

PEPPER MILL

Walter Hall shows how to make a Crushgrind pepper mill



Do you buy components or wood with the intention of making a particular project and then put them to one side until you ‘get time’ or until some other vital component is purchased then forget all about them. I do. Maybe it is a sign of old age or of trying to do too many things at once.

Many years ago I made a pepper and salt mill using quite good quality ceramic mechanisms and I was quite happy with them at the time. But as my turning skills improved I began to see areas of design and making that left something to be desired, so I resolved to replace them and purchased a pair of Crushgrind mechanisms, planning to make up the mills just as soon as I obtained some suitable spindle blanks.

PHOTOGRAPHS BY WALTER HALL

Several years later, searching the workshop for inspiration for articles, I came across them in the bottom of a box marked ‘project parts’, along with a lot of other forgotten items. Now seemed a good time to rescue them and get on with making this long-forgotten project.

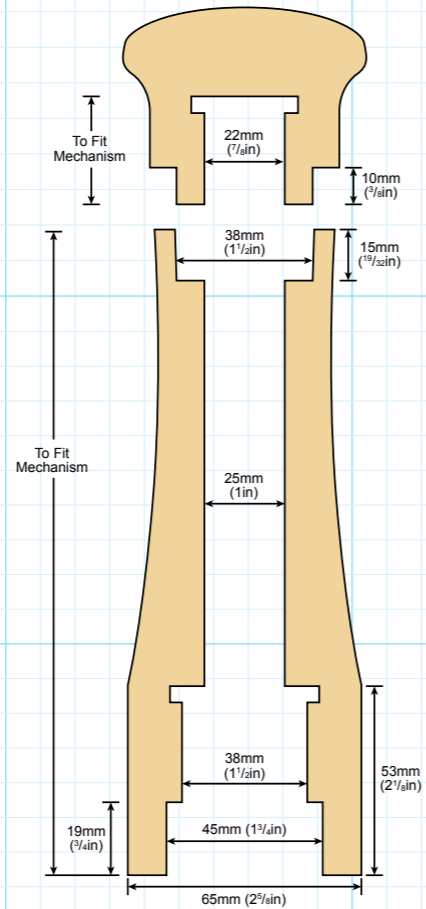
I wanted to get away from the traditional pepper mill shape but still have something recognisable as a pepper mill, so I spent some time researching classic design using the book *Classic Forms* by Stuart E Dyas. I wanted to achieve a simple contemporary look but with classical roots. I am happy with the result but if you don’t like my design the Crushgrind mechanism lends itself to any number of alternative shapes.

TOOLS AND MATERIALS

- Personal and respiratory protective equipment (RPE & PPE)
- 20mm spindle roughing gouge
- Beading and parting tool
- Skew chisel
- Thin parting tool
- 10mm spindle gouge
- Sorby Crushgrind tool or suitably-shaped side-cut scraper
- Jacobs or keyless tailstock chuck
- Forstner bits
- Abrasives 120 to 320 grits

MATERIALS

- Walnut (*Juglans regia*) spindle-grain oriented blank 70mm x 70mm x (length to suit mechanism)
- Crushgrind mechanism
- Finish of your choice

