



PHOTOGRAPHS BY MICHAEL T. COLLINS

Making a Bench mallet

In Issue 6 we showed you how to make a green woodworking mallet, now **Michael T Collins** gives us a refined design for cabinetmakers

It's hard to imagine being a woodworker and not having a good quality wooden mallet. In fact, the wooden mallet is essential for joinery, furniture making, for chopping mortises and 'persuading' joints together and apart. Wooden mallets have been around for thousands of years. I have accumulated a selection in my workshop – some purchased and some homemade.

Making a mallet was traditionally an apprentice piece – incorporating accurate layout, cutting angles, mortises and shaping.

Wood selection

A mallet head can be made of pretty much any tight grained and well-seasoned hard wood. A good source of wood in upstate New York is firewood, which is typically oak (*Quercus spp.*), black locust (*Robinia pseudoacacia*), maple (*Acer spp.*) or hickory (*Carya spp.*). However, beech (*Fagus spp.*), dogwood (*Cornus Florida*) and apple (*Malus sylvestris*) can also be used. My carver's mallet is made from live oak

(*Quercus virginiana*), a very dense and heavy wood. Another good source of seasoned wood is old pallets. When selecting a wood for your mallet, make sure you used a seasoned piece as this will prevent the wood from splitting.

Let's look at making a medium sized joiner's mallet from a piece of hard maple, rescued from the wood pile. The handle is made from a piece of straight grained oak.

Roughing out the billet

1 Split the wood out of a log or obtain a piece that is several centimetres larger than the size you want.

Layout and bring a block of wood to final dimension

2 The final dimensions of the head are 140 x 89 x 63mm and the handle will be approximately 368 x 25 x 50mm. Orientate the rough-hewn block of wood so that the end grain runs perpendicular to the bench. Using a Jack plane, bring one face flat, we'll call this the 'face side' or 'cheek of the head'.

What you will need:

- Try square
- Ruler
- Mortise gauge
- Brace
- Mallet
- Block plane
- Jack plane
- Rip saw
- Rasp
- 25mm firmer chisel
- 25mm spiral bit
- Bevel gauge
- Axe - optional
- Spokeshave



1

3 Plane an adjacent side at 90° to the face side – use a try square to check for squareness. Then, with a marking gauge set to 63mm, score around the block. This will delineate the width of the mallet. Plane down to the score line. You will now have two sides parallel – repeat the marking and planing process for the other two sides, setting the marking gauge to 90mm and checking for squareness. Leave the wood longer than required – we will adjust the length in a later stage.



2

4 Using a mortise gauge set to the width of your 25mm chisel, draw a 50mm long mortise centred on the top of the head ...



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5 ... and a 38mm long mortise centred on the underside.



3

6 Extend the mortise lines to the face side, then use a bevel gauge to join up the lines across the face sides – this will give you the required angle of the mortise. It will also give you an X-ray view of the internal angle of the mortise.



5

Chopping the mortise

7 Using a brace and 25mm bit, drill a hole vertically halfway through the wood and then repeat from the other side. It's important to try to drill through the centre of the wood in order to meet the hole coming from the other side. Use a try square to keep the brace and bit vertical. Alternatively, drill horizontally and use the ring trick – this was discussed in detail in Issue 4, 'Bridle joints'. While it might seem like a good idea to drill the hole at the required angle, it is difficult to control a spiral bit and you will run the risk of missing the mark on exit. ➤

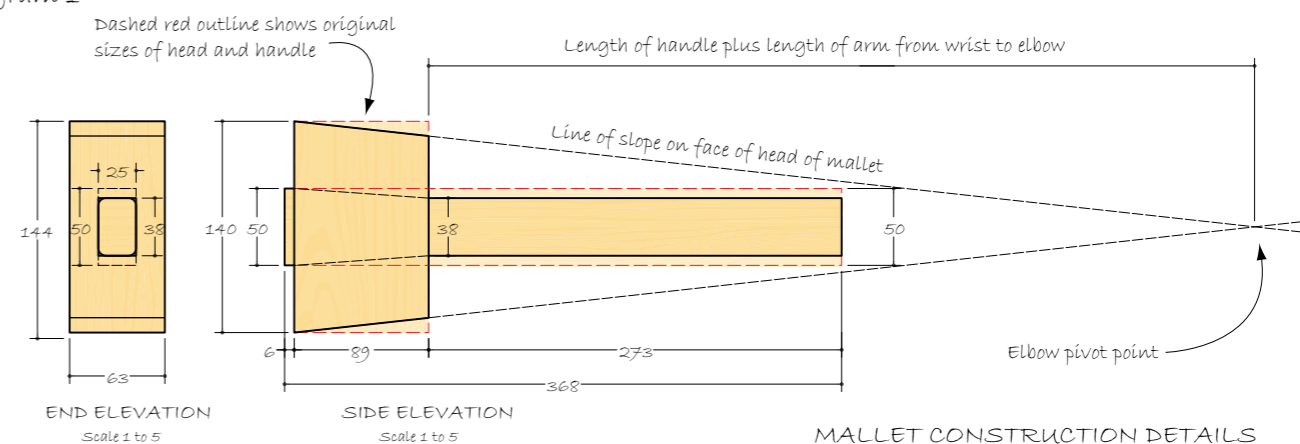


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Diagram 1



MALLET CONSTRUCTION DETAILS

8 Once through, we can start to chop out the waste. Chop in small increments, working your way through the waste; use the lines you drew on the outside to guide the chopping angle.



