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WOODWORKING CRAFTS

Issue 65



WELCOME

Merry Christmas and/or a happy New Year! Some of you will be reading this before Christmas but for some it will already be 2021, a new year which arrives with the hope of a return to a more normal existence for many of us.

This issue we have a selection of projects for your workshop with Mitch Peacock's beautifully made shoulder plane (pictured above), a handy benchtop vice from Mark Gough and tidy storage for your clamps from Alan Holtham. We also have techniques for making dowel joints, selecting handsaws and problem solving as you go along.

Australian furniture maker Josh Carmody answers our questions about his work, including his mind-bending optical illusion stools, and the coveted Tree of the Year winners are revealed. Owen Manson, aka Re-madeinnorfolk, shares his love of reclaimed wood, an ethic

we put into practice with a wine caddy made from pallet wood and Louise Biggs's restoration of a spice cupboard that was past its best.

Colwin Way invites you to try the hugely popular art of incorporating resin into wooden jewellery, lamps and tables with spectacular results.

Charles Mak makes a set of louvred shutters and Kate Forder explains the history behind a Mission furniture-style bedside cabinet project. With these, a ring box, part one of a beautiful sideboard, a winter snowman, a scrollsaw lovespoon, a floor lamp and a knife block, there really is something for everyone.

As always, we love to hear from you and see your latest work, so please contact us at WWCEditorial@thegmcgroup.com or on Instagram [@woodworkingcrafts](https://www.instagram.com/woodworkingcrafts)

Happy woodworking!

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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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BRITAIN'S TREES OF THE YEAR 2020



A plane, a rowan and a beech tree were this year's winners

Thousands of people across Britain have cast their votes for this year's Tree of the Year competition, organised by the Woodland Trust. The competition usually covers the entire UK but, due to the challenges posed by the Covid-19 pandemic, it was not held in Northern Ireland this year.

Now in its seventh year, the Woodland Trust's Tree of the Year contest aims to showcase the UK's favourite trees to help show their value and need for protection. It is supported by players of People's Postcode Lottery, which gives a £1,000 care award to the winning trees.

England's Tree of the Year

The Happy Man Tree, a 150-year-old plane in Hackney, won England's Tree of the Year. However, the tree is currently earmarked for felling as part of a redevelopment in the area. The local community is campaigning to preserve the tree and have added signs on its branches and the surrounding fence to draw attention to it. As an urban tree, it makes an important contribution to combatting air pollution and making grey city streets green. But the community sees it as more than just the sum of its parts – it's part of the estate, part of their collective history.

Adam Cormack, head of campaigning for the Woodland Trust

said: "The local community has made a powerful case to retain the tree, adopting the slogan #noticethistree. We did notice, and so did thousands more. In too many places we see well-loved mature trees lost to development rather than designed in to plans from the start. When this happens it's a lose-lose situation. The tree itself is lost and people lose something that made their lives better."

The tree is expected to be felled by the end of 2020 but the Friends of the Happy Man Tree say they are still campaigning for it to be saved.

Scotland's Tree of the Year

A rowan known as The Survivor Tree won the title of Scotland's Tree of the Year. Twenty years ago, Borders Forest Trust based its slogan: 'Where one tree survives, a million trees will grow', on this lone rowan clinging to a stream bank in Carrifran Valley. Today that survivor tree is lonely no more! It is surrounded by a little forest of its children, and lots of suckers are coming up from its base. This was some of the first natural regeneration the Trust achieved in the Carrifran Valley. In addition to its own children, the rowan tree now has over half a million other native Scottish trees for company. Where once it dominated the view, it will soon be hidden from sight. The rowan tree no longer stands alone and is a symbol of the 20-year journey to revive the wild heart of southern Scotland.



Wales' Tree of the Year

Wales' Tree of the Year is The Chapter House Tree in Margam Park, Port Talbot. Standing in the shadows of the 17th-century Margam Orangery and St Mary's Church, this historic fern-leaved beech envelops the remains of one of the first Cistercian abbeys in Wales. Its canopy has provided shelter to visitors for many years – from Victorian tea parties taking place under its sweeping boughs to a favourite summer picnic spot for present-day visitors. The tree provides an atmospheric backdrop and is loved by cinematographers, having featured in several productions including *Dr Who*.

www.woodlandtrust.org.uk



TOP RIGHT: The Survivor Tree in the Carrifran Valley is Scotland's Tree of the Year PHOTOGRAPH BY AIDAN MACCORMICK/SCOTLANDBIGPICTURE.COM/WTML

TOP LEFT: The Chapter House Tree in Port Talbot is Wales' Tree of the Year PHOTOGRAPH BY MARC ZYTYSKI/WTML

ABOVE: The Happy Man plane tree in Hackney won England's Tree of the Year competition but is due to be felled PHOTOGRAPHS BY TESSA CHAN/WTML



WOODEN SHOULDER PLANE

It isn't hard to make your own shoulder plane, as Mitch Peacock recently found out

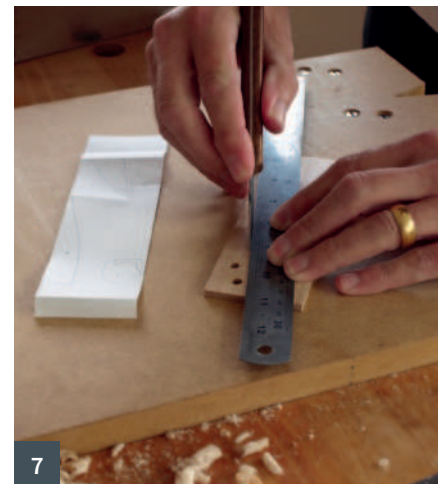
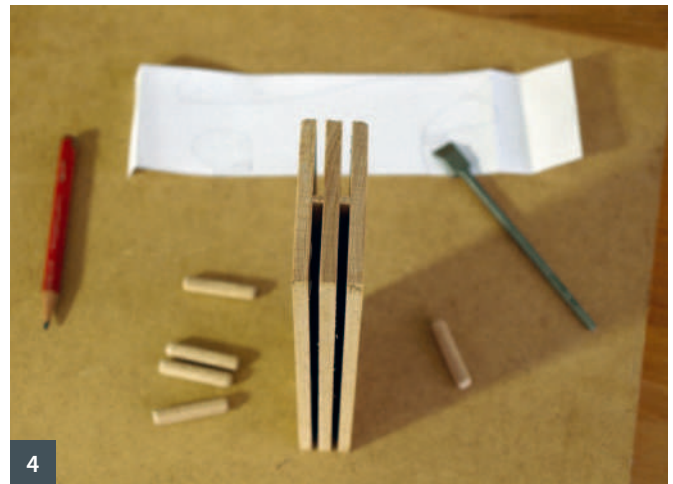
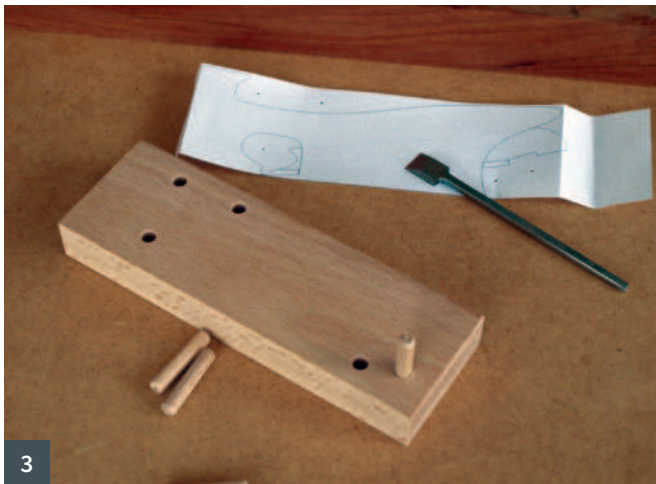
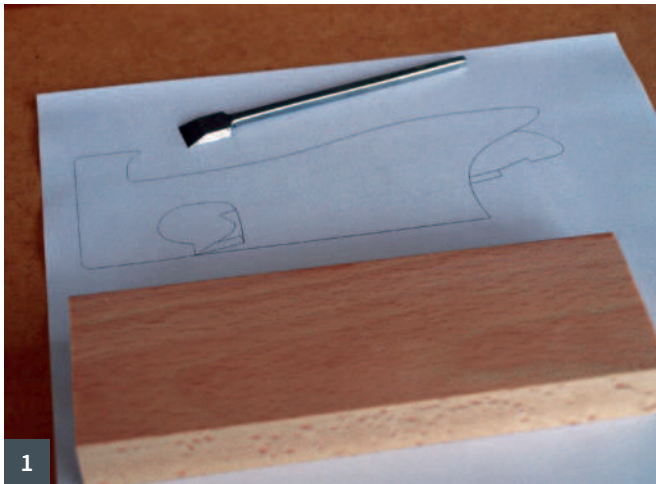
With a fair selection of planes in my workshop, I never felt the necessity to make my own, however I recently did just that! The joy of taking those first few shavings with my own plane was addictive, and I now have a list of other planes I want to make, just for the enjoyment of it.

Materials

Simple wooden planes, like this shoulder plane, only require an iron and a piece of hardwood. Even more complex ones don't require expensive or hard to source items. I started with an offcut of beech and an old Clifton iron that I had in my workshop. Common bench plane irons that have worn out, can easily be



cut down with care, frequently cooling them in water to maintain hardness. For stability, quartersawn timber is preferred.

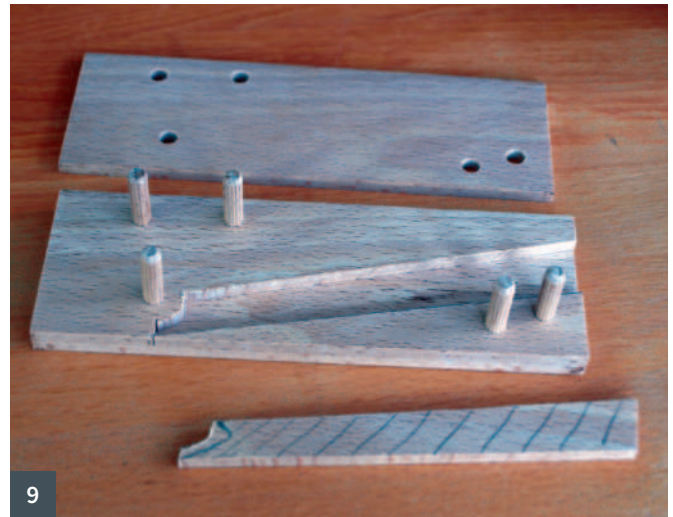
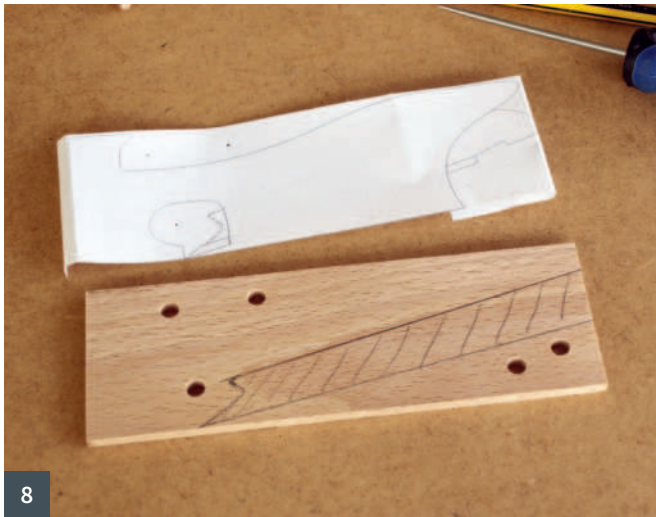


PHOTOGRAPHS BY MITCH PEACOCK

Body

- 1 I made a few sketches before settling on one design and producing a paper template. I chose to make the body by cutting its sides from the middle section, cutting a space in the middle section for the iron and wedge, and then gluing the sides back on. The template was used to identify locations for some alignment dowels that would be cut away when the plane was cut to shape.
- 2 Each location was pricked with an awl, and bored at the drill press ...

- 3 ... to take the hardwood dowels.
- 4 I used the tablesaw to partially rip the sides from the body blank.
- 5 I then finished separating them by hand.
- 6 The sawn faces were then smoothed, ready for gluing.
- 7 The iron and wedge space was marked on the middle section ...



- 8** ... using the paper template to prick through the locations with the awl, and joining these with the marking knife.
- 9** The sawn-out section was retained. You could use this to make the wedge, although I made one from a contrasting timber for my plane.
- 10** The three layers of the body were glued together, using the dowels to keep all the pieces aligned.
- 11** With the body blank back in one piece, it was sawn to rough shape ...

- 12** ... and worked to match the template using rasps and files.
- 13** The iron in a shoulder plane should be a fraction wider than the body, and able to be set flush with it on either side. I made the blank a little wider ...
- 14** ... and an equal number of shavings were removed from each side of the body until the required thickness was achieved.



The mouth and bed

- 15** In order to set the iron in the plane, the bed had to be cut into the applied sides ...
- 16** ... to match that previously cut in the middle section.
- 17** A mouth was sawn so that the iron can protrude through the sole of the plane. I used a temporary wedge to apply pressure on the iron when gauging where to cut, and it took three attempts, gradually widening the mouth, until the iron could just begin to emerge with sufficient space for a thin shaving to pass through.
- 18** Wedging the iron caused a slight deflection in the sole, underneath the bed; this was carefully removed with a block plane and by rubbing on flat abrasive paper. To avoid damage to the iron, it was retracted slightly, but wedged to the same degree.
- 19** Tapping the iron forward a little, I was able to take some test shavings.

Pimping it up

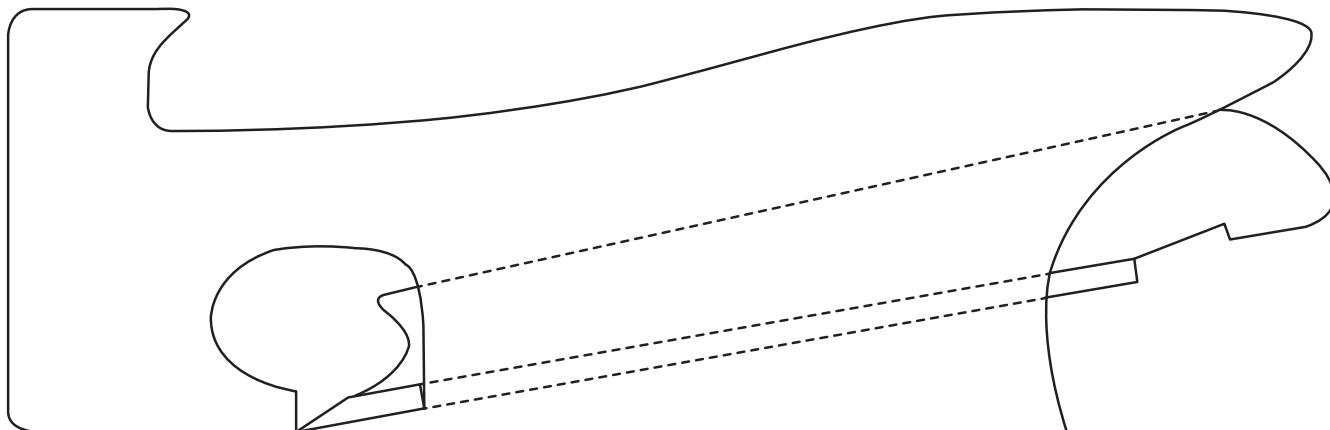
- 20** I chose to make a contrasting wedge from African blackwood, and fore and aft striking blocks of ebony. The wedge was sawn slightly over-sized, from the template, and planed and pared to produce a tight fit when its leading edge approached the bevel of the iron. A slight hollow in its belly ensured good pressure at the front of the iron. The front of the wedge was shaped to help shavings curl, but in use, up until now, they curl up before they get that far.
- 21** Mushroom-shaped buttons were turned on the lathe, before installing in mortises bored into the plane body with a spot of glue. (One of the ebony striking buttons has since chipped in use, and I shall use boxwood in future.)

Finish

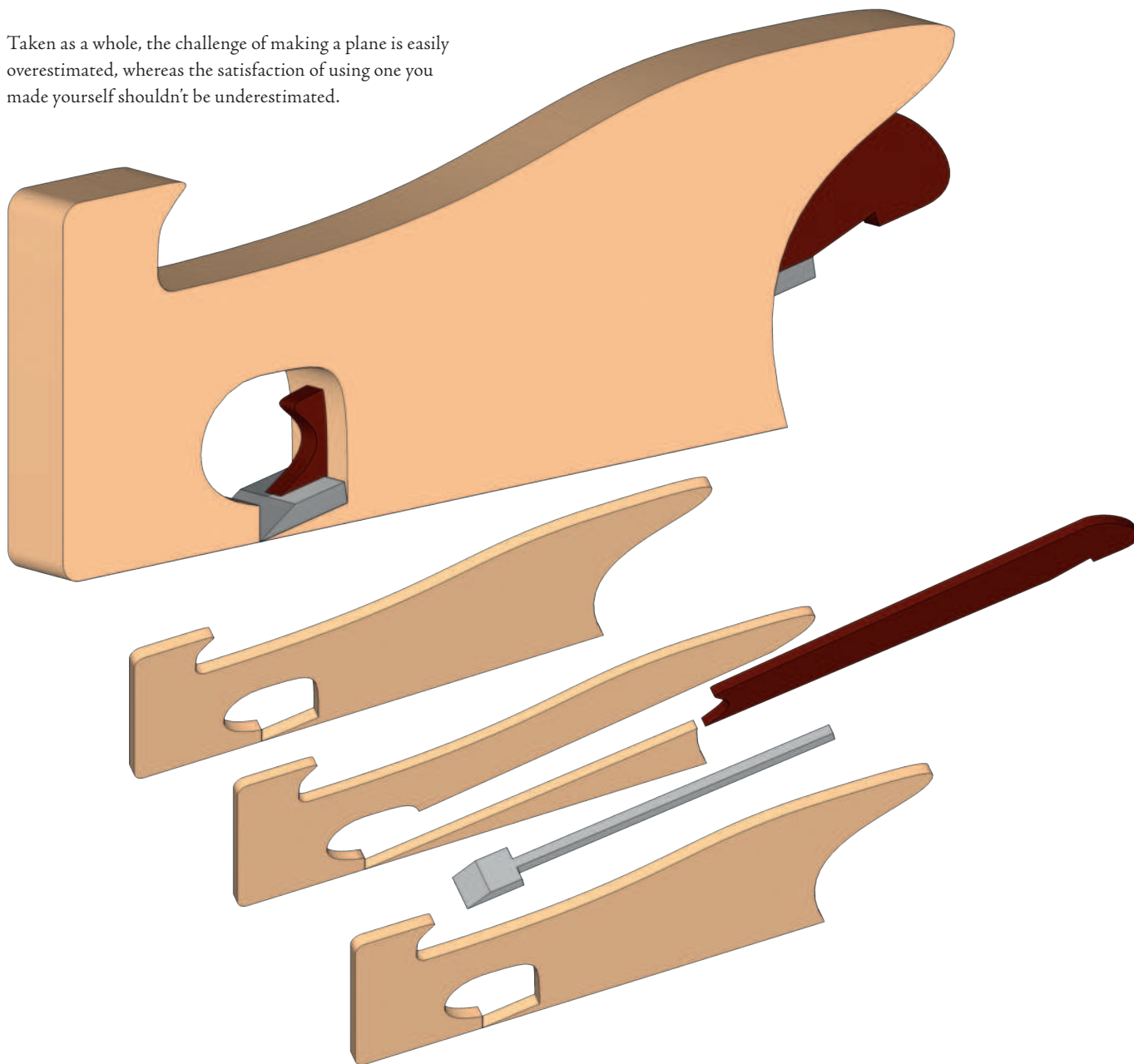
- 22** For protection, I gave all the wood parts two applications of boiled linseed oil, avoiding the wedge mortise and the top and bottom contact areas of the wedge itself.

Make your own

Use these drawings to make your own copy of my shoulder plane. Scale the template for a comfortable fit in your hand, and size the width to accommodate your chosen iron.



Taken as a whole, the challenge of making a plane is easily overestimated, whereas the satisfaction of using one you made yourself shouldn't be underestimated.



THE BRAINBOX

When faced with a design challenge for an exam, Oscar Whitcombe of Bedford School came up with a product to aid people with dementia



I am a GCSE student at Bedford School. As part of my Design and Technology course, I had to design and make a product to solve a need.

The design problem I decided to solve was the day-to-day struggles of people living alone or with carer support while in the early to middle stages of dementia. People who are affected by these issues are at risk of malnutrition, dehydration, over medication, isolation and extreme stress. This is especially a risk if, when experiencing these problems, the person can't remember an important telephone number or procedure

for an emergency. This could lead to extreme injury, suffering or death. This is not only a problem for the person directly affected, but it is also unhealthy for the family, friends and even carers, as these people will also be prone to stress and even depression.

My solution was the BrainBox, a device that helps dementia sufferers by reducing their levels of stress or confusion when trying to remember day-to-day activities such as medication, eating, paying bills and even remembering people.

The development and design process

After exploring different product variations and compiling data from market research, I decided that the BrainBox had to have the following characteristics:

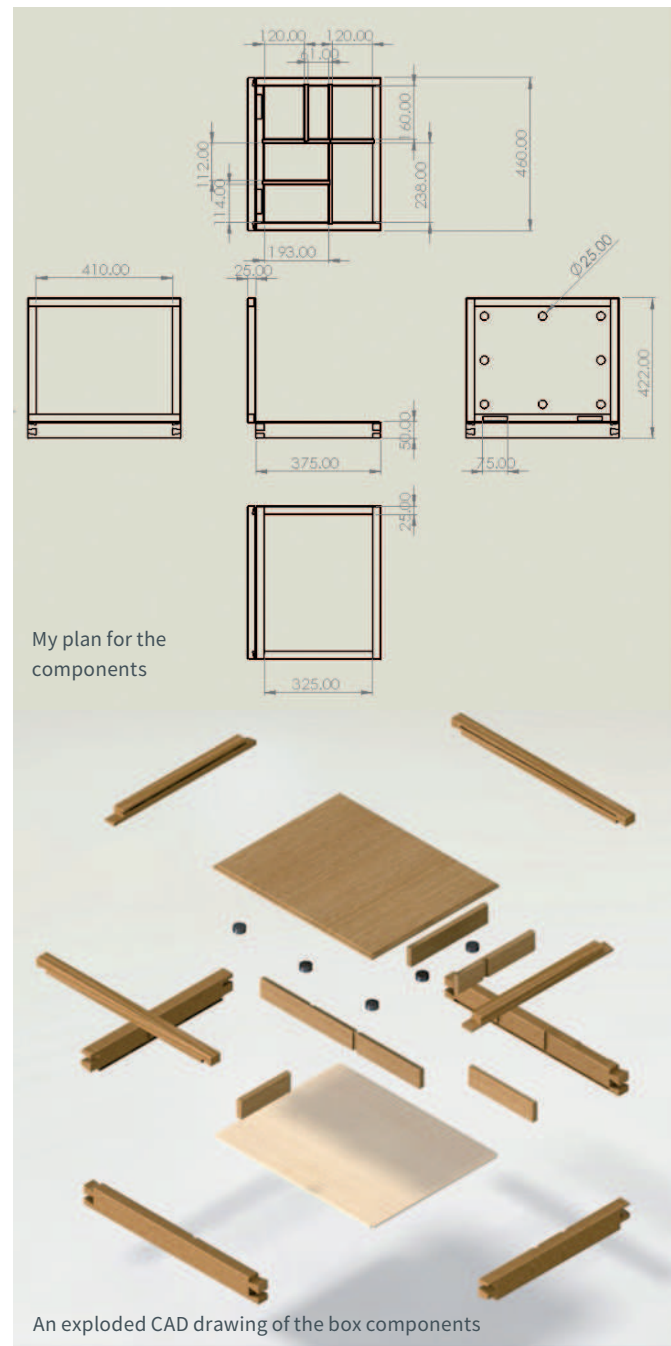
- Clearly labelled with bold signage so that it is easy to use and has order with no ambiguity.
- Contain sections labelled with the days of the week, with sections within those so that different things can be stored for the day, such as medication, food, etc.
- Able to store many different things of different sizes, such as keys, money and medication, so that everything is is in one place and does not to be refilled too often.
- Contain a photo frame-like system with a thin, bending clip so that the user can easily customise their product.
- Should stand out within the house so that it can be easily located.
- Must be simple and easy to use so that it does not overwhelm an already confused patient.
- No sharp edges or corners so that no injury is caused, leading to anxiety and stress.
- Must be a safe size so that it does not cause pain or injury if it falls.
- Must be strong and durable so that it can be used multiple times a day by the patient and/or their carer.
- Cheap to make so that it is profitable and is still affordable by all, especially the elderly.

In order to get an understanding of the size required, I measured a few items that the box will store. These items correspond to features on the product that need to be a standard/specific size in order to function effectively. I decided to make the box 460 x 375mm. The base is 5mm deep and the lid is 25mm thick. The base includes two notepad sections measuring 120 x 160mm with a section between for stationery that is 61 x 160mm. The compartment for the pill box is 283 x 120mm. The magnets that hold the family tree in place are 25mm in diameter.

Once I'd determined the box's size and requirements, the next step was to produce CAD drawings and make a plan for manufacture.

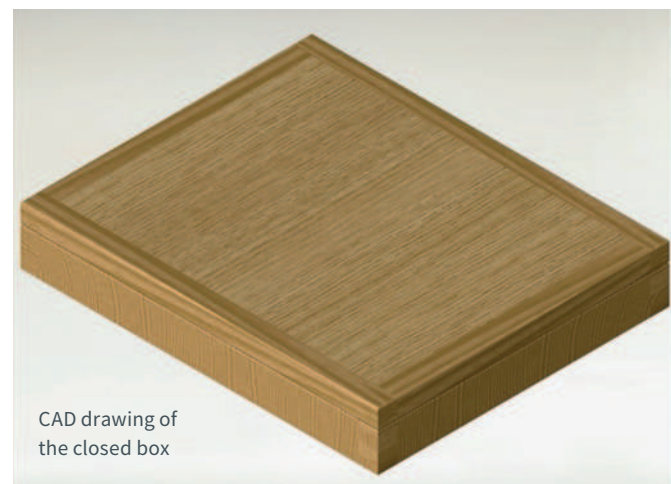


CAD drawing of the open box

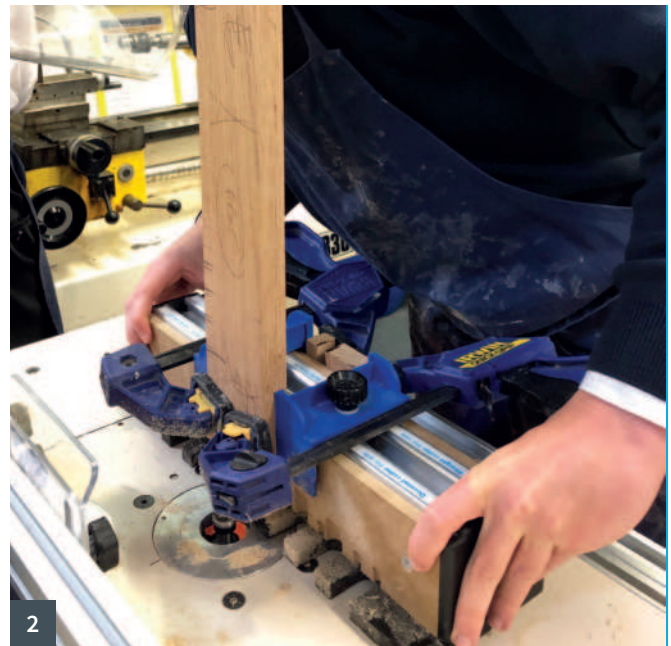


My plan for the components

An exploded CAD drawing of the box components



CAD drawing of the closed box



PHOTOGRAPHS BY OSCAR WHITCOMBE

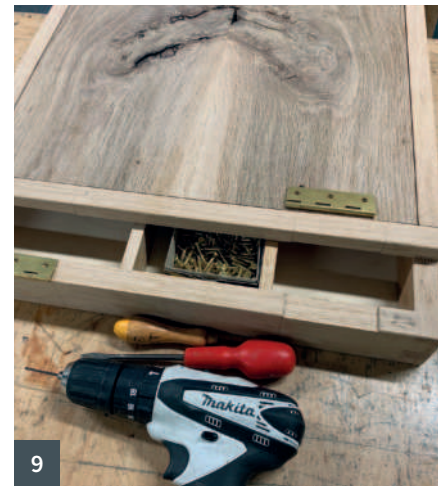
The materials

The BrainBox is made of oak. The four sides are held together by dovetail joints while the base and lid are held together by groove joints. It was important to glue it all together before cutting the lid off down the centre of one of the dovetails, because it allowed them to maintain their structural integrity. The groove joints provided the lid and the base with a solid foundation of support. Each dividing section was also held in with groove joints, however, they were not glued in place, instead they rely on the pressure of each other as well as a lip at the top of the groove joint each side.

The lid began as a thick block of oak which I cut in two. I was then able to biscuit joint the side pieces together which resulted in a really pleasing aesthetic.

Making the Box

- 1 The plank of wood that I began with was too thick and dirty. I put it through the planer thicknesser to make it the correct thickness and get rid of the markings. I then cut it into thinner planks using the tablesaw to make the sides of the box. I marked the lengths of each side using a tri-square and pencil and left 5mm between each length to maintain size.
- 2 I used a dovetail jig to remove material in each side. I also used the table router to remove the material for the groove joint that holds the top and the base in the product.
- 3 Here you can see all four sides after the router work. The groove joint does not go all the way to the end of two of the pieces to avoid them showing on the dovetail joints. I also checked if all the dovetails fit together.
- 4 I used an oak slab for the box lid.



- 5 Here you can see one half of the slab. After I cut it, I marked where each of the three biscuits would go with a tri-square and pencil to ensure that they would line up with the other piece's biscuits perfectly. I used a hand-held biscuit joiner to cut the slots for the biscuits.
- 6 I used a series of sash clamps and G-clamps to hold everything together. The lid was then cut down to size using the tablesaw against the face edge. Slot joints were created on the table router so that the lid could easily fit into the sides.
- 7 I made a dry assembly to check that everything fitted together.

- 8 I sanded through the grades. I did the inside faces before gluing so that it was consistently sanded.
- 9 I marked the space for the hinges, then clamped the lid and the base together and marked them both to ensure they would line up. I used a chisel to remove the material for the hinge, and then mounted the hinge.
- 10 Danish oil was used as a finish. I coated the inside faces before gluing so that there was a consistent coat.
- 11 Wax was added for a final finish. This, along with buffing, created a mirror-like finish.



THE DOMINO JOINER

Anthony Bailey explains the uses and features of this versatile joiner

The Festool Domino has been around for a while and has become very popular, though it is expensive. However, once you handle one and start using it, it's apparent just how useful this joiner actually is. The Domino is unique – there are no cheap copies. And it is not a biscuit joiner, which is more suited to assembling panels. You do need extraction fitted to avoid clogging and causing the cutter to jump.

The Domino is a frame assembly tool because it produces its own version of the mortise and tenon in the form of a rounded, ridged loose tenon. It is therefore ideal for building tables and chairs. Its speed and accuracy make it an effective replacement for other methods of mortise and tenoning.

How it works

The machining head is unusual because it consists of a swinging mechanism with an interchangeable spoon-shaped bit. The machine is plunged just like a biscuit joiner to make the cut. The bit is easily exchanged by removing the entire front assembly and using a small spanner and a spindle lock to undo one cutter and exchange for another. The fall front is locked at the desired angle using a protractor scale, which has click stops for the most used angles.

To the right are the plunge rods which have a spring return to remove the cutter from the job. Further to the right is a latching system for setting plunge depth. The numbers refer to half the length of a

Domino dowel, two matching slots making a complete joint for the Domino component to fit in. If you are fitting thick material to thin, it is possible to make a deep slot in the first piece and a shallow one in the second, so long as the overall slot size matches the component.

