

Turning upside-down salt shaker - Dave Paine

The origins of the idea

I have a book with designs of pepper / salt mill and salt shakers. I noticed a design where the salt is shaken out of the BOTTOM of the vessel. I thought this was both unusual and interesting. I then searched online and found this concept has been around for some time. It is referred to sometimes as "upside down" or "magic" salt shaker perhaps other names.

I cannot link to my book, but I did find a UK turning club site with what looks like the same design as in the book.

[Test Valley Turners Upside Down salt shaker](#)

I followed the concept, but chose to make the shape of the shaker to be like an acorn.

I found this to be a good project to use up some scraps.

The only critical dimensions seem to be the hole in the top of the insert and the distance between the top of the insert and the top of the inside of the dome. All other dimensions can be varied, perhaps based on the scraps available.

Start with some scrap pieces.



For this example, I have a piece of walnut to be used for the base, a piece of mulberry to be used for the insert and a piece of curly maple to be used for the body.

The tape shown for reference. The walnut was an offcut from a board, with the shape cut somewhat circular on the bandsaw. I left two flats for clamping on the drill press.

The maple was an offcut from roughing down a pepper mill blank.

The mulberry was roughed down and a section turned to 1 3/4in dia to be glued into the base. In hindsight I should also have turned a tenon to fit my #2 jaws.

My first step is to drill the base. I prefer the drill press since in my shop this is more accurate than drilling on the wood lathe.

I drilled a through hole at diameter which is the diameter of the router bit which I will use later for hollowing. Also to be used for mounting on the chuck jaws in expansion mode.

I then drill a recess at 1 3/4in dia for the insert. The flats help in clamping the piece in my vise.



The insert was already turned at one end to 1 3/4in dia. A quick test, nice snug fit so I glued this together.

In hindsight I should have turned the other end to a size to fit my #2 jaws.



While the glue is curing on the insert, I mount the body on the lathe and mark a line for the desired length, about 3 1/2in. This was a scrap so longer than required. I turn a tenon on the left portion which will later be cut off.



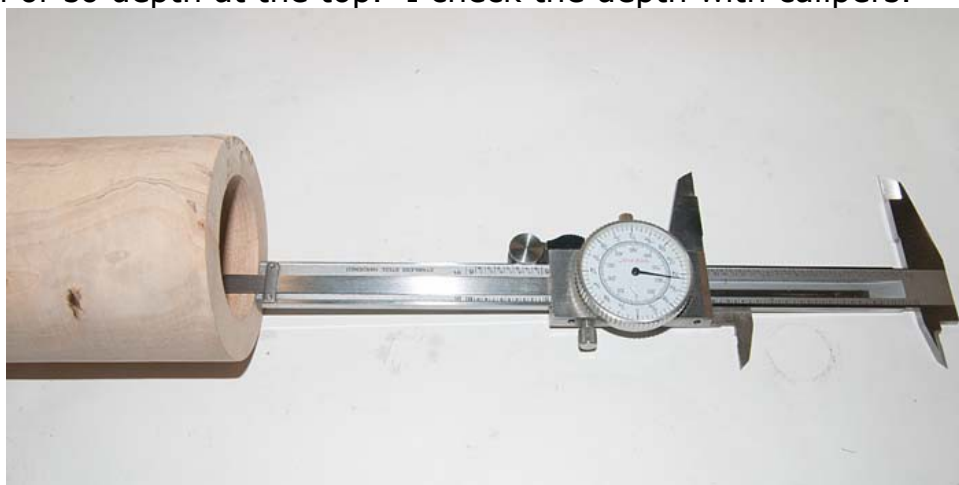
Next step is to drill the 1 3/4in dia hole for the insert and salt storage.

This can be done on a drill press, or the wood lathe. My wood lathe is not the best for drilling – too much slop in the tailstock, so I mount on my metal lathe.

A series of drill bit, 1in then 1 1/2in then 1 3/4in. Large holes generate a lot of heat. I prefer to drill in steps to avoid burning the wood or drill bit.



