Involuted tealight holder

Walter Hall tries 'inside out' turning

I have mentioned in a previous article my tendency to buy materials or components and then put them aside, sometimes for years, before getting around to making the project for which they were intended. Well, it seems my mental filing system for planning projects sometimes works in much the same way. It was back in 2010 when my attention was first drawn to involuted or 'inside out' turning by a tutorial posted on the Woodworkers Institute forum by my friend Basil Waugh. At the time I did some more research into the technique with the intention of trying it out but, for reasons that escape me, that never happened and it was not until I was looking for ideas for this series of articles that I remembered the tutorial and decided to use it as the basis for a project.

Involuted turning lends itself to any number of possible projects and I considered various options, such as boxes, lamps and candlesticks before settling on this simple tealight holder. As with all candle-related projects I used an insert to protect the wood from the heat of the flame.

The key to success with involuted work is accuracy, beginning with getting the blanks perfectly square. I used a planer thicknesser for this, but if you don't have access to machinery then it can be done by hand with a little patience and a fair bit of effort. If using a machine, do follow all the safety guidance and do not attempt to plane or thickness short pieces of wood. Work with longer blanks then cut them down to length after thicknessing. I thicknessed two pieces, each long enough to make the four blanks required.

PHOTOGRAPHS BY WALTER HALL

SAFETY

There is much debate as to whether one does or does not need to use some form of heat shield/insert between the tealight or candlestick and the item it sits in. There may be – depending on the country you live in – specific laws or guidelines for making and using candlesticks and, if there are, follow them accordingly. But if they are ambiguous or not given at all, my opinion is why take the risk of not using a purpose-made glass or metal holder? That way you know that you are minimising the risk of something untoward occurring for minimal cost. The inserts can be incredibly attractive too and add something extra to the piece.

General guidelines for working with candles and tealights are:

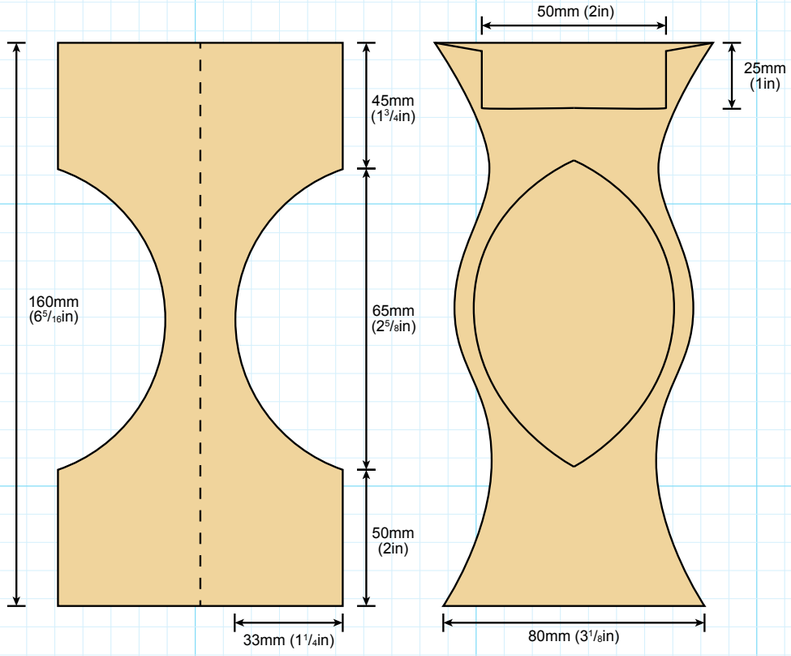
- Use an appropriate heat shield made from either metal, ceramic or glass.
- If you stick the glass, metal or ceramic heat shield insert in place, use a heatproof adhesive and make sure you leave a little bit of an expansion gap between the hole and the holder insert to allow for any wood movement.
- Never leave a lit tealight or candle unattended or place one near any flammable material.
- Never place tealights or candles too close together.
- Always make sure the holder of the candle or the tealight is of a design and weight and has a suitable width of base to be stable enough to stay where it is placed and withstand accidental knocking.

