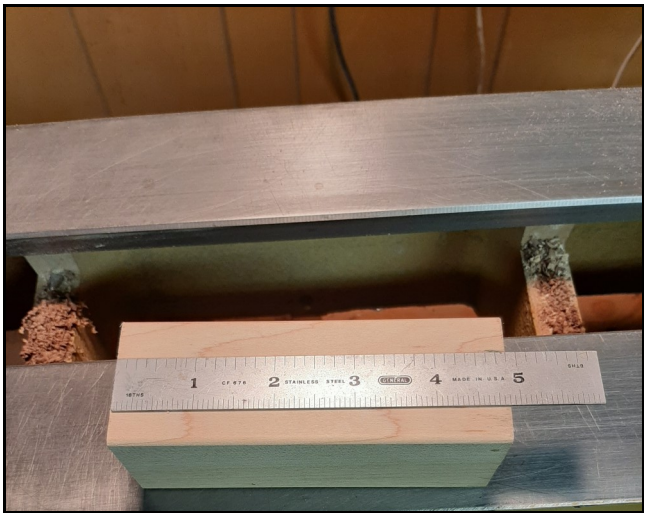
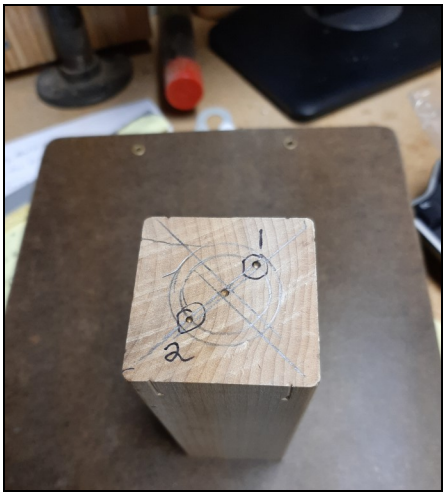
Turning an Off-Center Bottle Opener

This series of photos show the steps I used to turn an off-center handle for a bottle opener, using the stainless opener from Ruth Niles. The same techniques could be used to create a wine stopper or other small projects. I used Ruth's kit with the morse taper mandrel to drill and tap the wood blank with 3/8" threads. It is a good kit and includes the drill bits you will need for most woods. Hard dense woods generally take a better thread. Let's get started.

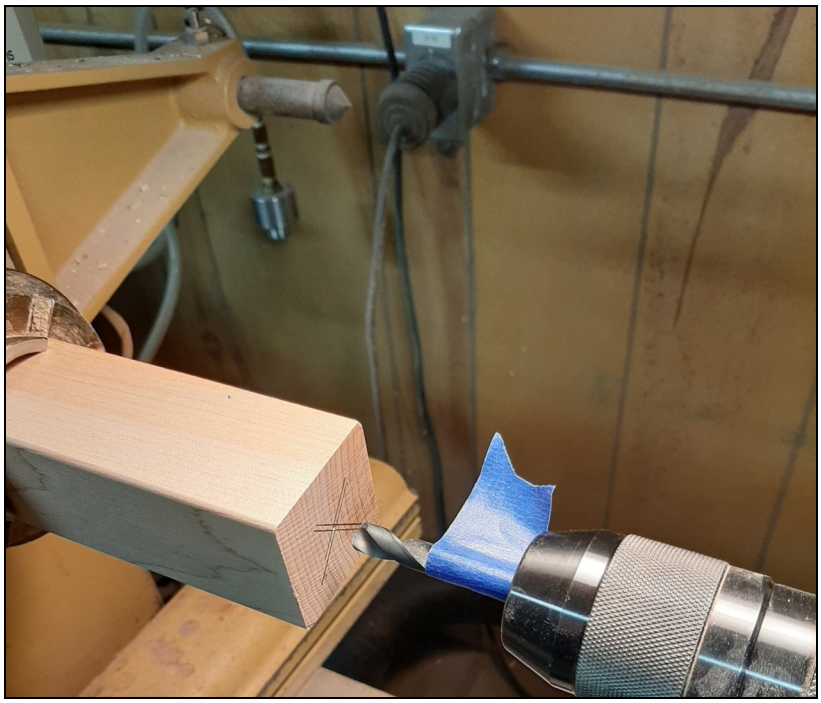


My blank for this project is a piece of hard maple. It is about five inches long and about 1-1/2" square. I have located and marked the center point on both ends. I also use a compass to mark a circle which will provide me with the off-set turning points. A circle about 1/2" from center is about right.

