

WOODWORKING CRAFTS

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Woodworking with Santa!

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Glue-up solutions Plane making & restoration **Beer crates** Japanese tools

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WOODWORKING CRAFTS

Issue 71

WELCOME

Christmas will soon be upon us and in this festive issue of *Woodworking Crafts* we feature Randall Maxey on the cover in his other role as Santa. Because we are on his nice list, he has paid us a visit to show how to create rebate joints for a box, perhaps to make drawers for your trinkets. Randall has been a GMC contributing writer and book author for some while and going forward you will be seeing a lot more of him. He has joined us to help with our new Woodworkers Institute website where he will have regular features in both video and written format, showing us how to achieve many woodworking techniques, how to get the best from our tools and how to make projects, for all skill levels. He won't always be dressed as Santa but being from the USA, as well as the North Pole, he might use some slightly different terminologies, but rest assured they are easily translated. Keep your eyes peeled for the announcement of a launch date for our new website.

Although Randall didn't make some of the Christmas items in this issue it is possible some of his elves could have, however, we have given them human names that sound like regular authors in the magazine. The nativity stable for you to create your own scene is delightfully festive and would look great alongside some carved snowflakes and a winter sledge – luckily all those projects are in this issue. We all

welcome Santa in our homes on Christmas Eve and traditionally we leave out something for him to drink and snack on. With this in mind, perhaps he would enjoy some beer from our beer crates, and he could set the bottles down on turned coasters atop an elegant side table, next to your note for him. To get some unique, fresh pasta ready for him you could use the useful turned pasta stamper made from our project and use the nicely restored mid-century tea trolley to deliver it all to the table. If you have decided to give him Chinese food, you could make our chopstick stand to make his life easier.

Moving on to Santa's workshop he, and hopefully you, will appreciate our advice on clamping difficult shaped items, using the downdraught table to cut down the ambient dust while routing and how to make a wooden ergonomic scrub plane that is as beautiful as it is practical. We also give advice on using Japanese tools and continue to explore classic tools, this time it is the Disston back saw. Finally, we have often heard the expression 'quartersawn oak' but perhaps don't really know what it means. We explain clearly what it is and how this most figurative of wood is created and used.

We hope you have a delightful festive season and a happy woodworking Christmas!

Happy woodworking! Alan Goodsell

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Woodworking is an inherently dangerous pursuit. Readers should not attempt the procedures described herein without seeking training and information on the safe use of tools and machines, and all readers should observe current safety legislation.

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WOODWORKING CRAFTS

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NATIVITY STABLE

As the festive season approaches, Cedric Boyns makes the setting for a Nativity scene



After obtaining a set of figures depicting the Christmas Nativity scene, I was tasked with making a stable in which it could be displayed. I had just the right wood for the job – some reclaimed beech sourced from a broken cot which was ideal for the roof skeleton, and some old elm boards rescued from a garden fence (that had seen better days and

needed replacement) for the walls. I felt the elm would give the building an older, rustic look. I decided to turn the elm into dowels, and this gave the impression that the walls were constructed of logs.

In addition, since it needed to display the Christmas scene, the front needed to be open. I therefore came up with the following design.

YOU WILL NEED

Wood cutting list:

- Beech, cut and planed to 12 x 10mm:
- 2 @ 400mm long – tie beams
- 4 @ 260mm long – rafters
- 2 @ 80mm long – king posts
(before cutting to size)
- 2 @ 70mm long – support webs
(before cutting to size)
- 6 @ 95mm long – bracing bars

Elm dowels:

16mm:

- 5 @ 140mm long – vertical supports
- 2 @ 120mm long – roof support beams

12mm (all of which will need to be cut in half):

- 21 @ 140mm – roof + 1 @ 140mm – back wall struts
- 5 @ 130mm – side walls
- 5 @ 390mm – back wall up to roof

- 1 each @ 460mm, 390mm, 330mm, 280mm, 190mm, 130mm and 60mm – for the gable ends, front and back. The ends of these will need to be cut at an angle

Elm board for base:

- 400 long x 130 wide x 15mm deep

Elm offcuts:

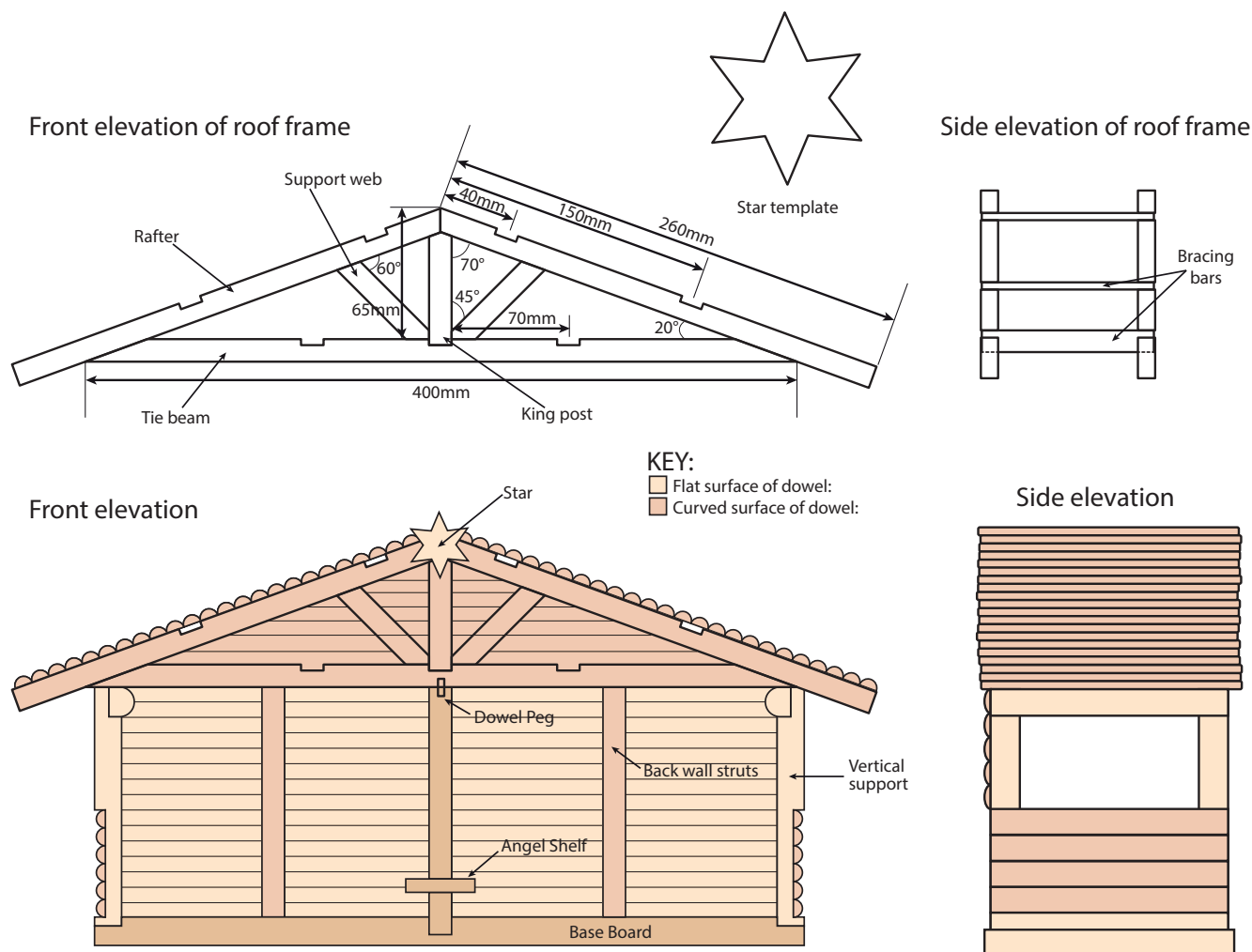
- 40 x 40 x 6mm – angel shelf
- 50 x 50 x 4mm – star
- 20 x 20 x 8mm – star support

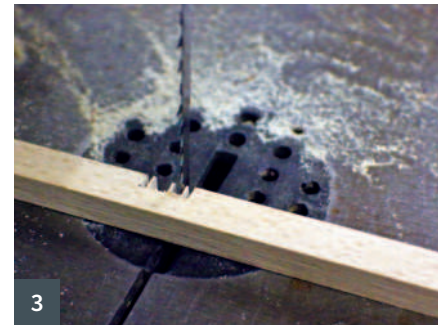
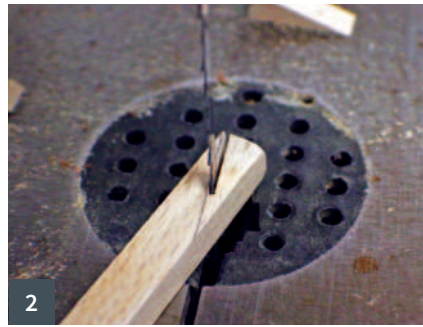
Other materials:

- Wood glue and hot melt glue gun
- Abrasives: 100, 150 and 240 grit
- Suitable finish (I used a coat of quick drying clear matt varnish)

Tools:

- Suitable PPE and dust extraction
- Bandsaw/handsaw
- Planer thicknesser or hand plane (unless timber for roof can be obtained ready sized)
- Steel rule, protractor and pencil
- Try square
- Sliding bevel
- Carpenter's gauge
- Detail knife
- Spokeshave
- Selection of small clamps and heavy weight (large log)
- Small chisel or carver's gouge (No.3, 6mm or 10mm)
- Pillar drill or hand drill
- Disc/belt sander or sanding block
- Forstner bit, 16mm
- Twist drill, 3mm





1 Marking the angles on the tie beams **2** Cutting the tie beam end **3** Cutting the slots for the bracing bars **4** Clearing the slots with a detail knife **5** Roof frames assembled **6** Gluing and clamping the roof truss over the full-size front elevation drawing **7** Joining and gluing the two roof trusses together with the bracing bars **8** The completed roof frame

Constructing the roof frame

I found it helpful to start by drawing the front elevation of the roof frame full size on a piece of old wallpaper. All the detail needed is given in the drawings on the previous page.

The ends of the 400mm-long tie beam should be cut to give a 20° angle where it meets the rafter. A 5mm-deep slot needs to be cut in the centre of the upper surface of this beam into which the central king post will fit. Two further slots need to be cut, one on each side, 70mm from the centre line. These will be used to brace the two roof trusses making up the roof skeleton. After marking them out with the try square I used a carpenter's gauge to ensure a consistent depth. I used the bandsaw to make a series of cuts and then, because they were so small, cleaned out the slots with a carving knife rather than a chisel.

The two rafters should each be cut at their upper ends, to give an angle of 70° after marking with a sliding bevel, so that they meet together in the centre (see the drawings). Two slots need to be cut in the top of each of these rafters – one 40mm from the top and the second 150mm from the top. Again these will brace the two roof trusses when the roof skeleton is put together.

Fitting the king post

There are two alternative ways to do this:

- Locate and mark the centre of the top of the king post. Each side is now cut at an angle of 70°. You can check the angles on the full-size drawing to ensure they are correct before doing any cutting. The rafters will sit on the top of the post when it is glued in position. The base of the post is trimmed to a length of 65mm and will sit in the slot cut in the centre of the tie beam.
- An open bridle joint can be cut between the top of the king post and the top of the two rafters to make a stronger joint. The angles needed are the same but the marking out and cutting will need to be done carefully and accurately. The king post will need to be cut 12mm longer, and fitted into the slot as before.

I glued and clamped the roof truss at this point, laying it on the full-size drawing to ensure it was square. I put a sheet of clear acetate in between to stop oozing glue from sticking the truss to the drawing.



9 Drilling the holes for the support dowels **10** Wood for the dowels **11** Making the dowels **12** Making the horizontal support dowels **13** Forming the flat regions on the support dowels with a gouge... **14** ...or the bandsaw **15** The completed back post

Fitting the support webs

Locate and mark the centre of the bottom of the support web on the 12mm face and cut 45° angles from this central point. Cut at a length of 65mm, and measure the angle needed at the top of the web, to allow a snug fit against the rafter. This should be 65°, but it can be checked against the drawing before the cut is made. Any adjustments to the angles can be achieved by sanding, either by hand or on a disc/belt sander. The webs can then be glued in place and clamped to complete the roof truss. The procedure is repeated for the second truss. The two completed roof trusses are glued together with the bracing bars fitted in the slots to hold the two trusses exactly 95mm apart. All the bracing bars need to have a small section of wood removed from both ends so that they fit snugly and flush in the slots cut in the rafters and the tie beams. Care was taken to ensure that the structure remained square, and several small clamps were used to secure the structure while the glue dried (as shown in photo 7).

Making and drilling the base board

The base is an elm board into which five 16mm flat bottomed holes are drilled to a depth of 10mm. One hole is drilled in each corner and one in the centre of the back edge. The holes are drilled far enough from

the edges of the board to prevent them from breaking down when the dowels were glued into them. I found that 2mm was enough but it could be increased to 3mm to be on the safe side.

Making the 16mm dowel support posts

Once the dowels have been cut to the correct length (see drawings and cutting list), a part of each one must be flattened to provide a suitable surface on which to glue the half dowels that will make up the walls. This will also apply to the horizontal dowels that will help support the roof.

Note: This pattern of flattening is not the same for all the dowels, so careful planning is necessary.

VERTICAL CORNER POSTS

Flat sections 5mm deep must be cut in the sides from a point 10mm from the base of each post and extending to a length of 60mm. A tenon saw and suitable carpenter's chisel, or small carving gouge (No.3, 6mm or 10mm), can be used to do this. Slots 7mm deep and 11mm long are then cut out of the top of each dowel on the opposite side to the other flat section. I used the bandsaw for this, but it can be done just as well with a suitable handsaw.



16 Fitting the dowel peg in the central back post **17** The roof frame fitted and glued to the vertical posts **18** Side view of the roof frame **19** Cutting the wall and roof dowels in half **20** Fitting and gluing the dowels to the side walls and gable ends first **21** The back wall taking shape **22** Improvising to complete the back wall **23** Sanding to ensure the roof dowels will lie flat

THREE BACK DOWELS

A similar 5mm-deep flat section again 10mm from the base and running right up to the top of the dowel is now cut to provide attachment of the half dowels that will form the back wall below the roof.

Note: The flat surfaces on the back corner posts must be at 90° to the ones that will carry the side walls, but take care that you have marked it out correctly before cutting.

ROOF SUPPORTING DOWELS

The horizontal dowels that support the roof each need two flat surfaces 5mm deep cut at 90° to one another. I created these flat surfaces along the whole length of the dowel using a spokeshave, checking the 90° angle with a try square. You could use a chisel or gouge or bandsaw if you prefer.

Once these have been completed it is time to assemble and glue the supporting dowels to the base and then the roof skeleton in place. I whittled a small 3mm dowel peg which was used in the central back post to align, and help secure, the rear roof truss in the correct position. Once again I used several small clamps to secure the structure until the glue dried.

Note: A 'dry assembly' prior to gluing is probably wise to ensure all the flat sections are in the correct position.

MAKING THE WALLS AND ROOF

The walls and roof are made of 12mm elm dowels which have been cut in half lengthways. Using half dowels reduces the number needed and also provides the flat surface needed for gluing to the upright supports and the roof trusses.

The dowels are first cut into the lengths needed before being cut in half on the bandsaw. This offers a few challenges, and must be done carefully and safely. The bandsaw fence is first set up so that the blade is central to the end of the dowel. It is essential to keep fingers away from the blade so push sticks were used to start the cut – one to initially keep the dowel against the fence, and the other to push it through to make the cut. On the longer dowels, once the cut had gone a short distance, I used my hand to guide the cut from BEHIND the blade, not only to keep it against the fence, but also to stop it from rotating as this would result in a half dowel with a spiralling flat surface. This is more likely to happen when cutting the longer dowels needed for the front and back walls of the building.

Note: I made my own dowels as I have the rounding tools for doing so, but dowels can be purchased from a number of suppliers in both hardwood and softwood (possibly not elm), but I'm sure that it would look just as good with lighter walls (e.g. ash or beech) which could also be stained darker if required. I believe Veritas



24 Completing the gluing of most of the roof dowels **25** Securing the position of the very end dowels with hot melt glue **26** Rounding the support post ends **27** Securing the angel shelf **28** Gluing on the backing support for the star **29** The finished stable... **30** ...and with the Nativity figures in place

make rounding tools in their chair-making range of tools.

The dowels covering the roof skeleton (gable ends) will need to be trimmed to the right length and with the right angles on their ends. I also used a belt sander to ensure that they were flat along their whole length before gluing them in position.

THE WALLS

I started with the side walls gluing either end of each dowel to the upright posts. Small clamps and clamping blocks were used to hold them in place. I cut and glued the dowels on in stages so that the clamps could be used as much as possible from the top and the sides, but for the last few in the middle, I improvised with a heavy weight to trap the centre of the dowels against the middle upright post.

THE ROOF

The dowels were glued to the top of the roof frame. I started at the apex and worked down in stages, gluing a few dowels at a time which allowed the use of the small clamps to secure them until the glue dried as before. When the use of clamps became difficult or impossible, I reverted to the 'large log' to provide the pressure needed.

Once 20 dowels had been put on each side, the ends of the rafters were cut off at right angles and the final dowel glued on at 90° as shown.

Clamping these proved problematical and I solved this by using small blobs of hot melt glue to hold them in place while the wood glue dried. These blobs are easily removed later.

FINISHING TOUCHES

There were a few tasks left to complete the stable:

- Small pieces of dowel were added to cover the very bottom parts of the roof rafters front and back.
- A small platform was glued to the back wall and the centre back post on which the angel can be given an elevated position.
- Two vertical half dowels were glued to the inside of the back wall, each one equidistant between the rear vertical supporting dowels.
- A star was marked out from the template and then cut out with the bandsaw before being glued on the front of the roof apex. A backing block was made and glued on before the star was finally positioned.
- The top of the front supports were rounded using a detail knife, gouge or abrasive.

The stable was then given a light sand with 240 grit, before a suitable finish was applied. I decided to apply a coat of quick-drying water-based varnish and it was then ready to receive the nativity scene figures.

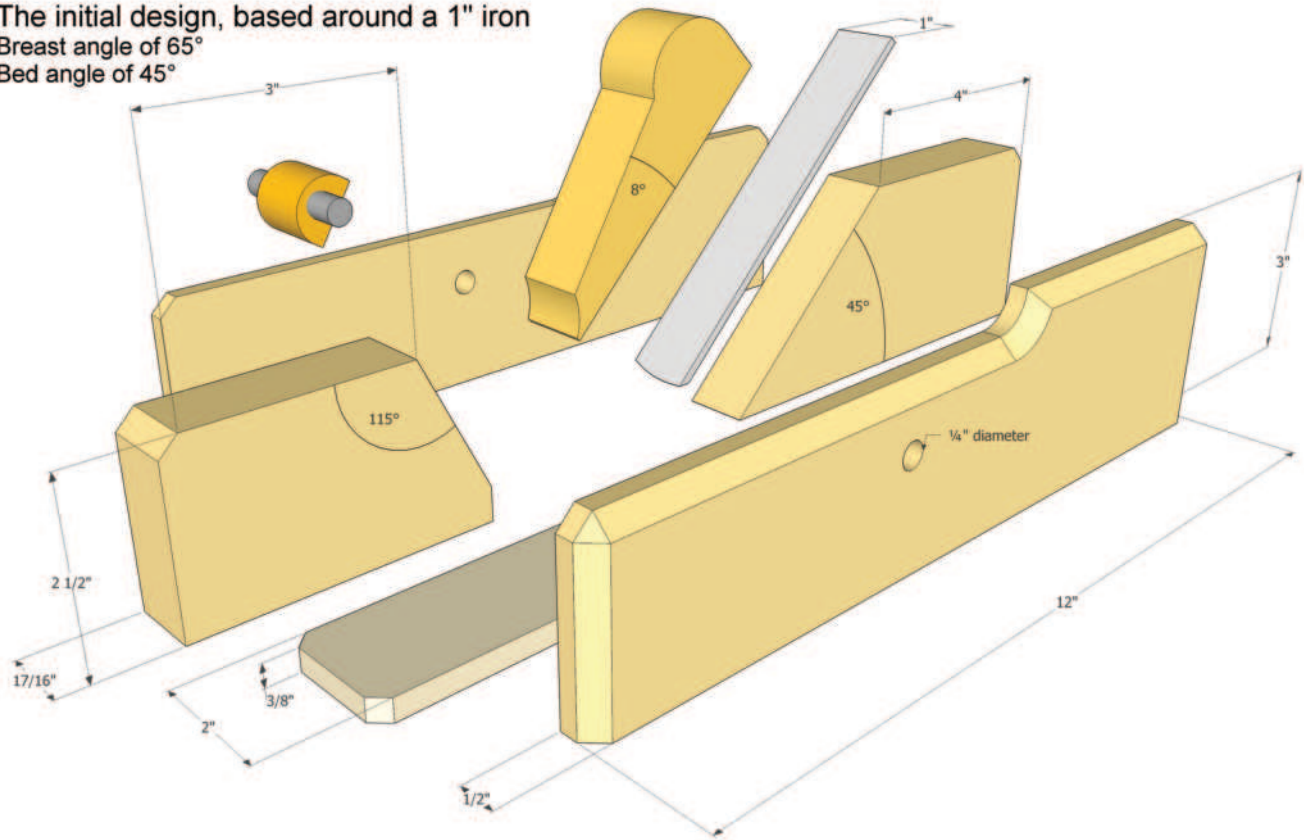
WOODEN SCRUB PLANE



Mitch Peacock makes an ergonomic plane for less painful scrubbing

As the years roll by, my hands complain more and more when I've been busy in the workshop. With that in mind, when I had time to make myself a new scrub plane, I tried to design a more ergonomic one. The main construction technique is simple, and ideal for anyone making their first plane, although you'll find out that I chose to complicate the build in a couple of ways.

The initial design, based around a 1" iron
 Breast angle of 65°
 Bed angle of 45°



1



2



3

Initial preparation

- 1 I opted to use a laminated construction, building the plane as though I were making a sandwich. The main benefit of this was that the mouth, and in particular the bed, could be sawn rather than chopped out.
- 2 The layers of the sandwich were ripped from European beech and what I think is omu, selecting the straightest grain and clearest that I had. From here on, I shall refer to the outside layer, of omu, as the cheeks, and the middle layer as the infill.

All the mating surfaces were flattened and smoothed for a good glue joint. As I chose to add a separate sole, another piece of beech was prepared for that, making sure it was a little over-sized in width.

Building it

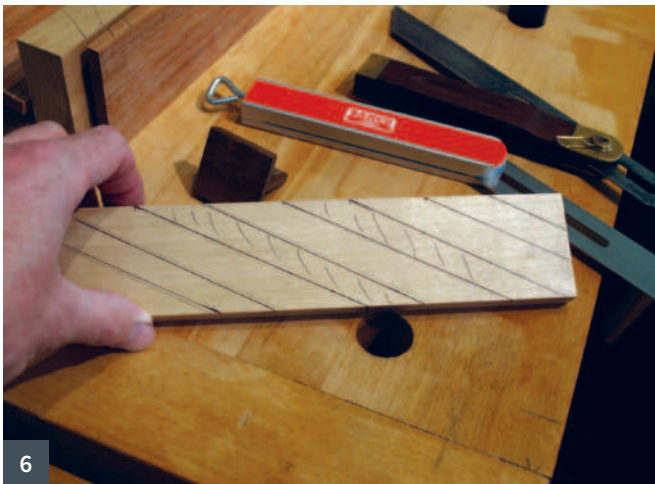
- 3 The front and rear pieces of the infill were marked out. Because of the angles that make up the plane's throat, one piece could be inverted to reduce the overall length required. In my case, the throat cutout removed a defect in the piece of beech I was using.



4



5



6



7



8



9

- 4 Care was taken to saw the bed angle as accurately as possible, to just leave a few clean-up shavings needed to finish it.
- 5 With the cheeks and infill prepared, they could be glued together leaving the appropriate mouth gap, and completing the blank for the plane body.
- 6 Since I was adding a separate sole, this had to be prepared first so that the additional thickness could be taken into account: the infill pieces would need to be glued in slightly further apart, and the throat continued through the sole. The first step was to mark out some

- tapered sliding dovetails; the method I had chosen to attach the sole.
- 7 The dovetails were sawn and pared in the sole, and when completed, satisfactorily, I measured the additional thickness the sole would add to the body...
- 8 ... giving me what I needed to position the pieces of the infill, and allow me to glue the main body together.
- 9 While the glue cured, I set about cutting a wedge from a character piece of yew. An angle of 7° to 8° would be a good compromise between holding power and ability to remove the wedge.



10



11



12



13



14



15

10 Clamping the prepared sole to the glued-up body allowed the sliding dovetail layout to be transferred.

11 Once cut, the body and sole could be slid together, tightening up as the tapered dovetails engaged.

12 The over-sized sole, once glued to the main body, was planed flush.

13 Choosing to add the separate sole closed off the mouth, and so the throat was extended by chopping through, following the bed and breast slopes...

14 ... and cleaning up the mouth from below the sole.

15 To give the wedge something to bear against, a steel pin was to be inserted across the mouth, passing through a brass flying bridge (optional), and I pre-bored a shallow counter bore to take yew plugs either side of it.



- 16** Once the pin was installed and the plugs fitted, they were flushed to the side of the plane.
- 17** Shaping to a comfortable fit in the hands was mainly done with rasps and files.
- 18** Testing for comfort included making a lot of shavings, and the resulting shape was far from my initial thoughts.
- 19** When I was happy, I gave the plane a protective coat of boiled linseed oil.

Conclusion

- 20** This was a hugely satisfying project, and I now have a self-made tool which will be used on my future unplugged projects. A scrub plane can be very simple, embellished or customised as much as you desire. I hope you'll make one and enjoy both build and result as much as I have.

PLANE IRON

The width of the plane is determined by the iron to be used, so sourcing an iron should be the first consideration. There are specialist blade makers, such as Hock Tools, that can supply excellent irons, or you can do as I did and re-purpose an old tyre iron or similar high carbon steel item. An edge with a radius similar to a 10 pence piece, and with a 30° bevel, seems to work very well. If you make your own, remember to heat treat the working end by taking it up to a temperature where it no longer attracts a magnet, and quenching it in vegetable oil for a few minutes.



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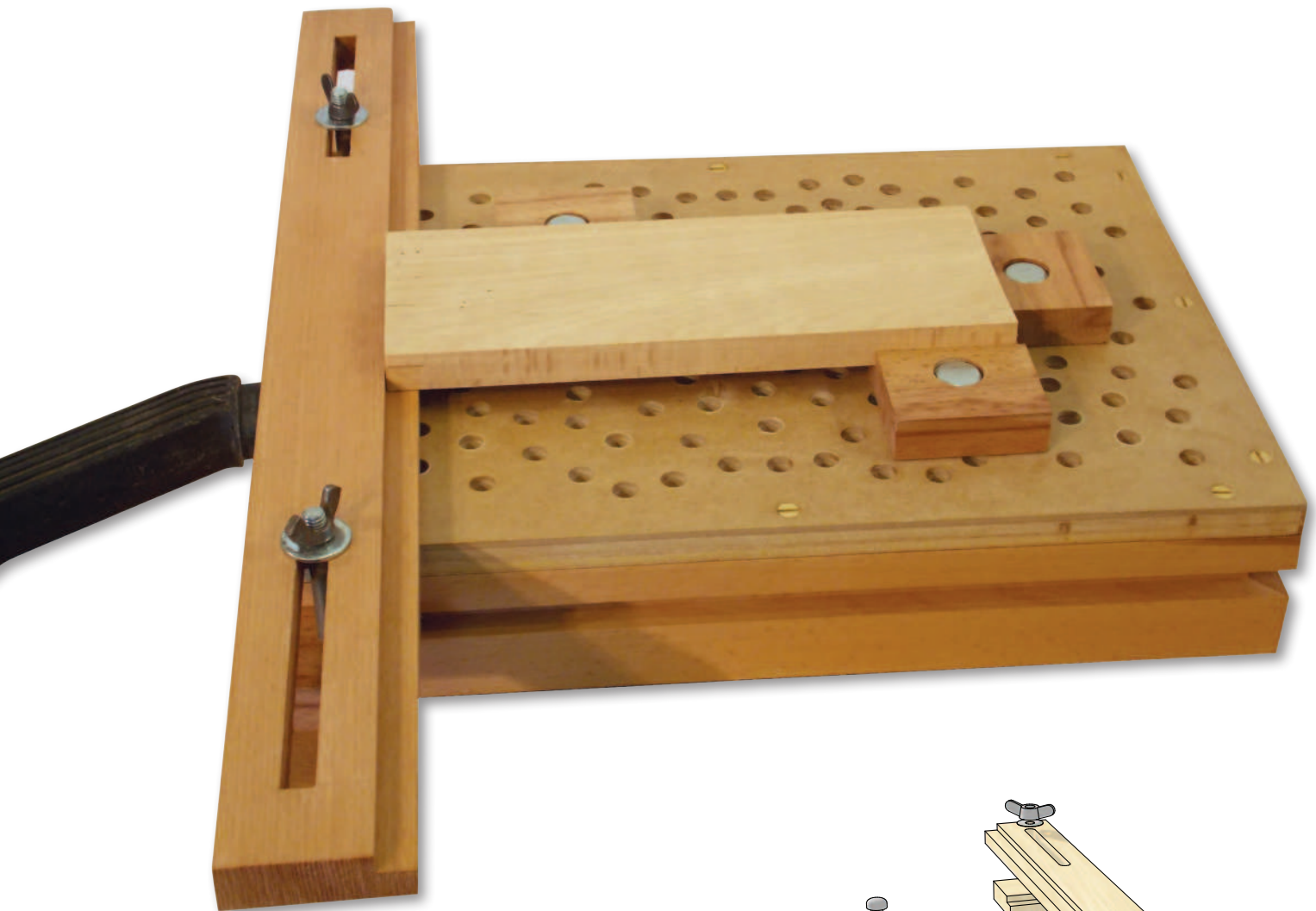


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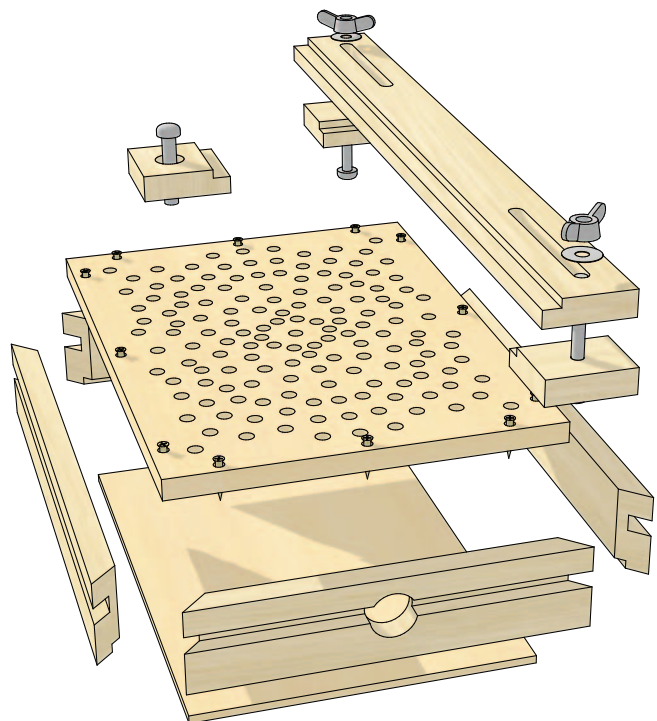
DOWNDRAUGHT TABLE

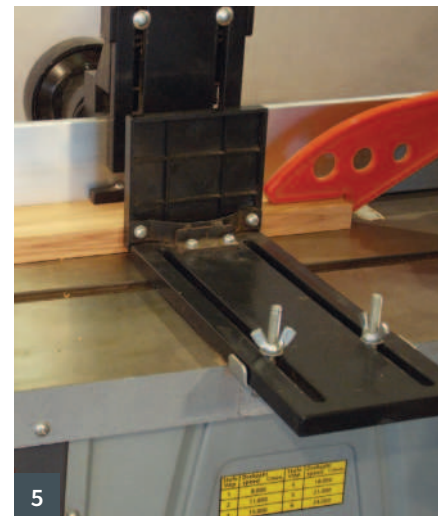
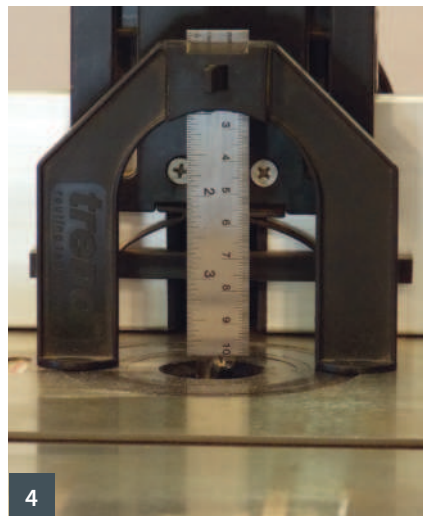
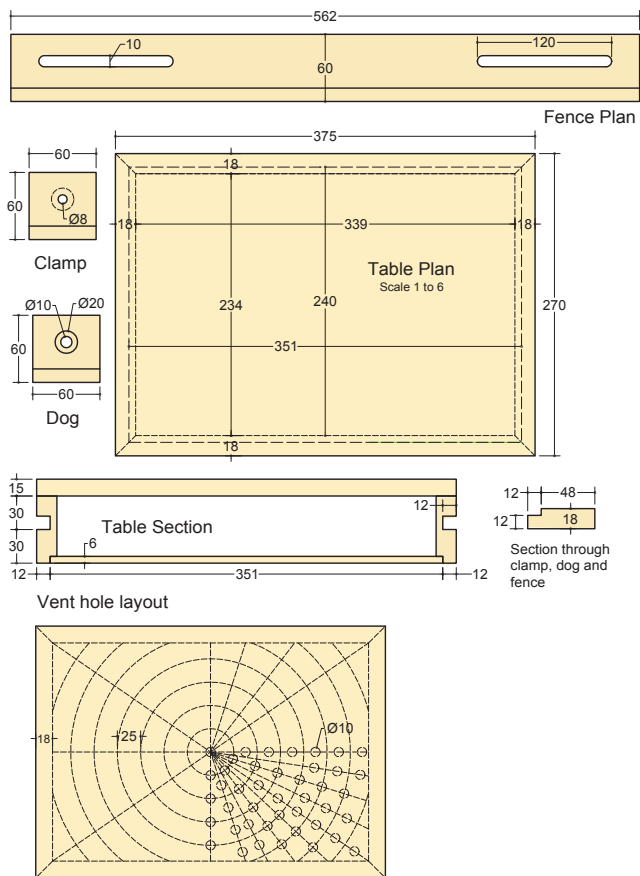
Neil Lawton's project is designed to help tackle the problem of dust in the workshop



In the fight against airborne dust, a downdraught table is a valuable addition to any workshop. Small rotary tools and even hand sanding can cause a large amount of dust that is not immediately evident. It is only on the rare occasion when a stream of sunlight hits the workshop window it becomes apparent that you are working in the wood dust equivalent of a 'snow globe'. This project was conceived to help address the problem, but should be seen as an addition and not as a replacement for conventional dust control measures.

