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WOODWORKING
CRAFTS

Issue 64

WELCOME

When summer is over, autumn has firmly set in and winter is just around the corner, many choose to embrace indoor activities that were forgotten during the unusually warm, sunny days this year blessed us with.

Whether it was new freedom as some lockdown restrictions were eased, the call of your garden or the heat of your shed or workshop that kept you away, now is the time to return.

This issue we explore the DIY solution to hiding an ugly boiler using an unusual building material and discuss the humble, but finger-saving push stick.

Carve a pheasant walking stick head for you to kick through the leaves in style on a chilly walk, or make it as a gift for Christmas. Speaking of making Christmas gifts, we also have a wedge-shaped box, an intricate scrollsawn photo frame and a wine bottle coaster – could be the perfect present for the oenophile who has everything!

Other challenging projects include a traditional Japanese Katsuobushi Kezurike, which can be repurposed as a vegetable cutter, and a beautiful heirloom box to house treasured keepsakes.

Refresh or develop your skills with a four-joint practice frame, make some simple wedges to keep your bench vice from racking, learn how to use a range of planes and router cutters and then make some handy storage to keep them sharp.

For those most dreary weekends, there is a host of furniture for you to build to occupy you, from a rustic bed headboard to an elegant half-moon hall table and a stylish tall bookcase.

And if you still have some time, why not carve a miniature lovespoon from all the lolly sticks you accumulated during the summer?

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

Happy woodworking!

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Woodworking Crafts magazine
(ISSN 1365-4292) is published every eight weeks
by Guild of Master Craftsman Publications Ltd,
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To subscribe online go to:
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Cover and Welcome page photographs:
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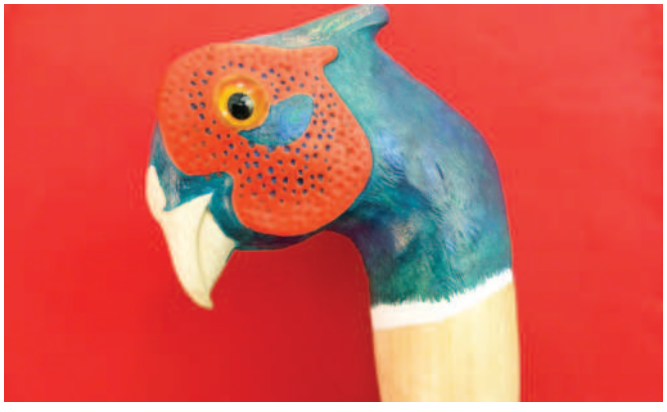

WOODWORKING CRAFTS

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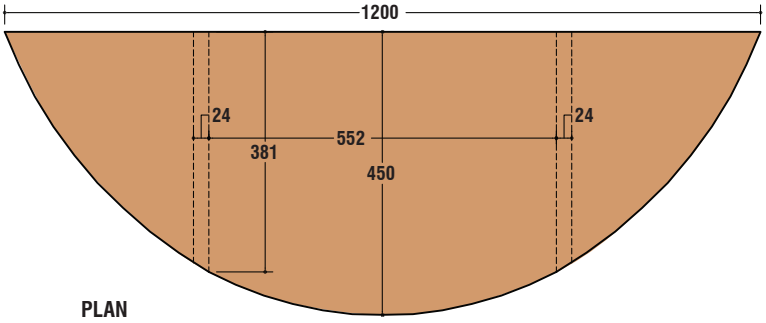
HALF MOON TABLE

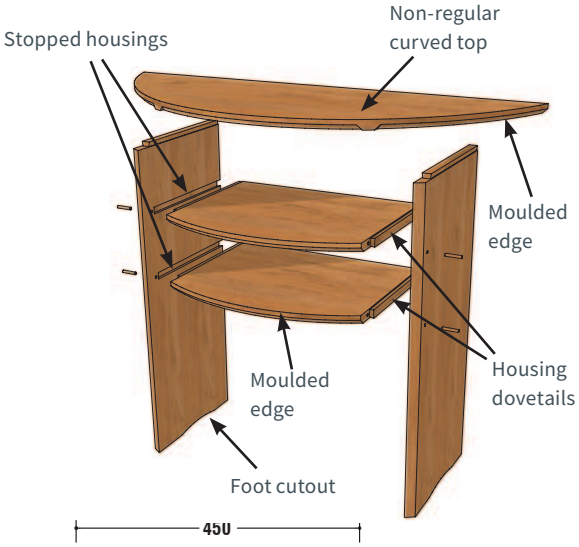
Peter Brett is commissioned to make a contemporary console table

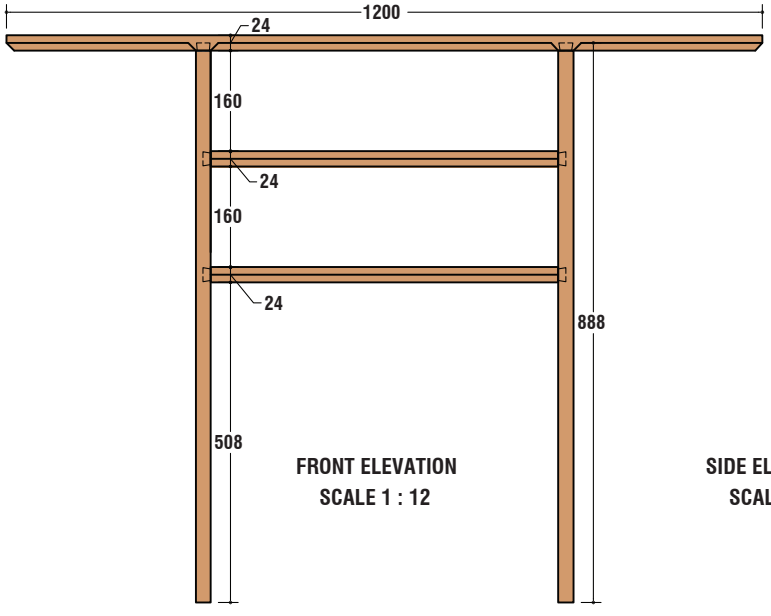
This table was the result of a commission for a console table for a decidedly modern house. The clients wanted 'slimline and interesting' but 'modern with some detail and uncluttered lines'. The 'slimline' part was necessary so as not to interfere with the access to the glass and oak staircase but the design took a bit more thought.

The table top had to be no longer than 1,200mm, and 450mm at its widest point. It also needed to be 900mm high to fit underneath a picture that was to hang on the wall above it. The clients also requested a small shelf or drawer underneath the top to avoid cluttering the top itself.

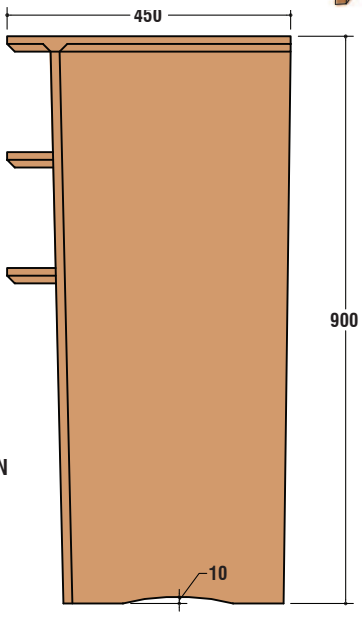


PLAN
SCALE 1 : 12





FRONT ELEVATION
SCALE 1 : 12



SIDE ELEVATION
SCALE 1 : 12

Design

1 I wanted to avoid the spindly legs of traditional console tables but also I didn't want the bulk of many modern designs. The clients had already decided that a crescent moon shape for the top would best fit their space and had given me the dimensions. These limitations lent themselves to just two solid legs jointed to the top. After sleeping on it, the whole design came to me more or less fully formed. A few sketches and a scale model later, and I was ready to face the clients. I was given the go-ahead but I needed to bear in mind the possible addition of a second shelf to hide an electrical plug and to provide a bit more storage space.

