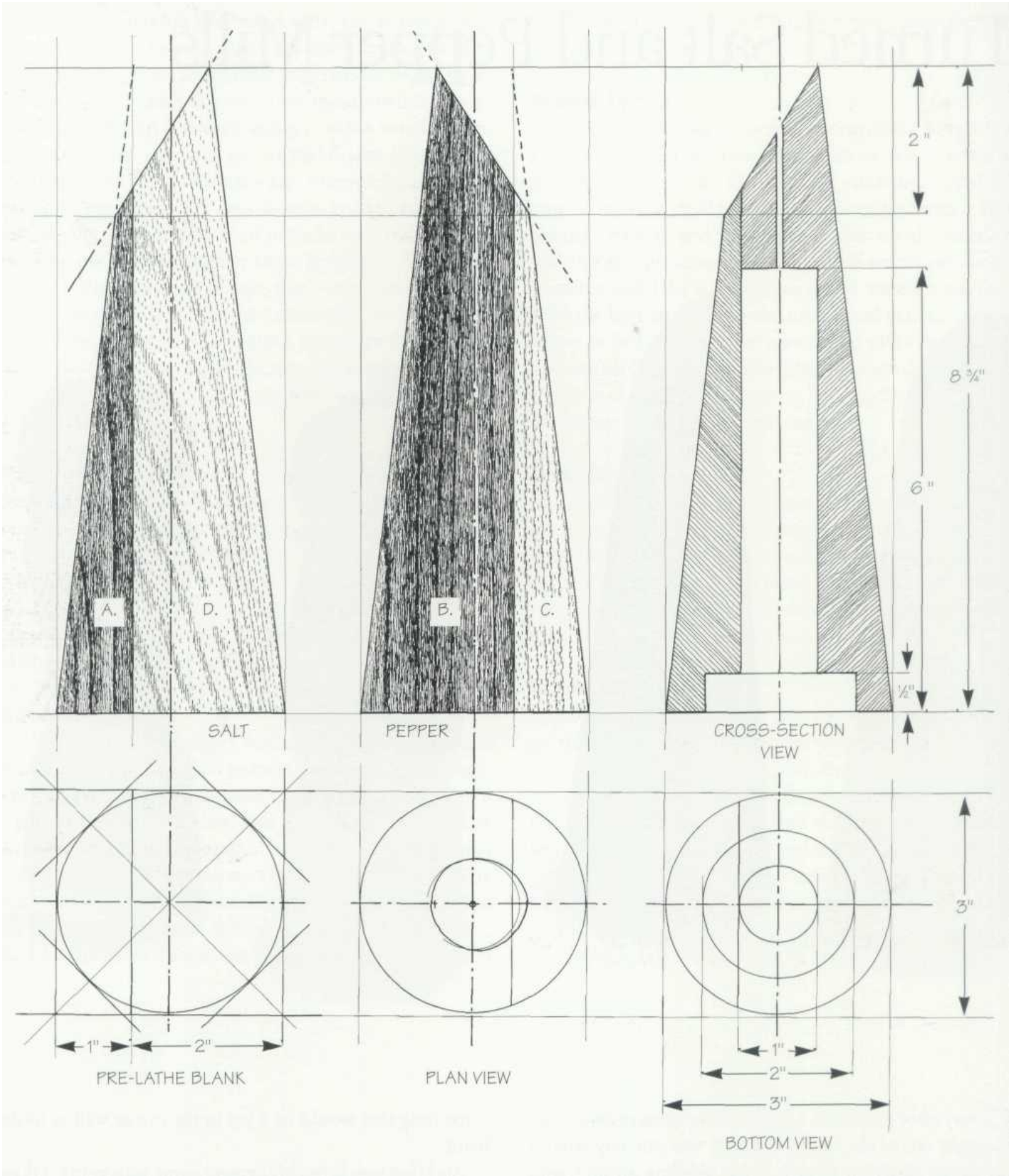
Turned Salt and Pepper Mills

Every once in awhile, a good project idea comes to me right out of the blue. And so it was one day when I was sitting down to dinner. I was fiddling around with our horrible diminutive, pressed plastic, difficult-to-hold salt and pepper mills, and trying to fill them for the umpteenth time, when the idea suddenly came to me—Eureka! I could make a couple of cone-shaped mills on the lathe—something really big, bold and sculptural, something that wouldn't need filling every ten minutes or so, something that would be a joy to the eye as well as to the hand.

And that was how this project came into being. Okay, perhaps they aren't to everyone's taste and, yes, they are a bit on the big side—but they are certainly a unique conversation piece. The over-coffee chat usually goes something like, "Where did you get those er . . . big/strange/terrible/unusual/beautiful salt and pepper mills?"—ha!


A.
D.
B.
C.
2"
6"
8 ¾"
½"
SALT
PEPPER
CROSS-SECTION
VIEW
1"
2"
PRE-LATHE BLANK
PLAN VIEW
3"
1"
2"
3"
BOTTOM VIEW

MAKING THE SALT AND PEPPER MILLS

When you have studied the project and generally brought your lathe and tools to order, take your chosen wood and cut it to size. You need four 10" lengths in all: one dark and one light 1 1/4" X 3", and one dark and one light 2 1/4" X 3".

Plane the mating faces and glue and clamp them together so that you have two 3" X 3"-square sections. If you have done it right, the two blocks will be color counterchanged, so that one is predominantly dark with a light strip and the other visa versa. You can, of course, glue the wood up from larger section material—so that you have a single large lump—and then slice it down to size.