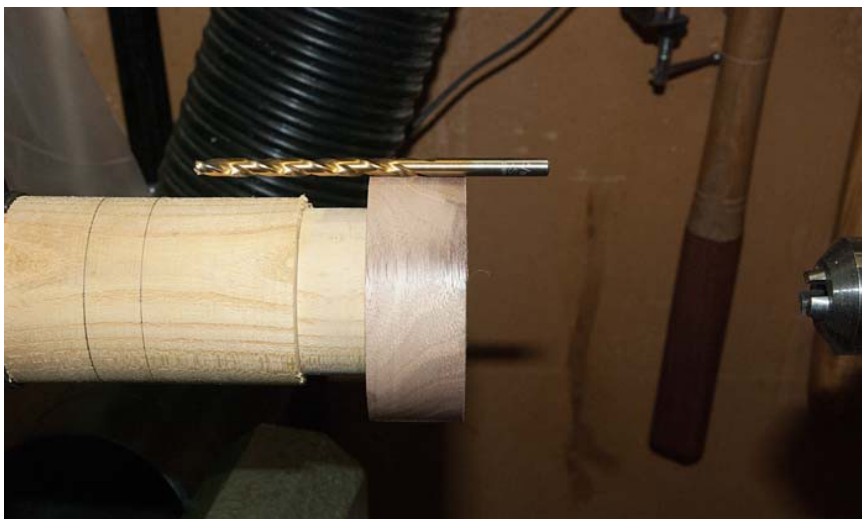
The hole is the depth of a Forstner bit and a bit of the chuck. Looking to leave about 1/2in or so depth at the top. I check the depth with calipers.



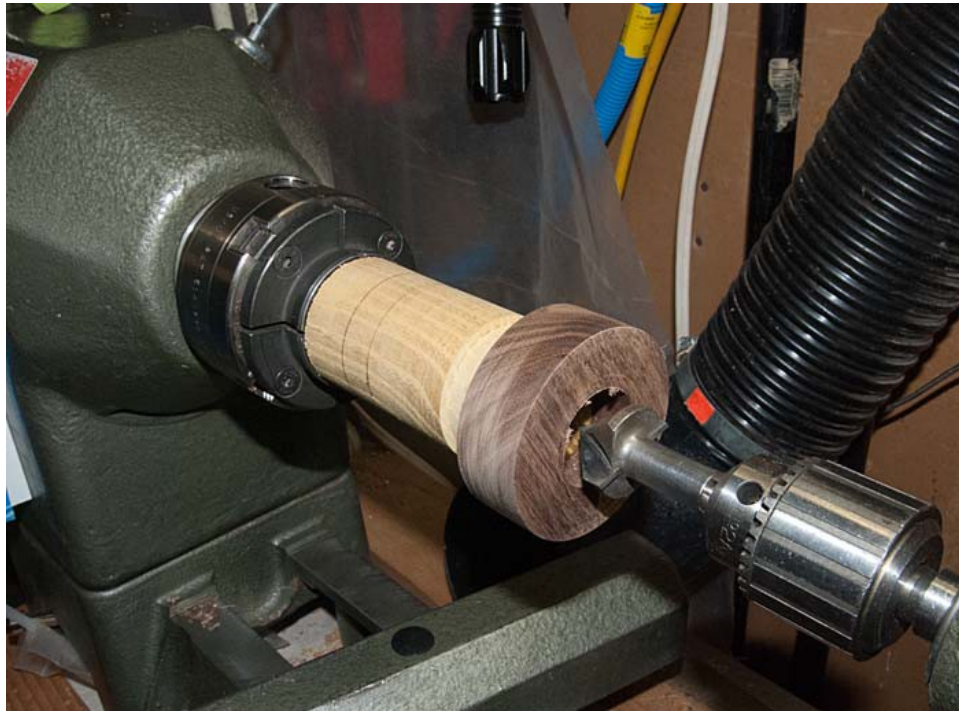
Measuring from the walnut base I draw a line representing the depth of the hole. I mark another line 1/2in from the hole depth. I like to make two lines, since it is easy to get distracted or need to leave the shop, and then when I return I do not have to re-measure to determine whether the line is the depth or the cut line.



I then flip the insert around to mount on the tenon so I can drill a 3/16in hole most of the depth. This diameter is not critical. Can be larger. **Do not go all the way to the pencil line with this drill.** Stop about 1/2in short.



I then rout the inside of the funnel. I happen to have a 45 deg x 1 1/4in dia router bit which is convenient for this task. You can also use whatever hollowing tools you have available. Shape and depth if this hole is not critical.



