PEPPERMILL CONSTRUCTION

I've been asked a several times to put together a review of how I turn peppermills. They are a great project, perfect for gifts and a lot of fun to make. They don't require especially large pieces of wood and can show off the quality of the wood very well. Not many tools are required, although like everything in wood turning there are do-dads you can buy, seemingly without end. There are also some specialized tools that you can make. I use the CrushGrind mechanism in my peppermills. I like the absence of a fastenerinterrupting the line of the top. I also like the ceramic grinding mechanism. This means you can grind salt or other spices without worrying about corroding metal pieces.

The process begins with a blank, about 3 x 3 x 12". About any wood will do but harder wood, like this piece of jobillo, takes detail very well and mills easily.

Mount the blank between centers and turn to round using a spindle roughing gouge.
Mark the position of the top section. For a 10" peppermill, the top, including the taper inside the body of the mill, will be about 3 inches long. Turn a tenon on the top of the blank and at the point where the top of the bottom will be separated. The tenon on the top of the bottom will hold the mill in the chuck while the bottom is turned.

Make sure that the shape of the tenon matches the chuck jaws. This is a Nova 50 mm jaw, and therefore has a dovetail. Size the tenant to allow the jaws to close almost completely to get the strongest grip on the wood.

The top of the mill is shaped in the chuck, held by the tenon. The round part seen above mill can be spherical or compressed and oval, whatever you like. The tapered bottom part is to smooth the line and fit with the bottom. Extending the top down inside the throat of the mill stabilized the rotation of the grinder. Before removing from the chuck, cut the groove to hold the shaft clamp (see below).

To finish shaping the top, the piece can be held in a jam chuck fitted to the 7/8" hole that will eventually hold the shaft clamp. I use this specialized expanding chuck. The base has a dovetail machine to fit the Novo chuck jaws.

Finish shaping the top, re-chuck to finish the upper surface. Sand to 600 grit using walnut oil sanding lubricant and finish with Pens Plus

To turn the bottom part of the mill, layout the approximate location of important features. Here, the narrowest point of the mill as well as the location of the rings at the bottom have been marked.

Turn approximate depths for these features and begin to shape the peppermill. The details of the peppermill is in part dictated by the wood. The more figured or complex the wood pattern is, the simpler the shape should be.

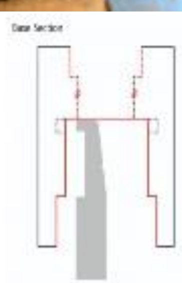
Jobillo has distinct grain and color but it is mostly in straight lines. Inclusion of the beads is appropriate for this piece of wood. The two small beads were turned with the D-Way beading tool and the large bead was turned with the skew chisel. The bottom part of the peppermill is shaped primarily with the spindle roughing gouge. French curve scrapers are useful in final shaping of the top.

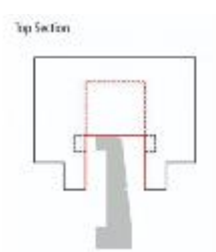
At this point, the bottom can be sanded and finished. This piece was sanded to 600 grit using walnut oil as a sanding lubricant. The piece was friction polished with fresh walnut oil and finished with three coats of Pens Plus.

The outside of the bottom is finished and now the milling of the interior begins. I use the Colt Maxicut Rotastop forstner bits. These are by far the sharpest and truest running forstner bits. Also, the Rotastop feature makes extensions very easy to use. A 1.75” wide, 0.75” deep relief is drilled into the bottom of the peppermill. This allows for the adjustment nut on the bottom of the Crush Grind mechanism. There are three drilling steps. The first one is the 1.75 by 0.75” opening in the base.

The second one is a 1.5” opening that holds the grinding mechanism and finally, a 1.187” opening that runs the length of the bottom of the mill to hold peppercorns. The opening for the grind mechanism must be drilled fairly precisely so that the bottom is held firmly into the mill by the wings at the top of the grinding mechanism.
The depth of the drilled position to hold the grinder can be determined by several methods.

Using part of a broken grinder and an old dental explorer, the hole can be drilled so that there is not a gap at the top or the bottom. A groove can then be cut with a 90° scraper. This can be made from an Allen wrench pounded flat and sharpened. There also commercially available tools for this job. Pinnacle and Robert Sorby both make tools specifically for this purpose. The Sorby tool is shown here. The advantage of this tool is that you don't have to drill to a precise depth. It just has to be long enough to take the grinding mechanism, although a good fit adds to the stability of the mechanism.





Catching the bottom of the groove in the tool on the top of the 1.75” opening, the cutting edge is placed in exactly the right position to trap the wings. The same procedure can be repeated to fix the top section which holds the grinder shaft.

In this picture, we see the 1.75” opening, the 1.5” opening with the grinder retaining groove in place and the 1.187 inch opening that runs the length of the bottom part of the mill.

To mill the bottom section, we need an expansion chuck. These plastic jaws can be turned to any size. They will expand into the 1.75 inch opening at the bottom of the mill.

Care must be taken not to split the wood when expanding the jaws, as happened with this piece of red heart.

The base of the piece can be wrapped with several layers of paper towel and reinforced the hose clamp. Jaws can then be expanded to hold the piece firmly in place without splitting. Note that the live center is in place to maintain alignment during chucking.

The simplest way to form the top funnel of the mill is to round the upper edge with a live center in place then use a cone covered with sandpaper. This cone is turned onto a piece with Morse Taper 2. Using a piece of 50 grit sandpaper, the trumpet can be roughed in using the lathe to drive the sanding.

The trumpet needs to be big enough to hold the tapered top section, which is fitted to it during shaping. The trumpet is sanded to 600 grit using walnut oil sanding we were good and finished with three coats of Pens Plus.

To set the grinding mechanism, flex the wing several times to loosen them up. Insert the grinder into the mill. A piece of 1.75” PVC pipe makes an excellent pushing tool. Tap the PVC lightly with a hammer in the grinding mechanism will snap into place. The shaft grip is placed in the top of the mill the same way (or set it in with epoxy)

This is the view from the bottom with the grinder in place. The gray nut determines the texture of the ground material. It can be loosened or tightened to control fine and coarse grinding.

Trip the grinder shaft with lineman’s pliers in a stepwise manner to allow the top to seat fully in the mill making sure it is long enough to go completely through the shaft grip in the top.

Fill and grind away!!