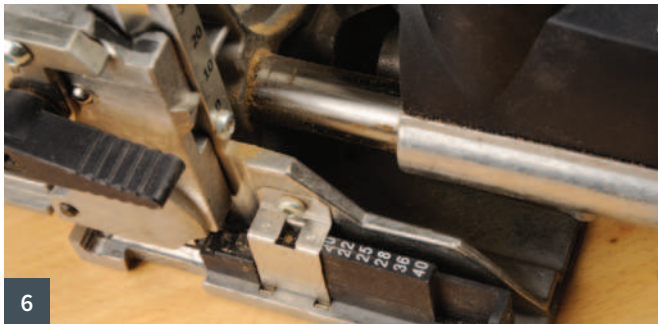
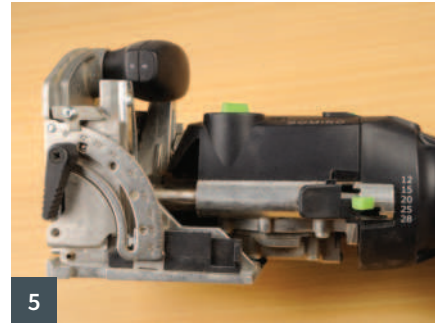
On the left-hand side is the fence height-setting step device for accurate resetting each time, as well as a scale on the back of the fence. The highest fence setting isn't always quite enough, but it is possible to remove the caps from the fence columns, which gives a slight increase.

Sprung stop pins

A key feature of this machine is the use of sprung stop pins. These retract normally when the Domino is pressed against a blank workpiece, however they can be used to locate it against the edge of meeting components for quick and easy alignment, thus removing the need for often inaccurate marking. The pins can also be used to make more slots at pre-set intervals as a pin can be located in the previous slot.

Handy additions

Narrow components always present a machining challenge whether you are using a biscuit joiner or any other tool. The Domino overcomes this by means of a handy slide-on attachment that clamps around the component. It is ideal for repetitious batch work. As always, the Domino can be centred on the component by means of the sight window.



1 The Domino Joiner is a complex looking machine but, once you learn the controls, using it becomes second nature **2** This shows how much more penetration a Domino component gives compared to a biscuit. There is a quite small size as well as the larger ones. The ridges act like those on a dowel as they allow glue to be expressed when the joint closes **3** Even the biggest Domino cutter looks tiny next to a biscuit jointer blade, but it creates an immensely strong joint suitable for large objects such as chairs and tables **4** Releasing the machine front – just lift the body lock and pull the front off. Note the dial for changing slot width. This allows for wide slots, which are useful where you have angled components meeting **5** The fall front protractor scale on the left and plunge depth setting to the right – it has a safety latch to prevent it getting accidentally changed **6** The step system used to adjust the fence height exactly to suit the material thickness in use **7** The sprung lock pins make for instant alignment so joints are flush, then there can be no scope for movement once the joint is closed unlike biscuit joints **8** Setting the narrow component accessory guide for safe, accurate working **9** The additional support makes freehand working much more stable and accurate

Working on narrow surfaces can be less than ideal if the machine is teetering and slipping around. The solution is a screw-on support that extends the face area when perpendicular to the job.

No competition

If you were thinking about whether you need a chisel mortiser or have

had a noisy, dusty time using a router and mortise box, or even hand cutting a mortise and tenon, then this machine beats them all hands down. It's fast, accurate and fun to use. Yes, it costs money and you are tied to Festool's own components, but it pays for itself if you are a serious maker.



Plantation-style shutters

Charles Mak shows how you can cut
angled mortises with the Domino Joiner

Plantation shutters, or louvered shutters, always add style to a room or house, while, at the same time, allowing air or light in and maintaining interior privacy. As a window or door fixture, their elegant look makes for a great first impression.

Custom shutters which feature louvres, however, are expensive. Some woodworkers make them by using a commercial louvre template kit and a router. If you own a Festool Domino Joiner, you can save a lot by making your own shutters. In this article, I will use a DF500 Domino Joiner ('the Joiner') to make four shutter panels for my main door to illustrate the technique. As an alternative to the Joiner, you could use a series of dowel joints, as described on page 62.

Fig 1 – Louvre Mortising Jig
(Left Stile Jig shown) NOT TO SCALE

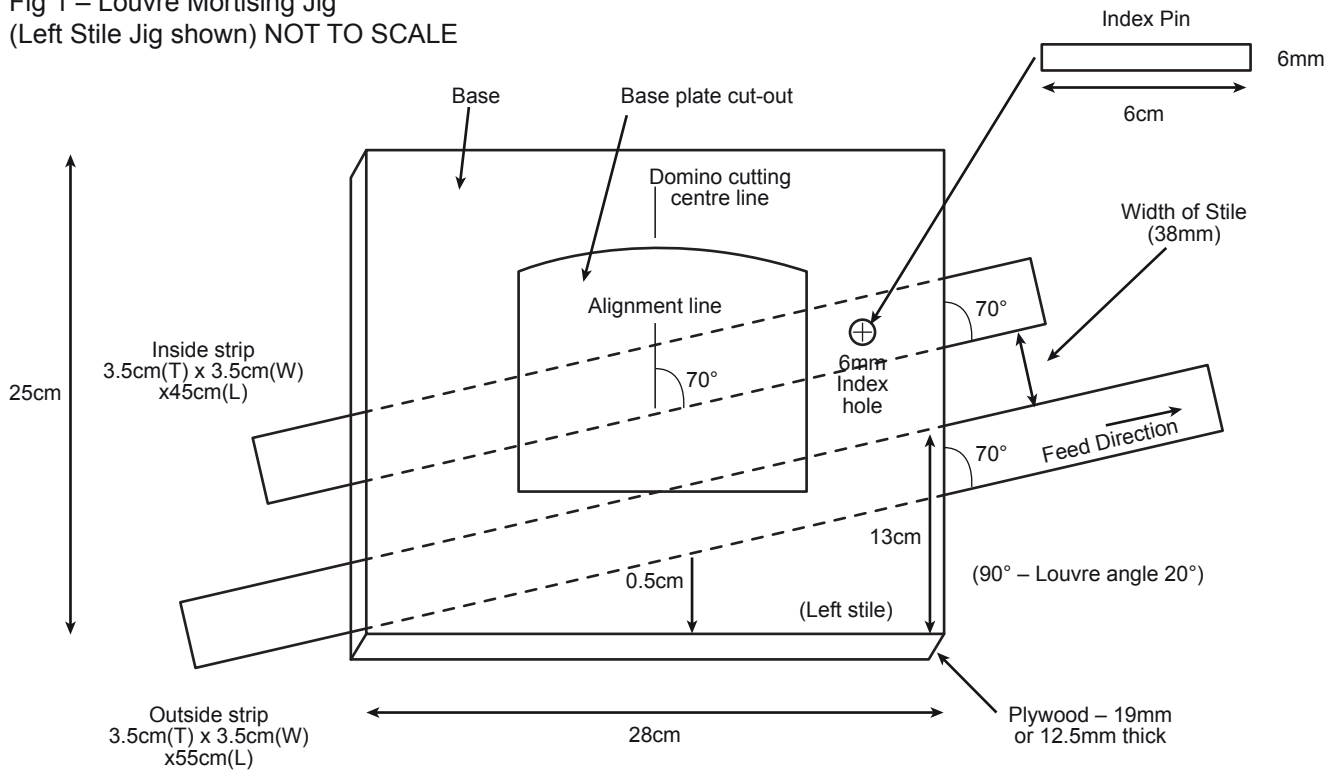


Fig 3 – Finding the centre point
(For index hole left stile) NOT TO SCALE

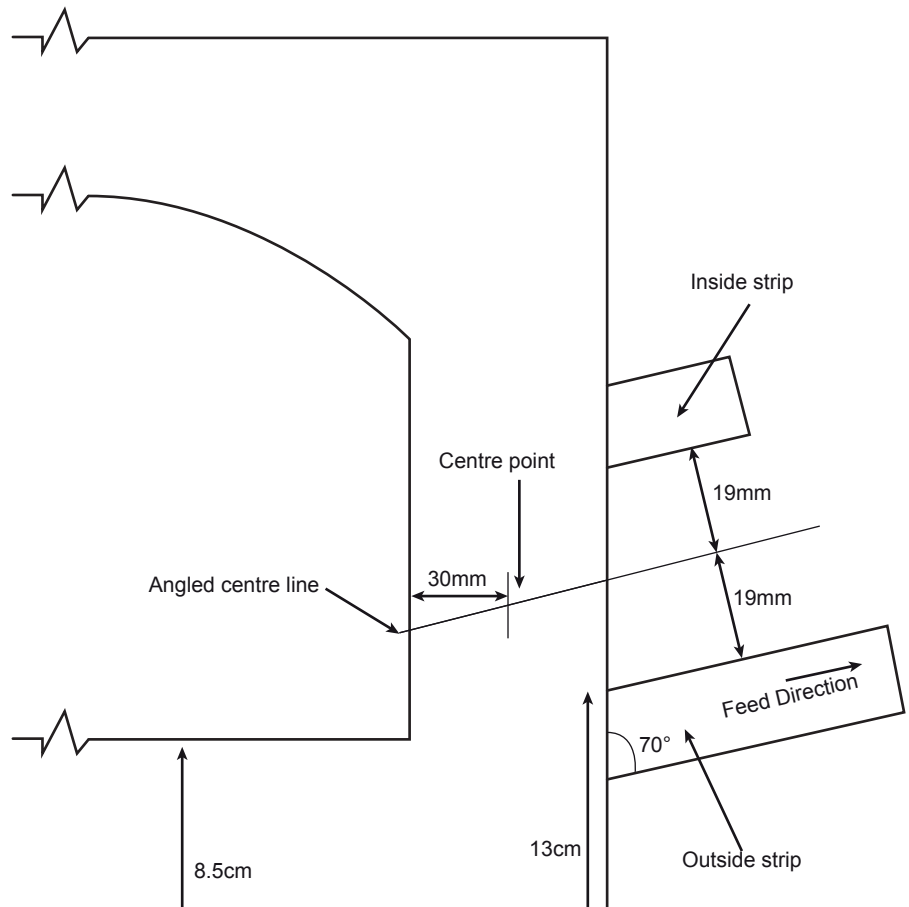


Fig 2 – Domino Joiner Settings

DF500 Mortising Bit: 6mm
Depth: 12mm (Actual mortising depth = 10mm)
Spacer: 2mm
Width: Widest (Actual mortising width = 28mm)
Louvre Spacing (20°) = 30mm



PHOTOGRAPHS BY CHARLES MAK

BEFORE ADDING THE SHUTTERS: 1 The louvre shutters were designed to fit the panels either side of the front door **OVERCOMING THE JOINER'S LIMITATIONS:** 2 Setting up the dimensions of the slats 3 I used a 2mm spacer in the Joiner 4 Setting the spacing between the slats **LOUVRE MORTISING JIG:** 5 Setting the strip at 20° to the jig's bottom edge 6 Screwing the outside strip to the base

Shutters for the entry door

My house has a traditional-style front door, with upper and lower clear glass panels on either side. To add privacy to this entry, curtains were mounted behind the glass inserts. The linen lining was functional but not elegant. I decided to fit custom shutters into those panels as a stylish treatment.

Beating a Domino Joiner's limitation

As designed, the Joiner can only cut mortises that are parallel to its fence. In other words, when using the machine with its fence for registration, it cannot produce any 'non-parallel', or angled, mortises or slots, which are what is needed for making shutters. To overcome such a constraint, the trick lies in using purpose-built jigs to orient the machine to the desired angles.

For the louvred shutters, the jig was a fixture cradling the whole machine (see Figure 1). To match the width of the glass panel frames, I chose the shutter rails and stiles to be 38mm wide. The slots for the slats would be cut with a 6mm cutter to the size of 6mm (width) x 28mm (length) x 10mm (depth), and the slat angle was set at 20°.

To meet such specifications, set the Joiner using the settings as given in Figure 2. To bring the effective mortising depth to 10mm, insert a 2mm spacer into one of the shafts. Finally, by milling and examining a few sample angled slots freehand, I decided on a spacing of 30mm between each slat.

The louvre mortising jig

As illustrated in Figure 1, the mortising jig is comprised of a plywood base with a cutout and two hardwood strips attached to the base at 70° to the Joiner's cutter. Here are the steps for making a mortising jig for the left stiles:

- 1 Trace the Joiner's baseplate on a piece of plywood, 85mm from the bottom edge as given in Figure 1.
- 2 Cut out the opening so the machine fits into the jig snugly.
- 3 Make a pencil mark on the plywood edge 130mm from the bottom edge of the jig as shown in Figure 1.
- 4 Position the outside strip with the pencil mark, and set the strip at 20° to the jig's bottom edge (see photo 5).
- 5 Screw the outside strip to the base (see photo 6).



7 Marking a centre line as the alignment line on the inside strip **8** The hole for the index pin **CUTTING THE ANGLED SLOTS: 9** Marking the angled lines for the slots **10** Clamping the stile in place **11** Plunge the Joiner to make the mortise **12** Realigning the stile **13** Milling the second and third slots **14** Positioning the stile using the index pin **15** Milling the slot **16** The mortised slots

- 6** Clamp the inside strip to the outside strip with a 38mm-wide scrap strip between them, and screw the inside strip in place.
- 7** Lay out a centre line as the alignment line on the inside strip as given in Figure 1 (see photo 7).
- 8** Run a centre line between the two strips on the jig as shown in Figure 3, and mark a line 30mm from the cutout edge to intersect the centre line, which gives a centre point.
- 9** Finally, use the centre point to drill a 6mm hole for the index pin (see photo 8).

This jig is now ready for milling mortises on the left stiles. Follow the same steps to make a second jig for the right stiles. Alternatively, you can unscrew the two strips and mount them on the opposite side of the jig for mortising the right stiles.

Stock preparation for the frames

Spruce lumber and the butt joint were chosen for this paint-grade

project. Based on the dimensions of the openings of the glass panels, I figured out the lengths of the rails and stiles for each shutter. I cut the rails to size, but about 50 to 100mm over-length for the stiles, to provide more registration surface for the initial mortising.

Cutting the angled slots

To mill the angled mortises on the left stiles, follow these steps:

- 1** Mark out the butt joint on the stile, and lay out the centre lines for the first three slots (at 70°, which is 110° on the protractor, see photo 9).
- 2** Slide the stile between the two strips under the jig.
- 3** Align the first pencil line on the stile with the inside strip's alignment line, and clamp the stile in place (see photo 10).
- 4** Place the Joiner into the jig, and plunge down to make the first mortise (see photo 11).



MILLING THE JOINTS: 17 Joining the rails and stiles with a butt joint **MAKING THE SLATS:** 18 The slats were cut to size 19 Rounding the edges of the slats 20 The edges of the shutter frames can also be rounded **ASSEMBLY AND FINISHING:** 21 Dry-fitting the slats in the frames 22 Hanging the shutters in place

- 5 Remove the Joiner and the clamp, and reposition the stile, aligning the second pencil line with the alignment line as before (see photo 12).
- 6 Mill the second slot and then the third one accordingly (see photo 13).
- 7 With the third slot done, slide the stile and position it using the index pin (see photo 14).
- 8 With the stile clamped and Joiner in the jig, mill the slot (see photo 15).
- 9 Repeat steps 6 and 7 until all the required slots are mortised (see photo 16).

Once all the left stiles are finished, work on the right stiles. Cut all the mortised stiles to their final lengths.

Milling the joints for the frames

The rails and stiles are joined together with a butt joint. This is done with the Joiner using the standard butt joint mortising technique (see photo 17).

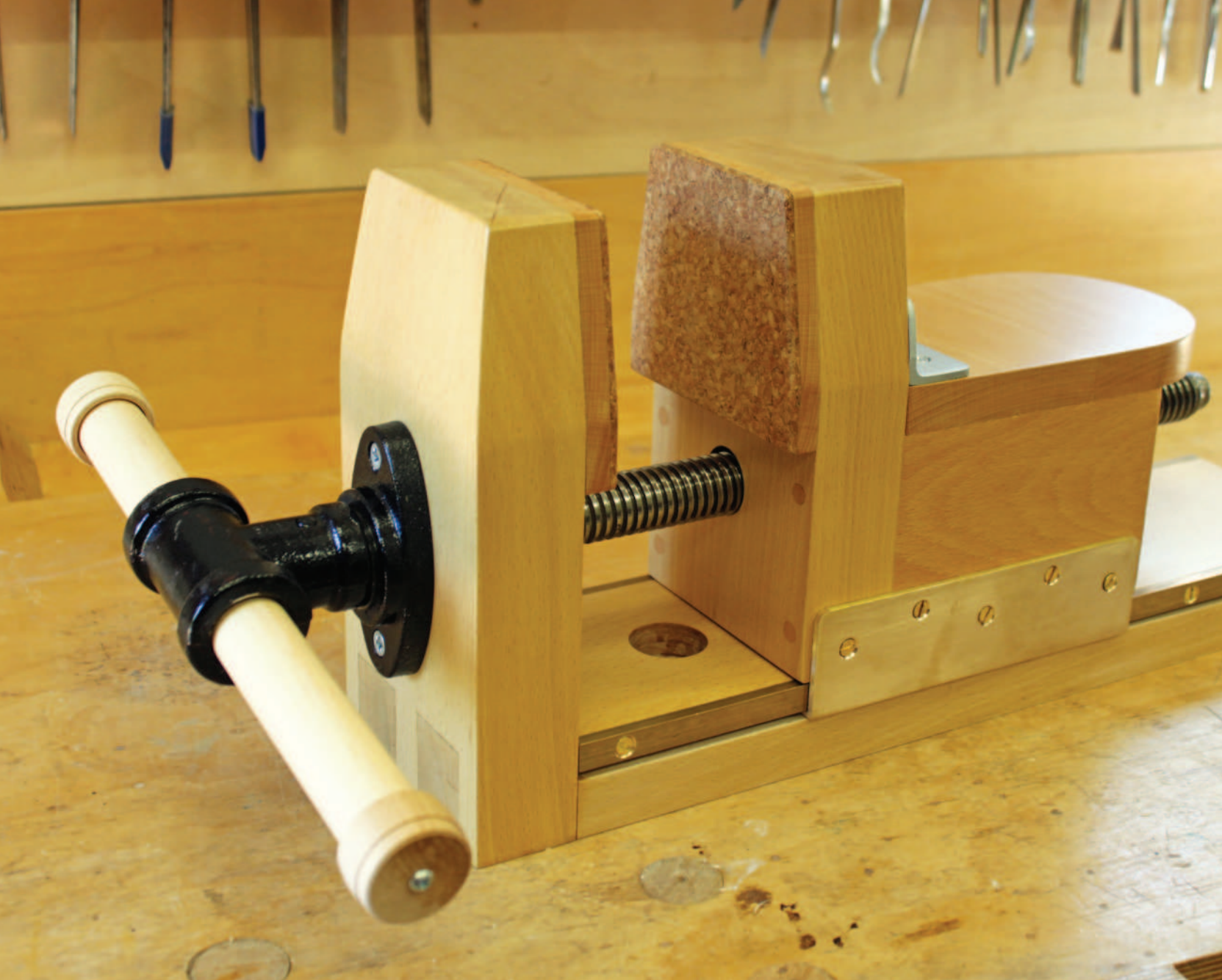
Making the slats

The slats are strips cut to the same thickness and width as the mortises (6 x 28mm), and to final length based on the frame's width and the mortise's depth (see photo 18). The edges of the slats are rounded on the router table (see photo 19). If so desired, rout the edges of the shutter frames as well for a cleaner look, using the same bit and set-up (see photo 20).

Assembly and finishing

After sanding, dry fit all the slats into the shutter frames (see photo 21). Once the shutters are glued, apply a basecoat and then light coats of paint. Now, hang up those stylish shutters (see photo 22).

As I hope this article has demonstrated, you can take your Joiner to the next level by using purpose-built jigs, so now it's time to get your Joiner ready for the next challenge!



Benchtop vice

Mark Gough makes a small vice that will be an excellent addition to any workshop

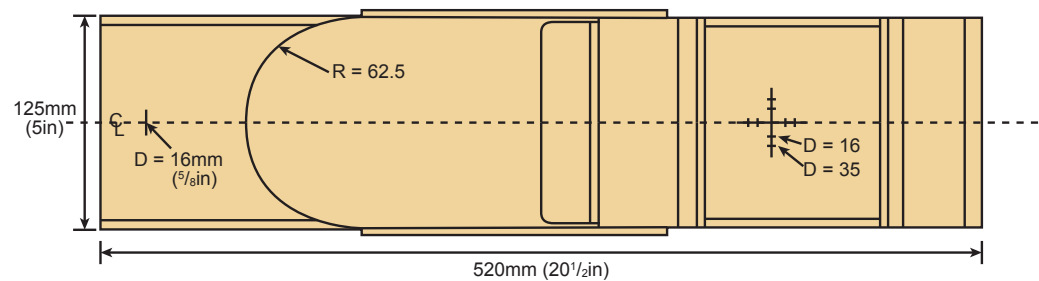
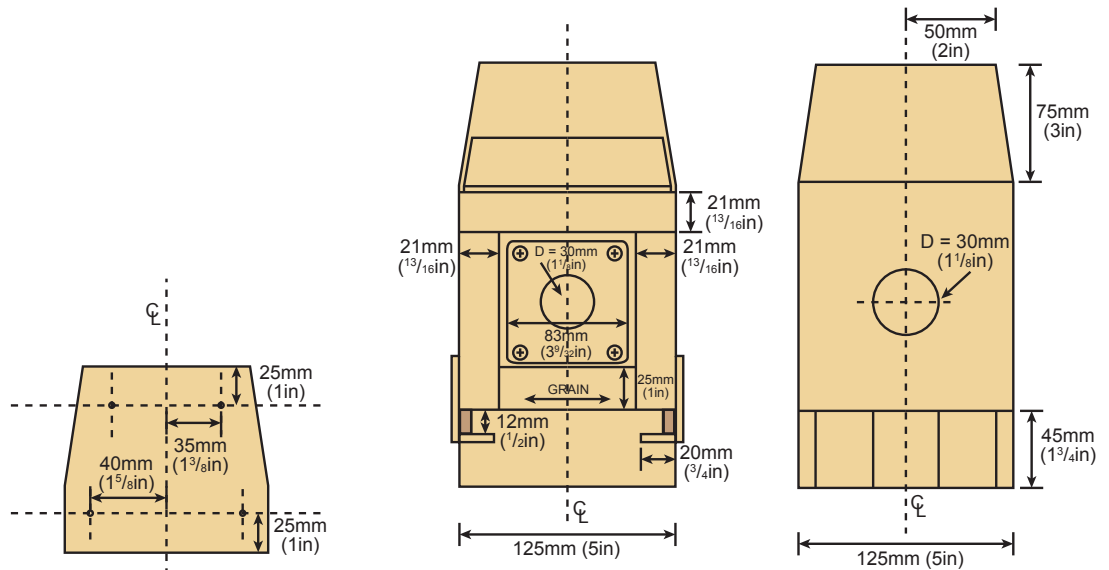
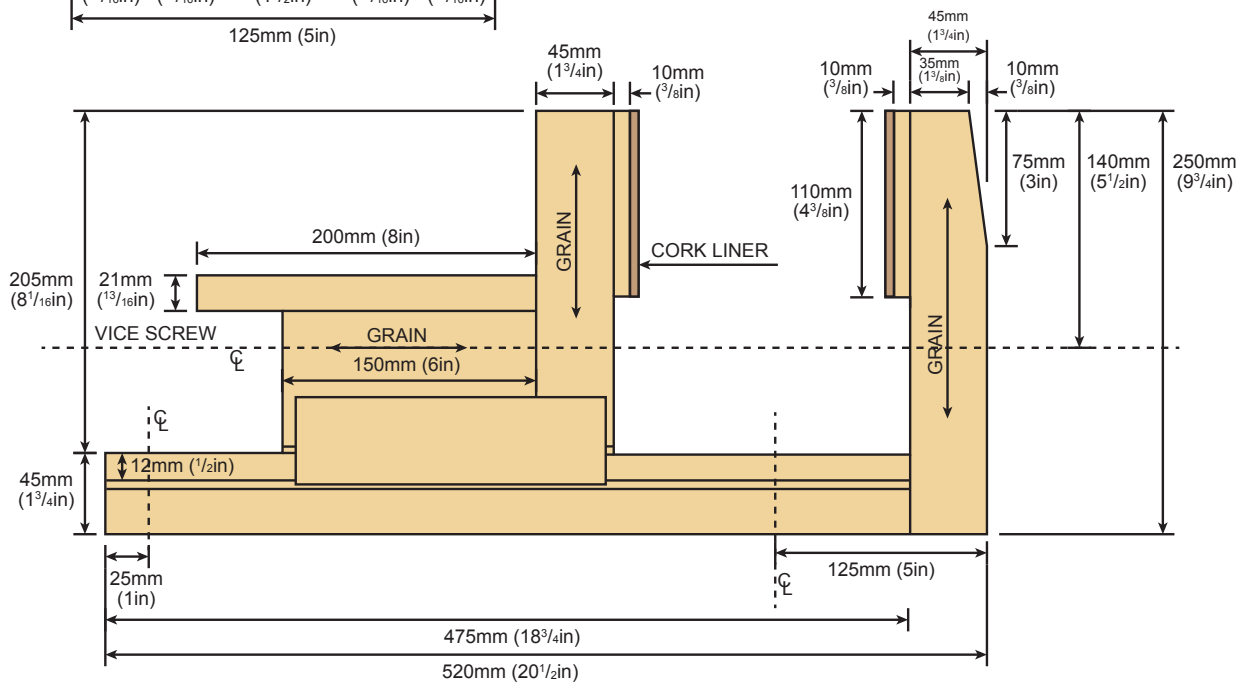
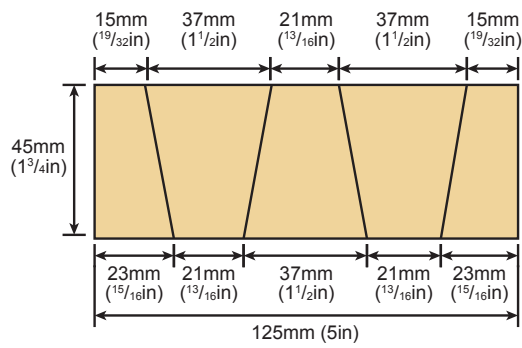
A good vice is an essential piece of workshop equipment for all woodworkers. This wooden vice is easy to make and robust enough for most projects – in fact, it can be scaled up for larger work if required. I used European beech, but other suitable timbers would be Canadian hardrock maple, iroko or any sustainable, hard-wearing, close-grained hardwood.

The main and most important part of the project is the vice screw, so I have opted to use a Trade vice screw from Axminster Power Tools, which is a hefty piece of equipment. Other makes are available.

For me the benefit of this vice is that it is mounted on top of the workbench and is at the perfect position for smaller projects. I am

quite tall, so front-mounted traditional woodworking vices give me backache, although they are perfect for planing timber. The vice could be mounted on a custom-built stand of your own design if desired to tailor it perfectly to your own requirements.

There are many versions around of this style of vice, all good in their own way. Here I have added some hardware of my choice and fitted reusable faceplates for longevity. You can opt to use different hardware if you find it difficult to get hold of the parts, for example any strong angle brackets cut to size will do for the rear jaw guides. Likewise, steel can be used instead of brass for the runners.



YOU WILL NEED

Tools:

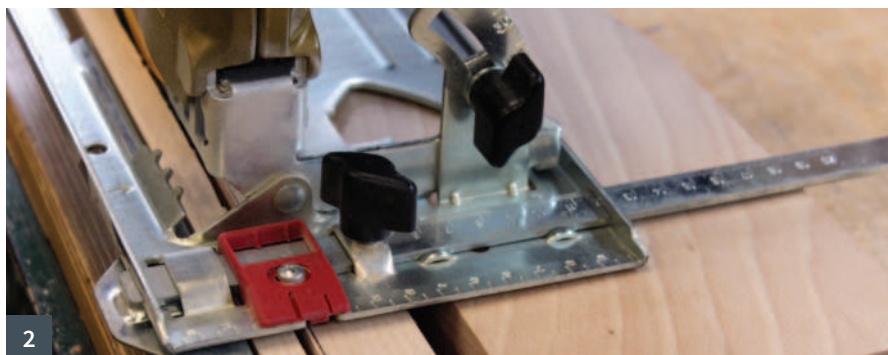
- Drill press
- Circular saw
- Router (optional)
- Rip saw
- Crosscut saw
- Fine-tooth saw
- Smoothing plane
- Block planes
- Small hammer
- Marking gauge
- 25mm paring chisel
- Square
- Centre punch
- Awl
- Steel rule & tape measure
- Clamps
- Forstner bits: 30 and 35mm
- Flat bits: 16 and 30mm
- Twist drill bits: 2, 4 and 5mm
- Suitable plug cutters (optional)
- Compass

Materials:

- Tail vice screw and handle
- Brass flat bar: 2 @ 12.7 x 6.35 x 150mm, 2 @ 12.7 x 6.35 x 475mm
- Brass angle: 2 @ 50.8 x 25.4 x 3.2 x 190mm
- Steel angle: 125 x 35 x 35 x 3mm or similar
- Brass countersunk screws: 24 @ 25 x 4mm, 10 @ 20 x 4mm
- Steel countersunk screws: 4 @ 100 x 6mm, 2 @ 40 x 6mm, 6 @ 25 x 5mm, 4 @ 40 x 5mm, 6 @ 40 x 4mm, 8 @ 25 x 4mm
- Sandpaper, 180–240g
- PVA glue
- Danish oil
- Wood filler (optional)
- Two 16mm coach bolts nuts and washers of a suitable length

Timber cutting list:

- European beech
 - Base: 1 @ 475 x 125 x 45mm
 - Front jaw: 1 @ 250 x 125 x 45mm
 - Rear jaw: 1 @ 205 x 125 x 45mm
 - Rear jaw sides: 2 @ 150 x 105 x 21mm
 - Rear jaw top: 1 @ 200 x 125 x 21mm
 - Rear jaw cross brace: 1 @ 83 x 25 x 21mm
 - Faceplates: 2 @ 125 x 110 x 10mm
 - Faceplate liners: cork tile of suitable size
- Template: plywood or hardboard 125 x 110mm



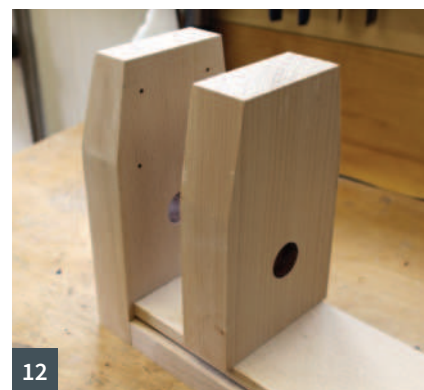
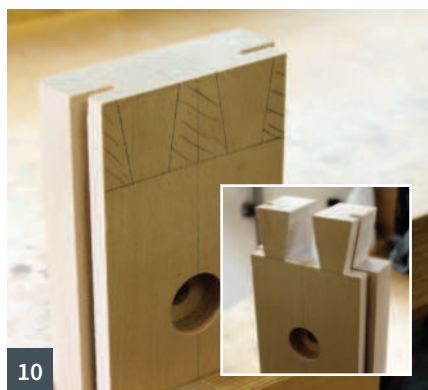
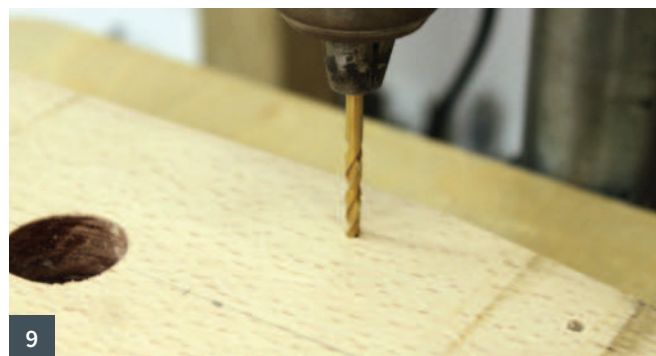
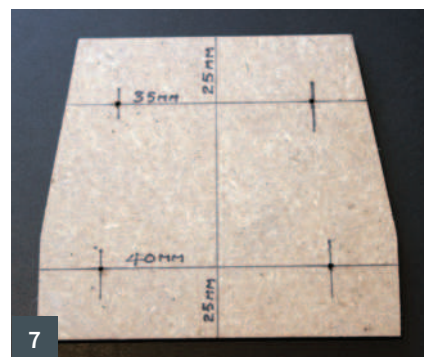
PHOTOGRAPHS BY MARK GOUGH

The base

- 1 Cut the base to size, 475 x 125 x 45mm, and mark the top and front, taking note of the grain direction. Draw a centreline front to back on the top of the base and measure 125mm from the front and 25mm from the back at points that intersect the line. Mark these points with an awl ready for drilling. For the front hole, using a 35mm Forstner bit, drill to a depth of 15mm then continue through with a 16mm flat bit. For the rear, drill a 16mm hole right through.
- 2 Using a circular saw or router with a groove cutting disc, cut the grooves on each side of the base. Set the cut 12mm from the top edge and cut to a depth of 20mm. This dimension will differ if using a router depending on the size of the cutter. Cut the groove to a width of 4mm.
- 3 Use a block plane to cut the rebate for the flat bar.

