

Peppermill Making -- Rev 2.1

By Ed Larson and Bill Juhl

Prepare Blank

1. Turn a 3 X 3 X 11 inch blank round between centers. Use your roughing gouge.
2. Based on your mill design locate the cut line between the body and top of the mill. For a 10" mill typically the body will be 7 1/2 inches long for example. The remainder will be used for the top. The size of the top is arbitrary ... governed by artistic and utilitarian considerations. Your one hand has to be able to comfortably grasp the top and rotate, otherwise it's an art statement. *(Ultimately the total height of the mill is governed by your mill hardware, and fine tuning of the overall length will be adjusted at the final turning of the top.)*
3. Turn a tenon at each end of the body and the top (4 in all) that will fit your chuck. For our example to fit the 50mm jaws make tenons 2-1/4 inches diameter by about 3/16th inch long. *(The size of your tenon is determined by your chuck, and the larger the tenon you can leave the better. You will have more design latitude for final shaping. The Bottom Tenon in particular determines the maximum size of your peppermill bottom.)*
4. Identify the orientation of the top and body to prevent confusion later.
5. Part the top from the body using a thin parting tool. **Do not part all the way through with the parting tool this is not a safe move.** Finish parting with a handsaw or bandsaw.

Drill Body

1. Using the tenon at the body top, mount the body in your chuck. Assure that it is running true, the center-point from the blank preparation can be used to help center the blank.
2. Face off the face of the tenon on the body bottom, it can be slightly concave.
3. Use a 1- 5/8th inch Forstner bit in a drill chuck and drill a hole 1/2 inch deep measured from the edge of the tenon. Sand this opening.
4. Without removing the body from the chuck, use a 1-1/16th inch Forstner bit and drill in as far as the bit allows. Reduce speed to the lowest level and advance the bit slowing to prevent overheating.
5. Add a drill extension to the 1-1/16th inch bit and drill to about 2 inches from the body top.
6. Reverse the body in the chuck. Make sure it is aligned properly and running true.
7. Face off the surface square to the body (spindle gouge), Make certain you have a clean cut on the face.
8. Use the 1-1/16th inch bit without the extension to complete the hole.
9. Remove the body from the chuck and set aside.

Drill Top

1. Mount the blank in the chuck gripping the tenon at the bottom of the top. Again assure that it is running true.
2. Face off the surface square to the blank.
3. Use a 5/16th inch drill to drill a little over half way through the blank.

4. Reverse the top in the chuck, grip the TOP tenon, and complete the drilling.

Form Spigot

1. Reverse and remount the top in the chuck.
2. On the bottom of the top turn a spigot 1/4 to 3/8 long that makes a tight fit with the 1-1/16th inch hole in the bottom. If you overshoot a piece of paper towel can be used to tighten the fit.
3. Face off the spigot square to the blank.
4. Cleanly face off the edge of the bottom of the top blank as well. This will rub on the bottom and needs to be smooth.

Make a Jam Chuck

1. Place a scrap of wood in the chuck and make a jam chuck with a taper that will fit in the 1 5/8th inch hole.

Shape the Mill

The mill will be turned as one piece between centers using the jam chuck in the head stock and a cone center in the tail stock. A piece of drawer liner between the jam center and the mill bottom will increase drive friction and prevent burning. A paper towel can be used to form a tight fit at the spigot between top and bottom can be helpful.

1. Align the grain between top and body.
2. Identify the top of the mill and make a thin mark with a parting tool at the intended cut line. In order to not have to cut the mechanism shaft the top of the mill will be 10 1/16th inch from the bottom of the mill. This is true if the 1 5/8th inch diameter hole is 1/2 inch deep otherwise make adjustments as required. (see diagram next page)
3. Identify the high and low points of your mill design and use a parting tool to establish the diameter of these features of your design.
4. A spindle roughing gouge works well for long sweeping cuts. Use a spindle gouge for coves and beads. On highly figured or curly wood, a scraper with a sharp hook edge may help deal with grain tearout ... that or often you need lots of sanding.
5. Make a small v-cut at the join to hide any alignments errors.
6. Sand and finish.

Finishes

1. **Interior.** Generally no finish is desired inside. The inside is where the peppercorns will lie against the wood, and any finish you use that has resin, varnish, shellac, polyurethane, driers, etc. will transfer that smell and taste to the peppercorns unless you leave the top off the mill and let it thoroughly dry for probably 2 months or more. Best to have no finish.
2. **Exterior.** This will be handled by hands... a lot. Body oil, food residue, etc. will get onto the exterior. Lacquer based finishes are not recommended... oils cause them to get gummy with age. A wipe on poly, or Danish Oil finish on the outside coupled with a coat of wax would be a good finish.

Install the Mechanism

1. Insert just the spring bar into the mill bottom, marks the hole locations and drill 3/32 pilot holes.
2. Assemble and install the bottom grinding mechanism as shown in the diagram below. The small end of the spring faces the bottom of the mill.
3. Center the turn plate on the spigot, drill pilot 3/32 holes and install.
4. Fill with pepper corns and adjust the grind fineness with the adjustment knob.
5. Enjoy