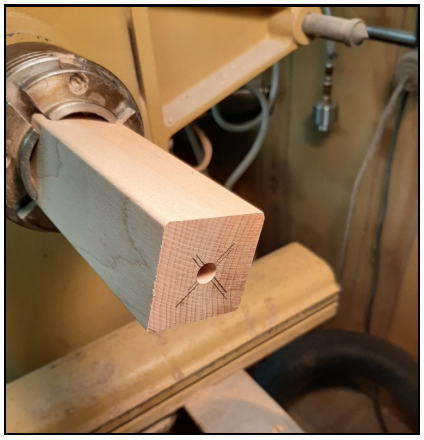


I made these off-center turning points, #1 and #2 on both ends of the blank. You want #1 and #2 to line up so that if you drilled a hole all the way through the blank it would pierce #1 on both ends. The blank will be shifted, but will always be parallel to the lathe axis.

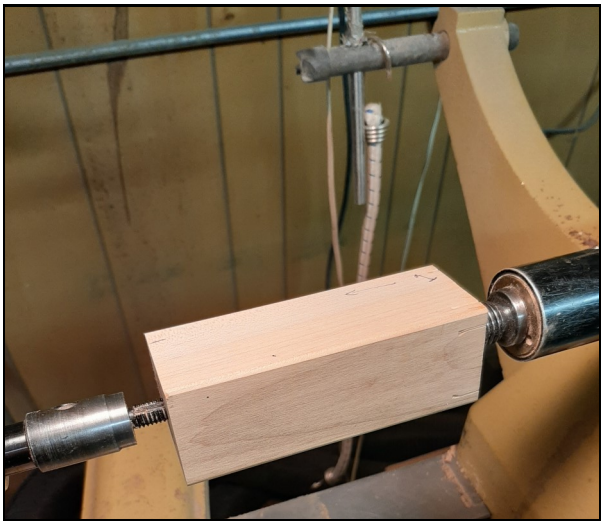
I like to begin by drilling and tapping the blank before I turn the off-center portion. You could do it after, but I find it easier to tap while the blank is square. I mount the blank in a chuck for drilling, and use the larger size drill in Ruth Niles' kit. I have the hole depth marked at about 1" with some tape.



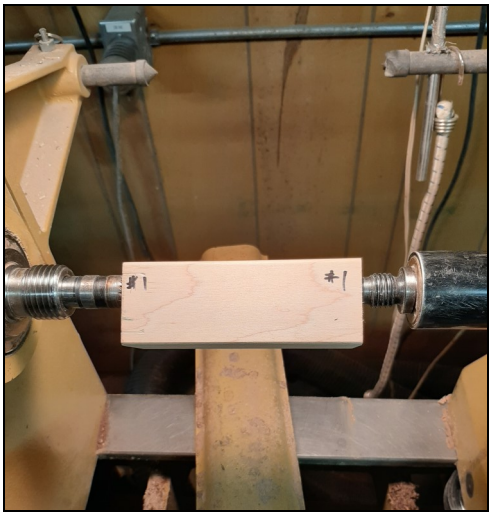
After I drilled the hole I realized I had not marked my off-set circles on this end. Oops. Better fix that.