The unit is designed to be used with any modern fine filter vacuum cleaner and allows the clamping of workpieces, while carrying out sanding, routing or shaping operations. The dimensions here were entirely dictated by the use of reclaimed timber and offcuts throughout. The reclaimed beech table legs provided the ideal tight grained timber required, but other materials such as plywood can be used. The dimensions can be tailored to any given need.





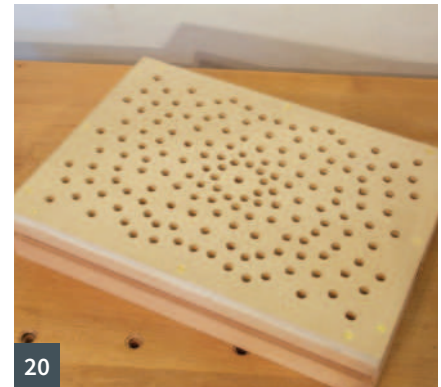
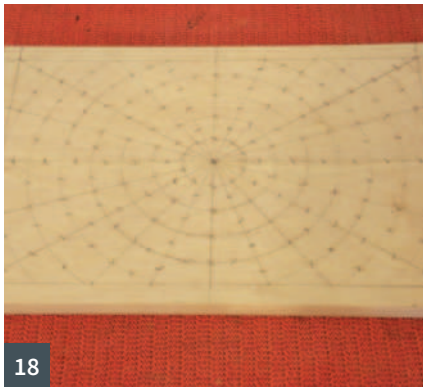
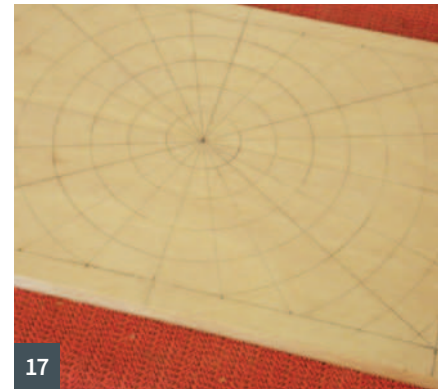
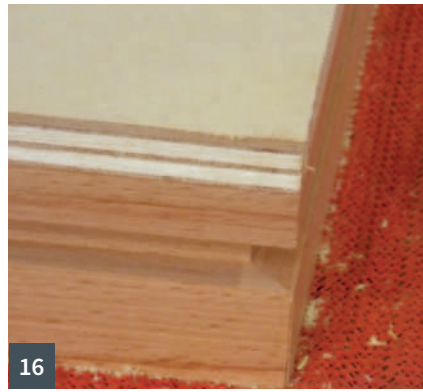
Making the table

- 1 When working with reclaimed wood, a metal detector is a good investment. In some cases, you would never know that a joint has been repaired or reinforced with screws or nails at some point in the past. I know from experience that what looks like an innocent dowel joint can be a screw and plug in disguise. It only becomes obvious when it's too late and the damage is already done to your blades or knives.
- 2 Start by rough cutting the legs into lengths 21mm thick, with a view to obtaining a finished thickness of 18mm. A thick walled carcass is essential for this project, as will become apparent later.
- 3 Plane down six lengths of beech to the same dimensions on the thicknesser. These will become the four box sides, fence and clamping dogs. Vary the infeed position with each pass; this will prevent uneven wear on the knives.
- 4 With a 12mm straight cutter fitted in the table, set the fence to just under the maximum width of cut. Set the cutter low for ease of cut.
- 5 Rebate the two pieces for the fence and clamping dogs, taking shallow cuts and multiple passes until you reach the required depth.



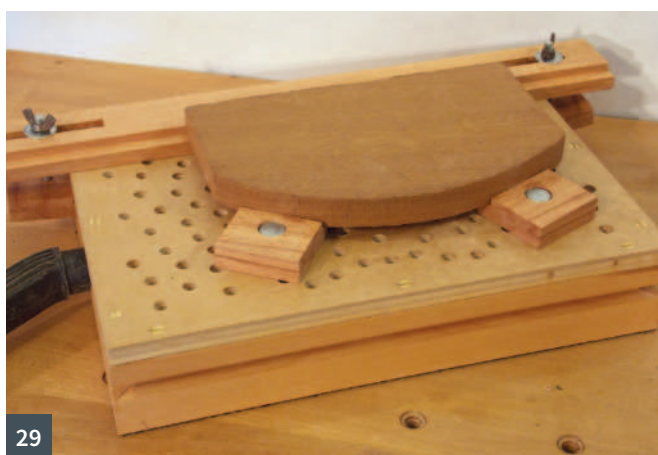
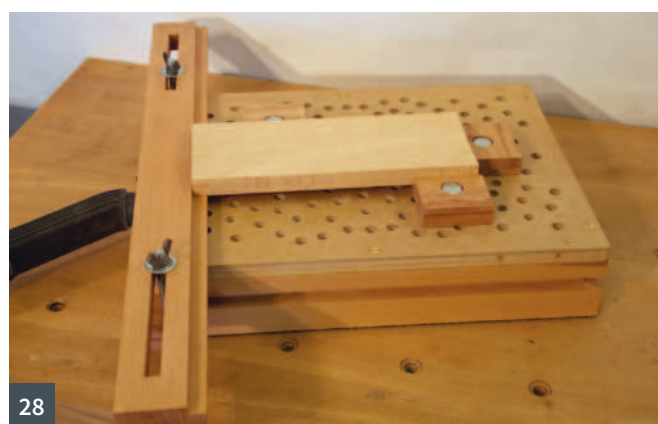
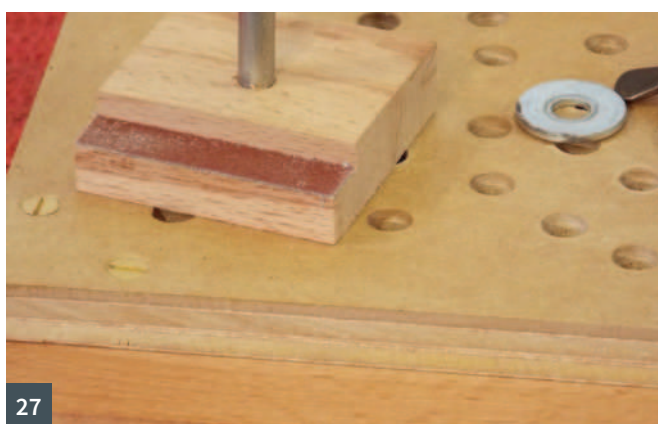
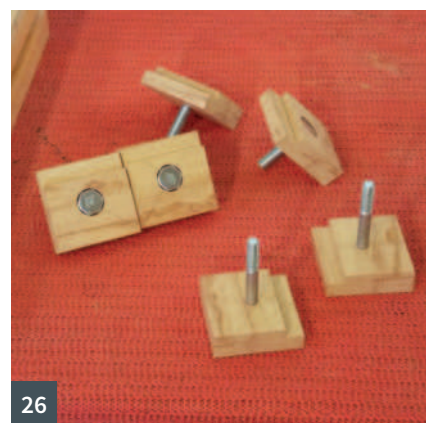
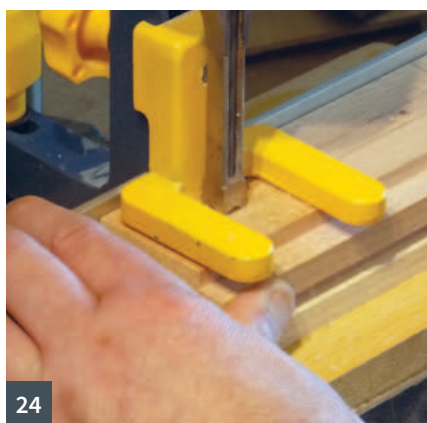
- 6** The rebate should be routed until the remaining timber forms a square, on both the fence and clamping block pieces.
- 7** Reset the fence to the thickness of the board being used for the bottom. The bottom needs to sit flush with the box sides.
- 8** Again taking shallow cuts, run the four side pieces through to form the bottom rebate. The six pieces should now look something like this.
- 9** The final router table operation is to cut the clamping rebate. Set the fence 30mm from the top of the sides to the edge of the cutter. Taking note of the orientation of the bottom rebate, pass the sides through. It becomes plain now why a reasonable thickness of timber is required, as the rebate must be deep enough to seat the clamping piece, while maintaining enough timber for structural strength.
- 10** Next, mitre the side pieces to length. This can be done by hand or powered mitre saws, or as here, with the tablesaw.
- 11** Dry clamp the sides and square up. Measure the rebate and cut the bottom board to suit.

- 12** The size restriction imposed by using the reclaimed timber means the extraction hole has to be drilled through part of the clamping rebate. A piece of scrap cut as a tight fit will prevent any breakout while drilling. A good friction fit is required to stop the hose working free during use. On measuring, I discovered that the hose was not entirely round, so I selected a slightly undersized bit.
- 13** Using a bobbin sander, enlarge the hole, but a rotary tool sander, or a sanding stick could also be used. Repeatedly check the hose for fit until you reach the desired size.
- 14** With the sides and bottom glued and clamped, run a small bead of glue around the edge and then lightly sand in. The bottom needs to be well sealed, but it doesn't have to be pretty.



- 15** The top could very easily be made with one thick board, but in my case, the use of offcuts made laminating my only option. For this method, glue two pieces of 6mm ply and a piece of 3mm MDF by combing the glue onto the boards, which can then be twisted into position to ensure an even distribution of adhesive. The boards can then be tightly clamped flat and left overnight to dry.
- 16** Due to the splintery nature of the offcut ply, I cut the top slightly oversize. It was then clamped to the box and routed to fit with a flush trimming bit in the router.
- 17** Mark the grid out on the underside of the top, allowing for the thickness of the box sides. Mark the centre and corner to corner lines first, followed by circles at 25mm spacing. Draw extra lines to the centre until the centre circle has roughly equal segments.
- 18** Mark the drilling points out, on and between the circles alternately. Mark extra drilling points wherever large enough gaps occur. These slightly more random points may be useful when clamping workpieces. After drilling a 2.5mm pilot hole through each point, drill the top from both sides with a 10mm Forstner bit, to achieve clean holes.

- 19** Any rough spots inside the enclosure will trap dust, so seal the inside and wax before you fit the top.
- 20** The top is fitted using screws; this will give easy access to clear any blockage, or if something is accidentally dropped through the holes. The countersinks are deep enough for the screw head to sit just below the surface, so as not to interfere with any clamping process.
- 21** Seal the sides and top with sanding sealer. Use a stippling technique on the top; this will prevent excess sealer clogging the holes. Wax and buff the top and sides, taking care to ensure no wax enters the clamping rebate, or gathers in the holes.
- 22** Use a proprietary fabric glue to adhere a piece of non-slip matting to the bottom; this can be trimmed to size once dry. Using reclaimed materials does have its advantages, as the glue and matting are the only materials that have to be purchased specifically for this project.
- 23** Next, cut one of the clamping pieces to a suitable length, which will be used as the fence. You can then mark out the slots, which will enable the fence to fit across the table at any angle.



- 24** The waste can be removed in several different ways, either by drilling or routing. In my case, the mortiser was the easiest option.
- 25** You can then cut six squares from the remaining clamping piece. Two of the blocks are centre marked with the rebate facing down; these will become the clamping blocks for the main fence. Mark the remaining four with the rebate facing up; these will become the auxiliary clamps or 'dogs'.
- 26** Select a Forstner bit that will match the size of the bolt heads and drill to an appropriate depth to countersink them in. Drill the blocks through with drills that match the thread diameter. Fit the dogs with M10 × 50 bolts and the clamping blocks with M8 × 75.
- 27** Fit the clamps to the fence and tighten them up into the rebate. If there is too much play, the clamps can be packed by adding extra

material. Here I have added some cloth abrasive; which helps to provide extra grip. Wear should not really be a problem, as the blocks are placed into the rebate before tightening up and are not run along it.

- 28** The combination of the fence and dogs allows a wide variety of shapes to be held securely.
- 29** The rebates on the clamping pieces hold the work above the table, allowing the extraction holes to do their work more efficiently.
- 30** This project can easily be tailored to your own needs. The table on the left was made to accept a rotary tool set as either a router or a sander. As a belt and braces approach, the rebate was reinforced with mild steel, though this has since proved to be unnecessary. In continued use there is little evidence of wear on either the clamping blocks or the rebate.

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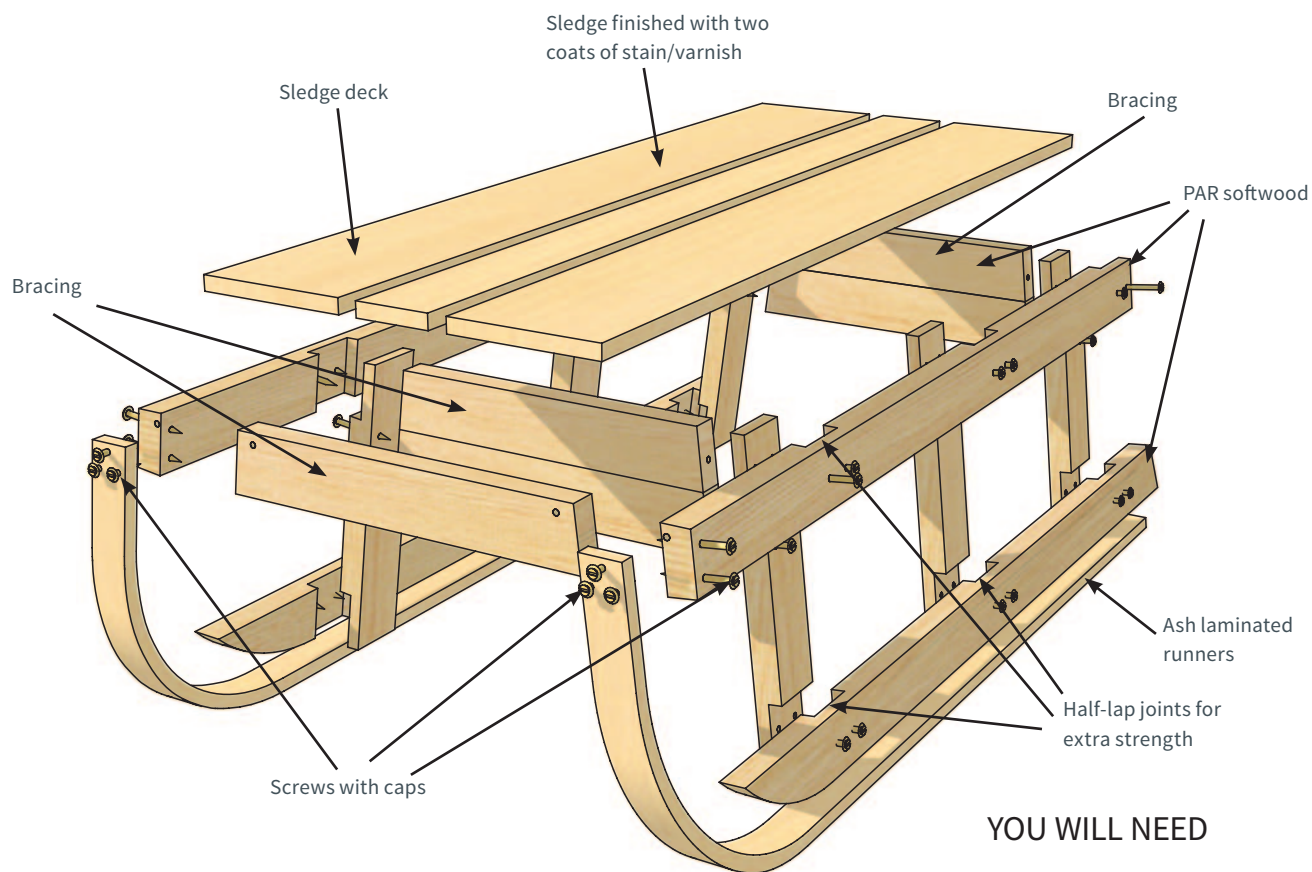
WINTER SLEDGE

Anthony Bailey shares the plans for an easy-to-make laminated sledge

I can't take the credit for this design. My father-in-law, Robert Fordham, a very practical man, ex-Army Para and Engineer, built the original sledge many years ago when our four children were young. Every once in a while it snowed in winter and we had many fun-filled hours, everyone taking it in turn to be pulled across the snow covered park.

This new version is built from standard PAR (planed all round) softwood with ash for the runners: this timber is much tougher and can be laminated and bent to shape.



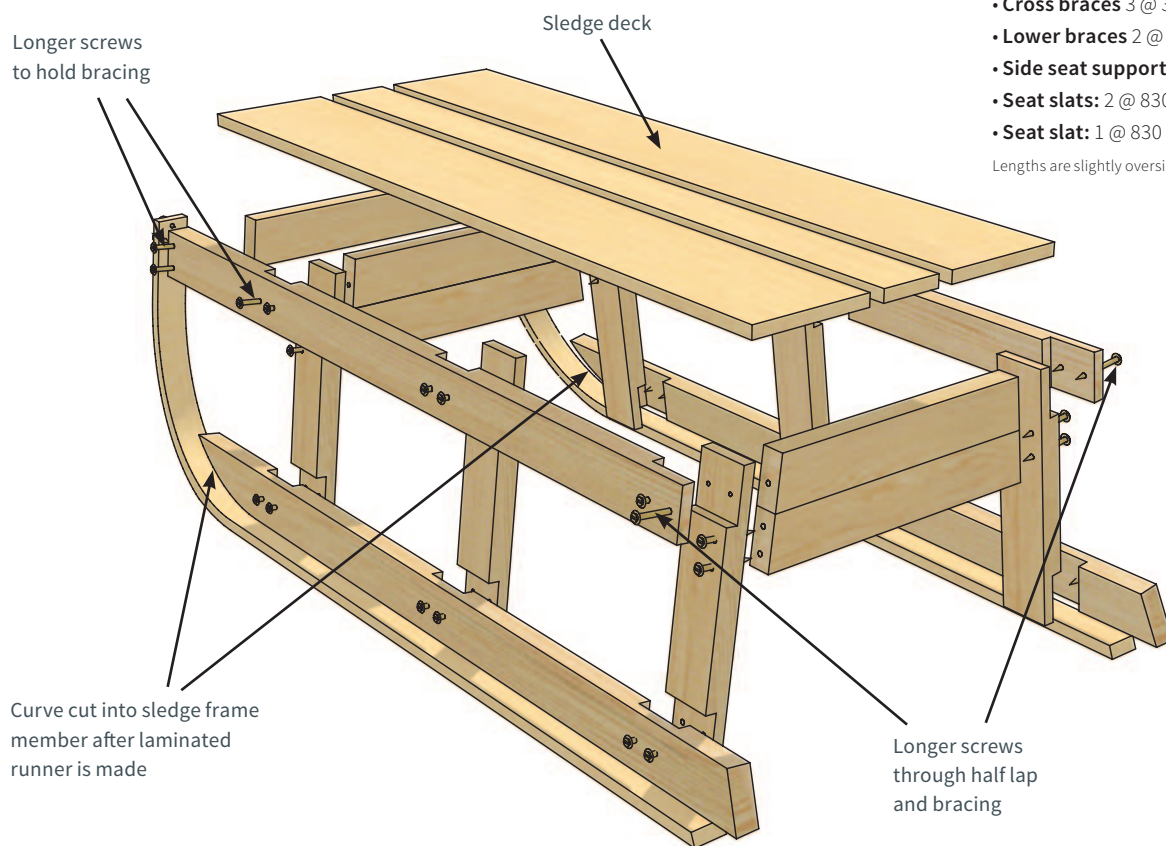


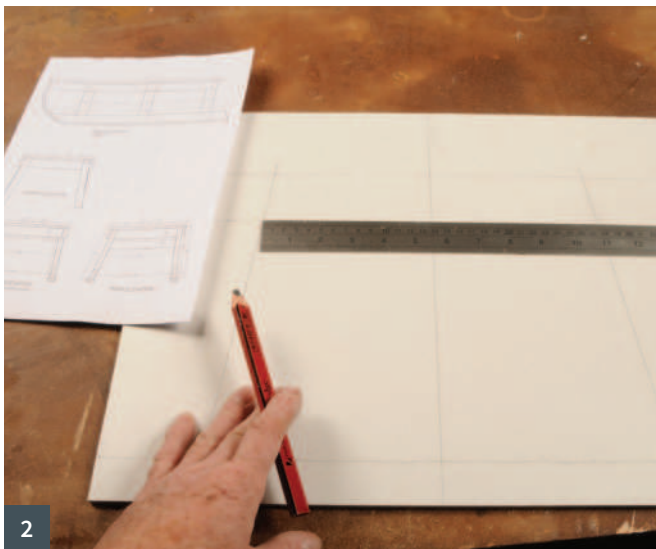
YOU WILL NEED

Wood cutting list:

- **Runners:** 2 @ 1150 x 32 x 12mm
- **Runner supports:** 2 @ 870 x 50 x 22mm
- **Uprights:** 6 @ 260 x 50 x 22mm
- **Cross braces** 3 @ 300 x 50 x 22mm
- **Lower braces** 2 @ 310 x 50 x 22mm
- **Side seat supports:** 2 @ 830 x 50 x 22mm
- **Seat slats:** 2 @ 830 x 120 x 12mm
- **Seat slat:** 1 @ 830 x 60 x 12mm

Lengths are slightly oversize for some components





Making the sledge

- 1 Make up a cutting list and cut to length all components with square ends, i.e. not the bevel-ended sections that make up the side uprights. Use a length stop for consistency. The bottom rails are left overlength at the front to allow for trimming when fitting the runners later on.
- 2 Using the plan dimensions, draw out a rod (a template) of the end elevation, making it full size, which will allow you to get the angles and lengths of components correct. Set the angle on a sliding bevel and use this to mark a test piece.
- 3 Set your crosscut saw to the angle on the sliding bevel, make a cut and check the result. When you're happy with it, cut all the side uprights and the end crosspieces.
- 4 Check the cut lengths against the rod and trim again if necessary. Make sure all these parts are prepared before moving on. It may pay to have several extra parts in case you make some mistakes later on.



- 5 Use a router, straight cutter and homemade T-square to machine the half-lap joints in the rails as a pack, all clamped side-by-side. Move the T-square across to widen the slots until the final width is reached.
- 6 Check the fit using one of the blank side uprights. It needs to be a good fit in order to resist any tendency to twist.
- 7 Use the bandsaw to cut the joints at each end of the uprights. Again, make sure you get a good joint fit. Do a test cut first to check the fence is correctly set.
- 8 Now glue the half-lap joints using water-resistant PVA. Clamp the side assembly together and screw using short 4mm diameter Pozi headed screws which need to sit in screw cups. These are easy to obtain at any good DIY store. They look good but more importantly, they prevent the softwood from crushing, or the screws tearing through.
- 9 Set one sideframe at a time in the vice and plane a bevel on the lower rail. Note each side has the opposite bevel so mark which is the outside of each before starting. Check the planed bevel angle using your sliding bevel.





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- 10** Glue and screw the crossrails to the sideframes. Note how the sledge splays out towards the base for stability. Once the glue has set, remove all screws and screw cups, sand carefully all over and apply two coats of a suitable woodfinish such as Sadolin. Refit the screws and screw cups.
- 11** Hold a runner against the sideframe and mark where the lower rail needs to be trimmed.
- 12** Using a jigsaw, cut the marked curve. Repeat on the other sideframe. If necessary, use a spokeshave and sandpaper to neaten up the curve.
- 13** The runners need to have recessed screws but in order to do this correctly, use a proper counterbore that creates a neat recess. Take care not to go in very far though.
- 14** Glue and screw the runners in place so the heads set in neatly below the surface. The ash doesn't really need any additional finish as it will get rubbed off when in use. You could use a clear wax to help it go faster!

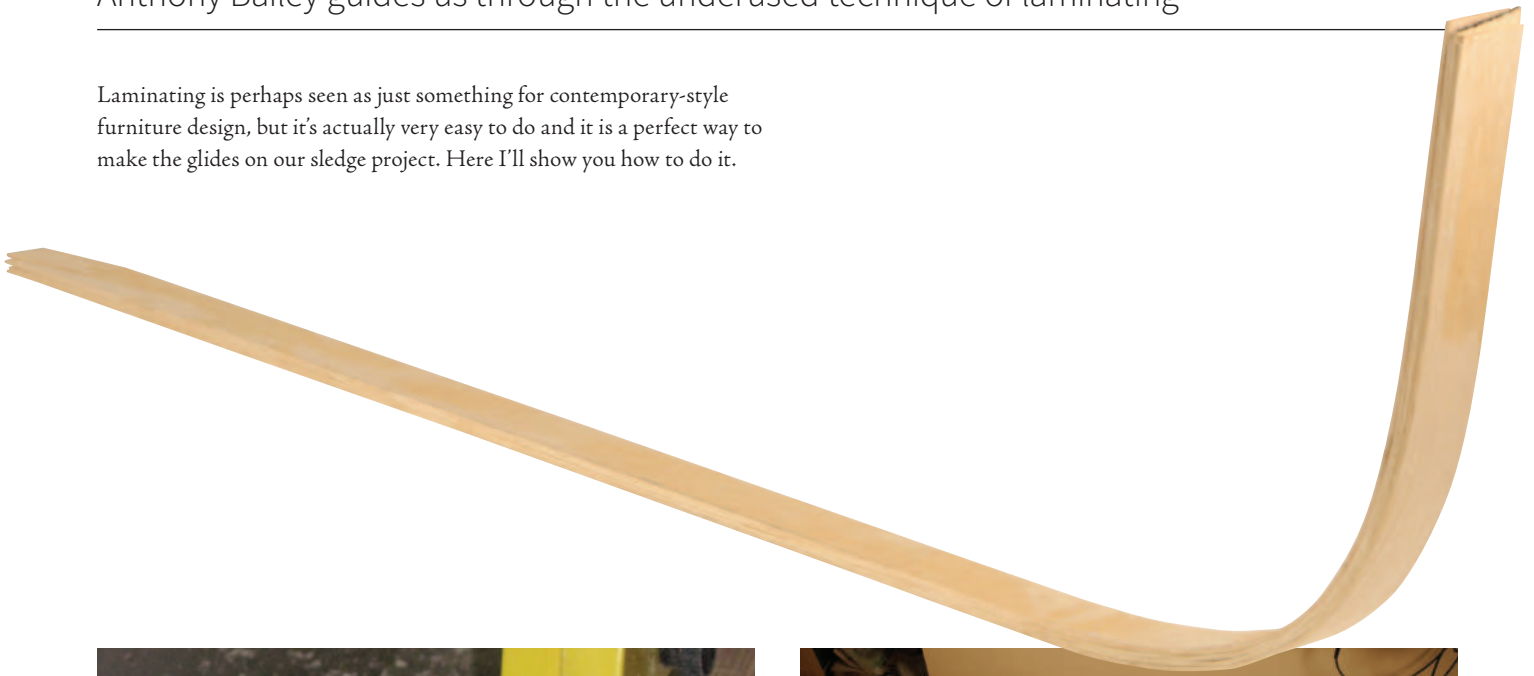


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LAMINATING

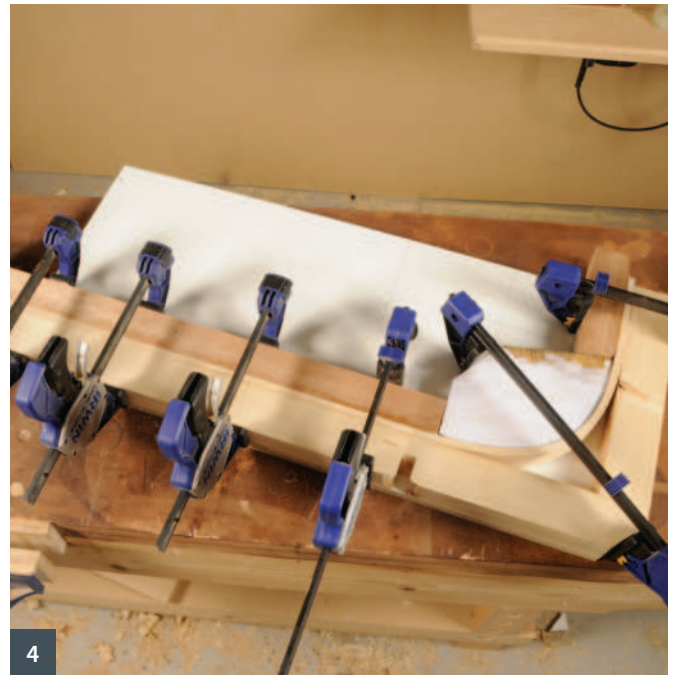
Anthony Bailey guides us through the underused technique of laminating

Laminating is perhaps seen as just something for contemporary-style furniture design, but it's actually very easy to do and it is a perfect way to make the glides on our sledge project. Here I'll show you how to do it.



Laminating the sledge glides

- 1** You need extra thickness of material in order to machine it into thin strips that you can bend successfully, as the sawblade will cause waste. Extra length and width are also necessary to allow for sizing accurately later. You can use either a tablesaw or a bandsaw with a sharp blade to cut the timber slivers. To create a tight bend you need thin layers of timber to laminate together. Ash is favourite because it lacks knots and other defects, and has a strong, but pliant, grain structure. Set the fence to give a width of 2.5mm as we need quite a tight bend. Saw at an even pace holding the planed timber firmly against the fence. Any burn marks caused by the blade heating are OK so long as they are hidden between the laminations. Make a jig for bending the ash strips to create the runners. Use a board of ply or MDF large enough to hold over-length strips. Use 50mm-thick prepared softwood to create the holding profile and screw it on to the board.
- 2** Now make the removable part of the mould – this can be in several sections. Place the dry unglued components in the mould and try clamping it together. If any section doesn't close up tightly enough, adjust the curvature of the movable section, then re-clamp.



- 3 Once you are satisfied that all is well, apply Vaseline to the inside mould faces as a release agent.
- 4 Apply glue to the strips in a zigzag pattern and place them in the mould. Clamp the mould halves tightly together, wipe off exuded glue on the visible edge and leave to dry. Once removed from the mould, repeat the operation for the other glide.
- 5 When the glue has gone off, remove from the pattern and plane one edge, then run the glide runners through the saw slightly overwidth and plane the sawn edge. Sand all round. They are now ready to fit, apart from trimming the ends.



BENCH PLANE ON A BUDGET



Thinking of restoring a plane? Iain Whittington covers all the factors you need to consider for a cost-effective project

The humble bench plane is an essential tool for all hand woodworkers. Using the No.4 2in (50mm) plane as the 'standard', the entry level planes that are 'worth the money' in the UK are probably the Chinese Bedrock planes by Quangsheng (branded Juma in the EU) together with the German made Kunz No.4 and Norris planes, which all retail at around £200. I have also seen the basic Kunz Bailey No.4 at £70 but as I have never seen an independent review of the German Kunz, it is hard to know where they measure on the quality/value scale.

While looking at basic planes, it's worth remembering wooden planes are still pretty much the standard in middle Europe, where the iron plane has taken much longer to establish itself. The European wooden planes have been modernised and now come with the option of a chip breaker and Norris-style screw adjuster, from the likes of pinie.cz, with their Premium range retailing in the UK at about £70. However, for the purpose of this article, I will set the bar at

somewhere in the region of £70–200. For comparison, the budget clones start at about 20% of that price, and seem to be a lottery in terms of quality and performance. If you were to go down the alternate route of buying and restoring an old plane, conservatively those prices would give somewhere between 10–20 hours 'free labour' as an equivalent target. Sadly, the easy availability of good pre-war planes for restoration has now passed, as 10 to 15 years ago these were often a good bet for value-for-money restoration projects. Unfortunately, the quality of bench planes started to decline post-war, reaching a nadir in the 1970s when domestic production was in serious decline and cost-cutting hit quality. By the 1980s, outsourcing components overseas became common and the old brand names were de-valued. Although some of these products remained of a useable quality, the advantage of a brand name over 'budget' products became (and remains) a lottery.



1 UK hybrid No.2690/91 by Marples **2** Modified wooden Chinese (L) and standard Czech Horned plane (R) **3** Exclude all planes with any damage to the body casting, like this metal plane **4** Broken wooden plane handles, showing impact damage

Wooden bodied planes

The starting parameter for a restoration project would have to include wooden bodied planes. The only UK made 'hybrid' was the No.2690/91 by Marples, which was made throughout the 1960s. These are seldom seen on the second-hand market and now attract silly prices for what was/is a mediocre product. Some years ago I bought one cheap on eBay that was not a collectible (the front knob had been added) and found the body had moved, requiring a gentle pass over with a planer, then some back-filling of the enlarged mouth for it to work well. Mine is now a decoration and seldom used, so I would suggest a hybrid is probably not worth the work apart from possibly as a 'make your own' plane project.

While on the subject of wooden planes, the traditional Chinese plane can be worth considering. They were in fashion a decade ago and could be found quite widely or online for £10–15. When I reviewed one, my conclusion was they were good value, but that 'restoring a vintage metal plane at £15–20 would be a better investment for much the same price'. Sadly, the starting price for a No.4 worth restoring is now well north of £20 and climbing, so the traditional Chinese wooden plane, which on the internet is still in the range £15–20, could make some sense. Bear in mind, most are a No.3 with a 1¼in (44mm) blade and adding a Western conversion,

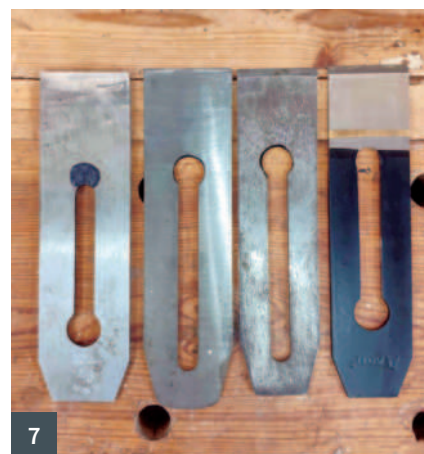
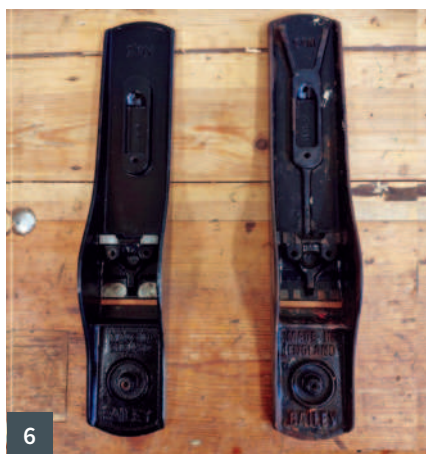
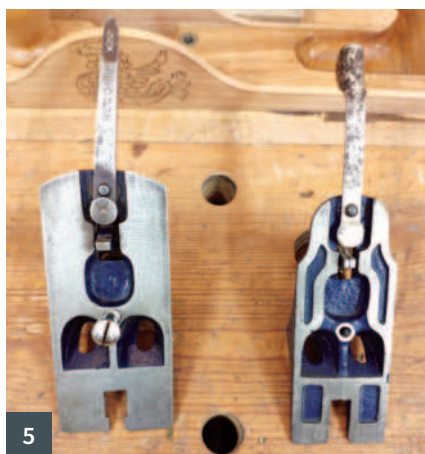
as shown in **photo 2** is not difficult. As a footnote, unlike my Marples transition plane, which is now just a decoration, I still use my Chinese wooden planes regularly.