Front jaw

- 4 Next cut the front jaw to 250 x 125 x 45mm, noting grain direction. Mark the top and face then draw a centreline from top to bottom on the face side. Draw a line 140mm down from the top edge, intersecting this line and mark with an awl ready for drilling. Using a 30mm Forstner bit, drill a through hole to accept the vice screw. The top of the jaws can be left square or, in this case, chamfered.



- 5 To achieve this, refer to the diagram and measure 50mm each way from the centreline on the top edge, then measure 75mm down each side and join the marks with a diagonal line back and front. Remove the waste with a saw and plane smooth.
- 6 Draw a line on the top 10mm from the front edge and 75mm down on the face, then join these lines on each side and remove the waste with a smoothing plane.

Faceplates

- 7 To make the template for the faceplates, cut a piece of plywood or similar to 125 x 110mm then, referring to the diagram, mark the centreline and fixing holes and drill 2mm holes for the fixing points. Clamp to the inner face of the front jaw, aligning the centrelines, and plane down to match the chamfers.
- 8 While clamped together, mark the screw holes by tapping a small nail through the fixing points on the template.
- 9 Drill 4mm holes to a depth of 20mm at these points.

Dovetails

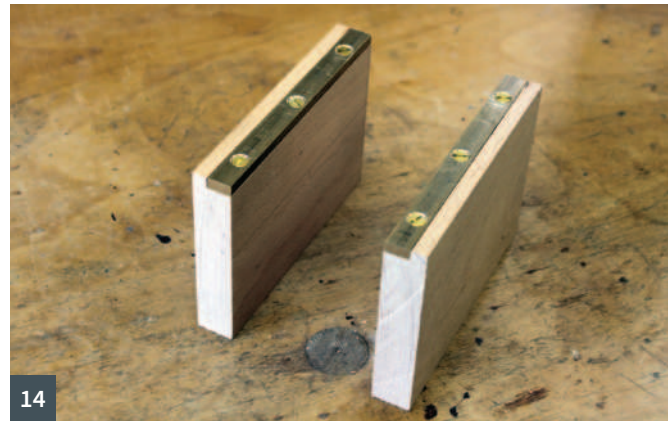
- 10 Scribe a line 46mm from the front edge on to the top and bottom of

the base then, referring to the diagram, mark out for the dovetails. This will give approximately a 1:6 dovetail. Shade in the waste side of the dovetails for clarity. Now remove the waste with a fine-tooth saw and clean up with a 25mm paring chisel, taking care to clean out the corners for a nice, neat joint, then transfer the marks to the front jaw and cut out the waste for the pins.

- 11 Check for a tight fit, then glue and clamp, making sure the front jaw is 90° to the base. This will leave 1mm protruding on the tails which can be planed down once the joint has set.

Rear jaw

- 12 Cut the back jaw to 205 x 125 x 45mm, noting grain direction, then mark the top and inner face. Next, place the jaw on the top of the base snug up against the front jaw and clamp together with a thin piece of card underneath. Transfer the chamfer lines on to the inner face of the rear jaw. While still in this position, mark the hole for the vice screw by pushing the Forstner bit through the front jaw to mark the centre point for drilling the hole in the rear jaw. Remove the clamp then transfer the chamfer marks to the outer face, remove the waste with a saw and plane. Drill the hole for the vice screw.



- 13** Before assembling the rear jaw parts, the holes for the back nut need to be drilled. To do this clamp both jaws together as before and fix the vice screw to the front jaw with 2 x 40 x 6mm c/s screws, making sure the thread is centrally positioned through both holes. Thread the back nut on as far as it will go and position it square to the rear jaw, then mark the fixing holes. Remove the vice screw and clamp and drill holes to accept 40 x 5mm screws. Using the template, drill holes for the faceplate on the inner face.
- 14** Cut the two sides to 150 x 105 x 21mm, noting grain direction, and mark top and outer face. Optional: the bottom edge can be rebated to accept pieces of brass flat bar runners 12.7 x 6.35mm. Set the cut so that the bar sits just proud of the edge and flush to the side. Fix with six 25 x 4mm c/s brass screws.
- 15** Cut the top to size, 200 x 125 x 21mm – the grain direction can go either way – then cut the cross brace to 83 x 25 x 21mm. Fix the

- sides to the rear jaw with four 100 x 6mm c/s screws and fill screw heads with plugs or filler. Fix the top to the sides with four 40 x 4mm countersunk screws and fill screw heads as before. Fix the cross brace to the bottom rear edges of the sides with glue and two 40 x 4mm c/s screws and fill screw heads as before.
- 16** The cross brace will also act as a stop against the rear mounting bolt to prevent the screw from being wound out completely.
- 17** To complete the rear jaw assembly cut, paint and fix a piece of steel angle to the top and jaw using six 25 x 5mm c/s screws.
- 18** Cut two 125 x 110 x 10mm then, using the template as a guide, plane down the edges to match the jaw chamfers on each piece. Mark the screw holes and drill 5mm clearance holes, then countersink deep enough so that the screw heads sit well below the surface. Now fix the faceplates to the jaws with eight 25 x 4mm c/s screws.



Finishing

- 19** Now is the time to apply the finish of your choice prior to fitting the hardware. I used Danish oil here, which can be touched up from time to time without re-sanding. Note the screw holes have been covered with tape to prevent glue from clogging the screw heads. The cork liners are simply pieces of cork tile glued on to the faceplates and trimmed back with a craft knife.
- 20** To fit the hardware, cut the brass flat bar to size and fit into the rebates on the base with ten 25 x 4mm brass c/s screws. The bar should be slightly proud of the top surface of the base. Place the rear jaw in position and fit the brass angle guides using ten 20 x 4mm brass c/s screws. The brass guides will need to be cut back to approximately 18mm on one face to fit into the groove. Check for free running and adjust if necessary.
- 21** Fit the vice screw parts using two 40 x 6mm countersunk screws

- for the handle and thread assembly and four 40 x 5mm c/s screws for the back nut. The back nut is supplied countersunk for recessing. For this project it will need to be countersunk on the reverse side. Check again for free running and adjust if necessary – the only touching parts should be the brass runners. A little candle wax will ease any resistance. The vice is now ready to mount on to your workbench, ideally on a suitable corner position, using 15mm coach bolts, nuts and washers of suitable length.
- 22** If you have cut a groove right through to the front of the base, as in this example, you can fill the gaps with small fillets of matching wood for a neat finish.
- 23** The finished vice ready for use.
- 24** The vice is easy to use and versatile, which makes for a useful workshop addition.



SMALL IS BEAUTIFUL

We consider the appeal of small, cosy spaces with a look at a Canadian cabin



PHOTOGRAPHS BY RONNY LEBRUN AND JACK JÉRÔME. COURTESY OF MONSA

An interesting trend of the last few years has been the growing popularity of small buildings, with websites, social media posts and books celebrating the appeal of compact living spaces and tiny hideaways. Cabins have become one of the favourite hiding places for people looking for a perfect place to rest and connect with nature. Small structures can also provide environmentally friendly homes, employing cutting-edge sustainable architecture that has a low environmental impact.



La Pointe

Buildings with smart and compact design, in which the spaces are open and shared, can help people feel connected to each other and to the environment. One example of this is La Pointe, a small shelter in Poisson Blanc Regional Park, in Quebec, Canada. This 38m² cabin was designed by Montreal-based architects Atelier l'Abri.

The shelter is part of the park's accommodations. Surrounded by towering pines, it is 10 minutes by foot on a trail from the visitor centre. Its triangular geometry offers an interpretation of the legendary A-frame popularised in North America during the 1950s. It is a simple yet sculptural structure with steel roofing and cedar board-and-batten siding that provides functional and nature-oriented spaces. The shelter, which was built on-site by Atelier L'Abri's

construction team, was designed to be off-the-grid, capable of hosting two to four guests. Leaning against the main volume, the covered terrace is the ideal place to enjoy the outdoors when the weather allows it.

The peculiarities of A-frame construction determines the use of the interior spaces, forcing the architect to come up with creative solutions to optimise the use of space and take advantage of awkward corners rather than leave them as unusable spaces.

The interior is minimal and bathed in natural light with a large window offering uninterrupted views of the forest. A kitchenette, a table that can be turned into an extra bed and a sleeping loft provide necessary amenities for a short stay in the wilderness.



Hideout: Cabins, Shacks, Barns, Sheds, published by Monsa, RRP £19.99, available online and from all good bookshops



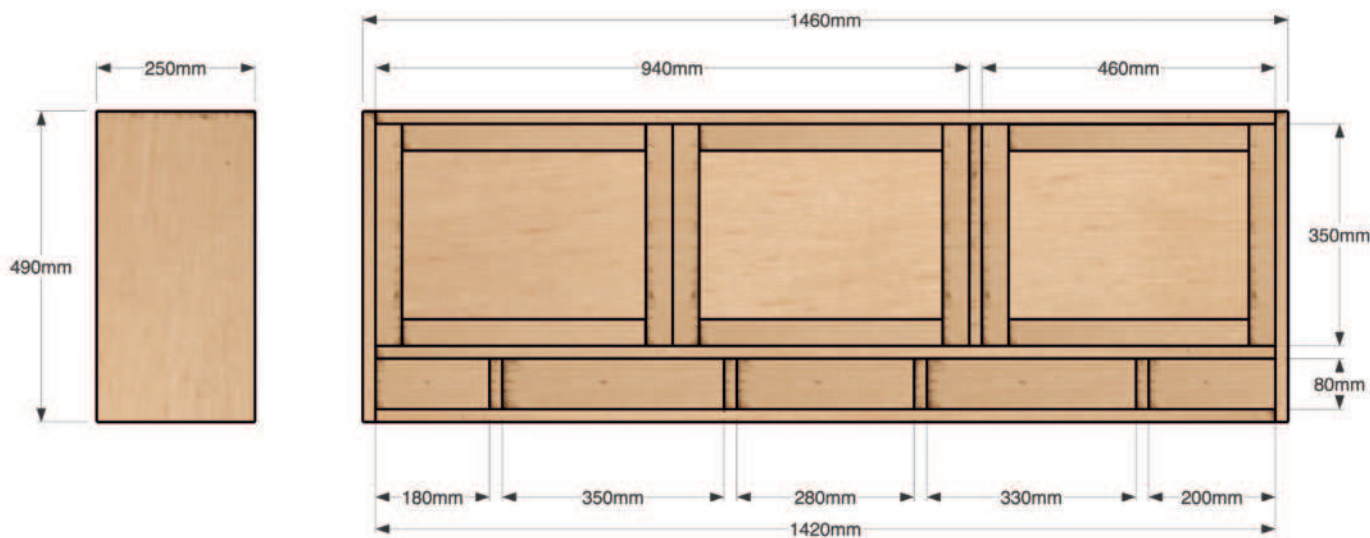
An (almost) quick cupboard – part 1

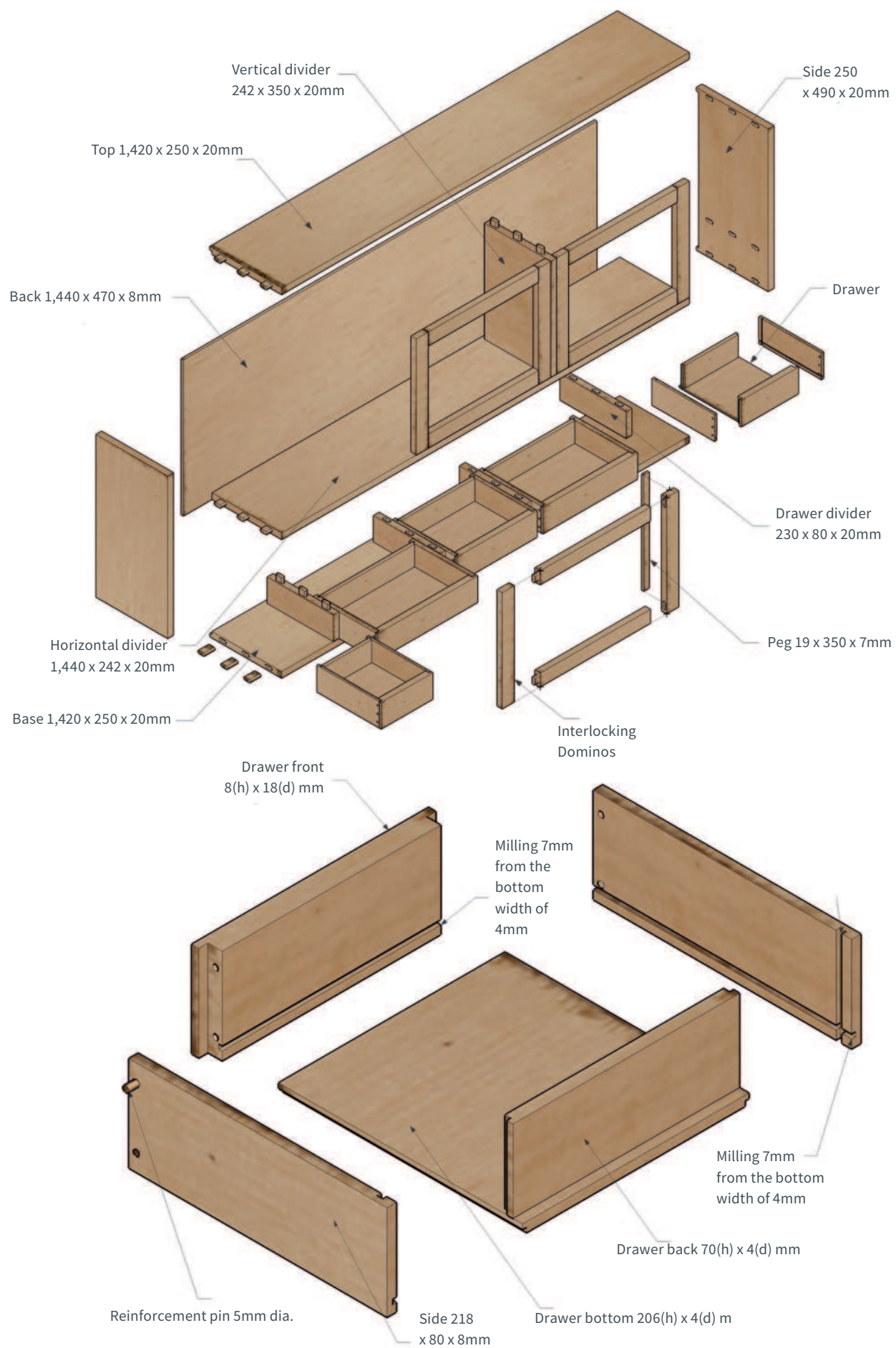
Giacomo Malaspina challenges himself to make a piece of furniture as quickly as possible

The saying 'time is money' was probably coined by a craftsman. In fact, for those who live off their work, lack of time is a chronic disease. It is no coincidence that the manufacturers of power tools and machinery are constantly looking for solutions that allow professionals to speed up their work. The same, of course, applies to materials and finishes. For mass- or fast-produced items, the beloved solid wood gives way to veneered and edged panels while the joints are replaced by fast and practical assembly

systems that make use of inserts, plugs, tabs and pins.

When making this cupboard, I put myself in the shoes of those who, despite having to deliver an impeccable job, need to cut down on processing times. I haven't used any hand tools and kept the use of solid wood to a minimum. The most time-consuming part of the project was the finish used on the doors and drawers, which took almost a fifth of the total hours to make the whole cupboard. You can read about that in the second article.







1 The tablesaw equipped with a sliding carriage. This machinery can make long cuts on large pieces, such as these panels **2** All the pieces are trimmed twice in width with the parallel fence. The first cut removes a few mm to true up the edge. This edge runs against the fence and the panel is cut to width **3** The header is cut at 90° from one of the edges that are already cut parallel. After making the first cut, turn the panel 180° and make the cut to size on the fourth side **4** The veneer is scored with a blind cut using the scribe blade before the panel is finally cut off **5** If you don't have a saw with a scribe blade, you can make a first scribing cut with the blade almost completely lowered and then raise it to finish the job **6** Applying the edging starts from one end of the panel. The edge strip must be of adequate width and must extend on both sides by a couple of mm

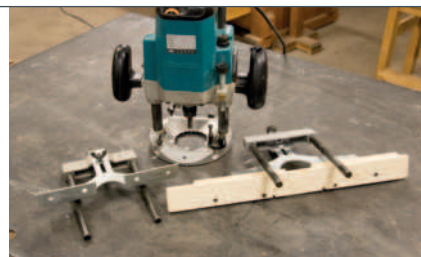
The panels

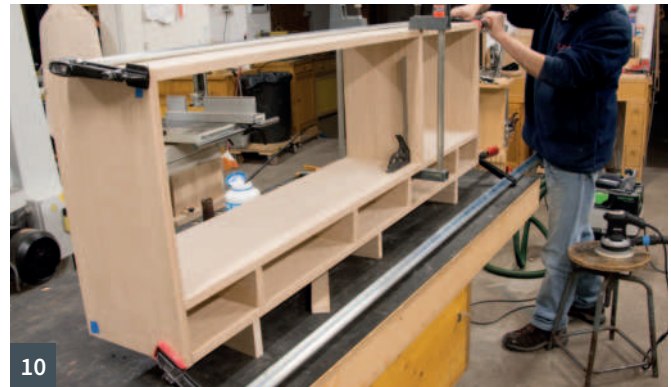
The body of the cabinet is entirely made of blockboard veneered in 20mm oak. The heart of the panels is made up of poplar strips, covered on their external faces with a sheet of plywood on which the thin veneer is applied. The best tool to create this material quickly is the squaring machine, even better if it's equipped with an engraver. The alternative

is to purchase the panels ready-made, but this would require a supplier whose quality and accuracy can be relied on. Even professionals sometimes require panels to be cut, but in this case, I made them myself for convenience and speed. The size of a whole panel can exceed 3 metres so maneuvering it is not easy. It's better to make the pieces a little over-size and then cut them to the final measurements.

SAFER CUTTING

The parallel guides for routers generally have a large groove in the centre that allows them to accommodate the largest cutters. However, this groove limits the support surface of the lateral stop at the entrance and exit of the piece, with the risk of making a big cut in these two points. The solution is to close the gap with multilayer strips and at the same time lengthen the fence. That's what those holes in the metal are for!





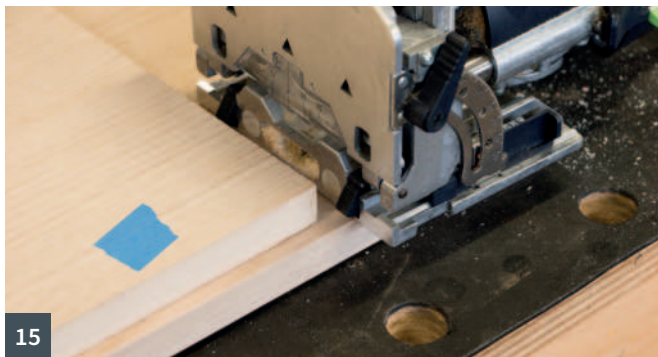
7 Check the adhesion of the edging and iron over the points where the glue has fixed down well **8** The parts of the edging that are over width or length must be trimmed manually. The ends are done with a sharp chisel stroke, while shaving on the long sides is done with a trimmer. Any glue waste can be eliminated during the sanding phase **9** The edging, with pre-glued veneer, if done well, will give the appearance of a solid wood **10** A pre-assembly is never a waste of time **11** The assembled cabinet allows you to mark the position of the junction of the elements between the external panels and between these and the various horizontal and vertical dividers **12** The Domino Joiner's milling height setting allows you to position the joint in the centre of the panel thickness

The scribe blade is a useful accessory for quick working. Cuts across the grain often create splitting— having a saw with a scribe blade eliminates this problem. The small saw blade precedes the main saw blade and rotates in the opposite direction to the latter. The fibres of the wood are cut cleanly and when the largest blade comes out of the wood it does not drag the fibres along the sides of the cut.

The edging

Not using solid wood involves some additional processes, such as edging. Mass-production companies have specialised machines that can apply, cut and trim hundreds of metres of wooden board and other materials in just a few hours. Alternatively, there are portable

devices that have a loader in which the roll of a special pre-glued edge is positioned. The machine heats the edge of the panel and the edge by activating the glue, which then adheres to the board edge. The removal of the excess edge is carried out with the trimmer, equipped with a bearing cutter. The time savings are considerable: there is no need to prepare the edge by yourself starting from the solid wood, there is no excess glue to clean, no clamps of any kind are needed and adhesion is immediate. To use the pre-glued edge, it is not necessary to have specialist machinery. For those who carry out this operation occasionally, a common iron may be enough. Of course, you need to do some testing to get the right temperature and pressure, but the processing speed amply compensates for the time spent getting used to it.



13 The control for plunging sets the depth of the hole **14** The selector allows you to use dowels of different widths or to make wider slots to allow the registration of the pieces during assembly **15** On the sides of the tip, the Domino has two retractable stops that can be pushed against the edge of the panel, so you can always place the joints at the same distance from the edge **16** The Domino does not have the necessary support for perpendicular drilling. This problem can be circumvented by increasing the thickness of the piece by fixing a strip flush with the upper edge **17** For the assembly slots between the box and the internal dividers, the Domino requires an additional stop. After marking the position of the divider with a line, it is fixed by aligning it on the mark. The first cut is carried out by placing the sole of the tool against the stop created by the edge of the panel. The second is cut with the sole aligned horizontally **18** The temporary stop system offers an excellent guarantee of accuracy as long as you match the alignment on the opposite faces that support the dividers

Construction

With the edging in place, all the panels are now at their final dimensions and you can begin the actual construction. Depending on the type of joints you use, a trial assembly may be necessary. This will take time but a trial fit is the best way to evaluate if the internal partitions are well distributed or even to decide the final position of the various partitions. The pre-assembly also allows you to mark the points in which to place the joining elements. There are different types, each with its own characteristics, pros and cons. In this case, I used a Festool Domino Joiner, which produces mortises within which special tenons are placed that act as a bridge between the parts to be joined. It is a replica of the old mortise and tenon joint with the difference that the chisels remain in their rack.

The use of the Domino Joiner is quite intuitive and similar to doweling machines and biscuit joiners (see page 15 for more about using the Domino Joiner). Once the various adjustments have been set, it is possible to proceed with cutting the joints quickly. For this cupboard, I used three plugs for each junction of the case and the two larger internal dividers. The dividers for the drawers required only two plugs per side (in total four for each piece). The assembly of the box was carried out on the model of the wall units. This means that the vertical sides are full height. The three horizontal elements (top, base and divider) were then cut on the heads while the lateral ones were cut on the faces. In this way the joints will offer greater resistance to the weight of the structure.

While cutting the joints, I found the two retractable stops placed



19



20



21



22



23

19 The router is the best tool for making rebate cuts quickly and accurately **20** The notches on the sides must be interrupted at a certain distance from the end of the panel so that they are not visible when the work is complete **21** The internal dividers must be reduced in depth only after having made the rebates to house the back **22** Sand and finish before closing the cabinet – this will produce better results **23** The final assembly of the case marks the end of the first working day

on the sides of the drill bit very useful and made it possible for me to prepare the holes for the outermost dowels without having to make marks. The position of the central ones were marked manually during the trial assembly.

Pre-assembly

Once the Domino dowels are complete, it should be possible to move on to assembly. In reality, however, several other processes must be done before that. The first is to cut a rebate on the back of the case into which the back will be inserted. The second is to cut the depth of the two largest dividers to the depth of the inside of the rebate. The drawer dividers, on the other hand, were left shorter from the start to allow air to circulate in the back. This has nothing to do with the conservation of their contents but to make the drawers slide better: if their space in the cabinet were completely filled, air would get trapped inside and slow down their closing. For the back cutting, I used a router, which makes it easier to make the interrupted cuts on the side panels of the case.

Before moving on to the gluing stage, the surfaces need to be finished. All the pieces must be adequately prepared while all the surfaces are easily accessible. In my case, as I was planning to use an oleo resin finish, I just needed to do some careful sanding of all the internal parts that would be visible when the work was completed.

Time taken so far

The question arises at this point: how much time has elapsed from the start of the work to the final assembly? The date and time shown on the photographs I took indicate it was just under 12 hours, but I can reduce this to eight hours taking into account rest breaks and the time taken to set up the photos. Of course, we are talking about a dedicated workshop, with functional spaces and equipment in perfect working order, as well as (forgive the immodesty) a fairly experienced craftsman. However, as you will see in the next article, there are still many processes to be done and unexpected events are always lurking!

Clamp rack

Alan Holtham's design offers an ideal, portable storage solution for clamps

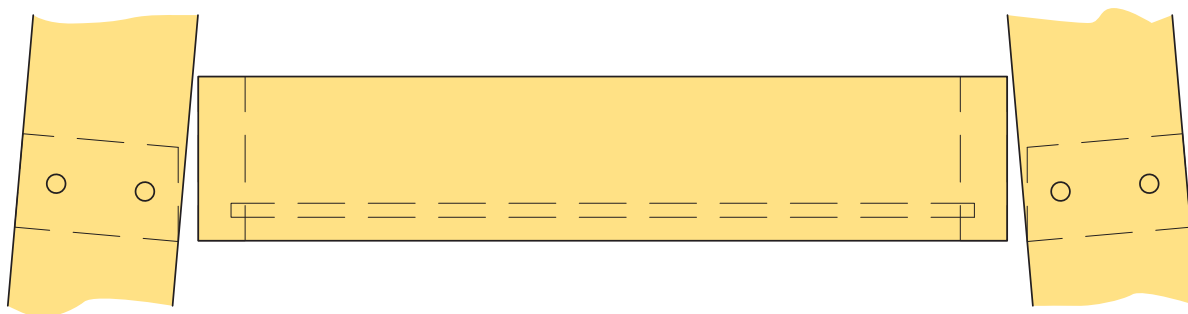
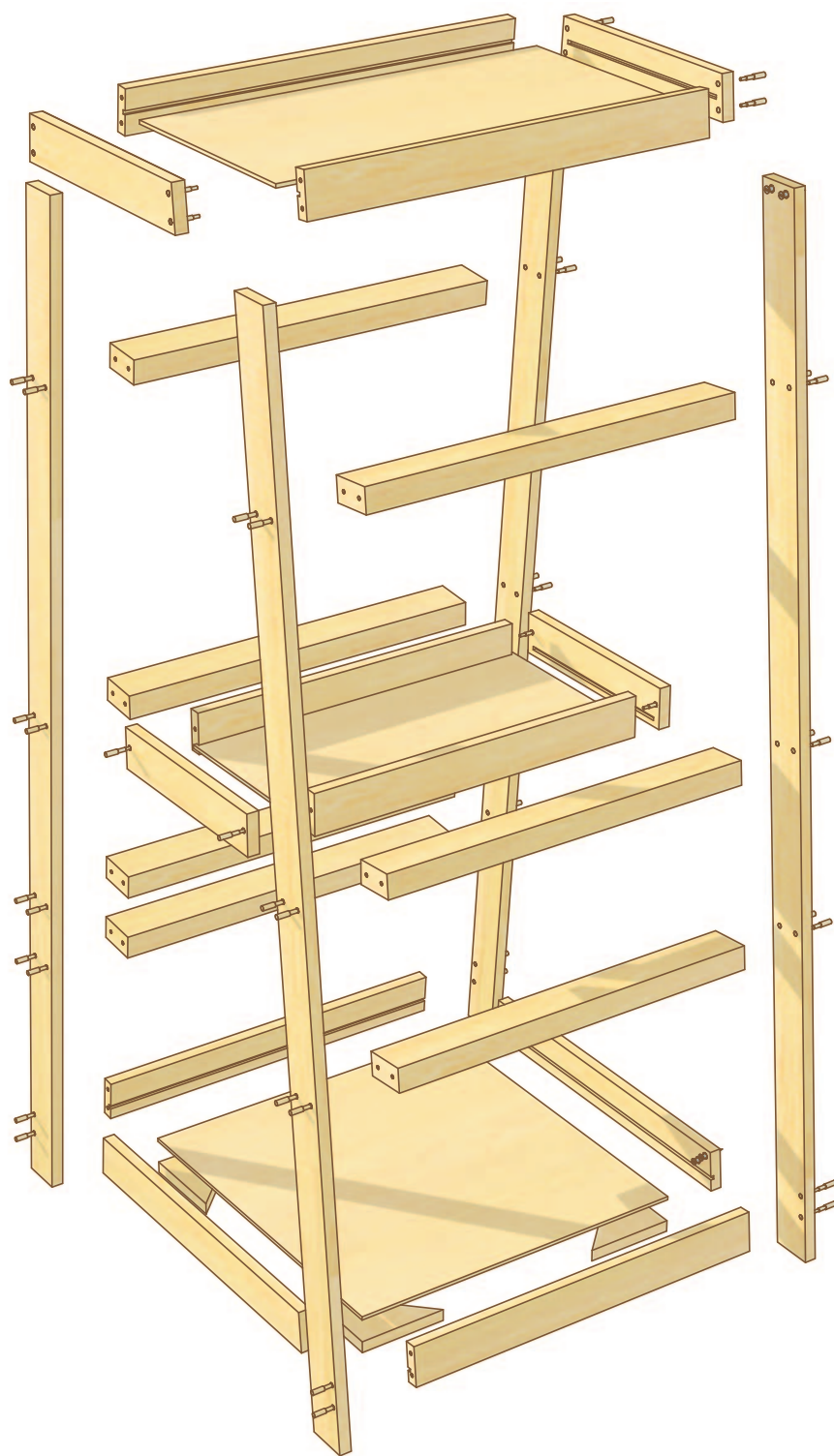
It is a well-known workshop lore that you can never have too many clamps. Over the years, I have accumulated quite a motley collection and with pressure building to get the workshop more tidy, a mobile rack seemed the ideal solution.