TOOLS AND MATERIALS

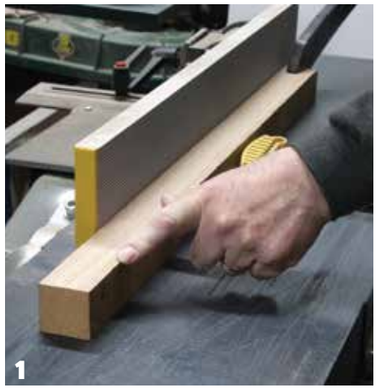
- Personal and respiratory protective equipment
- Spindle roughing gouge
- Spindle gouge
- Abrasives 120 to 320 grits
- Broad carpenter's chisel and mallet
- Cramps
- Drive spur
- Revolving tailstock ring centre
- Chuck
- Tailstock drill chuck
- Forstner bit
- Plane/planer thicknessser
- Table saw

MATERIALS

- Hardwood blank 40 -50mm square minimum 800mm long
- Wood adhesive down to 400grit
- Finishing oil
- Glass or metal tealight insert

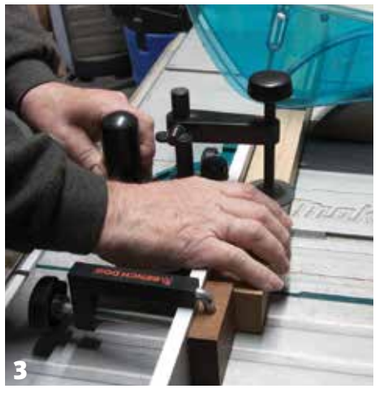


1 The first stage in squaring up the blank, whether you are using a planer thicknesser or planing by hand, is to plane one face of each blank flat and true and then plane one edge flat and at 90° to the face. If using a planer thicknesser please use appropriate eye, respiratory and hearing protection.



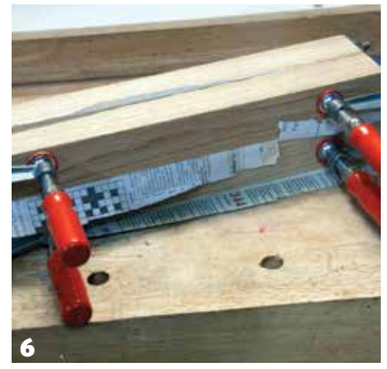
2 Once you have a true face and edge on each workpiece, these can be used as a datum to thickness all four blanks perfectly square. Beginning with the thickest piece pass each piece through the machine, gradually reducing the thickness with each pass until all four pieces are perfectly square.

3 Once the blanks are square, cut them to length. The easiest way is by using a tablesaw, I set mine up with stops and clamps to ensure the pieces were all the same length. You can, of course, cut them to length by hand if need be.



4 Place the cut lengths together on a flat surface such as a machine bed and check to ensure that they sit true to one another and that they will form a perfect square when glued up. Any inaccuracy at this stage will be compounded and will show up in the final work, so make any minor corrections that are necessary.

5 Using newspaper as a separator, glue two sets of blanks together. Any wood glue will do, I used Titebond III, which is probably overkill but is what I had to hand. Clamp the pieces, checking carefully that the joints are accurate, and leave to set in accordance with the instructions for the adhesive.



6 Once the glue is set, repeat the process to form a single workpiece from the two sets of blanks, once again using newspaper as a separator to enable splitting later in the process. You will see that I have glued up longer pieces which will be cut down to make two workpieces.

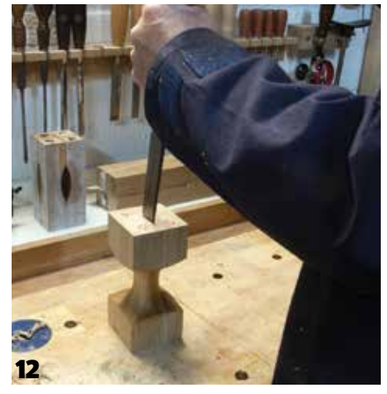
7 You should now have a perfectly square workpiece consisting of four perfectly square blanks separated by newspaper joints. If necessary, square off the ends with a disc sander. One way of ensuring the blanks do not split apart while turning is to make thin plywood end plates and pin them to the ends of the blank. I have found that using a large steb drive centre and a ring revolving centre works well enough, but if you wish to be extra cautious you may want to consider end plates.