Metal bodied planes

When looking at metal bodied planes, exclude all planes with any damage to the body casting. For example, the plane in **photo 3** has a bit missing. Even with advances in welding technology, you will never get the cast-iron body patched successfully, never mind any cost involved. The temperature involved will inevitably distort the casting. I use the plane in **photo 3** as a paperweight (although the blade and mechanism made useful spares for other restorations so that justified the purchase price).

Wooden handles

An area where repairs are simple is in the wooden handles (some synthetic handles from 1960–70s do exist and are better replaced with wood rather than trying to fix them with epoxy). I have noticed that the older planes usually only suffer from impact damage to their handles. The newer ones are actually prone to structural failure such as horizontal failures to the tote, which only becomes apparent after unscrewing the rod that is holding it together.



5 Frogs: vintage 2in (left); modern 1 3/4in (right) **6** No.5 bodies: 1950s Type 3 (L); 1980s Type 5 (R) **7** Assorted replacement plane blades. L to R: 2in: Chinese laminated and original; 1 3/4in: original, Chinese HSS **8** Laminated blade's edge

Frogs and blades

The other area where it is practical to be 'inventive' is with frog and blade mechanisms, where parts are often missing. Due to the near universal use of the Bailey mechanism, most of the parts are interchangeable, and it is sometimes possible to reduce the width of 2in (50mm) No.4 components to fit a No.3 1 3/4in (44mm) body using a grinder and files.

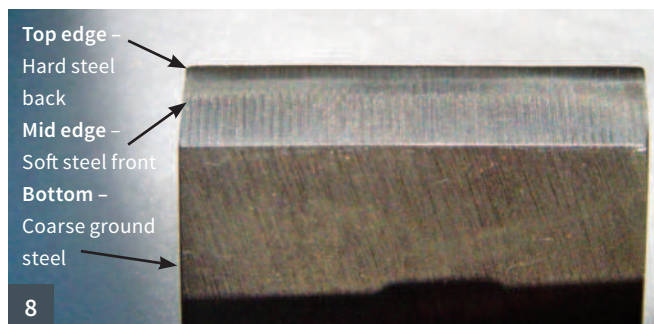
It can also be viable to use parts from budget planes, where the major failings tend to be in the lack of quality in the sole castings. Although frogs tend to be ropey, caps and chip-breakers and some handles can be useable. However, one thing to watch is that the frog adjuster on a newer Record is now part of the screw-head that fits into a groove in the frog, rather than the traditional Stanley Frog Clip & Screw mechanism, hence stopping the frogs from being interchangeable. New quality replacement parts are also offered from the better plane manufacturers.

There have been changes to the soles as well, but these don't generally affect transplant surgery (remember you can't fit a Bedrock frog, like the Quangsheng to a Stanley/Record Bailey). Other changes have been Stanley's 'efficiency savings' in the 1970s using ribs under the tote for the longer plane castings, intended to keep the castings flat, rather than their old system for distressing and seasoning castings over months. The other type of savings are little things like leaving the paint on the bearing surfaces – easily rectified by the user, as is (less easily) the poorer finish to the sole, where it would seem early planes had their soles machined, latterly replaced by the less accurate (but cheaper) sole grinding.

Another option when renovating an old plane is to upgrade the blade. Not all plane blades are equal and a change in thickness can cause knock-on problems with cap irons and adjusters, so take care. For example take thickness variations:

- A.** 1.7–2mm: on Clones and some WWII planes.
- B.** 2.5mm: on Modern Stanley, Kunz, Veritas and the Chinese combo HSS blades.
- C.** 3mm: on Marples Transition and modern Quangsheng planes.
- D.** 1mm (1/8in) Lie-Nielsen, Clifton and traditional Chinese laminated blades, plus many wooden planes in middle Europe.

Blade steel is a further variable. Most Bailey blades are traditionally High Carbon Steel (US01). While more exotic 'new' steels and



treatments have been introduced, my favourite remains the older option of laminated-steel, still usually standard in domestic Chinese blades (although these blades may need their slot dimensions fine-tuned to work with a standard cap iron). As I work with old oak for restoration and also occasionally with chip-board, (both hard on blade edges), I have also noticed that the Chinese (together with Kunz) now make a HSS blade as another useful option.

THE PLANE FROG STORY

Bailey Patent Patent, 1867

Although the first relevant Bailey Patent was for the metal frog, adjuster and blade clamp to be used for the transitional plane, the same concept was subsequently applied to Bailey's (and Stanley's) metal planes. The plane's cutter moves along a 45° bed by means of a forked lever that's activated by a knob. Bailey is also credited with the adjustable metal frog – the bed on which the cutter rests – and the cap iron.

Bedrock Patent, 1895

The Bedrock frog modification improves on the rigidity of the frog's mount and the mouth adjustment. The whole frog is mounted on a fully machined bed at 45° which can be moved to adjust mouth width without loosening the frog. In terms of restoration, this means that Bailey and Bedrock parts are not interchangeable.

Norris Cutter Patent, 1902/1921

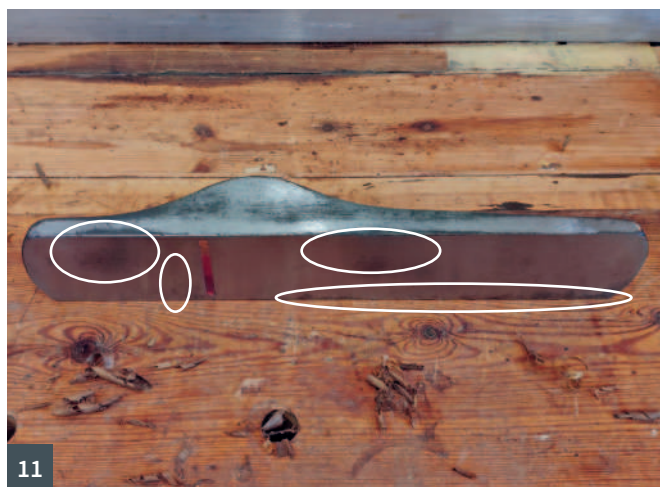
The Norris is completely different from Bailey and Bedrock and was never really exploited in mass production. From the accuracy of the machined parts and the adjusters, it provides the most positive and controllable mechanism of them all.



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9 The modern Silverline No.4 plane 10 1980s No.5 Type 4 plane (bottom) and my Type 3 1950s 'using' post-war plane (top) 11 Highlighting the faults in the No.5's sole 12 The restored and repainted No.5 plane body

Bargain planes

Unfortunately bargains are now seldom available on the internet, but can still be found in yard-sales and car-boot sales. A starting price for a 'naked' plane body will be around £10–15. Adding the blade, chip breaker and cap can be achieved from used parts at about £10 each – about a third of the price of new parts. Bear in mind that something like the Silverline No.4 can be found for under £15 so may be a worthwhile source of all the spares you need, or possibly even as a starter plane if you get a good one. The price quickly adds up and, when you include P&P, you're quickly up to the £50 being asked for a 'restored' plane.

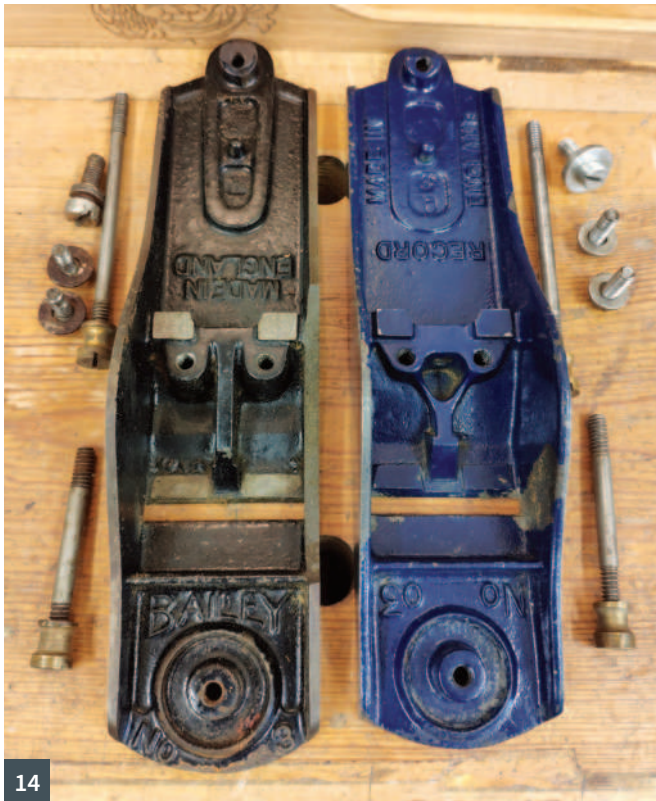
Restoring a No.5 plane

I found a No.5 Type 4 (1972–83 with bed ribs) for £10 that showed signs of having been a builder's tool before being abandoned with handle damage and a missing frog. All the metal surfaces were well encased in rust and there were parts missing, with paint and impact damage on many surfaces. The reflection of the pipe-nut in the sole of my 'using' plane is shown alongside it in **photo 10** for comparison. The body of my 'using' plane is an earlier No.5 that had been my father's, bought in the post-war era, which was in good nick when I inherited it 50 years ago, only needing the application of WD40 and wire-wool to remove the surface rust (although some pitting remains), having a true and flat sole.

Flattening the sole demonstrated the error of the rib-stability theory, as the sole was far from true or flat. As you can see from the white rings on **photo 11**, it was out-of-true for much of one edge and wavy along the sole, with not even the mouth that flat. This would



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13 Test drive of the restored No.5 **14** Bailey No.3 plane (L) and Record No.3 plane (R), before restoration **15** Modified cap and Chinese HSS blade for the No.3 **16** On reflection, the No.5 restoration was not really cost-effective... **17** ...but the No.3 restoration was cost-effective and is regularly used

have taken a lot of hand-lapping, so I had to resort to rough-cutting with 240 grit on a belt sander, before finishing with 320 grit.

With the body now clean, it was de-greased and then re-painted. As I knew the end result would be a hybrid, I decided not to restore it in 'Stanley black', but used red to make sure that it couldn't be passed off as genuine in the future.

With the body ready, re-assembly could start. The edge of the replacement (Chinese) laminated blade was honed and a transplant for the missing cap found and the 'wrong' branding removed. The brass nuts were cleaned and the screw-threads waxed to re-attach the repaired handles. Finally, the plane was taken for a quick test drive.

Restoring a No.3 plane

I also found a late Record No.3 from post 1988 that was missing parts and had a broken handle. It cost £10. Bearing in mind this is of a similar vintage to the No.5, not only was it in better condition,

but it had also been of a higher manufacturing quality than the equivalent dated UK Stanley.

Replacing the blade, chip breaker and cap could have been achieved from used parts at about £10 each – about a third of the price of new parts. However, I had some old No.4 parts in my junk box, so I simply set-to with a grinder and files to reduce the width by ¼in to fit the smaller 1¼in mouth of the No.3. As an experiment, I purchased a Chinese combo-HSS blade (their traditional planes use 1¼in blades, so sourcing is easy on eBay).

Handle repair

The Stanley USA Bailey planes had rosewood handles until the latter part of the 20th century. UK Stanley was only established in 1937 (to take on UK domestic producers of Bailey planes, such as Record who had been making planes since 1931). Stanley's initial use of rosewood in the UK was quickly superceded by beech, then later by unspecified hardwoods, to be ultimately replaced by plastic by the late 1980s.



18 The broken handle of the No.5 **19** A new ear was made from beech and glued and clamped in place **20** Shaping the tote with a rasp **21** A dark wood dye was applied to complete the handle **22** A homemade hybrid plane

Broken handles are not uncommon and probably mostly attributable to accidents. Possibly the most common damage is a break through the base of the handle, often not noticed until the plane is taken to pieces. This can be easily repaired as it can be glued and then re-assembled and clamped in-situ with the handle bolt.

However, the No.5 I restored had the more obvious loss of its 'ear' amongst its less obvious faults. As I had some beech in the scrap bin, a new ear was fashioned, glued and clamped in place over-night. Rasps and files were then used to blend it into the handle, before the residual old French polish was scraped off before final sanding. A suitable dark wood dye was selectively applied and allowed to dry over-night before apply a few coats of garnet polish. This was gently cut back before finishing with dark wax polish, then a final buffing to a gentle shine.

Hybrid plane projects

The real solution to a good budget bench plane would probably be to make yourself a modern wooden plane, either as a hybrid (using a Bailey mechanism harvested from eBay, such as the one in **photo 22**) or with a Pinie Screw Adjuster, using their online construction plans. You can find many such projects described on the internet.

Conclusion

Going back to my starting premise that there were only between 10–20 hours' 'free labour' available, I feel that the troublesome No.5, together with all the costs of new frog & blade parts probably failed to qualify as cost effective. On the other hand, the No.3 with £10–20 for blade and cap (the latter actually free) probably did qualify as cost effective and I now use its HSS blade often.

In support of:



Supporting the SSAFA charity

As I already have a Stanley No.5, this restored and improved plane, now with a laminated blade, will be going for auction on eBay, with the proceeds donated to SSAFA, The Armed Forces Charity: www.ssafa.org.uk



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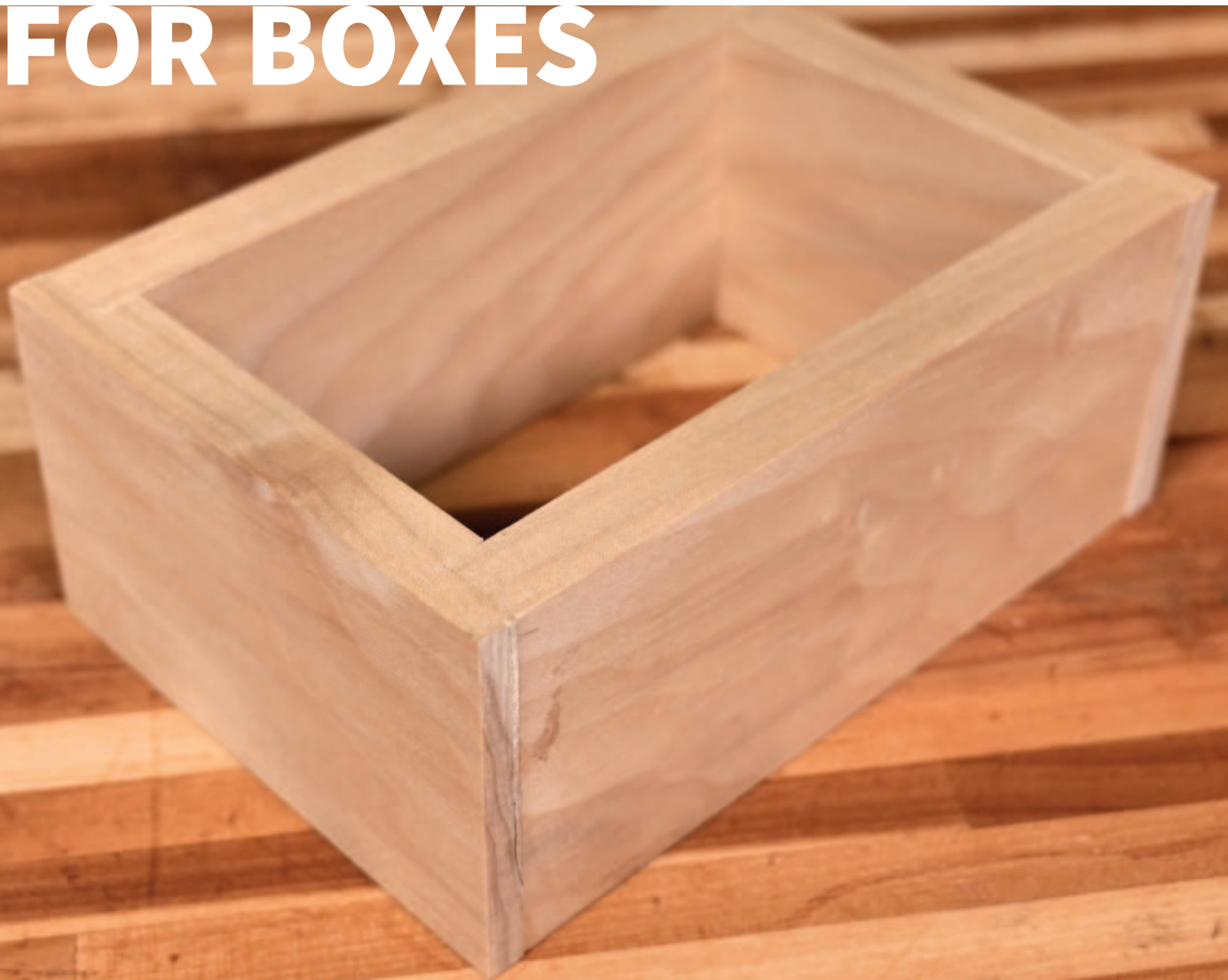
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REBATE JOINTS FOR BOXES



Our festive cover star, Randall Maxey, is out of his Santa suit and back in the workshop to demonstrate this handy joint technique

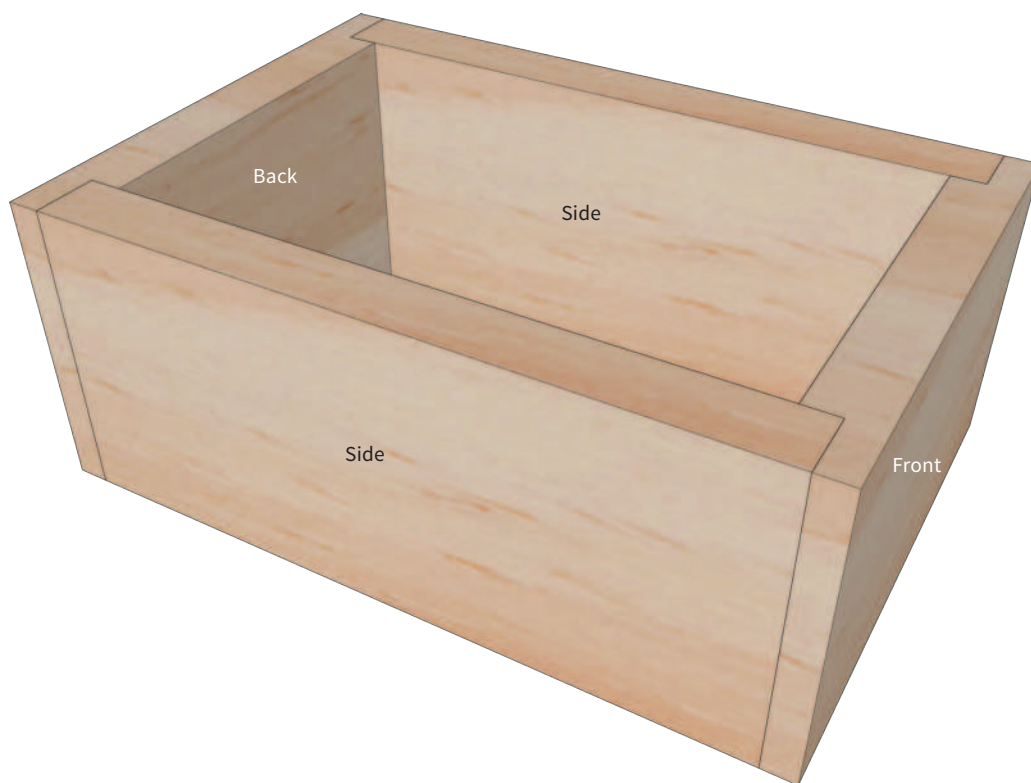
As a woodworker, when I'm perusing the aisles of antique furniture stores, I can be guilty of pulling out drawers to see how they were constructed: as you might expect, a lot of drawers were made with dovetail joints either machine-made or hand-cut.

But I was surprised to see a number of drawers made with a rebate to join the drawer fronts and backs to the sides. As a matter of fact, I came upon an old cabinet with dozens of drawers used to hold screws, nails, bolts and nuts, as you might find in an old hardware store. Every drawer in this hardware cabinet was made using a rebate joint. Since the quality of wood glue wasn't what it is today, the joints were assembled with finish nails.



This antique hardware cabinet features drawers made with rebated fronts assembled using nails

PHOTOGRAPHS BY RANDALL MAXEY



A rebate joint offers a few benefits. It's easy to make using hand tools or machinery. It provides plenty of glue surface for strength. For drawers, the rebated fronts and backs hide the end grain on the drawer sides when installed in a cabinet. The simplicity of a rebate joint makes it suitable for quickly making drawer boxes or... boxes of any kind. I often use rebate joint construction when making small boxes for friends and family.

The illustrations above show the anatomy of a rebate joint. For drawers, the rebated pieces become the front and back. The sides fit into the rebates.

Making a box with rebated joints is a great way to practise your hand tool skills. Start by cutting the four sides of the box to length, making sure the ends are square, I'll then guide you through the rest of the process step by step.



Making the rebate joint

- 1 Set the marking gauge by using the thickness of one of the workpieces. This setting determines the width of the rebate.
- 2 Mark the baseline (width) of the rebate joint.
- 3 With the same setting on the marking gauge, mark the width of the rebate on the edges of the workpieces.
- 4 Use a rule to set the depth of the rebate. Here, I used half the thickness of the workpiece but you can use any depth you desire.
- 5 Mark the edges and ends of the workpiece to create a guideline for the depth of the rebate.
- 6 Mark the waste areas with a pencil to make it easier to remember which side of the line to make the saw cuts.
- 7 Register the chisel in the scored line and make a few taps with a mallet across the workpiece.





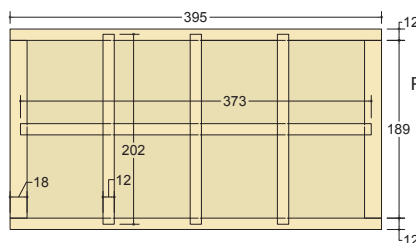
- 8 From the waste side of the scored line, use the chisel to remove a thin chip to create an edge for registering the saw blade.
- 9 While snugging the blade up against the edge you created with the chisel, cut down to the scored line that defines the depth of the rebate.
- 10 Use a rip saw to cut on the waste side of the line on the end of the workpiece. Cut down to the saw kerf you made earlier to remove waste.
- 11 You can use a sharp chisel to smooth the cheek of the rebate, keeping an eye on the scored line so that you don't cut deeper than that.
- 12 My preferred method of cleaning up the cheek and shoulder of a rebate is to use a shoulder plane.
- 13 Dry-assemble the box, keeping the sides square. Make note of any gaps in the joints and clean them up with a chisel or shoulder plane until the joint fits tight.
- 14 Apply glue to the rebates and clamp the assembly, making sure to keep it square as you apply the clamps.



By hand or by machine, making a box or drawer using rebate joints is one of the easier construction techniques you can use. With tight-fitting joinery, your project is sure to stand the test of time.

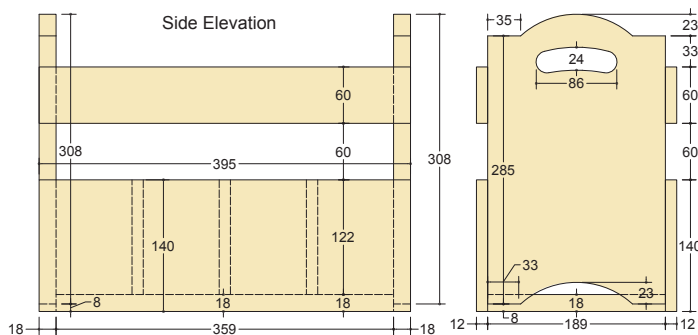
BEER CRATES

Anthony Bailey uses his router to convert waste wood into stackable beer crates

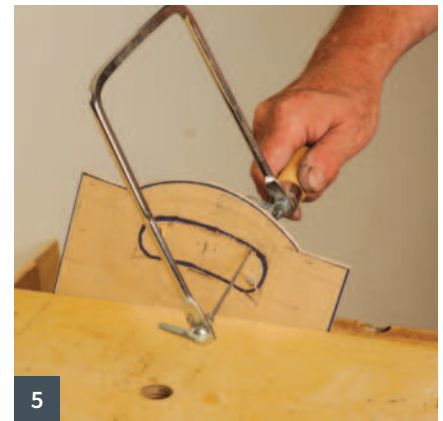
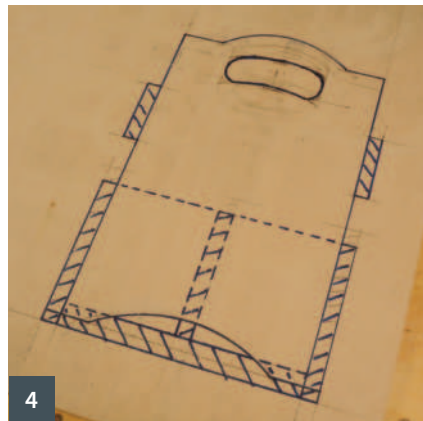
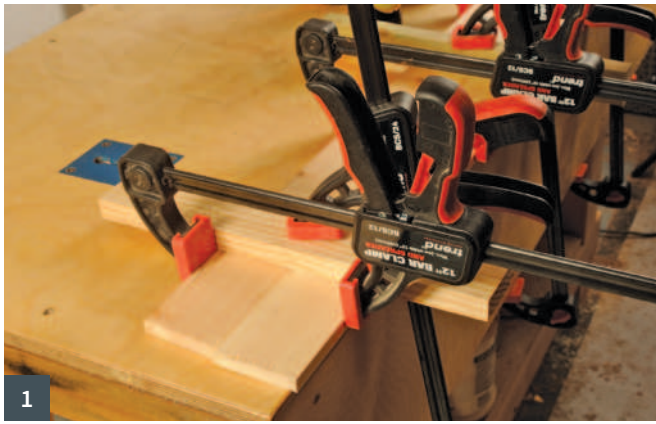


Plan / Section

End Elevation



I was looking for a project to use up some leftover wood that I couldn't use anywhere else – the wood had biscuit slots and grooves on some of the edges and it was narrow so I wasn't able to saw off the unwanted machinings. That's when the penny dropped and the idea of a stackable beer crate seemed the perfect excuse because all these faults could become design virtues instead...



Making the crates

- 1 The softwood battens were 'ganged' together with glue to make up strips to suit the design in widths of two, three or four pieces. This wasn't critical; only final widths would count.
- 2 After cutting all the components to length according to the plans, the boards were all 'shot' by hand to ensure they were nice and square, which was checked using a try-square.
- 3 You must forgive my 'magpie eye' – when I went in the off-licence to choose my liquor, I was taken by the wide variety of bottle shapes and sizes. It seemed sensible to try one of everything – to see if they fitted my design of course...
- 4 From that measuring up exercise I came up with a 'rod' – a template – which was drawn at 1:1 scale. The idea was that the curved ends would interlock if another crate sat on top of the other, but no more than that for safety's sake.
- 5 Now the rod became a setting out and routing template. This involved accurately cutting around the end shape leaving off the end profile of the side pieces. The edges and hand hole in particular were finely shaped to the drawn line using a 'hand-stitched' rasp with fine teeth, but a coarse wood file will do the same thing.
- 6 The two crate ends were then drawn out using the template. It wasn't critical to centre on the boards as the design is supposed to appear deliberately 'flawed', which makes the whole thing more interesting to look at.
- 7 The crates needed to be cut to identical sizes and the curves done on the bandsaw slightly away from the marked line, ready for machining to finished size.
- 8 Ditto the hand holes, but using a jigsaw after drilling a blade entry hole. The waste would disappear when routed out.



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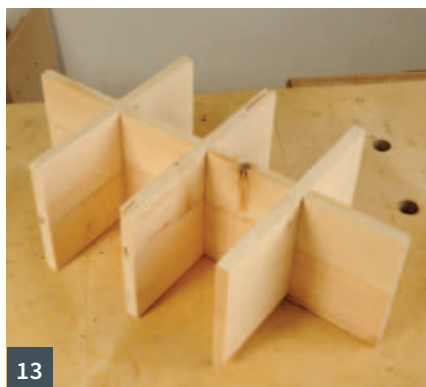
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- 9 The template was pinned to each crate end in turn and an end bearing-guided straight cutter used to run around the template to create smooth finished edges. Good extraction is essential here. Incidentally, perspective makes my fingers look closer to the cutter than they actually were – I promise that this was a safe operation.
- 10 A roundover was needed on each hand hole for comfort, the cutter needed to be a small enough radius that the bearing would still run along the centre of the board thickness so the shape didn't get ruined on the second pass from the other face.
- 11 It didn't even need to be a full roundover, comfort and a certain crudeness of making was part of the effect I was after.
- 12 The bottle partitions were carefully marked with a try-square and sawn down to create the halving slots. Because the boards were thin and apt to break, holding a tall block against the board while sawing prevented this happening.
- 13 Once all the cuts were made the whole assembly could be dry-fitted to see how it went together. Any tight joints could

be adjusted by some judicious 'nibbling' on the bandsaw, which helps to widen the slots fractionally.

- 14 The lower crate sides were marked as a pair where the housings would be machined. The partition boards were 12mm thick and the router cutter 12.7mm diameter. However, a careful check with digital callipers proved that not all 12.7mm cutters are the same diameter! I ended up choosing the closest one to the actual board thickness.
- 15 I used a housing jig I had made some time ago. It was intended for a 20mm guidebush although you can make a jig to take a smaller one so long as the cutter will pass through easily.
- 16 The bottle partitions are 7mm longer at each end so I needed a depth of cut at least 7mm. I chose a 7.5mm drill bit and used the shank to set the cut depth.
- 17 The two crate sides were stacked on top of each other so the housing jig fence batten would sit flat properly. The jig was then clamped to them and the machining done in two passes until the final depth was reached.



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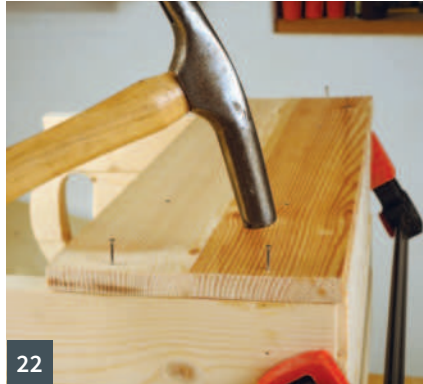
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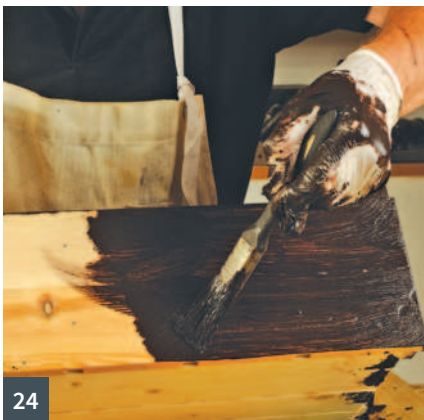
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18 The crate ends, however, have stopped housings. The same jig was used but a pencil line on the workpieces was an approximate guide to length.

19 The vital check, will all the compartments fit nicely together? Thankfully, yes.

20 Before glue-up, I checked the end board was sitting correctly. It needs to be high enough so another crate will interlock underneath it.

21 The bottle partitions were sanded across the top before assembling the whole crate.

22 All the components were then fitted together with aliphatic resin glue along each housing or corner butt joint. The bottle partitions didn't need glue as they were pinned to the outside of the crate.

23 Most of the construction was now complete and ready for a finish to be applied. The top rails were left off to make applying finish to the interior easier to do.

24 First of all, I wanted to experiment with a dark gel stain that

would make the crate look traditional. This was a messy job and the stain needed to be wiped off to even it up and allow some wood grain to show.

25 After making that version, I went on to try using milk paints for a light 'rubbed-through' effect that was completely different to the effect achieved using the gel stain. The first job was to apply a red milk paint as a base coat with a coat of clear sealer on top of that. I allowed both coats to dry, then added two coats of a cream-coloured milk paint over that.

26 A combination of 80- and 120-grit abrasives created that 'rubbed through' effect, which you can see in flea markets, interior design and antique shops everywhere. It's easy to do and very effective. The version you make is entirely up to you. Have fun!