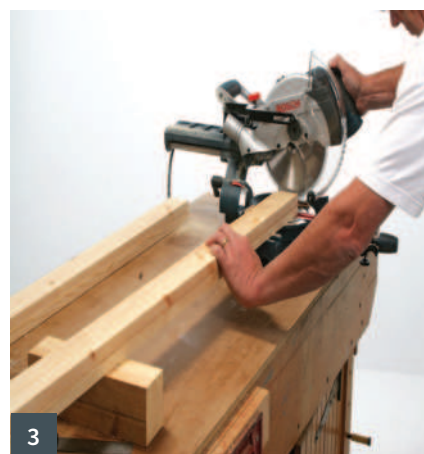
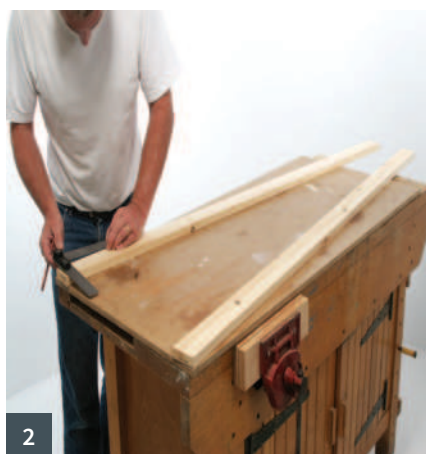
The first task is obviously to arrive at a suitable design, and I did a fair bit of research on this, eventually combining ideas from several sources. Stupidly, I didn't draw it out first, relying on a 'make it up as I go along' approach, so consequently made some silly mistakes along the way, but as my whole woodworking career has been founded on the principle of damage limitation, I was well qualified to work around them! This does, however, highlight the need for proper planning before you start, particularly with more ambitious projects.

You can adapt the design to suit your own requirements. This one holds a large number of quite big clamps in a very small footprint, but I can see a small-scale version being useful too, say, a musical instrument maker whose clamp collection is probably just as varied but each clamp is very much smaller. You could even produce a benchtop version if you are really pushed for space.

I have a habit of over-engineering jobs like this, usually making the sections far too heavy and forgetting that overall strength in the finished project accumulates as it is built. In this case, I was aware that clamps en masse are extremely heavy – you don't realise how the weight builds up handling them one at a time – so I had to try really hard to keep the sections relatively small. Hopefully, the finished design achieves a decent compromise between strength and aesthetics – so far it has proved to be plenty strong enough.







PHOTOGRAPHS BY ALAN HOLTAM

Making the rack

- 1** The starting point was some 70 x 20mm PAR (planed all round) material bought from a local DIY shed. I know that many woodworkers criticise timber from these outlets but if you select the pieces carefully, some are actually quite good quality and reasonably priced, considering there is virtually no waste. You can buy just what you need. It also has the benefit of being FSC sourced, so you don't need to worry about sustainability either. However, although the machining is generally pretty consistent, there always seems to be considerable snipe on the ends of each piece, often so severe it has to be trimmed off. The unnecessary waste makes me cross – it is just down to poor machine setting.
- 2** The initial layout is quite simple, particularly if you have a Trend angle gauge. This is like a traditional sliding bevel, but with a digital indicator in the middle giving you an instant readout of the angle between the two legs. It is fast becoming one of my most useful pieces of workshop kit. I wanted an angle on the uprights of 5° to achieve the necessary slope to keep the clamps in place as the rack is moved.

- 3** This 5° angle will be a common theme on many of the pieces and is best cut with a mitre saw, cutting matching components together. A fine cut blade should leave a perfect finish with minimal splch, but do try to cut all the angled pieces in one session as it is very difficult to set precisely the same angle again. Also, make sure the work is supported so it is flush to the saw table – any droop on pieces of this length will result in an off square cut.
- 4** The top box section has a 6mm MDF bottom fitted into a slot routed in the sides, so set out where you want the groove to be for this, allowing enough depth below the bottom to screw through onto an upright.
- 5** Holding small pieces like these for routing is always difficult as they need to overhang an edge for the guide fence to work, but they are too small to clamp without obstructing the router. My solution is to stick them temporarily to a block held in the vice. This gives you the necessary overhang and provided the mating surfaces are smooth and dust free, you only need double-sided tape to get a secure grip.

ROUTING SHORT PIECES

A good tip when routing relatively short pieces using the side fence as a guide is to close up the sub faces on the fence to prevent it turning in as the support transfers from the front face to the back. Very few people realise that the faces are adjustable for this very reason, and you will be amazed at the difference it makes.





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- 6** The main framework is just glued and screwed together, but the process is made much quicker if you use a combined drill and countersink bit to produce the necessary pilot hole. This is woodworking at its simplest but it still needs to be done properly, so use a piece of scrap as a spacer to produce the necessary amount of offset for the side rails.
- 7** I changed my mind about the design at this stage and decided to fix

- the top framework around the outside of the uprights, rather than the inside like the bottom.
- 8** What I did not think through was that this would expose the groove for the base when the assembly was completed. This is one of the hazards of designing on the hoof and I should have known better!
- 9** To counter this, I screwed the bottom panel sides to the A-frame base inside the frame.



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10 With such long uprights, it is vital to make sure the angles are spot on as even a minor discrepancy at one end amounts to a big difference at the other, so I used the angle finder to check the accuracy as each component is fixed. This joint was 0.01° out – near enough for me.

11 The Miller dowels I used for the external joints produce an extremely strong joint – far better than screwing into end grain, where the screw has the tendency to strip. You will need the special stepped drill bit, but the whole kit, including a pack of dowels, is relatively inexpensive.

12 There is no room for adjustment once the holes have been drilled, so take care that everything is aligned properly and held firmly in place as you drill. The trick for getting the dowels to seat in properly is to remove any swarf from the hole, so drill slowly

and keep withdrawing the bit to clear the flutes.

13 The dowels are then coated with glue and tapped into place with a hammer, leaving just a small amount of the biggest section protruding. This is the cut off after the glue has set. What I failed to realise at the start is that tapping in the dowels with a hammer is not enough to pull the joint up really tight and hold it while the glue sets – you will still need to use clamps for some of them.

14 As the assembly builds up it is far easier to work on the floor, but the job of holding the rails in place is simplified by using the bottom panel for support. This is just a piece of 6mm MDF, but another good tip here is to trim about 10mm off any existing cut edges, as I always find that they swell slightly due to moisture ingress during storage and you will struggle to fit them into your 6mm groove.



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15 The top frame is fitted in exactly the same way, working around another 6mm MDF panel, but now you can see how the groove is left exposed. I subsequently cut a filler piece and glued it in place to hide this error, but a little forethought and stopping the groove would have been a better answer. There is another slight problem with this joint that I had actually foreseen, in that the two cross rails are screwed onto the angled ends of the long rails, so the top and bottom edges aren't parallel to each other. Because the angle is only 5°, this discrepancy is minor and didn't really bother me but for a piece of fine cabinetmaking, you need to cut the end rails slightly over-width and chamfer the edges.

Now you can start laying out the arrangement of crossbars to suit your collection of clamps. Take your time with this, preferably by making trial arrangements on the floor to see if you can gain more storage by overlapping some of the longer clamps, or by tucking some smaller ones behind others that stand out further.

16 The crossbars are 70 x 40mm material that again is just doweled into position, but I did round over the edges to make it easier to slide the clamps into position. The crossbars are fixed at 90° to the uprights, so they end up angled inwards by 5° which helps to keep the clamps in place. If in doubt, put in plenty of crossbars – it doesn't matter if you don't use them all and you may need them later if you buy new clamps or change the arrangement.

17 Once again it is necessary to hold the joint together with a clamp as you knock in the Miller dowels, and leave the clamps in place as you add the other crossbars to avoid springing the joints open.

18 The drawer is made up from the same material, with more 6mm MDF as the bottom. This time I did remember to stop the groove. Just be careful where you drill for the dowel though, to avoid cutting into the groove.



19 The drawer is mounted on metal runners. I prefer the type that sit underneath – measure carefully to get the runners positioned correctly, particularly as the uprights slope inwards. Fortunately, these runners need a gap of 12mm either side, which just gave me enough clearance.

20 The other half of the runner is fixed to one of the crossbars, but this needs to have its internal edge chamfered at 5° to provide a vertical fixing face. Spacing of the runners is critical and it may be necessary to clamp the crossbars in position before final fixing.

21 With the assembly complete, you can start cleaning up. Trim off the exposed dowels using either a chisel or a flush cutting saw. I actually prefer a saw as even a sharp chisel can sometimes break off a section of the dowel below the surface. A flush cutting saw is thin and flexible and as it only has the teeth set to one side, it doesn't mark the surface as you cut. They are brilliant for this type of work, producing a perfectly flush surface.

22 The whole rack is mounted on castors, so I fitted some corner plates of 20mm softwood to provide a fixing. It is amazing how heavy the rack becomes when fully loaded, so make sure the castors are heavy-duty and preferably buy at least two of them with locks. The rubber tyred type are best and the bigger the diameter the better, if the workshop floor is covered with dust and shavings. Give it all a thorough sanding using a random orbit sander – I use 120-grit discs on this prepared material as the finish is normally pretty good anyway.

23 The dowel joints clean up really well and although crude and simple, I feel that they actually look quite good on a workshop type project like this.

24 To finish, I always use oil where there are lots of components with the potential for drips and runs. Any excess oil is wiped off after leaving it a few minutes to penetrate, so there is no chance of runs.

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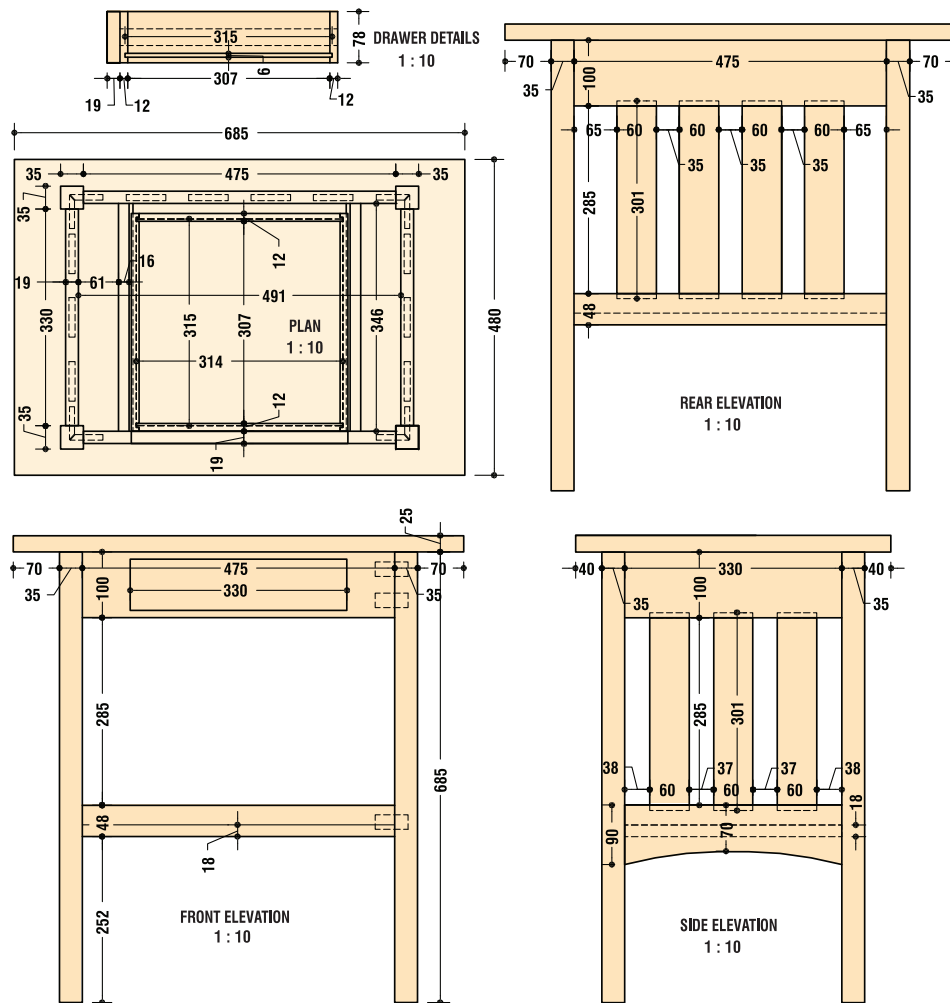
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Night mission

Anthony Bailey makes a Mission-style bedside cabinet

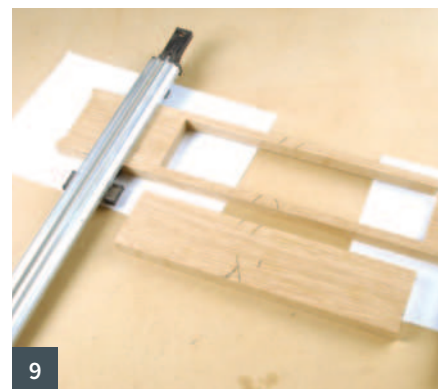
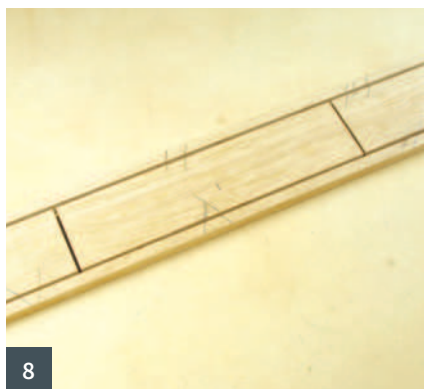
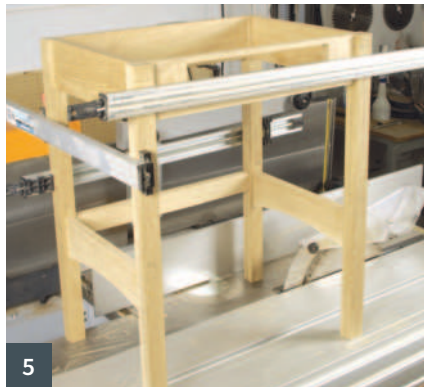
This bedside cabinet, or night table, is inspired by the American Mission style of furniture, which was popular in the early 20th century. Its design is deceptively simple as its making involves several exercises in jointing and accuracy. American white oak is used throughout, except for the contrast ply drawer base. This oak is stable and comes in decent-width boards so there isn't much wastage.





YOU WILL NEED

- Bandsaw
- Planer thicknesser
- Spokeshave
- Festool Domino System (optional)
- Mallet & block
- Biscuit jointer
- 1/4in router plus two fences
- Chisel
- Belt & orbital sanders
- Rebate plane
- Abrasives
- Wood glue
- Bearing-guided bevel cutter
- No. 20 biscuits
- 8mm Dominos
- 9.5mm straight cutter & 6.35mm-diameter straight cutter
- Sanding sealer, wax & polyurethane varnish



Preparation

- 1 Saw everything over-size and then plane to finished thickness and width, except for the slat components. Make up the top and the lower shelf by gluing up enough sections to width.
- 2 The top is sawn to finished length but left slightly over-width and run over the planer to give a better finish on the long grain. The legs, top and lower rails are all sawn to length. The curve on the lower end rails is bandsawn to the finished line and cleaned up by spokeshave or by sanding.

Jointing the frame

- 3 I am becoming accustomed to the Domino system and this was a perfect chance to use it; however, standard mortise and tenons, loose tenons or even dowels could be substituted. All the rails have a vertically arranged pair of 8mm Dominos except the lower back rail, which has just one.
- 4 Lay out the parts and mark them for jointing, bearing in mind that the 19mm rails have to centre in the 35mm-wide legs. Use the nearest offset on the machine; these are 36mm and 20mm

respectively. This difference is not critical so long as matched components are the right way round.

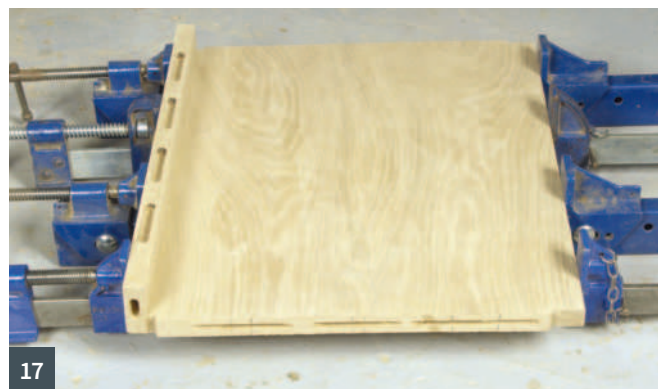
- 5 Dry assemble the whole table frame and accurately measure the shelf size needed to fit in between and also the amount to take out in the corners where the legs are.

Biscuit jointing

- 6 Both the shelf and the two crosspieces that carry the drawer runners are biscuited in place with No. 20s.
- 7 Mark up for jointing while at the dry assembly stage. Take the whole thing apart and machine the biscuit slots.

The drawer opening

- 8 The drawer opening is achieved by sawing an overwidth board to give a thin top and bottom rail. Here you can see the cut layout for the drawer opening in the front rail.
- 9 The centre piece is cut in three, the middle section being the drawer front and the two outer parts being glued back to the two thin rail sections, thus forming the whole front rail.



10 The drawer front is trimmed to fit later.

Domino solution

11 In order to size the lower shelf I wanted to be able to dry assemble the whole frame without too much use of mallet and block as Dominos are quite tight. My solution was to saw some down the middle and use a half in each joint. This makes for a floppy assembly that needs light clamping but is very easy to pull apart.

12 Where two joints meet, one split Domino can push past the other half so a complete set of joints can be assembled this way.

Fitting the slats

13 The signature Mission-style slats are dry-jointed into 8mm-deep holes. Carefully mark the slot positions, then, using a $\frac{1}{4}$ in router with two fences, centre a 9.5mm straight cutter on each rail in turn and make the slots.

14 Measure the slot width and plane the slats to that width and to slot length as well.

15 Reassemble the ends in turn and then the back rails and legs, each

time checking the rail positions against markings on the legs.

Measure the complete length required for the slats and cut them all to length. Use a sharp chisel to 'nick' the corners 8mm in from each end and take the corners off so they will fit in the slots. They are effectively barefaced tenons with the corner shoulders resting on the wood around the socket.

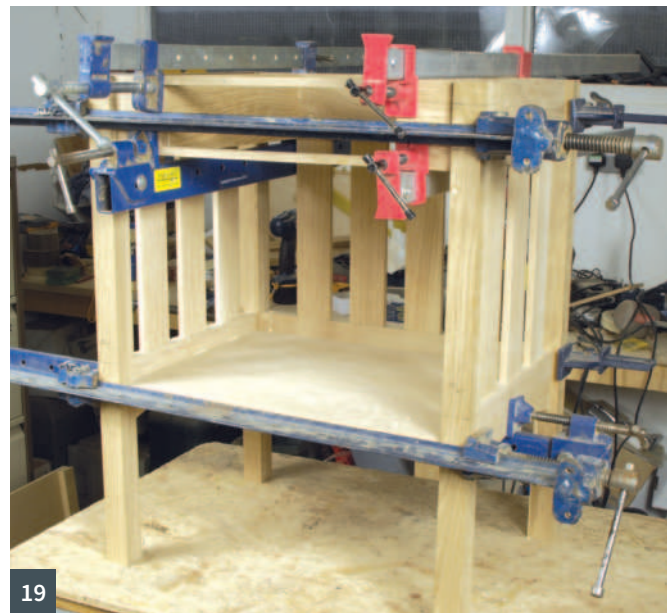
Glue-up

16 Sand all meeting or awkward faces to get surfaces to a finish, ready for assembly. Any standard wood glue is suitable though I used Titebond aliphatic resin, which sets hard and grips quickly. Check all is square before leaving to set. The ends are assembled as sub-units; here you can see the completed end assembly (note the tape bandage where a glue repair was necessary).

17 The shelf and lower rail are also assembled as sub-units. Here you can see the lower shelf assembly drying in readiness for the main glue-up. The main glue-up is harder to do so plenty of sash or T-bar clamps and some patient assistance are in order.



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18 Lay down one end sub-assembly and offer the shelf sub-assembly and upper rail to it with slats in place. Note that the Dominos have been mitred just as proper tenons would, so they don't foul each other in the leg joints. Tap everything part way together with a mallet and block, then fit the other end sub-assembly, ensuring the drawer crosspieces have been fitted in place.

19 Now clamp up using plenty of clamps to ensure there's no distortion or out of squareness.

20 Clean off the glue while it's still sticky and wipe with a damp cloth. The table frame is now ready for biscuiting to accept the top.

Fitting the top

21 The top needs careful belt and orbital sanding before it can be fitted. The edges are very slightly chamfered using a bearing-guided bevel cutter. Lay the top upside down, place the frame on it dead

centre and get it square. Draw a line around it with a sharp pencil and mark biscuit positions. Ignore the fact that the fence won't sit where the legs are. Remove the table frame and carefully freehand biscuit slot the underside of the top where marked, then clamp a piece of MDF to the back rail of the table frame, having first transferred the biscuit marks to the top edge.

22 Sit the jointer on the edge pressed against the MDF and make the slots. Repeat on all top frame edges; note that the front rail only has a slot on either side of the drawer opening. Sand off marks and previously unsanded surfaces, glue and fit the biscuits in the top underside, then glue the frame slots and tap together. Ingenious clamping using a degree of force is required to pull up the whole assembly. You must ensure the top doesn't bow in the middle so extra cramps are needed here. Likewise make sure the thin upper rail above the drawers is clamped against the top underside. Clean up and leave to set.



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Making and fitting the drawer

- 23** The drawer comprises a simple box with a ply bottom and a stuck-on front piece. The drawer front needs accurate sizing to look neat. The drawer box is the same height and has tongue-and-groove joints at the corners done on the router table using a 6.35mm-diameter straight cutter. The same cutter does both joint halves and the drawer base groove as well.
- 24** Dry assemble all the parts and check for fit, then sand all round and glue-up, checking for square. Make the drawer runner slots in the drawer sides. Make the runners, checking that they are a close fit with the drawer. Position them and mark where they need to be, then remove the drawer, glue and clamp the runners against the marks and leave to set. All being well the drawer will fit perfectly but minor adjustment with chisel or rebate plane may be required. Fit the hardware and glue and clamp the drawer front in place, ensuring it is the correct way up for a grain match. Lastly, glue



25

a couple of stop blocks against the crosspieces to ensure the drawer front closes flush with the front rail.

Finishing

- 25** Sand where necessary and take off all sharp edges with the abrasive. A sanding sealer and wax should suffice on oak although glasses or mugs will mark it so you may want something more resistant on top such as a couple of coats of polyurethane varnish cut back before waxing.

ON A MISSION

Kate Forder explores the history of Mission furniture



Willow armchair made
by Gustav Stickley
ca. 1907-13

PHOTOGRAPHS COURTESY OF WIKIMEDIA COMMONS, UNLESS OTHERWISE STATED

Arising out of the Arts and Crafts movement, Mission furniture became synonymous with the ideals of quality craftsmanship and exceptional design. Commonly made out of oak, although cherry and maple were also used, the furniture was sturdy in its form with little or no decorative features, showing off vertical or horizontal lines, exposed joinery and plain fittings of copper or iron.

Mission furniture is still a popular design style today as people aspire for simple designs in their furniture, combined with an elegance in its craftsmanship. With its straight lines and minimalist feel, it is often mistaken for Shaker style but in fact its true influence on furniture design came about much later in the 1900s.

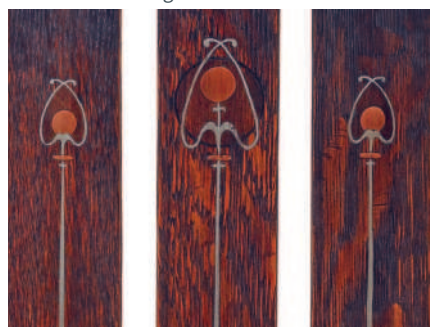
The origins of the Mission style

It began with an American furniture maker named AJ Forbes who made a chair for the Swedenborgian Church in San Francisco at the end of the 1800s. It is claimed that the piece was inspired by the Spanish mission churches of late 19th-century California, although its actual design bore little resemblance to the furniture used by the missions. The oak chair was solid, with straight vertical and horizontal lines and was practical as well as durable. It was these characteristics that were the beginnings of a design style we have now come to associate with Mission furniture.

However, it wasn't until New Yorker Joseph McHugh took Forbes'



Oak side chair made in 1903 by Harvey Ellis for the Gustav Stickley workshop. Mission-style furniture remains popular today: this piece recently sold for \$5,075 at a Bonhams auction in Los Angeles



Detail of the inlay on Harvey Ellis' chair; the pewter inlay was made by the workshop of George Henry Jones

PHOTOGRAPHS COURTESY OF BONHAMS



Early 20th-century American parlour decorated in the Mission style



Oak library table made by Gustav Stickley ca. 1906

design and decided to copy it that the style's popularity began to grow. McHugh designed a line of furniture that took on the premise of Forbes' design but expanded it to encompass a complete range of furniture known as 'McHugh Mission'. His was the first company in America to bring mass-produced Mission furniture to the general public, and his eye for what was popular in interior design helped him become a major influencer in the Arts and Crafts movement.

The influence of Gustav Stickley

By the early 20th century the Arts and Crafts movement was flourishing both in Britain and the USA, as people shied away from the overtly ornate and fussy furniture design of the Victorian era. In America the movement was led by Gustav Stickley who, through his travels to Europe, was influenced by the simple forms, sleek design and quality craftsmanship of designers such as William Morris. He took these ideas back to New York where he began designing the furniture that became the signature of the Mission style.

Stickley's furniture was not only about the linear lines, the rectangular spindles and the simplicity of the design but also about the use of raw materials, the exposed joinery and colourants that enhanced the grain to show the master craftsmanship of the piece. Stickley became synonymous with 'Mission furniture', although he despised the term preferring to refer to it as 'Craftsman furniture'.

His influence was further enhanced by founding the publication *The Craftsman* in 1901, which not only advertised his furniture through articles and reviews but also had a profound effect on promoting the Arts and Crafts movement that spurred on its popularity, which in turn made Mission furniture so desirable.

Mission furniture continued to be a prominent design style right up until the 1930s when it was overtaken in popularity by the Art Deco movement. However, in more recent times Mission furniture has once again had a resurgence in popularity as people seek out a more organic, simplistic, linear design in furniture that celebrates the raw materials used, as well as the craftsmanship in design and structure.



WOODEN WONDERS

Chopping and stacking logs has a practical purpose but, as Holly Farrell explains, there can be other benefits too

Few images conjure up a warm, cosy feeling better than that of a crackling wood fire. It speaks of warming toes after a long country walk, of hot drinks and good books, of toasting marshmallows and seasonal celebrations. Where better to hunker down for winter than in front of a log fire?

A fire is a beautiful thing to just sit and watch, as the flames flicker and dance around the wood at first, then consume it so that the whole log glows white hot. Blue flames sputter then undulate upwards as trapped gases within the wood are released, sparks fly and dozing pets twitch as the log slips within the grate.

The physical and mental benefits of chopping wood for logs make it a particularly constructive and meditative activity. Chopping – or, more accurately, splitting – logs is a simple, repetitive task that nonetheless requires complete focus.

The same physical actions are performed again and again: pick up a log, place it on the block, swing the axe, pick up and toss the split logs onto the pile. It's physically demanding work that requires

attention on the breath and balance, and complete awareness of one's whole body. The effort raises the heart rate and releases endorphins (chemicals that induce a happy feeling in the brain). The concentration that the task demands also ensures that the log-splitter is entirely in the moment – there's no room for wandering thoughts when it's necessary to fix so completely on the line that the axe will take on the log, not to mention each stage of the physical movement needed to bring the axe down accurately and safely on that line.

While the satisfying repetitive thunk of axe on wood brings all the benefits of meditation with added movement, there's also a wider feeling of pride and purpose to be gained from splitting logs and stacking them ready for winter. Providing fuel for the fire – a means to keep everyone warm over winter – is to fulfil a basic need of life, as ancient as humankind itself.

Preparing for the future – and feeling secure in that preparation – engenders the same satisfaction as laying down jars of jams and pickles during summer gluts. It means looking forward to the



TIPS FOR SPLITTING SUCCESS

- Use the right tools. A splitting axe of a good weight will be heavier to lift but give more heft when it comes down on the log. Make sure the blade is sharp and the handle oiled after using – this keeps it smooth for the next time, so it won't cause blisters.
- Use a strong and steady block on which to split the logs to avoid dulling the blade in the ground and to reduce the bending required.
- Be safe – wear decent footwear with steel toe caps if possible and glasses or safety goggles to protect from flying splinters.
- Avoid trying to split logs with knots or branches through them, it's generally not worth the enormous effort required.
- Stack the split logs somewhere in the open air but protected from the rain for the best air circulation and fastest seasoning process.

darkening nights, while still enjoying the bounties of summer and autumn. When it comes to burning the wood, the ash can be returned to the compost pile and then the garden, where it'll feed and nourish the plants and trees again in a never-ending circle.

Know your wood

There are plenty of online tutorials for the best way to split logs, but there's no substitute for experience. Practice makes perfect, so the saying goes, and the more often the axe thuds down onto the log, the more obvious the best splitting line becomes and the more accurately the axe hits home every time.

Take note as well of the type of wood – oak logs will split and burn differently to pine, and cherry differently to ash. Look at the bark pattern and colour to identify it, but also be mindful of the thickness of the bark compared with the centre wood, how soft or hard it is, the grain and the rings. Paying attention in this way not

only further anchors you in the moment, but also helps in splitting the wood effectively.

Finally, stacking the logs can be a similarly meditative process – it's a repetitive physical action that requires mental focus to assess the shape and size of each log and how to fit them together for the best use of space. There's an art to stacking logs and, in a way, the log pile itself forms a work of art, a final satisfying flourish after a hard day's work.

What is seasoned wood?

This describes wood that's been logged then dried in the open air over a year or so, or faster within a kiln. This lowers its moisture content so it smokes less when burned and therefore gives off fewer pollutants. It's more expensive than unseasoned wood, but more efficient to burn. Unseasoned (also known as wet, or green wood) logs are those that are sold soon after the tree has been felled.



STRIKING A BALANCE

Moving between architecture and furniture-making, Melbourne, Australia-based designer Josh Carmody brings the two worlds together

Unable to decide between architecture and making furniture, Josh Carmody pursued both at the same time – until an unexpected commission tipped him over into the furniture camp.

Josh's Melbourne-based product design studio aims to strike a balance between simplicity and complexity, and his background in architecture informs his classic yet innovative approach to furniture and product design. He has created several tables designed for office environments and meeting spaces, including the Trustable standing-height table, which he came up with as a solution for 'increasingly agile workplaces'. His Curves series of tables takes an innovative approach to disguising cables, and the Remnants series is based on materials left over from architectural projects, which can be converted into tables using a system of clamps.

'My approach to design is pretty varied,' Josh says. 'I like complexity, and I like simplicity. I like the unexpected, but I also like refined and balanced aesthetics. I think for many designers, their work is the result of how far they push their tastes one way or the other. And as I design more, I tend to see these patterns throughout my work – I rationalise often opposing ideas to a point where I am comfortable and happy with the results.'

'Major influences undeniably come from my background in architecture and interiors, and specifically in workplace design. Seeing how furniture is laid out in spaces, and the various and often overlapping functions intended for different products, was always something I was taking in on the job.'

Although he opted to train as an architect, Josh has always been interested in making. 'I was always interested in the creative subjects at school,' he recalls. 'I spent a great deal of time sketching and drawing through my schoolbooks and on my hands, arms and even legs. While drawing remained a constant form of expression, other media would inevitably take my interest too.'

'I still remember being around 10 years old and looking from my primary school over at the wood and metal workshops in the secondary school with great envy and anticipation. I made my first piece of furniture in that school wood workshop: a coffee table made from two Australian timbers, jarrah and spotted gum.'

He adds: 'I learned a lot from that piece, both at the time of making and afterwards. While the table was designed and made fairly well, being a headstrong 15-year-old, I glossed over researching one of the more important details: the process of fixing the top to the frame. I simply cut pine blocks at 45° angles and screwed into the top and into the sides of the frame. During the grading for this table my teacher educated me on the button system and principles of seasonal movement. Over the passing of a few seasons, and a tough





few years in shared houses in my early adulthood, I watched the table top split in a few places, learning the importance of doing the fundamentals correctly.'