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Making the components

I chose oak for the table as the clients' stairway and hall floor were made of it. I was able to source the oak locally, and most of it was ready prepared too, saving me much time on the planer thicknesser. I got hold of some 30mm timber although it was a little warped, so I planed it down to 25mm.

I made up all five parts of the table slightly oversize: the top, two legs and two shelves. For edge jointing tops, I swear by an accurate biscuit jointer – though I had to make sure that none of the biscuits were placed where they might be seen later when cutting the housing joints.

I decided that dovetail housing joints would be the most successful method of joining the components. These would allow the wood to move relative to its parts, as well as being invisible from the front of the table.


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PHOTOGRAPHS BY PETER BRETT

The jigs

2 The key to dovetailed housing joints is a pair of really accurate jigs. I was careful to make the end dovetail jig over length, to provide a long run in and out for the router as well as to accommodate the three different widths of legs and shelf that were needed. It also is helpful to have some offcuts exactly the same thickness as the table components to serve as the spacers between the ends.

3 The housing jig, made from 6mm MDF and softwood, needed careful measurement as the slot needed to allow for the offset of the router guide bush. Once this had been worked out, I cut the slot against the fence of the bandsaw to ensure that I had two exactly parallel cuts, before chopping out the piece to form a slot into which the guide bush would fit. The next step was to fit a straight piece of softwood against the edge so that the slot is held at exactly right angles to the workpiece when routing the dovetail housing.

Cutting dovetail ends

4 I cut the width and length of the legs oversize in case of any glitches in cutting the dovetails. To cut the dovetail joints, the leg was held vertically in the vice, and the jig was then slipped over the top of the end grain and clamped into place firmly. The router had to be adjusted so that the fence guideed the dovetail bit to cut an accurate dovetail-half out of each side. Once set, this adjustment could be kept for all the end dovetails in the shelves and legs. I found that I could cut all the six joints I needed in about 15 minutes using this method.

The top

5 I cut a piece of 6mm MDF to the width and length of the top and marked out the centre of the proposed leg positions with perpendicular pencil lines across the MDF. I then clamped a flexible steel metre rule in one corner and bent it to the marked centre line until I had the full-bellied curve that I wanted. Using a cordless jigsaw with a fine-toothed metal cutting blade so that I didn't get too much spelch on the line, I cut as accurately as I could and then used the waste piece, after freeing it with a cut down the centreline, to mark out the other half of the curve on the MDF.

6 A visual check of the curve and then a rubdown of the high spots with 120-grit sandpaper on a block was enough accuracy at this stage for the curve of the table top. The MDF pattern was then used to mark the crescent shape of the table top onto the oak blank. Using the jigsaw again, I cut the shape.

Housing joints

7 The housing joint jig was made to have ample clamping space on each side of the slot so that it could be firmly held when routing.

8 The housings were also stopped about 50mm short of the end. Once the jig had been clamped down firmly in place, the router – on the same depth setting as before but with the extra depth of the guide bush– was slowly introduced to the slot and pushed forward. When cutting housings the waste soon fills the slot so slide the router back to eject the waste. It is important to work slowly and methodically ensuring that the guide bush is kept firmly to the left of the jig slot on the way up and firmly to the right on the way back.


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‘Fettling’ the joints and details

9 The dovetails on the top of each leg had to be cut back to fit the stopped housings in the top. I made the front of each leg project 10mm or so beyond the top, and made the back of the legs flush with the back of the top. I then marked the place where the curve of the table top would show on each leg. This junction was used to mark a taper drawn with a steel ruler, from top to bottom of each leg. Visually, the taper lifts the weight of the top from the floor, making it appear lighter.

10 A similar, but slightly smaller taper was needed for the back of the legs to allow for the back of the table top to sit flush against the wall but not foul the skirting board. I couldn’t do this yet because I needed to keep the back of the leg at right angles to cut the housings for an extra shelf. I had to arrange a meeting with the clients with the dry-assembled piece on location in which they decided to have an extra shelf on the legs. The tapers were cut carefully on the bandsaw and finished with a long plane, taking account of the angled front of the leg surface. The shelves also then had to be fitted individually so that they sat flush to the front of the legs in the dovetail housings and flush with the back of the legs too. The fronts of both shelves were then marked with a curve copied from the front of the table and cut to shape.

11 The bottom of each leg also had a small curve marked and cut out and finished with a sander held in a drill. This makes table legs more stable, particularly if the floor is uneven.

Detailing and sanding

12 The front of the table top and each shelf had a deep bevel routed into the underside. This had the effect of reducing the thickness of the shelves and top, and lifting the eye upwards. Where the legs meet the tops, the router had to be stopped to allow the legs to meet the table top square on. With such deep bevels it is best to do them in stages to avoid burning the wood.

13 I decided to sand and finish the shelves before assembly because they would be hard to reach with a sander once they were in place. All the components were then sanded in stages up to 240 grit using a random orbit sander.

14 I finished the shelves with two coats of Danish oil applied at least 24 hours apart with a 320-grit sanding between coats. The dovetail joints on each shelf were protected with masking tape so they would not pick up any oil.

Assembly and finishing

15 The legs were assembled to the top one at a time, using glue in the housings and a sash clamp on front and back to ensure a tight fit. A try square was used to check the legs are at right angles. All squeezed-out glue was of course wiped away. The dampened areas were sanded once dry.

16 Once the legs and top had been assembled and checked, they could be finished with two coats of Danish oil with a 320-grit sanding between each coat.

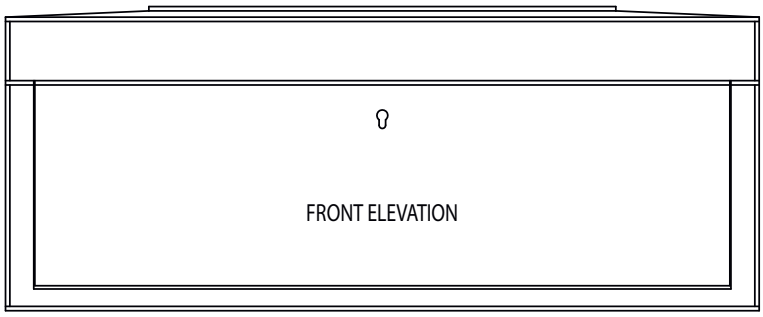
17 The finished shelves were then tried for finished size in the dovetail housings. All was well so I glued them up, again one at a time. I taped a rigid block on each leg for the clamps. The table then just needed a final sanding with very fine abrasive and a coat of finishing wax.

