

ALL PHOTOGRAPHS BY CHRIS WEST, UNLESS OTHERWISE STATED PHOTOGRAPH BY LYNDIA MCINTYRE

“This double-ended salt and pepper mill is designed to make your life easier”



Salt and pepper mill with a twist

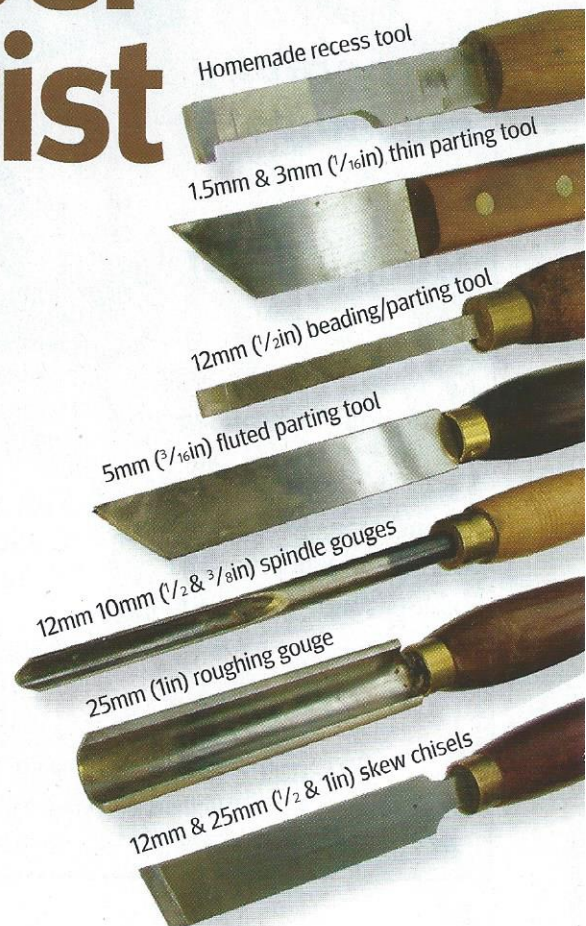
This clever item by **Chris West** eliminates the need for both a salt and pepper mill

Can you always make room on your dining table for a pair of salt and pepper mills? What with the wine bottle, glasses, accompanying side dishes, plates, etc. there isn't always room. This double-ended mill is designed to make your life easier.

When I first started designing this mill my idea was that the two central 10mm (3/8in) pieces of contrasting woods would be threaded in such a way that the salt and pepper could be added by unscrewing the two parts. However, I then decided that not everyone had the thread cutters

and means to do this, so this design avoids that need. The design is a very simple outside shape using woods most people already have available. I used ash (*Fraxinus excelsior*) for this project. Hopefully this mill will spark your imagination and make you want to try other interesting shapes, woods and methods for filling the mills.

The turning part of the mill is relatively straightforward, it is the drilling accuracy that is important. Throughout the project I have used sharp sawtooth drilling bits with the lathe running around 1000rpm when I am drilling.



