



PHOTOGRAPHS BY MICHAEL T COLLINS

# Cherry mantle clock

Michael T Collins makes a traditional mantle clock, in cherry wood

Every home I have lived in has had a clock hanging in the kitchen and one in the living room, ticking away the hours. Whether an eight-day carriage clock or a wall hanging shaker clock, each has had the same familiar and reassuring tick and that unmistakable Westminster chimes ringing in the hours. In this article I will be making a Mission-style mantle clock. I will be using many of the tools and techniques that you have learned over the past 11 issues.

## Making the top and bottom

**1** First rip and cut all parts to size – if you are ripping thick boards it is best to leave them stickered for a few days after ripping, to allow them to dry out. The top and bottom are attached to the sides using a modified tongue and groove.

**2** Using a marking knife and mortising gauge, layout the groove so that it is 6 x 6mm and about 60mm long and positioned 48mm from the sides.

## WHAT YOU WILL NEED:

### Tools

- Rip saw
- Cross cut saws
- 6mm and 19mm bevelled chisels
- 6mm mortise chisel
- Jack plane
- Block plane
- Combination plane

### Optional tools:

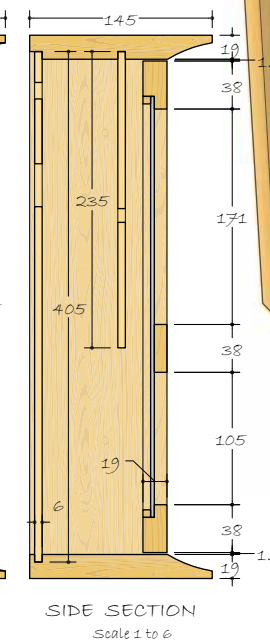
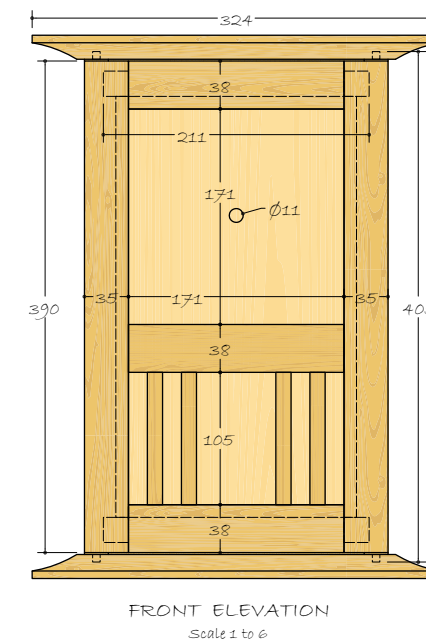
- Round moulding planes – 12mm, 19mm and 25mm
- Router plane with 6mm cutter or shop-made router

### Wood

- Straight grained cherry (*Prunus avium*) – 25 x 200 x 1200mm (Prepare the wood as per the cut list – marking all face and edges)

## Cutting list

- 2 @ 19 x 145 x 324mm (top and bottom)
- 2 @ 19 x 90 x 405mm (sides)
- 1 @ 215 x 235 x 6mm (ply face plate)
- 1 @ 220 x 405 x 6mm (ply back soundboard)
- 2 @ 35 x 19 x 390mm (stiles)
- 2 @ 38 x 19 x 211mm (top and bottom rails)
- 1 @ 38 x 10 x 171mm (centre rail)
- 1 mission clock mechanical kit



Top and bottom rails tenoned into stiles. Both rails and stiles are rebated for glazing beads

6mm plywood soundboard with optional hole to hang clock

Plywood clock faceplate sits in grooves in sides and top

Glazing beads mitred at corners

Decorative mid rail and muntins sit in front of glass and are butt jointed to door frame

6mm grooves in bottom for plywood back and stopped tenons on sides

## Chopping the grooves

**3** There are two methods that can be employed in chopping out these narrow grooves. Because some are stopped grooves, sawing down the walls is out of the question. Treat the long grain grooves as regular mortises and chop accordingly. Go slow when chopping close to the edge in any wood, but especially cherry which is very brittle and easily chipped.

**4** For the short grain grooves you need to apply a different technique since chopping mortises the long grain way may result in splitting the wood. Deeply score the boundaries of the stopped grooves.

**5** Then, with a 19mm chisel (bevel facing the groove), chop down the score lines. Do this on each side. Then carefully chop parallel to the score lines towards the score lines and remove the waste – repeat until you have reached the correct depth.

**6** Now with the 6mm mortice chisel clean out the waste. Continue this process until you have removed all the





waste. This is where the router plane would be a great asset.

**7** If you do not have a router plane the simplest method to flatten the bottoms of the grooves is to make yourself a router/scrapper.

