

Peppermills Made Easy – Larry Randolph

Peppermills make not only a great gift for weddings or Christmas gifts but they are a piece of woodturning that in my opinion can be both art and function. My friends and family that I have gifted my mills to, report that they continue to use them and they remind them of me and my sharing my turning with them. So, to turn a peppermill is not a difficult task. It only takes a little preparation and thinking through the process. Seriously, if I can make one of these... any turner can!

Start with a completely dry wood blank size of approximately 3" square by 10" long, can be longer based on desired end result. You will likely lose a 1/2" to 1 full inch in the turning process.

Mark the centers of the blank and use a punch to mark the center on both ends. You can use the point of the drive spur but make sure to only use a rubber or wooden mallet. A metal hammer can flange or damage your drive spur.

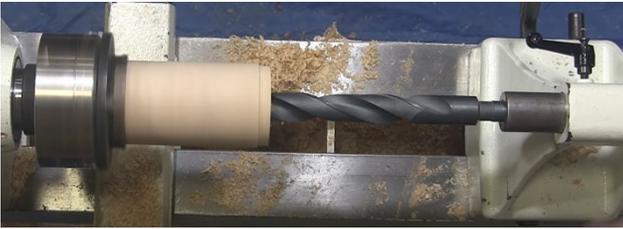
Mount the blank between centers and adjust the tool rest to make sure it is not in the way of the blank before turning on the lathe. You can use any number of tools to rough out the cylinder for the mill. I use a large roughing gouge but you can use other tools as well. Skews in the hands of experienced users work well, smaller spindle gouges will take a little more time or even carbide tools like Easy Wood Tools can make quick work of rounding out the blank.

Once rounded it is time to make the decision on which end is going to be the top of the mill. This often is determined by planning the best use of figure, spalt or flaws in the wood. Once the top and bottom are decided it is time to make some marks on the blank. I like to break it into the obvious sections. For the top, I usually add about a 1/2" to 1 full inch depending on the shape I will be turning. I also plan to make a spigot that will hide the tops mechanism from view. This I plan for a 1/4" to 3/8" then I mark where I will part the two pieces. This automatically sets up the bottom. I then mark where the top and to bottom meet so that I don't lose the orientation of the grain.

Now that I have marked my blank, I'll cut the tenons paying close attention to match the size to the jaws that I will be using. Then I clean up the ends as needed. I'll also make a fairly deep cut where the spigot tenon on the cap will enter the body of the mill. This can be done with either a diamond parting tool, bedan or a square carbide cutter. The spigot will be approximately 1 9/16" so, I cut down to near 1 5/8" using a Galbert Caliper, any preset caliper will work. Then using my parting tool I will part down until leaving approximately 1/4" of material and will then turn off the lathe. At this point, I'll take either a hacksaw or backcut saw and separate the two pieces. *(this is much safer than trying to cut all the way through with the lathe running)*



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Next I will remount the bottom of the blank/mill into the 4 jaw chuck. Once secured, I will use a 1" #2 morse taper drill bit and mount it in the tailstock quill. (There are many plans that explain using

forstner bits in many different sizes but we are going to simplify this a little.) I make sure to snap or slap the morse taper bit soundly into the quill for a pressure fit. Then with the lathe spinning at approximately 400 rpm I start to crank the bit into the wood. If you go much faster you will dull your bit quicker with too much heat and smoke the wood. I clear the bit often and reposition the quill and tailstock as needed based on the depth of cut.



1" Morse Taper 2 Drill

Once I have drilled the blank just over $\frac{1}{2}$ way through I'll replace the morse taper bit with Woodcuts Mill Drill which is also built on a morse taper #2. This tool is designed to set the cutters to the necessary diameter



depending on the pepper mill kit you are using. As I am doing a Crush Grind kit these cutters will be set to 6.5mm and the one on the back of the tool should be set to 5mm from the base. These will allow the Mill Drill to cut the appropriate openings for the base of the Crush Grind mechanism $1 \frac{9}{16}$ "

and $1 \frac{3}{4}$ ".

Woodcuts Mill Drill has a couple of marks that will tell you the depth of cut on. The advantage to this tool is that it replaces two other forstner bits that normally take longer to drill with as well as the bit changing time. Though it is not a cheap tool it definitely speeds up the process. I highly recommend this tool over forstner bits and extensions.