Homemade recess tool

1.5mm & 3mm (1/16in) thin parting tool

12mm (1/2in) beading/parting tool

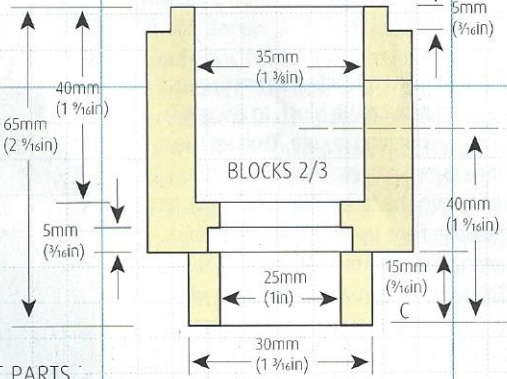
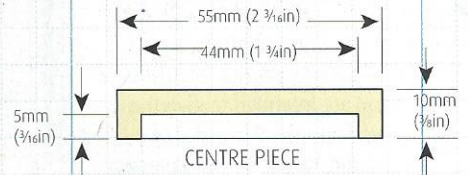
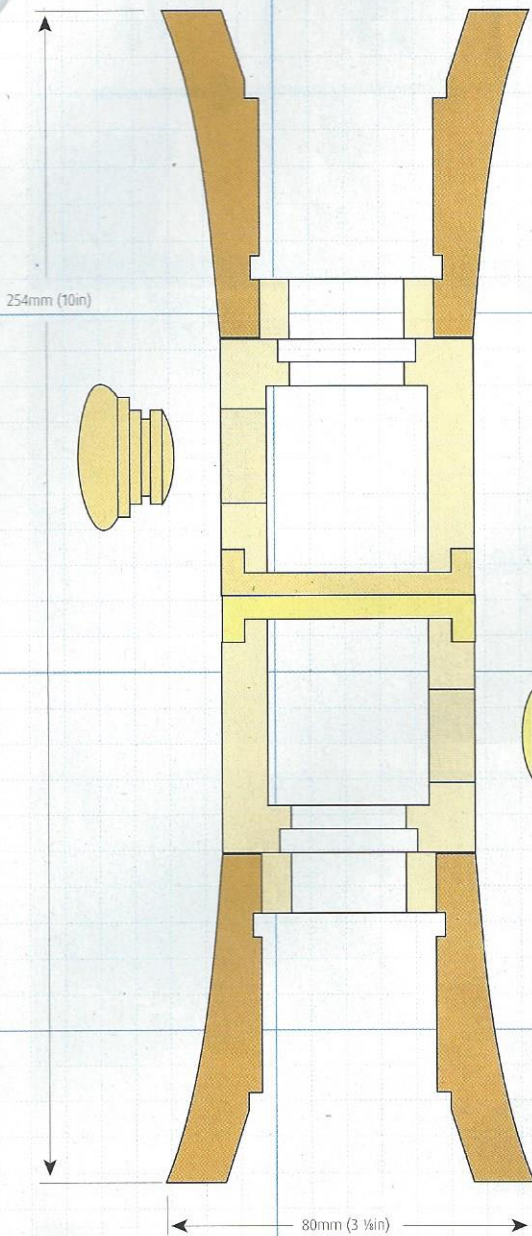
5mm (3/16in) fluted parting tool