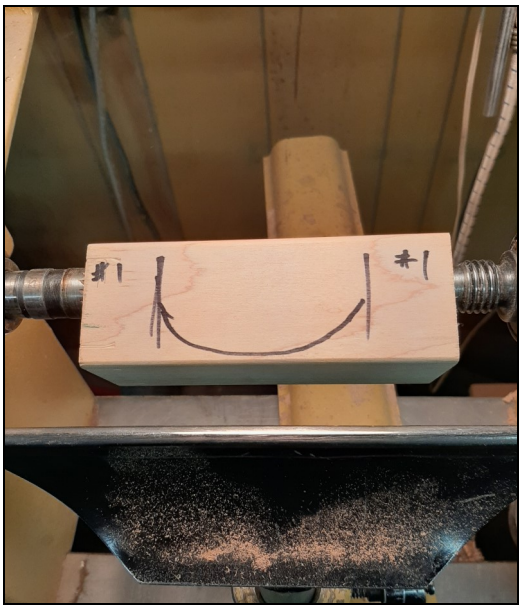
Now I am tapping the thread for the 3/8” bottle opener. The tap from Ruth is on a #2 morse taper mounted in the head-stock. The tailstock live center helps keep alignment square. I spin the blank onto the tap a half turn or so, then advance the tailstock ram enough to keep the live center pin engaged. Keep going until the blank snugs against the shoulder of the tap. If it gets hard to turn along the way, I sometimes have to twist the blank off and apply a little wax to the tap threads.



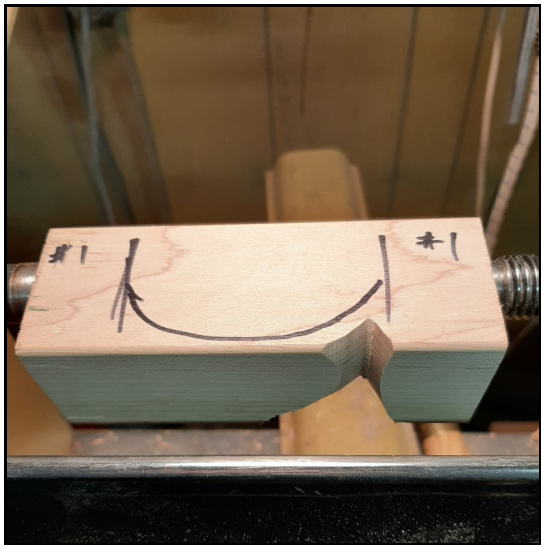
Now the fun part begins—the off-center turning. I remove the blank from the mandrel with the tap, and replace the mandrel with a drive center. I mount the blank between centers so that the #1 position on one end lines up with the #1 position on the other end. The blank should be parallel to the lathe. But shifted off-axis. My blank is about 1/2” from center, which is about right for this project. Even a small offset is quite obvious to your eye.



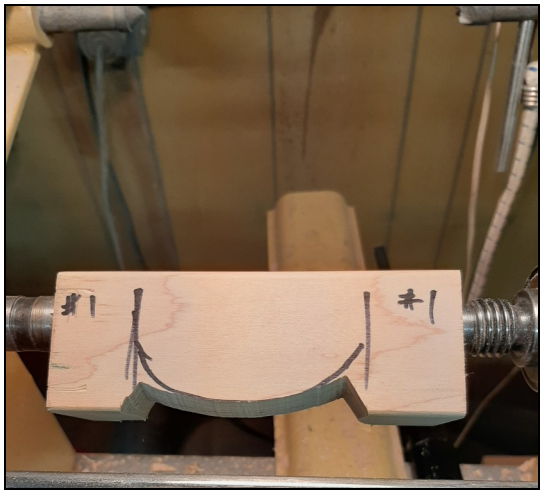
I lay out the shape of the handle I wish to turn. It will be an arc shape done in two halves. It is really just a broad bead and corresponding cove. I will mark about an inch from both ends of the blank, and do the off-center turning between those marks. I will start with the bead portion, using the mounting position #1.