At this point, I examine the holes I have drilled for tear out. I take a dowel and wrap 100 grit sandpaper around it and turning at the same speed, 400 rpm and sand out the rough bits left behind by drilling. There is no need to sand to a high grit on the inside (unless you like sanding) as I just want to make sure that all of the lose fibers and tear out are sanded flat.

This is also a good time to sand the bottom of the mill to a finished grit. Cutting end grain can be difficult if you allow it to be. I prefer to either use a bowl gouge and shear scrap, a negative rake scraper or a sharp carbide cutter. You must make sure that you don't take much off the bottom as you want your tenon to still have plenty of room while insuring that your pepper mill sits flush on the cabinet countertop. Once I have got the finish cut I like I then sand up to 400 grit.

Now that the bottom is finished, I flip it around in the chuck and use the 1" morse taper bit to drill the rest of the way through the blank. Then just like before, I replace that bit with the Woodcut Mill Drill and drill just the first hole just about a $\frac{1}{2}$ " deep. This will be where the spigot I cut to $1 \frac{5}{8}$ " on the top will sit to hide the Crush Grind plastic inserted into the top of the mill. As



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before, I use the dowel wrapped with 100 grit sand paper to take off any torn grain to flatten it out. Again, I shear cut the end grain and finish sand it to 400 grit.

At this point, if I know the shape I want I can cut that shape with my gouge between centers. I make a jam chuck that fits in the chuck and use a cone center for the tailstock side. I prefer to use pine as the jam chuck as it is soft and will not mar the blank. However, most times I will get to this point and not yet shape it and go onto drill the cap/top of the mill.



After I set the body aside, I remount the top/cap blank back in the chuck. At this point I carefully remove more of the spigot while test fitting it to the top of the body where it will go when finished. Once I remove enough material that it is a fit I sand the spigot to finish again 400. The spigot needs to have a little play between it and the body of the mill but not so much that you would consider it slop. Remember, wood always moves and you don't want to have the tolerance so close that when humidity is high it swells and sticks. By the same token, you want it close enough that it doesn't really "wiggle" when used.

Next I drill with my drill chuck mounted in the quill of the tailstock with the 15/16" forstner bit. I want to now drill this at least 1 1/4" deep. 1 1/2" gives you a little more room for error. You can start to shape the top if you wish in the chuck but often times I take it out and replace it with a softer piece of wood like pine (you can use the one you turned the body with) to form a jam chuck to fit the hole I just drilled onto. Again, by using a softer wood you don't risk marring the piece. I cut slowly until I get the jam chuck to fit very snugly when I push the top of the mill blank onto it. Then I shape, finish cut and sand it.



Designed to work with the Crushgrind mechanism

Assembly of the Crushgrind

mechanism is pretty straight forward. The best advice I can give you is to use epoxy for your glue. CA glue is too brittle and will give way over time.

As for a finish, I prefer something harder like a spar urethane or in particular one product from General Finishes called "Woodturners Finish." It is to apply and build to a high gloss if that is what you are going for. The main piece of advice I would give about your finish is to remember that not only will this turning be it will be handled with potentially greasy or salty hands. So, it needs to be a harder finish than most friction polish or wax finishes will give.

The biggest part of turning a peppermill once you understand drilling is to simply just choose the particular

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shape you are looking for. I researched for a long time the different styles of mills that others turned as well as those that are in mass production. Though I personally don't care for the traditional style that you typically see in stores there are many that do. So, in doing your research you'll need to decide for yourself what your personal esthetics you are looking for. There are modern straight lines, traditional beads or simple curves. Whichever you choose, you'll enjoy turning peppermills weather for sale or as a gift.

Materials

Sanding Stick	Hardwood Blank 3"x3"x10" longer for a taller mill
Sand Paper	Crush Grind Pepper/Salt Mill : Amazon \$13.95
Parting Tool	Peter Galbert Caliper : \$79.95
Roughing Gouge	1" MT2 Drill can be found at either:
Gouge of your choice, I prefer a bowl or spindle gouge	Amazon : \$34.95
Hacksaw or Backcut Saw	Machine Shop Supply : \$29.95
Calipers	Wood Cut Tools – Mill Drill Amazon : \$89.95
Drill Bits	Forstner Drill Bit 1-9/16"
Gouges	Woodturners Finish – General Finishes

Quality peppercorns available from: <https://www.penzeys.com>