CELTIC SNOWFLAKES

Dave Western carves some wintery decorations

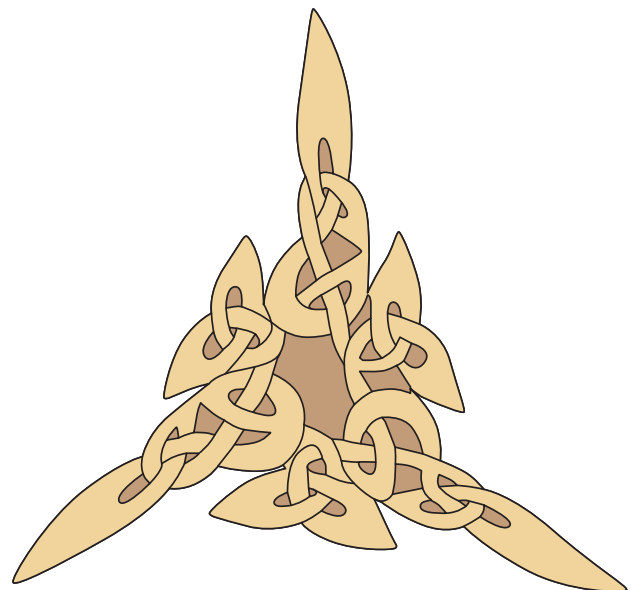
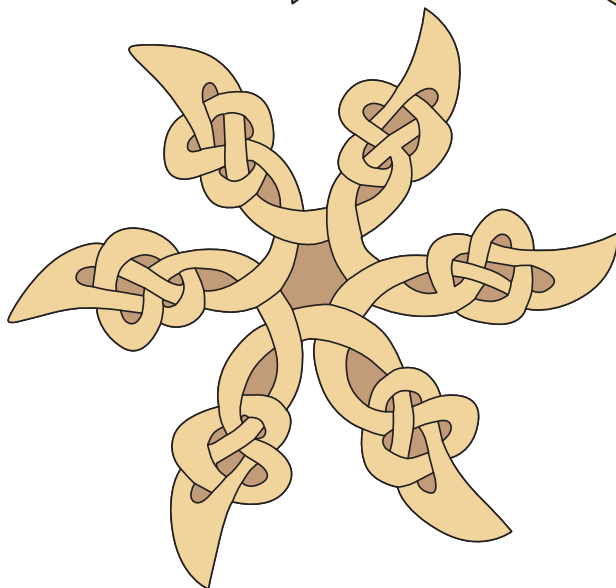
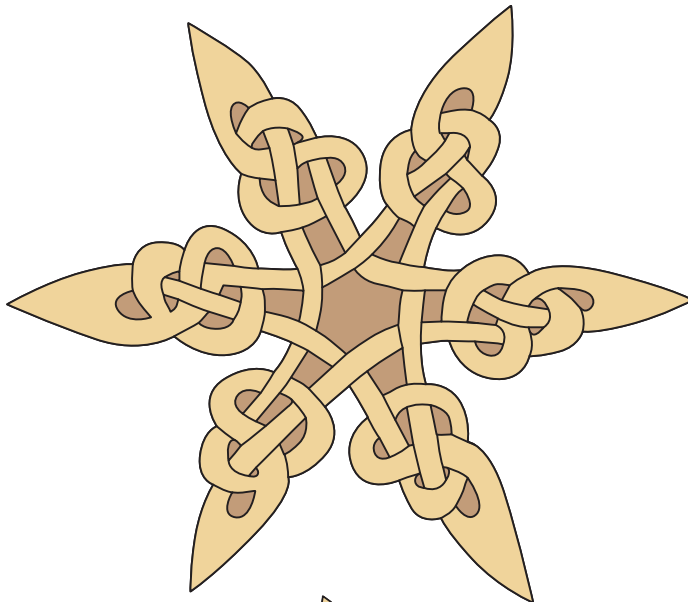
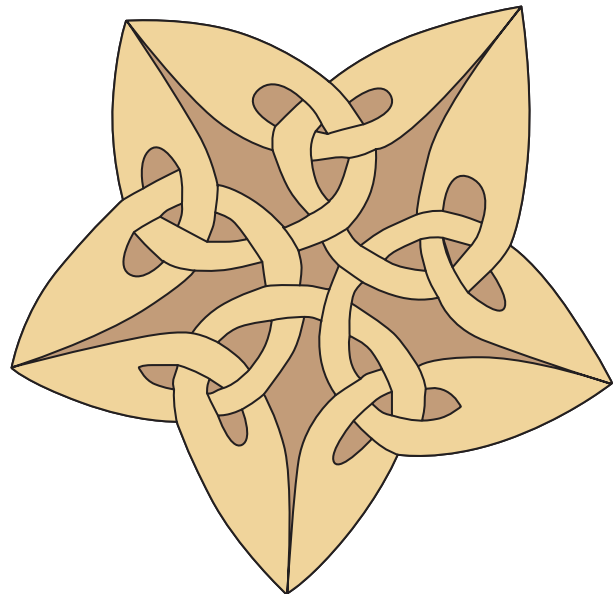
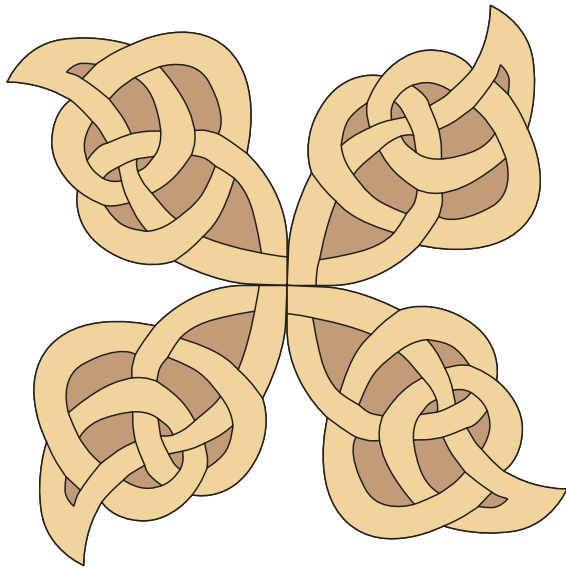
With the festive season rapidly approaching and wood bins bursting with all sorts of offcuts that will have to be dealt with in the new year, here's a perfect little project to use up some scraps and win some accolades.

These Celtic knot snowflakes are beautiful to look at and highly engaging to make. Although they appear pretty complex, all are fashioned from very simple knots which have been repeated to form three-, four-, five- or six-arm patterns. I make my snowflakes

from 5mm-thick material and generally carve both sides to heighten the over and under effect of the knotwork.

The knots can be made highly fretted or simply relief carved. Depending on how your shop is set up, I have included carving methods for those with scrollsaws and for those who plan to make them totally by hand.

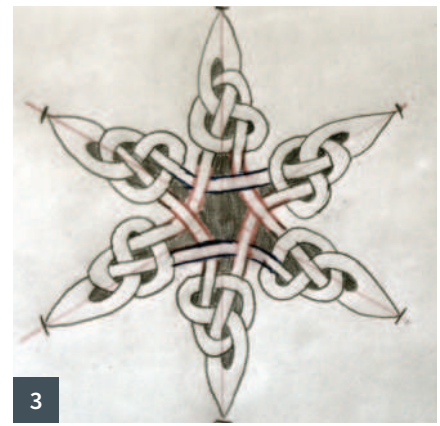
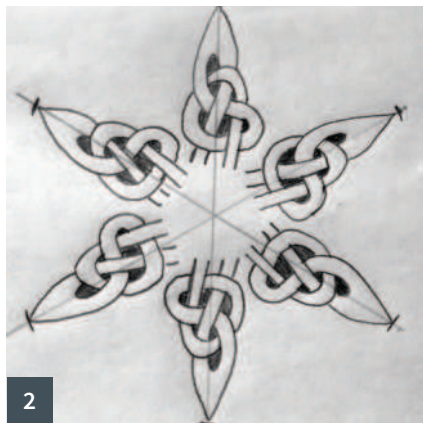
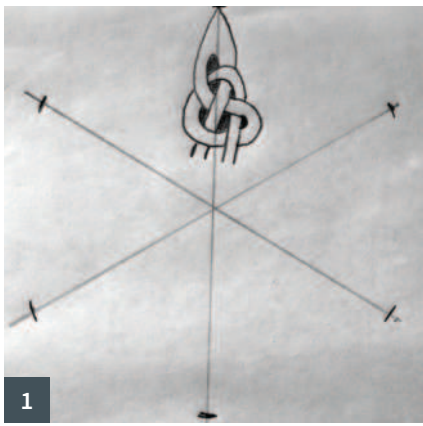
To get you started, I've provided diagrams of a variety of three-, four-, five- and six-point knots. The six-point is the most like a snowflake, but the others are lots of fun too.



YOU WILL NEED

Tools:

- Scroll/jeweller/coping saw
- Drill and a variety of bits
- 1in straight knife
- $\frac{1}{8}$, $\frac{1}{4}$ in wide chisels
- Needle files
- Small paintbrush for oiling



Deciding on a pattern

- 1 You can fire up the photocopier and churn out some copies of the patterns I have included, or you can have a go at making your own. I love to use tracing paper when I do my sketching – it allows me to recycle ideas without having to totally redraw. For something like these snowflakes, it allows me to quickly and easily repeat a pattern by simply moving the paper around over the original drawing. It is important to use a knot with two strands so that the 'over and under' pattern can more easily continue as you circle the snowflake. To make a quick and easy snowflake, draw out a pattern of straight lines indicating where each arm of the snowflake will locate. Place your small knot section on the first arm and trace or scribe.
- 2 Repeat this operation for the rest of the arms. With all the arms drawn, carefully link them together while keeping your 'overs and unders' consistent. Sometimes this can be a bit tricky and require some concentration, but as long as you consistently repeat the pattern, you should be OK.
- 3 The result is a stylish knot that looks much more complex than it actually is.

Shaping out

- 4 With the pattern glued to the wood workpiece, it is time to rough out the external shape of the snowflake. If you have a band or scrollsaw, it is a pretty quick and simple task.
- 5 If you are using a coping or jeweller's-type saw, remember

to clamp your work and make sure it is supported. This is especially important as more of the snowflake's arms are exposed and the wood becomes structurally weaker.

- 6 If you lack a saw, you can cut the arms clear with a knife. There are several ways to do this – I like to cut a channel along the drawn lines then work my way through the wood using an increasingly larger triangle cutout. This creates a ramp-type cut which can be made deeper with each consecutive pass.
- 7 If you prefer something a bit more aggressive and less structured, simply remove extra stock and work back towards the lines. Remember to keep the knife at 90° to the work when you get close to your lines. Whichever method you feel most comfortable doing is the way to do it. Your ultimate goal is to get nice and close to your drawn lines and to maintain a crisp 90° angle as much as possible.

Detailing the knotwork

- 8 If your plan is to fret the interior sections of the knotwork with a jeweller's saw or a knife, save time by drilling holes to clear away as much material as possible. I use a variety of drill bit sizes to clean out the waste, leaving as little waste material behind as possible. This helps speed things up nicely.
- 9 If you are not cutting through the knotwork, scribe the lines with a knife tip. Run the knife along all the lines to a depth of about 1.5–2mm and make sure all of the pattern has been scribed before beginning your cutting out.



10 Clear the sections between knots by tilting the knife at an angle so that the chip removed is the shape of an inverted triangle. This will leave a hollow and help define the knotwork.

11 This picture shows a series of steps in forming the knotwork when not fretting through the wood. Imagined as a clock face, the arm at 12 o'clock shows the scribe lines following the drawn lines. At 2 o'clock, the paper has been removed to show the pattern carved into the wood. At 4 o'clock, the initial chip cuts have removed the material in the spaces between the knot threads and some shallow ramping has been done. At 6 o'clock, the hollows are being tidied up and the ramping made deeper. Some of the edges of the threads are also rounded a bit. At 8 o'clock, the knotwork is pretty much completed and all that remains is for a bit of fine sanding or filing to smooth the edges and refine the knot. At 10 o'clock, a couple of the 'hollows' are still a bit frazzled. A razor-sharp knife will be required to make the fine shavings to give a final tune-up.

Fretted knotwork

12 If you have fretted the knotwork, ramp the 'over and under' intersections. Take shallow cuts until you have ramped the entire design, making sure that the knot flows as it should. If you hit a section with two consecutive overs or unders, you'll have enough material left to make a suitable save. Dig in too deep and you are committed to whatever happens.

13 Once all is in order, add depth to the ramp cuts and start defining

the knot a bit more. Be careful not to pull straight up to clear at the end of your cuts or you will risk chipping out the crossing knot thread. Instead, cut downward to clear material at the intersection.

14 Now clean up the various loops by chamfering the edges with a shallow knife cut. This refines the knot and makes it look much more finished than leaving the edges square.

15 After you are satisfied with the knotwork, you can use needle files to clean up any scruffy interior cuts or wood fuzzing. A small set of needle files make much finer work of this than rolled-up sandpaper as the file cuts the wood rather than abrading it.

16 This picture shows a variety of methods for finishing fretted Celtic knotwork. The arm at the 12 o'clock position is unfinished, with square edges and refinement necessary. At 3 o'clock, the edges of the arm have been chamfered a bit. At 6 o'clock, the chamfers have been lightly sanded and anomalies smoothed out. At 9 o'clock, the loops have been heavily sanded and take on a bit of a shoelace look. To finish them off, apply a couple of coats of oil or wax then thread a bit of fishing line through a hole to allow you to hang them.



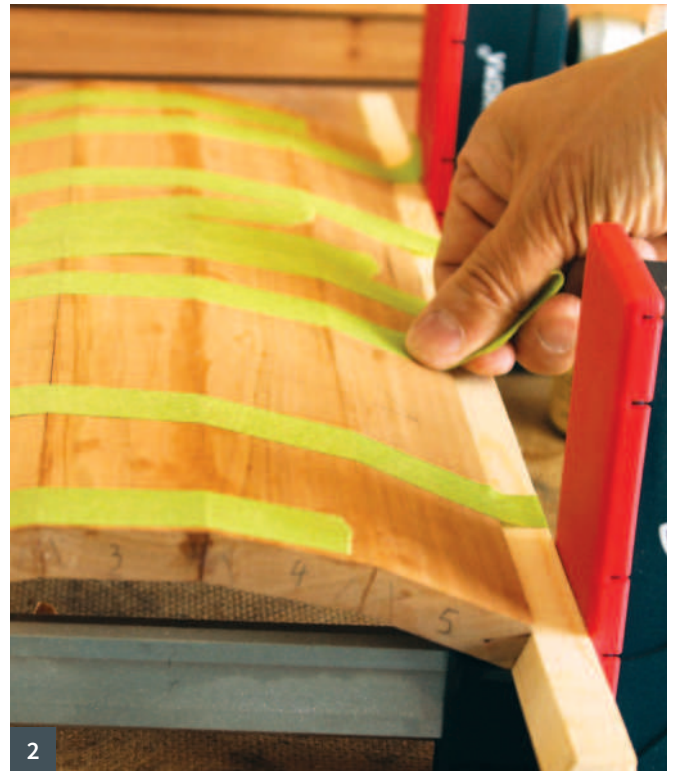
UNIQUE CLAMPING SOLUTIONS FOR CHALLENGING GLUE-UPS

Charles Mak shows some of his clamping techniques for oddball glue-ups

Some woodworkers find the last step of a furniture project – finishing – the most nerve-racking. To me, the most dreaded process is the glue-up. Unlike a spoiled finish which can usually be fixed even if it means sanding and starting over, a glue-up gone wrong could be capital punishment in the woodworking sense. That is why I invest time in finding or developing techniques that

will assist me in handling various sorts of clamping challenges.

Study, for a moment, the challenge you would face in gluing up the staves to form the coopered lid for a keepsake box (**photo 1**). Taxing glue-ups like that are satisfying challenges when you figure out a way to conquer them. In this article, I will go over some unusual glue-up challenges and their clamping solutions.



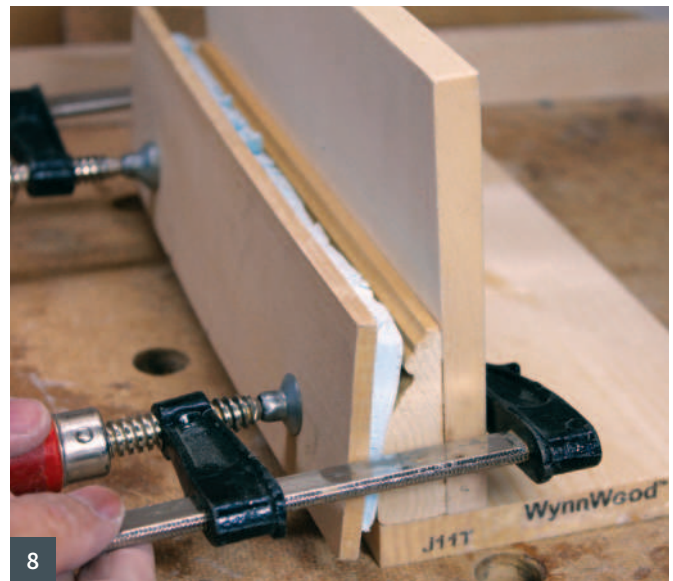
Angled cauls

The key to getting a tight joint is to apply the clamping pressure at a right angle to the surface and in the centre of the joint. However, glue-ups like the coopered lidded box that involve odd angles or curved edges make exerting pressure on the joint at 90° with regular clamps difficult.

To handle such irregular joints, the trick is to use cauls to complement the angle so the clamping pressure is directed on the joint

at a right angle. For example, for the coopered lid, I cut the cauls at a complementary angle to the staves, allowing me to clamp the staves together without slipping (**photo 2**).

You can find two more examples of the use of angled cut-offs: one in this splayed gift basket (**photo 3**), and the other in these shelves (**photo 4**).



Handscrews as complementary cauls

In a previous article (WWC 64), I covered the use of handscrew clamps as problem solvers. In addition to those uses, handscrews make great clamping cauls.

For instance, to fix the loose leg of a tripod table, all I needed was a handscrew, tape, an F-style clamp and a couple of scrap blocks (**photo 5**). I taped a block to the end of the handscrew and clamped the handscrew to the leg. Lastly, I used the F-clamp to pull the curved leg through the handscrew to the pedestal (**photo 6**).

Mirror-image cauls

Sometimes, a surface or profile has more than one contact to exert clamping pressure on, such as a moulding. A more sophisticated approach is to make a custom clamping caul that closely matches the profile of the workpiece so that clamping pressure can be applied evenly across it.

For larger surfaces, lexan, flexible plywood and Styrofoam are examples of materials that can be used to make custom cauls

(**photos 7 & 8**). For more delicate or detailed profiles, I use a mouldable compound such as Friendly Plastic or body fillers to produce moulded cauls.

As an illustration of the technique, here are the steps I followed to make a mirror-image caul to fix a cracked neck of a cat-shaped bookend:

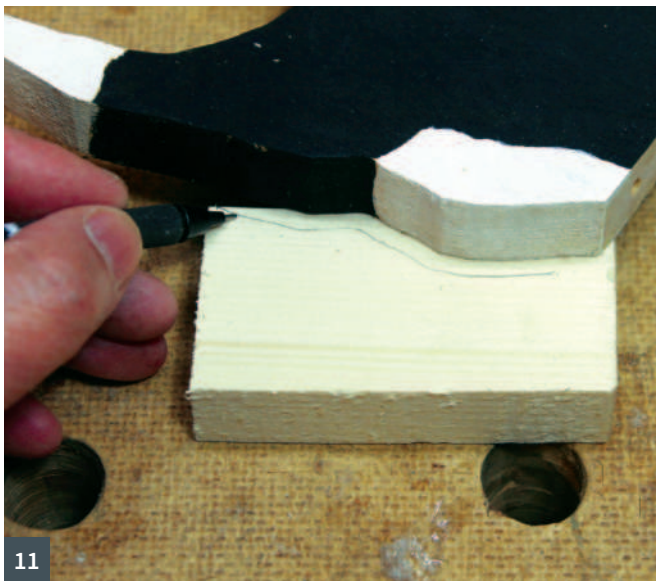
- ♦ Mix the body filler in an amount sufficient to form a caul of the desired size (**photo 9**).
- ♦ Place a plastic wrap over the head and spread the filler around the top (**photo 10**).
- ♦ Press the filler lightly to ensure it is in contact with all surfaces in the cavity.
- ♦ Trace the outline of the opposite end and cut along the line to make a complementary caul (**photo 11**).
- ♦ The cured mould provides a perfect impression of the ears and their surrounding area for clamping (**photo 12**).
- ♦ Screw the repaired body to its stand – mission accomplished! (**photo 13**).



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For many woodworkers, there are few tasks in the shop that elicit more anxiety than facing a complex, non-reversible glue-up. These unique clamping techniques provide pressure in places beyond the reach of regular clamps. They can be a life-saver where all the familiar clamping methods cannot do the job.



CROXETTI PASTA STAMP

Andrea Zanini turns a traditional pasta stamp

Italy and food are two words that often go together. Our culture is indeed full of high-quality products such as fine wines, delicious cheese and a huge variety of pasta. But how can woodturning be related to culinary tradition? The first answer you get is, of course, rolling pins. And yes, there's also fun projects such as lemon juicers or honey dippers, but I was looking for something deeply connected to culture and tradition. Then I remembered the story of croxetti pasta stamps.

During the Middle Ages, Italy was divided into several small counties and within each county noble families shared their influence. Liguria, the region where croxetti were invented, was particularly important because of its position on the Mediterranean Sea.

It was imperative for the nobility to state clearly which portion of land they ruled over. The quickest and best way to show that was through food, which is why croxetti were invented: they cut round discs of pasta to print the insignia of the local noble family on one side and a cross on the other (that's where the name, croxetti, comes from).

Initially served at balls to underline the importance of the local noble family, they were later introduced among the population and they worked improving cohesion and the sense of community. They are usually served with a nut or basil pesto and even though they're now stripped of their social and political meaning they are still a delicious dish that belongs to our culinary culture.

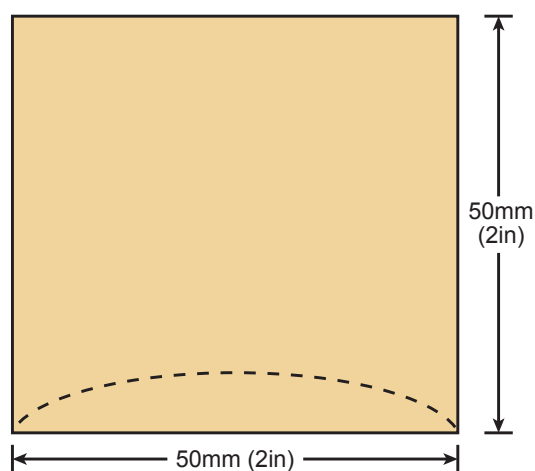
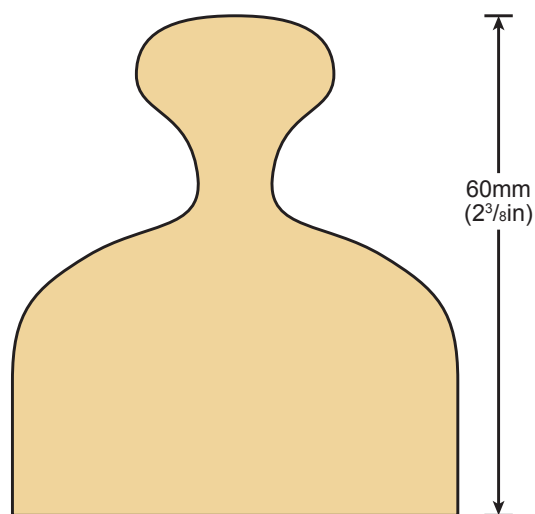
YOU WILL NEED

Tools:

- 10mm bowl gouge
- Parting tool
- Roughing gouge
- Skew chisel
- 10mm spindle gouge
- Spring calliper
- 15mm-wide leather strip
- Dremel carving tool
- 1mm ball head burr

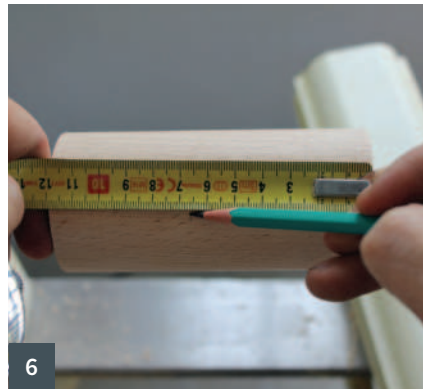
Materials:

- Abrasives from 150–240 grit
- Reclaimed beech



Preparing the blank

- 1 First of all, you need to choose the right piece of wood. Since this is a small project, you can use reclaimed wood or a piece from your scrap pile. Though there are no precise measurements, the wood should be big enough to obtain a round blank of 50mm in diameter. Traditionally croxetti were made out of apple or pear wood, but beech will be just as good. Cut the blank to length using a bandsaw. You can use a manual saw if you prefer or you can cut it directly on the lathe. To obtain a two-part stamp you should cut it at 120mm.
- 2 To avoid any wood waste, be precise in finding the centre. A centre finding jig is very handy, but if you don't have one, just use a calliper.
- 3 Put the blank between centres and round it using a roughing gouge. Be careful not to remove too much material. Later you'll have the option to carve your family insignia on the stamp, so you're going to need some space for that!
- 4 When the blank has been rounded, smooth it down using a skew chisel. The finish on the blank will be great and it is a very good way to practise your smoothing skills.



- 5** Check that the blank is cylindrical by measuring it with a spring calliper. This is a very important step because the two parts of the stamp must fit as best as they possibly can to one another. This is the perfect moment for the final sanding of the stamp surface. If you used the skew chisel a touch of 240-grit abrasive will be enough, otherwise you can start from 150 grit to sand. Remember that this project will be a kitchen tool, so the final piece won't have to be super smooth and shiny it you can use a sharpened parting tool or, if you want a better finish, a spindle gouge.

Making the stamp

- 6** Now you need to figure out the measurements of the two halves of the stamp. The half with the handle should be approximately two-thirds of the blank but, again, there are no strict rules and you can improvise.
- 7** Use a parting tool to separate the two halves of the stamp, but don't go all the way through the blank. Leave a little bit of wood that will be removed manually with a small saw; it's a much safer way to part two pieces from one blank.
- 8** Cut a strip of leather from, for example, an old belt and wrap it on the side of the stamp that will be put in the chuck. The strip must not overlap at either end as it would create an off-centre effect on the stamp. If the strip is a little short round the stamp then that is also fine.
- 9** Place the piece of wood with the leather strip as shown. The leather will avoid any jaw marks on the smooth surface of the stamp and will assure a strong grip on the piece. It's a neat little trick that can be used on a number of different occasions.
- 10** An important thing to remember is to square both ends of the two halves of the stamp. On the short piece the carved sign will be present, the other piece will have a flat surface that will host another, simpler, drawing – like your initials. To square it you can use a sharpened parting tool or, if you want a better finish, a spindle gouge.
- 11** On the short part, opposite to the flat side, you have to make a shallow depression. Start turning from the edge and keep the border sharp. This part will cut the pasta in small discs, actually making the croxetti. Use a small (10mm in this case) sharp bowl gouge to obtain a very smooth finish.



Making the handle

- 12** It's now time to turn the handle that will be placed on the bigger of the two blanks, the one without the concave shape on one of the two sides. Mark the measurements on the blank and start removing material which corresponds to the narrow part using a parting tool.
- 13** Now, using the spindle gouge, shape the rest of the handle. Take it slowly and stop from time-to-time trying the grip until you feel it comfortable in your hand. When the shape is right, just a touch of sandpaper will make it smoother.

Carving the croxetti design

- 14** It's now time to stop the lathe and start carving. On one of the two flat sides draw the more complicated design. I like to carve the complex one on the half without the handle so I can hold it firmly in my hand, but you can, of course, use a vice. Carefully draw your design with a soft pencil. The better the drawing, the better the result.
- 15** The ball point burr is the best choice to carve curved designs. The carving doesn't have to be deep and even a small burr will do the job in a reasonable amount of time. That being said, you can

of course experiment with different types of burr. A shallow carving is enough to leave a neat and clean mark on the pasta. The design I chose is just a random one, but you can decorate however you want.

Using the stamp

- 16** Now that you've turned a croxetti stamp, you'll need some pasta to go with it! To make some delicious pasta, you will need 300g of flour, two egg yolks and 100ml of water. Sieve the flour first then mix all the ingredients and knead until you get a pliable, smooth dough. Form a ball with the dough and let it rest, covered in clingfilm for at least 30 minutes at room temperature. Roll out the dough until it's approximately 3mm thick then use the sharp end of the croxetti stamp to cut out even discs.
- 17** Place the disc between the two halves of the stamp and apply a firm pressure. Be sure not to shift the two halves to obtain a clear and neat design on the pasta.
- 18** The result of a perfect croxetti. Cook the croxetti in salted water until they come up on the surface, and let them boil for no more than four/five minutes. Serve with some basil pesto for a tasty dinner!





THE WOODLAND CRAFTSMAN

Woodlander and eco-builder Ben Law
shares his love of ancient forests
and traditional crafts with *WWC*



Ben Law has many roles: he is a woodsman, craftsman, eco-builder, teacher and writer. He lives and works in Prickly Nut Wood, an ancient woodland in West Sussex. He specialises in roundwood timber framing and is a passionate advocate for buildings being constructed from local, sustainable materials. The building of his own unique woodland home in Prickly Nut Wood was featured on Channel 4's *Grand Designs*. As well as coppicing his own woodland, he makes a range of craft produce, runs courses on sustainable woodland management and permaculture, runs a specialist eco-building company and trains apprentices. He is also the author of several books, including the *Woodland Craft Handbook* (see page 98) and his latest title, *Woodlander*. Here, he tells us more about his experiences and the traditional woodland crafts he practises.

WHAT FIRST DREW YOU TO WOODLAND MANAGEMENT, AND WHAT BROUGHT YOU TO PRICKLY NUT WOOD IN WEST SUSSEX?

I was drawn to woodland management when I received a leaflet through my letterbox in the 1980s about large areas of the Amazon rainforest being burnt. One of the reasons was timber exploitation. I felt if I could manage a local wood sustainably and supply some local timber and products that would help take pressure of the



Amazon and the demand for tropical hardwoods.

Prickly Nut Wood was a stone's throw from where I was living and I was able to purchase the woodland by barter.

HOW DID YOU LEARN THE TRADITIONAL CRAFTS, SUCH AS SPOON CARVING, STEAM BENDING, BASKET MAKING, ETC.?

I have learnt craft skills mainly from researching traditional crafts and tools and having a go. Beyond that it has been tips and help from people I have met.

WHAT DO YOU THINK ARE THE MAIN BENEFITS OF LEARNING THESE KINDS OF TRADITIONAL CRAFTS?

Crafts are a way of adding value to wood. Coppicing produces a large amount of raw material that has traditionally been used for craft making. So by making crafts from the wood I coppice, the crafts are helping with the management of the woodland and its biodiversity. It is all about understanding the cyclical picture: when I make a woven hurdle from coppiced hazel, I am helping support butterflies and dormice whose habitat is directly linked to coppicing.



WHICH TRADITIONAL CRAFTS WOULD YOU SAY ARE THE MOST ACCESSIBLE?

Spoon carving is a great starting point as it takes few tools and a small amount of wood. Key to all woodland crafts is learning to cleave. The process of splitting wood by prizing the fibres apart with a billhook, adze or froe enables the craftsman to create smaller pieces that have far more strength than sawn wood and if the round timber is quartered it will remove the likelihood of the wood splitting as it dries.

DO YOU THINK TRADITIONAL WOODLAND MANAGEMENT SKILLS WILL HAVE AN IMPORTANT ROLE TO PLAY IN HOW WE TACKLE CLIMATE CHANGE?

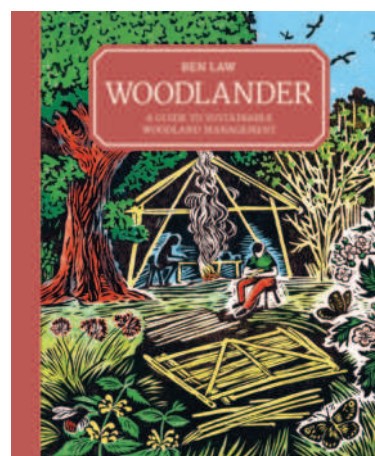
Traditional woodland management skills will have an important part to play in how we tackle climate change but they will need to be combined with a new outlook that increases diversity of species in our woodlands. Planting species that will cope with our climate in 50 to 100 years' time will mean that we need to source seed and species from further south than we currently are and take some risks in what we plant as no one can accurately predict our climate when these new plantings mature.

COULD YOU EXPLAIN THE CONNECTION BETWEEN ANCIENT WOODLAND AND BIODIVERSITY?

Ancient woodland in England and Wales refers to woodlands that we know have been established for at least 400 years (250 years in Scotland). These woodlands contain species that have evolved together over a long period of time. Many ancient woodland plants are slow to spread and establish and are therefore fairly unique to the ancient woodland environment. These plant species are particularly rich in woodlands that have been managed through coppicing as the patchwork of letting the light into different areas of the woodland on a cyclical cycle has created an environment for a rich diversity of species. These species are often the food plants of many species of butterflies. Ancient woodlands often contain veteran trees, which are rich in species of mosses and lichens, and can support hundreds of species of invertebrates that are a key link in the food chain for many other species.

YOU WORK A LOT WITH CHESTNUT, WHAT QUALITIES DOES CHESTNUT HAVE THAT MAKE IT SO GOOD TO WORK WITH, EG FOR FURNITURE MAKING?

I mainly use chestnut for outdoor crafts due to its high concentration



Woodlander by Ben Law, £25, published by GMC Publications. Available online and from all good bookshops

of tannic acid that makes it naturally durable. It is a fast growing hardwood that coppices well and produces good quality poles with very little sap wood. Chestnut cleaves readily and therefore is used as a cleft material in many of the products I make, these include fencing, trellis, laths and roofing shakes. In its round form I use it for pergolas and construction in roundwood timber framing. It also makes a good charcoal and firewood. Added to this it produces a good crop of edible nuts and therefore makes it a very useful all round tree.

YOUR BOOK *WOODLANDER* COVERS THE TOPIC OF SOCIAL FORESTRY, DO YOU THINK THERE IS SOMETHING SPECIAL ABOUT BEING IN A WOODLAND THAT HELPS PEOPLE WORK TOGETHER AS A GROUP?

The woodland environment has a calming effect on many people and the need to spend time in woods for our wellbeing and mental health will be a growth area in the future. Volunteering in local and community woodlands gives many people a first taste of spending time with others fulfilling a useful task in the woodland environment and provided there is a plentiful supply of tea and cake many people return week after week. The balance and benefit of spending a day in the woods having maybe spent five in front of a screen cannot be underestimated.

WHAT DO YOU ENJOY MOST ABOUT TEACHING WOODLAND CRAFTS?

I enjoy many parts of teaching, in particular making students aware of where the materials they are working with have come from and the direct link between craftwork and species biodiversity.

WHAT ARE YOUR FUTURE PLANS FOR YOUR OWN WOODLAND?

Prickly Nut Wood has been around way before my time and will continue way beyond it. I am a temporary steward and my role has always been to leave the woodland in a better state than it came to me to pass onto the next steward or stewards. When I took on Prickly Nut Wood it was covered in Rhododendron, which we have now fully removed and the old coppice cycles that were derelict have now been restored. My future work involves diversifying the stands of sweet chestnut to make them more diverse and disease resistant. I am also working on widening the woodland rides for butterflies and bringing the large deer population into balance.

ben-law.co.uk

A collection of various woodworking tools is scattered across a rustic, dark-stained wooden workbench. The tools include a red and black hand plane in the top right, a red and black hand saw in the middle left, a black and red hand saw in the bottom left, a large circular saw blade in the bottom right, and a black and red hand plane in the bottom right. The wood grain is prominent and runs vertically.