9 The bevel gauge, or a small block of wood cut at the same angle as the mortise, will help to guide you. Once one side is cleaned up, repeat the chopping process from the other side. Again, use the block or bevel gauge to guide the chisel. It is very tempting to try to chop out too much wood. Resist the temptation and be patient. If the chisel gets jammed in the mortise it will be difficult to work free and you will run the risk of damaging the blade.



10 With the bevel gauge set to the same angle, check the mortise for flatness. Be very careful not to hollow out the sloping sides – you want the entire length of the mortise to be in contact with the handle. If hollowed out, constant pounding on the mortise fibres at the top and bottom will begin to compress, resulting in a very loose head.



The handle

11 Prepare the wood to 25 x 50 x 368mm, this will provide 6mm above the head, 89mm in the head and 273mm for the handle. With a pencil, transfer the same angle used to chop the mortise to the handle, allowing for about 6mm protruding out the top.



12 Saw out the tapered section, staying on the waste side of the marks. Then rip saw the handle section.



13 Use a spokeshave to remove the saw marks on the tapered section and bring it down to the pencil marks.



14 The section between the taper and the end of the handle can be shaped with the spokeshave – the simplest method is to chamfer the corners, making an elongated octagon. Putting a slight concavity in the handle will provide a better grip and prevent the mallet flying out of your hand.



15 Test fit the handle to the mallet – it should slide in with just a little resistance as it seats itself. Use the rasp to fine-tune the fit. Ease all the edges of the handle.



Finishing up the head

16 Regardless of the method used to construct the head, the angle of the striking face needs to be fine-tuned to fit you. Just like a saw, when it's in use a mallet should be like an extension of your arm, pivoting at the elbow in such a way that the striking face impacts the chisel perpendicularly. So we need to determine the slope angle of the face. The easiest way to do this without resorting to maths, is to place the mallet on the table and mark a distance equal to the length of your arm – from elbow to wrist – plus the length of the handle. The slope angle is found by drawing a line from the head of the mallet to where it intersects your elbow – see diagram 1. Using a crosscut saw, remove the waste wood.

17 Lastly, clean up all the surfaces and add a 5mm chamfer to all edges, this will prevent the fibres from splitting. I hope this inspires you to check out the next wood pile or abandoned stack of pallets you come across and find some really knurly, knotty wood to make yourself a couple of wooden mallets. ■



Alternative construction method



Before we determine the angle to cut the head of the mallet, let's look at an alternative construction method. Very few big box stores carry 12/4 lumber, so consider making the head out of four pieces of hard maple laminated together.

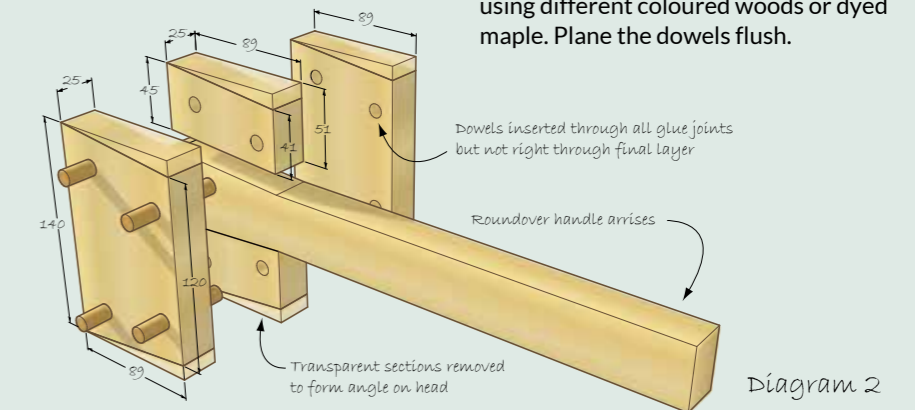
It is better to add some mechanical device to hold the parts together.

1 Cut and plane four pieces of wood to 25mm thick as per the dimensions in diagram 2. Make the handle using the same method described above then cut the two sloping parts to the same angle as the dovetailed section of the handle.

3 Simple dowels will prevent any lateral movement. Hold the sections of the head together with a few clamps and then drill two 10mm holes either side of the handle. There is no need to drill the holes all the way through but they do need to be long enough to span each glue joint. Use the ring method to get holes perpendicular to the head.

2 The parts at this stage could simply be glued and clamped together, however, while modern glue bonds are strong, the amount of pounding that a mallet undergoes may break the bond.

4 Glue and clamp the head together with the handle in place and then glue the dowels in place. Once the dowels are seated, remove the handle and clean off any glue on the handle and inside the socket. Allow the head to dry. If you really want to get fancy, try using different coloured woods or dyed maple. Plane the dowels flush.



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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