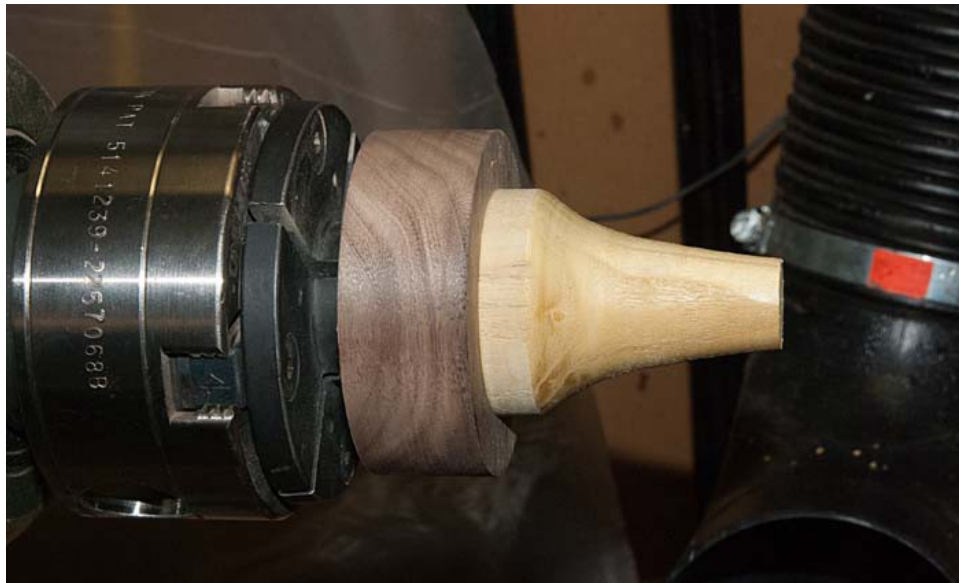
The inside after routing.



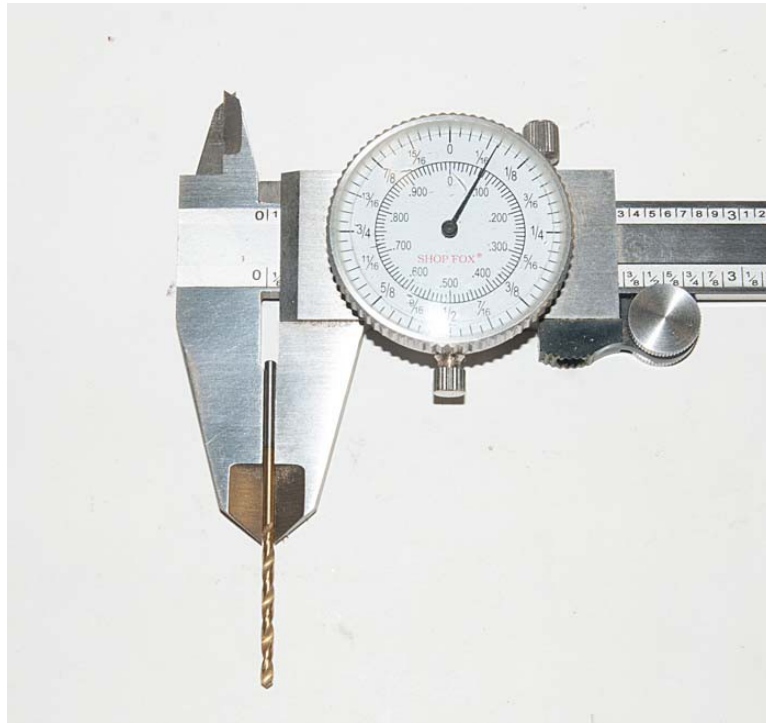
I then cut off the excess from the insert. I prefer to use a hard backed saw than a parting tool.



Next step is to shape the funnel. The shape is not critical. Need to leave a small area next to the base to glue onto the body.



Next step is to drill the top hole in the funnel. This diameter **IS** critical. For normal fine grain table salt the hole should be 5/64in.



Drilling the top hole. In this example the drill was pushed off centre by the wood. To avoid breaking the drill I removed the bit from the tailstock and completed the hole with cordless drill.



If using coarser grain salt the hole will need to be wider. I recommend increasing the hole by 1/64in steps and test how much salt is delivered before going to the next size hole. This requires dry fit of the body and some salt.

Now to test fit the body. A nice snug fit.