12mm 10mm (1/2 & 3/8in) spindle gouges

25mm (1in) roughing gouge

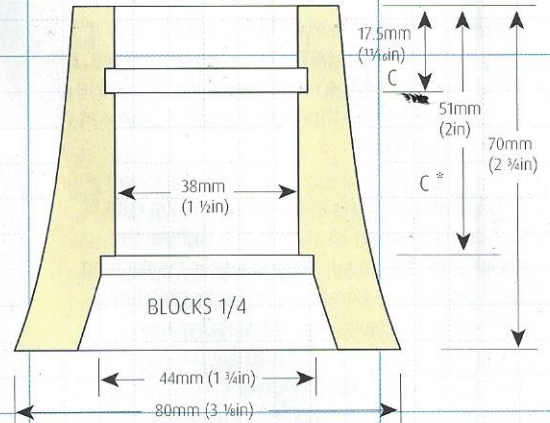
12mm & 25mm (1/2 & 1in) skew chisels

SALT AND PEPPER MILL DIMENSIONS

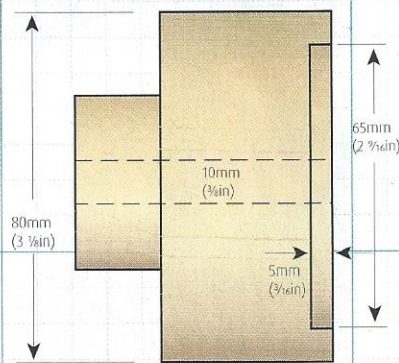


COMPONENT PARTS

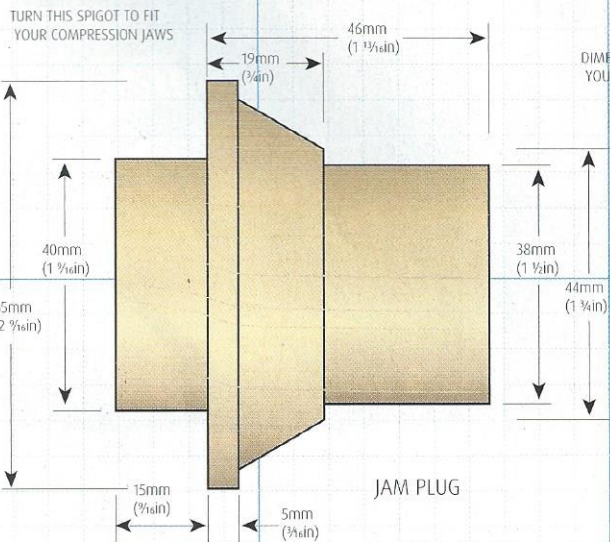
*C denotes critical dimension



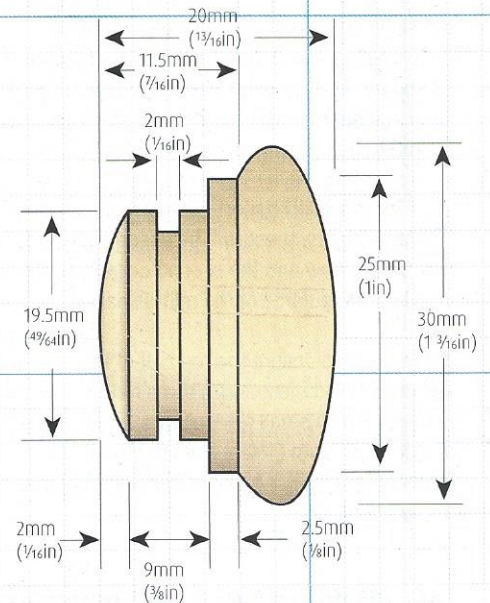
Purpose of 10mm hole is to remove the centre piece if it is a tight fit through the headstock by prodding with a wooden dowel



DIMENSIONS OF SPIGOT TO FIT YOUR COMPRESSION JAWS



TURN THIS SPIGOT TO FIT YOUR COMPRESSION JAWS



SKILLS & PROJECTS

Salt and pepper mill

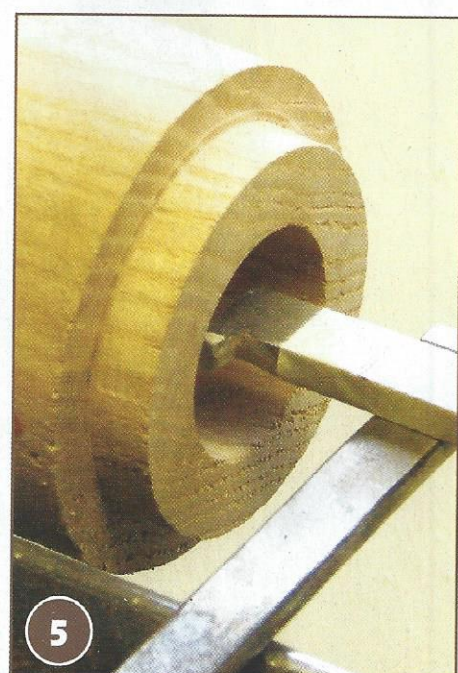
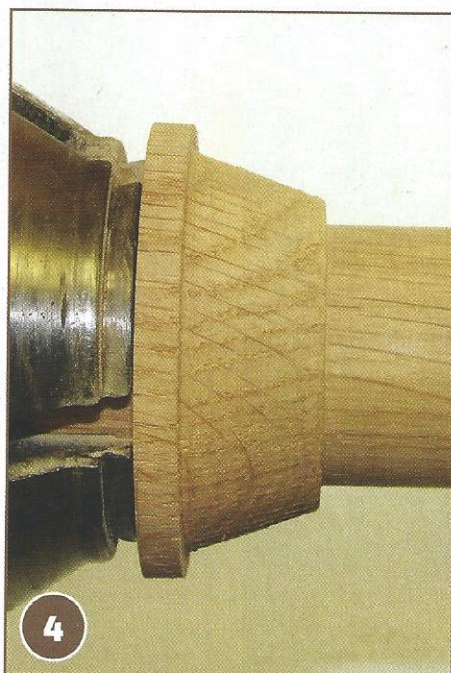
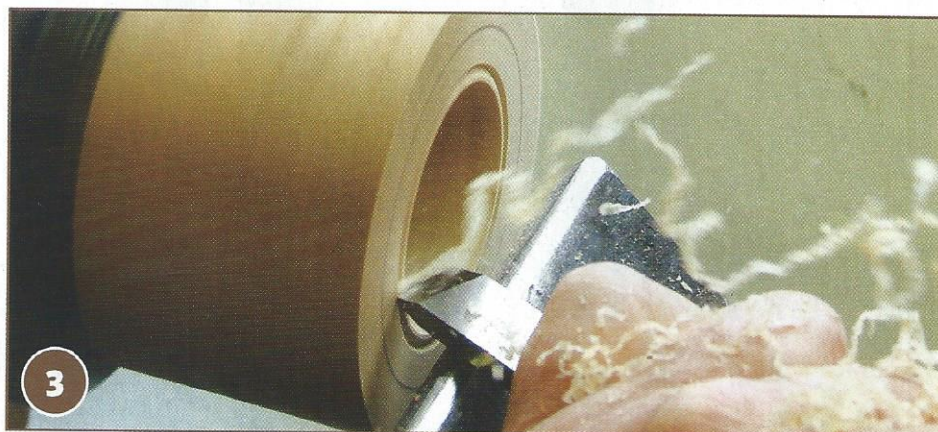
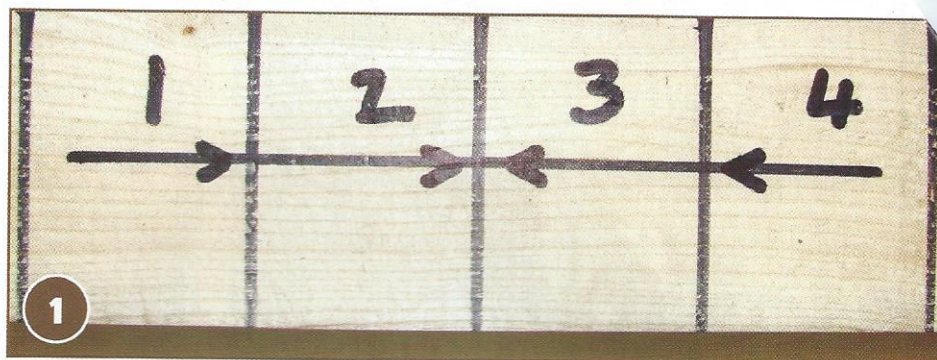
1 You will see that blocks 1 and 4, 2 and 3 are identical. Cut the blanks from a length of ash 300 x 90 x 90mm (11½ x 3½ x 3½in). Number each piece and draw an arrow to show the direction. The cuts are made across the length of ash and are intended to give the most attractive grain features. The order of turning is blocks 1 and 4, the two centre pieces of contrasting wood and then blocks 2 and 3. Finally, the assembled salt and pepper mill will have its final turning