Josh went on to qualify and work as an architect, but kept a furniture design studio going as 'a side hustle'. 'I could never decide between the two, so I just did both,' he explains. 'Architecture provided me with a broad range of skills and the discipline required to bring ideas to fruition. My furniture-making background is self-taught – beyond secondary school anyway. I was led simply by a sense of curiosity and artistic expression, combined with the chase for perfection and impossibly high standards of craft.'

'My two career paths grew side by side and eventually the two collided when the architecture firm I was working at – Woods Bagot – engaged my studio, or myself, more accurately, to design and make nine tables for its new Melbourne studio.'

'The six-week deadline was tight, the scale of the project was larger than anything I had ever attempted, and even the tables were bigger than any I had ever designed or built. But years of experience and experimentation culminated in what was probably my final hurdle to seeing myself as a professional furniture maker.'

He adds: 'Designing and making those pieces gave me the chance to design for a space that I work in, and then see how these designs worked for the studio and those using the space – including myself. This end-to-end process had a great deal of takeaways for me both in regard to design and production.'

The side hustle

Josh has been running his furniture business alongside his architectural studies and practice since he was 18. 'I was just hedging my bets really,' he says of his decision to set out on his own. 'I decided to study architecture with the confidence that the broader skillset would serve me whichever path I ended up following, as I knew it would be in this general area anyway,' he explains. 'During that first year studying architecture, I couldn't shake the urge to be building things with my hands. So I registered a business, with the intent to develop it while I studied. And I started making furniture for anyone who showed interest – mainly family and friends.'

He used savings from a part-time job to buy basic machines and, after completing a few commissions, bought a cheap camera and started photographing his work. He launched his website in 2009. He says:



'Instead of working in an architecture firm between my undergrad and masters, I decided to make furniture. And around this time, I began entering design competitions and contacting the editors of design magazines, genuinely curious to see what they thought.'

'Within 12 months I had been published in a few Australian design magazines and had won LaunchPad, an award for emerging designers in Australia. From there I just kept on designing and making alongside my masters in Architecture and then my graduate architect role, until I became a registered architect. At this stage I used part of my salary to rent space in a shared workshop in Richmond for two years. Here I gained my first experience with commercial grade machinery and exposure to other makers.'

Under no illusions

Josh first drew WWC's attention with his Legless bar stool, a three-legged stool which looks as if it has four legs when viewed from the right angle. This illusion was used by YouTuber Zach King in a video on furniture illusions which name-checks Josh and had had nearly 63 million views at the time of writing.

Josh recalls: 'One morning I woke up to quite a few messages about

Zach King's YouTube feature on Optical Illusion Furniture. I had no idea what they were talking about.

'Seeing the film, I instantly realised that while the design in the clip was the Legless Bar Stool, and Zach had even credited me by name as the designer which was great, from the proportions and the timber used I realised that I had not actually produced the piece used in the clip.

'This left me with a bittersweet situation on my hands. On one hand, a world-famous creative whom I admire had shown great interest in my work – and promoted it to millions of people globally. A huge deal to me, to be perfectly honest. Yet on the other hand, I hadn't made the piece used in the clip. This may sound quite minor, but in Australia, designers have a regularly recurring problem with their work being reproduced without permission and remuneration.

'It was clear to me though, that it was not Zach's intent to do anything untoward. So I made contact with him directly to sincerely thank him for taking interest in my work and for including the Legless Bar Stool in his piece. I also let him know that if I had only known sooner, I actually would have just sent one over to California for the shoot.

'To my surprise I received an immediate reply, and realising the oversight, Zach offered to ship one of my stools over to the US himself



and reshoot a special clip with my stool to further credit my work. Which was beyond incredible to me and I gratefully accepted. It was a very surreal few days.'

So how did he come up with the idea for this unusual stool? 'I first designed the lower 450mm height Legless Stool,' he says. 'At the time I was having a year off between architecture degrees and had started a small bespoke furniture-making business. At this stage I would draw for hours at a time with one idea leading to the next. I recall drawing the simplest stool I could imagine. It had a square seat and four legs, one extending down from each corner. Then I simply erased one leg and imagined ways to make it stand without that leg. The now somewhat well-known form emerged immediately.'

'Throughout the subsequent design process of drawing and redrawing various side views and perspectives, it occurred to me that the form of the design would produce an almost Escher-like effect when viewed from certain angles.'

'The challenges for me were all in resolving the joinery. At this early stage in my career, I worked hard to devise the joinery system that would perform beyond the structural requirements – while also adding to the

appearance of the form and integrity of the craftsmanship. Part of this process was experimenting with proportions and the stance to ensure the stool would be strong and stable enough to sit on, while also retaining the optical illusion I was hoping to achieve from certain perspectives.'

'It was one of those designs that is so exciting from its inception that the whole process is simply fun to me – from the moment the form took shape on paper to the moment I unclamped it and sat on it to find it solid as a rock. It was more of a challenge following it up with a bar stool version. Simply increasing the height was not an option, as the extra leverage on the joint would have compromised the structure under any real weight. So I let the bar stool idea simmer for a few years before the form took shape one day in another sketchbook and that same level of excitement took hold. I prototyped it a week later and released it to market within a couple of months.'

It was crucial to Josh to make sure the stool stood up as a piece of furniture as well as an illusion. He says: 'I tested the strength back on day one, with myself and my brother both standing on it at the same time, and it passed. As the market for the Legless Stools increased I decided to have them both officially tested at the Australasian Furnishing Research



and Development Institute in Tasmania. During the testing process both stools underwent a number of structural tests, including but not limited to 50,000 seating cycles at 95kg. Both stools passed.'

Is there any advice he would offer fellow woodworkers who want to design pieces that work as optical illusions? 'As with any furniture piece, if you have an idea, draw it until you are happy with it. And then make it.'

A home for makers

Sketching continues to play a vital part in Josh's design process. 'I sketch my speculative ideas and future production pieces for a long time before I build them,' he says. 'Sometimes I keep ideas in my head for a long time before I sketch them. But when I feel an idea is ready, it usually comes to fruition within a few weeks.'

Josh now has his own workshop in a 200 sq m space in Heidelberg West, a short distance north of Melbourne's central business district. He says: 'After spending around six years working in a shared workshop, I wanted to provide that same opportunity to other makers to start their businesses or build their portfolios, so I kept space for four residents. My workshop has a central roller door up front, with work benches running down either side of the first third of the workshop. I have kept it open plan with no office, internal walls or corridors. This is a deliberate move to keep it easy to manoeuvre trolleys and workpieces without having to squeeze through tight spots.'

The machinery in the workshop follows a logical sequence which leads from a roller door where the timber comes in through the bigger machines to individual workbenches where people can do the fitting and hand work. 'I run pretty lean on hand tools and power tools. I tend to buy once and buy well. This also means I buy sparingly,' Josh says. 'My favourite hand tools are my O1 chisel set, my No.4 hand plane, my rabbit block plane and my small shoulder plane – all made by Lie-Nielsen. These are generally all used somewhere in production on every project.'

He prefers a mortise and tenon joint to a Domino, and loves working with American hardwoods – particularly because they are easily traceable, which helps him answer questions from clients increasingly interested in sustainability. 'In addition to the client's wants, durability, reliability, availability and sustainability are the main factors in using

American hardwoods. I design and make pieces to last for generations, and as such the materials I use need to stand up to this intent,' he explains. Some private clients ask for Australian timbers such as red and blue gums or blackbutt and wormy chestnut. Josh says: 'These timbers are hard and heavy, but strong, beautiful and worth the effort.' When finishing, because many of his pieces are headed for commercial settings, he tends to choose between an Osmo Polyx Oil or a clear satin polyurethane. 'I lean towards the Osmo Polyx Oil, as it is highly durable, easy to apply and simple for the client to maintain. On-site repair is also a plus if something penetrates the finish – which I think is a contingency worth planning for.'

Business and beyond

Josh still has a soft spot for his first major project, for Woods Bagot's Melbourne studio. 'This was a life-changing opportunity, and full credit to the principals in the studio for even giving me the chance, when every supplier in town would have given them a good deal on furniture. That entire experience solidified a foundation I had been laying for years. I worked minimum 15-hour days for six straight weeks with only one day off. And I loved every minute of it.'

The most complex project he has worked on was a set of boardroom tables for the new Australian Unity HQ in Melbourne, which was completed in May 2019. He explains: 'For this project we were commissioned to produce the boardroom tables for the heritage listed spaces that sit below, yet integrate with the new tower above, designed by John Wardle. For these boardroom tables, we supersized one of the table designs from my collection – the Curve table. One of these tables is 4,000mm in length by 2,400mm in width and another two are 4,000mm in length by 1,800mm in width. A great deal of effort went into sourcing enough quartersawn American white oak for the job.'

'Given the size of the tables and the fact we needed to fit them into an elevator on site, a lot of detail and coordination went into the design of the frames and tops so they could knock down for assembly onsite. It was a monumental effort by the team.'

His current project is a number of tables for a new building at the University of Melbourne, where he studied for his Master of Architecture degree. 'These tables were specified by Woods Bagot, my former workplace. It is nice to see things go full circle with them,' he says.

Josh is also moving into smaller residential commissions and production runs for new and returning clients, a mixture of old favourites such as his Legless Stools and new bespoke creations. 'I am designing a new collection, slowly, but surely. I am also designing a few speculative pieces to satisfy my own creative curiosities.'

Josh adds: 'I have been lucky that the initial economic slowdown [as a result of the Covid-19 pandemic] came at a time when I had a lot of work booked in for the year. A large part of my studio is designing and making fine furniture pieces for commercial spaces. And much of this work is booked in months, and sometimes even years in advance.'

'Another large part of my business is making bespoke pieces as well as making to measure my production pieces for private residential clients. I think a somewhat unexpected side effect of the lockdowns here in Melbourne has been that, with people spending so much time at home, and working from home, people have been noticing the pitfalls of poorly designed or made pieces of furniture, and as such have been motivated to upgrade or fill voids in their homes.'

joshcarmody.com.au

DOWEL JOINTS

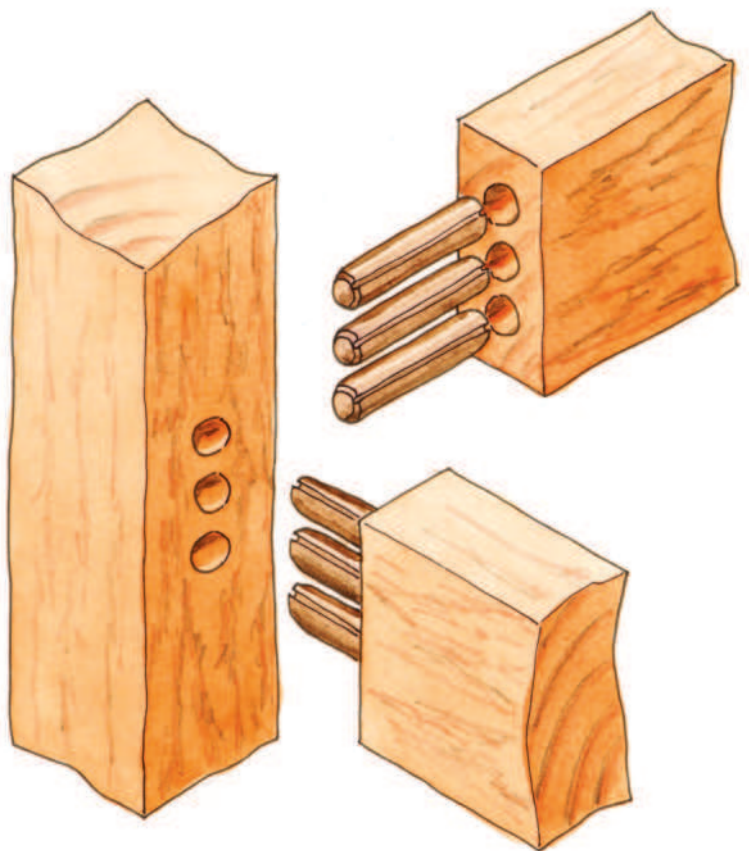


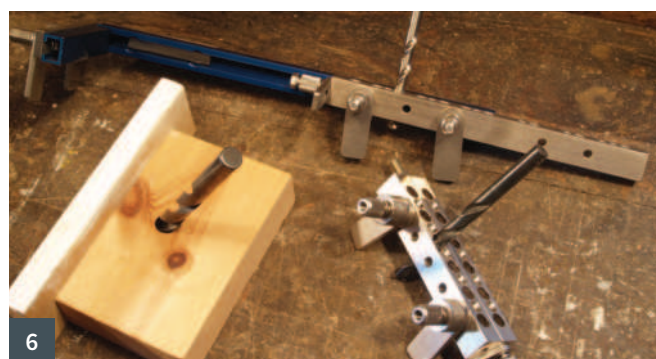
Successful dowel jointing
relies on accurate marking up,
as Michael Huntley explains

When furniture ceased to be handmade and mass production took over in the first half of the 19th century, manufacturers worked out that it was easier to drill a matching pair of mating holes, glue a dowel into one hole and then glue that component to another component which also had a pre-drilled dowel hole in it. Provided that the holes could be drilled accurately, the entire process was faster than using a mortise and tenon.

The ability to drill accurate dowel holes repeatedly in components was a major factor in the explosion of cheaply produced furniture in the 19th and 20th centuries. However, non-mass-produced dowel joints had been made for hundreds of years before that.

In recent times the inserted-plug type of jointing method has been expanded into a whole variety of jointing systems. Bearing in mind that a dowel joint is just a butt joint with locating and fixing pins, its success depends upon the accurate use of a marking system. In this article I will show how some of these systems are used.





Making the joint

- 1 For a long-grain joint, cut the components with plain crosscuts at right angles to the main axis of the component or alternatively bisect the angle formed by the two components, as I have done here. Dowels are very useful for components that join at odd angles because the face of the butt joint can be used for registration. Boards can also be jointed along their length to make up into wider widths for tops and sides, although nowadays a biscuit jointer would probably be used for this application.
- 2 For a T- or L-shaped joint mark the intersection of the shoulders of the 'minor' piece onto the 'major' piece.
- 3 Set up the minor piece in a drill press and drill a hole suitable for the dowel that you are using. In most cases three dowels are used in order to add strength and prevent twisting of the joined components. Choose the longest and fattest dowel that you are able to, but bear in mind that the timber surrounding the hole should be thicker than the diameter of the hole itself. You also need to leave a decent amount of timber at the bottom of a transverse hole to prevent the dowel breaking through on the far side. Here my drill press is on a low stand. This allows me to secure the component in the bench vice. This is, however, cumbersome: the drill press is heavy and potentially unsafe to move so a much easier method using

jigs is shown. The drill press head has to be swung through 180° for this system to work. On my drill it does not overbalance but other drills may need weights or clamps.

- 4 For the dowels you can use pre-shaped rod, commercially manufactured ribbed compressed beech dowels or you can make your own using a dowel plate. For specials and one-offs you could turn them on a lathe and you can also use metal or fibre-glass rods. In the main picture on the opposite page I am making a non-standard-size dowel in a workshop-made dowel plate. The plate is simply a piece of scrap mild steel that has been drilled with a variety of holes in both metric and imperial sizes.
- 5 When you have the hole in one component you need to mark the position of the corresponding hole in the other component. For this use dowel-centres, a jig or dead-reckoning. Dowel-centres slip into the first hole; bringing the components together causes a little mark to be made in the second component. There is a close-up of a dowel centre on top of the left-hand board.
- 6 Either make a jig like the one on the left which was designed for angle drilling or use a proprietary one such as the Joint-Genie, of which two sizes are shown in this photo. You could also use a router in one of the standard joint-cutting tools and plunge to bore the hole, although that would be awkward on some set-ups.



PHOTOGRAPH BY CHRIS TRIBE

- 7** The Joint-Genie in use. The tabs are clamped against the face edge. To make the mating hole the tabs are simply swung through 180° and registered against the datum face on the second piece and then clamped in place.
- 8** Make sure that your dowels have a 2mm clearance at the bottom of the second hole. This is to make certain that they do not 'bottom' and prevent the joint from closing up. Plain dowels also need to have a slot cut in them to allow surplus glue to escape. Put the glue in the hole, not on the dowel. If you put it on the dowel the action of locating the dowel into a tight hole will scrape all the glue off. The dowel will also swell up and won't fit the hole anyway.
- 9** The joint being closed up.
- 10** What might appear as a difficult shape is easily made with dowelled joints. This one is ready for final clamping.
- 11** This photo shows the large Joint-Genie being used with an extension bracket to cut a series of dowels in a wide board of the type that might be used for a carcass. To prevent movement at the end of the bracket a screw has been driven through the arm

into the substrate. The screw hole will be hidden by the board that is to be fixed.

Uses for dowel joints

- 12** Dowel joints being used to secure the top to the sides of a curved cherrywood cabinet.
- 13** Dowel joints are equally suitable for carcass assembly.

Conclusion

Dowel joints are easy to make and assemble; they are also easy to prise apart, drill out and repair. On the minus side, dowel joints in chairs tend to work loose over time and shear failures are common. Given the choice I would always prefer to use a tenon joint but as a restorer I know that it is easier to repair a dowel joint that has become loose than a loose mortise and tenon joint. So you could argue that dowelled chairs are likely to last longer because they are cheaper to maintain, although in pure cabinetmaking terms mass-produced dowels are a less elegant solution.

KIT & TOOLS

A collection of press releases and tests showing the latest tools and products on the market



We learn about Triton's new surface planer

Triton Tools has recently launched the TSPL152 1,100W Surface Planer as a partner product to its popular TPT125 Thicknesser.

The new surface planer features a dual-bladed cutting block and powerful 1,100W motor to help woodworkers prepare their workpieces for jointing. Cups, bows, crooks and twists are eliminated, resulting in perfectly flat boards.

The TSPL152 planes timber with a maximum width of 152mm and up to a 3.2mm depth of cut in a single pass by easily and accurately adjusting the infeed table height. Large, durable cast-aluminium infeed and outfeed tables provide support for longer boards and the extruded aluminium fence guides workpieces at angles of 45–135°, pre-set increments at the most common jointing angles.

Mark Pearson, Triton Global Brand Manager said: 'We're excited to bring our new surface planer to makers' and woodworkers' workshops. Our customers love the TPT125 Thicknesser, and now they can fully prepare perfectly flat and square workpieces ready for jointing projects.'

With safety in mind, the surface planer includes an adjustable drum guard that not only protects the user from the exposed cutter head, but also aids in reducing the chance of kickback. Supplied with two push blocks and a push stick, the bench-mountable TSPL152 includes all the accessories needed for safe usage.

www.tritontools.com



Fresh from the Shires – Staffordshire Black's Ebonising and Tannin juices

Staffordshire Black quietly launched its Ebonising Juice and Tannin Juice lines in September, offering adventurous turners and other woodworkers ready-to-use solutions to recreate techniques used by furniture-makers in times gone by, making regular wood look like expensive ebony.

'It's a new look at an old recipe,' said Murray Kelso, a woodturner who founded Staffordshire Black with his wife, Dawn, in their shed in the south of the county. 'We have taken the original base mix for ebonising fluid, which is messy, stinky and needs to be carefully monitored as it brews to prevent build-up of risky gasses, then mucked around with it and added powerful secret ingredients – natural ones – to make it much more effective on most woods.'

'When you add Staffordshire Black's Tannin Juice to the equation, which is another natural product from locally-harvested ingredients, you can control just how black you want your masterpiece to be, so they work brilliantly together – even over colour.'

'The feedback we have been getting even at this early stage is excellent,' said Murray. 'Now it's a case of letting more people know that Staffordshire Black is around and seeing what happens after that. It's all quite exciting!'

For more (layman's) information about the science-based ebonising process, how-to videos and to buy Staffordshire Black juices visit www.staffordshireblack.co.uk or email hello@staffordshireblack.co.uk

A close-up photograph of a person's hands using a hand saw to cut a piece of light-colored wood. The person is wearing a blue long-sleeved shirt and blue jeans. The saw has a black handle and a long, thin metal blade with a serrated edge. The wood is being held steady by the person's left hand, while the right hand guides the saw. The background is a dark, textured surface, possibly a workbench or floor.

A GUIDE TO HANDSAWS

Matt Long explains
which saws you
need in your toolkit

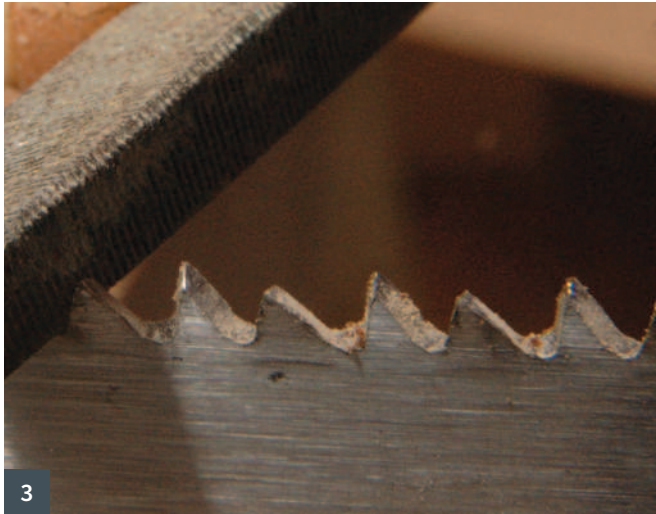
So, you've measured up your timber and you know what you are going to make. Chances are, before you do anything else, you are going to have to cut your stock to length – or even width – so now's a good time to tell you about the saws you will need for your basic toolkit.



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PHOTOGRAPHS BY ANTHONY BAILLY/GMC PUBLICATIONS

1 My old Disston handsaw, which is about 20 years old and still going strong after numerous re-sharpenings **2** A joiner's panel saw **3** Crosscut saw teeth have a pointed profile **4** Rip saw teeth are sharpened to a chisel edge, not to a point

The basic cut

The most common cut a woodworker will do by hand is the crosscut. Here a saw is needed that will cut perpendicular to the direction of the grain. You are slicing across the wood fibres, not with them. I'll discuss saws for cutting with the grain (rip saws) a little later.

The basic construction of saws does not vary: they have a thin metal blade, along one edge of which are shaped teeth that cut the timber. The blade is narrower at the front and wider at the rear – where a handle is attached. In the crosscut saw, the teeth are triangular shaped and chamfered, so that the tip of the tooth is a point. The teeth are set, which means they are bent ever so slightly outward, alternating to one side of the blade and then the other, with the sharp point of each tooth to the outside. When cutting, the teeth cut through the fibres on either side of the kerf (the slot cut by the saw), and the timber in between crumbles away. This also means the kerf is just wider than the blade itself, preventing the blade from jamming in the cut. The saw also cuts predominantly on the push stroke.

Crosscuts come in different sizes for different jobs. My old Disston handsaw has around seven teeth per inch (tpi). Years ago, when I was an apprentice joiner, the Disston was the saw of choice, and would easily plough through anything from joists to stud framing with ease.

Panel saws

A panel saw is just a handsaw with a higher tpi, typically above 10. As its name suggests, the saw is usually used for cutting thinner timbers such as panels, and plywood. The higher tpi and subsequent tooth and

kerf size helps to minimise any splashing on the cut for finer timbers.

My panel saw was something of a workhorse on site – it was excellent for finer joinery, including cutting mitres on skirting boards, dado rails, etc.

Rip saws

Rip saws are designed for cutting along the grain of the timber, rather than across it. They have the same basic construction as crosscuts, it is just that the shape and size of the teeth is different. Whereas crosscut saws are shaped to a point, the rip saw teeth do not have a chamfer and are sharp across the width of the blade, more like a chisel. This means the timber is removed in tiny shavings across the width of the kerf, rather than having the edges cut and the timber in the middle crumble away. This is necessary because a crosscut saw is relatively inefficient when going with the grain, as timber does not crumble as well between the edge cuts of the kerf.

Backsaws

Backsaws are used for very fine carpentry, and they include the dovetail, tenon and gent saws. The blade of a backsaw is rectangular, and thinner, to allow for finer cuts and more teeth per inch. Because the blades are thinner they need more support to stop them flexing on the push stroke. The saws therefore have a reinforcing back on the saw blade, hence the name. This back is usually made of brass. Tenon saws tend to be larger than dovetails, which are larger than gent saws, which have a different handle shape.



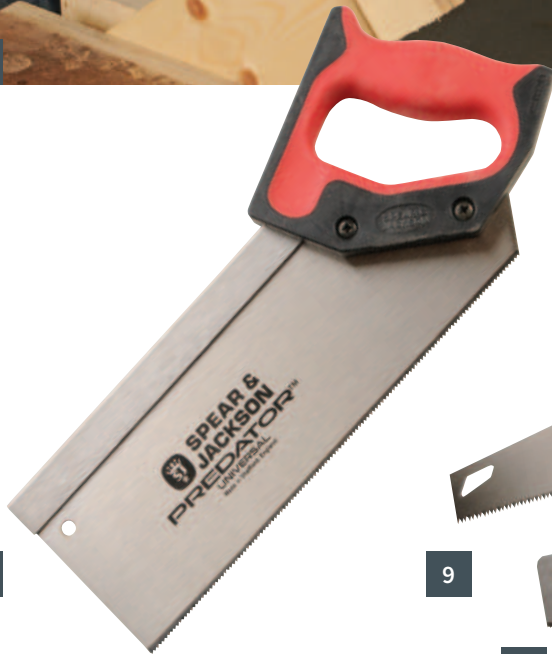
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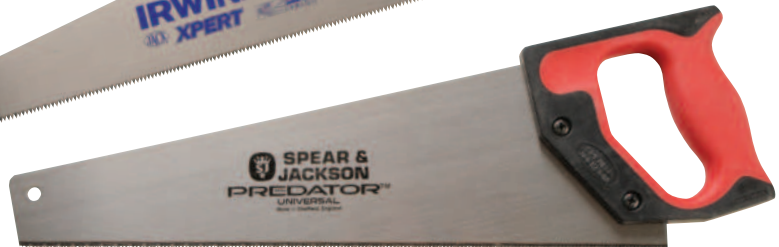
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5 As the name suggests, tenon saws are designed for cutting tenons 6 A Draper gent saw with hardpoint teeth 7 A Stanley hardpoint back saw 8 Spear & Jackson's hardpoint back saw 9 Irwin's hardpoint handsaw 10 Spear & Jackson's hardpoint handsaw

Keyhole saws

A keyhole saw has a much narrower blade. The function of the saw is to cut into thin materials, often panelling, for small, awkward cuts.

Hardpoint saws

By far the biggest recent development in sawing technology has been the advent of the hardpoint. These are cheaper saws, not intended to be re-sharpened, that have their teeth hardened. In modern saws this is usually by induction heating – basically an electric current is used to heat up the teeth, which are then cooled rapidly to leave them hard, but brittle.

Saw manufacturers are trying ever more exotic ways of designing these saws, and are taking inspiration from Japan in that the teeth are ground to cut on both the push and pull strokes, increasing the efficiency of the blade – these teeth are often precision ground to produce the best cutting results. Be warned, however, the teeth are often longer and thinner and, being brittle, can easily break off when used on hardwoods.

Frame saws

The basic idea here is that a frame saw holds the blade in tension. This allows a blade to be much smaller, as they will not bend during use. The blades are expected to break or dull over time, when a new blade can be fitted into the frame and the saw can be used again.

The coping saw has a particularly thin blade and is used to cut curves and scrolling patterns. The frame is designed to be relatively far from the blade to give the woodworker room to manoeuvre the blade and frame around the workpiece, and the angle of the blade can be changed for the same reason.

Hacksaws are frame saws but are designed to hold blades that cut through metal, rather than wood – every toolkit needs a junior hacksaw, and the full size version. You never know when you might need to be cutting materials other than wood.

Bow saws also follow the same general design, but they are a lot larger, and the blades have much bigger teeth as they are used to cut through green timber, so they are not a necessity for a basic toolkit, but if you have the money, it's worth investing in one.



11 A coping saw in action cutting out a curve **12** A close-up look at a coping saw **13** A hacksaw **14** A Japanese pull saw **15** Irwin's hardpoint variation of a Japanese pull saw



Push or pull

Japanese saws are becoming more and more popular in the west for quality woodworking, because of the fineness of their cut. The teeth cut on the pull stroke only, rather than the push stroke, so the blades are much thinner, as they are in tension when the teeth are cutting. This isn't the place for a detailed analysis – there are so many different varieties – but the saws come with rip and crosscut teeth. One version of the saw, the ryoba, even has both kinds. Some saws have a stiffening back rather like a backsaw, and others don't. If you are intending on doing a lot of very fine joints with a handsaw, such as dovetails, then it would be well worth investing in one of these. Western manufacturers are cottoning on to the benefits of the Japanese way and are manufacturing hybrids, combining the best of both types of saws.

In conclusion, it has to be said the number of saws on the market these days is quite bewildering, but if you include the above saws in your toolkit, you'll be prepared for most jobs.



RECLAIMED AND REMADE

Owen Manson tells us about the joys of working with reclaimed wood

Based in the heart of Norfolk, Owen Manson is the man behind Re-madeinnorfolk, the small company that he set up and runs from his garage workshop. Owen specialises in working with reclaimed wood, saving it from the incinerator and transforming it into rustic-style furniture and home décor. Here, he tells WWC about his woodworking journey.

Tell us about your background and training.

I do not have a traditional background in woodworking, short of CDT lessons back at school I am completely self-taught, watching videos, reading books and just giving it a go! I have learnt a lot and still have a lot to pick up, but I have had support from followers and friends across social media.

Is Re-madeinnorfolk your full-time job?

No, by day I am a civil servant. My role is very focused on delivery of policy and can see me behind computers for most of my day. My woodworking is a portal to the practical and creative side of me. I tend to get out to the workshop as often as I can, normally evenings if I'm working with hand tools and the weekend for the more noisy jobs.

How do you work and what is the ethos behind the business?

Re-madeinnorfolk is a really small business: I'm the owner, cleaner, accounts manager and creator! In short, it's just me working out of



my garage workshop. The ethos behind my work has always been to give me a chance to use my creative side; if I can do this and create some products that bring people joy and cover my costs, I'm happy! The business ethos is around reduce, reuse and recycle. I use reclaimed wood and other materials, only buying in where I can't salvage.

What first drew you to woodworking?

It all started back in 2014 when I was trying to find a present for my wife on her first Mother's Day. I decided to make her something, so with an old piece of scaffold board, a hacksaw, hand drill and a flat screwdriver, I set to work. I was chuffed with the outcome and my wife loved it. I started making things for family and friends then, in 2017, I watched some skips filled with perfectly usable wood being shipped off for incineration. I didn't see waste scrap wood anymore, I saw coffee tables, frames, spice racks ... you get the picture, so I decided to create Re-madeinnorfolk and share what I was doing.

What was the first big project you completed?

My first big project was a couple of reclaimed wooden toy chests – these were huge! It really showed me the importance of ensuring you have enough materials to complete a project, trying to find reclaimed timber once you have run out halfway through, really adds to the pressure. They came out well and are still going strong.



PHOTOGRAPHS BY OWEN MANSON

What type of tools and materials do you like to use?

I work with reclaimed wood, so I will tend to design pieces around what I have in the store and then use power tools to create the piece and finish using hand tools and sanding. It really depends on what I'm making.

I have had to build my tool arsenal up slowly, only affording to get new tools by selling pieces or receiving tools as presents. In the beginning everything was done by hand and I still like to finish items off this way and connect with the wood.

Tell us about your workshop.

My workshop is in my garage. It houses all of the normal things garages do as well as my work space. One day I would love to have a dedicated workshop and an efficient dust extraction system. Going forward I would love to set up a business to make it easier for 'waste' wood from buildings to be collected and have my own reclaimed wood yard.

How does your design process work?

My designs are often based on the materials I'm provided with. Some customers will bring me wood that has sentimental value for them and a suggestion of what they would like to be made. Others will simply leave it to me to make what I feel will work. Most of the work I do is bespoke pieces to fit into a specific space and designed with the customer, but with reclaim the opportunities are endless.