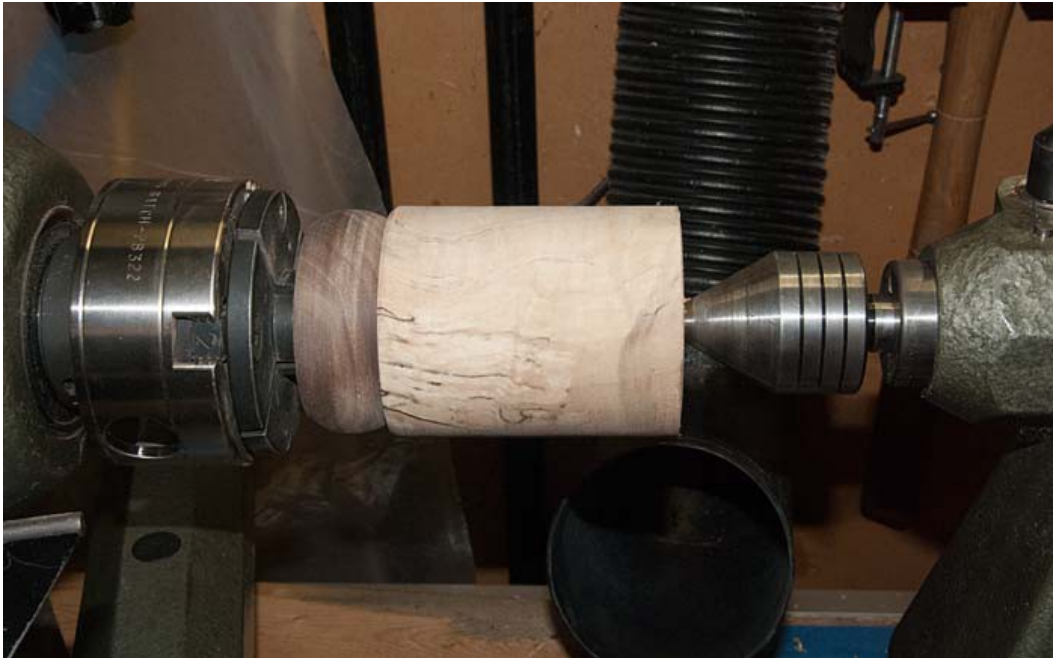


I use the base as a jam chuck for the body for the remaining steps. I cut off the tenon with a hard back saw, then drill the top with 3/8in dia bit for the stopper.

If the top fit is not snug, will need to mount on a chuck with jaws in expansion mode. Do not apply too much pressure. As the wall thickness is reduced later, it could break.



Now to shape the body.



Shaped and initial sanding.



Now to make a stopper for the top.

One method is a wood bead with though hole often used in macrame. Glue in a piece of 3/8in dowel. A couple of examples.



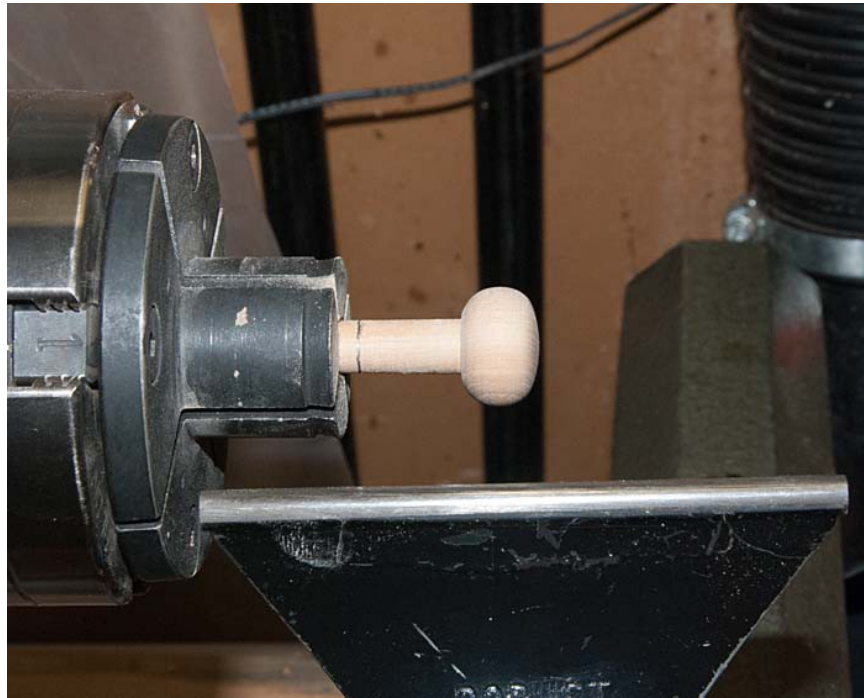
The dowel can be purchased, turned on the lathe or my preference is to use a plug cutter which allows me to get a face grain dowel.

I get the best fitting dowel if I use the plug cutter in the drill press rather than the lathe.

Another option is to make a single piece stopper. I used a bead cutter to make the shape.



Parted off, sanded and ready to be cut to length. I marked a line at the depth of the hole in the body.



The completed components.



Next step is to sand the inside of the top prior to sealing. I find the small sanding wheels work well.



Now apply a couple of coats of some finish to seal the funnel and inside of the body. Zinsser SealCoat works well. Dries fast. Can use any film finish such as polyurethane.



The parts after applying finish and buffing.



The assembly a snug fit. Ready for gluing, but will not glue so I can show folks how this goes together.