First establish the end centers of the blocks. Scribe out 3"-diameter circles and clear the bulk of the waste so that you more or less have octagonal sections. Then mount the wood on the lathe and swiftly turn it down to a 3"-diameter smooth, round section. With the workpiece held securely in the four-jaw chuck and pivoted on the tailstock center, take the dividers and mark off the total 8 3/4" length. Take the parting tool and sink a tool-width channel at each end. Run the tool in to a depth of 1" so that you are left with a 1 "-diameter core at each end of the turning. Now, with the narrow end of the cone nearest the chuck, take the gouge and make repeated passes from right through to left.

When you have made the cone shape, carefully part the waste off at the tailstock end. With the drill chuck mounted in the tailstock, run two holes into the wide end of the cone—first a 2"-diameter hole at about 1/2" deep, followed up by a l"-diameter hole at about 5″ to 6" deep.

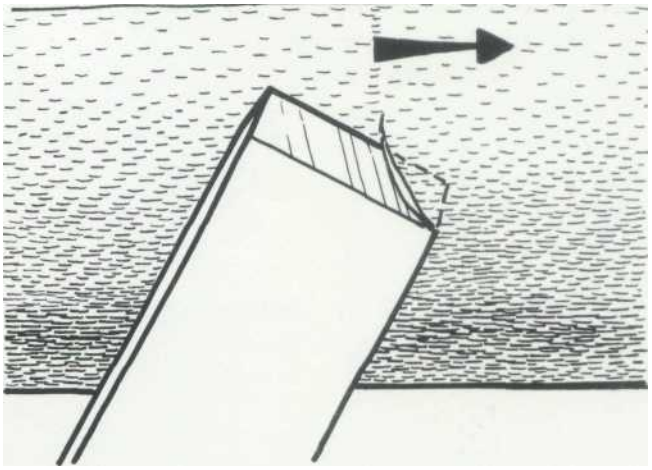
Finally, part the cone off from the lathe, run a ¥52"-diameter hole down into the top of the cone at top center, and saw off the top of the cone so that it is truncated at an angle. Rub down to a smooth finish and then burnish with a small amount of vegetable oil.

MATERIALS LIST

A Dark wood (1)	1¼″×3″×10″—we used American Walnut
B Dark wood (1)	2¼″×3″×10″
C Light wood (1)	1¼″×3″×10″—we used English Hornbeam
D Light wood (1)	2¼″×3″×10″

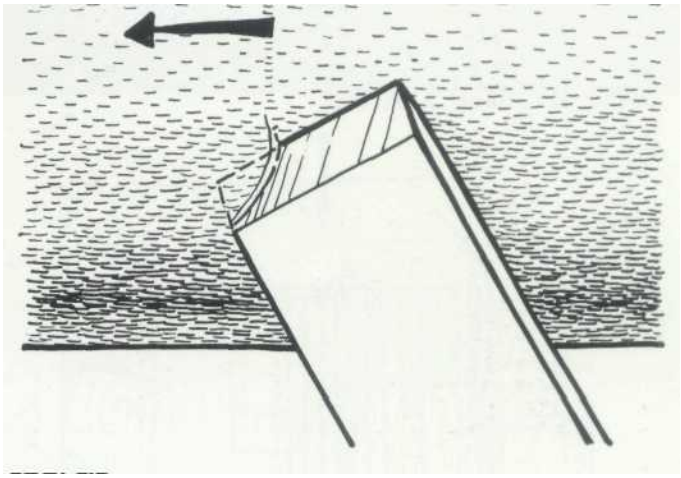
HARDWARE AND EXTRAS

E Corks or plastic stoppers to fit the 1″-diameter holes



TOOL TIP

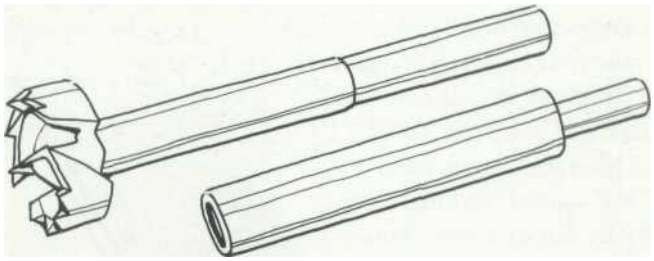
When you are using a turning chisel, the procedure is to lift the



handle up until the lower end of the cutting edge begins to bite, then advance the cut in the direction of the blade. If you work in this way, you will find that the skewed approach greatly minimizes tool pressure and consequent flexing of the workpiece.

