

# Creating Secret mitred dovetails

Sorry for the obvious pun, but...  
Michael T Collins shows us  
how to box clever

Whenever I make boxes – and I make a lot of boxes – I like to keep the grain flowing around the joints and generally employ a spline joint, since a standard butt joint is not particularly strong (see issue 7 page 20). When creating a dovetail, either a through or half-blind/lapped dovetail, this visually aesthetic flow of the grain around the corners is interrupted by end grain.

Typically, in the 18th century it was too provincial to have dovetails showing and the old masters would cover the through or half-blind dovetail with moulding or a cornice at the top of the piece. But this is not practical when making boxes. So how to employ the strength of the dovetail joint yet allow the grain to flow around the corners?

## Enter hidden dovetails

Hidden dovetails, often called mitred dovetails, appear to be quite complex

and therefore difficult to master but, given a methodical approach and careful layout, this type of joint is no harder than the half-blind dovetail.

In fact, unlike the half-blind dovetail, there are only three faces that need to be 'perfect' – the top and bottom edges and the mitre. The hidden section can be as rough as you like so long as the dovetails hold and the mitres fit snugly.

## Basic mitre and tongue layout

Unlike the through and half-blind dovetails, hidden dovetails work best if the boards are of equal thickness. They don't have to be, although working with boards of differing thicknesses adds complexity.

**1** So, let's start. Select a piece of straight-grained wood. I have chosen to work with poplar, cut and



**1** plane to final thickness and square the ends. To do this I just use a jack plane and my bench hook.

**2** Mark the face and edge sides. These will be the outside surfaces of the final piece. Then set the marking knife to the exact thickness of the board.



**3** Scribe a line on the inside face of both pieces, referencing off the end grain.

**4** Set the cutting gauge to approximately 6mm and, from the face side, mark a line on the end grain, referencing off the face side of the wood.

**5** With a ruler, connect the outside corner of the board with the scribed line on the inside edge. This produces a 45° angle.

**6** Repeat this process on the ends of all four pieces. Now, mark the same 6mm line from the end grain to the point where this line intersects with the 45° diagonal line. Also mark a line on the inside face, referencing off the end grain. In fig. 6 I have emphasised the lines for clarity.

**7** Cut the rebate using a chisel, remove a V-notch on the waste side of the scribed line.

**8** Saw down to where the scribed line meets the diagonal line and chisel off the waste.

**9** Pare down to the scribe line and check for squareness.

## Laying out the pins

In my previous dovetail articles, and as a matter of habit, I have cut tails first. However, in this example it would be very difficult to lay out the tails first.

**10** On the end grain and within the rebate area mark in approximately 6mm from both edges and then come in an additional 6mm. Then divide the remaining space for three pins (the number of pins is determined by the width of the



boards). Here I am using a 1:6 shop-made dovetail template. Mark the waste – it is so easy to get carried away with excitement and cut the wrong part. Trust me, I know.

**11** When cutting half-blind dovetails, it is quite acceptable to over-saw the pins, but in this case, I want to retain the secret nature of the joint and over-sawing would, to some extent, give the game away.

So, instead saw on the waste side leaving the pencil line, making sure you do not over-saw the 'tongue' of the rebate or go beyond the scribe line on the inside face.

**12** Once all the sawing is done, chop out the waste. To do this, start by using the largest chisel that will fit within the waste area, bevel out and about 1mm from the scribe line. Chop into the waste.

**13** Then, from the end grain, remove the waste. Repeat this process until you have excavated most of the waste.

You will need to chisel down along the side of the tails where the saw hasn't been able to reach. Depending on the wood you're using, you might want to go easy as chopping too hard on the half pins can cause the wood to split. To reach into the corners, use a smaller chisel or a skew chisel.

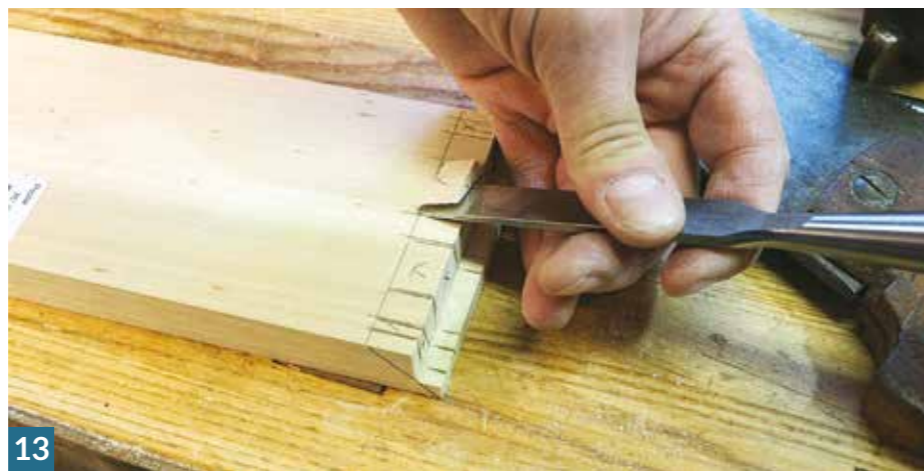
Finally, place the chisel in the knife line and chop down, adding a slight undercut. Clean up the pins. It's a good idea to add a small chamfer to the inside edge of each tail. This makes for a cleaner joint and a place for excess glue to go. Repeat this process for all the waste. For a detailed description see issue 27 page 70.

### Lay out the tails

**14** The tails are laid out using the pin board. This process is very straightforward and uses the rebate tongue to position the pin board on the tail board. Using a sharp pencil to lay out the tails, carry your lines square across the end grain.

*Note: The way to remember: tails are angles on the face grain and pins are angles on the end grain.*

**15** Again, mark the waste clearly.



**16** Saw on the waste side of the line and chop out the waste using the method described above. When cutting tails, it's sometimes easier to angle the wood so that the saw is cutting vertically.

### Finally cutting the mitres

**17** Carefully saw the mitres on the edges on the waste side of the diagonal scribe lines.

**18** Pare away the waste – take care not to cut beyond the face edge of the tongue.

**19** Tweak the long-mitred edge, taking small amounts at a time and test-fit as you go. Make sure that the leading edge of the mitre remains sharp – you are looking for crisp lines between the mating surfaces of the joint.

**20** Now all you have to do is repeat this whole process three more times... Since these are custom-fit dovetails make sure that you label mating joints.

**21** Once all the mitres are cut a groove can be planed or sawn about 6mm up from the bottom of each piece. Apply glue to the mating surfaces and clamp together. And there you have it, the secret dovetail joint.

It may take a little more time than a normal dovetail, but it is worth the extra time when you are working on a particularly nice piece where strength is needed, and the appearance of end grain will ruin the piece or where you can't simply cover it up with moulding. It is also another joint that will develop your woodworking skills. ■