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**LOOK OUT FOR THE
NEXT ISSUE
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LARGE TURNED COASTER

Chris West demonstrates why upcycling timber appeals to his 'don't throw it away, there will always be a use for it' attitude



Upcycling is a common word these days and includes converting potential throwaway materials like old furniture and turning them into something different which is both attractive and useful. There can be challenges, however. In old furniture there is not a great deal of wood with a thickness over 20mm and it has usually been mostly made from a single species of wood. Given that I am a woodturner, at first glance this would appear to restrict me to turning slim items like a pen, a spurtle or a lace bobbin!

During lockdown I have been turning 50 to 100mm diameter inlays, some of which were inserted into weed pots in the shape of a rectangular bottle (see *WWC 70*). So, when I was recently offered a nest of small 1970s oak side tables, it was time to think outside of the box...

As with upcycling most furniture there are often two particular common qualities:

- ♦ The piece of furniture usually has wood all of the same species.
- ♦ The dimensions of the wood often limit the types of projects without either laminating pieces or using other species of wood.

I decided that, using the idea of the inlays, I would upcycle the tables to make a larger coaster than normal.

So, my design would include a group of oak end grained pieces (i.e., the legs), sitting inside another piece of circular oak (i.e. a piece of the table top). The oak end grained pieces would be glued to a piece of 2mm greyboard and be separated by a 2mm-wide gap which would be filled with two-part black Milliput®. This is bandsawn and turned into a circle to fit into the piece of circular oak.

Normal coasters are around 75mm in diameter. I wanted this one to be a minimum of 100mm. The choice of size is yours.

An alternative to ebony as an inlay – using Milliput®

Black Milliput is a two-part, cold setting, non-shrinking epoxy putty which at the time of writing is available in five colours. The colour comes in two cylindrical rolls. Equal lengths of white and black are cut and mixed well for a few minutes until the two colours are one.

YOU WILL NEED

Woodturning tools:

- 3/8in spindle gouge
- 1/2in spindle gouge
- 10mm Bedan parting tool
- 2mm parting tool
- 10mm square carbide tipped scraper

Peripheral equipment:

- Set square
- Chop saw
- Bandsaw
- Thicknesser
- Baking/parchment/tracing paper

Consumables:

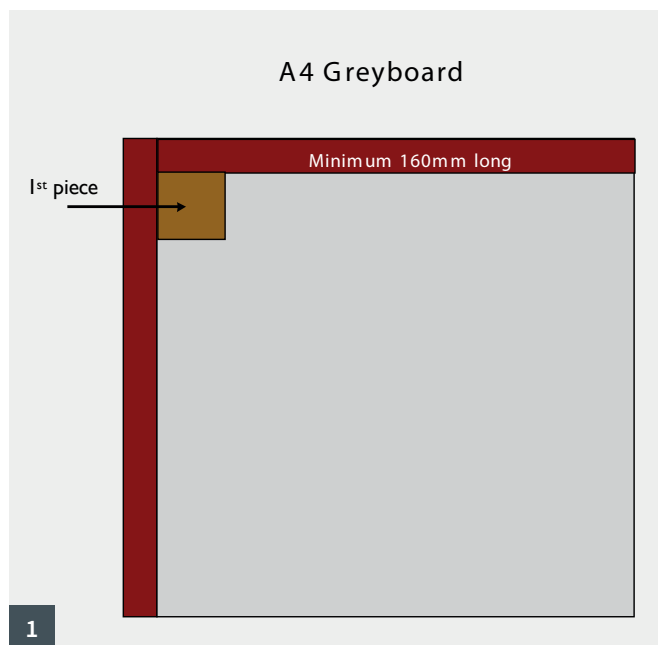
- Abrasives
- Hard wax oil



Turned rectangular weed flask with inlay



A set of 1970s oak side tables in need of upcycling

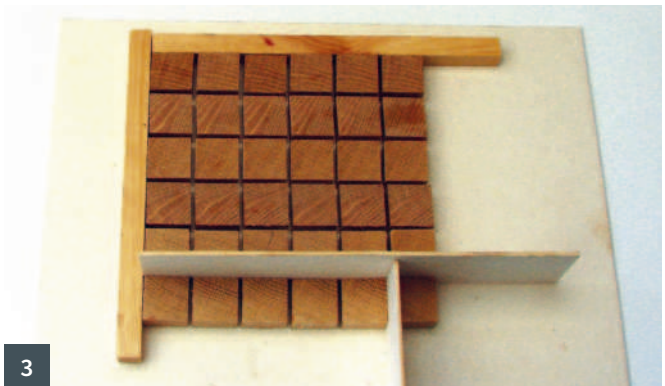


Preparing the greyboard

- 1 Make up two pieces of square hardwood, with the lengths being a minimum of 160mm. Glue the pieces at 90° to each other on a piece of A4, 2mm, 2,000 micros greyboard. Use a set square to be sure that they are at 90° to each other.

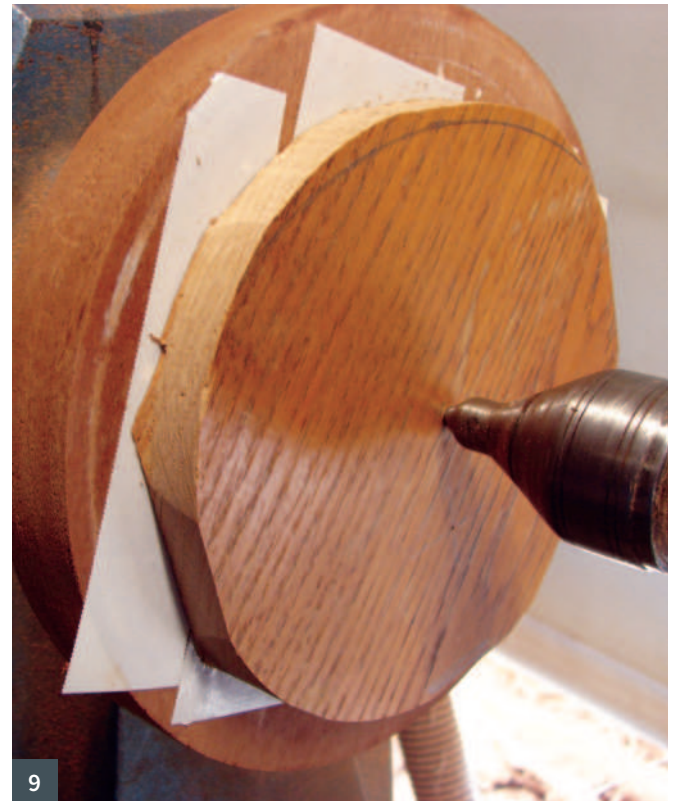
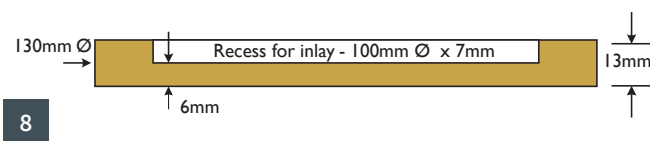
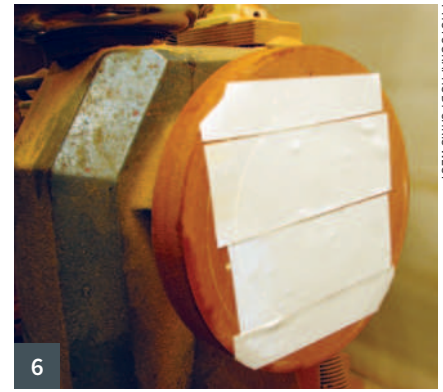
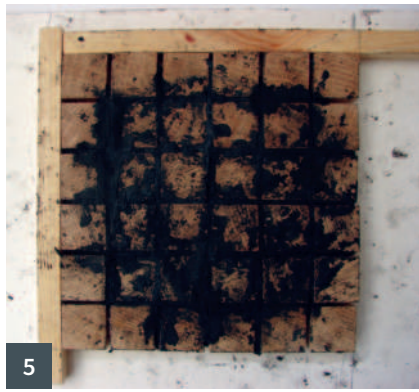
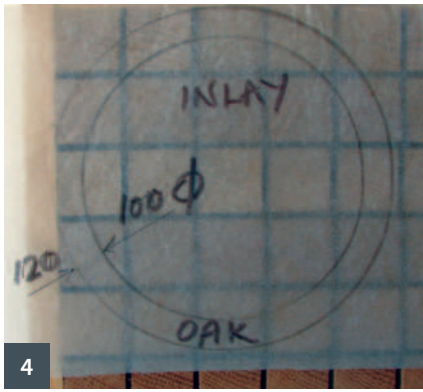
Preparing the oak inlays

- 2 The oak table legs shown here were 24.5mm square by 460mm long. They were run through a thicknesser to reduce them to 23 x 23mm. A chapsaw was then used to cut them to 12mm in length.



Deciding on the position and direction of the inlay blocks

- 3 The end grain of each piece will be the top face of the coaster and is lined up along the row and each piece marked, the object being to get the grain running in the same direction for each row. Two strips of the greyboard are used as spacers for the 2mm gap. The next leg's pieces are lined up and marked appropriately. Once the position of the 36 pieces is complete, each row can be carefully removed and put aside. By adding pieces to the rows and columns the coaster's finished diameter can be increased considerably. Reminder: the 2mm gap will be filled with the Milliput.



Fitting the inlays

The first inlay has a smear of five-minute drying, white PVA glue, placed on its bottom side and placed in the corner of the two pieces of wood. Ensure that the grain direction is as you want it. A couple of minutes should be enough for the first glued oak to firm up. Proceed to position the next piece with the 2mm space to hand. Continue until all 36 pieces are glued in place.

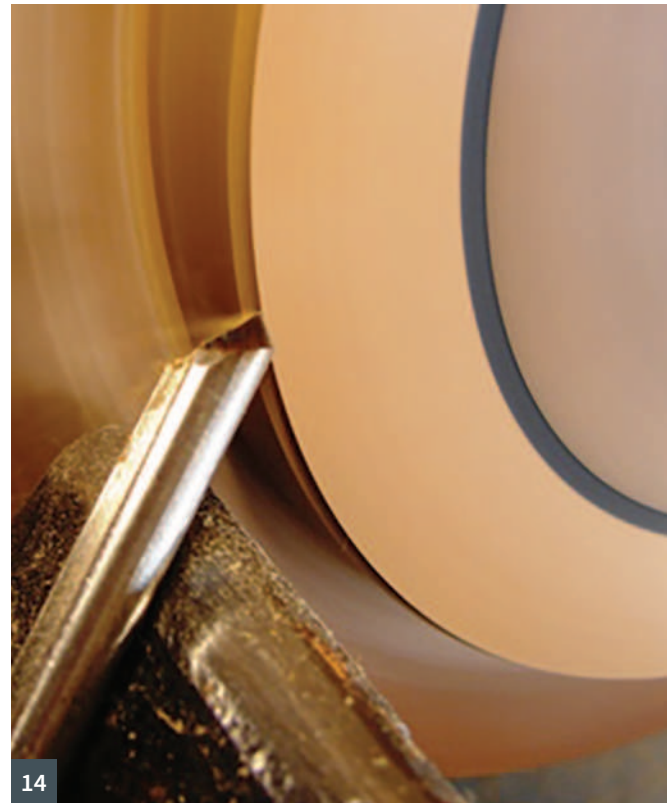
- 4 Use baking/parchment or tracing paper and a compass and pencil to draw different inlay diameters and coaster sizes. These are then laid over the pieces of oak to see which size looks the best. Shown here is a piece of tracing paper with an inlay diameter of 100mm. The paper is then centred over the 36 pieces and the cut line marked. As you can see, a larger diameter inlay can be achieved with the 36 pieces of wood if you prefer.
- 5 Time to fill the gaps between the blocks with Milliput. Use a credit card or something hard but less than 2mm thick to press the filler all the way to the greyboard.

- 6 A piece of 175 x 175 x 25mm hardwood is screwed to a 150mm diameter faceplate. Onto this, strong double-sided tape is placed on the hardwood faceplate ready to receive the circular coaster. The excess Milliput will be removed using a square carbide tipped tool.
- 7 The 2mm greyboard and the inlays are marked and bandsawn circular to around 120mm diameter. This is then placed centrally on the double-sided tape and left overnight to ensure that it is dry and has hardened.

Note: The depth of the inlay, at this time 12mm, is such that it will sit proud in the coaster when it is glued in using a PVA wood glue. This will be levelled off in step 14.

Turning the outer shell ready to receive the inlays

- 8 Replace any used double-sided tape already on it and renew it ready to receive the coaster blank.



- 9** The roughly cut 130mm diameter outer shell is placed against the double-sided tape and its outside circumference turned to ensure that the piece is somewhere near balanced which will encourage it to stay on the double-sided tape. This is achieved using a $\frac{3}{8}$ in spindle gouge as in step 14.
- 10** The 100mm Ø recess is identified with a pencil mark and a $\frac{1}{2}$ in Bedan parting tool is used to begin removing just 7mm depth of wood. When this point is reached, the diameter is opened to allow the inlay to fit. A small square ensures that the bottom of the recess is flat.
- 11** The base and side of the inlay has PVA glue applied and pushed into the recess. Place a flat scrap of wood against the inlay and the tailstock's centre to clamp the scrap wood against the inlay.
- 12** Turn the inlay down to the level of the outer shell using a pull cut with a $\frac{1}{2}$ in spindle gouge. Sand the surface down to 400 grit. In order to make the coaster more attractive a 2mm gap is made around the circumference of the inlay using a narrow parting tool. This gap is then filled with black Milliput.

- 13** Once dry the excess filler is removed using either a carbide-tipped tool or a $\frac{3}{8}$ in spindle gouge turned on its side and pulled across the face of the coaster (the second option is shown here). When completed, reduce the inlay's diameter to your choice of diameter and lever it from the double-sided tape using the largest woodworking chisel you have.
- 14** The coaster's diameter is now turned down to its finished diameter of 130mm using a $\frac{3}{8}$ in spindle gouge. This edge and the front are then sanded to 400 grit.

After sanding, follow step 13 to remove the coaster from the double-sided tape using the widest woodworking chisel you have and reverse it on to new tape. Sand the base of the coaster before finished as below.

Finishing

Given the intended use of the coaster it is imperative that it is both waterproof and heat proof. I chose to apply several light coats of hard wax oil before buffing.

WOOD AWARDS SHORTLIST 2021

A showcase of the nominations for the annual awards





PHOTOGRAPHS COURTESY OF THE WOOD AWARDS

Nineteen structures and 11 product designs have been nominated for the Wood Awards 2021. Established in 1971, the Wood Awards is the UK's premier competition for excellence in architecture and product design in wood. The competition is free to enter and aims to encourage and promote outstanding timber design, craftsmanship and installation. The independent judging panel visits all the shortlisted projects in person, making this a uniquely rigorous competition. The Awards are split into two main categories: Buildings and Furniture & Product.

The Wood Awards shortlist will be on display at The Building Centre in London, from 25 October until 3 December, as part of the exhibition World of Wood. This six-week celebration of global timber and global forests will demonstrate the benefits forest supply chains bring to the natural and urban environment. It seeks to build on the increased interest in climate change policy, highlight the vital role which forest supply chains play in reducing carbon emissions, and showcase the innovation and design potential of timber.

woodawards.com

Bespoke furniture

1 BOWATER CHEST OF DRAWERS BY JAN HENDZEL STUDIO

This chest of drawers is part of a nine-piece furniture collection, which celebrates British craftsmanship and materials, and embraces digital processes and traditional hand tooling. A playful ripple is the signature to the pieces in the collection.

2 MESAMACHINE BY HAYON STUDIO AND BENCHMARK FURNITURE

At the start of the pandemic, nine international designers were invited to create a table and seat for their homes. With lockdown in place, none of the designers were able to visit the workshops and all communication had to be done over digital platforms. Mesamachine (translated as 'table machine') is Spanish designer Jaime Hayon's response. It is a space to host family and friends but also a space to work. Like a Swiss army knife, the table can be pushed, pulled and extended so that the function can be changed without having to move everything around.

3 NORDIC PIONEER BY MARIA BRUUN AND BENCHMARK FURNITURE

Part of the same project as Mesamachine, Nordic Pioneer is Danish designer Maria Bruun's response to the brief. Made entirely in maple, the collection is a masterclass in Nordic design. With a purity to both the seating and the gate-leg table, the pieces are intentionally pared back and let the materials and construction shine.

4 KINGSLAND DINING TABLE BY GARETH NEAL

The focus of this design is on economy of form, simplicity of material and beauty in the detail. It highlights the importance of crafting thoughtfully designed pieces for the home, with functionality at the heart.

5 GAYLES FARM 5 BY WYCLIFFE STUTCHBURY

This room divider was created to further Wycliffe's exploration of textile techniques and characteristics using wood. The piece has a flowing appearance, made up of thousands of small oak tiles glued to an open weave cotton twill, creating a curtain. The curtain is hung on a hinged, three panelled oak frame with hemp rope and cleats.

Production furniture



1

1 ALLAY CHAIR BY DANIEL SCHOFIELD AND MOR DESIGN

Allay Chair has been designed as the archetypal lounge chair but reduced to as few lines as possible. Craft and simplicity have been combined to create a chair that will age gracefully, that balances aesthetics with practicality and durability.

2 CORSO TABLE + BENCHES BY DYLAN FREETH AND ERCOL FURNITURE

These light and simple tables and benches are designed to fit comfortably and elegantly into everyday life. Corso retains the tactility and durability of classic Ercol designs but the sizes, forms, component assemblies and profiles have been modernised.

3 CRUZ DEL SUR BY MATTEO FOGALE

This side table is CNC machined out of one sheet of cork. Small leftovers are used as packaging material so there is no production waste. The simple yet functional table arrives flat-pack in a pizza style cardboard box and can be fitted together in just a few seconds.



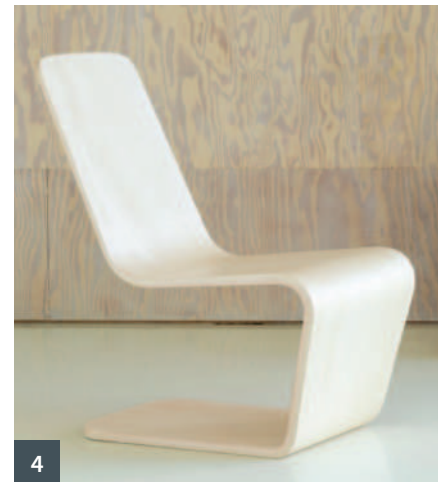
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4 ISO-LOUNGE CHAIR BY JASPER MORRISON AND ISOKON PLUS

Jasper Morrison looked to Isokon's archives and was particularly inspired by the brand's original logo, Gerald Summers' Bent Plywood chair with its single flowing plywood surface, and Rietveld's Zig-Zag chair. The result is a plywood chair with a cantilevered design that creates balance and support.



4

5 OVO ARMCHAIR BY FOSTER + PARTNERS AND BENCHMARK FURNITURE

The OVO armchairs suit a variety of settings, from office and commercial to domestic. The seat is designed in a modular fashion so that it can be replaced, with either a solid timber or upholstered version available as standard.



5

6 T01 CROSS CHAIR BY PEARSON LLOYD AND TAKT

This chair has been designed with a deep respect for Danish design tradition, embodying its principles of craft, simplicity and elegance while embracing the economy and convenience of flatpack furniture.



Buildings

The nominations in the Buildings category are:

- ♦ 16 Chart Street, London by Ian Chalk Architects
- ♦ The Alice Hawthorn, Nun Monkton, North Yorkshire by De Matos Ryan
- ♦ Lockerbie Sawmill, Lockerbie by Konishi Gaffney Architects
- ♦ Sands End Community and Arts Centre, London by Mae
- ♦ The Welcome Building RHS Garden Bridgewater, Manchester by Hodder + Partners
- ♦ David Brownlow Theatre, Newbury, Berkshire by Jonathan Tuckley Design
- ♦ Guildford Crematorium, Guildford, Surrey by Haverstock
- ♦ Ibstock Place School refectory, London by Maccreanor Lavington Architects
- ♦ Kantor Centre of Excellence: The Anna Freud Centre & Pears Family School, London by Penoyre & Prasad
- ♦ Magdalene College Library, Cambridge by Niall McLaughlin Architects
- ♦ Built: East Pavilion, Belfast by OGU Architects + Donald McCrory Architects
- ♦ Unfolding, Pavilion at London Design Biennale 2021, London by PLP Architecture
- ♦ 1930s apartment, London by Knox Bhavan Architects
- ♦ The Boathouse, Devon by Adams Collingwood Architects
- ♦ Concrete Plinth House, London by DGN Studio
- ♦ Leyton House, London by McMahon Architecture
- ♦ SNUG Home, Bristol by SNUG Homes
- ♦ St John Street, London by Emil Eve Architects
- ♦ Wooden Anex, London by Tsuruta Architects



Built: East Pavilion



The Boathouse

Workshop news

The latest product news, plus a competition to win a leather work apron



BeaverCraft Tools are generously offering one of these high-quality leather aprons as a prize!

BeaverCraft Tools' aprons are made from genuine leather with an additional surface wax coating for higher durability. They have reinforced straps with full-metal copper hardware, and a big kangaroo pocket together with an additional chest pocket to give plenty of storage. The apron's body length is 75cm, the waistband 60cm is wide with an adjustable neck strap and an adjustable waist strap up to 120cm, making it great for woodworking. It helps to keep your clean and safe in any situation within your workshop.

R.R.P. £169, available as part of the extensive range of BeaverCraft tools and accessories from www.beavercrafttools.co.uk

To be in with a chance to win, please email your name, address and phone number to WWCEditorial@thegmcgroup.com.

The closing date for entries is 6 January 2022 and the winner will be announced in the next issue. BeaverCraft Tools will contact the winner of the draw to arrange the delivery of the apron.



Clarke Devil Electric Fan Heater

The Devil 2850 2.8kW electric fan heater is ideal for heating your workshop or garage. The heater is constructed with a sturdy steel frame with a tough powder-coated finish. Weighing in at just over 2.5kg with a convenient carry handle, this heater is lightweight and portable enough to be easily transported.

It has three settings: Heater 1 (1.4kW), Heater 2 (2.8kW) and fan-only setting for cooling during warmer weather. For added safety, the heater has a tip-over cut-off switch which will trigger if the heater is knocked either forwards or backwards. It is available for £47.98.

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USING JAPANESE TOOLS

Michael Huntley recommends the Japanese tools to add to your workshop and uses them to make a set of shelves

You may have read about the unique qualities of Japanese tools and wondered which ones to buy and how to incorporate them in your own style of woodworking. In this article I will give an overview of which tools best translate into western woodworking practices and how they do so.

Saws

The Japanese dozuki saw is probably the most accessible tool in terms of cost and will make an immediate difference to your joint cutting. All Japanese saws are thinner than western saws and cut on the pull stroke. The thin blade is always in tension, which means

that the kerf is less likely to wander. I find it easier to cut to a line with one of these saws. The dozuki is a backsaw but there is a wide variety of styles of saw available.

The ryoba has both cross-cut and rip teeth. This saw has no back and can be used for long ripping and for shoulders of joints and cross-cutting. These saws are fitted with replaceable blades and to my mind offer very good value for money.

If you can sharpen your own western saws though, then a quality western saw would be more economical in the long run. Remember, the tool, whether Japanese or Western, does not make you a fine cabinetmaker. That is down to practice.



1 As with all Japanese saws the dozuki backsaw cuts on the pull stroke **2** The ryoba saw has cross-cut and rip teeth **3** The ryoba in rip mode for a big plank **4** The ryoba in cross-cut mode being used to cut the project shelf top to length **5** Large flat chisel **6** A Japanese plane is high maintenance but gives perfect results

Marking knives

Japanese marking knives come in left- and right-handed configurations. It seems obvious but I regard handed marking knives as essential. Even if you are right-handed you will still need a left-handed knife for some operations.

Chisels

There is no doubt that Japanese chisels can be sharpened to a very fine edge. Most woodworkers who understand the relationship between steel, method of sharpening and grind angles will, all other considerations being equal, choose a high-quality Japanese chisel. But, you must be more considerate in your methods of working. There is no such thing as a general-purpose chisel. Each tool has a specific function and way of use. Secondly, good chisels are

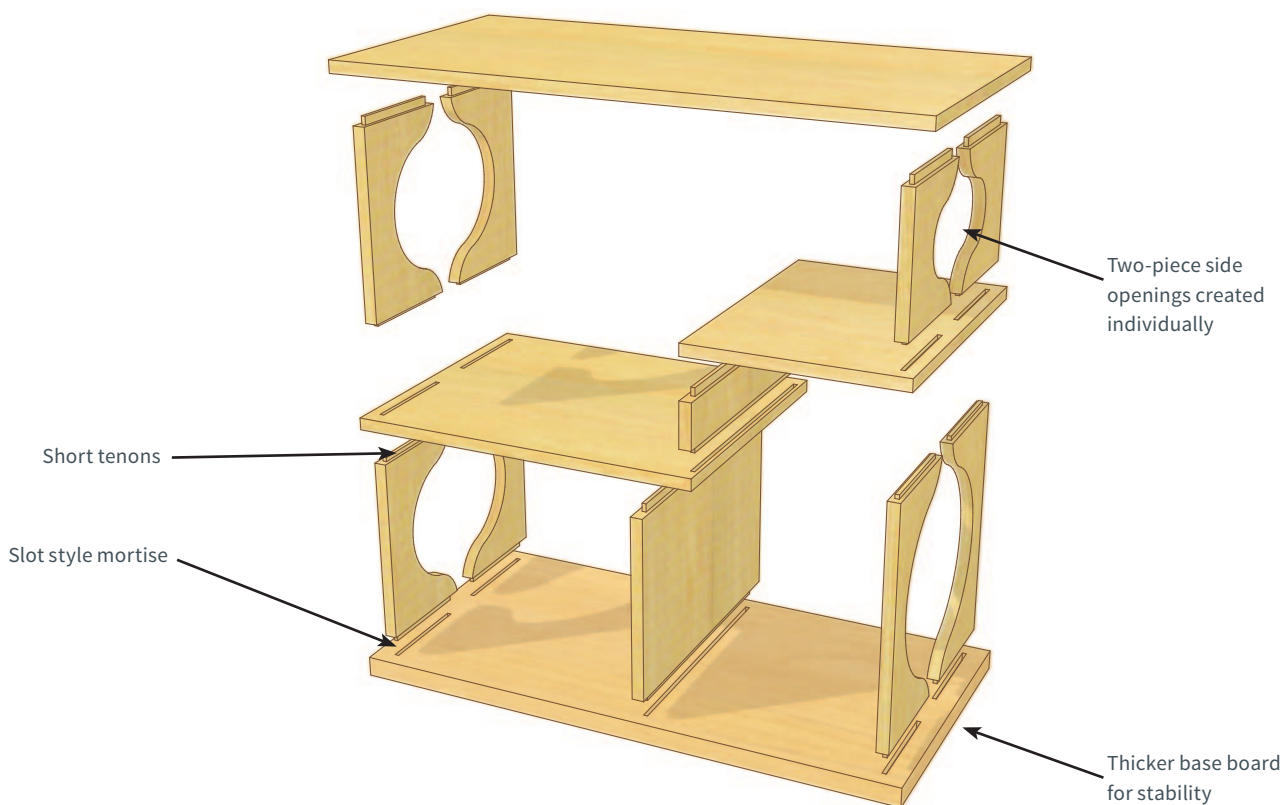
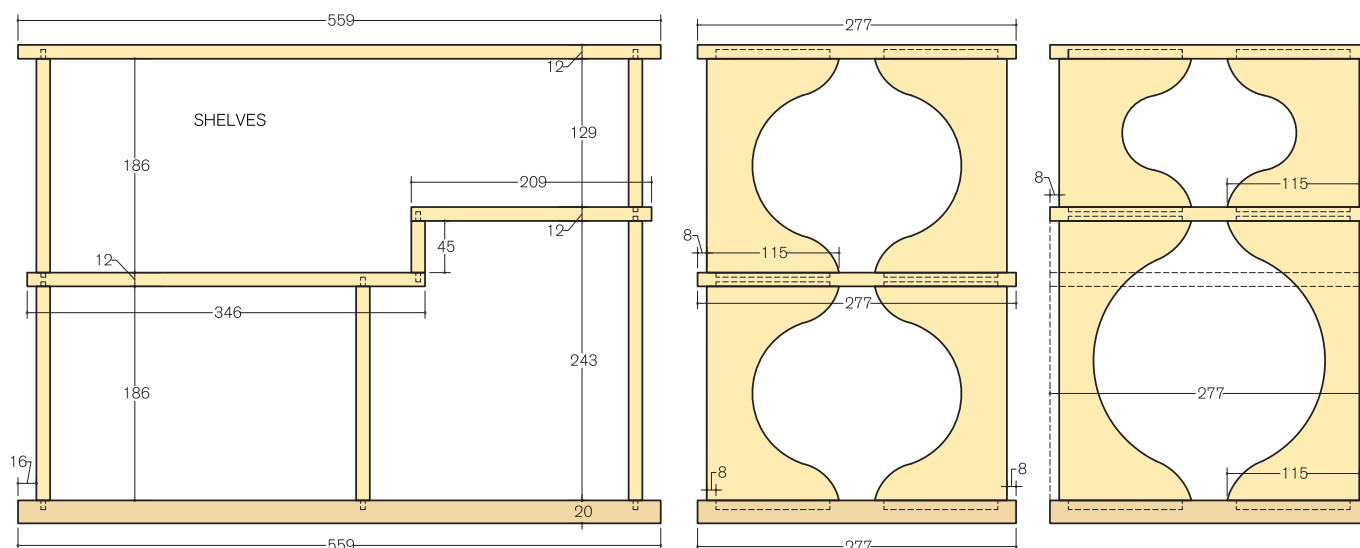
expensive. If finance is a consideration choose western chisels. They will be easier to use and look after. You must have adequate resources of time, money and skill to get the best use from Japanese chisels.

Planes

All that I said above about chisels also applies to planes, but even more so. Specialist tools are required to set and maintain Japanese planes. With these in place they are wonderful, but the lead time and resources required are considerable. The finish, though, is impeccable.

Sharpening stones

The Japanese sharpening system is labour intensive. It does give very good results though. It is, however, vital to understand the system properly and be committed to it.



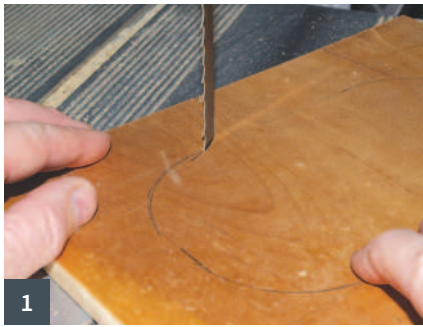
Making Japanese-style display shelves

Every Japanese building has a 'special place', known as a tokonoma. Sometimes a small set of shelves with asymmetrical spacing will be placed in the tokonoma and beautiful objects, both natural and man-made, placed on them. There could be a pot on the shelf, a branch or flower display or a small scroll hung on the wall of the alcove formed by the shelf.

These shelves are made from old reclaimed panels from a chest of drawers. Items such as unwanted furniture and doors are a good source for thin, wide panels. Reclaimed timber has the advantage of being more dimensionally stable, having had many years to settle. The top shelf is the solid polished mahogany side of the original

chest. The finish is wax, but the piece could be ebonised or a coloured varnish applied.

- 1 The structure of the piece is maintained by the shaped side brackets. My sides are 11mm thick so once a template is made they can be cut on the bandsaw.
- 2 Having cut the curve the edges can be faired in. I am using a small Vallorbe riffler. A bandsaw and a riffler open up a whole world of curves to the woodworker...
- 3 The brackets are tenoned into the shelf, so leave sufficient meat to form the tenon at the tops and bottom of the bracket. Here, a shoulder plane is best, although a powered router would do



- the job just as well. I use a marking knife to score the joint between the shoulder and the tenon. With a tiny tenon like this frequent careful removal of the fibres is necessary.
- 4 Close-up of the finished tenon. It is hard to hold such little pieces so I used a bespoke clamping arrangement.
- 5 The little mortise grooves are formed by 'chain-drilling' and cleaning up with a chisel or by using a small cutter in a router and taking very thin careful cuts. One can also use a small plough or even a scratchstock. Outline the edges of the slot with a wide chisel first though.
- 6 The set of shelves ready for final finishing. On this prototype version I left the original finish on the timber in order to make the components stand out better in the picture. In reality they would all be finished in a uniform way.

Conclusion

I think the fundamental point about Japanese tools is the respect accorded them during their making, a respect that is continued by the craftsman. Living and working with that respect makes a difference to the work produced within that tradition, so I would like to end with some thoughts on tools by my assistant in Tokyo, Masahiko Hosokawa, who provided the artwork and much of the technical details for this article. Masahiko has given his daughter

the personal name Kanna, the Japanese word for plane. He says:

'We believe people who take good care of tools will be good at their skills. After their practice, they clean their tools themselves. When I was a child, my parents always told me to take care of your tools yourself if you want to improve your skills. And my parents said to me, "Even if you are not good at something the tools themselves will act like a professional. So do not worry about your skills, just take care of your tools every day."

'Woodworking tools are very sensitive, we should always check their condition if we want to use them without stress. Kanna is one of the typical tools for a woodworker, but we have to do a lot of steps to use kanna. It needs understanding of the kanna, like sharpening and practice using it. This is the same as in general life where you need to prepare, acquire knowledge, take action and then reflect.

'I would like my daughter to be the kind of person who can use kanna. Every day they do preparation and learn more and act and reflect. They do the same thing every day but improve a lot.'

Resources

Good-quality Japanese tools may be purchased from www.classichandtools.com and www.workshopheaven.com. You can also find more information about Japanese tools and woodworking techniques at japanwoodcraftassociation.com

CHOPSTICK STAND

Fred and Julie Byrne use the scrollsaw to make this display stand



Friends of ours recently spent time in Japan and brought back some very impressive chopsticks that are far too good to be hidden away in a drawer, so we came up with the idea of a display stand, similar to the stands traditionally used for samurai swords.

The stand and rests are both laminated using two dark and one light wood, the design details within the stand are cut out first, and

the three woods are then laminated together. The kanji – Japanese characters – scrolled out within the base represent ‘Happiness – one happiness scatters a thousand sorrows’. We thought this was quite appropriate as sharing food with others is a happy occasion. You could of course use any kanji you wish or any other design that pleases you.