SPECIAL TIP

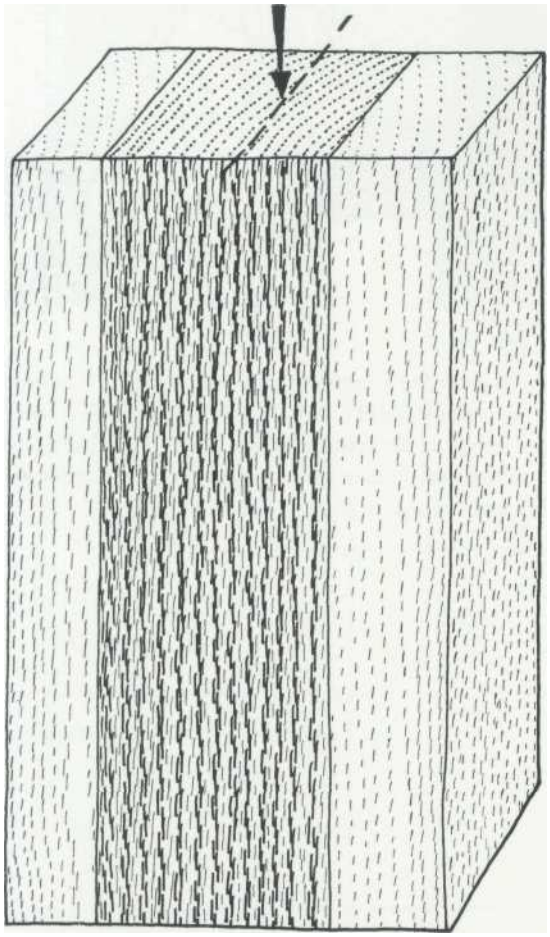
Because the gist of this project has to do with being able to drill deep, accurate, smooth-sided holes, I would always advise using either a Forstner bit or a saw tooth multi-spur-type bit. As to the actual drilling procedure, if you have to do it off the lathe—say on a drill press—then be warned, if you go off center, there is a big chance that you might break through the walls of the cone.



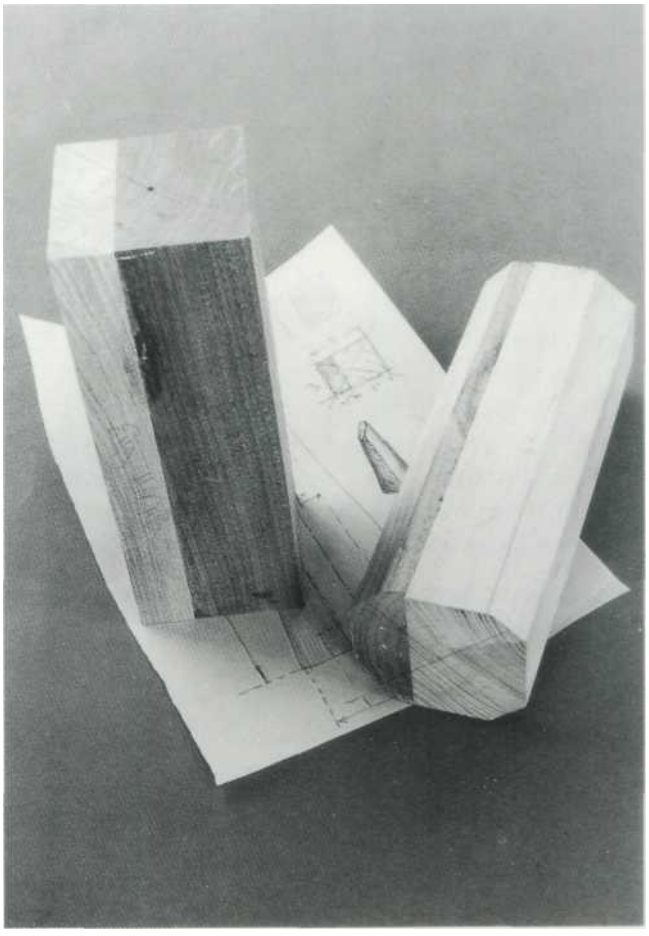
DRILLING HOLES ON THE LATHE

If you need to drill holes on the lathe, then it's best to get a Forstner or multispur bit with an extension bar.