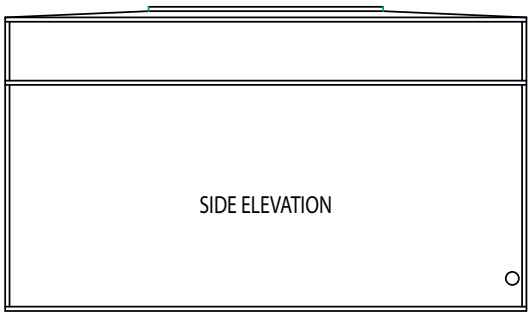
HEIRLOOM BIBLE BOX

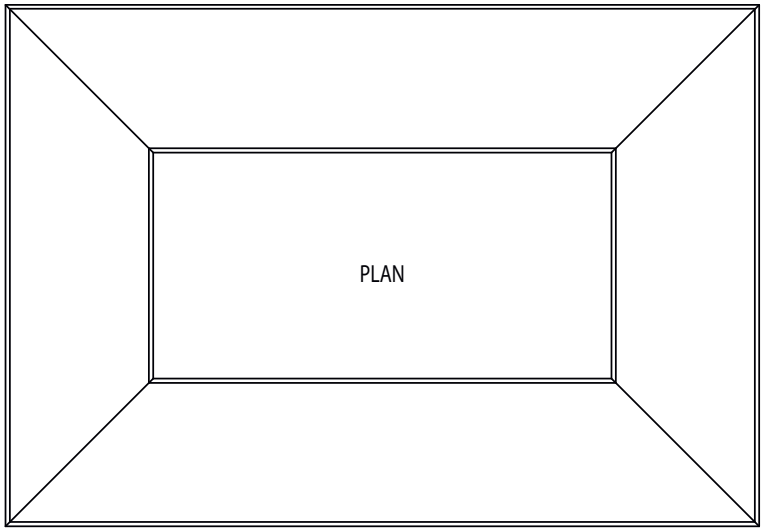
Louise Biggs constructs a box to house two special family books

I was approached to design and make a box from European oak that could safely house two family Bibles. After I submitted a couple of design options, the clients made their choice and the overall sizes of the box were worked out, making allowances for hands and fingers being able to safely extract the Bibles from the box. As a nod to the age of the books, I thought it would be a nice touch to add some bog oak details, although my small bog oak board has not been carbon dated. The aim was to obtain the whole box out of one board of material.

At the time I made this box, I was temporarily working from home in a rapidly assembled workshop due to the Covid-19 lockdown. Consequently, I had to adapt some of my usual ways of working and some machines were not available to me.

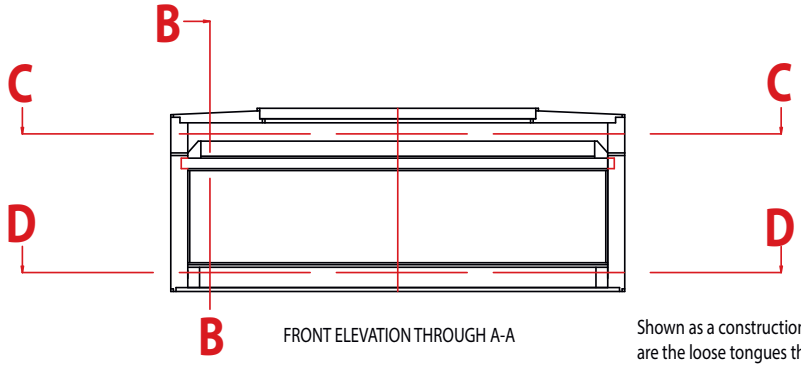




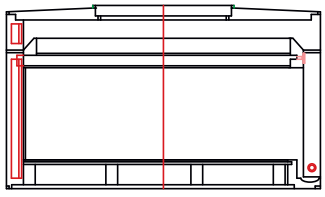


YOU WILL NEED

- Hand saws – rip and crosscut
- Planer/thicknesser
- Jack and block planes
- Tenon saw
- Flush cut saw
- Chisels – various sizes
- Spokeshave
- Router and router table
- Cutters – straight and cove
- Drill and drill bits – various sizes
- Sash, 'G' and 'F' clamps
- Strap clamps with corner blocks
- Mitre square
- Square and sliding bevel
- Marking gauge of article example: H 160 x W 120 x D 100mm

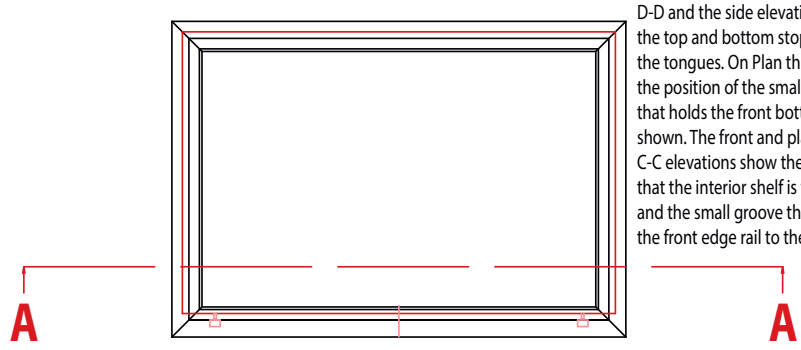


FRONT ELEVATION THROUGH A-A

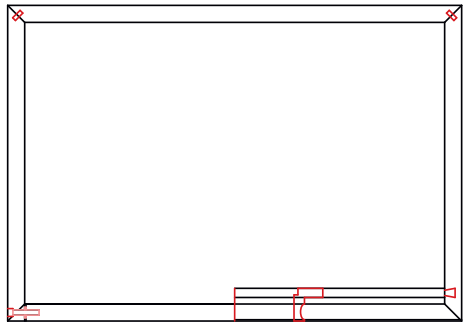


SIDE ELEVATION THROUGH B-B

Shown as a construction line in red are the loose tongues that support the mitres on the corners of the box sides. Their position is shown on Plan through D-D and the side elevation shows the top and bottom stop lines for the tongues. On Plan through D-D the position of the small dovetail that holds the front bottom rail is shown. The front and plan through C-C elevations show the groove that the interior shelf is fitted into and the small groove that holds the front edge rail to the shelf.



PLAN THROUGH C-C



PLAN THROUGH D-D
Left front shows door in place with brass peg and Bog Oak plug for the pivot point.
Right hand side shows the joint for the bottom front rail with the small dovetail and a cross section for clarification.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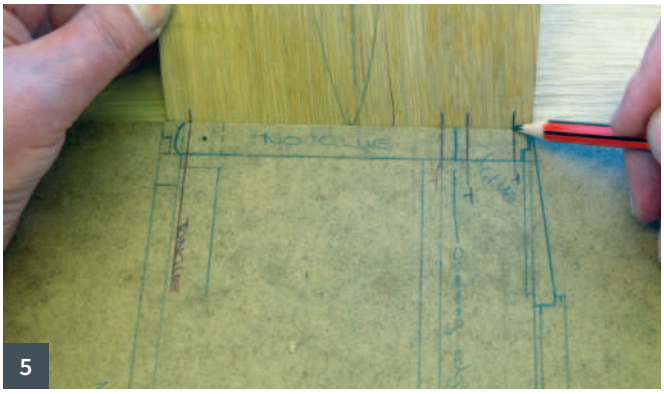
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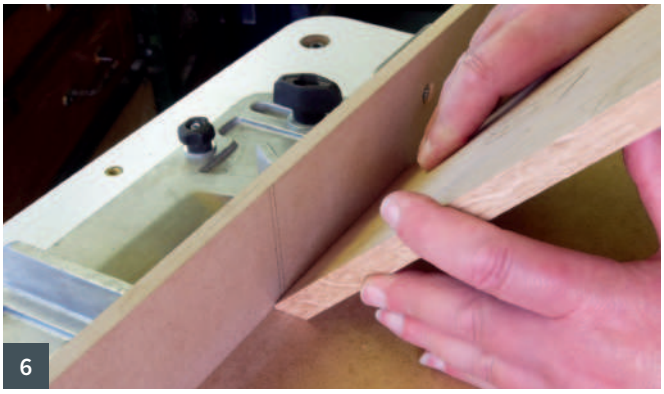
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PHOTOGRAPHS BY LOUISE BIGGS

Making the box

1 I cut the board into various lengths with a crosscut hand saw before planing all the pieces to width and thickness, except for the shelf piece. This was planed on one edge and face on the surface planer before being passed through the thicknesser to plane the other face while keeping the greatest thickness. Using a rip hand saw I cut the shelf section in half creating two thinner boards, then planed them to thickness. I then planed two of the edges with a jack plane.