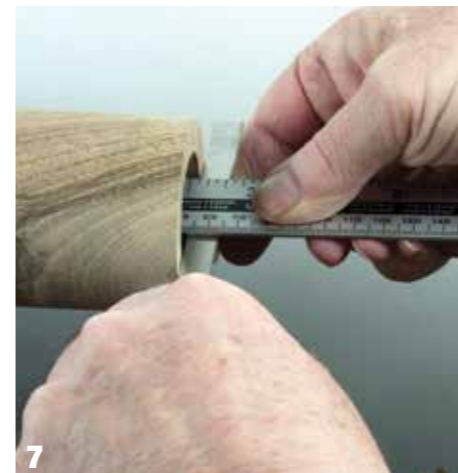
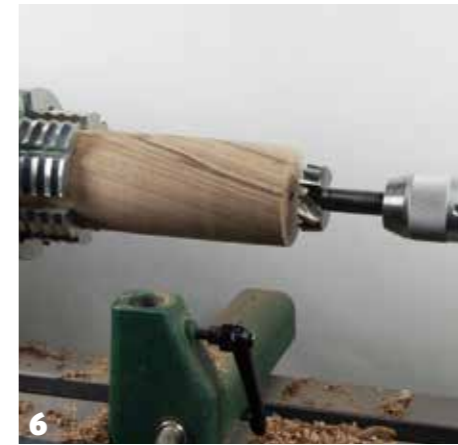
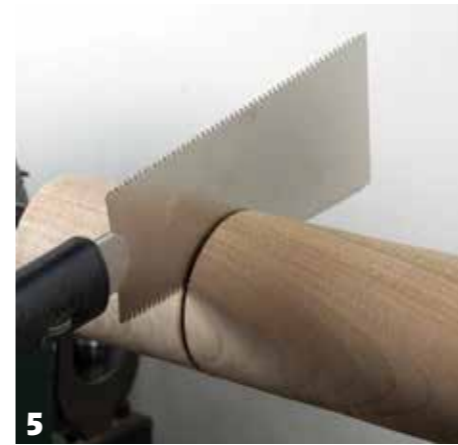
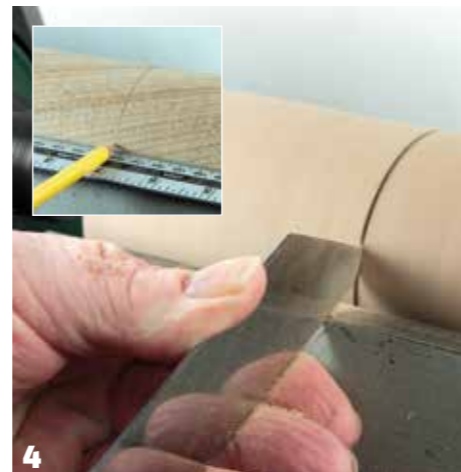


1 Begin by marking the centres of each end of the blank and mounting between centres. As the blank was longer than the standard toolrest I borrowed the toolrest from my bigger lathe, but you could turn one end at a time working out from the middle towards the ends.

2 Using the spindle roughing gouge turn the blank to a cylinder just slightly larger than the largest diameter of the finished pepper mill. There is no need for a fine finish at this stage as we will be returning to shape the outside once the internal parts are completed.

3 Square off and clean up the ends of the blank with a skew chisel. Use only the point of the skew, take light cuts and avoid letting the cutting edge of the skew contact the newly cut surface or you will get a catch. Alternatively, you could square off with a parting or beading and parting tool, but this will not give such a clean finish to the end grain.

4 Measure the length of the main body with a ruler and mark the position. This will vary depending upon the size of the mechanism you have chosen, but is critical to ensuring the correct operation of the mill. Using the thin parting tool, part most of the way through the work just outside the marked line. Arc the tool into the work and take a second widening cut to avoid overheating the tool or the work.



5 Cut through the remaining stub with a fine saw. A fine Japanese pull saw is ideal for this. If you used a steb centre as a drive remember to back off the tailstock a little before sawing or the pressure of the spring will jam the saw blade in the cut.

6 Remount the body section in a scroll chuck to drill the recesses for the mechanism. I used a large set of jaws which extend beyond the body of the chuck. If doing this, it is more important than ever to take care to keep your hands well clear of the revolving chuck. If you only have smaller jaws you could make the body a little longer and cut a spigot on the end to fit your chuck, trimming the work to length later.

7 Carefully drill each step to the correct depth as per the drawing. Check with a rule and straightedge to get accuracy. As with the overall length of the body, the depth of the recesses is critical to the fitting and operation of the mechanism.