STEP-BY-STEP STAGES

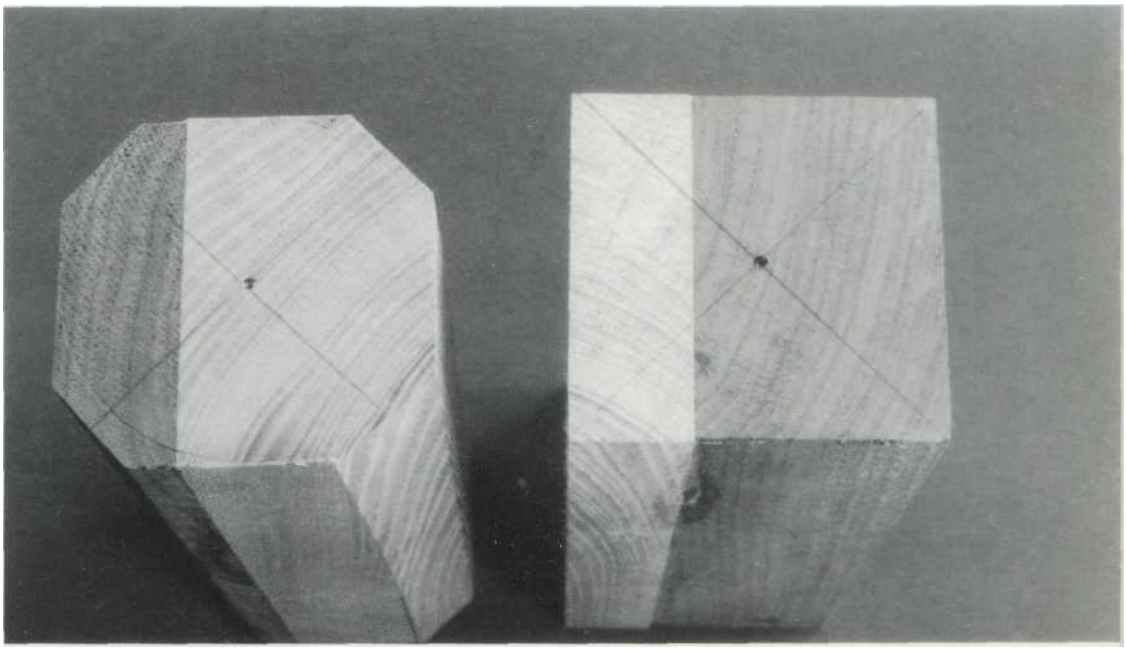


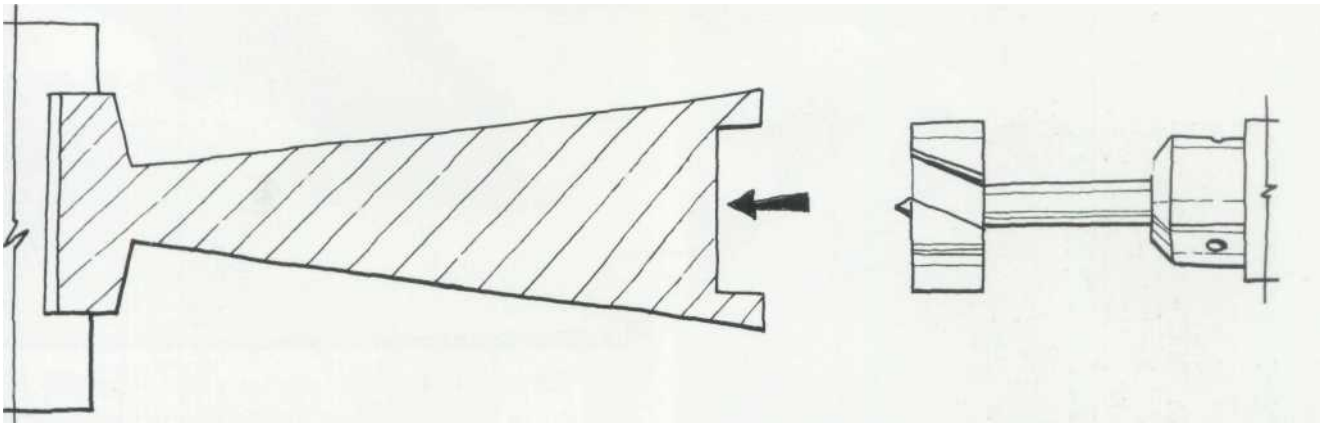
1 If you don't like the notion of gluing up small individual strips of wood or you are working with bigger pieces, a very economical method is to glue up the three blocks as shown, and then saw the resultant piece through from end to end.



2 If you are working on a small lathe, it's always a good idea to clear the bulk of the waste by planing the wood to an octagonal section. You need to finish up with two blanks, one predominantly light and the other predominantly dark.

3 In the interest of safety, you must make absolutely sure that the laminations are sound and well glued. If you have any doubts at all, it's best to start over. Be warned, if ever you should decide to modify this project and go for different light-dark proportions—meaning a different gluing-up arrangement—you must make sure that the lamination line occurs well clear of the center of spin. If you don't, there is a danger that the tailstock point will force the wood apart.

