



PHOTOGRAPHS BY MICHAEL T COLLINS

BEGINNER'S GUIDE

Using basic hand tool techniques to create joints

Our man in America, **Michael T Collins** progresses further still through basic jointing techniques

As a boy, attending secondary school in England in the '70s, I was required to take woodworking classes as part of my education. For most of us, this was our first encounter with using traditional hand tools. We learned how to manipulate wood by planing, sawing and chiseling and created all sorts of things, including garden dibbers, boxes, chessboards and coffee tables.

40 years on, I am still using some of my early creations and can still recall the sense of pride at having created something with my own hands. Mr Young, our woodwork teacher,

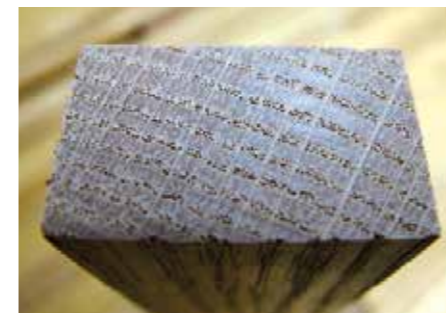
knew everything there was to know about wood, tools and techniques. He instilled in me a passion for woodworking. I realise now that he was probably a disciple of the School of Sloyd, a system of learning that imparts knowledge, order and exactness of skills in ever-increasing levels of difficulty with little or no hands-on assistance from the teacher.

There's an old proverb: "Tell me and I'll forget, show me and I may remember, let me do and I will learn." To really learn woodworking, one has to learn experientially. As a beginner woodworker, you are not going to be

perfect and you will make mistakes, but you will learn from them. Working wood is a progression and it takes time and patience for these skills to be developed.

Basic joinery techniques

At the outset, woodworking requires some fundamental skills that over time will become second nature. These skills will develop into good habits and once muscle memory takes over, you will never forget how to hold and use tools. So let's look at some basic joinery and techniques that can be developed into skills that will last a lifetime.



Red oak cut through the cells

The butt joint

I'm going to start with the most basic joint of all: the butt joint. This joint consists of two pieces of wood that are simply butted against each other, typically forming a 'T' joint or corner joint in a cabinet face frame or mitred corners of a picture frame or box. The strongest butt joint consists of joining straight grain to straight, such as when joining boards for a tabletop – see issue 2, pages 51-54. This is because boards that are cut lengthwise preserve the grain structure, whereas joining end grain to end grain or end grain to straight grain slices through cells that were once strong and the original strength of the board is lost. With joints of this weaker nature, there is no easy way to join the sliced end grain back together with glue alone. Any glue applied to end grain is wicked from the surface and produces a starved joint. A joint of this nature requires mechanical fasteners, such as



Stud joined with nails or screws and a dowel joint, both examples of using mechanical means to joint end grain to long grain

a biscuit, mortise and tenon, dowels or pocket screws in addition to glue.

Picture frames are a good example of a butt joint – here you can see the result of a butt joint using only glue; the wood has started to pull away due to seasonal change. With joining end grain to long grain, where the wood is moving at different rates, it is clear that a stronger joint is needed.

Half-lap, halving joint or lap joint

Let's look at joining wood with another joint that is suitable for picture frames, face frames: the half-lap or halving joint. This joint has many names, but they are all essentially the same joint. As the name implies, in the half-lap halving joint, the amount of wood cut away is half the thickness of the wood. The terms halved/half-lap joint and lap



Mitre joint on a picture frame held with only glue



Lapped dovetail or half-blind dovetail

are often used interchangeably, but while a halving and half lapped joint is a lapped joint, a lapped joint is not always a halved joint.

Here you can see a half-blind dovetail joint which is a lap joint, but clearly both pieces do not have half the thickness removed. If the timber is of differing dimensions, then the amount cut away will vary, but the resulting joint is generally the thickness of the thickest piece of wood. In this article, I will only be looking at half-lap joints.

CUTTING THE JOINT

What you will need:

- Tenon saw
- Marking knife
- Marking gauge
- Jack and block plane
- Try square
- Bench hook
- Vice
- 19mm bevel-edge chisel



1

1 First, all the stock must be prepared to the project's final dimensions. Plane the wood square, then check using a try square. I will start by demonstrating a simple half lap joint that can be used for a picture frame or face frame. Using the try square and marking knife, mark the location of the joint adding 1mm for waste. This waste will be planed off once the joint is finished.