Why do you like working with reclaimed wood?

It's the essence of what Re-madeinnorfolk is all about, there is something magical about stripping back the top layers and revealing the wood underneath, often with unique weathering. Taking a piece of thrown away wood that may have been a pallet, an old bed or flooring and repurposing it into something practical or decorative that becomes a show piece in a home is a really good feeling.

Are there any disadvantages?

Twisted, gnarled, no straight edges, nails, screws, weathering and often limited supply make reclaimed wood a challenge at all levels. However, these are also the reasons I love it: it's always a challenge. It's this that makes the design exciting and if you can live with edges and angles that are not perfect ...

Do you work with other materials as well?

I have worked with metal but just do not have the space to really give it a full try. It would be great to work with a local metal worker to create the legs, hinges and latches I use.

What sort of finishes do you prefer?

I like to give items a coat of oil and wax. I tend to use natural finishes like beeswax and often make the wax oil finish myself from scratch. This way I can add any dye and I know it's made from natural ingredients. Where possible I like to keep painting to a minimum, after all it should be about the wood.

You work on projects of all shapes and sizes. Are there any you like better than others?

Space is a big factor limiting what I can practically do. I like working on large pieces, but with only me in the workshop, constructing them can be really difficult.

**What inspires you and where do you get your ideas from?**

At first social media was a huge influencer, giving me the initial ideas for some of my work, but now it's the customer. I will often work to a design brief, the designs will develop based on these often with multiple designs that go unused. Sometimes you see a bit of wood and it's just obvious what it will become.

What is your favourite project you have worked on and why?

I think it's the stump stool. I made it with my son when he was about four. We built it together, hand-sanded it and added the finishing wax. It looked great, but it's much more than just a stool.

What is the most challenging project you have worked on?

A bespoke wine rack and shoe rack for an old farmhouse. The wood



was warped, twisted and very mixed in quality. To add to this, the place they were going meant that the size needed to be exact, however the walls were more wonky than the wood in places and there were a number of pipes and features to work around. It took me ages, but I learnt a lot and they were installed with a very happy customer.

What are you working on now and next?

Not a lot. At the start of the Covid-19 pandemic business was booming, however my day job also became extremely busy. I mothballed Re-madeinnorfolk as I just could not balance the business, my bill-paying job and importantly my family. My woodworking fix was directed to raised flower beds and cloches.

I have recently started to pick up the tools again. I have always run my business through online sales, seeing items head off to Scotland,

Wales, Ireland, France, Germany and of course numerous counties across England. In that respect business is good, with lots of people looking to small local business this Christmas.

What do you do when you're not working?

I love Norfolk and really enjoy being out in it. I do this mainly through fishing and can often be found beside a river, lake or the beach adding to my Fishboylive account on Instagram. I combine this with painting, drawing and photography.

You can see more of Re-madeinnorfolk's work on Instagram @remadeinnorfolk and on Etsy: [etsy.com/uk/shop/Remadeinnorfolk](https://www.etsy.com/uk/shop/Remadeinnorfolk)

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CHICHESTER 4 North Station Rd, CO1 1RE	01244 762242	LONDON K 6 Kendal Parade, Edmonton N18	020 8508 8284	SUNDERLAND 13-15 Ryhope Rd, Grangetown	01792 792969
CROYDON Bishop St, CV1 1HT	01873 0640	LUTON Unit 1, 326 Dunstable Rd, Luton, LU4 8JS	01582 728 063	SWANSEA 7 Samlet Rd, Llanamslet, SA7 9AG	0191 510 8773
CROYDON 423-427 Brighton Rd, Sth Croydon	01325 380 841	MAIDSTONE 57 Upper Stone St, ME15 6HE	01622 769 572	SWINDON 21 Victoria Rd, SN1 3AW	01793 491717
DARLINGTON 214 Northgate, DL1 1RB	01304 373 434	MANCHESTER ALTRincham Rd, ALtrincham 0161 9412 6611	0161 9412 6611	TWICKENHAM 83-85 Heath Rd, TW1 4AW	020 8892 9117
DEAL (KENT) 182-186 High St, CT14 6BQ	01332 290 931	MANCHESTER CENTRAL 209 Burg New Road M8 0DU	0161 241 1851	WARRINGTON Unit 3, Hawley's Trade Pk.	01925 630 937
DERBY Derwent St, DE1 2ED	01302 245 999	MANCHESTER OPENSHAW Unit 5, Tower Mill, Ashton Old Rd	0161 223 8376	WIGAN 2 Harrison Street, WN5 9AU	01942 323 785
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JAPANESE-STYLE FLOOR LAMP

Rob Stoakley updates Alan Peters' classic floor lamp design

This floor lamp project was inspired by a design in Alan Peters' excellent book *Cabinetmaking: The Professional Approach*. I altered the design to fit my requirements and the space in my living room where the lamp would stand.

The original lamp appears twice in the book and is quite a tall, wide structure made from Burma teak in 1981–82, with handmade paper panels produced by Gillian Spires. The dimensions aren't given, but from the illustrations, it's possible to work out the rough proportions that could be transposed onto the design for this lamp.

SAFETY NOTE

Ensure you are aware of and comply with the regulations for the manufacture and sale of electrical items for your country. If you are in any doubt, enlist the help of a certified electrician.

Materials

Although teak is one of my favourite timbers, I had a few, clean, 25mm-thick boards of American cherry which I decided to use for the framework.

The roughly square 'box' at the bottom of Peters' design – there to give some visual weight – appeared to be made in a slightly darker timber and I opted to do likewise. In my oddments box under the bench, I had an offcut of Brazilian walnut or ipe, a hard, dense timber but one that works surprisingly well.

The design

Although the original lamp is quite simple in form, the intriguing feature is a six-way joint that appears at each corner. So I sat down one evening with my sketchpad and a couple of Japanese woodwork books to thumb through to try to work out how the joinery had been done. Four hours later I was still sitting, still sketching and still puzzled: the framework at the top of the lamp appeared impossible to make!

I was just about to give up when I thought about how Alan Peters must have done it all those years ago. The answer was simple: the protruding 'stubs' weren't part of the main frame at all. They are separate, matching offcuts and must have been doweled in place to make the rails appear as one piece of wood.

Times move on and although dowelling would have been satisfactory, a much better solution was at hand – to be precise, the Festool Domino Joiner. Not only the stubs but also the entire project has been constructed using 5mm Dominos. However, this poses a constraint in itself, as the minimum width that can be machined is 20mm, so the complete framework was made using 22 x 22mm section timber, leaving a scant 1mm each side of the Domino slot. Instead of the Festool machine, you could use a series of Dowel joints (see page 62).



**MEASUREMENTS
ARE IN MM**

Bridle joints used
to make the shoji
panel frames

8 x 8mm rebate
was created
to take
the shoji frames

Shoji paper is stuck to
the frame with rice glue

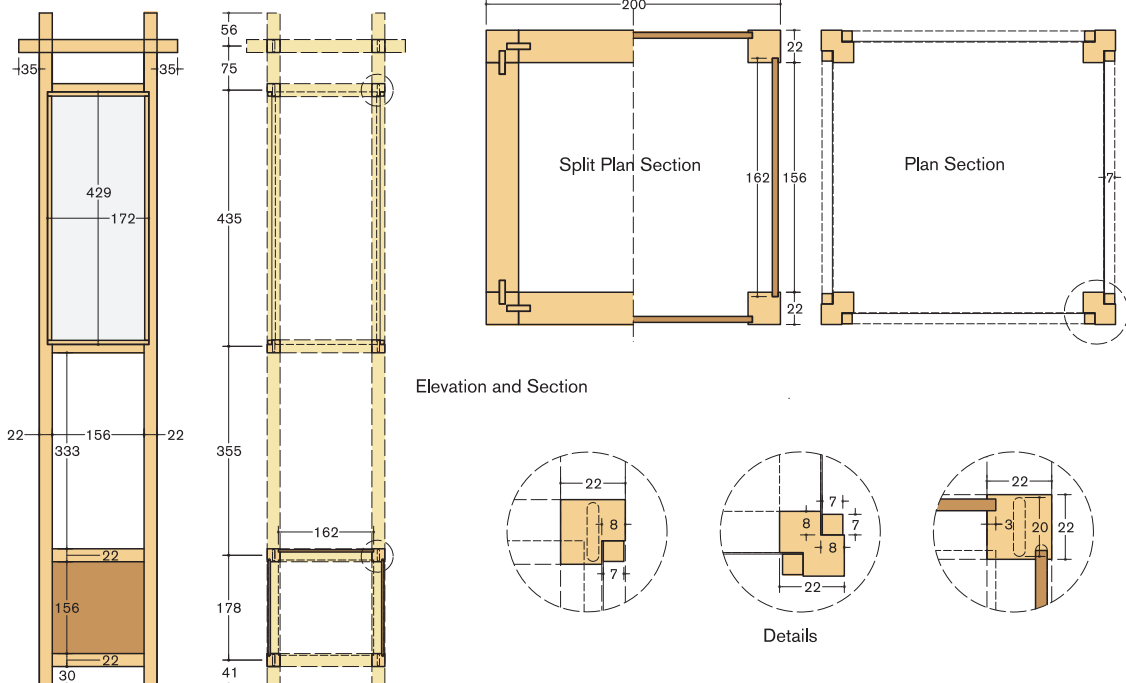
5mm Dominos were
used for the frame
construction

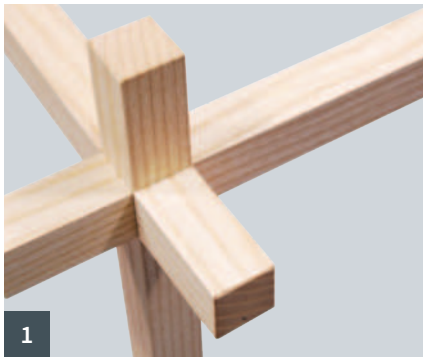
American cherry frame

Matching
offcut from the
corresponding
frame component

Perspex bent to form a
bracket for the lamp holder

Brazilian
walnut panels





1 The practice joint **2** The practice joint exposed **3** Hand planing to 22mm **4** Marking out, with the aid of three clamps **5** Using the indexing jig **6** The indexing jig for the first Domino mortise **7** The first mortise cut, with the leg turned through 90° **8** Using 'mock' Dominos to test the fit and alignment **9** Using a cabinetmaker's triangle to mark the position of each piece on each side

Construction

The cherry was machined to a fraction over 22mm and left for some time in the workshop to settle, after which it was hand planed to size. The four long stiles were then clamped together and the centres of the Domino slots were pencilled and marked with a 'D'.

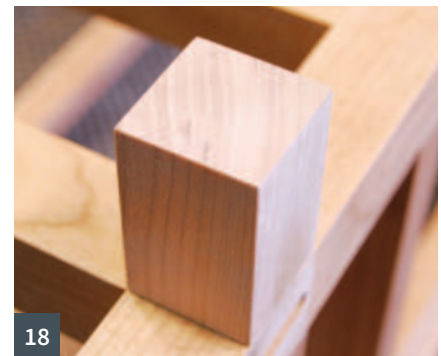
For the various rails of the lamp to meet accurately, I realised that it was essential that all the mortises had to line up exactly on adjacent faces and even more so on the six-way joint at the top of the framework – even a sharp pencil line would cause some cumulative errors when positioning the Domino. In order to circumvent any problems, I made a tight-fitting box so that the edge of the machine would register against it. The technique to cut the slots was to position the machine for the first one, slide the box up to the edge and clamp it in place, then cut the mortise. The stile could then be turned through 90° ready for the next mortise to be cut, and so on round the stile.

Each of the short rails (20 in total) was cut and shot in exactly to size, then arranged on the bench and marked with a cabinetmaker's

triangle. With so many identical pieces of wood it was vital to keep track of where each was supposed to fit. The offcuts from the short rails were not discarded, as these would be selected later to form the short stubs at the top of the framework. Once pushed into their sockets, proper Domino biscuits can be notoriously difficult to remove and are often damaged in the process, so I made some dummy Dominos from 5mm-thick material, which I used to test the trial alignment of the framework.

The box at the bottom consisted of five veneered panels that were located into 3mm stopped slots cut on the router table. A small 'notch' was also marked out and cut on each stile so that the top panel of the box could be fitted.

Although it appears complex, the construction was actually quite simple, with the caveat that I knew where each bit was supposed to go. As is my usual practice, all internal surfaces were planed clean, sanded to 320 grit, given two coats of matt Osmo Polyx oil and then waxed, which made it easy to remove glue at a later stage. The Dominos were



10 Trial fitting of one panel with mock Dominos **11** Chopping out the return 'notch' on the other faces with the mock Domino inserted for support **12** Sections for two sides hanging out to dry, with the Dominos pre-glued in place **13** Clamping the frames to clean up, from the bench well side **14** Cleaning up the frame with a 'super' smoother **15** Routing an 8 x 8mm rebate all round **16** Labelling the stub joints with Roman numerals **17** Planed and sanded to fit **18** Gluing a pair of stubs on, one pair at a time

pre-glued in place to make it easy to hang all the rails up from a line to dry. Once all the internal finishing had been completed, a pair of opposing sides was glued and then the exterior side on each cleaned up on the bench.

The remaining rails and panels of the framework could then be glued and the completed assembly cleaned up again on the bench, this time using a long jointer as a 'super smoother', in order to bridge the stiles and to ensure that it was flat and square.

Making the 8 x 8mm rebate for the traditional-style shoji panels was a straightforward task. I used a bearing-guided cutter and a long extension base on the router, after which the corners were chiselled square.

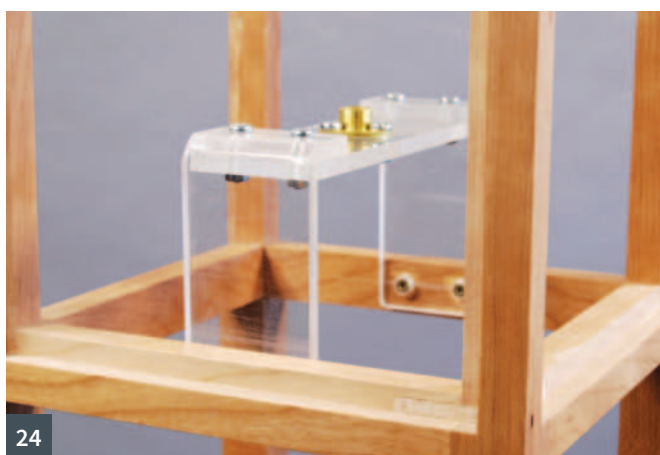
During this stage, particular attention had to be paid to sanding the outside as it's crucial that the areas where the protruding stubs are glued remain dead flat, and that the arris not be removed as all corners need to remain sharp in order to maintain the illusion of a single rail.

Each stub was selected in turn to match its corresponding rail and

then marked with Roman numerals, using a 3mm chisel. Lining up the numbers each time ensured that the stub was located in the correct position so that it then became very easy to shoot in for an exact fit. With the framework and stubs polished, each pair was then glued in place.

Internal fitting

The internal fitting for the light was made from transparent 6mm acrylic plastic, in order to cast the minimum shadow. This material isn't difficult to deal with and should be handled using metal-working techniques, but you'll find that it's hard on edge tools, so a disc or belt sander is recommended to smooth the sawn edges. The fitting for the light consists of a pair of L-shaped brackets with a bridging piece bolted to each. Bending acrylic isn't difficult either, provided everything is ready before the heat is applied to the piece. I started by heating the material through an MDF mask with a hot air gun, which ensured that only a localised area was touched. It should be turned over every



19 The equipment prepared for hot acrylic bending **20** The bending jig in use **21** The heating mask jig **22** The bending jig ready **23** Routing 2.5mm bridge joints for the shoji panels **24** The lamp fitting inside the framework **25** Four shoji panels, polished and ready for paper

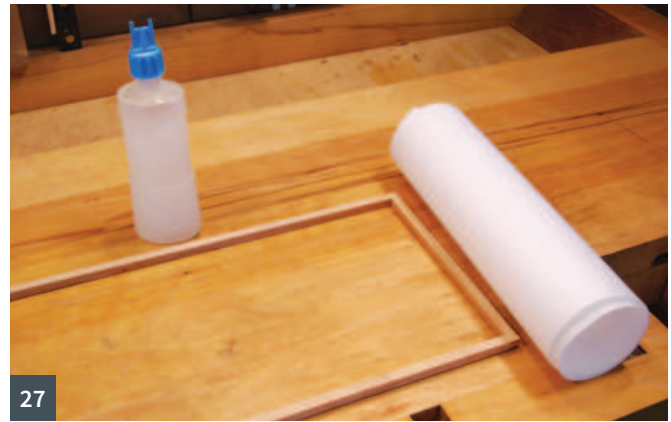
30 seconds and will bend at around 130°C. If the plastic is too hot, it will bubble along the line; if too cold it will crack when it's bent. With two or three practice attempts you will soon be able to handle the hot material. Once the correct temperature had been reached, I quickly inserted into the bending jig, applied the clamps and then allowed it to cool down. Having removed it from the jig, the appropriate countersunk holes were drilled and the brackets screwed onto the inside of the frame, after which the rectangular bridging section could be fitted with 4mm nuts and bolts.

The shoji panels

The frames were made from 7 x 7mm cherry, which is quite thin, so

some care was required to make them. They also needed to be flat, which means that the corner joints needed to be dead true – this is very difficult to do by hand with such small-section material. However, if a corner bridge is used and the mortise cut using a 2.5mm wing cutter in the router table, it's then easy to set up the router to machine the other half of the joint so that the frameworks go together squarely.

I initially thought that applying the shoji paper would be one of the most difficult tasks, but in fact it was one of the easiest parts of the whole process. The frames were glued – but not clamped as they're too small – cleaned up with a finely set smoother and sanded to 320 grit. They were then treated with Liberon finishing oil and waxed before the reverse surface was sanded clean with 120-grit paper to remove any last traces of finish. Each frame



26 Paper taped to bench, frame under **27** Rice glue bottle, frame and paper **28** Paper glued to the frame **29** Stacked between boards **30** The panels weighted down **31** Panels sprayed with water

was laid in turn on the bench with the clean surface uppermost and an over-size piece of shoji paper – ‘show’ side down – taped at one end.

I bought the traditional rice glue, which is supplied in a very flexible bottle, and which also has a special applicator on the end that squeezes a thin bead of glue onto the middle of the frame. Once the glue had been applied, the paper was then rolled onto the frame, stacked between two boards with some weight on top and left overnight. In the morning the panels were sprayed with tap water, which was slightly disconcerting as it made them sag quite alarmingly. However, as the panels dried out, the water had the effect of shrinking the paper so that when fully cured, the panels became ‘drum tight’ and then it was just a case of trimming off the excess material with a sharp scalpel. The panels

were fitted into the lamp rebates using small blobs of flexible mastic, which makes it relatively easy to remove them later on if required.

Conclusion

This lamp would have been difficult to make as the timber is only 22mm square, but the advent of the Domino machine has made what was once quite difficult, relatively simple. Having visited Japan, I witnessed at first hand many examples of traditional Japanese shoji work and while very common in the Far East, these sorts of lamps are much scarcer in the west, which seems a great pity as they are fairly straightforward to make, given that the authentic paper, in many designs, is readily available.

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TURNED SNOWMAN

Rick Rich makes the perfect winter woodturning project – a snowman on a stump

This small turned snowman makes an ideal Christmas decoration, gift or item to sell at a craft fair. Small diameter branches of almost any tree species provide ample and ready sources of turning material for this project. I have several evergreen trees on my property and, thanks to winter windstorms, I have picked up plenty of perfect-sized branches for turning.

Safety note

When tightening the jaws of fresh-cut blanks, the bark may slip off the wood, causing the blank to become loose. With seasoned branches this has not been an issue. My solution with green branches is to remove the bark in the area where the jaws grab.

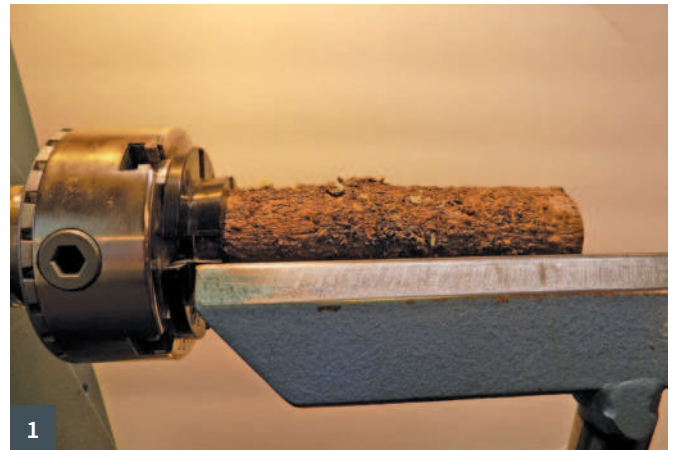
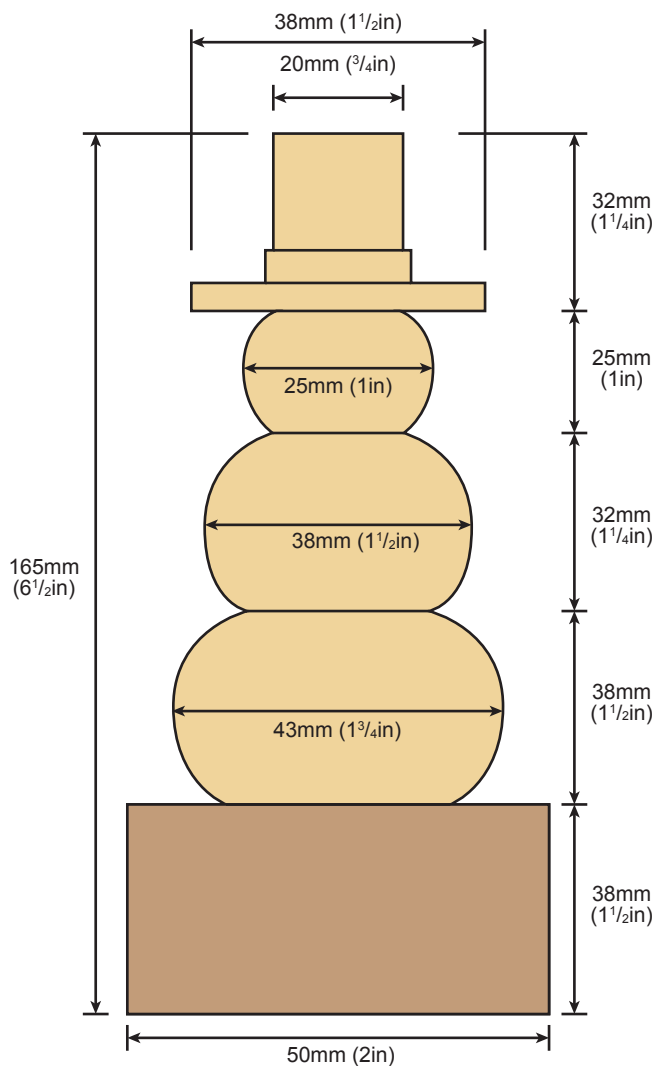
YOU WILL NEED

Tools:

- Personal and respiratory protective equipment
- Skew chisel
- Thin parting tool
- Spindle gouge
- Chuck
- Drive spur
- Revolving tailstock centre
- Pyrography unit
- Drill
- Drill bit of a size to suit wooden section for the nose

Materials:

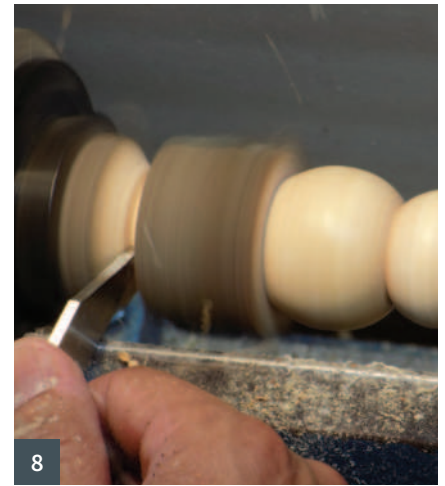
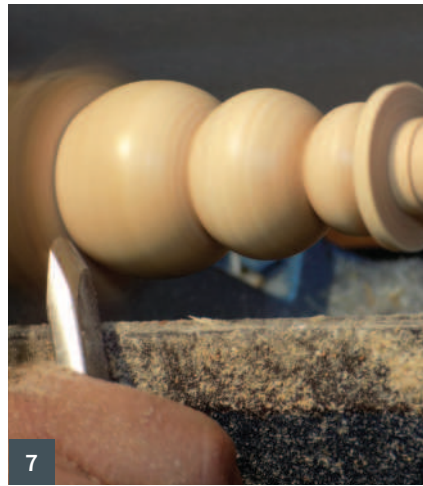
- Small section of branchwood
- Fibre-tip pen
- Toothpick
- PVA adhesive



PHOTOGRAPHS BY RICK RICH

Making the snowman

- 1 It begins with the branch, which should be about 50mm round. Too much smaller and it's tough to get a good grip in the chuck jaws, and too much larger won't fit into the standard jaws. The snowman blank is a straight piece of branch cut about 180mm long. Make sure there is bark on the branch by the headstock portion of the blank for the 'stump' portion of the finished piece.
- 2 This blank was nicely round and in this instance was able to be securely held directly by the chuck jaws without turning a tenon. If you are uncomfortable grabbing the blank directly, it is a simple step to turn a tenon, but may require a slightly larger blank, depending on jaw size.
- 3 Turn off the bark of the top third (tailstock end), decide the hat brim size and turn a small hat on the end. Peel-cut the waste away to make the head, leaving rough areas to clean up and finish. Then make the bottom brim of the hat. It is a bit tricky, so make careful and sure cuts with the skew.
- 4 Now make the head and belly.
- 5 Refine the beads as you go along and create as smooth a surface as possible.
- 6 Finally, cut the bottom bead form, which is the last of the three different-sized beads.
- 7 The bottom bead wraps into a square-cut top of the branch stump.



8 V-cut the bottom edge of the natural-edge base section with the skew to give a clean edge for the bottom. Then use a 3mm parting tool and part the blank off by undercutting. This is necessary so the snowman sits upright and stable. Be sure to have a hand ready to catch the turning when it parts free. If you find the bottom is not flat, sand it and carve a slight concave middle section to allow the rim of the base to sit flat.

9 Using a small wood burner, add dots for the eyes, nose, smile and buttons.

10 The nose dot then gets a toothpick-size hole drilled about 6mm deep for an orange-coloured piece of toothpick nose to be glued in. You can colour the toothpick with an orange marker or dip it into a small bottle of orange craft paint. Make sure you use a drill bit that corresponds closely with the toothpick size.

A collection of various woodworking tools is scattered across a rustic wooden surface. In the top left, there's a wooden handle and a red-handled tool. To the right, a red square is visible. Below it, a black and red tool lies horizontally. On the left side, a hammer with a wooden handle and a black head is positioned vertically. In the bottom left corner, a black tool is partially visible. On the right side, a large circular saw blade with a serrated edge is prominent, along with a long, thin metal rod. The background is a rich, textured wood grain.

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ANTIQUE SPICE CUPBOARD RESTORATION

Louise Biggs repairs a
damaged fruitwood cabinet

This antique spice cupboard is made from one of the fruitwoods and was in need of some tender loving care. Over its many years of existence it has suffered greatly from insect damage, which had left a trail of destruction. The panel joints and carcass joints showed evidence of animal/hide glue but the mouldings and back panel were attached with iron cut nails.

Assessment

My assessment of the spice cupboard revealed:

- Extensive insect damage.
- A split in the door and back panel.
- Top panel at the back is detached.
- Carcass is loose at all joints.
- Lower part of right-hand side is split and broken.
- Internally there are splits on the shelves and one part is detached.
- Broken corner on the back panel.

Following the assessment I judged that the mouldings, front frame and back panel were all nailed in place with old cut nails. The door and the carcass appeared to have some glue in place but being old animal/hide glue it had dried out, hence the whole cupboard was loose.

Animal/hide glue would be used where required during the restoration. I salvaged as many of the original cut nails as possible but I also have my own supply of nails salvaged from other old pieces.

TOOLS USED

- Japanese cat's paw
- Rubber mallet
- Soft head hammer
- Jack plane
- Rule
- Hammer
- Sash, 'F' & 'G' clamps
- Glue pot with animal/hide glue
- Pin hammer



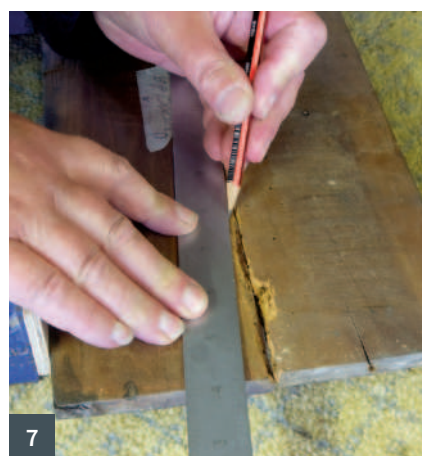
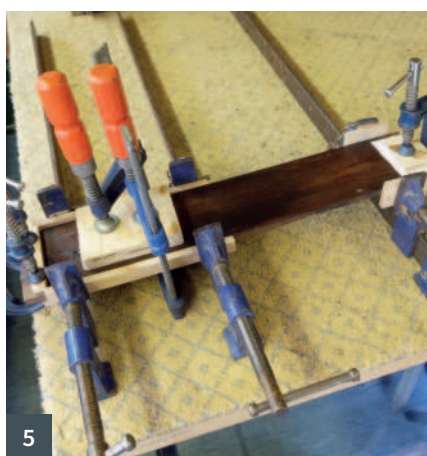
PHOTOGRAPHS BY LOUISE BIGGS



A Close-up view of the damage around the top **B** The damage inside the cupboard **C** Back with insect damage and broken corner

The restoration

- 1 The back panel was removed followed by the top and bottom mouldings. Due to the extensive insect damage, the cut nails were not difficult to remove from the carcass once a cat's paw had been worked in behind the back panel and the mouldings to lever them off.
- 2 Having removed the door, the front frame was levered off in the same way as the back panel and mouldings. Care was taken not to bruise any surrounding timber but, as before, the cut nails could be pulled out of the carcass quite easily.
- 3 The bottom panel and inner shelves were fitted into a housing joint on the sides and having marked each individual piece I set about knocking the remainder of the carcass apart using a rubber mallet or a soft head hammer where more force was required.
- 4 The back half of the right-hand side panel had a break at the bottom end and a split running up from this break. The broken part was still in place but needed gluing to secure it in place before the two parts of the side were glued together. The loose section was removed and the joint edges cleaned up to remove dirt and dust.
- 5 Debris was also cleaned out of the split then the loose section was glued back in place at the same time as the split was glued up. Sash clamps applied pressure to close the split while 'F' clamps with two sturdy blocks pressed the loose section level with the front and back surfaces.
- 6 With the repair completed to the broken right-hand panel the two

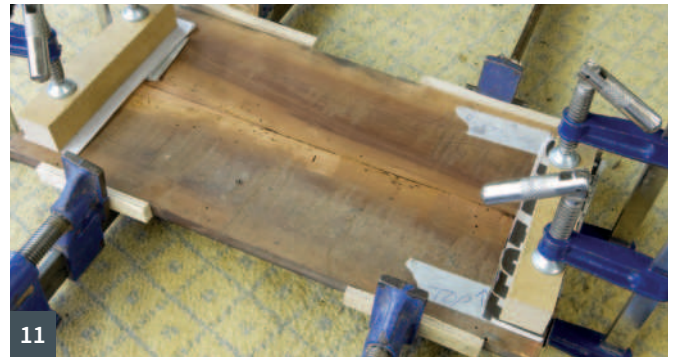
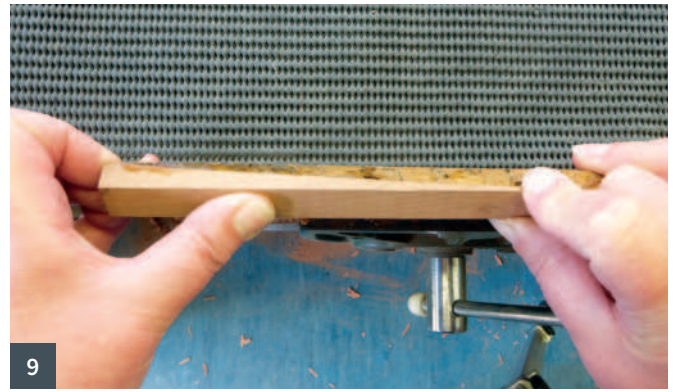


halves of the sides could be joined. For each side panel the two halves were first clamped together to access the joint and where required the smallest amount possible was planed off to make a tighter joint for the purpose of gluing. I was not looking to achieve a perfect joint – the age of the piece meant it was no longer perfect and trying to make it so would detract from it.