YOU WILL NEED

Tools:

- Scrollsaw: No.3 & 5 blades
- Patterns
- Glue stick/spray adhesive
- Pillar drill: 1.5mm drill bit
- Sandpaper: 280 to 320 grit
- Wood glue
- Clamps
- Finish of choice

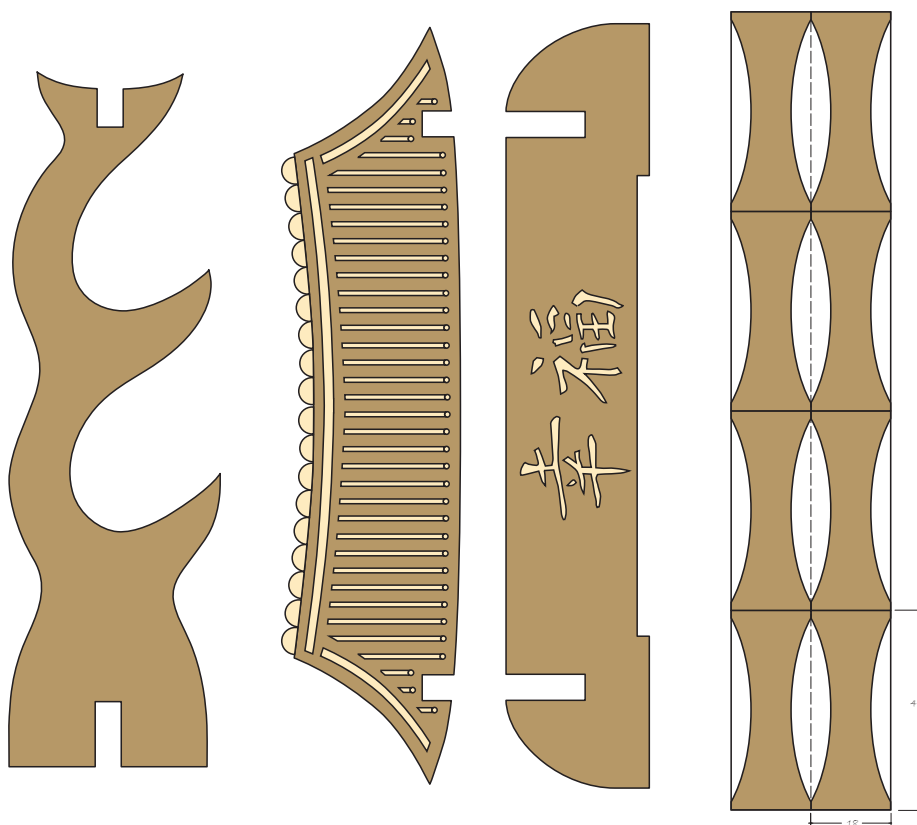
Materials:

Chopstick stand:

- Base: 3 @ 190 x 45 x 2mm – 2 dark wood, 1 light
- Roof: 3 @ 190 x 55 x 2mm – 2 dark wood, 1 light
- Sides: 2 @ 170 x 60 x 6mm – dark wood

Chopstick rests:

- 1 @ 18 x 18 x 45mm
- Laminate 3 @ 6 x 18 x 45mm – optional



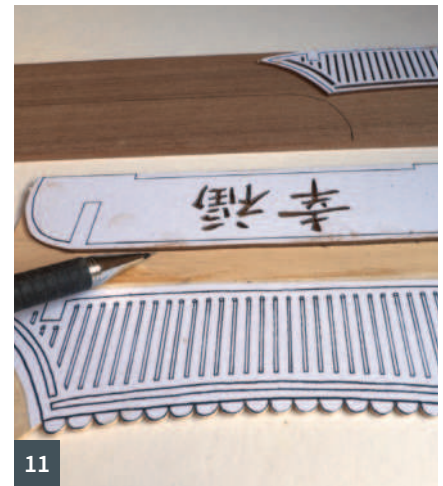
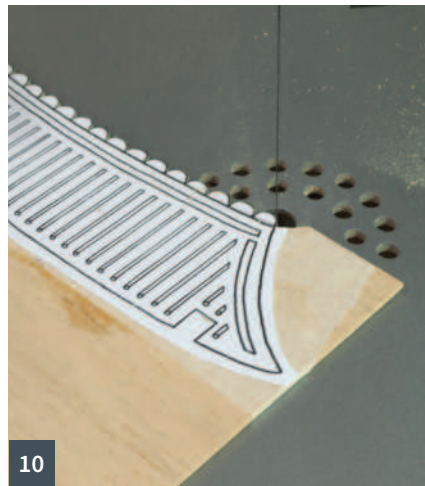
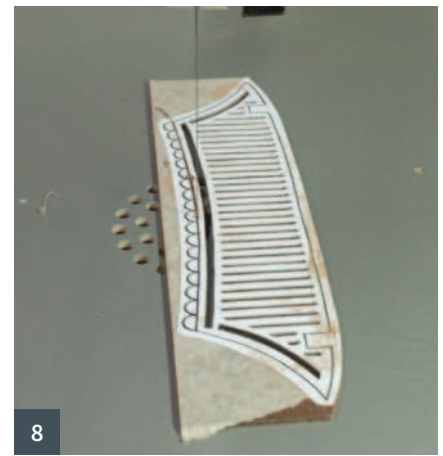
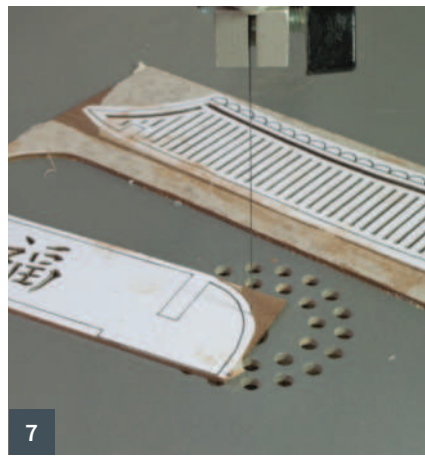
Getting started

- 1 Prepare the surfaces of your chosen wood by sanding the outer surfaces only. Adhere strips of the extra wide masking tape prior to attaching the patterns – this makes the pattern much easier to remove.

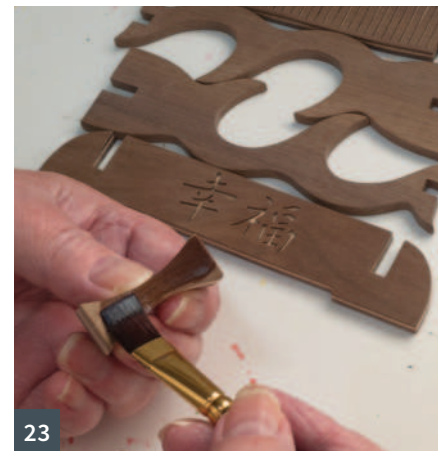
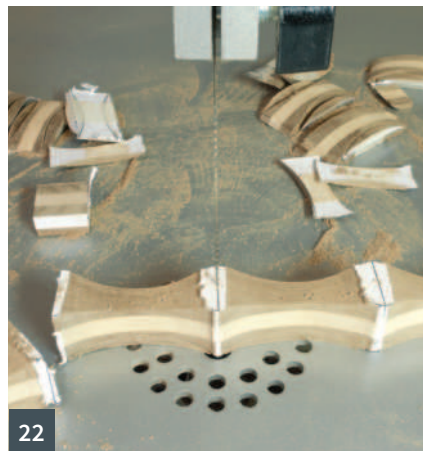
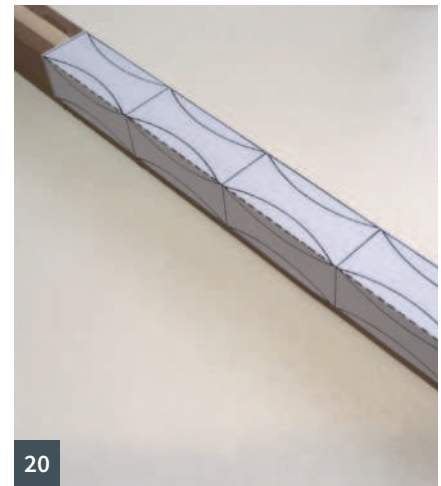
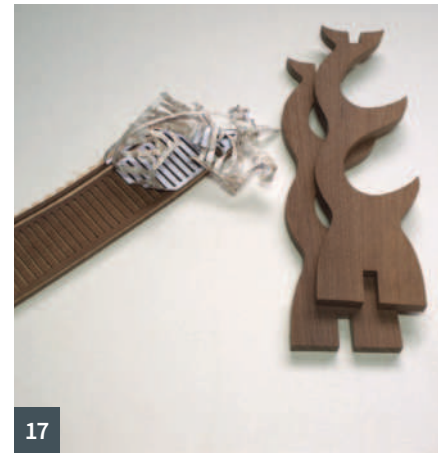
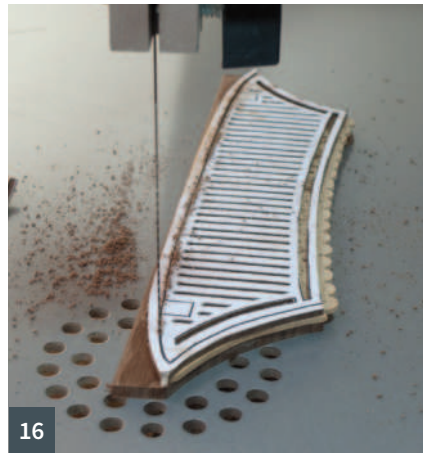
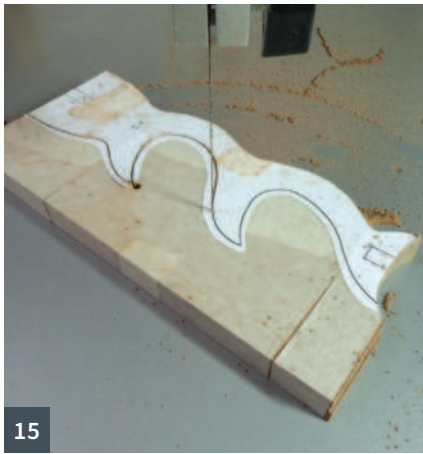
The chopstick stand

- 2 Using a 1.5mm drill bit, drill all the blade pilot holes in the roof and base sections.

- 3 Set up the scrollsaw with a small No.3 blade and carefully remove the inner cuts of the Japanese kanji within the base section.
- 4 Cut the short line detail within the roof. Working along the line from left to right, make the first cut into each line down the left-hand side, thus finishing the cut on the right side. This will help to support the rest of the piece as you work to the end.
- 5 Sand the underside to remove the burr as you go, to keep everything nice and flat.



- 6** Leave the long cut at the top of the roof until last, again this will help to support the piece until the very last cut.
- 7** Next, once all the inner cuts have been made, cut approximately 3–4mm around the outside of the pattern you are going to use. When the roof and base of the stand have been laminated together they can then be cut as one.
- 8** Cut along the top of the roof section to remove the scalloped detail, as this is only seen on the lighter wood that is in the middle of the lamination.
- 9** Next, cut around the scalloped detail at the top of the lighter middle section of the roof...
- 10** ...then as before cut around the outer edge leaving a 3–4mm gap.
- 11** Use the cut out base and roof sections with their patterns still attached to trace around the prepared remaining woods to complete the laminations.
- 12** Remove the pattern from the middle – light wood – sections of the roof before laminating.
- 13** Apply an even layer of glue and then laminate the base and roof piece together, remove any glue that may have oozed out within the cut out detail.
- 14** Check as you clamp that the pieces do not slip out of alignment and then leave to dry.



- 15** Meanwhile, secure the two side panels together with masking tape and attach the pattern, then, using a No.5 blade cut around the perimeter.
- 16** Once the base and roof sections are dry, cut around the outer edge.
- 17** Remove the patterns and masking tape.
- 18** Using a fine grade sandpaper – 320 grit – lightly round over the edges to give that finished look.
- 19** Check the fit; the base and roof sections should fit snugly into each of the side panels; make any adjustments if needed. Apply a finish of your choice; we applied two coats of a clear liquid polish, giving a good buff in-between.

The chopstick rests

- 20** First fold the pattern along the dotted line and then attach it to the prepared wood.
- 21** Using the No.5 blade, cut along one side of the pattern retaining the pieces as you go. Reposition the cut pieces and secure them with the masking tape, turn the piece over and cut along the other side of the pattern.
- 22** Once both sides of the pattern are cut out, cut through each pattern to make the individual rests.
- 23** Apply a finish of choice; we applied two coats of tung oil, letting it dry thoroughly between coats.

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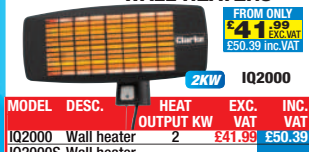
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SIDE TABLE

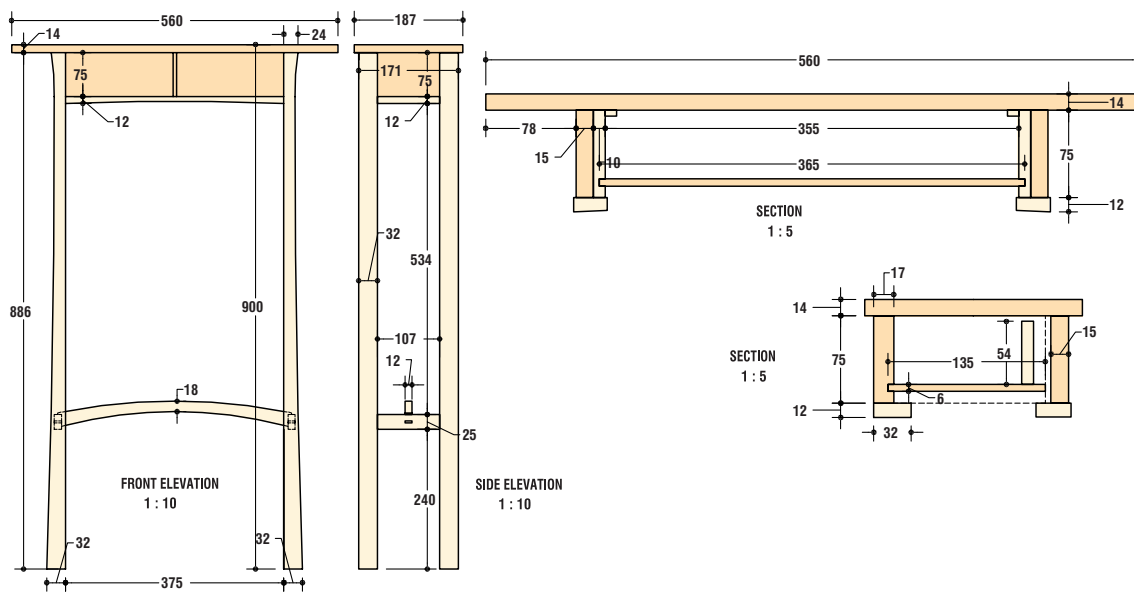
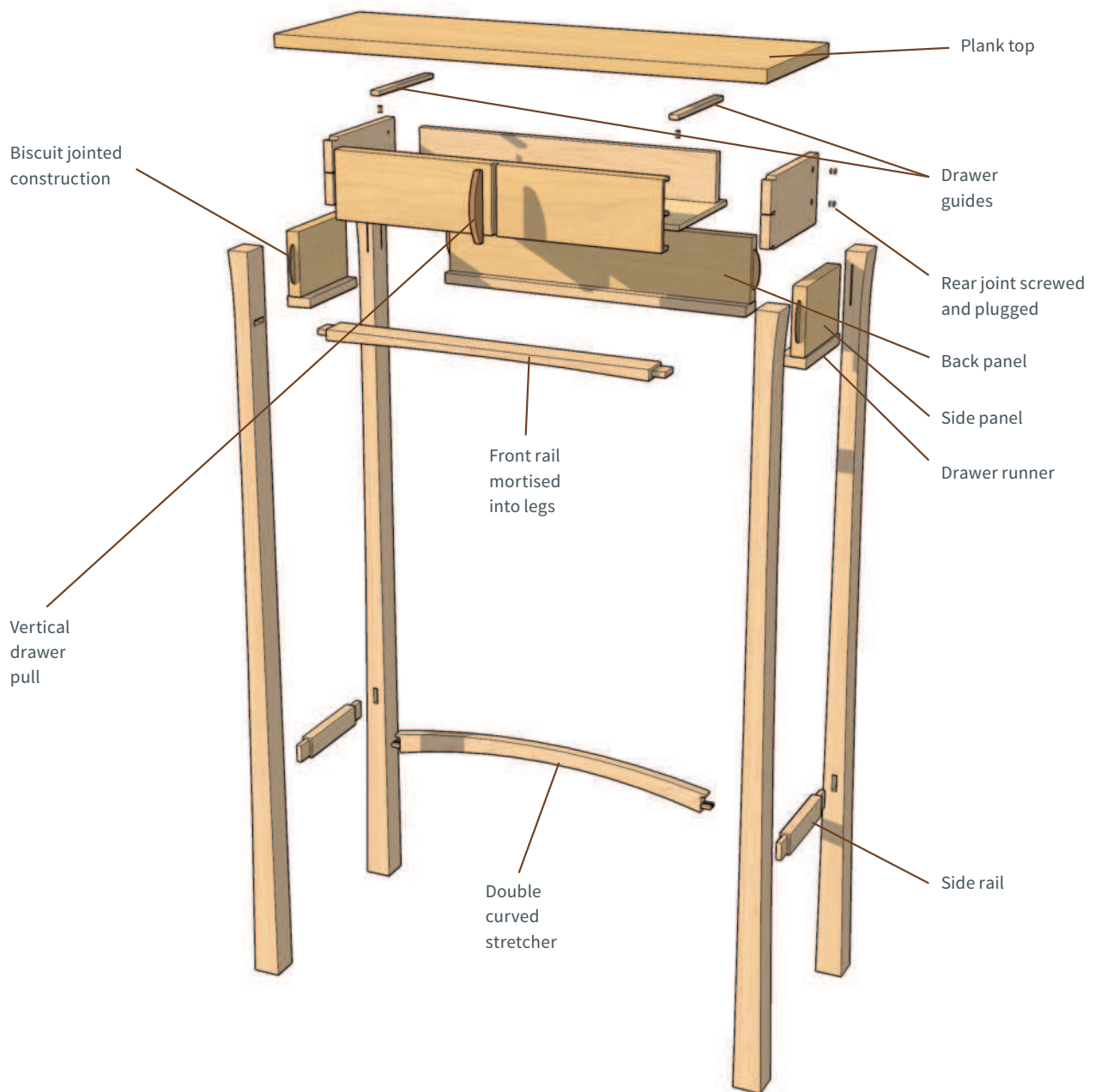
This design from Mark Ripley can be made to suit a whole range of purposes due to its decorative appeal and handy size



I have made various designs of side tables, usually for galleries or exhibitions where they generally sell quite well, and their small footprint and portability make them practical – trying out ideas on this scale is economical and, if they work, can be scaled up for use in larger pieces. Although the frequently asked question ‘What is it for?’ has various possible answers, the side table is a largely decorative piece and could stand on a landing, in a hallway, alcove or any space lacking interest.

This one has light sections and curves and a vertical handle. I have used ash and light oak in a number of pieces now and I like the subtle contrast, which gives a gentle contemporary feel. In photo 1 on the following pages, you can see a variation in olive ash and sycamore with wider legs and no drawer.

As a project it is manageable in terms of time and size, and lends itself to using exotic timbers that could be expensive or overwhelming if used on a larger scale.





1



3

1 The olive ash and sycamore version of the side table **2** The end assembly
3 The stretcher and top rails



2

Construction

The two pairs of legs are joined by biscuit jointed panels at the top, and mortise and tenoned stretcher rails lower down. These end assemblies are joined at the back by another biscuit jointed panel, and at the front by a mortise and tenoned rail. The top is structural, being biscuit jointed and glued to the front half of the ends, and screwed to the back panel with stretcher plates, thus allowing for movement. In such a small piece, biscuits are strong enough to substitute for mortise and tenons.

The drawer runners are glued to the underside of the ends before assembly and project by 2mm on the outside and 12mm on the inside. This gives added strength and depth to the ends as well as visually framing them. A similar rail is glued to the back panel.

The drawer is conventional and has a cedar bottom. Drawer guides are fitted to the underside of the top, and walnut dowels are fitted into these to prevent people pulling the drawer out and dropping it on the floor. The stretcher rail is curved and fitted with through mortise and tenon joints, and an overlapping bridle joint above the end rails.

Stretcher and top rails

I cut 6mm mortises for the top rail and stretcher rails. The transverse travel of a compound mortiser table is useful for cutting mortises across the grain for the top rail. Alternatively, all four legs could be clamped together and the mortises routed with the router fence running against the ends of the legs. Do remember though that only the front legs are mortised, the back legs are used to support the router.

The mortises are also cut for the stretcher rails and the curved connecting rail. The latter are through mortises and tenons, and need to be cut from both sides to prevent breakout. Because of their small size, I cut all the tenons on the bandsaw and clean them up by hand. The joints in the curved rails are cut before they are shaped. Fine fitting the overlap part of the stretcher rail assembly is best done by hand planing the end rails to fit the overlap. Through mortises need to be tapered to allow for the wedges in the tenon with the width of the finished joint being the same, or slightly less, than the thickness of the rail. This means that the tenon is not the same width as the rail. As the tenon is so small, I only fitted one wedge at each end rather than the usual two. For contrast, the wedges were made in walnut.

Timber

Small pieces like this can be designed around the wood to some extent and for them to work well, the wood does need to be of a very high quality. A nicely curved bit of figure in the oak was used for the drawer front and this was my starting point, while straight grained oak was used for the sides and back. The top has a bit more figure. Drawer linings are in ash and the handle is black walnut.

As no jointing up is required, the cutting list can be prepared fairly quickly. The curves in the legs are formed at an early stage because the waste removed can release stress in the wood, causing the inside faces to bow slightly, and this needs to be planed straight before marking out the joints. I used a spindle moulder to shape the legs but the section is narrow enough to use a router inverted in a router table. In either case, the shape will need to be bandsawn slightly oversize and the piece fitted to a template which will follow a bearing guided cutter. Alternatively, they could be accurately bandsawn and finished by hand.

End and back panels

The drawer runners and back rail are glued to the prepared panels before cutting them to length. These could be fitted with No.10 biscuits but I just glued and clamped them. The panels were sanded and sealed before gluing.

When dry, the excess glue on the panels can be carefully peeled off and the components cut to length on a bench saw. An MDF packing piece under the panel prevents breakout.

Biscuit slots are machined into the ends of the panels and backs. Again, packing pieces were used to overcome the step formed by the drawer runners and back rail.

Curve

Everything is dry assembled at this stage to check the fits before shaping the rails. The lower rail curves are marked from a batten sprung between two panel pins – note that the top curve is shallower than the lower one. These can be bandsawn and finished with a spokeshave.

The top rail is a very shallow curve and this was formed by screwing the rail to a heavy batten through the tenons with a 4mm block in the centre, which forced the rail to bow. This bow was planed flat with a bench plane and when released, a consistent and finished curve had been produced.

Finishing

The legs are lightly chamfered on the outside corners, and everything fine sanded and sealed in preparation for assembly. As I said earlier, I like the subtle contrast between ash and oak and was happy for the colouration caused by my usual finish of $\frac{1}{3}$ polyurethane varnish, $\frac{1}{3}$ Danish Oil and $\frac{1}{3}$ white spirit.

The olive ash and sycamore table was different and I wanted to accentuate the contrast there so I opted to use a different finish with neutral Liberon finishing wax on the sycamore and thinned Danish Oil on the ash.

Assembly

The ends are assembled first – panels and stretcher rails. These are cleaned up with the legs and panels flush on the inside. Before gluing up the rails and back panel, machine the biscuit slots for the top – these are at the front of the end assemblies.

When the frame and panels have been cleaned up and given a second coat of sanding sealer, the top can be fitted. I used washers to prevent



4 Detail of the lower rail overhang 5 View of the underside with the drawer opened 6 Drawer sides and dovetails



the screws going through the holes in the galvanised steel stretcher plates used to fix the top to the back panel. I do not generally use these in fine furniture, but space was very limited and there was no room for nicely worked slotted wooden blocks. With the top fitted dry, the drawer guides are positioned and screwed to the underside of the top and pre-bored to take the retaining dowels. After these are in place, the top can be glued on, but remember to apply glue only to the front half of the ends.

Drawer

The drawer front and sides are carefully fitted to the opening in the cabinet, and the thickness of the sides scribed onto the inside face of the front. The back is marked off to the distance between the sides and cut to length. As the solid wood bottom runs under the back, it is fitted higher than the sides by 10mm at the bottom and also lower at the top by 5mm to allow for the stretcher plates that fix the top. The 6mm grooves are routed into the sides and front for the base and, if a divider is desired, into the front and back to accommodate it.

Lap dovetails are used for the front joints while the back was screwed and plugged. It would of course be more traditional to dovetail front and back, but the front joints are the ones that do most of the work and so I concentrate the effort there. The dovetails are cut by hand and the pins scribed off them onto the drawer front. Again, the joints are cut with a dovetail saw – some of the waste was removed with a router, but mostly this is a job for hand tools. All the inside faces are waxed prior to assembly.

The drawer is cleaned up and fitted, and a slot routed in the front to take the handle. It is easier to fit the handle to the slot than the other way around. The handle is shaped after a satisfactory fit has



7 The central divider in the drawer **8** The walnut dowel in use as a drawer stop

been made. Both drawer front and handle need to be sealed before gluing the handle in place. The bottom is planed to 6mm thickness and dimensioned. To allow for movement, two short chamfered slots are routed into the bottom to take screws into the back. Once the drawer bottom has been waxed, the front edge can be glued into the drawer front and the screws fitted.

Fitting the walnut retaining dowels is the last job, though for your own use, you may well decide not to bother as it proved to be rather fiddly. I glued them with Araldite, but access to their holes was awkward. The top is given further coats of Danish Oil and the whole piece was waxed.

Labour of love

Alan Goodsell takes a workshop break and considers the art of gift giving

Do you know what a white elephant is? If not, I will explain: it is a term used for a gift that is utterly useless and near impossible to get rid of. The saying is said to have come from the King of Siam as he is reputed to have had a habit of giving albino elephants to courtiers who had fallen into his bad books. His unwelcome, useless and impossible to dispose of gift would also be likely to cause the recipient financial ruin due to the animal's expensive upkeep.

Woodworkers are kind, creative and generous people who often give gifts they have made to their loved ones, and they are mostly received with welcome arms as useful and attractive things for their home, and then probably go on to become treasured heirlooms. However, there are times when a kindly woodworker misreads a situation and may give a gift that is possibly not so well received. The recipient won't want to get rid of it as it was made with love, but on the other hand will not want to have it in their house, so will hide it away, only putting it on display when the kindly woodworker visits. It is unlikely it will cost money like an albino elephant, but it will cost the owner stress in making sure it is on display at the right time.

So before creating a wonderful wooden gift for someone, make sure it is what they want as you don't want to be 'that' woodworker... unless you do actually want to be the King of Siam of woodworkers.



PHOTOGRAPH BY SHUTTERSTOCK

WORDSEARCH

Ash	Hinge	Rasp
Burl	Lacquer	Shavings
Dovetail	Laminate	Spokeshave
Frame	Nail	Stretcher
Hardwood	Pyrography	Taper

D	E	H	L	E	C	E	G	N	I	H	H	V	S
E	C	R	A	S	H	E	A	M	A	E	E	E	P
S	U	D	C	L	T	I	A	L	A	S	A	T	O
B	S	V	Q	H	I	R	R	E	P	A	T	A	K
R	H	A	U	N	E	A	E	A	V	A	P	N	E
P	H	P	E	K	P	M	T	T	I	R	T	I	S
H	D	O	R	S	A	E	A	E	C	N	S	M	H
S	E	C	A	R	F	E	M	L	V	H	N	A	A
E	M	R	F	S	O	A	Y	N	B	O	E	L	V
U	I	N	O	T	S	S	P	A	E	O	D	R	E
D	L	E	R	H	E	E	U	I	D	U	H	L	C
H	A	R	D	W	O	O	D	L	E	S	H	S	R
T	Y	N	S	E	A	S	H	A	V	I	N	G	S
K	R	N	P	Y	R	O	G	R	A	P	H	Y	H

SUDOKU

Sudoku is a great activity to sharpen the mind. The object of Sudoku is to fill in the empty spaces of a 9x9 grid with numbers 1-9 in such a manner that every row, every column and every 3x3 box contains all numbers 1 through 9.

			7	3			6	5
	7		6			1		
	6	4			1			2
8			4	9			2	
	4						1	
	2			1	6			7
2			3			8	9	
		3			9		7	
7	9			6	4			

Pickfords

MIXED MEDIA

Furniture maker, painter, printmaker, ceramicist:
we meet multi-talented artist Johnny Paramor



Johnny Paramor creates art across a range of media: paint, print, ceramics and furniture. He originally trained for four years at G. Perry & Sons (Leicester) as an Engineer's Patternmaker, working in wood and metal. This then led to a degree in Furniture Restoration and Craftsmanship in High Wycombe. A visit to Cornwall in 1994 opened his eyes up to creativity, especially in furniture, stained glass and fine art. He lives in Leicester.

CAN YOU TELL US ABOUT SOME OF THE SKILLS YOU LEARNED ON THE FURNITURE RESTORATION AND CRAFTSMANSHIP COURSE AT HIGH WYCOMBE?

The skills I learnt in High Wycombe initially started with making a small box in lime wood. Then I made my first chair, which was based on one designed by Ernest Gimson in the early part of the 20th century – an ash ladderback chair with a rush drop-in seat. In the second year we started restoring furniture and I learnt a lot about finishing, colour matching and blending in repairs. In the third year my approach changed and was more focused on conservation, working on an 18th-century provincial armchair.

CORNWALL HAS BEEN AN INSPIRATION ON YOUR ARTISTIC WORK, COULD YOU EXPLAIN WHAT IT IS ABOUT CORNWALL THAT INSPIRED YOU?

Cornwall I found was very inspiring. My first visit in 1994 opened my eyes up to creativity, the sea and the landscape. I also visited the Barbara Hepworth museum and the Tate in St Ives.



Three-leg chair in ash and birch plywood



PHOTOGRAPHS BY JOHNNY PARAMOR

Table in European ash

YOU'VE ALSO BEEN INSPIRED BY ERNEST GIMSON'S FURNITURE, WHAT APPEALS TO YOU ABOUT HIS WORK?

Ernest Gimson's work is very inspiring, he was part of the Arts & Crafts movement and was born in Leicester, too. We studied the Arts & Crafts a lot on the course, in particular its honesty to materials and a return to craftsmanship.

ARE THERE ANY OTHER FURNITURE MAKERS AND ARTISTS WHOSE WORK YOU ADMIRE?

The painter, the late Howard Hogkin, has been an influence on me, his use of colour and brushwork. Many years ago I visited London and admired his work. With regard to furniture, I do admire Rupert Williamson and John Makepeace.

WHICH ARE YOUR FAVOURITE TIMBERS TO WORK WITH AND WHY?

My favourite timbers are ash, oak, elm, cherry and birch plywood BB furniture grade, I usually use 12mm and 18mm.

HOW DOES YOUR FURNITURE DESIGN PROCESS WORK?

My design process usually starts with drawings, then a card model to make it three-dimensional and as a patternmaker I make set outs on birch plywood which are very accurate.

CAN YOU TELL US A BIT ABOUT THE CHAIR YOU MADE FROM CARDBOARD TUBES? WHAT INSPIRED THAT PROJECT?

The cardboard tube chair (made circa 1996) was inspired by a friend who was doing her GCSEs. Her teacher set her a brief to design a chair from them and we got talking and that gave me the idea to do something similar. I was interested in using a material that is usually just thrown away.

DO YOU HAVE ONE WORKSHOP/STUDIO FOR ALL YOUR DIFFERENT CRAFTS OR SEPARATE SPACES FOR EACH?

I have two studio spaces, one for wood and the other for fine art painting.

DO YOU DIVIDE YOUR TIME EQUALLY BETWEEN YOUR DIFFERENT FORMS OF ART OR ARE YOU SOMETIMES INSPIRED TO WORK MORE IN ONE MEDIUM THAN ANOTHER?

My studio session starts with furniture and then for the last few hours I paint.

HOW DO YOUR DIFFERENT ARTISTIC PURSUITS INFLUENCE AND INSPIRE EACH OTHER?

When I start a painting I use carbon black, with a touch of blue and grid the canvas with a fine filbert brush. Recently I have started to use the same colour in a spray can (Liquitex acrylic), to achieve different results. In the last year I have started to use black for my furniture too, a water-based stain, and with ceramics I have used black for a number of years when I glaze. With printmaking, again I have a number of years ago printed using a single colour, usually black.

WHAT KIND OF PROJECTS ARE YOU PLANNING TO WORK ON IN THE FUTURE?

Future furniture projects are a 'two seater' chair in ash and laminated birch plywood. A small coffee table and a 3-metre dining table are also in the pipeline but that is not until early March 2022. With my painting, I am continuing to build up a new body of work, possibly for an exhibition in March.

As an artist, and having a need to express myself, I continue to work in different media. These include furniture and fine art painting. I find they work together, influencing each other, yet are able to stand alone.

WHAT TYPE OF FURNITURE DO YOU ENJOY MAKING?

Chairs have been a passion for me since High Wycombe. What draws me to them is not only can they make a statement of our time but I feel 'man will always need to sit'.

TELL US ABOUT YOUR PAINTING STYLE.