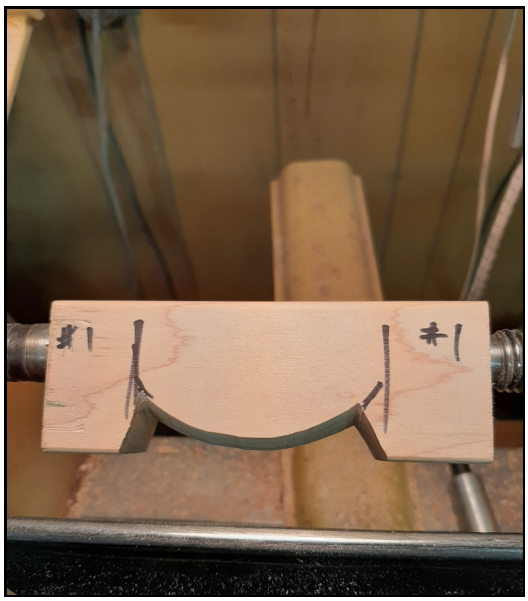
Here I am getting started. These ends are the hardest part, I think. This is all interrupted cutting, so your tools need to be quite sharp. This is cutting air as much as wood, so a higher lathe speed is your friend. I find with good lighting, I can still make out the black marker guidelines through the blur. Take light cuts and take your time.



Making progress. You can see the bead portion of the handle taking shape. I'm going to cut a little beyond my curved guideline, but try to stay within the two end marks. I alternate between a bowl gouge and a spindle gouge to make the curved cut and get into the corners.



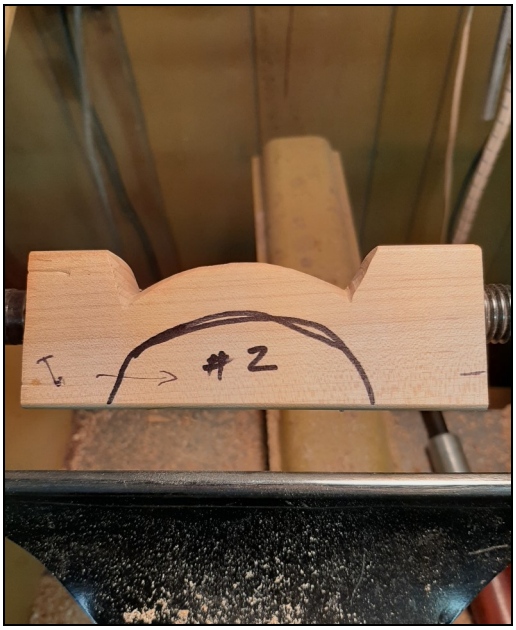
Almost to where I want it. Try to make the curve as smooth and consistent as possible, as it will be easier to sand later. You really can't sand these interrupted shapes on the lathe, so some hand sanding is always required.



Looking good now. Time to work on the cove portion of the handle.

I'm going to take the blank from the position between points #1 and move to be mounted between the #2 points. It will still be parallel to the lathe bed, but now shifted the same 1/2" of off-set in the other direction.

Now the blank is remounted between the #2 centers, and I have marked out the material I plan to remove to complete the cove portion of the handle. This part goes much faster, as there are no tight corners to reach into. The same rules apply: sharp tools, higher lathe speed and take light gradual cuts as you watch the shape take place. I stop frequently to check my progress and see where I may need to remove more to refine my shape.

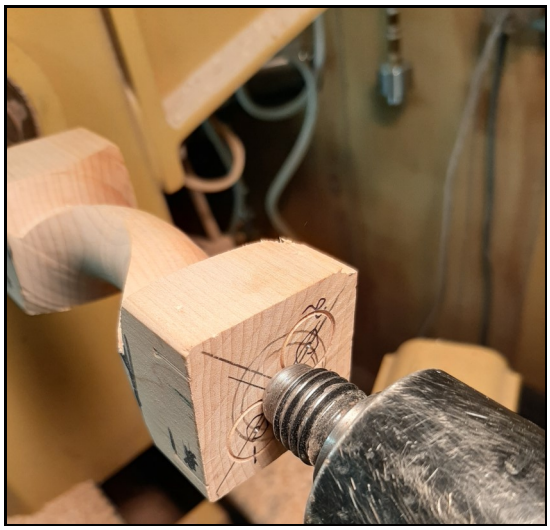


This is a good start on the shape. I still need to cut a bit farther, and increase the width of the cove slightly. It is still possible to go back to the #1 mounting position and cut more on the bead side if you think that will improve your shape.