**8** Use the 6mm combination blade set in an 'L' shaped scrap of wood. Hold the cutter in place with a nut and bolt.

**9** Clean up all the corners, keeping the chisel perpendicular.

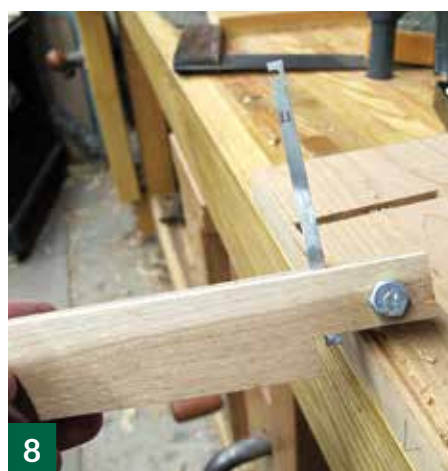
### Cutting the tongues/tenons

**10** The 6 x 6mm tongues/tenons are located in the centre of the top and bottom of the sides. Using a mortise gauge from the face side, mark the location on the end grain and 6mm on the edge sides. Use a marking knife or cutting gauge to locate the shoulder. Using a chisel cut a 'V' notch, giving the saw a place to run and providing a very clean shoulder. Cut down to the gauge marks and repeat this on all ends. Because the tongues are so small you can get away with just breaking the waste off. If you have less than straight-grained wood then you can place the wood in the vice and use the chisel to chop down the 'cheeks' on the waste side. Clean up the tenon with a chisel from both sides of the tenon – we want the tenon to remain centred. Be sure to test fit the tenon every so often – you want the fit to hold without forcing it together – too tight and glue will be squeezed out; resulting in a poor joint.

### Cutting the profile on the top and bottom

**11** The profile can be either convex or concave – it is much easier to plane a convex profile. To do this you need the planes already have in the tool box. On the face edges, draw a thumbnail profile. Then, starting with the jack plane on the end grain, work from the back to front remove the bulk of the wood, refining the profile with a block plane. Any tear out will be removed when the same profile is cut on the front edge. Repeat this process for the top. However, this series is about developing your hand tool skills, so let's make a concave profile. Draw the profile on the top and the base.

**12** Then, remove the waste using the combination plane creating the shoulder first.



**13** Remove more waste with successive passes of the combination plane.

**14** Finally, use the round moulding planes to refine the profile.

**15** If you do not have a combination plane – remove the bulk of the waste with the jack plane, creating the shoulder with a saw kerf. Then with the 12mm round plane remove more of the waste. Switch to the next size plane refining the profile as you plane with the next largest plane. Final clean up can be achieved with increasingly finer sandpaper ending with 600 grit.

### Cutting the rebate on the sides

The sides have a 10 x 10mm rebate running the length – this is cut using the combination plane and a 10mm cutter – mark the edge to be rebated (it's easy to get confused and plane the wrong piece!) How do I know this, you might ask...

**16** I like to gauge the rebate with a marking knife as this will prevent any splintering if the grain is running the wrong way. Using the combination plane, adjust the depth stop to 10mm. Start at the end farthest from you and plane working back towards yourself. This prevents the cutter from removing too much wood and potentially splitting out large chips. At some point you will be going against the grain, in this case the sharper the cutter and the finer the cuts the better.

### Face plate groove

The clock's faceplate is housed in grooves on the sides and top. The grooves can be cut with the combination plane as they are open at the top – alternatively, use the method described earlier.

**17** Dry fit the case and make any adjustments. The face plate has an 11mm hole centred horizontally and 105mm from bottom.

### The door

**18** I like to take all measurements off the case. The door is composed of three rails and two stiles – the upper and lower rails are mortise and tenon construction. For a refresher on this joint see issue 1, pg.68 and issue 5, panel doors. There is nothing to stop you, using other joints: through mortise and tenons and even bridle



joints could be used. The centre rail is 10mm thick and having no structural strength is simply butt jointed into place.

**19** A 10 x 10mm rebate is cut on the inside edge of the upper and lower rails. Cut this after the mortises are made. When the tenons are cut this difference in depth from the front to the back needs to be taken into account. ➤





**20** For the upper and lower stile, set the mortise gauge to 6mm putting the mortise in the middle of the 6mm stock.

**21** Lay out the mortises using the gauge and a pencil and chop the mortises using a 6mm mortise chisel – because the mortises are so close to the end support the sides of the stile with wood.

## Cutting the tenons

**22** Once all the mortises are cut, cut the tenons allowing for the rebate in the rails. The back of the rails is offset by the depth of the rebate.

**23** Glue and square up the door frame.

**24** Clean up all the surfaces with a block plane.

## Door fitting

The centre cross member needs to be positioned so that the top 'window' is square. Once the frame is made the hinges can be installed – the hinges are positioned one hinge length from the top and bottom of the door these are no-mortise hinges – the door is held closed with a magnet. The lower half is composed of four pieces of wood butt jointed in place – again these have no structural strength and so butt joints are quite acceptable. The glass is held in place with 6mm square moulding that is mitred and pinned into place.

**25** The back panel has two holes one 13mm to hang the clock (if desired) and a 34mm to allow the chimes to clearly ring out. Sand the whole clock before installing the movement with 120, 240, 320 grit and then finished with a couple of coats of



## Michael T Collins

British-born Michael has been working with wood off and on for 40 years. He moved to New York in 1996 and over the years, has made bespoke furniture, including clocks, inlay work, Adams fireplaces, book cases and reproduction furniture.

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natural Danish oil. Lastly, the quartz movement can be installed following the detailed instructions. Ah! Finished, it's 4 o'clock and time to pour a cuppa and listen to the Westminster chimes.

**26** Your final piece should look something like this. ■

## Supplier list

Mission clock mechanical kit available from [www.klockit.com](http://www.klockit.com)