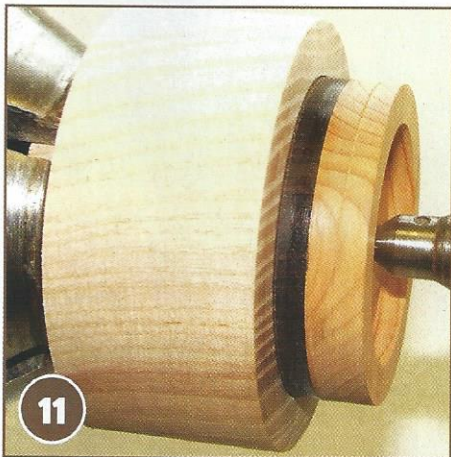
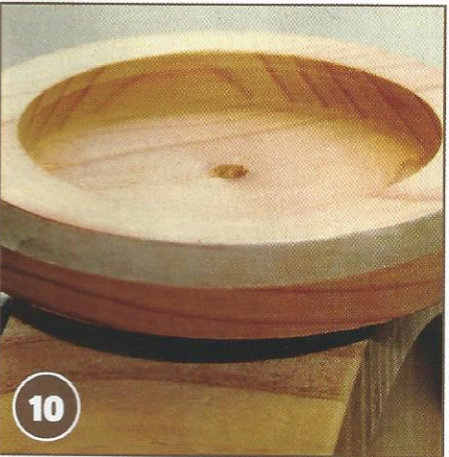
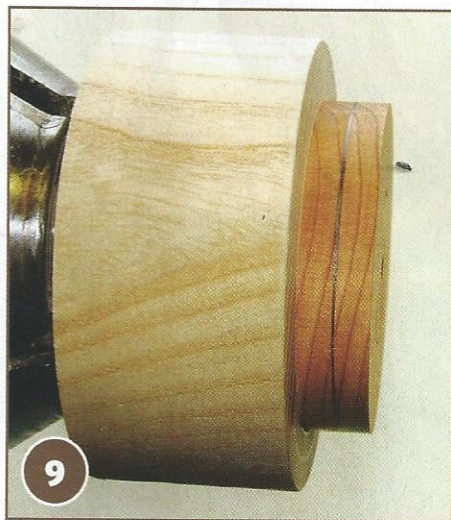
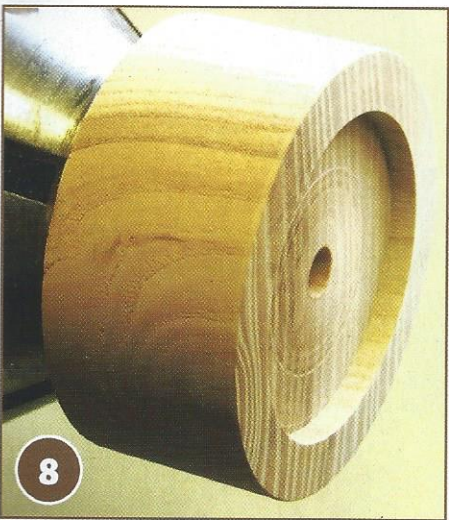
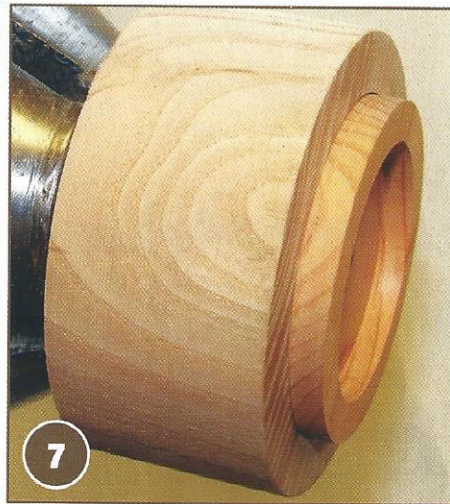
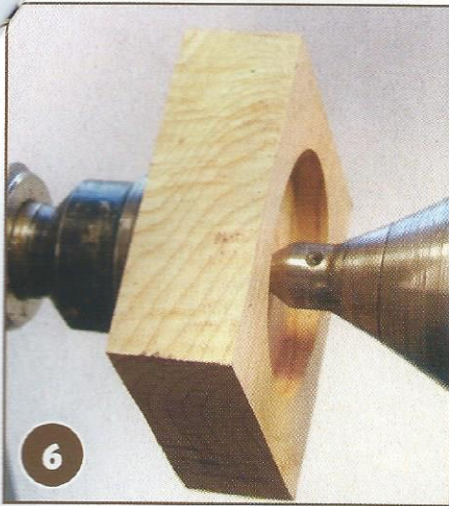
2 Start with block 1 mounted between centres and reduce the block to 85mm (3½in) using a roughing gouge. True up the faces using a fluted parting tool. Make the distance between the faces 70mm (2¾in), as per the drawing. Face up at the tailstock end first, removing the minimum amount. Measure 70mm (2¾in) back from there and face off. The maximum amount of matching grain remains next to what will be block 2. Re-draw the direction arrow, left to right. If you are going to have to make a spigot to fit the jaws you have available the spigot can be put on the wrong end! Remember the headstock end is the base of the mill, so you therefore need the spigot at the tailstock end