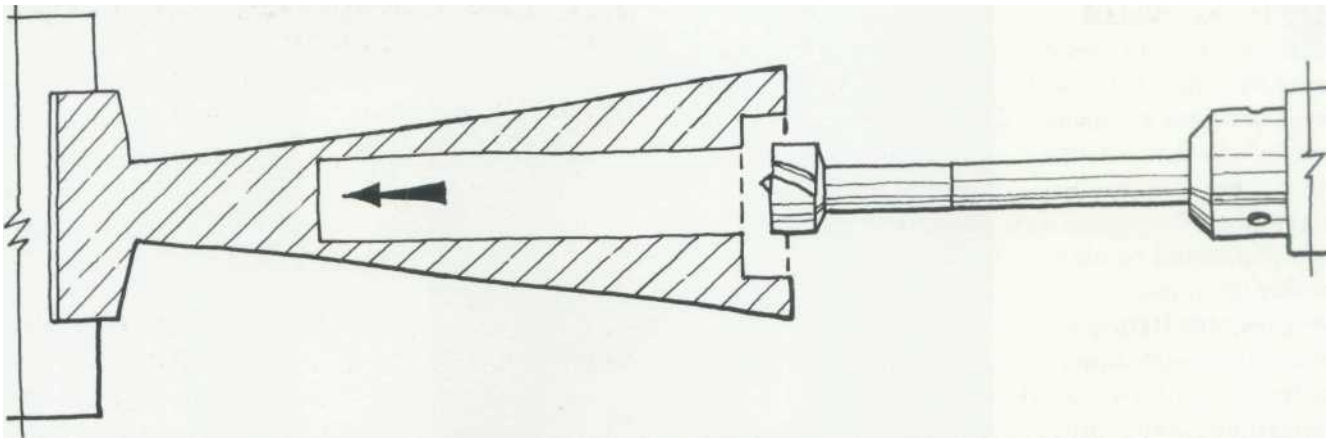




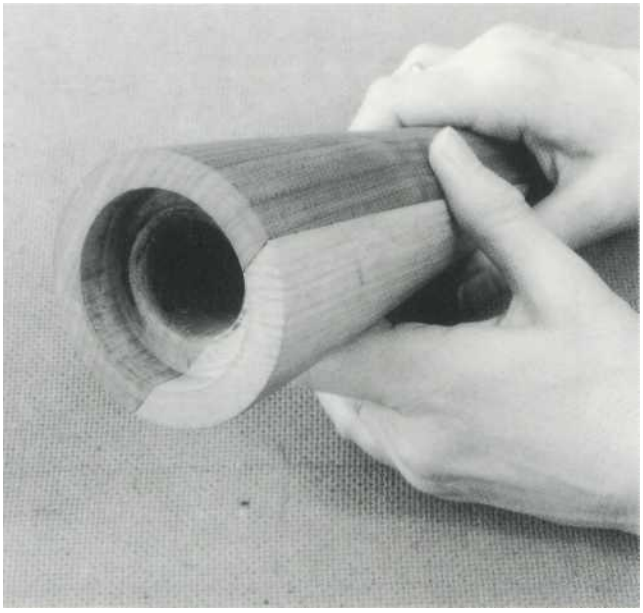
THE FACE PLATE

Using a faceplate is a good, sound means of securing a large blank. ***Notice*** *the use of short, fat screws for maximum holding efficiency.*

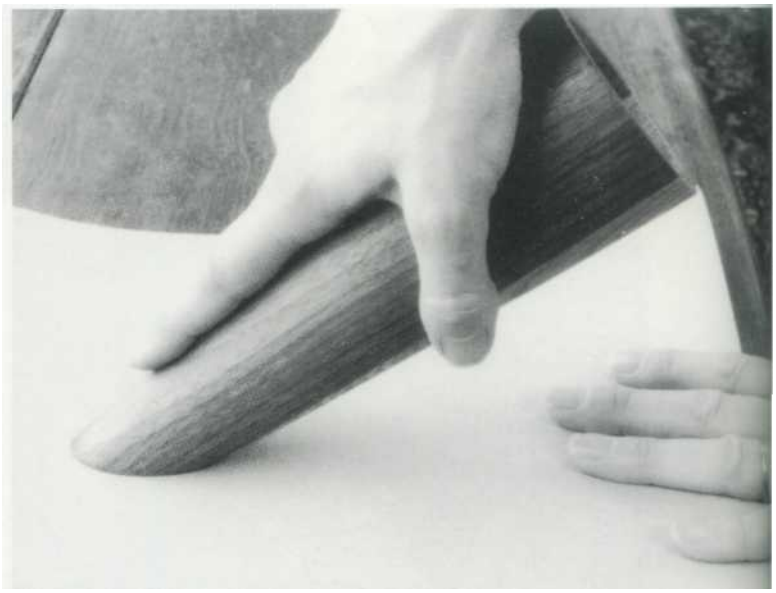
4 With the workpiece held secure in the jaws of the chuck, lit a 2"-diameter Forstner bit in the tailstock chuck and run a 1/2"-deep hole into the end of the cone.



5 Having made the 2"-diameter hole, follow up with a 1" bit and sink a hole to a depth of about 5", 1/2″ at a time. The procedure is, run the bit in 1/2" and then back out, and then back in another V2", and so on, so that you remove the waste little by little and give the bit a chance to cool off.



6 The drilled and recessed base allows you to fit all manner of corks and plugs. If you like the idea of the project but want to go for something a little more sophisticated, then many specialist suppliers stock small brass screw-stopper-and-collar units that can easily be fitted into the recess.



7 Having drilled the $^{3}/32$"-diameter hole down into the top of the cone—right through to the cavity—and used a fine-tooth backsaw to truncate the cone, use the graded sandpapers to achieve a smooth finish.

GRINDING MILLS

Traditional Colonial-style salt and pepper mills are fascinating! It's not so much the way they fit together and operate—although this is very interesting in itself—but the way they are made. There is something really exciting about the procedure. One moment you have a couple of lumps of wood and the next you have two little machines. Really good fun!

MATERIALS LIST: OPTION

A (2) 2½″×2½″×12″ pieces of beech
B (2) 7½″-long mechanisms—one for salt and the other for pepper