2

2 Continue the line on the edge sides using a pencil. The inside edge can be marked with the knife as this will not be seen, but because the outside edge will be visible, be sure to use a pencil here.



3

3 Now take the marking gauge and find the centre of the edge side. This does not need to be measured. Instead, set the gauge to approximately



half the thickness of the stock and mark from both the face and opposite side. Adjust the gauge – using light taps on the marking gauge stalk – until the marks coincide.

4 Then, from the face side, you can mark the depth of the lap joint. Take care not to allow the gauge to follow the grain – steadily increasing the pressure on the gauge will help. Mark the two sides and the end grain. Using the marking knife or chisel on the face side, cut a ‘V’ notch on the waste side of the knife line.

5 Place your cross cut saw in the notch and using your non-dominant thumb as a guide, make several small cuts to start. I always start on the back stroke on the far side as this severs the fibres and prevents tear-out. Saw down to the centreline, paying particular attention to the backside of the joint as you do not want to cut beyond the line. With practice, you will be able to saw vertically, but initially a good way



to keep the saw perpendicular to the wood’s face is to look at the reflection in the blade – you want the wood to appear as if it continues in a straight run through the saw.

6 Finish off the joint by placing the piece in the vice at 45° and saw as we did for cutting tenons in issue 1 – see pages 68-71. Note how the index finger points in the direction you want the saw to go. Repeat for the other piece. The joint may need some fine-tuning but go easy – it’s always easier



to take more wood off than to put it back.

7 Once glued, use the block plane to clean up the joint – note the direction I am planing: from the joint end in with a slight angle of attack; this way end fibres are sliced.

8 Variations on this joint include mitred lap joints, particularly for picture frames; this would certainly avoid those unsightly gaps and still show the typical mitre.

Cross half-lap joint



1 Let’s look at another half-lap joint, but this time in the middle of two pieces. Using the marking knife and the try square, mark the location of the joint. Then, without moving the try square, place the second piece tight up against the try square. With the marking knife against the second piece, nick the corner of the bottom piece.



2 Remove the top piece and place your marking knife in the mark just made, moving the try square so that it is now resting against the knife. Deepen the line and carry all marking lines around the edges. As the whole joint will be hidden in this instance, you can use the marking knife on the face edges.



3 As before, using the marking gauge, start to find and mark the depth of the joint, then cut a ‘V’ notch on the waste side of the two knife lines. I am sure you are beginning to realise by now that much of woodworking is the steady repeated application of a few basic skills. Saw down the two marks – be careful to not go beyond them.



4 With the help of the bevel chisel, pare away from one side to produce a slope.

5 It’s tempting to try and remove all the waste at once, but you must resist this temptation. Repeat the paring from the other side, creating a ‘roof’.

6 And finally, pare away and tidy up the bottom of the joint with a slicing action – as you can see here, the fingers of the left hand act as a pivot point.

7 Now take this piece and place it in position over the mating piece – the joint should be hand tight, but do not force them together. If the fit is too tight, then take a very thin shaving off the edge of the uncut piece – a joint



that is too tight may bow the pieces. Now use this finished joint to mark the second piece and repeat the process of marking, sawing and paring.

8 Once pared, the two pieces should now fit perfectly. Apply glue to all mating surfaces. At this point, the faces can be planed if necessary. If there are secrets to woodworking they are: take your time, measure accurately, mark from the face sides and cut on the waste side.

9 Here are a few variations on the theme of lap joints. Try experimenting for yourself! ■

NEXT MONTH...

In the next issue, Michael will move on to looking at bridle joints



Michael T Collins

Michael has been working with wood off and on for 40 years. Having run out of projects in the UK, he moved to a small village in the heart of the Finger Lakes in Upstate New York with his family in 1996. Over the years, he has made bespoke furniture, including clocks, inlay work, Adams fireplaces, book cases, reproduction furniture, woodcarvings, restorations, bowls, tables and some major construction projects. As a mathematician by training, he is constantly looking to solve puzzles and woodworking for him is a continual process of solving puzzles – or maybe that’s just the way he works...

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