2 Once the two edges came together tightly in a test run with the sash clamps I glued the two panels together. Clamping the boards between sash clamps can cause the middle to bow upwards under the pressure so straightening blocks were clamped at the edges.

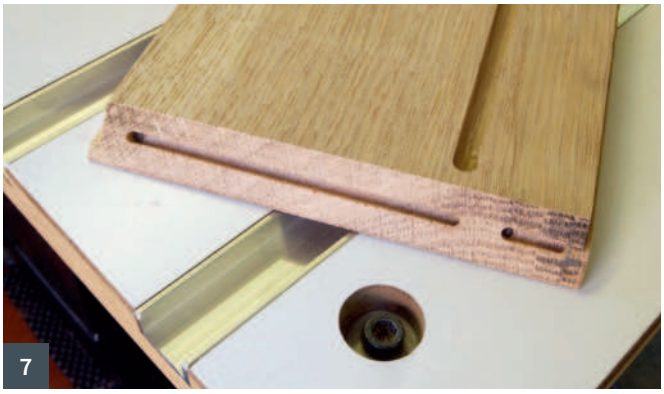
3 The box sides were cut to the correct length using a hand saw, then putting front and back and the two sides together in pairs I planed the end grain on both ends to be perfectly square with the edges, working in from both ends to prevent splitting.

4 With only a small table top router table and a 45° cutter available I decided not to rout the mitre to the very edge. A 2mm-square bog oak line was going to be fitted all round so I left a small square edge at the end of the mitres.

5 From the full-size working rod I marked the outside ends of each side of the box to indicate where each loose tongue would be positioned. The lid was not yet separated from the base so the loose tongues must break between the lid and base while leaving shoulder lines, as shown on the rod. I took care not to turn one of the sides the wrong way. A face mark indicates the top edge of each piece.

6 The grooves for the loose tongues were cut using a 4mm cutter. I fitted a section of hardboard over the router table top so the bottom edge of the fence was covered to prevent the timber running under the fence. With the cutter position marked on the fence I carefully lowered the mitred edges down, supporting the timber with my hands, which were clear of the cutter, and cut the grooves between each set of shoulder lines.

7 Rebates were cut for the top and bottom panels and a groove was cut for the internal shelf. As the box was going to have a drop-down door on the front, the shelf will fit into the sides and back only, at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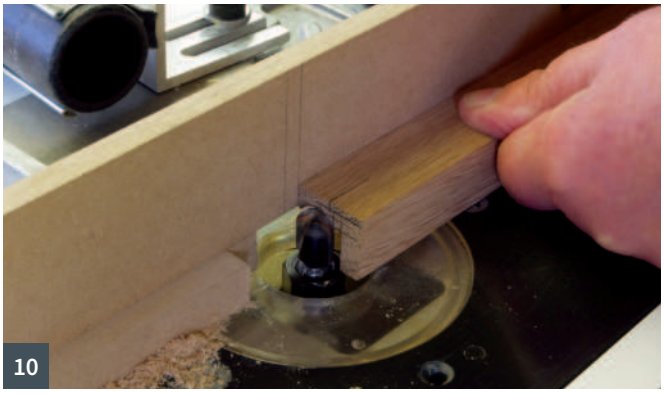
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the front edge of the sides the groove will be stopped back from the mitred edge. Again the positon of the cutter was marked on the fence and I transferred the stop lines to the outside face to guide me as to where to start and stop the groove.

8 The base half of the front will form the drop-down door, it will also form the mitred returns on the front ends of the sides so the bottom half cannot be glued up with the rest of the box, but the lid half needs to be. I split the lid and base sections prior to gluing up. With a 1mm straight cutter set in the router, I set the table fence in the right position and cut a groove on both sides of the box pieces. I then separated the remaining timber with a small tenon saw.

9 The loose tongues were made and the box carcass glued up with the exception of the front mitres for the base sections. These joints were left dry. The shelf was fitted but not glued into the groove so there is room for expansion. The mitred ends of the base front were separated from the main part that will form the door. In this way the grain on the door will line up with the front of the lid and the mitred returns. All inside surfaces were abraded before being glued up.

10 The bottom front rail requires a fixing point for the inner and outer bottom panels, a rounded groove for the bottom edge of the door to clear when opening and a joint to fit into the sides of the box. The cross section of the rail was drawn out on the workshop rod and two rebates were cut, starting with a section 22mm by 25mm. The larger 13mm by 17mm rebate, on the top front edge, was cut in small steps and once I had achieved the 13mm depth the piece was supported on a fixed run-off batten to cut the rebate to 17mm. The rounded groove was then cut along the length 1mm back from the front edge.

11 The smaller rebate on the back bottom edge could then be safely cut. I had allowed extra length on the rail and cutting a short piece off the end acted as a test piece for the mitre/dovetail joint to join the rail to the sides.

12 Having cut the rail to length allowing for the length at the mitre being slightly longer than at the dovetail, the mitres were cut before I formed the small dovetail at either end, and the dovetails marked on the sides. I cut down the sides with a flush cut saw, and the waste was removed with a narrow bevel-edged chisel.


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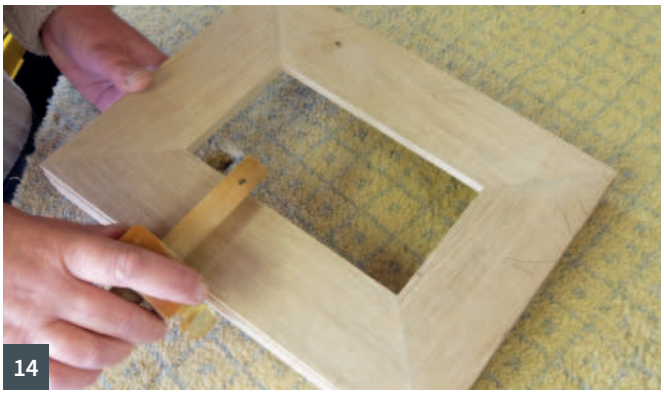
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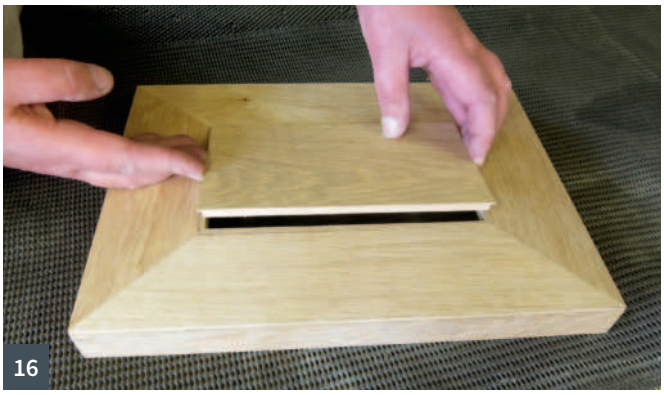
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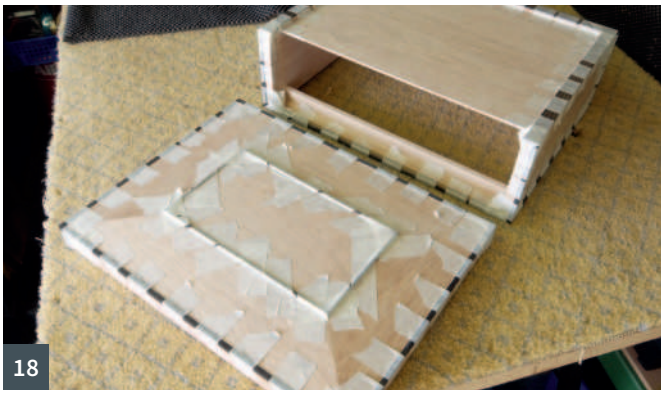
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13 The last stage before the rail could be glued in place was to cut a small groove to take the inner bottom panel. The inside of the bottom section would be lined with fabric so a test piece was used to mark the position of the groove and to check after the groove was routed. The front rail and mitre returns were then glued and clamped in place.