THE PROCEDURE

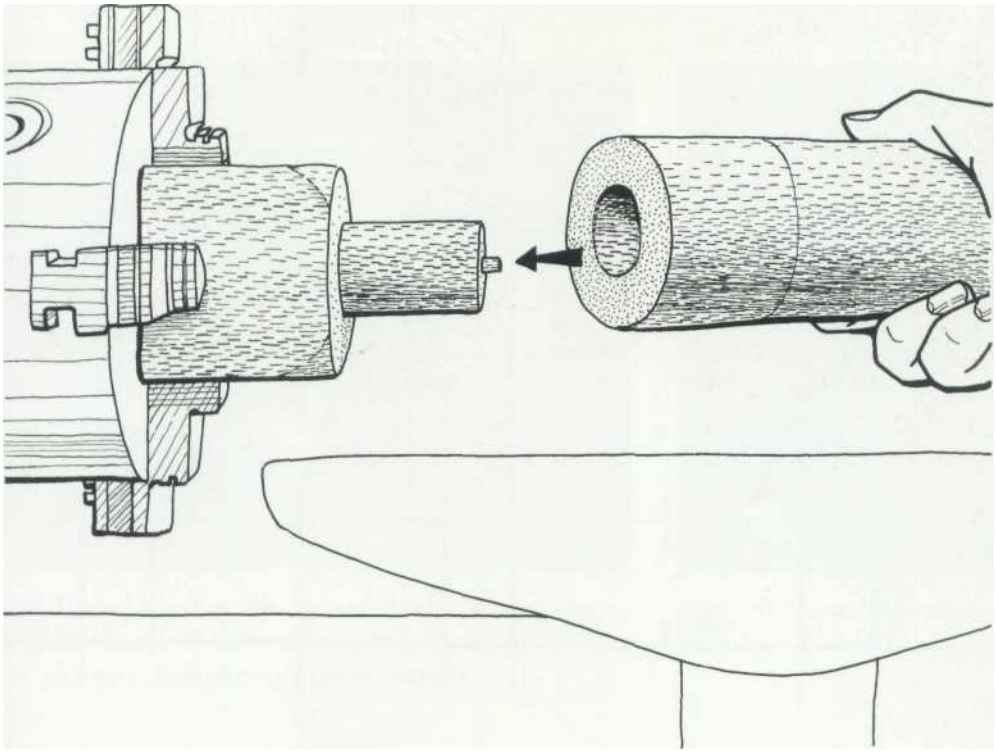
Having first made sure that the wood is free from splits and cavities, mount it on the lathe and swiftly turn the greater part of the length down to a 2 1/4"-diameter cylinder. Run guidelines around the cylinder so that the top part of the mill is nearest to the tailstock end of the lathe.

Turn the top of the mill—called a capstan—to shape and very carefully part off. Fit the tailstock drill chuck, set the 1 1/8"-diameter Forstner bit in the chuck, and run a hole into the end of the cylinder. Sink the hole in to a depth of about 3". Part off the 5 1/5"-long cylinder.

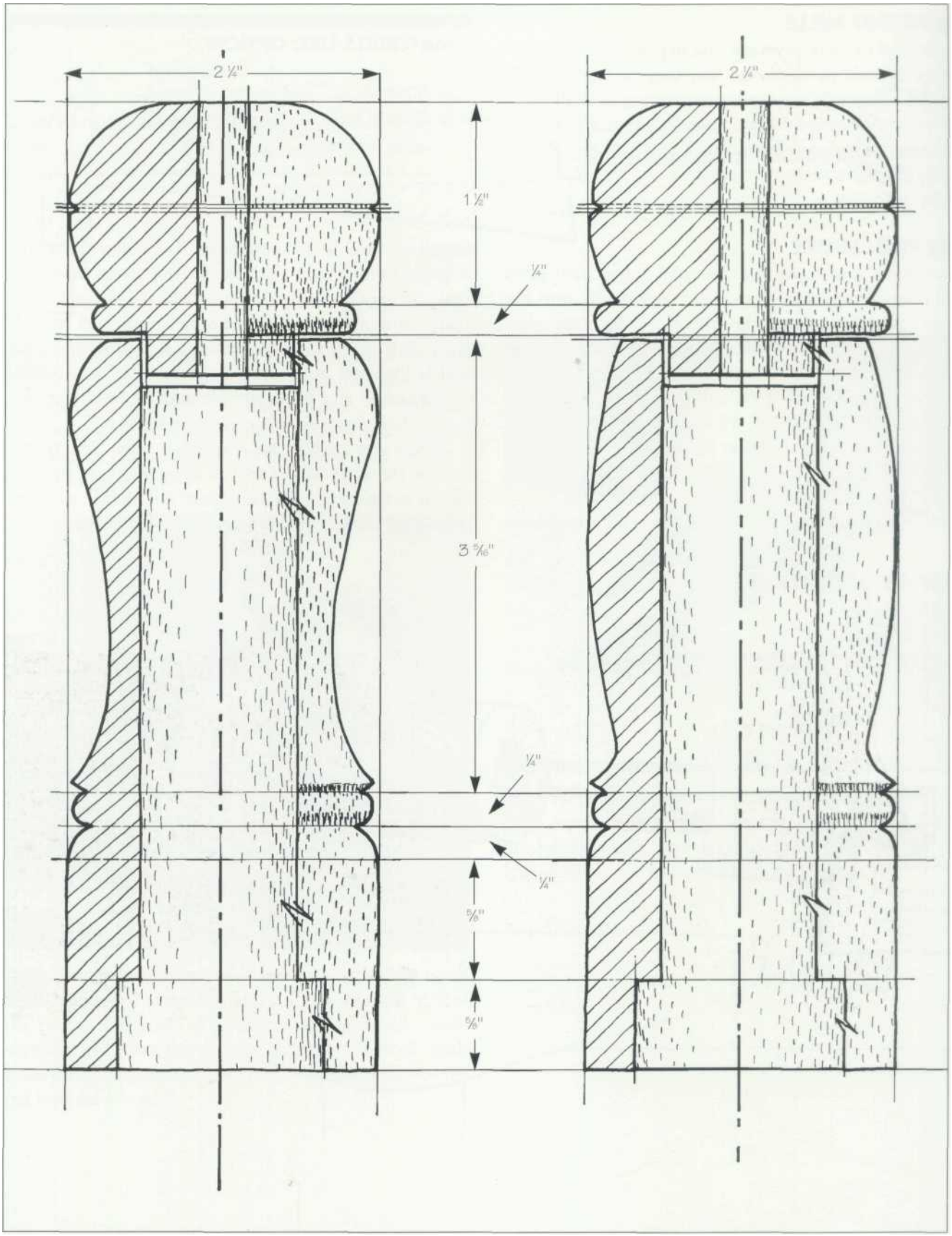
Wind the tailstock up so that the remaining short length of wood is well supported. Turn off a spigot that is going to be a tight push fit in the l 1/8"-diameter hole that you have drilled into what will be the top end of the body. Now, slide the body onto the spigot, refit the tailstock drill chuck and bore different size holes into what will be the base of the mill body. Bore the first hole at 1 1/2"-diameter and 1/2″ deep, followed up by the second hole at 1 1/8"-diameter and as deep as it will go.