8 Drill the central bore of the mill with a long 25mm Forstner bit as far as you can from this end. I like to keep my hands off the chuck when drilling since, if the Morse taper is in good condition and properly fitted, it will have a much better grip than I could exert. My holding on to the chuck would likely not prevent it from revolving if the bit were to jam. A tip from Andrew Hall RPT – if you do hold on to the chuck don't wear gripper-type gloves as they may prevent you from letting go of the chuck quickly enough and you could end up with a wrist injury.

9 It is important to keep a light grip on the chuck when withdrawing to avoid the possibility of the Morse taper disengaging from the quill. This is especially important with self-ejecting tailstocks.

10 Once the recesses are completed, use a specially shaped scraper to cut the groove at the top of the recess into which the mechanism clicks in place. Robert Sorby makes a tool especially designed for this, but it would be a fairly simple job to make your own from a suitable piece of steel. Finally, reverse the work in the chuck and drill the remainder of the 25mm bore through from the other end and the recess to accommodate the top.

11 Remount the drilled body between centres. You will need to make a jam chuck of some kind for the drive. I simply used the (tightened) keyless chuck padded out with some paper towel to save time. Turn down to the largest finished diameter and mark the position of the straight bottom section.

12 Use a skew chisel or spindle roughing gouge to form the curved shape of the mill body. Aim for a clean, sweeping curve with no lumps or bumps. While the work is still on the lathe, sand through the grits to 320 and apply the finish of your choice. I used Chestnut Food Safe oil – not because the outside of the mill needs to be food safe but because I like the nice satin finish that the oil gives.



13



14

13 The mechanism comes in two parts. The body of the grinder part has lugs that clip into the recess you have cut in the body of the mill. The smaller head section has similar lugs to clip into the top.

14 The mechanism should press smoothly but firmly into the body until you hear and feel the lugs click into place. If necessary, a little gentle persuasion can be applied using a large socket resting on the body of the mechanism, but do not put any great pressure on the central shaft or you may damage it.

15 Mount the remaining section of the blank in the chuck jaws and drill out the recess as per the drawing. Once drilled, use the shaped scraper as in step 11 to cut the groove for the lugs on the top part of the mechanism.



15



16

16 Using the beading and parting tool cut a spigot to fit inside the top of the mechanism. Test this for fit before continuing as it will be difficult to remount and adjust once the top is completed.

17 Mark out the positions of the main features of the top to help guide you when forming the shape. Make sure you have plenty of clearance to work on the chuck end of the work.



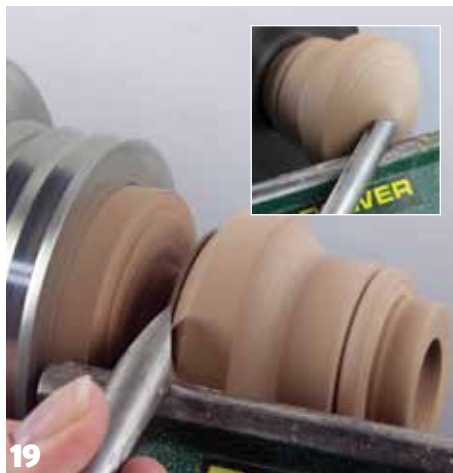
17



18

18 Turn down the lower section of the top to diameter and form a bead at the end with the beading and parting tool or skew. This will delineate the joint between the top and the body. A trial fit at this stage will allow you to make any small adjustments.

19 Form a cove to blend the upper part of the top into the lower using the 10mm spindle gouge. Take care to ensure a clean and smooth joint between the sections. Now use a skew chisel to form the shape of the top. If you do not have sufficient clearance to do this, reverse chuck the work on to a smaller set of jaws opening into the recess and clean up and sand the top as necessary. Finish sanding and finishing the piece as for the body and fit the upper part of the mechanism into the recess.



19

20 Now all that remains is to test assemble, make any final adjustments, fill the mill with peppercorns and it is ready for the table.



20