I am a serious painter working in oil and acrylic. My paintings are abstract and expressive. I attempt to portray emotion, feeling and energy on to the canvas/paper/board, using thin layers of transparent and opaque paint. The paintings are built up gradually; for me, depth, movement and colour are very important.

www.johnnypamor.co.uk

Instagram: @johnnypamorartist



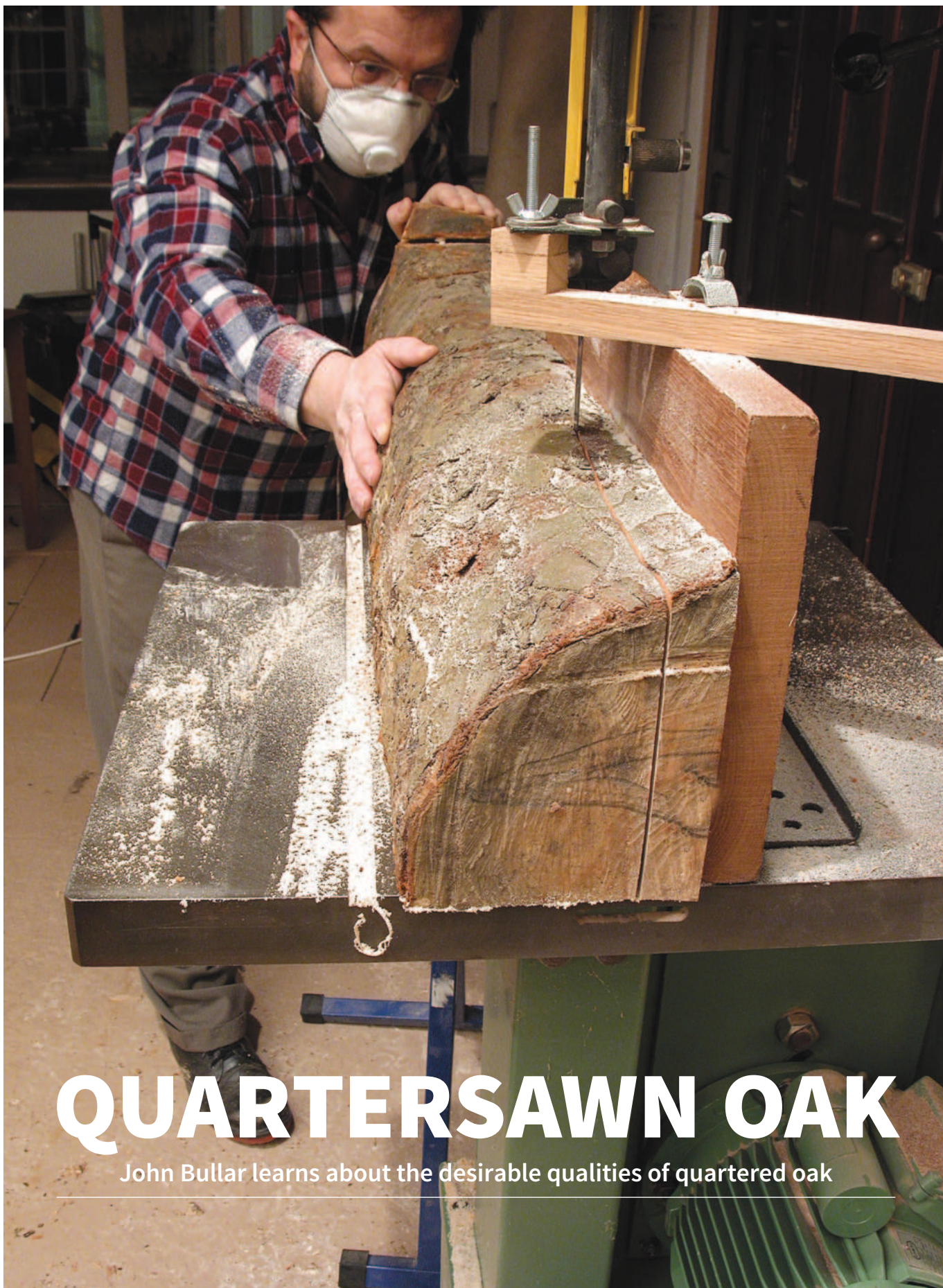
ABOVE: Cardboard tube chair made in 1996 BELOW: Turned ash table legs





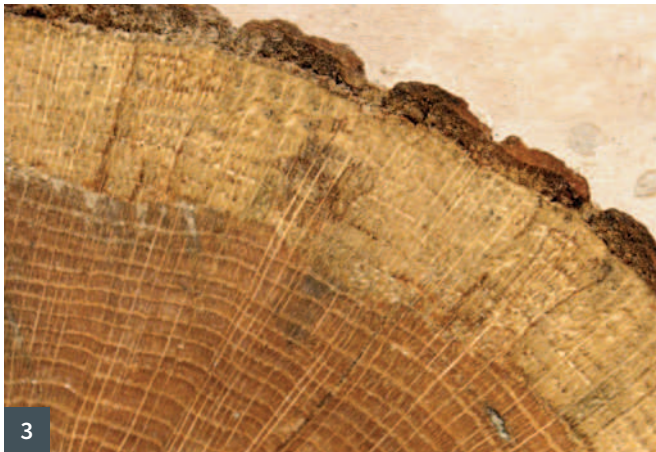
ABOVE: Expressions painting, acrylic on canvas
 RIGHT: Glazed/painted ceramic vessels
 BELOW: FP mk11 plywood chair





QUARTERSAWN OAK

John Bullar learns about the desirable qualities of quartered oak



1 Wainscot panelling in a Tudor building shows silver grain figuring in the rails and stiles as well as in the adzed panels **2** Arts & Crafts furniture makers emulated historical woodworking and ray-figured oak **3** In cross section an oak log shows growth rings around the centre with the rays at right angles from outside to centre **4** When you split an oak log it cleaves along the axis of the medullary rays

Oak is renowned for its silver grain or ‘ray figuring’ – flecks and flickering ribbons of light seen on the face of select materials. As well as aesthetic value, this patterning signifies that the wood is stable, probably quartersawn or ‘quartered’ and unlikely to move in size or shape.

Wood like this has been used in high-quality furniture and joinery since medieval times, often in wide panels of brown oak cut from the boles of large mature trees. It enjoyed a strong fashion revival among wealthy furniture clients in the Arts & Crafts era. The appearance of ray figuring in oak and some other hardwoods depends on the angle at which the wood is cut during conversion. Silver grain shows as the dominant figuring in oak boards which have been sawn through the middle of the trunk, while it will not be visible at all in crown-cut boards sawn further out from the same trunk.

For mass producers of oak furniture the occurrence of silver grain can be a problem because it reveals the poor matching of unselected boards. A random mixture of plain and ray-figured edge-jointed boards looks like a dog’s breakfast and so cheap oak furniture has often been treated with a dark stain to hide the natural figure and colour variations.

However, for the individual designer-maker who rigorously selects their wood, there are opportunities to exploit the dimensional stability of quartersawn boards while making a composition with the natural ray figuring on the surfaces of the furniture.

An important safety note, however: quarter sawing in miniature is possible on a workshop bandsaw but not recommended for any quantity.

Medullary rays

If you look at the sawn-off end of an oak log you can see growth rings running round the centre with the much finer and lighter-coloured rays running at right angles to them from the centre to the outside.

Ray figuring is produced where thin lines of radial cells, which run between the central pith line of the tree trunk and the outer cambium layer, break the surface of a converted board. These flat ‘parenchyma’ cell structures, which the living tree uses to carry sap and nutrients horizontally, weave their way through the vertical wood fibres between the central pith and the outside of the trunk.

This process happens to some extent in all trees but is particularly noticeable in oak and a few other hardwoods.



5 Bog oak, preserved in wetlands for 10,000 years, still shows the ray patterning where the fallen tree originally cleft **6** This small bole or trunk log, sawn along the radius then planed, shows the ray pattern continuing through the pale sapwood into the cambium **7** After boxing out the centre and then removing the widest boards, each quadrant is sawn on alternate faces producing a series of narrower 'quartersawn' boards

DIMENSIONAL STABILITY

Reduction in moisture content causes woods to contract, mostly in a direction known as tangential shrinkage which follows the line of the growth rings. Radial shrinkage along the lines of the medullary rays in oak is typically half as great or less; consequently boards sawn this way have approximately half the shrinkage in width.

Silver grain is a distinctive feature of some hardwoods, and confirms that the board has been radially sawn. In other words the board was cut in the sawmill so that the blade followed the radius of the tree trunk. This means that the faces are at right angles to the tree's growth rings. The board will be dimensionally stable with small movement and any changes in moisture will only cause a minor change to the board's width.

Perhaps more importantly, the shrinkage is well balanced between

the two sides of the board and so cupping is practically eliminated. Changes in thickness of the board will be relatively large, but these are usually of no consequence.

NATURAL BREAK

If you have tried splitting oak for firewood with a wedge you may have noticed that it often cleaves along the axis of the medullary rays. Tension produced by tangential shrinkage in a partially dried oak log pulls at the fibres. These then separate across planes of lesser resistance where the rays lie. Boards cleft from oak therefore have dimensional stability, good figuring as well as unbroken long fibres for greater tensile strength.

Cleft wood is often used for roofing shingles where the uncut fibres make it less prone to absorbing water. One disadvantage in



8



9



10

8 Quartersawn boards with growth rings at an angle between 90° and 60° to the face will show ray figuring on the face **9** Brown oak, with fungal decay destroying the sapwood, displays ray figuring particularly well in the undamaged heartwood **10** Picking through a bundle of flat-sawn oak: shakes around the central pith line show the boards that will have the strongest ray figuring

wood prepared this way compared to sawing from the log is that it is likely to have internal checks created by drying tension.

Planing reveals the full beauty of ray patterning but if the plane's cutter is less than razor sharp it will tend to pick up the ray cells. Particular care is needed to avoid tearing the weakened surface. Because the planed face runs parallel to the wood fibres it is prone to the slightest changes in grain direction and susceptible to tearing the rays.

Quarter-sawing technique

There are several variations on the method of quarter sawing. Some other techniques such as billet sawing also render the widest boards as quartersawn while allowing the rings of narrower ones to run off at increasing angles as rift sawn.

True quarter sawing is carried out in a number of stages. Boxing out

the centre of a log removes the pith line which would otherwise create tension and split, possibly leading to shakes in the widest boards.

The centre boards will be slightly less wide than the radius of the trunk and the most valuable. With these removed, each of the four remaining quadrants is sawn on alternate faces, producing a series of narrower quartersawn boards.

The best grades of oak sold for furniture always used to be quartersawn to yield a significant proportion of stable boards. The process is more selective, labour intensive and wasteful than flat sawing, therefore many wood yards no longer stock quartered oak. However, some quartersawn European oak is still produced.

The improved stability of quartersawn wood makes it a sound investment for high-quality solid wood furniture that will survive the rigours of time and climate.



11



12



13

11 Working around the shakes, boards can be selected with strong ray figuring **12** Quartersawn oak (top) compared to quartersawn European plane (below), also known as lacewood **13** Quartersawn rippled maple selected for a violin back – the central kerf ensures even drying while keeping the matched halves together ready for edge jointing

Through and through

Most commonly available hardwoods are through and through or flat sawn, meaning that the wood is converted to boards in a simple series of slices along the trunk.

By chance, in any stack of unselected flat-sawn oak, a proportion of boards will have been cut through the centre line of the trunk or near to it. With a bit of extra preparation these boards are to all intents and purposes the same as quartersawn. Picking through a bundle of flat-sawn oak, shakes or splits around the central pith line of the tree are a giveaway clue to the boards that will have the strongest ray figuring. A stack that has previously been well picked through may have these boards left behind because they look wasteful.

Other quartered wood

Silver grain figuring is only visible in hardwoods where many cells combine into rays that are thick enough to make a feature. In beech wood they produce an attractive fine fleck while in European plane wood the patterning is coarser than beech and tends to have more symmetry than oak, leading to its popular name of lacewood. Chestnut, which otherwise looks similar to oak, shows practically no ray figuring. Native elm shows no ray figuring and has traditionally been used in wide flat-sawn boards, although quartered cuts are less prone to cupping.

In the making of stringed musical instruments, which must be the most demanding application, selected tone woods are quartersawn for their stability and performance as much as for their appearance. Typically these quartersawn woods are spruce for bellies and maple for backs.

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CHERRY-PICKING BASKET

Woodsman Ben Law demonstrates a traditional technique for weaving a basket from willow



Baskets come in a variety of sizes and shapes. Their lightweight form makes them a particularly useful type of container to have to hand. Over time, the diverse weaving techniques of basketry have spread out to encompass a wide range of products from furniture to fish traps, from hats through to coffins.

The amazing versatility of a flexible plant-based material and a pattern of weaving can produce a large array of different products. The cherry-picking basket made here is a traditional bucket-shaped basket that is hardwearing and strong. This project uses two varieties of willow: 'Whissender,' a form of *Salix triandra* for the base and uprights; and 'Norbury,' a form of *Salix purpurea* for the weave.

Meet the maker

Renowned basket and spoon maker, Martin Hazell, paid me a visit at Prickly Nut Wood to share his knowledge about basket

making. Martin was working for the Wildlife Trust in Shropshire in the 1990s when he visited an old colleague who was making baskets. Inspired by the rhythmic patterns and repetition, he started making a few himself. The making of baskets soon became an obsession that was more important to him than his regular job – so he made it his regular job. Martin then trained with basket maker Jenny Crisp, who helped him refine his technique. Since then he has taught basket making and more recently has travelled as a nomadic basket maker and spoon carver, sharing and learning different techniques in Europe.

'What I really like about basket making is taking a really unpromising bunch of sticks and then turning them into an organised and beautiful thing, making something you can use,' says Martin. 'It's empowering knowing you can make stuff, you don't need to just buy it and the pleasure of making it is a boost to the spirit.'

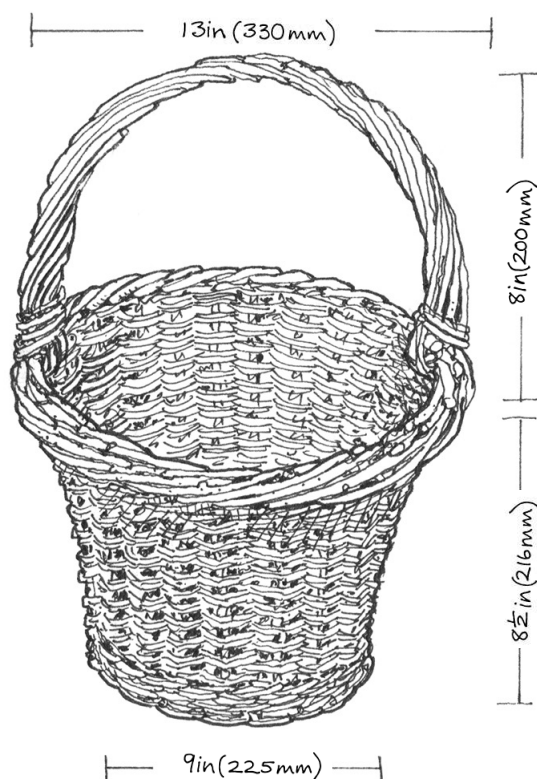
YOU WILL NEED

Materials:

- Approx 125 pre-soaked willow rods, 1.5m long

Tools:

- Bodkin
- Rapping iron
- Knife
- Secateurs



Soaking the willow

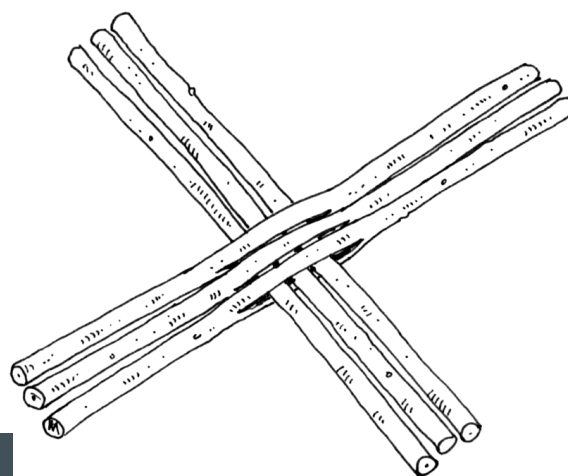
Pre-soak the willow in water for four days. The general rule is one day per 30cm. This process can be sped up by using warm water. Once the willow has been soaked, it needs to be used within a few days.

The base

Choose six fairly robust rods and cut to about 200mm long to form the slath (the round base). Split three of them in the centre section of the rod and insert the other three rods through them. The usual tool for this job is a bodkin (a steel spike with a handle). However, Martin whittled a pointed piece of wood, which he pushed through the willow in place of a bodkin.

Begin pairing (the most-used balanced weave) by placing two more rods to one side of the three rods that have passed through the three split willow rods. Weave one rod under three then over three and the other rod over three and under three. Do two rounds in this way and then open up the cross into a wheel shape. Pull down on the wheel rods to create a dish shape like the base of a champagne bottle. This will be stronger and the weave will tighten as downward pressure is applied on the base of the basket. Continue pairing by weaving over one then under one around the whole wheel.

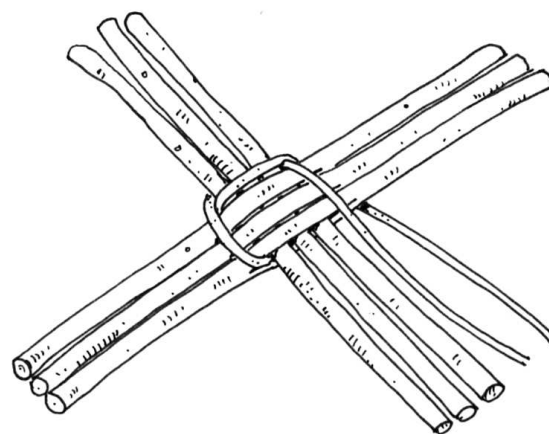
Finish the base by tucking the tip ends into the last row of weaving. The base is now complete. Martin makes a number of bases and leaves them for a few days to dry out while he selects and grades material and then stakes up and weaves a number of baskets at the same time.



1



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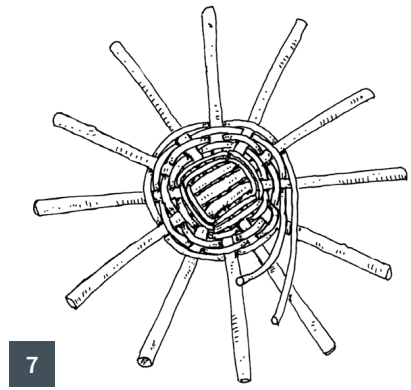
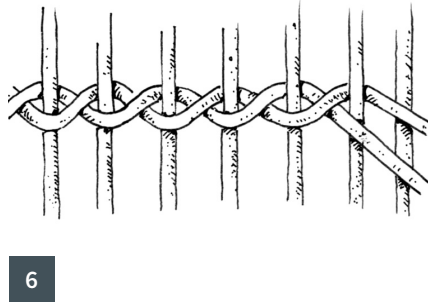
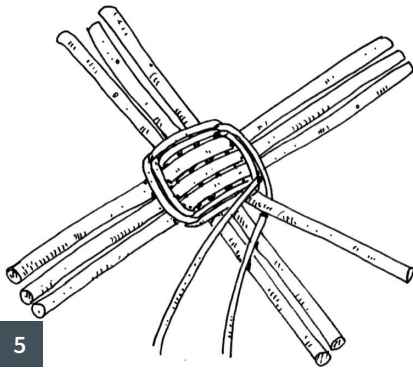


3



4

1 The completed cross **2** Opening the willow in the centre, to insert the other willow sticks to form the cross **3** Beginning pairing **4** Ready to open up the sticks to form a wheel



5 Opening out the sticks to form a wheel **6** Pairing **7** Continued pairing around the whole wheel **8** Continued pairing to form the base **9** The completed base **10** Getting the angle of the knife correct for slyping **11** The finished slype **12** Rods slyped and ready to insert into the base **13** Inserting the uprights into the base

Staking up

Look for 24 rods for the uprights. When you look closely at them you will see that they have all grown with a slight curve and this can be used to help shape the finished basket. Use the rods with the convex side of the curve leaning outwards. Using a sharp knife make a slype (a slanted cut) at the butt end of each rod. Push the uprights carefully into the base a few centimetres deep, with the slyped end going in first and without bending them. There should be one on each side of the 12 spokes of the wheel that forms the base. Once they are all in place, apply pressure with the back of a knife and bend each rod upwards. Then tie all the rods together to keep them at the correct angle to start working the upsett.

Joining in new rods

Where joins are needed, join tip to tip or butt to butt and try to make the joins oppose one another to keep the basket circular.

The upsett

This is the first 25–38mm of the side of the basket. The key role of the upsett is to separate the stakes evenly and to set them at the correct angle for the remainder of the basket weave. Martin chose a four-rod, pull-down wale weave. Waling is a strong weave and ideally suited for the upsett, where control is needed to keep the stakes in place. The pull-down wale does as its name suggests and ensures the rods are pulled down as the wale pattern is weaved.

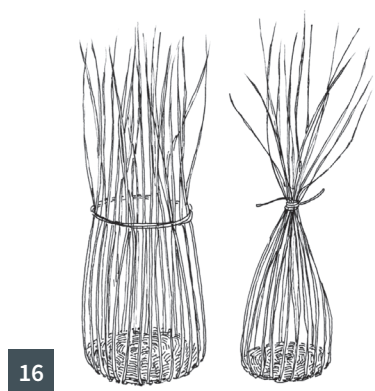
Begin with eight rods and insert four of them in two pairs on either side of two of the wheel spokes. Weave one rod at a time in between the uprights 'in front of two, behind one', pulling down to fill in the gap between the uprights and the base. Next insert four rods opposite the first four and weave the same pattern in the same direction. When the first rod meets the position where you started weaving, cut it off. The weave pattern now becomes a three-rod wale. Work two sets at the same time for evenness of the basket, continuing the weave 'in front of two,



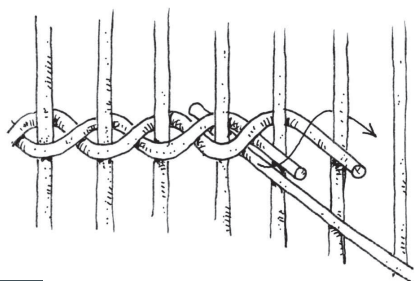
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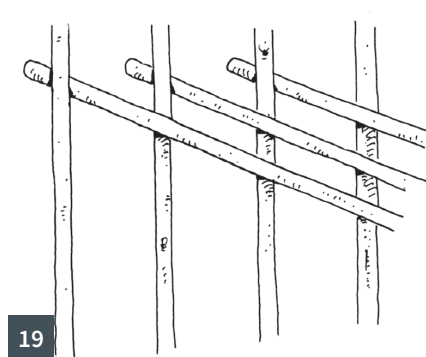
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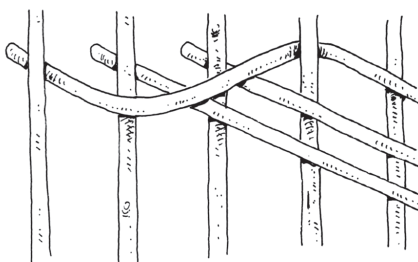
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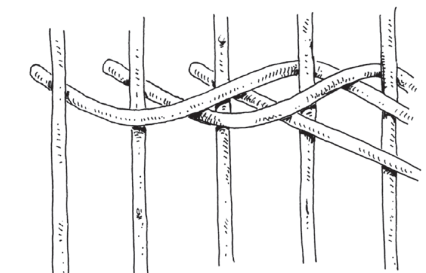
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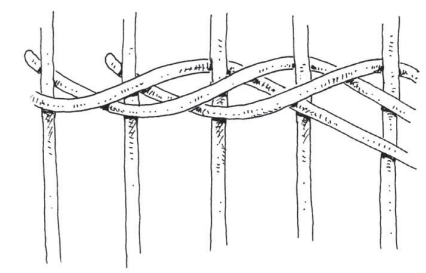
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21



22

14 The base with the uprights inserted **15** Using the back of the knife to put pressure on the rod where it will bend upwards **16** Hooped and tied rods **17** Joining a new rod while pairing **18** Inserting rods to begin weaving the upsett **19** Three-rod wale, inserting the weavers **20** Starting with the left-hand rod, weave 'in front of two, behind one' **21** Weaving the second rod, weave 'in front of two, behind one' **22** Weaving the third rod, weave 'in front of two, behind one'

behind one'. The three-rod wale is a very useful weave for keeping the basket nice and even. Where these two sets run out insert two more sets of three rods by inserting them at the midpoints between where you began the previous two sets. Continue weaving the three-rod wale until the upsett is approximately 25–50mm.

Use an axe handle to rand the weave. Randing is the process of rapping down the weave to keep it tight and even. This would usually be usually done with a randing iron but Martin shows the versatility of how few tools you need in basket making by using the handle of a tool.

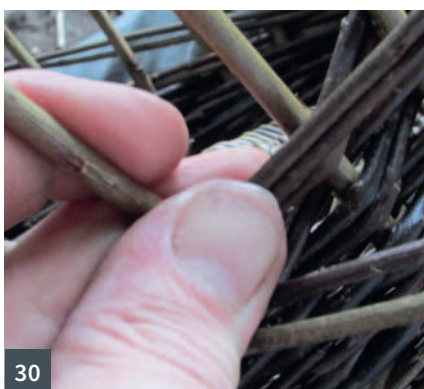
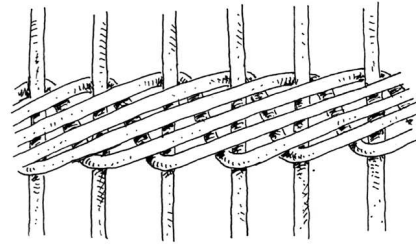
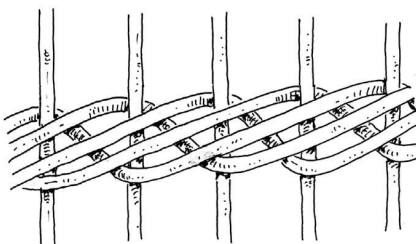
Waling

This is a strong type of weave and is often used to strengthen a basket when changing from one weave to another. A three-rod wale uses three rods, a four-rod wale uses four rods, etc. The pattern can vary: for example, a four-rod wale could also be 'in front of two, behind two'.

The main weave

Continue the weave by using a 'double French rand'. Randing (when referring to a weave) is a term that describes the pattern 'in front of one rod, behind one rod'. A double rand refers to two rods worked in pairs, weaving 'in front of one, behind one'. Weave 'in front of one, behind one' once with one pair and then move onto the next pair, and so on in an anticlockwise direction. This weave looks complicated as there are many rods attached to the basket at one time, but it is simpler than it looks and the double rand ensures fast progress up the sides. Select and slype 24 even-sized rods and insert them into the weave behind each upright to become the lower set. Select another 24 rods, slightly thinner than the lower ones to become the upper set. There are now 48 rods to weave in total, in 24 pairs. Weave 'in front of one, behind one' with the pairs of rods and rap down the weave every couple of rows.

When the weave reaches the desired height, return to the three-rod



23 Randing the upsett **24** Example of a four-rod wale, weave 'in front of three, behind one' **25** Example of a five-rod wale, weave 'in front of four, behind one' **26** Detail of the double French rand weave **27** Inserting the lower set of 24 rods for the beginning of the double French rand **28** Inserting the upper set of 24 rods for weaving the double French rand **29** Weaving in pairs, the double French rand, 'in front of one, behind one' **30** Notice the thumb position, keeping the upright rods in the correct position while weaving around **31** The sides going up

wale to consolidate the rand underneath. Choose 12 rods and begin with three rods opposite each other then butt joint the other six rods in and continue the three-rod wale to a similar depth as the upsett. At this point, put in spacers for the handle and weave the three-rod wale around them. These will leave a gap when they are removed and facilitate the fitting of the handle. Martin chooses to align the handle with the original rods that form one part of the cross in the base of the basket.

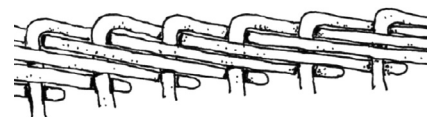
Slewing

A great weave for using up offcuts and different-sized pieces of willow is slewing. This could be used as an alternative to the double French rand. A two-rod slew would mean weaving around the basket in pairs 'in front of one, behind one'. When one tip gets too narrow, add another rod above the existing pair and weave with this new pair. Continue

until the desired height is reached. This works best with an uneven number of uprights.

The top border

There are many different styles of border depending on the finished look and use of the basket. A trac border is one of the simplest styles but Martin chose a patterned border, as follows. Take five existing rods and bend each one against your thumbnail about 1cm up from the top of the wale beneath. Twist each rod and lay it behind two uprights. The first rod that was bent over now goes 'in front of four uprights, behind one'. The sixth upright is bent over and goes 'behind two, over the top of the first rod'. This pattern is continued to complete the border to a width of about 25mm or more if you prefer a wider border and the tips are tucked in to finish.



32 Looking down on the basket. Martin's attention to keeping the shape is clearly visible **33** The three-rod wale above the double French rand consolidates the weave and strengthens the top **34** Example of trac border, 'in front of two, behind one' **35** Bending over the five rods that go behind two **36** Taking the first rod that was bent over 'in front of four, behind one'. (Note the three uprights together in the picture are actually one upright and the two handle spacers and therefore count as one) **37** Bending the next upright 'behind two, over the top of the one that you have just taken in front of four, behind one' **38** The finished border with handle spacers **39** The bow rods fitted to the basket **40** Wrapping the rods around the bow rods

The handle

This basket has a wrapped handle but you could also have a twisted or rope handle (see below). For the wrapped handle, pick a pair of rods for the bow and pre-bend them over your knee to avoid them kinking. Remove the handle spacers, slype both ends of the rods and push them firmly into position where the spacers were. Select 10 long, slender rods. (You will need at least eight, but possibly nine or 10.) Insert two rods each side of the bow rods and wrap three times around the bow rods, being careful to make sure the two rods stay aligned next to one another and don't cross over. Then repeat from the opposite side. If there is a gap in the bow, add another rod or two to fill in. Using a bodkin (or whittled spike) open a gap through the wale weave below the border and pull the rods through. Then take each rod individually around the handle, pulling tight and then threaded back through the

wale being careful to ensure they don't twist over each other. Repeat on the opposite side. Trim off any excess willow with side snips and your basket is complete.

Twisted or rope handles

This type of handle is commonly used on large baskets such as log baskets. Select four 1.5m-long rods. Slype one end of the first rod and insert it where the handle spacers have been removed. Make a suitable curve for the handle and then pass the other end from the inside of the basket through the wale and out the other side. Twist a second rod to separate the fibres (as if making cordage) and push one end into the border at the opposite end of the handle curve to where the first rod was inserted. Twist three times around the first rod. Then go through the wale and out the other side and weave back around the first rod and



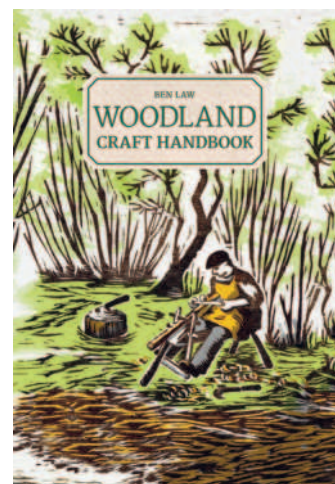
41 Taking the ends of the twisted rods through the wale weave **42** Bringing each rod around the handle and back through the wale weave **43** All the rods tied in **44** Trimming off the excess willow **45** The first rod inserted to form the handle bow **46** Twisting the willow to separate the fibres and make it behave more like cordage **47** The finished twisted handle

then through the wale. Now take up the end of the first rod and wrap that around the handle. Go through the wale and weave both ends into the wale weave.

Enjoy using your basket!

These bucket baskets have a multitude of uses. I keep one by the door, on hand for collecting summer vegetables or for the autumn chestnut harvest.

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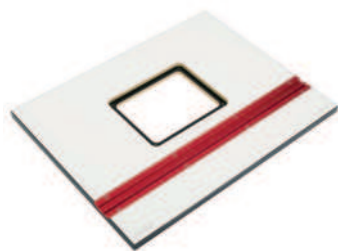


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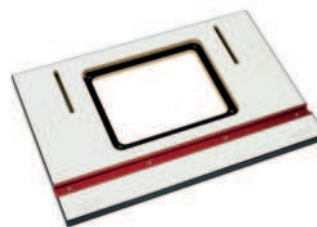
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MID-CENTURY TEA TROLLEY RESTORATION

Derek Jones uses his furniture-making skills to repair a piece of classic Scandinavian design



It's well understood that working with period pieces of furniture can help you with making your own pieces. But it cuts both ways, for there are techniques used in the workshop that, with lateral thinking, can be adapted to perform major surgery without leaving the scars behind to prove it.

This Tea Trolley 901 by Finnish architect and designer Alvar Aalto is a classic example of Scandinavian design from the 1930s that is still being produced in various forms and exported around the world today.

The problem

Twentieth-century furniture is not always as easy to repair as older pieces because much of the construction relies on adhesives that are not reversible and finishes that are not as easy to repair as shellac or wax. In some cases the materials used were relatively new to the production process and come with their own problems. In this example it's the birch ply used as the base for the two trays that have been home to a family of woodworm with a voracious appetite.

The piece had been in the current owners' family from new and they were happy that the worm had been treated some time ago, so I had been asked to re-glue the melamine covering that was starting to lift from the ply trays and generally clean things up.

Both sheets of melamine came away without any trouble at all but what lay below was not ply as I was expecting but linoleum that had been heavily scored; presumably to provide a key for the adhesive used to attach the melamine.



PHOTOGRAPHS BY ANTHONY BAILEY/GMC PUBLICATIONS



1 The trolley before restoration. The Tea Trolley 901 was designed by Alvar Aalto in 1936 and is still produced today **2** Although the woodworm had made its way into the beech frame the ply was particularly badly affected **3** The melamine laminate was a later addition that was beginning to part company with the trays **4** The melamine laminate came away easily to reveal the original linoleum surface **5** Finmar Ltd were a major importer of Scandinavian furniture into the UK between 1934 and 1965 **6** The batch mark stamp is found on both trays and side frames **7** The screw-in tray supports were left in place for fear of not being able to align them perfectly on re-assembly **8** All the screws were kept on a story board to be returned to the same place on re-assembly

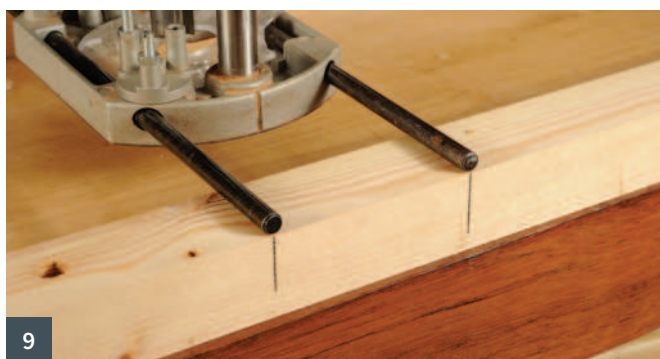
The solution

All things considered, the best course of action was to return this piece to a condition where it could be used and preserve as much of the original article as possible, including the factory label and batch number. The original linoleum was beyond repair and needed replacing.

Before dismantling the trolley I prepared a rod in which I drilled holes to store the screws in exactly the same location as they appeared on the job. The only hardware left in place was the steel tabs used to secure the bottom tray at one end. These are screwed into the laminated frames and would prove difficult to relocate precisely in-line with the screw holes on re-assembly.

Over the years the top tray had taken on quite a bow – so much so that anything taller than a tea cup looked in danger of falling over. The linoleum had also become hard and brittle and impossible to remove without risk of delaminating the ply substrate.





9 Mark centre-lines on the skis to drill holes for the fence rods **10** For this operation the base plate needed to be flush with the base of the skis **11** The router was moved back and forth across the edge of the raised beading to skim the linoleum off the ply **12** With the router base flush with the skis I could work right up into the corners and keep the router from dipping below the surface **13** A parallel straight edge clamped to the bench made it possible to get right up to the beading without damaging it **14** Clamping a fence across the skis made it possible to trim the long sides, without damaging the beading, even though the tray was bowed

The top tray

Even the most basic hand-held router can become a precision instrument if used appropriately and the technique often used to flatten sawn boards was perfect for removing the linoleum. Using the standard fence rods, the router is attached to a pair of skis via matching sets of holes drilled on a pillar drill.