When you are this far, the rest is easy. You simply reverse the body of the mill in the chuck—so that the base is in the chuck—fit the capstan on the mill, and then wind up the tailstock and turn the mill to shape.

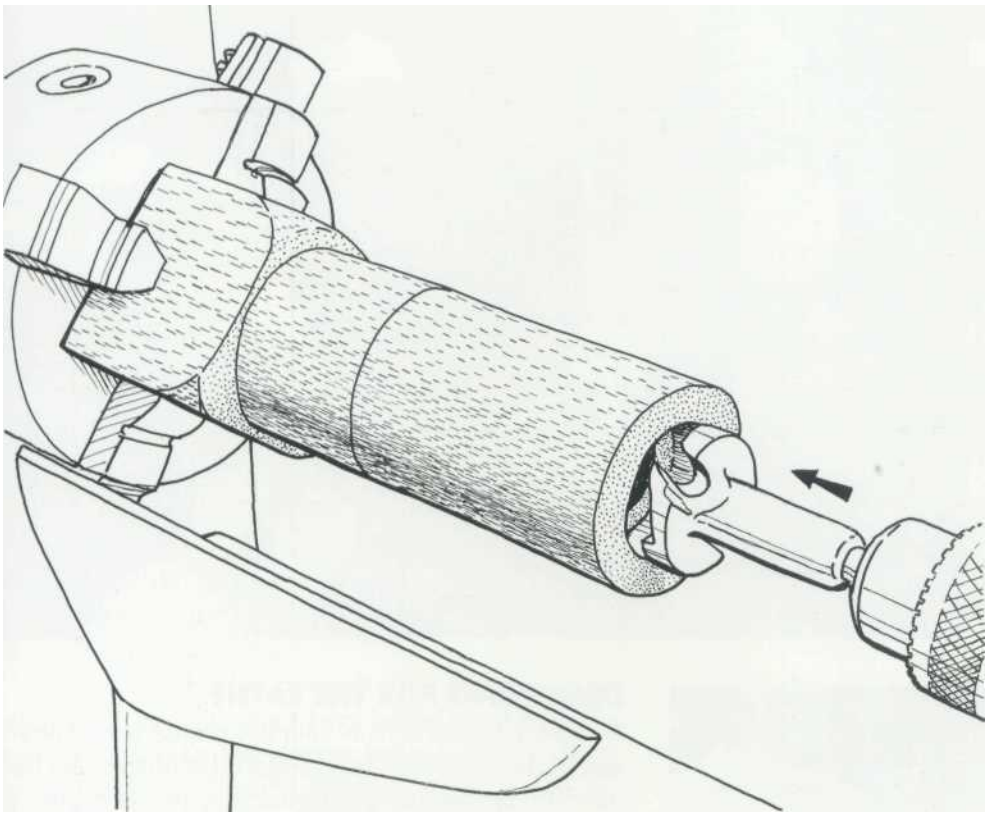
STEP-BY-STEP STAGES



1 Having turned the capstan to shape and parted off, drill a 1 1/8"-diameter hole into what will be the top of the body. Then push the cylinder onto the spigot.



WORKING DRAWING B

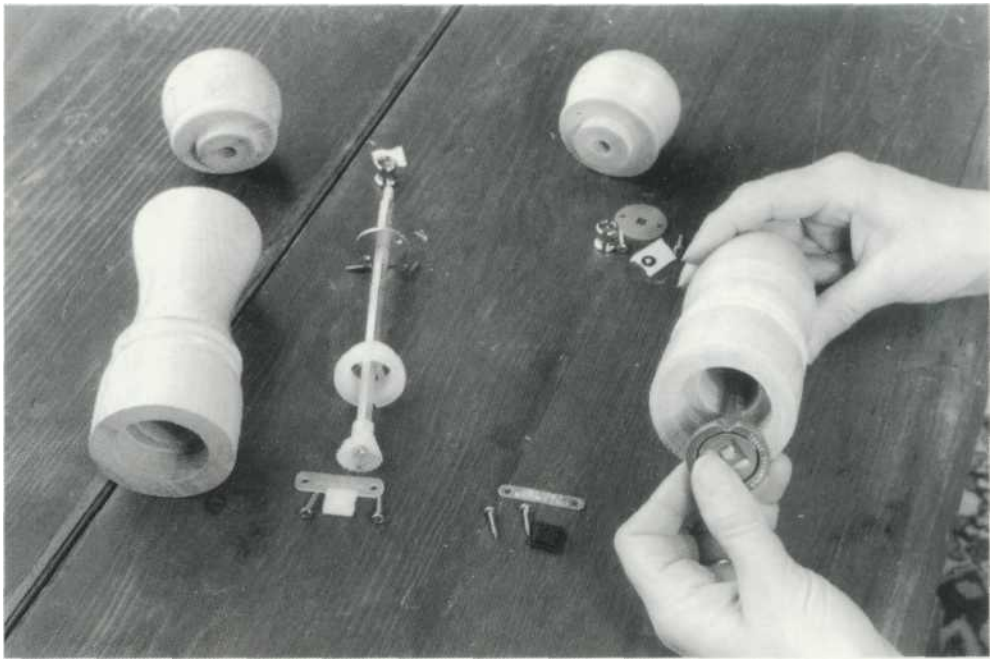


2 Bore two holes into the bottom of the mill—the first hole at 1/2″ in diameter and 1/2" deep, followed by the second hole at 1 1/8" in diameter and as deep as it goes.