3 Mount the blank in the compression chuck jaws (arrow to the tailstock). Tighten the chuck jaws and ensure that the block is running true. Drill a hole 44mm (1¾in), exactly 19mm (¾in) deep. Wrap a piece of masking tape round the shaft and mark it to get the depth. Check with a depth gauge to ensure that it is correct. If you don't have this size drill, open up the hole to the right diameter with a skew chisel. Centring on the previous drill centre point, drill a 38mm (1½in) hole all the way through the block, as per the drawing. In order to give easy access to the adjusting nut on the mechanism it is necessary to widen the 44mm (1¾in) hole over the 19mm (¾in) but at an angle into the point where the 38mm (1½in) hole begins. Mark a pencil line 5mm (¾in) from the edge of the 44mm (1¾in) hole drilled. Use a 12mm (½in) skew to shape the opening. Lay the skew on its side and in small increments push into the wood forming the correct angle as you go. At this point take the opportunity to sand and seal just the bottom and the 44mm (1¾in) hole of the mill

4 This is a good opportunity to make the two jam spigots; these will be used twice. The first time is now and the second occasion will be when the outside of the mill is shaped

5 In order to ensure the top half of the CrushGrind mechanism turns freely when in position, turn a small rebate 2mm (⅞in) deep at a point 17.5mm (⅙in) from the top block. Repeat steps 1-5 for block 4. Be mindful of the arrow orientation





6 Take contrasting squares of yew and blackwood which are approximately 60 x 60 x 15mm ($2\frac{3}{8} \times 2\frac{3}{8} \times \frac{5}{8}$ in). Mount between centres and true up both faces. The length does not matter at this stage, as long as it is more than 12mm ($\frac{1}{2}$ in). Repeat this step for both pieces. If you have a drill vice where the wood is only gripped on the sides, then any stubs left on as a result of the truing up of the faces won't matter. Otherwise, clean up the faces on a belt or disc sander so that at least one side is flat. Mount each square in turn in the vice and drill a 44mm ($1\frac{3}{4}$ in) hole 6mm ($\frac{1}{4}$ in) deep. Return to the lathe and mount between centres again. Turn each to approximately 65mm ($2\frac{5}{8}$ in) diameter. Do your best to get both the same diameter – this helps when you come to put them in the jam chuck you are about to make