14 The mitres on the top frame were cut using a hand saw and paired up to two longs and two shorts and held together. I then planed the end grain to true up the mitres until they were square to the face and the mitres all aligned when the frame was clamped up and fitted inside the lid frame. Once I was happy with the fit the sections were glued up, upside down and clamped against a flat board. When dry, I set a marking gauge to mark the width and depth of the chamfer.

15 Clamping the lid firmly to the bench I planed the chamfer onto the lid using a jack plane. I started planing at the bottom edge, slowly increasing the width of the cut. I constantly checked that the surface was not becoming rounded and that the angle of the chamfer would line up with the gauge marks.

16 The small panel which will form the centre of the top was cut to length and width and planed to make sure it was square to the mitred frame. A small rebate was cut around the bottom edge to allow the panel to sit within the frame while allowing the panel to be raised from the chamfered edges by 2mm.

17 I used a small block plane to remove the small amount of timber left when the lid and base were split. With abrasives taped to a wide flat board I worked across the corners and from front to back and side to side to gain a true flat surface. I kept moving the abrasive board in all directions so as not to cause one corner to drop. I worked down through the grits until the edges and outside surfaces were clean.

18 The bog oak lines were cut and planed to size along with four 2mm-thick edge pieces that would fit to the lead edges of the base so that when the box is closed there is a 2mm black line between base and lid. I routed a 2mm by 2mm rebate around all the edges. The bog oak lines were glued and taped in place with mitred corners. I also put the lines around the 2mm lip on the central panel of the top and around the inside edge of the panel on the underside of the lid.


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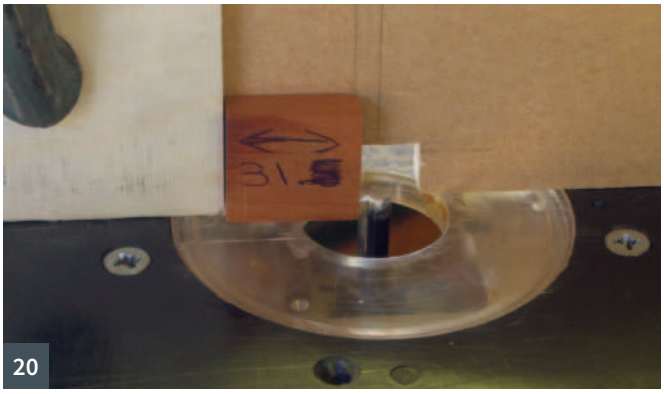

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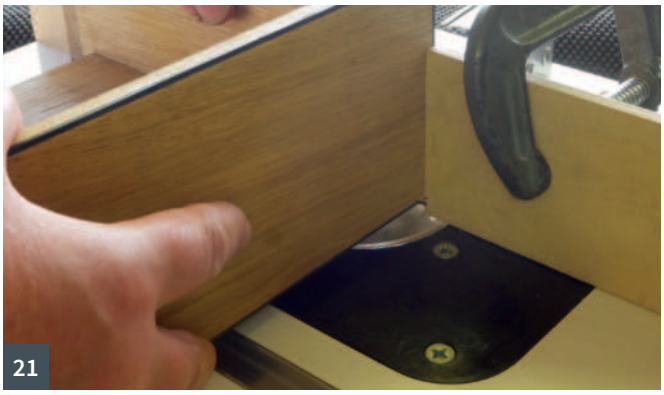
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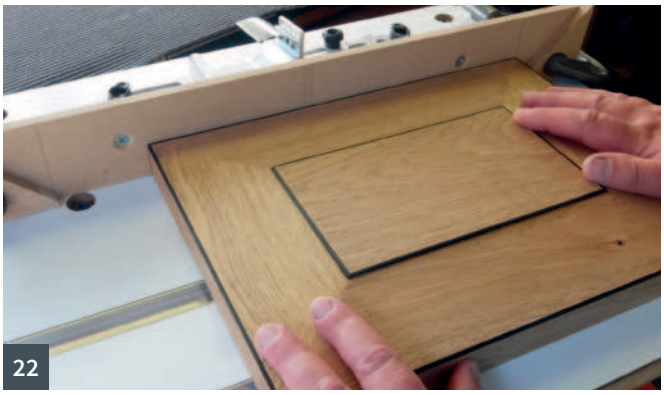
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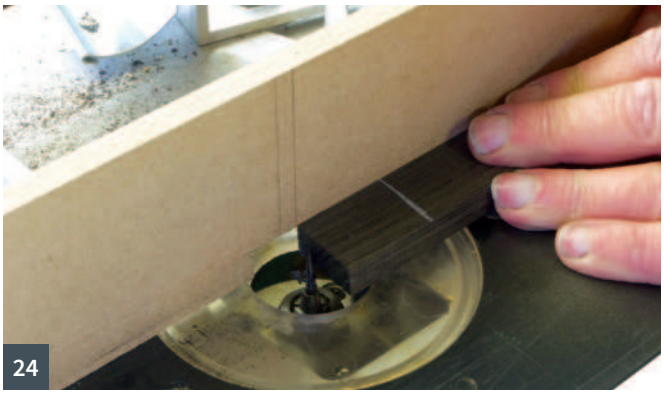
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19 Once dry the bog oak lines were cut back flush with all surfaces using a spokeshave and cabinet scraper.

20 On these type of boxes I prefer to use Neat Elite hinges and lock. I use a 31mm spacer block to locate a stop block against the router fence which allows the exact length of cut needed for the hinge. The set-up allows me to cut left-hand base and right-hand lid hinge slots. I made the spacer when I first used the hinges and it's kept in a box with router cutters specifically for these hinges and lock.

21 The stop block then needs to be set up on the other side of the router fence, using the same spacer. To cut the right-hand base and left-hand lid slots is a bit trickier on the router table as it involves dropping the box edge down on top of the cutter while tight to the stop block as shown. I hold the box parts firmly against the fence and stop and lower carefully down keeping the edge parallel to the table.

22 When it comes to the lock, following the calculations given on the instructions carefully will allow the keyhole to finish dead in the centre. I made another spacer specific to this box size and set up a stop block on both sides of the router. I drop the lid down just slightly in from the stop on the right and carefully climb-cut back to this stop before passing through to the left-hand stop.

23 As this box has a drop door on the front I had to re-calculate to make another spacer block to allow for the difference in length between the door and the lid. At some point in the procedure of cutting out for the hinges and lock you will come up against climb-cutting on the router – hold the box/lid firmly and carefully. Drilling and cutting out for the main part of the lock can then be done as normal. I marked the position of the keyhole, having inserted a packing piece in the lock opening to prevent breakout I drilled out a 5mm and 3mm hole and linked the two with a straight cut.

24 The shelf required a strengthening piece across the front to prevent the shelf from bowing out of shape, I decided to make this out of bog oak and a shallow profile would be used around the sides and back of the shelf to contain the small Bible. A wider section of timber was cut for the front edge and I cut a small groove along the bottom edge to tie in with the rebate on the front of the shelf.