- 7 The top panel needed a bit more work. On clamping the two pieces together I found there was extensive insect damage to the underside of the top on one end. As the side panels were nailed along the top edge to the top panel I took the decision to infill the damaged area with timber to gain strength when nailing the carcass back together. The pencil lines show where the joint will occur.

WOOD STABILISER

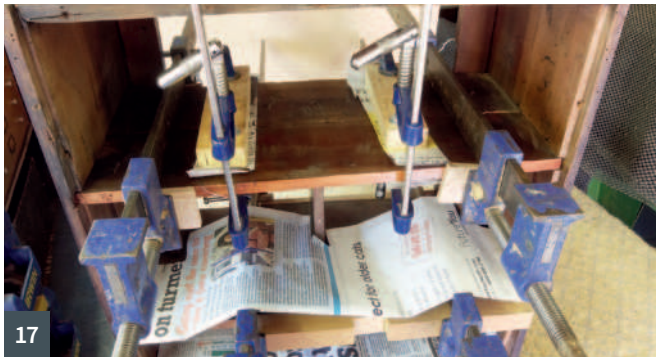
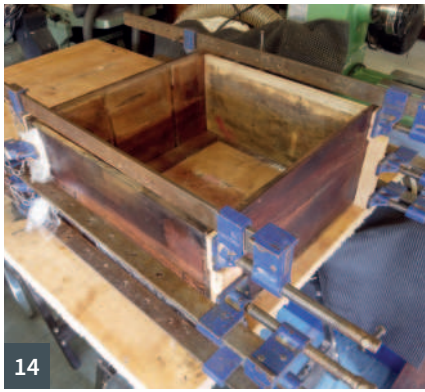
The extensive insect damage caused the timber to be very crumbly when trying to form joints especially on the top, bottom and back panels. There is a semi-liquid product which is used extensively in museums; it is injected into the holes left by the insects and, when left to dry, it will harden the remaining timber. I have used it previously with good results, however it is time-consuming to work with, as the more holes injected the better the result, but in order to save the spice cupboard and get it back to a usable condition it was worth the time. I used Lake One Wood Stabiliser but other similar products may be available. **Note:** It is advisable to wear some form of fume mask and work in a well ventilated area.



- 8** As the damage only showed on the underside, a tapered joint surface was formed using a jack plane, without touching the outside polished surface, on each part of the top. The top panel, especially the area around the damage was treated with the wood stabiliser.
- 9** Wedges of fruitwood, in this case cherry, were cut and planed to a suitable size before being glued to the top panels. I used a rub joint with animal/hide glue; rubbing the new piece until the glue begins to 'tack' allows the piece to be positioned without the need of additional clamps or tape, in doing this the glue would also penetrate the insect damage holes helping to strengthen the joint.
- 10** With the glue set, the new pieces were planed down to finish level with the existing timber, working from the edge and the face of the piece, and then the end was trimmed back level.
- 11** The two panels forming the top were then glued together and clamped using sash clamps, flat battens were clamped across the ends to prevent the panel bowing upwards as the sash clamps were tightened. Newspaper acted as

a barrier to prevent the blocks sticking to the panel.

- 12** The bottom and back panel were made of elm, of all the parts these had suffered the greatest. In taking the cupboard apart the back edge of the bottom had crumbled into several parts; although I treated them with the wood stabiliser they were too far gone to make a strong enough repair to allow the back panel to be nailed to the edge. Having cut a straight edge across the back, a piece of replacement elm was applied which built up the bottom panel to the required width.
- 13** Likewise the back panel had suffered a similar fate: a gap had formed in the centre due to shrinkage and/or other factors. A similar process was undertaken, planing the two edges of the back panel to form a straight joint surface. Gluing and clamping the panel followed the same procedure as that for the top and side panels.



- 14** The outer carcass had originally been glued and nailed so with clamps prepared for the job, I glued these four pieces. In order that the newly glued carcass lined up with the front frame, which was not square, I first laid the frame on a flat surface and covered it with a sheet of clingfilm to prevent it sticking. The front frame had a rebate down the outer edges of the sides which the carcass fitted into, so once the carcass was placed over the frame the carcass could be pulled with the clamps to line up along the top and bottom edges.
- 15** With the carcass dry I then glued the front frame in place. The 'G' clamps across the bottom edge were used to pull the bottom panel in line with the frame along the inside edge of the carcass.
- 16** Now that the carcass was reassembled, the interior shelves could be re-fitted. Interestingly, the shelves were the full depth of the cupboard but the vertical sections were only half the cupboard depth and the interior showed no signs that they had been any wider. So the front halves of the interior pieces were pushed into place.
- 17** Next the back halves of the shelves were pushed into place, having glued them along the joining edge. Doing one shelf at a time, a block and clamps were used to pull the joint together and keep the surface flat.

- 18** I had noticed that the door was twisted and the through tenon joints were a little loose. My thought was to pull the door flat by initially pulling it past the point of being flat but with the twist now the opposite way round so that when released and allowed to settle, the door should be flat or flatter. With blocks under two diagonally opposite corners, the other corners were clamped down to a sturdy flat board. This in turn opened the joint between the stiles and rails, which were filled with slivers of timber glued into place.
- 19** Once released from the clamps, the corner infills were levelled off using a chisel and the door left to see what happened. A few days later, although not perfectly flat, it was much flatter than when the cupboard was dismantled. The panel in the door was not glued so I gently levered the two panels across to close the gap which was glued and the surfaces pulled flat with blocks and clamps.
- 20** All that remained was to stain and polish all the repairs and then give the spice cupboard several good coats of tinted wax, allowing a few days between each coat. Once the lockdown period was over the customer came and collected the spice cupboard to take it to its new home.



CELTIC-STYLE LOVESPOON

John Everett uses a scrollsaw
to make a traditional lovespoon

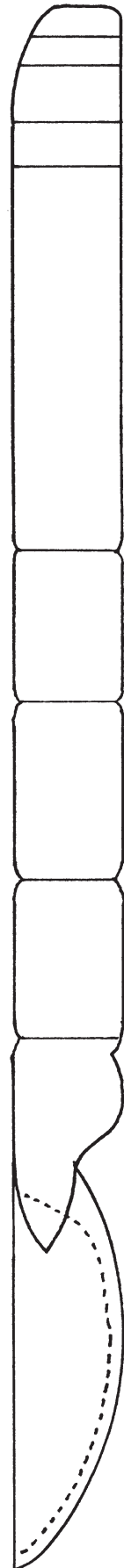
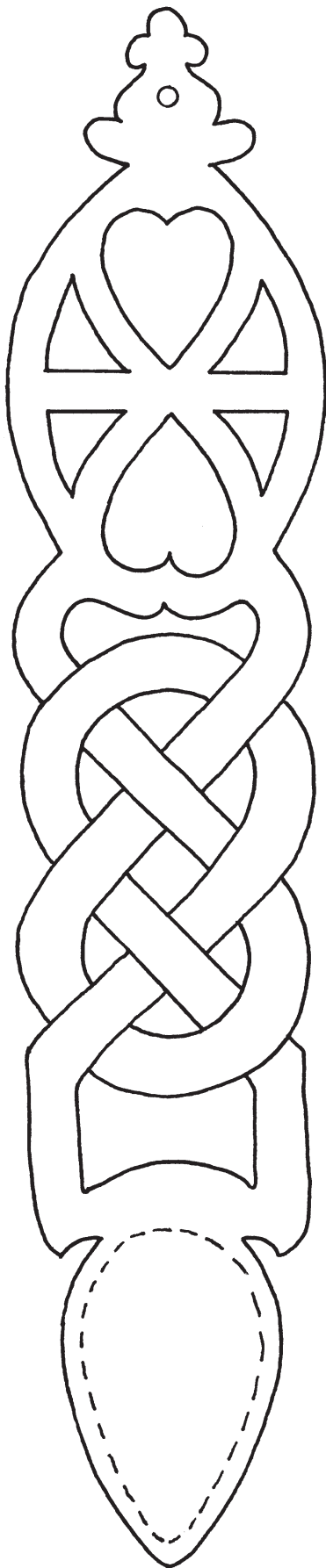
The traditional Celtic lovespoon is a popular subject for the scrollsaw, even though a lot of finishing has to be done after the sawing is completed. The originals, of course, were created with nothing more than a penknife and many hours of whittling in the fields while tending the flocks. A young man would carve an intricate lovespoon to impress his lady love with his undying devotion.

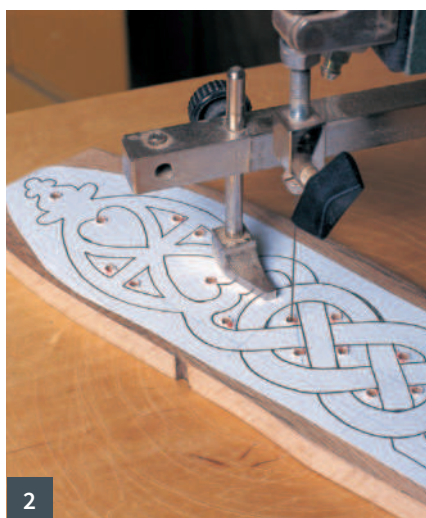
Each feature of the traditional spoon had a specific significance. The heart shapes on the design for this project need no explanation. The Celtic knotwork, intertwining loops of rope in the centre of the design, signify eternal togetherness. The spoon bowl indicated a willingness to provide for the bride.

The fairly straightforward design presented here is still, by the time you have completed it, a true labour of love. Patience is the particular virtue required for this project. The completed spoon will take around four or five hours of work to complete.

YOU WILL NEED

- A piece of oak, or similar hardwood, around 300mm in length, 60mm in width and around 12–20mm thick
- Craft knife
- 3mm drill bit to make a hanging hole for a nail, and the starter holes for the internal cuts
- Wood stain and polish to finish
- Spray mount





PHOTOGRAPHS BY GMC PUBLICATIONS

Making the lovespoon

- 1 Make sure the grain of the wood you are using runs along the length of the spoon. This will ensure that the completed piece is strong. Do any surface preparation which may be required. If the surface is rough, then sand it as smooth as you can on both sides. With most scrollsaw projects, it is much easier to carry out any surface preparation before committing the wood to the saw. When you are happy with the surface of the wood blank, prepare a cutting pattern on paper and glue it to the blank using spray mount. Once this is accomplished, mark out and drill all the starter holes, as well as the nail hole. The positions for these are shown on the template.
- 2 Make all the internal cutouts, making sure the blade tension and the hold-down device are set correctly. Take your time at this stage – a degree of accuracy is essential if the finished lovespoon is to look its best. Keep good control of the workpiece when changing from cutting across the grain to along the grain and back again. Remember that the saw will cut much faster across the grain of the wood than it will along the length of the grain.
- 3 Once you have satisfactorily completed all the internal cutouts, set up the saw to make the external cut. Again, try to make the cut as accurate as you possibly can, following the cutting pattern lines exactly.
- 4 When you have completed the external cut, remove the remains of the cutting pattern and clean away any saw tear-out with a little

light sanding. Refer to the template, which shows where shaping is required. Using a craft knife, begin by cutting lightly across each line where the 'rope' passes underneath or over its crossing partner. You can then begin rounding and shaping the 'rope'. Once you have finished carving, sand over your work with a strip of sandpaper. An emery board is useful for this job as it is flexible enough to cope with the rounded bends in the 'rope', and small enough to fit into the corners. You may need to do some more shaping with the craft knife.

- 5 The remaining section that needs your attention is the spoon bowl. I rounded the back of this one with a belt sander, but a rasp or any other coarse file will take away most of the waste material fairly quickly. The rounded underside can then be finished off with some sandpaper. If you have a craft knife set, then use the large gouge to rough out most of the wood from the bowl of the spoon. Otherwise, use whatever you have to hand to accomplish this task. As a last resort, the job can be done with a piece of coarse sandpaper, but it will take longer. Once you feel you have taken out enough wood from the bowl of the spoon, sand it off to leave a nice smooth finish. Choose an appropriate finish for the type of wood you're using. In this example, a light coat of Jacobean Oak varnish was used to give a deep colour. I only used one coat, to keep the end result from being too dark, and finished the project off with some wax polish.

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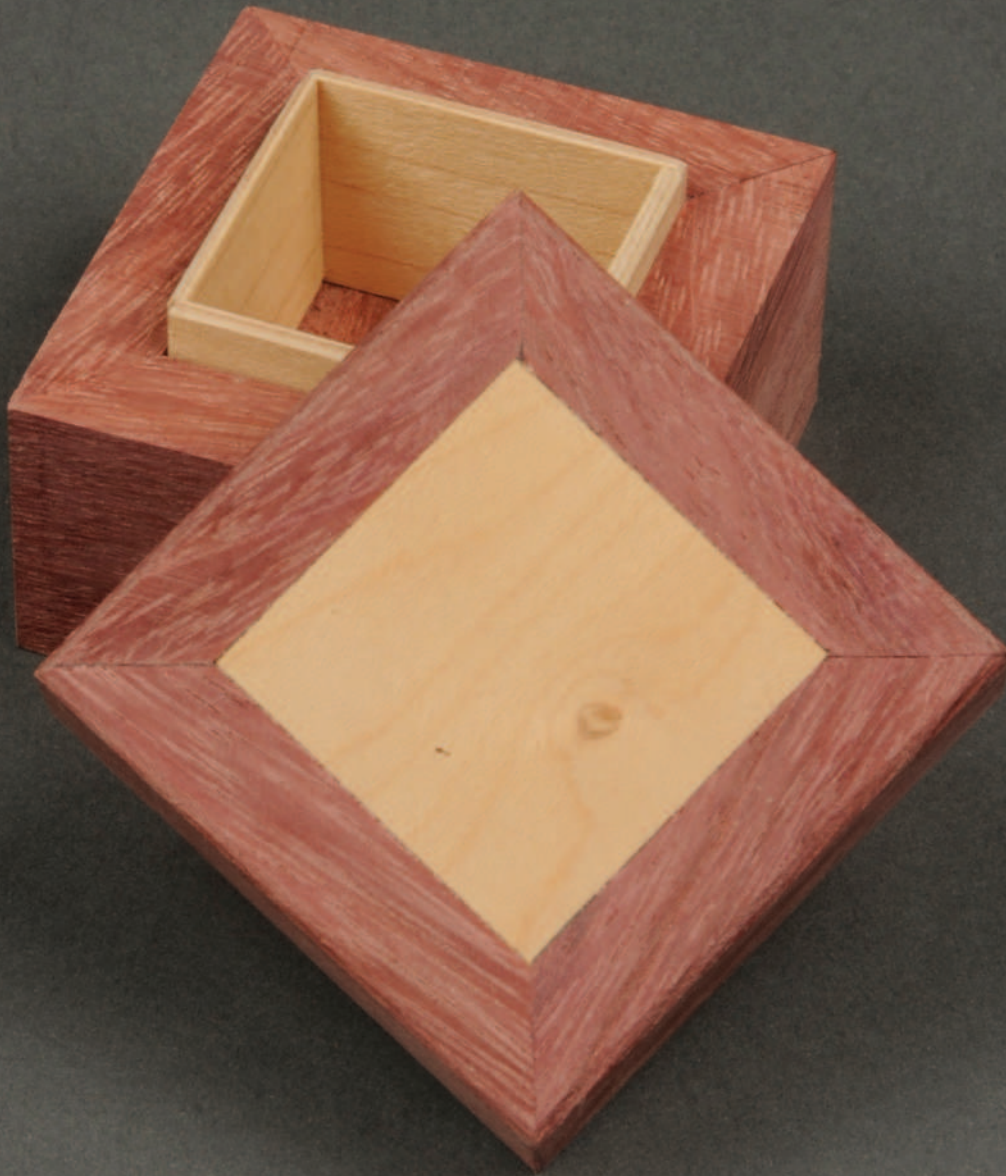
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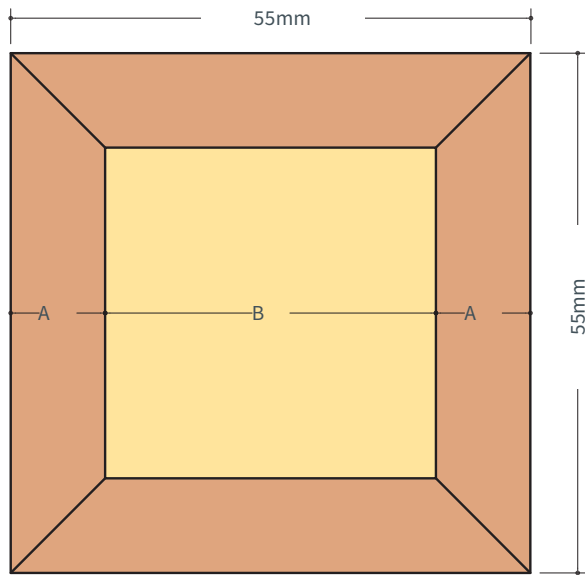


RING BOX

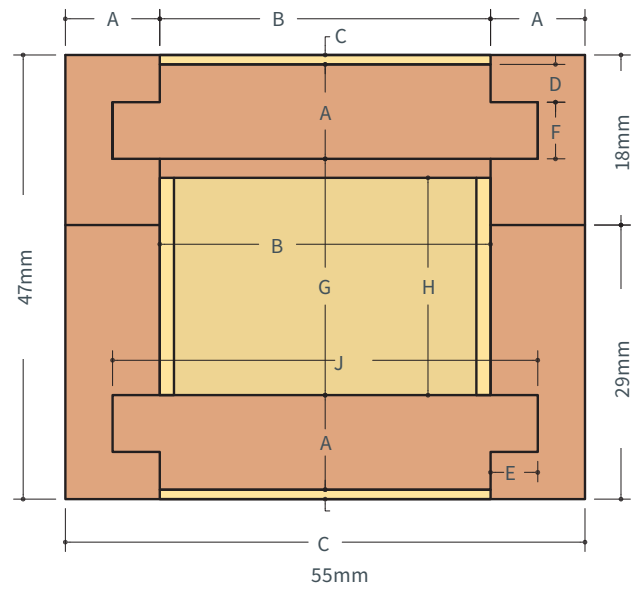
Derek Jones's small box design is the perfect project for using up timber offcuts

This box project is a great way to hone your sawing, marking and trimming techniques on small components as well as using up precious offcuts of exotic timber and veneer. The proportions need not be square, and, although this project is presented as a ring box, it could be adapted to store larger items.

The key to success with this project is to make sure your stock is planed flat and square on all four faces, so pay attention to which side of the line you are working to. There are 24 mating edges on this cube, all of which are visible, so cut over-size and trim to fit to achieve the best results.



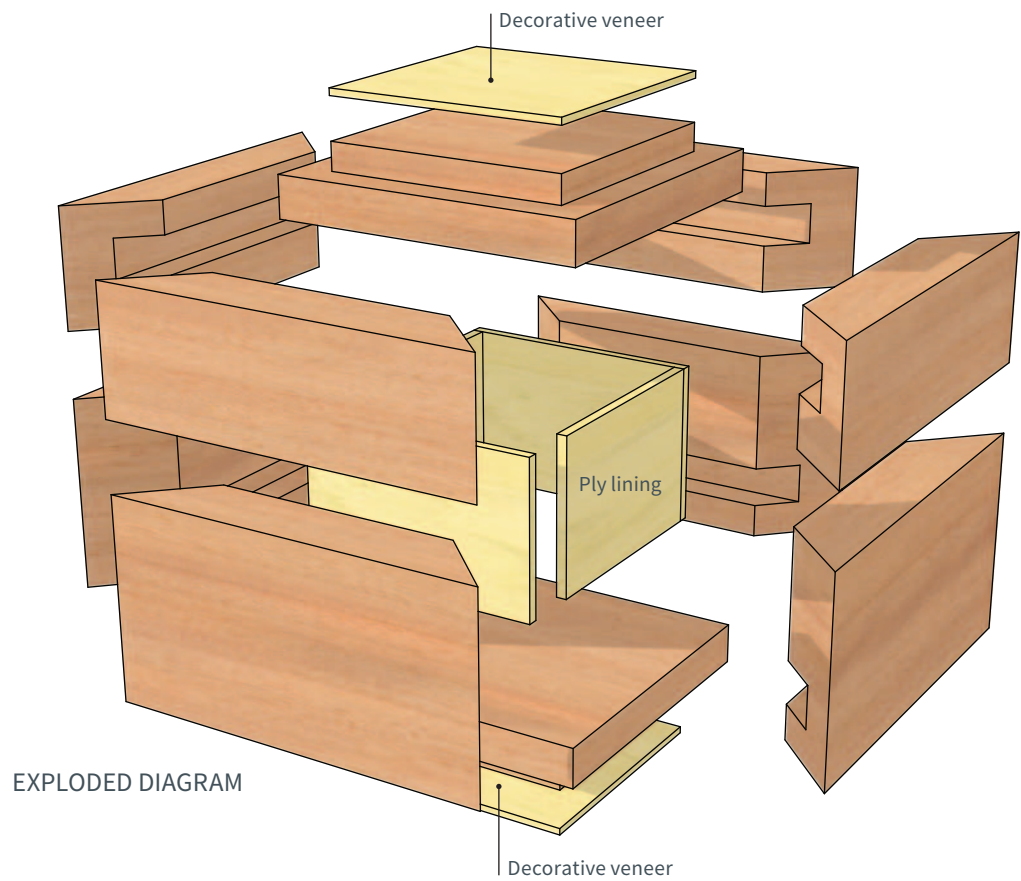
PLAN



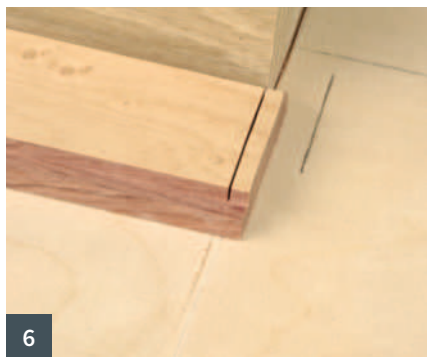
SECTION

KEY

- A = 10mm
- B = 35mm
- C = 1mm
- D = 4mm
- E = 5mm
- F = 6mm
- G = 25mm
- H = 23mm
- J = 45mm

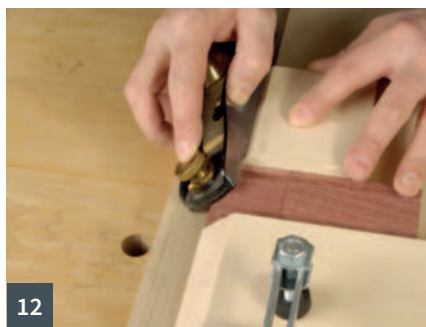
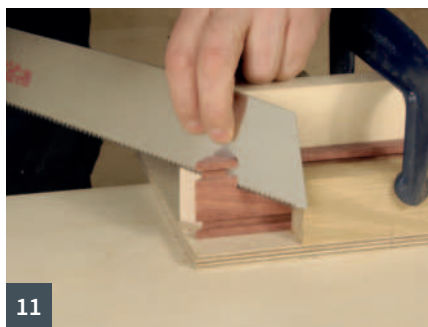


EXPLODED DIAGRAM



- 1** Select your offcuts; I used lengths of purpleheart and some bird's eye maple veneer for my box and cut the veneer slightly wider than the purpleheart.
- 2** Apply a thin coat of glue to one face of the solid timber (not the veneer). Spread the glue evenly across the whole width of the board.
- 3** Sandwich the solid timber and veneer together using one of the solid timber boards as a press. Apply pressure with clamps evenly across the stack.
- 4** Cut a rebate on two edges of the veneered face and a corresponding groove to two edges of the plane board. Try to achieve a reasonably tight fit with the veneered surface set slightly lower than the edge of the board.

- 5** Cut and trim a square edge on the veneered board and set a marking gauge to the width of the rebate.
- 6** Transfer this measurement to the end and cut the shoulder to form a full-width tenon.
- 7** Use a shoulder plane to trim the tenon to size.
- 8** Mark out for the shoulder on the other end, remembering to cut the right side of the line.
- 9** Use the first component to measure out for the second. The most important edge is the shoulder line, not the overall dimension, which can be reduced to fit later.
- 10** Label the meeting component edges before marking out for the corner mitres.



- 11** Cut the mitres over-size with the aid of a mitre block clamped to your bench hook.
- 12** Trim the mitres with a low-angle block plane on the shooting board with a mitred support block in front and behind.
- 13** If you under-cut any of the mitres you can adjust the shoulder lines of the insert, but remember to alter the top and the bottom. You might find it easier to glue the box up in two halves.
- 14** Use a cabinet scraper to trim the top and bottom edges of the box to the veneer.
- 15** Use a marking gauge to mark out where you want the lid of the box to be.
- 16** To avoid a mistake, cut on the line to split the box by first making

cuts part-way through the sides to establish a continuous saw line.

- 17** Level the edges using a sheet of abrasive stuck to a flat board. Work from corner to corner, a couple of strokes at a time, and then rotate.
- 18** Make up some thin ply with three strips of veneer. Lay one piece with the grain opposing the direction of the outer layer.
- 19** Cut the inserts over-size and trim them to fit on the shooting board.
- 20** Glue the inserts in place one at a time.
- 21** Your finished box should look something like this.



WINE CADDY

Emma Basden turns an old pallet into a handy carrier

Be the star of any picnic or summer party when you arrive bearing a bottle of wine and two glasses in this stylish caddy! If you are feeling up to the challenge, you could adjust the design so that it holds four glasses.

YOU WILL NEED

- 1 x pallet plank (any type)
- 1 x wine bottle
- 2 x wine glasses
- Tape measure or ruler
- Pencil or marker pen
- Jigsaw
- Sander and sandpaper (120-grit)
- Drill
- 40mm wood screws
- Flat bit (approx. 16–20mm, to create a hole big enough to fit the rope through)
- Rope to use as handle – approx. 30–45cm length (suggested thickness: 16–20mm)



Making the caddy

- 1 Take a pallet plank and place your two wine glasses and wine bottle in position, ensuring there is enough space between them for your partition wood. Measure how long the bottom of your caddy will need to be, draw a line and cut the plank. Sand each piece as you go, as it will be hard to sand once it is completed.
- 2 Cut two more pieces of plank to the same length as the bottom of the caddy. These pieces will make the sides later on. Put them aside for now.

- 3 Cut two pieces of plank to approximately 17cm. These will form the ends of the caddy.
- 4 Take the two ends you have just cut and place them on their ends. Attach the bottom of the caddy to these with the 40mm wood screws.
- 5 To create the two centre supports (to which you will attach the rope handle at the very end), cut two pieces of plank to approximately 40cm long. Use the jigsaw to cut out an arch at one end of each plank to give the planks a rounded 'nose'.



- 6 Next you will need to use your flat bit to make a hole so that you can attach the rope to create the handle.
- 7 Attach both of the planks to the bottom of the caddy in the same way as you attached the ends. Stand your wine glasses and bottle in the caddy to work out the best place to position the two middle supports before you attach them.
- 8 Take the two sides you cut earlier and attach them to the caddy. You should have two even holes in the middle supports. Take the rope and thread it through these holes, tying knots in both ends to create a sturdy handle for carrying.
- 9 And you're finished. Pour yourself a glass and enjoy!



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PROBLEM SOLVING IN THE WORKSHOP

John Bullar offers practical solutions for some common woodworking problems



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I like to think that I learn from my mistakes and also from other people's mistakes, if I get a chance before I make them myself. So before getting stuck into your next handmade woodworking project, it may be helpful to think ahead to some things that might go wrong, then you can plan to avoid them.



Marking out

- 1 'Measure twice, cut once' the old saying goes. It's certainly true that you can avoid expensive errors by taking a breather and then double checking at the initial marking out stage. Remembering there are exactly 25.4mm to an inch and using a calculator removes any conversion errors. Use a sharp pencil or the flat side of a marking knife for important lines. If you need to measure precisely, aim to mark and cut within a fraction of a millimetre.
- 2 When you are marking out parts to fit together you often don't need numbers at all – just mark one piece off another. Sometimes it's better to work by touch rather than sight. Your fingertips can feel the minute ridges between components of slightly different sizes. Small errors tend to build up as components come together.

Models and templates

- 3 Before you commit too much expensive wood and precious time to a project, it makes sense to prototype a new design. This can

either be a scale model to see how the finished piece will look or a full-sized mock-up. Full-sized drawings known as rods laid out on stiff board help check out final dimensions and angles.

- 4 Transfer shapes from full-sized drawings to wood using templates cut from MDF or ply. Making samples in scrap wood helps solve difficult shapes and joints. I keep a stock of old templates that usually come in handy, together with a notebook on how they were used and any problems that had to be tackled.

Straight and square

- 5 Before you make a frame, mark all the pieces so you know which ends go together. Use an accurate square pressed tight against an edge to check each corner. Measure both diagonals of any rectangular frame as they should be identical. Un-square corners, un-flat surfaces and un-straight edges cause a lot of trouble later on. Mitre joints are particularly prone to accumulating small gaps.



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- 6** Using a chisel can lead to unintentionally angled joints if the chisel isn't held straight while you chop. Hold the chisel so you view it edge-on to judge if it is vertical. If you are building furniture, buy extra wood and make spare legs, just in case.
- 7** I have bought most of my tools one at a time so I get a chance to know them. Like all hand tools, chisels need to be looked after carefully. The back must be flat so it cuts straight down inside the wood. As long as you only grind or hone from one side, the chisel should keep its flat back.

Strong joints

- 8** Joints need to be large enough to carry their load. Any type of seat joint, whether it is for a garden bench or a footstool, is likely to get a lot of strain. Both the joint and the wood around it need to be strong.

If a joint fits loosely, sometimes you can rescue it by inserting a wedge.

- 9** If you want to learn from other people's mistakes, you don't always have to watch them at work. Sometimes the evidence is revealed years later when the joints drop apart.

Straight planing

- 10** Before they are jointed together, edges must be planed straight and level. It can help if you plane both edges side-by-side. Any small inaccuracies should then cancel out when they are pressed together.
- 11** A hand plane is usually held level, either horizontally or on its side. If you do need to plane at an angle, tilt the wood accurately but still keep the plane and its cutter level.



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PHOTOGRAPHS BY JOHN BULLAR, UNLESS OTHERWISE STATED



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Wood problems

- 12** Nature makes all trees different but quite often human activity has an effect on it too. Nails, shotgun pellets or barbed wire can be hidden in tree trunks. Examine wood carefully before you cut it.
- 13** All freshly felled wood is wet – often dripping wet. Usually it is sold kiln dried so the moisture content should be around 10%. Working with damp wood which shrinks as it dries, or joining wood to a drier piece, commonly causes problems. Trying to resist wood movement is futile – you have to plan for it.

Springback

- 14** Damp wood that has been steamed can be bent into shape, typically for making parts of chairs. However, as soon as you release it the wood will spring back to a straighter shape which depends on the type of wood and how dry it was.
- 15** Big pieces of timber are often damaged in wood yards when they are moved around. Dents that are too deep to plane away can sometimes be lifted by a combination of heat and water with the aid of an iron.