7 Turn from hardwood the jam chuck shown in the diagram to take the 65mm ($2\frac{5}{8}$ in) pieces you made earlier

8 Place the first piece in the jam chuck with its drilled side facing out. True up the face to give a depth of 5mm ($\frac{3}{16}$ in). Repeat for the other piece

9 Check the depth you put into the jam chuck and place one of the pieces into the chuck with the flat side facing you. Knowing the depth of the jam chuck, place a pencilled mark on the piece to give you 10mm ($\frac{3}{8}$ in) in length. Ensure that the new face is absolutely true. This face is going to be glued to the other piece, so you don't want to see any gaps between the two

10 Here you can see a bead of masking tape round the circumference to demonstrate how to overcome the jam chuck recess being made too large!

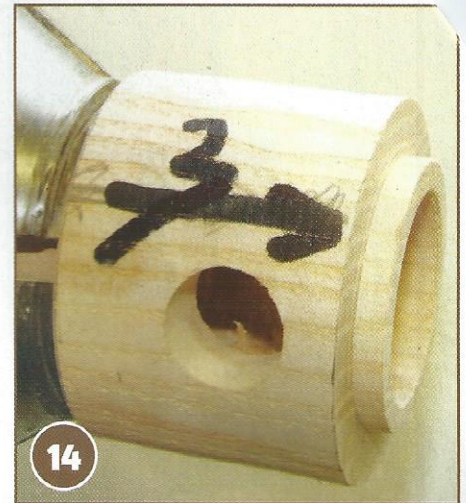
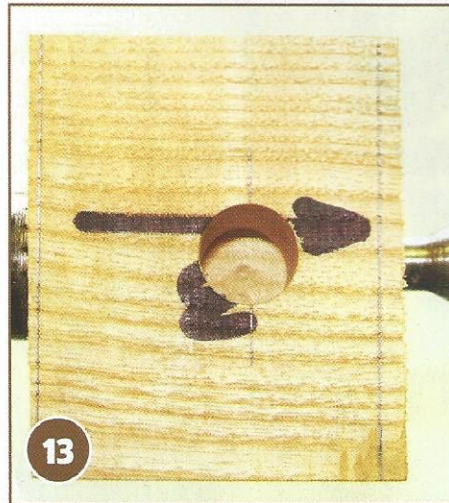
11 You can now glue the two pieces together on their flat surfaces. Place one of the pieces with its rebated side into the jam chuck. Glue with the grain on the two pieces at 90° to each other, bringing the tailstock up to give support

12 Here are the blocks 2 and 3 marked out and the 19mm ($\frac{3}{4}$ in) holes already drilled on the pillar drill to a depth of 38mm ($1\frac{1}{2}$ in). The line at the base of the arrow is 40mm ($1\frac{3}{8}$ in) from the centre of the hole. Turn one of the blocks through 180° to keep the grain orientation for the two blocks correct before drilling

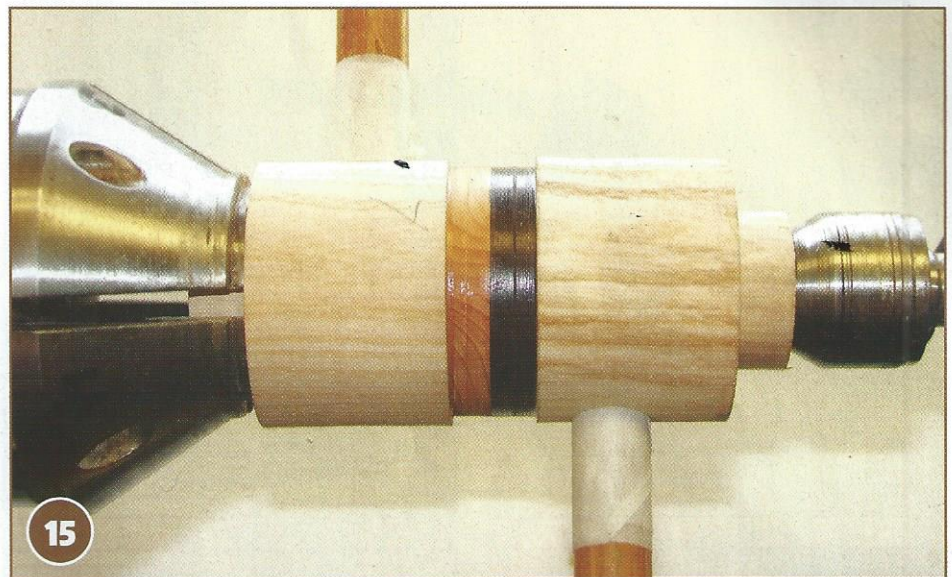
“You can now glue the two pieces together on their flat surfaces”