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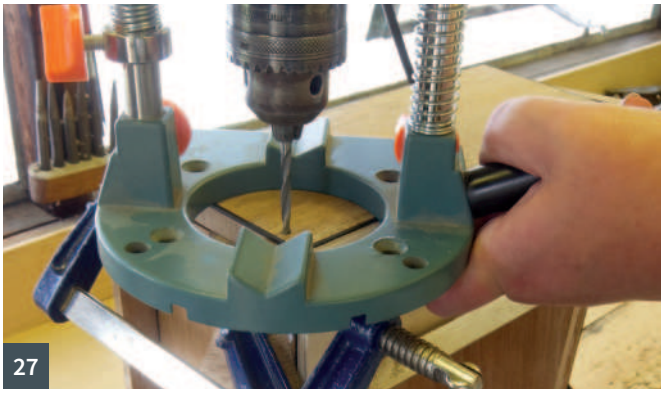
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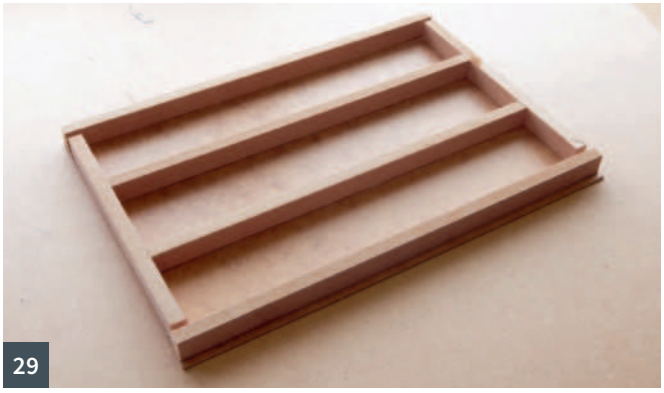
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25 On the sides and back the bottom edge of the chamfer would line up with the lead edge of the box and this was carried around on the front edge, leaving a wider section at the bottom of the profile. The top edge would be finished at 2mm complementing the line details on the outside of the box. Once I had marked out the four pieces the chamfer was formed using a small block plane.

26 Rare earth magnets would be fitted to either end of the door to hold it in position when the lid was opened. I drilled out small holes within the groove on the front edging and inserted small steel pins for the magnet to lock on to. They would not be seen and were drilled out so there was just 1mm of bog oak between the pin and the magnet. The depth of the pin required was tested on a waste piece first. The front edge was then glued in place while the sides and back would be fitted by screwing through from the underside of the shelf.

27 The door would be fitted on a pivot point either end formed from 4mm brass rod. I positioned the door and held it in position using various clamps and packers. Having worked out the centre point of the pivot on the workshop rod I marked the two points and drilled out two holes. The first was 6mm diameter and was drilled 5mm deep to take a small bog oak peg, the second hole was 4mm and passed through the side and into the end of the door.

28 The brass is not cut to length until the very end, so I extract it to remove the door for finishing. On completion the rod will be cut to length and the bog oak plugs glued into place. I inserted the brass rods and tested the door, checking carefully that it was not catching on the bottom rail and that the groove allowed the required clearance for the bottom edge of the door.

29 The bottom panel would have two layers with packers in between to allow the internal bottom to be clear of the door when it is opened. The linings would be fitted into place after the finishing process. At this point the bottom panel would be fitted in place.

30 With all processes completed the hardware could be re-fitted and the box was ready to go to safely store and protect the family Bibles.

THREE BENCH VICE STOPS

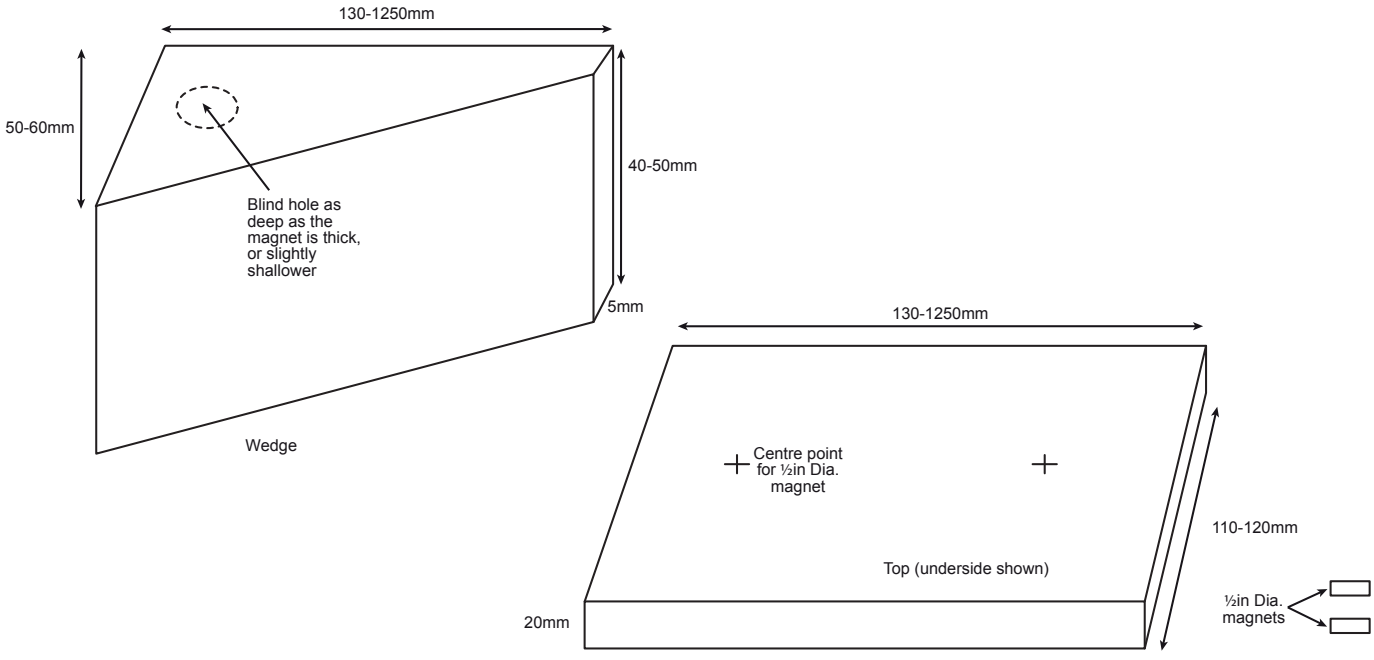
Charles Mak shares a few ideas for preventing an angled jaw, which can cause your work to slide or vibrate

In almost every furniture project I undertake, my bench vice is used for one reason or another. Like many other vice users, I am concerned about vice racking which could potentially cause damage to the vice. Side-to-side vice racking happens when a workpiece is clamped on only one side of the vice. The work will tend to slip when there is uneven clamping in the vice.

The common cure is to place a piece of scrap wood of the same thickness as the work on the opposite side of the vice to balance the clamping pressure. Unfortunately, as Murphy's Law has it, your scrap wood bin likely does not have the proper size scrap when you need it!

Motivated by this frustration, I began to explore and make devices that are always on-hand to deal with any vice racking. Here are the favourite ones that I have made and employ in my work.

Magnetic Vice Rack Wedge (Not to scale)



Adjustable vice rack stop

My first device is a simple spacer stack, which is adjustable for its thickness to match the workpiece's. This rack stop is easy and costless to make.

1 It is made of a stack of old plastic cards held together with a bolt and wing nut.

2 Start by stacking the cards together and marking on the top card the centre point for a hole near the top edge.

3 Drill the hole and bolt the whole stack together to complete the device. You can also use other similar materials such as laminate or Formica samples to make this type of rack stop.