For this application it was important for the router base to be set flush with the underside of the skis, as the extra surface area would be useful when it came to machining close to the ends and into the corners.

With the ski resting on the top edge of the raised bead and a 15mm radius, two-flute cutter in place, I removed the linoleum 1mm at a time in straight strokes back and forward across the tray. The bow in the tray caused the cutter to remove some of the ply in

the corners while still leaving a patch of linoleum in the centre. This had the effect of levelling the surface slightly without altering the shape of the tray and mis-aligning the fixing holes.

As previously mentioned, the trays feature a raised beading around the outside that needed to be kept intact. Although bowed, the tray still had two sets of parallel sides. By clamping a straightedge to the bench to run a single ski against, I was able to machine right up to the beading along the short sides, maintaining contact with the router base on the top edge of the beading.

A similar process was used to clean up the long sides: clamping a batten to the skis to run against the opposite edge. Referencing this far away from the cut looks odd I'll admit, but if the router skips, the only way it can move is into waste material and well away from the beading.



15 Pierce and trim through the ply with a bearing-guided cutter running off the frame **16** Hardly surprising that the original ply was delaminating and offering little structural support **17** A bearing-guided rebate cutter was set to the depth of the ply to create a surface for the replacement **18** No need to square the corners of the rebate. The new sections were shaped on a disc sander to fit and scraped level with the surrounding area **19** Flattening the boards with a router **20** The router bits used, left to right: three-winged bottom cutting bit used to flatten sawn boards; pierce & trim bearing-guided cutter; rebate cutter

The bottom tray

In contrast to the top tray, the linoleum on the bottom was reasonably pliable and was able to be removed in a few strips. Unfortunately the ply substrate was in such poor condition that parts of it disintegrated in the process.

With a bottom bearing, two-flute cutter registering off the beech frame, I was able to pierce and trim through the base to remove most of the affected ply and keep the original frame intact along with the all-important factory badge and batch number.

Turning the base over I created a 10mm rebate to a depth matching the ply to take new sections and give the base some much needed stability. Old and new ply were both 6mm. I played around with some water-based stains to match the underside of the new sections with the existing frame.

Flattening sawn boards with a router

There are many elaborate versions of this technique to be found and the principles are largely the same; the router is mounted within a jig to operate at a given height over a wide area. If this

sounds a bit like a poor man's CNC, you'd be right.

This simple version requires the router to be mounted on skis that in turn rest on a pair of level rails either side of the board in need of attention. With the board firmly chocked in place the router passes over the entire area skimming the surface as it goes. With each pass the router is adjusted lower until a level surface is achieved. Once complete, you can turn the board over and repeat the process on the other side. There are a couple of things to watch out for:

- 1 The base of the jig must be flat.
- 2 The side rails must be uniformly level across their length.
- 3 The skis should be rigid and not interfere with the working controls of the router.
- 4 Forwards and backwards travel needs to be restricted to avoid contact with the rails by the cutter.

I strongly advise the use of extraction for this process even though it will restrict your vision. The skis and rails benefit from sanding and waxing so that the router can glide smoothly back and forth.



21 The de-waxing solution removes only dirt and grime leaving the existing finish intact **22** Button polish was used to bring the areas of bare wood up to the same colour as the rest of the trolley **23** Out of eight tight corner bends half were showing signs of de-laminating **24** Look closely and you can see the diagonal glue lines where the complete hoop was joined

Repairing the finish

With the structural repairs done, it was time to see what could be done to improve the state of the finish. Before any decisions like this can be made on a repair job, it's important to know first of all what the current finish is. I say current because often what you have in front of you now might not necessarily be what was originally intended. Given the amount of DIY improvements carried out on this piece, it's quite possible that the work extended to re-finishing.

First of all, there's a simple test that can be done to determine if the finish is alcohol based. Simply place a small amount of meths on a cotton bud and wipe it over a hidden patch; this will remove the polish back to bare wood. If there is no reaction then the finish is either oil based – which is unlikely in this case – or cellulose/lacquer based.

In the mid 1930s, shellac was still a popular choice of finish but perhaps not where modern manufacturers of the time were concerned. Pieces like Trolley 901 were designed to be produced in quantity and benefit from all that a modern production system could provide. A sprayed finish therefore, would have been the order of the day. My test suggested that the finish was not shellac.

Synthetic finishes present the restorer with a problem in deciding which course of action to take; either conserve the original surface layer or restore what is already there. The solution is relatively straightforward when the finish is shellac as more polish can be added safely without fear of lifting the existing surface. New shellac bonds perfectly well with old. The same cannot be relied upon when dealing with synthetic products. Re-coating with a cellulose lacquer would

require stripping the existing finish off because of the potential risk of poor adhesion between the two layers. The best option in this instance is to use shellac to give an overall shine to the existing finish. It will also permanently mask some types of water damage to the existing finish. Colour-neutral, but more importantly easily reversible, shellac will adhere to pretty much any clean surface, so in many respects, constitutes the perfect product.

After cleaning with a de-waxing solution it appeared that the finish on the two main frames of the trolley was in reasonably good condition. However, time had not been quite so kind to the trays on the piece that were displaying areas of bare wood, mainly along the top edge of the raised bead moulding. These were brought up using button polish to match in with the existing golden colour prominent elsewhere on the frames before the whole trolley was given a couple of wipes over with rubber using clear shellac.

Other defects

There still remained the tricky question of the worm-holes. Having gone to the trouble of removing the worst affected areas I wanted to disguise these as much as I could so experimented with waxes and fillers to fill the holes where they appeared on the surface, mainly around the perimeter of the bottom tray. The best solution came in the form of a light Brummer filler with a small amount of raw sienna earth pigment added. To avoid the need to sand the surface I added the smallest amount of moisture to the paste just by dipping the palette knife into water before applying. Rather than sand the filler flat I used



25 These little markings give an indication of how the trolleys were manufactured **26** The old laminate was used as a template to cut the new linoleum with an additional couple of millimetres for fine trimming **27** A plane can be used to trim the linoleum to get good, clean edges **28** Burnishing cream was used to blend the chips that had been touched up using white shellac with the existing paint

a damp rag to wipe away the excess and repeated the process a second time. There was evidence of some de-lamination at the corners and as it didn't appear to be having a detrimental effect on the rigidity of the frame, I made no attempt to correct it other than filling.

Re-ebonising

The handle on the trolley was originally finished in black lacquer. Not wanting this to look over-restored I added a small amount of black spirit dye to some shellac sanding sealer before wiping it over with an old rubber. The result is blacker but with a trace of the pale timber showing through where it had worn naturally. Something I hadn't noticed when I originally dismantled the trolley was a number stamped on the rail corresponding to the paired frame. It's a minor detail but one that gives us a glimpse of how the pieces were made and then disassembled for finishing.

Fitting the linoleum

Trimming linoleum is really straightforward and can be done with a sharp craft knife and a straightedge. I was able to retain the old Formica sheets to use as templates for this project. To give myself a little extra to play with I used the thickness of a metal rule to increase the overall dimensions. In the same way you might shoot veneers in a press, linoleum can be planed on edge to fit. Be careful though – the corner has a tendency to break out like end grain, so work in from each end. In a majority of cases, it would be beneficial to glue the linoleum to the board and then trim flush with a router, just as you would with veneer.

Forbo, the linoleum supplier, recommend PVA as the adhesive for laying onto a timber-based substrate. It can be done in a heated press but just as well in a vacuum bag or under clamps. Because the trays on the trolley were not flat I decided to press the linoleum in a vacuum bag without a base-board. Using one would have resulted in forcing the trays to lie flat – something they had not been for a long time – and therefore out of alignment with the rest of the structure if they decided to remain that way. To ensure a good bond at the edge and protect the raised bead, I placed a sheet of 4mm hardboard on the top.

Wheel treatment

In keeping with the rest of the trolley, the condition of the white painted wheels needed to be improved without overdoing things. Fortunately the existing paint was still very much intact – just a little dull with a few chips. The de-waxing solution removed a lot of the dirt present and it was possible to disguise some of the chips with shellac and white pigment. Further treatment with burnishing cream brought them up to a point where they matched with the rest of the piece.

Conclusion

As far as looks go the end result is probably not much different from where we started but then that is the general idea. All things considered, this Trolley 901 has been returned to service with a minimum of visible intervention. It may not be everyone's cup of tea but I hope you've learned a thing or two along the way that will help you breathe new life into similar mid-century classics.

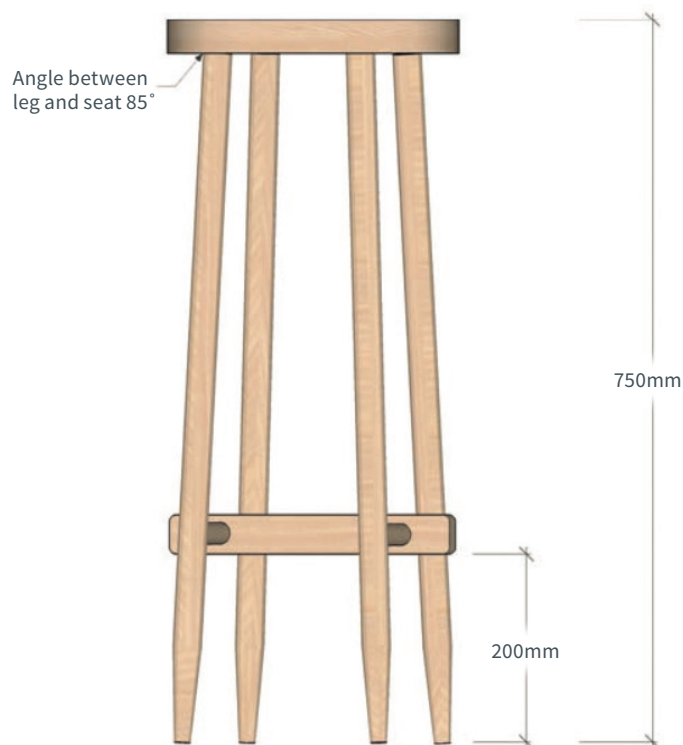
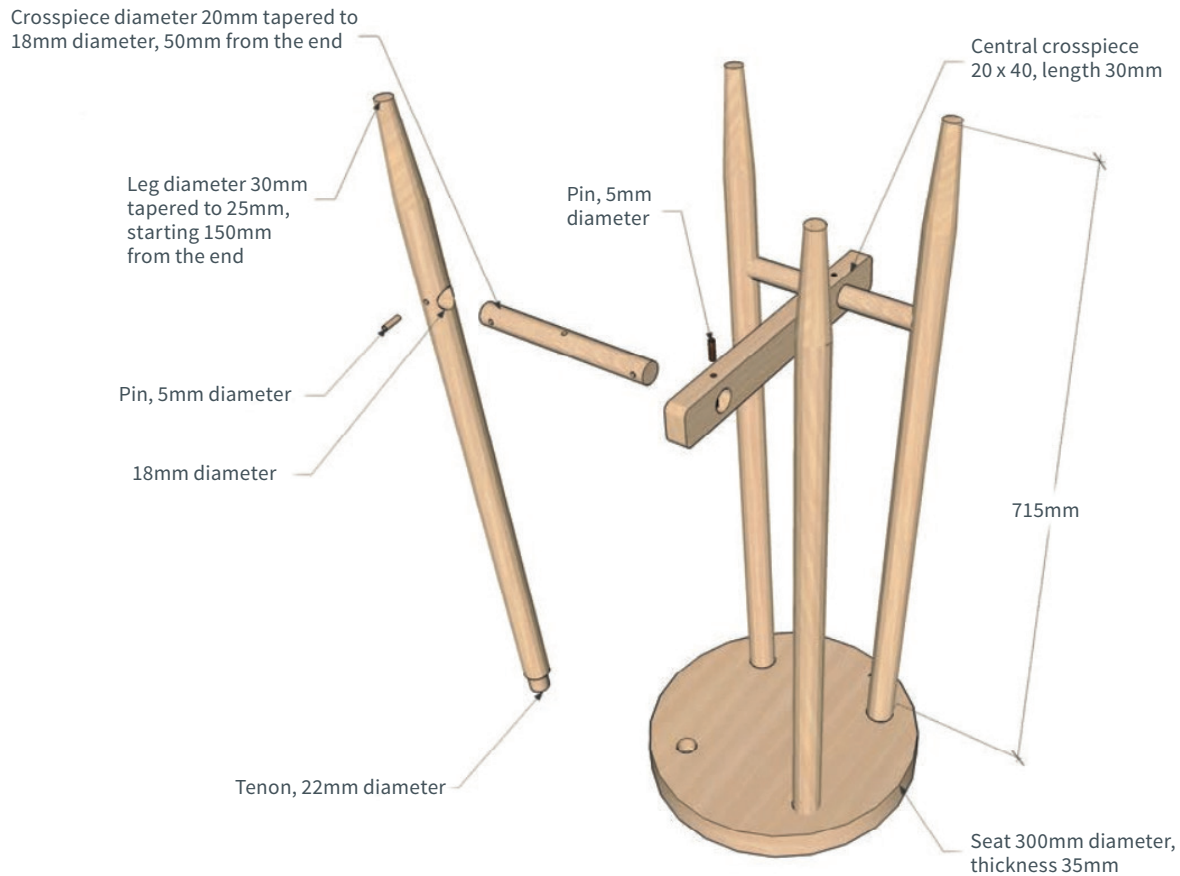
HANDCRAFTED WORKSHOP STOOLS

Mattia Migliorati makes a pair of practical stools for sitting at his workbench

The stool can often have a complex construction. Good ergonomics and seating comfort are not always easy requirements to integrate into a product that must also satisfy aesthetic and structural parameters. Fortunately, the project that follows does not aim to be an answer to this kind of complexity as I will limit myself to guiding the reader in the construction of a 'practical' stool, to be created and used, avoiding, at least in part, the problems that professional chairmakers have to tackle.

It all started with the idea of building a pair of stools for the workshop, of a good height to be able to work at the bench while seated, and experiment with the artisan techniques that are the basis of carpentry.

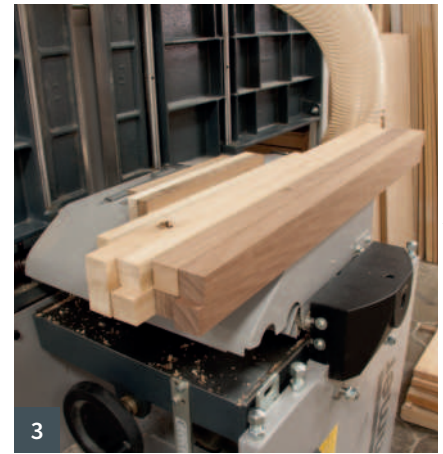
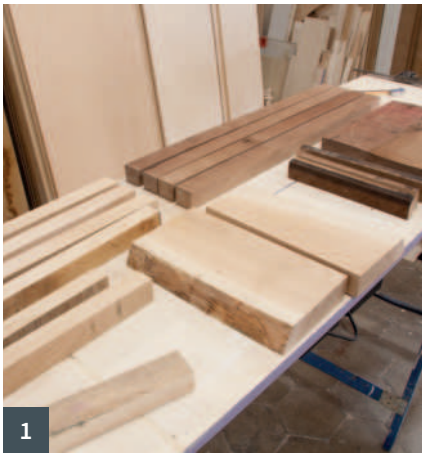




The design

The design I came up with is a minimal style: the elements that make up the stool are reduced to a minimum and do not have particularly showy workmanship. I was looking for a balance between a light shape and good stability, taking care of the proportions of the various elements based on the height that the seat needed to have (750mm), to allow me to work at the workbench while seated.

The stool consists of a round seat, 300mm in diameter, in which four legs are inserted at an angle outward (85° with respect to the seat). The legs are joined in pairs, 200mm from the ground, by two crosspieces with a circular section (diameter 20mm). These are in turn connected to each other with a third crossbar with a rectangular section (20 x 40mm). As for the construction, I favoured manual work and traditional techniques.



1 Recycled material from the waste pile was used to make the stools **2** The material was cut into smaller pieces with the bandsaw... **3** ...and then brought to the final sizes by planing **4-6** The seats were made from several pieces. Both the defects of the wood and the direction of the grain had to be accounted for, so as not to create unbalanced pieces which, in addition to not looking good, can lead to different movements of the wood. Biscuits were used to keep the parts aligned during gluing **7** The diagonals were drawn on the two squared seats and the centre was found, then the perpendiculars to the sides were drawn with respect to this

The circular seats

I selected the wood I needed from the workshop waste pile, and processed it to bring it, with the necessary margins, to the final measurements. As usual, if the starting boards are very large, cut them to obtain pieces that are easier to handle and reduce the extent of defects, such as warping or various distortions.

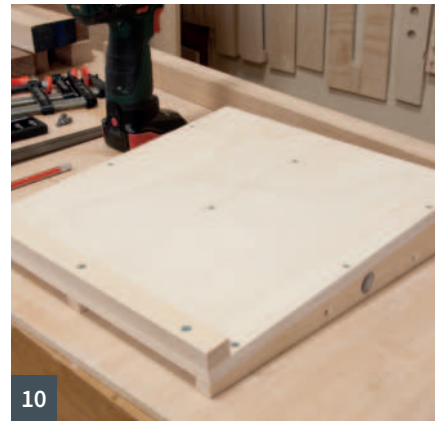
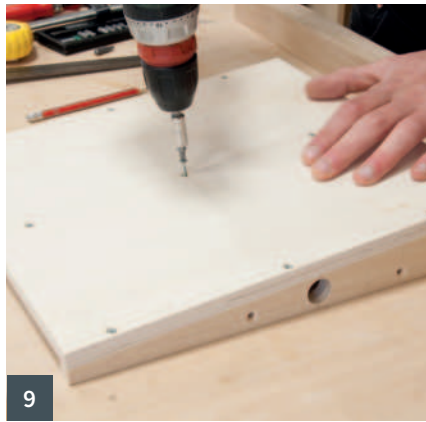
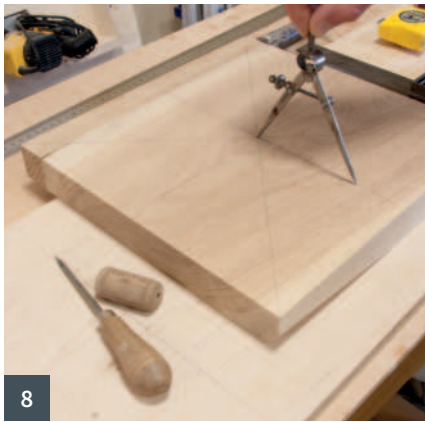
The two seats were the first elements to be made. They were obtained by gluing several boards, up to 300mm on each side, by interposing some lamellas between the various pieces to keep them aligned.

Once the glue was dry, I moved on to squaring the seats to a slightly

larger size than the final one, then traced the places to make the holes in which the legs would be inserted.

The legs fit into the seats by means of circular tenons. The blind holes to be made on the top are 22mm in diameter and are inside the perimeter of the seat by about 50mm, a distance calculated to have the same size as the seat at the point where the legs touch the ground. Since the legs are angled at 85°, to make the holes I first had to make a ramp to be used with the drill press (as you will later see, this accessory would also be useful for other processes).

When the ramp was ready, I placed it on one of the seats and placed



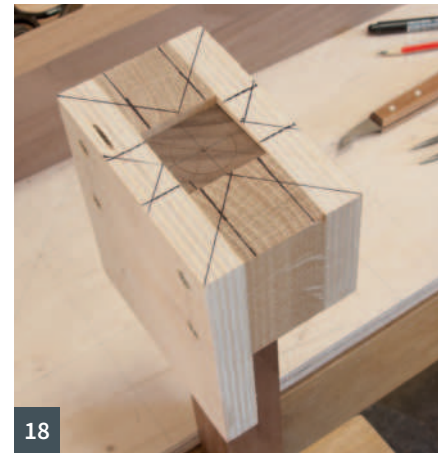
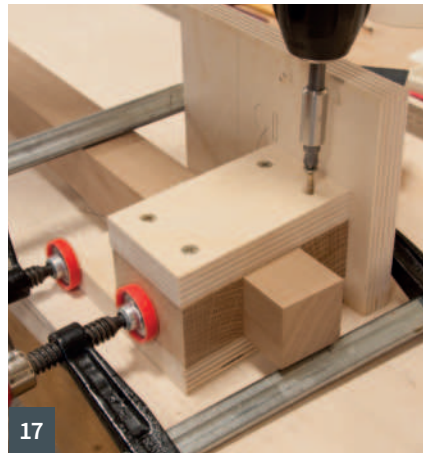
8 Opening the compass by 100mm marks the coupling points of the legs on the last lines drawn **9 & 10** To make the ramp to be used with the drill press, it was necessary to prepare three wedges at an angle of 5°, cutting them from a panel of large sizes with the saw. After making the holes that will allow you to lock the jig to the base of the drill using the clamps, the ramp plane and the stop for the seats were screwed onto them **11** On the drill press the jig was positioned so that the Forstner bit fell on the centres marked on the seats. After having also performed the lateral alignment, two stops were added that prevented the ramp from moving on the leading ones and locked it to the drill table with the clamps **12** I proceeded with drilling by setting the depth of cut of the drill to 25mm. Between one hole and the next, the seat is rotated by 90°, the ramp naturally remains stationary in position **13-15** The circular shape of the seats was created using the router and a homemade compass

the assembly under the drill so that the 22mm Forstner bit fell exactly on one of the marked centres. All subsequent assemblies would depend on this placement, so I took a few minutes to get it right. After having fixed everything with the clamps, I set the depth of cut of the bit so that it cuts for 25mm at the most (we use the depth stop of the drill!). Then I adjusted the drill to a low rpm and finally I could start to drill.

It was better to leave the seats square until the work on the legs was finished, to have references with which to check the success of their assembly. After this I could cut them to a circular shape using the router and a special compass.

Perfect circles

To give the seats the circular shape, I used the router equipped with a compass. My self-made compass consists of a simple plate screwed to the base of the router and a steel pin inserted in the centre of the seat (in the lower face), which acts as a fulcrum for rotation. With an end mill I made a circular groove a few millimetres deep, then, following the outer edge of the line, the waste was eliminated with the jigsaw. By moving the seat to the router table, the part of the edge that had remained rough was removed with the reference to the clean one milled with a compass; an end cutter with bearing was used for this cut.



16-19 The box jig for the shoulders: to cut the angled shoulders of the tenons, I made a simple guide jig using the remaining pieces of the legs and some plywood. Tracing the circumference of the tenon on the head of the pieces gave a visual reference of where to stop the descent of the blade into the wood **20** The legs were cut on the tablesaw to create the octagonal section. Note: the blade's guard was removed while shooting this photo, and this is an operation for which it is essential to use a push stick **21** The facets cut on the bandsaw brought the tenons closer to the final cylindrical shape **22** Given the inclination of the shoulder it was necessary to update the stop on each side, so it was best to work the pieces in series

The legs

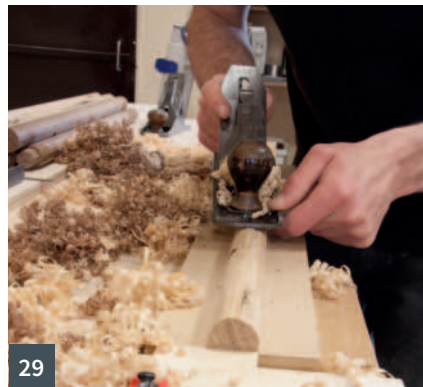
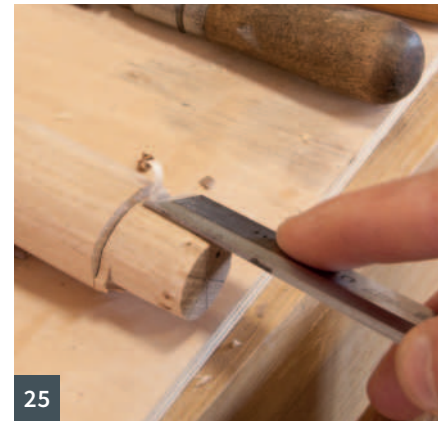
Processing the legs was one of the most interesting steps of the entire creation of the stools, as it involved making a cylindrical section starting from a square using, for the most part, a hand plane. These pieces have a section of 30mm, which tapers in the last 150mm to 25mm at the point of support on the ground. On the opposite side, where the legs join the seat, there is a 22 x 25mm circular tenon.

Before starting to facet the previously planed pieces, I cut the shoulders of the tenons, an operation that would have been difficult to achieve once the section had been changed. The tenon must obviously be cut at the

same angle as the holes made on the seats, which is why it is convenient to make the cut with a handsaw with a jig to guide the saw's path and to obtain a clean cut. I used a kind of box jig that was easy to assemble.

Once the cutting of the shoulders was complete, I moved to the tablesaw to cut the facets of the leg pieces. I set the blade for a 45° cut and the parallel guide to obtain the width, with a minimum margin, an octagonal section of 30mm.

With the new shape of the legs, it was easier to approximate the circular section of their tenons. I started by using the bandsaw to initially bring them to an octagonal shape and then used a carving



23 After initial cutting on the bandsaw, the tenons were cut using a carving knife **24** To create a precise tenon I prepared a board with the correct sized hole in which to try the tenon several times **25** The marks left by the edge of the hole on the tenon gave the necessary references to be able to complete the work with the chisel **26 & 27** The holes for the crosspieces are positioned about 200mm from the end of each leg. Once the hole had been made on one leg, I worked the one placed in a mirrored position, then turned the ramp 180° and drilled the remaining two, always making sure to drill the innermost face of the leg **28** At the end, the holes were made for the pins that lock the crosspieces in the seats, 5mm in diameter **29 & 30** Hand planing requires a well-sharpened blade and great attention to the direction of the grain. Working all around the piece, the direction of the fibre almost always changes by 180° making cutting difficult. To create all the passes it was necessary to refer to the faces previously produced with the tablesaw!

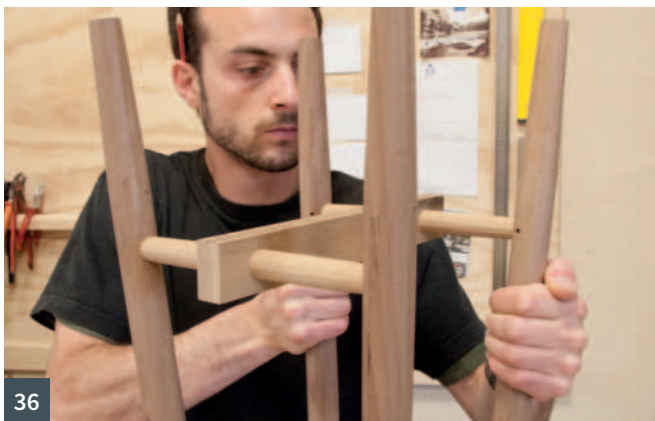
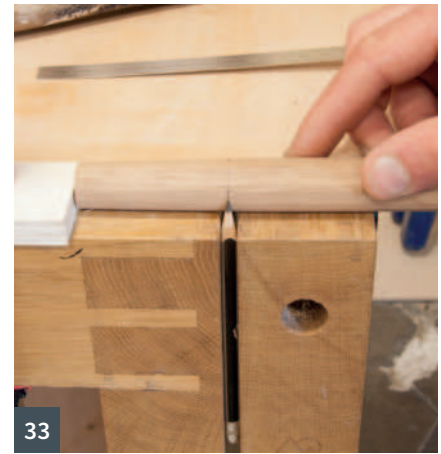
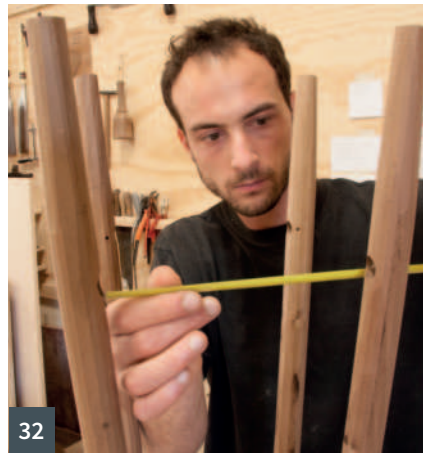
knife and the chisel to obtain the final cylinder. I constantly tested the piece in a reference hole to obtain a perfect fit. The exercise required precision and was a good test of my skills!

Once the work on the upper joints of the legs was finished, I moved on to making the lower ones for the two crosspieces, starting by drilling the holes for their housing in the legs. The crosspieces have a 20mm cylindrical section with a slight taper and are inserted in the holes in the legs; two 5mm pins placed crosswise prevent each of the pieces from being able to slip out. The holes for the crosspieces are also inclined, so I used the ramp again, adjusting its position for the new

use. The holes have a diameter and a depth of 18mm.

After the drilling I used a hand plane to add more facets to the legs to bring the section from an octagon shape to a hexadecagon shape (a polygon of 16 sides) with more or less regular sides and angles. This gives the legs an elegant look that also highlights the manual workmanship.

To work in the most symmetrical way, I placed the legs on a support and planed the edges by counting the number of passes, in this way I was able to eliminate roughly the same amount of wood on all eight vertices. For those who want to, you could continue to facet the section to create a circular piece instead.



31 The last part of the leg is tapered, starting at 150mm from the end of the leg and then tapering gradually, bring their section to 25mm at the end **32** The two lateral crosspieces are created using the same procedure as used for the legs **33** The pencil mark shows where the tapering begins; it reduces the diameter by 2mm so the end of the crosspiece is the size of the holes drilled in the legs **34** As with the legs, the crosspieces were finished using a hand plane **35 & 36** The central crosspiece is created after taking the distance between the two side crosspieces, transferring the measurement back to the central crosspiece, increasing it by 10mm on each side, then drilling two 20mm holes **37** Using polyurethane glue, unlike vinyl glue, guarantees strong gluing even where the joints do not match perfectly

The crosspieces

To connect the legs of the stool to each other and give solidity to the entire structure, the project includes three crosspieces. The two side ones have a diameter of 20mm, which tapers slightly at the ends to engage the 18mm hole made on the legs. To determine the length of the two pieces, I mounted the legs in the seat and checked that they are parallel in pairs, and equidistant from each other. I measured the distance between the holes with the tape measure and added to the measurement the depth of the holes made in the legs. I shaped these

two crosspieces using exactly the same method as the legs.

The third central crosspiece connects the previous two to each other for purely aesthetic reasons. It has a different rectangular section, which further differentiates the design of the stools from the classic scheme with four lower crosspieces. The connection between the three crosspieces is made by means of two holes made on the central one.

Gluing, final touches and finishing

Once the stools had been dry assembled and I had checked that



38 To tighten the parts together, the simplest system is to use elastic bands **39 & 40** The reinforcement pins achieve a mechanical fixing which guarantees the tightness of the joints for a long time **41** With the stool on the ground, and after levelling the support points with shims, I marked the height at which to cut off each leg **42** The final cut was made with a handsaw... **43** ...then the work was finished with abrasive stuck on a pastry board

all the pieces fit together correctly, I disassembled everything to prepare for the gluing phase. The planed surfaces of the various elements required only a light sanding (with 220- and 320-grit papers). Where needed, I rounded off the sharp edges with the router and a sculpting knife.

I carefully distributed the glue inside the holes, on the tenons of the legs and on the ends of the two crosspieces and assembled the stool starting from the intersection of the three crosspieces. I then added the legs and finally the seat. I used elastic bands to tighten the pairs of legs.

When the glue was dry, I used the drill to extend the holes for the pins and inserted these in their housing, then I cut the ends of the legs so that they all flattened well on the ground. To perfect this process, I placed the stool on a flat pastry board on which sandpaper was attached. Moving the stool on the abrasive evenly flattened the support points of the stool.

To give the stools a soft touch and an easy to apply finish, I chose a natural oil finish. In addition to adequately protecting the wood, it was a perfect match for the handcrafted aesthetic of the piece.

The vintage toolbox

Colin Sullivan looks at
the classic Disston
No.14 backsaw



1

The history of the handsaw as we know it today goes right back to the start of the Industrial Revolution. The use of water power made it possible to use large diameter grinding wheels essential for the mass production of hand saws.

It is interesting how the Disston saw is regarded as the best but in fact we were making saws of equal quality long before. Henry Disston was born in England in 1819 and the whole family went to America when he was 14 years old. By 1840 he had his own saw making company; this lasted up to 1955 and after a series of takeovers finally ended up with the Sandvik Tool Company.

The No.14

The No.14 backsaw was first listed in their 1914 catalogue and patented the same year, described as being 'quickly adjusted to cut any special depth', and having a cherry handle. The carving on the handle quickly identified the saw as a Disston and may have been partly responsible for the popularity of their saws.

The catalogue describes the saw as having 'Disston crucible steel blade, warranted. One edge toothed nine points for cutting with the grain; the other 13 points for cross cutting. The slotted heavy steel back, by means of the wing nut and lever tightener is quickly adjusted to cut any special depth required. Adapted for tenoning, shouldering, dovetailing, cog cutting. Or any purpose where a definite depth of cut is desired. Made in five separate lengths from 200mm to 405mm long.'

Not stated in the catalogue are the Japanese-style saw teeth on one side of blade for cutting along the grain – an unusual detail at that time.

This saw must have been very useful for cutting the housing joints on staircase strings and bookcase sides, the sort of work that is now all done with the router. I had noticed in an old woodworking magazine instructions on how to make a wooden puzzle, and set about making one to try out the saw, partly because the housing joints were all the same depth and partly because I wanted to get a feel of the saw. A normal tenon saw can sometimes feel top heavy, but this saw has most of the weight in the stop bar lower down the blade and balances more easily. I found it rather good to use and I am surprised there is not a saw of this sort available now.



2



3



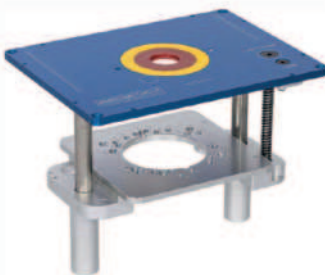
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5

1 The No.14 was patented in 1914 2 The quick release lever opened for blade removal 3 & 4 The front end of the blade has teeth to engage with teeth in the depth bar, and a slot arrangement where the bar fits into the handle 5 The saw can be used for cutting simple housing joints at a constant depth without any marking out

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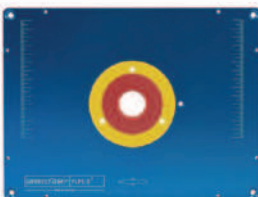
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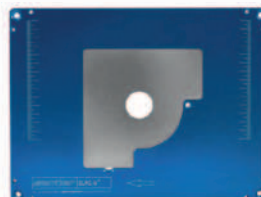
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