Salt and pepper mill

13 Mount block 2 between centres, arrow to the tailstock end. Rough turn to around 60mm (2³/₈in) diameter or a size that will fit your compression jaws. Re-draw the arrow pointing to the tailstock. Measure 40mm (1⁵/₈in) from the centre of the hole to the face at the base of the arrow. True up the face. Measure from this face 65mm (2⁵/₈in) and true up. Remove from between centres and mount the arrow end in the compression jaws. Ensure that the block is running true. Drill a 25mm (1in) hole 38mm (1¹/₂in) deep. On the recess tool mark a line 20mm (3/4in) from its end and using the armrest make a slot 5mm (3/16in) deep. Measure 15mm (5/8in) from the tailstock face and turn a spigot down to 38mm (1¹/₂in) diameter. Offer block 1 to the spigot and ensure a tight fit. This is important: when the outside is shaped blocks 2 and 4 need to turn concentrically with their adjoining block

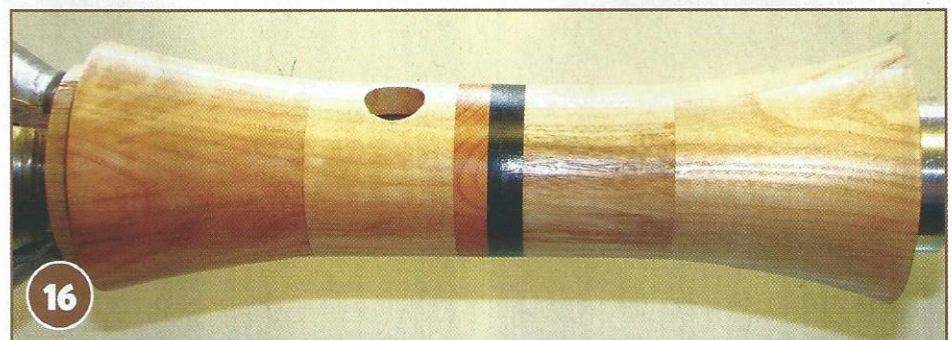


14 Turn the block round and hold the 38mm (1¹/₂in) base spigot in the compression jaws. At the tailstock end drill a 35mm (1³/₈in) hole 40mm (1⁵/₈in) deep. Turn a spigot 5mm (3/16in) wide down to 44mm (1³/₄in). Offer one of the centre pieces to the spigot to ensure a good fit for gluing. Decide which wood will eventually be glued to this block. Repeat steps 13 and 14 for block 3. Glue the centre pieces together using the spigot as a support (don't glue this in). Apply glue to one of the flat surfaces, hold the second centre piece against it and use the tailstock centre as a clamp



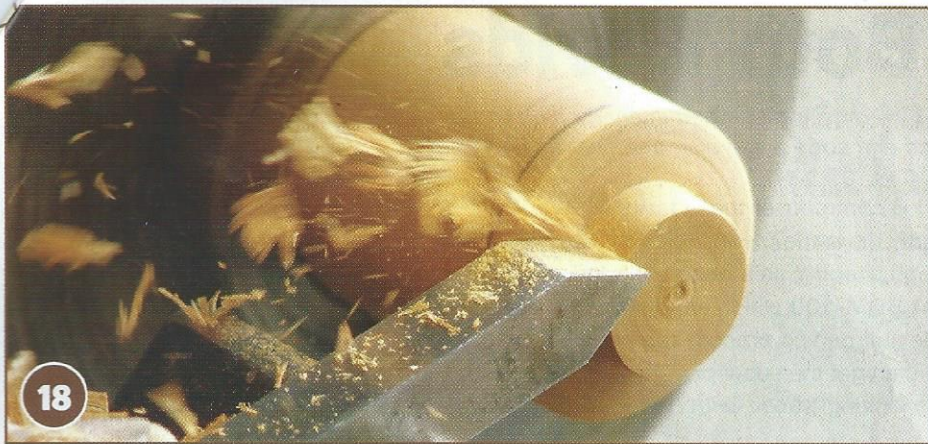
15 Glue up blocks 2, 3 and the centre blocks, making sure that the two plug holes are 180° apart. Temporarily put dowels in each hole to allow you to check the two sections are at 180°. In theory, the grain should also line up if the drilling is correct