4 There are two techniques you can use to set the stack to the thickness of the workpiece. In the first method, slide out enough cards from the stack to match the work's thickness, and then place the spacer block in the opposite side of the jaws.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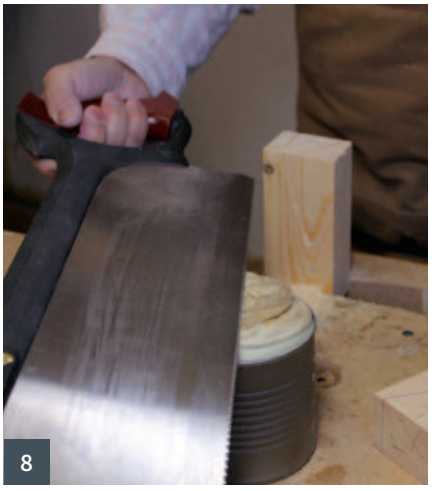
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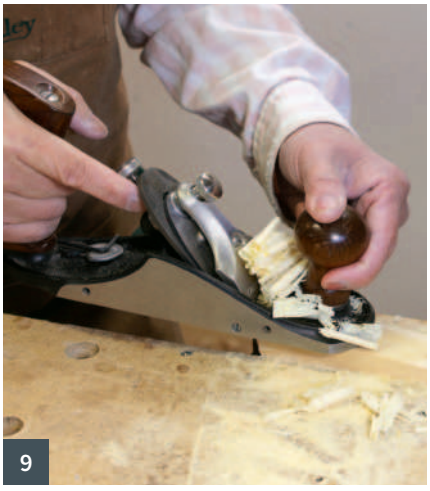
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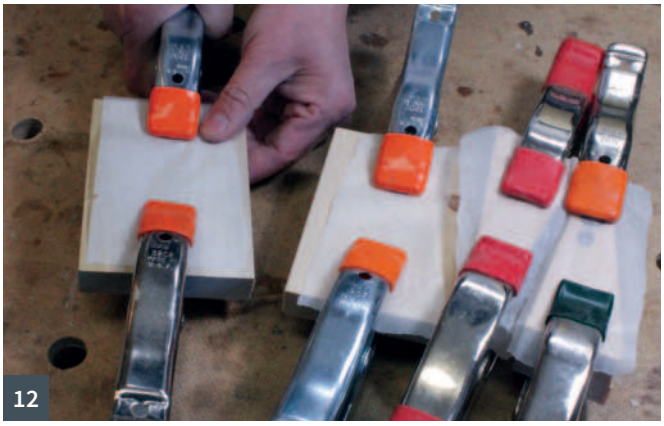
PHOTOGRAPHS BY CHARLES MAK

5 The second way, which I prefer, is to clamp the work in the vice on one side with slight pressure. Then place the rack stop over to the other side and press down as many cards as can fit between the jaws. Lastly, tighten the vice home to secure the work.

Magnetic vice rack wedge

Instead of a rectangular block, my second rack device comes in the form of a wedge which is attached to a top by way of magnets (see diagram above left). The wedge-shaped block provides varying thicknesses to match the workpiece's, while the top keeps the wedge from falling as the sliding jaw is adjusted.

6 Let's start with the wedge. Find a scrap block that's large enough, and lay out a line to form a wedge.
7 Saw the block to shape on the waste side of the line.
8 Lubricate the saw blade as necessary as you work.
9 Remove the saw mark on the bevel side…
10 … then lay out the centre points for the blind holes on both pieces.
11 Drill the holes to depth, and glue the magnets in place – in their proper orientation so they attract.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12 I marked the glue side of the magnets with a cross, and protected the clamp pads with wax paper.

13 Using the rack wedge is similar to using the rack stop. Begin with the workpiece slightly clamped on one side of the jaws, then slide the wedge (with its top attached) into the other side until the wedge locks in.

14 Finally, tighten the jaws fully.

15 The top will keep the wedge from falling when the vice is loosened and the work retrieved.

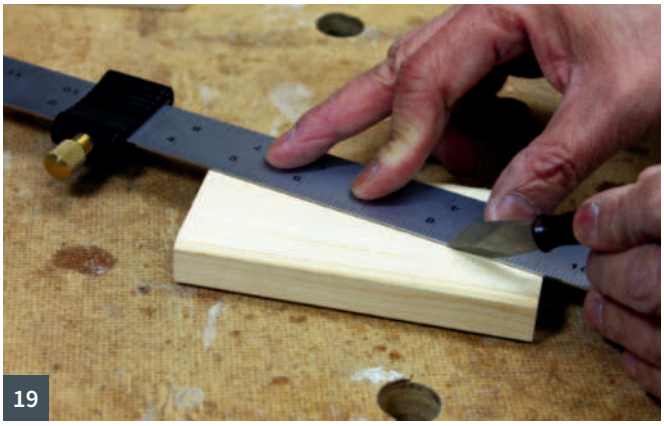
SLIDING VICE RACK WEDGE

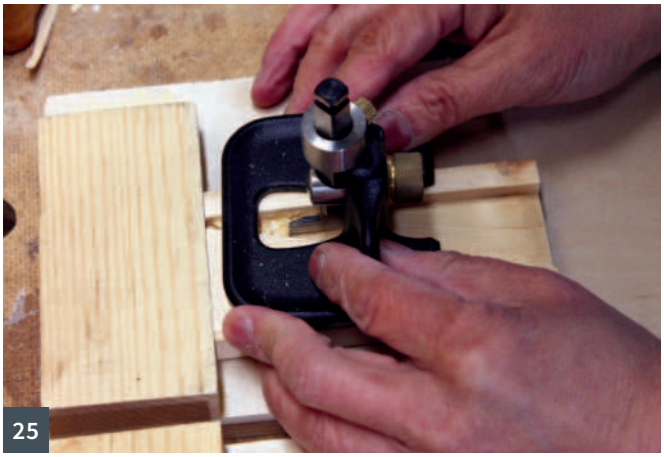
The last fixture can be viewed as a hand-cut joinery version of the magnetic rack wedge. Here, the top and the wedge are held together using a sliding dado joint. It is also one of the projects participants complete in a hand-tool class I teach. If you are a hand-tool enthusiast, get your plane, handsaw and chisels ready.

16 First, cut a wedge from a board in the same manner as described for the vice rack wedge above. Remember to check that the wedge's top and side are square to each other after planing away the saw mark on the bevel side.

17 On the underside of the top, scribe one straight line for the straight side of the wedge.

18 Then lay the wedge in position on the top with the wedge's straight side over the scribed line, and knife mark the bevel side.





19 With a rule and marking knife, scribe the bevel line on the top.
20 In the final marking step, lay out the dado depth on the ends.
21 To cut the dado, chisel a shallow groove as a saw guide on the scribed lines…
22 … and saw down on the groove.
23 After sawing the dado walls, rip a kerf between the dado walls near the middle, taking care not to go below the dado depth.
24 Chisel away most of the dado waste …
25… and finish the job with a router plane. Finally, fit the wedge to the top. It is used in the same manner already described for the magnetic vice rack wedge.

Knowing how to make these handy devices, you now have a couple of important decisions to make. First, you can make all of these vice stops in one single day, or at a more relaxed pace, over a weekend for instance. The second choice is whether you want to make all of them with power tools, or with hand tools alone, or a combination of both. Those choices can sometimes be harder to make than the fixtures themselves!

WEDGE-END BOX

An offcut inspires Derek Jones to make this neat little box

I had this quadrant-shaped block of brown oak left over from a previous project. It had a few faults that made it unsuitable as a turning blank, and its size meant it was not viable for turning into veneer either. But it is not just the character of the material that can be a source of inspiration; the shape of an offcut can just as easily spark an idea.

When it comes to converting offcuts into a project that is made up of small components, it is a good idea to factor in the machining processes required and establish whether they can be carried out more efficiently while the original stock is still in one piece.