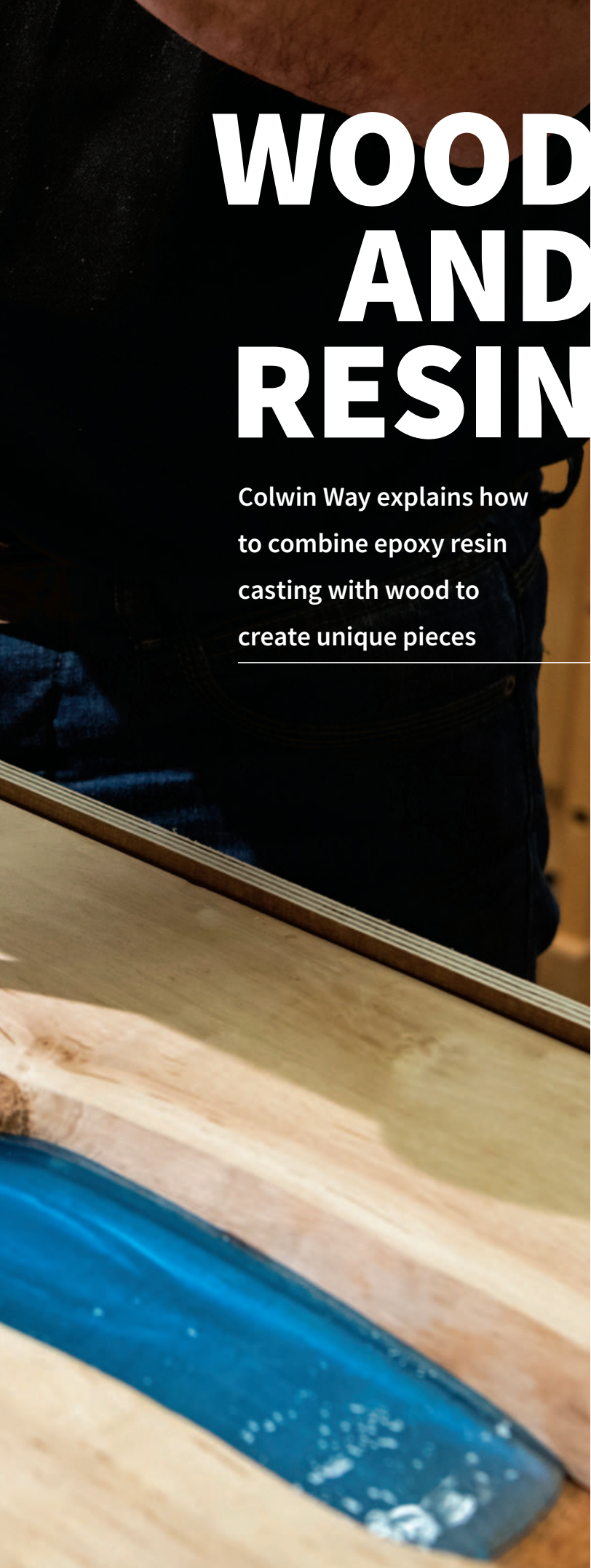
Freehand work

- 16** Not all woodwork has to be precise. Sometimes freehand work, such as carving, can add a personal touch to an otherwise bland panel. Even so, you need to be careful not to slip.
- 17** Although the exact shape of these inlay pieces is unimportant, to achieve the desired effect they must fit together without any visible gaps. One sneeze and these carefully shaped parts could be lost in the sawdust!

Near the end

- 18** The closer you get to the end of a project, the more demoralising any mistakes become – sometimes they can result from rushing to finish. When something starts to go wrong in the workshop the first thing to do is take a breather. Come back to it later and you may be able to repair it, make a feature of it or make it smaller. Quite often though, I sleep better when I chuck the offending component in the wood-burning stove so I can re-make it again properly the following day.





WOOD AND RESIN

Colwin Way explains how
to combine epoxy resin
casting with wood to
create unique pieces

Epoxy resin has become extremely popular over the last few years – I've certainly enjoyed exploring some of the possibilities this medium can give to my projects. You won't be able to escape pictures of river tables, encapsulated pencil crayons and penny floors on YouTube and Instagram. However, jumping straight into this interesting craft can be fraught with misadventures and pitfalls – to begin with I made a heap of mistakes just trying to find the correct resin to use. As well as making many errors I also got through a load of hard-earned cash. As you will discover, this isn't a cheap material to experiment with. So in this article I want to share with you some of the things to look for and tips to help make your adventure in resin a happy one.

As there's so much to cover I'm going to start with the most basic of information before stepping it up a little and looking at what can be done with different types of resin and ways of treating it. This will allow you to increase the range of projects from small pieces of jewellery all the way up to your first river table.

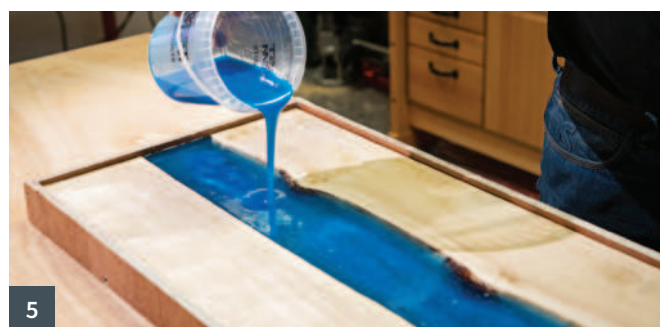
SAFETY CONSIDERATIONS

- While generally safe in use, prolonged exposure to epoxy resins and hardeners can lead to contact dermatitis; read and follow the safety guidelines for the product.
 - Hardeners are moderately corrosive, so wear latex gloves when using them.
 - Prolonged exposure to epoxy vapour can lead to respiratory problems – work in a well-ventilated area and wear appropriately rated respiratory protection.
 - Inhalation of dust from sanding epoxy that is not fully cured can cause serious health problems – ensure epoxy is fully cured and wear appropriate respiratory protection when sanding.
 - Epoxy resin is classed as inflammable but the curing reaction is an exothermic reaction and can result in temperatures up to 200°C, which may ignite plastic containers or closely situated combustible materials.
 - When using a naked flame to raise and remove air bubbles do so only with a fire extinguisher/fire blanket close to hand and have all combustible materials cleared away from the work area.
 - Resins and hardeners from different manufacturers/suppliers may have different compositions, risks, and safety advice – read and follow all guidance issued with the product.
-

What resin should I use and how thick can I cast?

The first mistake I made when choosing a resin was not getting advice from other woodworkers. I went straight to a company that dealt with all types of resin, read their sales blurb and made my own mind up as to the one I should choose. I saw the words 'casting' and 'encapsulating' and assumed that this was the one. My choice was a poor one and I ended up with polyester casting resin. There are two problems with this. First, the smell is so intense you need to wear a full vapour mask and work must be done in an area with good air filtration – definitely not in the house. The second is that polyester has no great strength on joins, which meant every piece I cast broke on the join with the timber.

The correct resin for us woodies is epoxy casting, or countertop resin. There are many makes on the market that are especially made for woodwork. They come in various container sizes and I would



1 There are many casting resins on the market, including several designed for use with wood **2** Start off small with your resin experiments **3** A couple of resin/wood cabochons, made with countertop resin (left) and casting resin (right) **4** Jewellery made with 10mm casting resin **5** Pouring a coloured resin between two boards **6** Larger-scale timber and resin work **7** An elm piece waiting for its final seal coat

advise starting with small castings, such as jewellery. This way you can practise all the important bits, such as mixing, colouring, sanding and polishing, without breaking the bank. You will make mistakes to start with, so start small.

Once you've got a basic understanding of the product there's no end to the possibilities. Using old plastic containers, such as margarine tubs, yoghurt pots and takeaway cartons, you can begin to cast small pieces, but as you progress you can add casting to larger projects.

Most brands of epoxy are sold in different casting thicknesses so you can match the thickness to the item you're making. For instance, for casting resin look for 50–60mm resin, for jewellery-making you'll need 10mm, or for artwork or countertops choose 3mm or a resin specifically made for countertops.

The difference in finish between thicknesses is also very varied. Countertop resin tends to be far brighter in its shine than that of casting resin. As you can see from photo 3, the countertop resin on the left would need no further polishing, whereas the casting resin on the right will need a polish with abrasive, burnishing creams or polishing mops – maybe a combination of them all. The other property of countertop resin is that its self-levelling makes it ideal for use on table tops and floors. A good solution if you want your river table, for

instance, to become glass-like in finish would be to cast the main pour with casting resin then sand flat to 240–320-grit abrasive, then give a coat of countertop resin allowing it to spill over the sides.

The pieces of jewellery shown in photo 4 were made using 10mm casting resin with a variety of timbers and cones and the addition of pigments for colour. The pieces were wet sanded to 2,000 grit followed by burnishing cream and, finally, a polishing mop with an acrylic glossing bar. Glossing or glass-like finishes are only important if you're using transparent colour or clear finish. If you're using opaque or solid colours then finishing to 1,000 grit is ample.

Casting thickness and temperature

When you're ready to start casting, you need to have everything set up and ready to go, including having the mould sealed and the project held down and in place – remember, wood floats so it needs to be fixed in position. This can be done with hot-melt glue, a bit of resin, silicone sealant or simply a clamp. At room temperature I would cast large areas up to around 25–40mm thick and leave for 24 hours or until it reaches stage two, which should be firm to the touch but still yield fingerprints. At this point you can re-pour over the top without abrading and the two surfaces will merge and show no join. However, if you allow the first pour to set



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8 Pressure pot with compressor **9** Using a small blowtorch to remove bubbles **10** Using a torch to see the bubbles **11** Moulds ready for use for casting bedside tables **12** Multiple moulds ready for small castings

you will need to sand to around 240 grit to create a key before you re-pour.

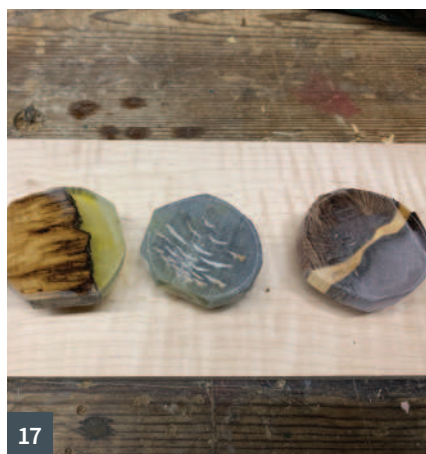
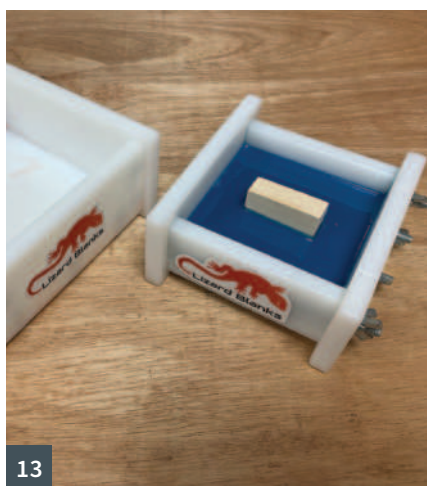
Casting thicker than this can be done but I would encourage you to cast at a colder temperature, which means the resin will stay liquid for longer, so helping to expel bubbles and controlling heat from chemical reaction. It will take a lot longer to dry – up to four days in some cases – but the results will be much better. This will also help if you want to cast thick with a coloured resin. A top tip if you need to cast a colour and you want to cast in several pours is to measure the amount of resin and the amount of hardener into separate tubs, pour your pigment into the resin only and mix thoroughly. In a third container mix together enough mixed resin and colour with the hardener to do the first pour then, when that's set, mix the final solution together and pour. This technique will ensure your colour is constant. If you want to add a glossing coat or countertop coat to a previously cast piece, it's important to seal the timber first. In photo 7, you can see this elm lamp has had its main pour and is waiting for its final sealing coat. This can then be left to fully cure before being taken out of the mould, trimming square, and sanding to 240 grit before the final thin coat is applied.

Dealing with air bubbles

Air bubbles in resin are just a consequence of mixing the resin and

hardener together – how you deal with or use these bubbles depends on many factors. Let's start by looking at getting rid of bubbles, or at least hiding them. Using pressure pots and vacuum chambers are common ways of creating crystal-clear resin, however they work very differently to each other. A pressure pot with a compressor is the more commonly used method and allows you to cast larger pieces. By putting your blanks and liquid resin into the pot and bringing the pressure up to around 25psi any bubbles get shrunk to a size at which they are no longer visible. Vacuum chambers are generally used by pen makers who look to stabilise soft timbers, corn cobs, cones, etc. These expel all the air while making the resin fully saturate the subject, leaving a hard, easily turned blank and being perfect for those softer materials.

For thinner castings such as jewellery blanks or river tables, the bubbles can be encouraged to the surface with heat. A word of warning though – this method must not be used on polyester resin as it will combust. I use a small blowtorch very lightly over the surface but not directly onto the resin and the room must be free from dust and all other forms of combustibles. Hot-air guns or hairdryers produce too much air flow and will push your resin around too much, unless that's the intention, in artwork for instance.



13 Ready-made, reusable, take-apart moulds **14** A homemade mould being put to good use **15** Resin is used to enhance the timber for these pendants **16** Adding yellow pigment to the main pour **17** A selection of cast and cut pendant blanks **18** The two-colour 'Aurora Borealis' effect

Instead of removing the bubbles, they can be used for decorative effect. They can be very attractive when light reflects off them, as in photo 10. The bubbles give this piece a real star-like quality, which works really well.

Moulds and moulding

This is probably the most boring part of resin casting but arguably the most important – if you get this wrong you will either end up with a floor covered in extremely stubborn resin or the mould being part of your final piece. Photo 11 shows the construction of two moulds intended for a pair of bedside river tables, the material used was a bendable sign-making foam. This material already has a covering of plastic film, which can be peeled off at the end making extraction from the mould easy. A wooden template was used to build the mould around while fixing in place with hot-melt glue, then it was sealed with silicone sealant.

For smaller pieces such as jewellery, small recycled pots can be used – margarine tubs, yoghurt pots, etc. Photo 12 shows small jewellery blanks being poured using strips of foam glued in place with hot-melt glue onto a piece of scrap wood.

Purpose-made moulds are great if you intend to mould the same shape multiple times. The two shown in photo 12 are for coasters and pens, but once cast the resin can be cut to make any pieces you want. The surface is designed to separate from the resin relatively easily,

but the use of mould-release spray is still advised.

Finally, the mould in photo 14 is a homemade one and, although very large, the resin will be cut to make jewellery. In the mould are slices of banksia nut and it will be poured with a solid colour resin filling all the holes in the nut. This mould will make 12 offset-pendants once cut up. The mould is screwed together so I can use it multiple times, but to make sure the resin can be released you will need to cover the inside of the mould with release tape and then seal all corners with silicone sealant. The rule I work to when making moulds is that it must hold water and if you think it won't, then the resin will escape.

Making jewellery

A small piece of jewellery is an ideal beginner project. You can, of course, simply pour solid resin, but I find it far more interesting to use pretty timbers such as burrs or pine cones and banksia nuts. The resin can be used to enhance rather than disguise the timber and fill the voids in the timber and cones. This can be a great way to use up all those scraps in your workshop.

The other thing with starting small is that you don't need to spend ages making moulds – in fact, moulds can be recycled and made from almost any container, such as margarine tubs and old takeaway boxes. The one in photo 16 was made from some old scraps of MDF lined with mould-release tape. It's important to stick down anything that you're going to cast around. Don't forget that timber floats and just a dab of



19 Burr elm is cut and planed square and flat to make a lamp **20** Different effects on two resin lamps **21** Yew planks for the river table **22** The finished tables **23** Bigger pieces should be clamped down **24** Removing from the mould

silicone or some hot-melt glue will work in the case of small pieces; however, you will need to take it out of the mould afterwards. Colours can be mixed and patterns made while the epoxy is in liquid form and again here the main pour has been completed with transparent epoxy and now I'm adding more epoxy with a yellow pigment in. This second colour can be left to sit and bleed through the clear, or you can gently swirl it in by hand, which is how you get the 'Aurora Borealis' look. It's best to have a standby piece ready into which you can pour any surplus epoxy rather than wasting it and then in time you'll have a multi-coloured bonus blank.

It's best to make several small batches of blanks for your jewellery rather than make everything the same colour from the same timber. Mix up one batch of clear resin then decant it into smaller yoghurt pots and mix in different colours before adding to different moulds and timbers. Cut to your desired finished shape, insert holes for the twine, then sand until smooth.

Making lamps

Lamps make great use of the light effects of resin, either with light reflection from bubbles or bouncing around the surface of the timber encapsulated in the resin. Casting lamps is a fairly straightforward process and, like the jewellery, just involves getting a good watertight seal.

The piece of burl elm I'm working with in photo 19 was first cut and planed square and flat before being stuck down on a piece of MDF of the

same dimensions. The MDF has been faced with mould-release tape, making it easy to remove after the resin has cured. The sides have then been capped off with more Foamex and sealed with silicone sealant.

For round lamps you will need to cast them standing up. Start by cutting or turning a round base from a piece of MDF or plywood, then surround it with Foamex or a plastic tree guard. This can throw up another slight issue if you're going to cast a large piece. Anything over roughly 75mm should be cast in 24-hour intervals, which is fine if you're using clear resin, but if you're adding colour it's almost impossible to add the same amount of pigment to each mix. So here's a top tip – work out your quantities of resin and hardener for the entire pour, but don't mix them. Mix the pigment thoroughly into the hardener only, then into a third pot mix together with enough mixture to do the first pour from these two batches. Then, when you come to do the next pour, you should find that the colour is identical. If you want a completely water-clear lamp then putting the mix into a pressure chamber would give you the best results. If you don't have a pressure chamber you will need to let the resin cure as slowly as possible. To achieve this, you will need to keep the resin cool, which helps to let any bubbles that form rise to the top. However, using the bubbles to your advantage can result in some really cool effects, as you can see in photo 20 with these two completely different lamps. See how the light bounces off the bubbles and the air pockets at the seam of the timber.



25 Sanding the resin to finish off **26** Polishing resin on a polishing mop
27 Using micro-fine abrasive on the resin with a cloth pad

Making river tables

A river table is probably also one of the most common uses of resin with woodwork, but this is not something you should be doing without a little experience of casting.

Before starting, consider where your table will go and make the appropriate size adjustments when making the mould. The monetary outlay means you don't want to be cutting off and throwing away excess resin and timber. Preparation is everything. Make sure your mould is well made and sealed as the worst thing that can happen is you lose hundreds of pounds worth of resin on to the floor – and it's very hard to clean up once set.

Think about colour too. Do you want a transparent colour, a solid one or a bit of both by casting in two parts? Whatever you choose the timber can make or break the piece, so be careful with your selection.

Photo 11 shows the preparation of two moulds for a pair of matching bedside tables. To make sure the tables were the same size and to help with the construction of the moulds a wooden template was used while positioning and gluing in place the Foamex. One thing that's easily forgotten in the eagerness to get something poured is the level of the

workbench you're going to pour the mix on, so before you construct any mould make sure you get the level out.

The two completed tables shown in photos 22 were lifted from the mould, sanded and buffed with varying grades of polishing creams. See if you can tell where in the boards they came from. These have a transparent blue pigment with hairpin legs, which can easily be sourced online.

There are a few key points to consider about making larger tables. The first is something I've already mentioned but is so important to the success of the project you're making – clamp the piece down before the pour. Like I said, wood floats, so either glue or clamp the piece down.

Make sure you thoroughly check your mould for potential leaks before the big pour and cover your homemade moulds with mould-release tape and spray. Seal every joint with silicone sealant and allow to cure. Have everything to hand before you pour – remember, casting resin open time is measured in hours, so there's no rush.

When raising and bursting bubbles with heat, heat guns or blowtorches work best, but a gentle brush over the top will raise and burst them. This may need to be done several times before you leave the piece to cure. Avoid pouring on to bare wood; instead do a sealing coat 24 hours before the main pour. This will considerably help to prevent large air bubbles appearing overnight.

Be patient and give the epoxy plenty of time before you remove the table from the mould. If you prepared well, de-moulding should be fairly easy, just remember the mould-release tape and spray. Large areas can still be stubborn so fine wedges will really help.

And finally, finishing resin off on flat work is laborious but it's necessary for tables. Sand through the grades to around 400 grit over the whole surface but then to around 1,500 on the epoxy areas before your final finish. If you want a glass-like finish sand to around 320 grit and pour a second counter-top epoxy over the surface, allowing it to run down the edges. Once cured this will be a mirror finish and need no further polishing.

Finishes

Here I want to look at the three types of finishes commonly used and the ones that are the most useful for woodworkers. The first is polishing mops. These can be used at the final stages after sanding to 2,000 grit, with or without burnishing cream. I use an acrylic polishing bar, which is relatively fine in its abrasive, but I've found that the buff bars made for polishing woodwork work well even though they are slightly coarser. The rule when polishing epoxy is not to linger in one place for too long, especially when it comes to edges, otherwise they are likely to soften.

If the pieces are on the lathe already then sand them to 800 grit dry and then through your wet abrasives, which can go to 4,000 grit, before using burnisher cream. This is a really fast and effective way of getting a super-glossy finish, great on jewellery.

Larger pieces will need a bit more effort. So if you've made a river table and don't want to cover the timber in resin you will need to work through your grades. I tend to come up in around 100 grit jumps to about 2,000 grit, at this point a further three burnishing creams – medium, fine, then extra-fine – before adding an acrylic polish. However, if you want to bypass all of this and are happy covering the timber you can sand the table top to 240 grit and then coat the table with countertop self-levelling resin. Allow the resin to coat the edges as well. You will need to do at least one sealing coat before the final coat but this will leave a glass-like finish over the whole table without the need for further polishing.

Seasonality in woodworking

Time to take a well-earned break and ponder the effects of the seasons on our work

Do you have a favourite time of year to do your woodworking, or is it a year-round hobby or occupation? The reason I ask this is because woodworking suppliers often see sales increase and decrease at different times of the year, mainly in the summer when it seems that woodworking winds down. The seasonal trend is in a normal year and the exception is this year where, due to the Covid-19 pandemic, we are seeing a different trend as people's lives have been restricted and turned upside down, seemingly freeing up more time for woodworking. This leads us to believe that woodworkers in a normal year are concentrating on other things in the summer, such as going on holiday, looking after the garden or focusing on other pastimes. Although the summer weather is sometimes nothing to write home about it, it may be possible that our sheds are just too hot and other things are then more appealing. Could it be that you are concentrating on going on holiday and that is where your time and budget is aimed? Or are you doing other things in the summer, alternative hobbies for example, as it is good to ring the changes to keep things fresh. One of my 'other' hobbies is 3D printing and I find that it complements my woodworking as I can design and create tools, jigs, interesting fixtures and decorative



PHOTOGRAPH BY SHUTTERSTOCK

additions for my wooden creations. Designing in 3D helps me think in three dimensions and that is useful when planning a piece of furniture, for example. Please let us know if your woodworking is seasonal and if it is, we would love to know what else you are doing.

WORDSEARCH

Abrasive	Clamp	Splinter
Blade	Fretsaw	Ventilation
Bracket	Gauge	Walnut
Carpentry	Mahogany	
Carving	Restoration	

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.

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

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



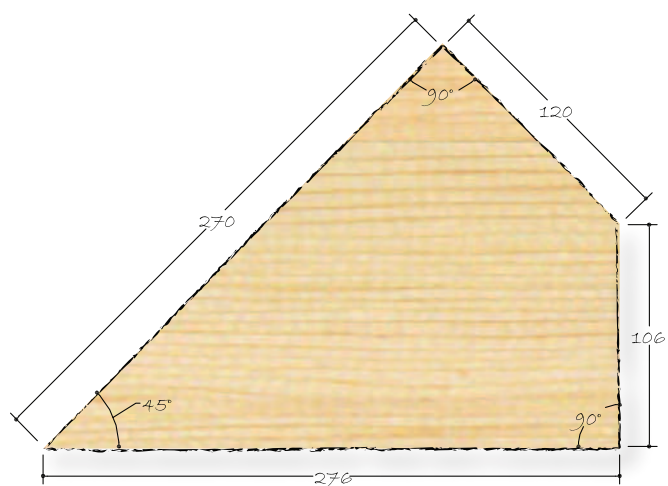
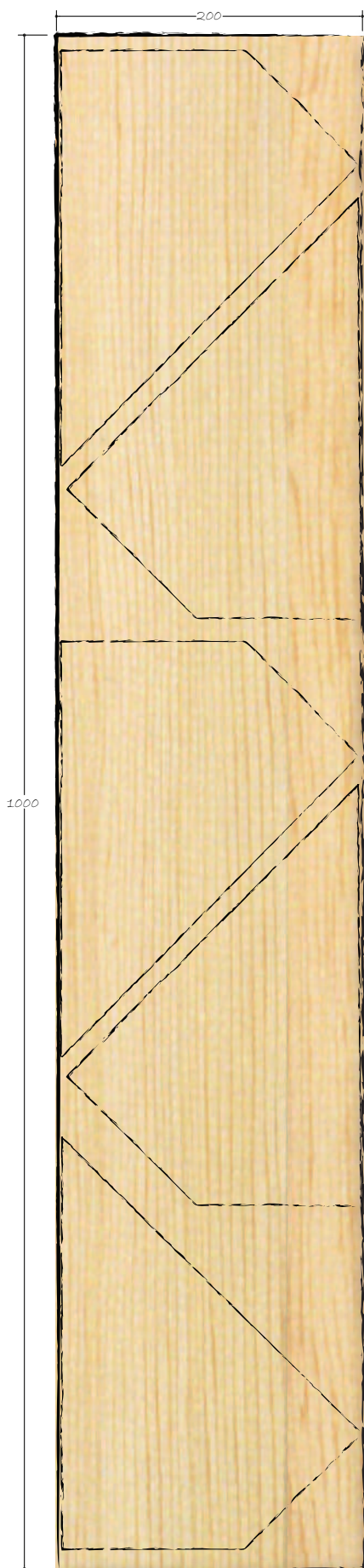
KNIFE BLOCK

Andy Standing makes some handy kitchen storage from just one plank of wood

Kitchen knives can be difficult to store safely, and one of the most convenient ways is to use a knife block like the ones that are supplied with expensive sets of knives. This is a surprisingly easy thing to make and you can adapt it to suit your needs.

YOU WILL NEED

- Saw: a tablesaw is ideal, but a bandsaw or a good handsaw is fine
- Smoothing plane and block plane
- Clamps
- Router with straight cutter and optional rounding-over cutter
- Glue
- Power sander
- Workbench with vice



Making the block

- 1 Mark up the plank and then cut out the components on a tablesaw.
- 2 If you don't have a tablesaw, cut out the components with a handsaw.
- 3 Inevitably, there will be slight discrepancies between the parts, so clamp them all together in a vice and clean them up with a smoothing plane.
- 4 Use a block plane to make sure the end grain is up to scratch



5



6



7



8



9



10

- 5 Stand all the pieces together and mark a V across the front so that you can re-assemble the pieces in the right order after routing.
- 6 Mark out the knife positions with a pencil. Allow enough space so the blades will slide easily. Start with the outer piece.
- 7 Then put the next piece on top and repeat the exercise until...
- 8 ... the block is complete.
- 9 Extend the marked lines with a ruler and clearly indicate the waste areas. These odd-shaped parts are difficult to rout using any kind of

- clamp, so position one on the front of the bench so that its edge just overlaps. Take a pair of offcuts and temporarily nail them onto the benchtop to hold the component in place.
- 10 Fit the router with the straight cutter and set the cutting depth by plunging the cutter onto a flat surface, and then loosely sandwich one of the knife blades between the depth stop and the turret. Lock the depth stop.

PHOTOGRAPHS BY ANDY STANDING



11



12



13



14



15



16

- 11** Fit the router with its side fence and use the front edge of the workpiece to guide the tool as you rout out the knife slots.
- 12** Apply glue to the pieces, being careful to avoid the knife slots.
- 13** Use the V marking to ensure that you are assembling the block in the right order and then clamp tightly. Leave to set overnight.
- 14** After the glue has cured, clean up the whole piece with a power sander, being careful to remove any blemishes or pencil marks.
- 15** Finish by rounding over all the edges using the router fitted with

a bearing-guided cutter. A routing mat on the bench should hold the block securely. Alternatively, you could round the edges with the power sander.

- 16** To keep the block clean, it is wise to give it a couple of coats of varnish or oil. As a final touch, fit the base with a set of adhesive rubber feet to protect your work surface.

Chisel away

We explore the ancient roots and modern uses of the trusty chisel



PHOTOGRAPH BY SHUTTERSTOCK

IT'S ALL IN THE NAME

The word chisel has venerable roots. It is derived from the Old French 'cisel', and late Latin, 'cisellum', meaning a cutting tool, from 'caedere', to cut.

MEET THE FLINT STONES

The oldest chisels to have been discovered date back to around 8000 BCE. These rudimentary tools were made out of long, flat flints. An early concave chisel, dating from 4000 BCE, was used like a gouge and could rough out wooden drinking vessels and bowls.

BUILDING A DYNASTY

The ancient Egyptians used solid copper chisels, before switching to bronze, an alloy of copper and tin. Carpenters and stone masons used chisels with wooden mallets in the construction of statuary, tombs, sarcophagi and pyramids.

TO FIT THE MOULD

With bronze easier to cast and mould than copper, wooden handles could be incorporated on tools, thus reducing the amount of metal required. This also made the chisel easier to use and less damaging to the mallet. The edges could be resharpened and old tools reshaped.

BETWEEN A ROCK AND A HOT PLACE

The next tool revolution came with the iron age. Hotter furnaces enabled iron to be smelted from rock and this harder material launched an era of strong, reliable tools.

A WEALTHY DISPLAY

In later centuries, the wealthy and fashionable classes demanded greater adornment on furniture and architecture to demonstrate their riches and sophisticated taste. This required a higher level of accuracy and inspired the invention of a wider array of chisels for specific aspects of carpentry, cabinetry, turning and carving. By the 18th century a carpenter would have had about 70 different chisels in his toolkit.

STEELY RESOLVE

In 1856, the process of manufacturing steel inexpensively by mixing carbon with iron was discovered by Henry Bessemer of Carlton, Hertfordshire, after extensive experimentation to keep the carbon content of the molten iron low enough for it not to be as brittle as cast iron. He was knighted in 1879 for his inventions and this technology led to your modern toolbox full of steel chisels.

CHISEL VARIATION

From small hand tools for tiny details, to large chisels used to remove big sections of wood, they have been used in sculpture, furniture making, timber frame construction and boatbuilding.

Here are just a few:

Firmer chisel – the blade has a thick rectangular cross section for tougher work.

Paring chisel – can access tight spaces and grooves with its long blade.

Skew chisel – trims and finishes across the grain with its 60° cutting angle.

Bevel edge chisel – gets into acute angles with its bevels.

Jointing chisels – specialists for mortises, dovetails, etc.

Corner chisel – cleans out square holes with its L-shaped cutting edge.

Carving chisels – gouges, skew, parting, straight, paring and V-groove chisels.

Framing chisel – usually used with a mallet; similar to a butt chisel, except it has a longer, slightly flexible blade.

ICY RECEPTION

Chisel your way to a dramatic party centrepiece with a huge ice carving and bartend shavings into your stunned guests' cocktails.

MUSICAL INSPIRATION

If your obsession with chisels needs even wider expression, how about downloading some tunes for the workshop from the bands Cold Chisel, Chisel and The Chisel (in particular the track, 'Chisel Boys'). Enjoy!



MASTERS OF WOOD

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TQT RSS



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- Almost total dust collection when connected to a vacuum extractor with 63mm dust extraction outlet
- Direct drive from the motor spindle



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