8 Mount the work between centres. Centring the drive and revolving centre is easier if you lightly centre-punch the point at which the four blanks meet, but do take care not to be overzealous with your punching – you don't want to start splitting the joints prematurely. Whatever precautions you have taken to avoid the work coming apart it is still necessary to wear appropriate PPE, in this case I would recommend a full face visor.

9 Check that the work spins freely and, with the rest at about centre height, begin to form a cove using the spindle gouge. The depth of the cove will determine the size of the recesses and the thickness of the remaining walls in the finished piece.

10 Aim to achieve nice, clean cuts without any breakout and stop the lathe regularly to check the shape and depth of the cove. The glued joints can be abrasive and have a blunting effect on your tools, so sharpen as necessary.

11 Once you are happy with the shape of the cove, sand through the grits to a level appropriate to the wood and finish you have chosen, then apply the finish of your choice, avoiding finishing the parts that will be glued back together in step 13. I worked through to 240 grit, which I think is adequate for an open-grained wood such as oak when using an oil finish. Finer-grained timbers may warrant going to finer grits.



12 With the work removed from the lathe and set down on a workbench or other firm surface, mark the ends of each individual blank to identify them then, with a broad, sharp chisel and mallet, separate the paper joints.

13 Turn each blank through 180° so the corner that was in the centre is now at the outside and re-glue and clamp the pieces together, this time without the newspaper separators. Take great care to ensure that everything is aligned and squared up.

14 It is best to drill the recess for the glass insert for the tealight before shaping the outside of the work while the maximum amount of wood is remaining. Mount the work in a set of large gripper jaws, making sure to centre it accurately.

15 Set the lathe to a low speed and mount a Jacobs or keyless chuck in the tailstock. Using a Forstner bit slightly larger than the insert to allow for movement of the wood, drill just a little deeper than the insert to leave allowance for shaping the top.

16 Now remount the work between centres. The glued joints should now be strong enough for you not to have to worry about them coming apart, but a large steb centre and ring centre mounting as before provide confidence – and don't forget the PPE.

17 Work can now begin on shaping the outside of the work. I found that a sharp spindle roughing gouge with the lathe set at a fairly fast speed of about 2000rpm enabled clean cuts to be made on the centre section where you are cutting a lot of air. A light touch is needed, along with frequent stops to check how the cut is proceeding.

18 Continue shaping with the spindle roughing gouge, skewing the cuts in order to achieve a fine finish. Alternatively, you could use a skew chisel to make the final finishing cuts. Removing the work from the lathe and standing it upright can sometimes help to check that the shape is how you want it.

19 With the spindle gouge, cut a cup-shaped recess into the top of the workpiece and tidy up the edges of the drilled recess for the glass insert.

20 Before removing the work from the lathe sand through the grits as for the inside and apply the finish of your choice. A folded strip of abrasive held under the work with one hand behind the lathe will avoid catching your fingers on the open part of the work. A final sanding along the grain with the lathe stopped will remove any annular marks. ●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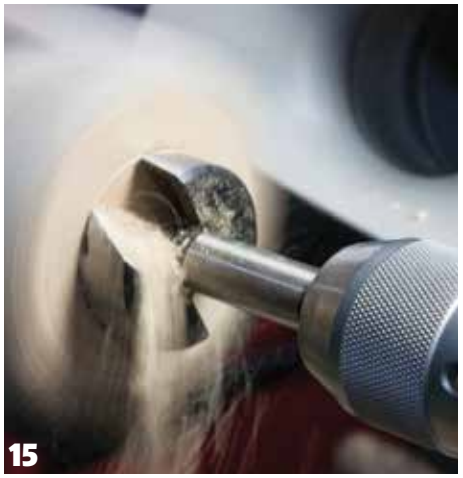
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