16 Using the two jam plugs mount all of the blocks between centres and shape and finish the outside of the mill. Remove from the lathe and remount blocks 2, 3 and the centrepieces by holding one end in compression jaws and the tailstock centre at the other end. Relieve the spigot allowing for a free turning action in blocks 1 and 2

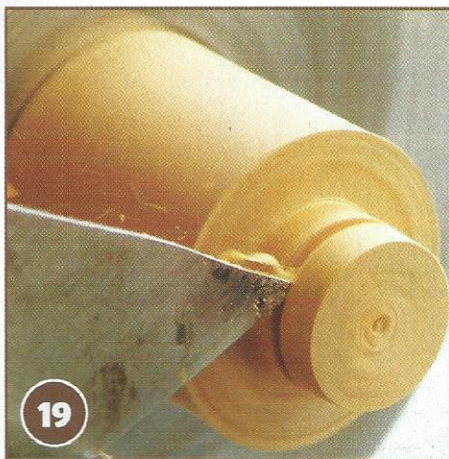


17 It's now time to turn the two filler plugs. The O-rings can be obtained from either a plumbing or hardware shop. You may need to adapt the depth of the slot in the plug to fit the O-rings. Obtain more than two O-rings, they will get damaged when you take them off during the plug turning and fitting phase. The filler plugs were made from pieces of 35 x 35 x 44mm (1 1/2 x 1 1/2 x 1 3/4in) yew and blackwood. Rough the yew piece between centres down to 34mm, remove from between centres and hold in compression jaws. Face off using the fluted parting tool with enough room for the 19.5mm (3/4in) spigot to be turned





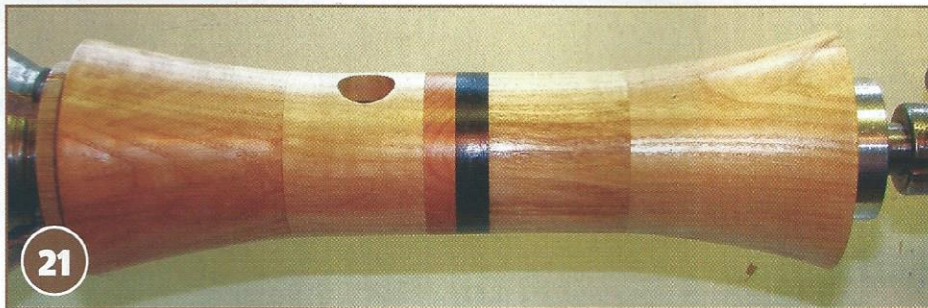
18 Mark out 11mm from the end. Using a beading/parting tool reduce this initially to 21mm. Continue to remove wood until the plug fits smoothly into the hole. A 2mm ($\frac{5}{64}$ in) wide slot is required at a point 4mm ($\frac{5}{32}$ in) from the end. A 1.5mm parting tool was used for this, going down to around half the depth of the O-ring. Now roll the O-ring on and off until the plug fits. Once it fits, remove the old O-ring and fit a new one in the final fitting



19 Turn the 25mm (1in) shoulder, 2.5mm ($\frac{3}{32}$ in) wide using a 3mm ($\frac{1}{8}$ in) parting tool. Reverse the filler plug and shape the top using a 10mm ($\frac{3}{8}$ in) spindle gouge



20 The filler plug should look something like this when completed. Now turn the blackwood filler plug to the same dimensions



21 The completed mill can now be remounted using the jam plugs and be given a finish of your preference, e.g. a sealer and acrylic lacquer or an oil finish. I buff my mills using tripoli and a touch of Carnauba wax. The final step is fit the mechanism. To assist fitting the mechanism into blocks 1 and 2, drill a hole, 25mm (1in), 12mm ($\frac{1}{2}$ in) deep into the end of one of the jam plugs. This fits over the screw in the CrushGrind and allows it to be tapped into the base. You should be able to push blocks 2 and 3 into the CrushGrind by hand

22 Here is the completed double-ended salt and pepper mill ready for use •

DETAILS

UK

Contact: Constable Woodcrafts

Tel: 01206 299 400

Website: www.peppergrinders.co.uk

Contact: John Davis Woodturning

Tel: 01264 811 070

Website: www.johndaviswoodturning.co.uk

USA

Contact: Packard Woodworks

Website: www.packardwoodworks.com

Contact: Rockler

Tel: (001) 800 279 4441

Website: www.rockler.com

Canada

Contact: Jacques Coulombe Ltd

Tel: (514) 255-9769

Website: www.jacquescoulombe.com

Australia

Contact: CrushGrind Australia

Website: www.crushgrind.com.au



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