As the cove cut gets deeper, you will be getting closer to the lathe center axis, and your cuts will start to smooth out as you cut more wood and less air. Try to make the cove a nice sweep curve—again, less sanding later.

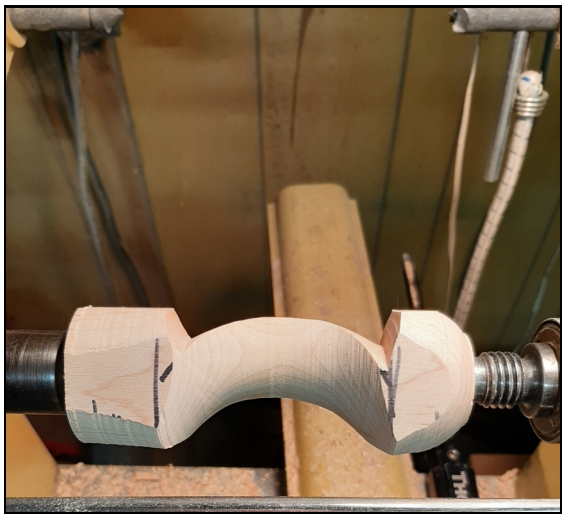
This handle is coming along nicely. I think I am satisfied with that cove part of the handle. Now I can remove the blank, and put the Morse taper mandrel with the 3/8” tap back in the headstock. I will use the thread cut in the blank to screw it onto the mandrel. If not done earlier, you could drill and tap the blank now as well.

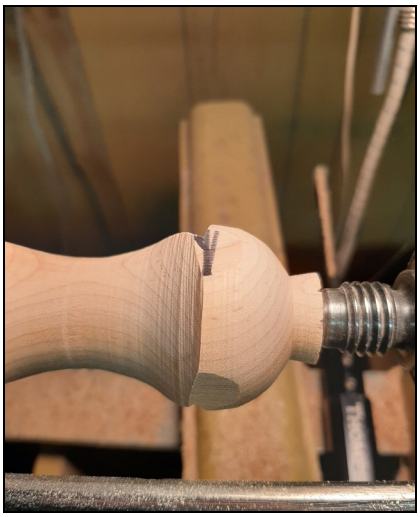
The threads on the mandrel hold the blank securely, but I still keep the tailstock in place to provide support.



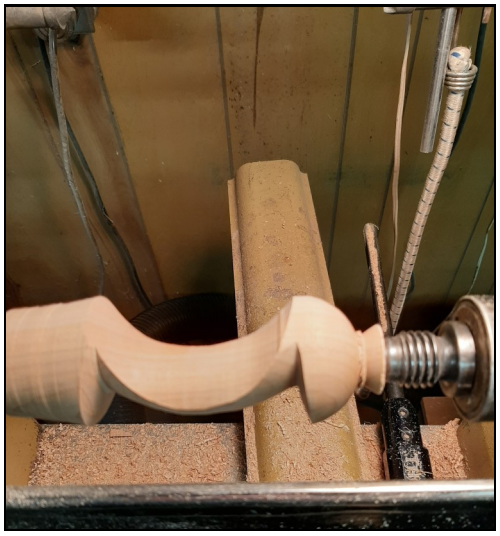
The rest of the project is standard spindle turning. I will finish the upper end of the handle, then turn a shape on the other end to match up with the bottle opener hardware.

Here I have started to round off the remaining square corners and start shaping the rounded end of the handle.





Now to round and add some design to the bottom of the handle where it will meet the bottle opener hardware.



Once I am satisfied with the bottom, I turn back to finish the top, which is still secured by the tailstock. I cut off that extra bit, then turn that smooth. If I take light cuts, I find the Morse taper provides enough support. If you need it, Ruth's mandrel is threaded for a 1/4-20 drawbar through the headstock.

There we are. All ready for a little sanding, apply the finish of your choice, and screw on the hardware. I find I can power sand the last on-axis parts, but the off-center portions have to be hand sanded and blended in. A little more effort, but worth it, I think. This was a fun project. Give it a try!