3 Having more or less turned the capstan to shape, fit it in the chuck and bring it to a good finish. Run a 3/8"-diameter hole through the workpiece.

4 Fit the whole works back on the lathe and sand and burnish to a good smooth finish.

5 Slide the mill mechanism up through the body and fix with the little bar and a couple of screws.



6 Having screwed the ring washer on the capstan spigot, slide the capstan on the threaded rod and fit with the fancy head screw.

DESIGNING FOR THE LATHE

Designing for the lathe is uniquely problematic. The success of the design not only hinges on aesthetics and function but also on the turning techniques. Of course, the same goes when you are designing a chair or whatever—you still have to make decisions about the tools and the techniques—but with turning, the tools and the techniques are paramount. Also, the design solution is very closely related to method. In chairmaking, the balance of concern is perhaps equally distributed between aesthetics, function and technique; with wood turning, the technique concerns far outweigh all others. In fact, when I'm designing for the lathe, my big worry is not whether it looks good or if it functions. Rather, I'm concerned with how I will hold, secure and approach the workpiece while it is being turned, and whether it is safe.

When I'm designing for wood turning, I always run through the following little how-will-I-do-it checklist:

■ Is the lathe powerful enough? Will the motor size hap pily shift the weight of the wood?

■ Is the distance between centers long enough to accom modate the design?

■ Is the radius of swing big enough? (Meaning, is the distance between the center of spin and the top of the bed great enough?)

■ How am I going to hold the wood? Am I going to use the four-jaw chuck, the face plate, the screw chuck, the pronged center, or what?

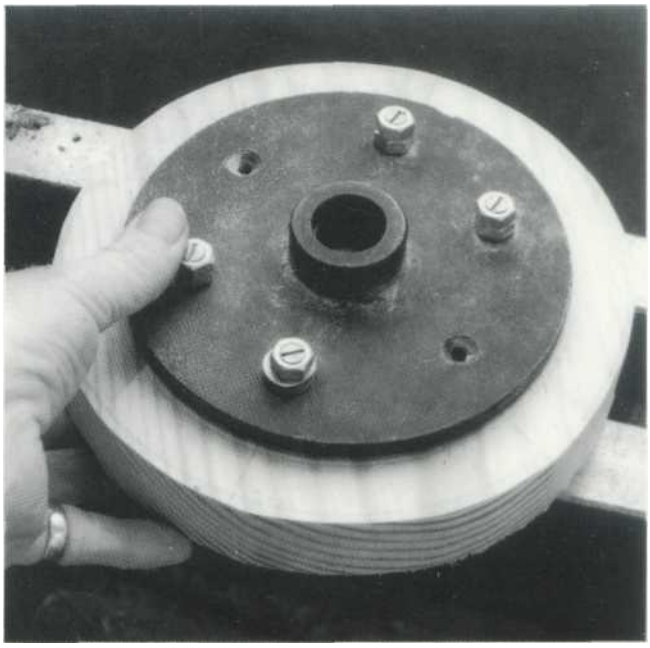
■ Will I turn multiples in one piece to be cut apart or as individual units?

■ Will 1 need to use a drill chuck in the tailstock mandrel?
■ Will I need to use special drill bits with extension pieces?
■ Will I turn the item over the bed of the lathe? Or will I use the outboard bowl-turning option on the back of the lathe?
■ Is the chosen wood type available in the size and quality I need? Will I need to laminate up?
■ Is the wood the traditional choice for a turning of this size and character?
■ Will 1 need to use special tools other than the usual scrapers, chisels and gouges?

As you can see, at least half of the design procedure has to do with the lathe and related tooling. Of course, just about all your questions are answered if you want to turn something like a baseball bat—your only worry is length—but if the turning is more complex with maybe two component parts that fit together, then it's not so easy and needs thinking about.

Let's say, for example, that you have set yourself the design problem of turning a large lidded container—the biggest diameter possible on your lathe—a form about as high as it is round. The first thing you do is measure the radius of swing and double it. If your lathe measures 3" from the center of the headstock down to the top face of the bed, you can reckon on a diameter of no more than 6". So, you are turning a container about 6" in diameter and 6" high.

Next, you have to decide how the block of wood is to be held and the order of work. Though there are many



ways of proceeding, I usually turn the wood down between centers—meaning the outside profile—then hold the wood in the four-jaw chuck while I hollow-turn the center. When I have cleared the waste from inside the container and maybe turned the rim, I then change the container around on the chuck—so that it is held by its rim—and finish up by turning the base.

What else to say, except that you must always think well ahead before you put tools to wood. And of course, as with all potentially dangerous machinery, you must always be wide awake and ready for the unexpected.