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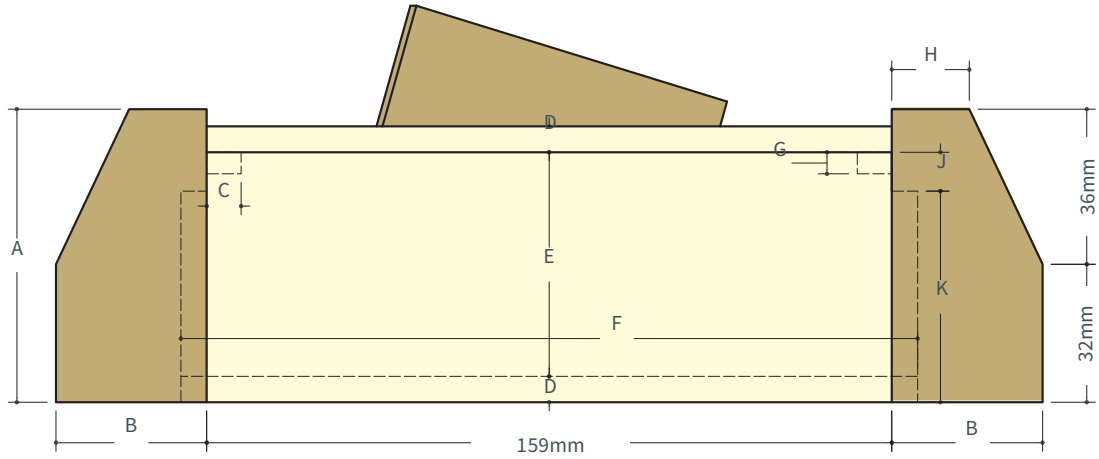
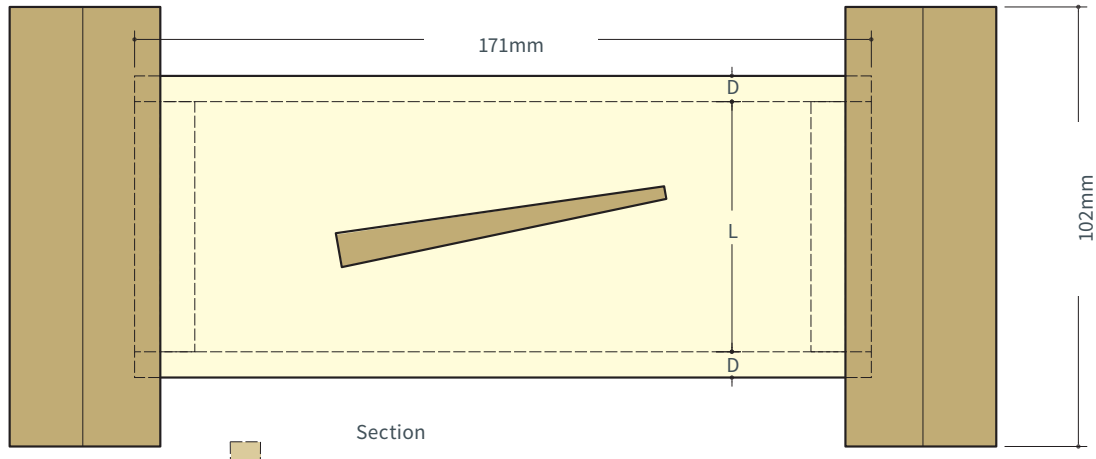
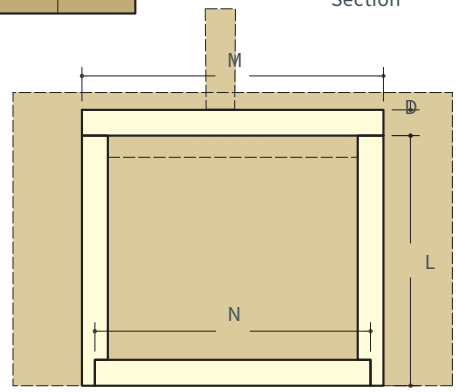


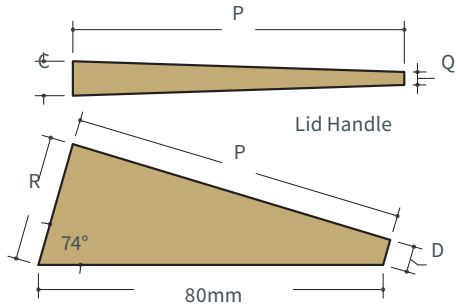
Side elevation



Section

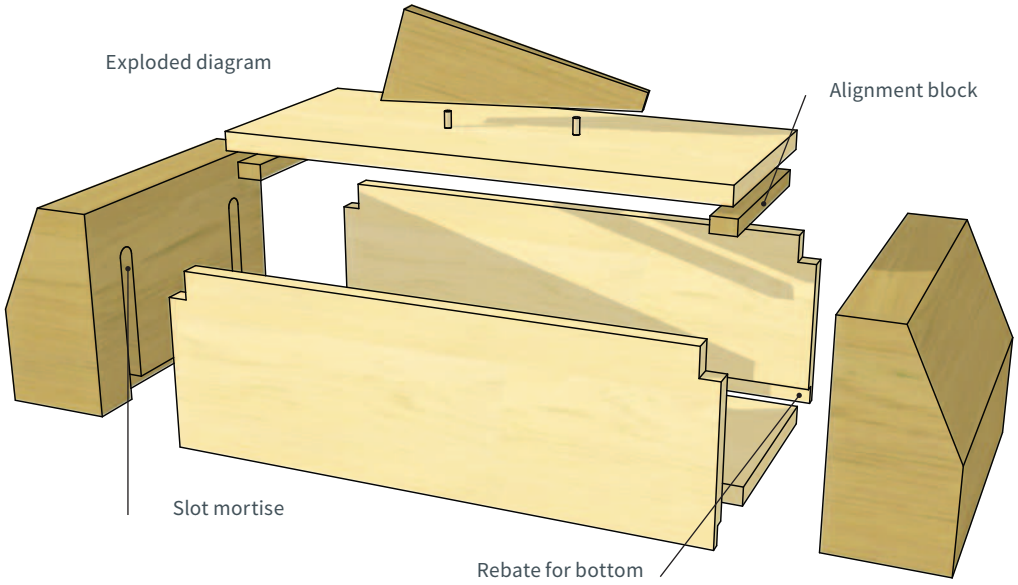
Plan



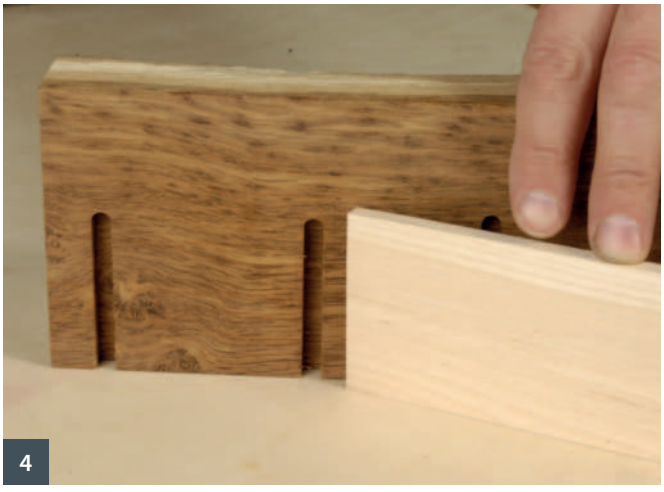


Lid Handle

Exploded diagram



KEY
A = 68mm
B = 35mm
C = 8mm
D = 6mm
E = 52mm
F = 171mm
G = 5mm
H = 18mm
J = 9mm
K = 49mm
L = 58mm
M = 70mm
N = 64mm
P = 77mm
Q = 3mm
R = 29mm



1 The first step is to prepare a flat face and edge to the block from which all the joints could be machined.

2 The new growth was sawn from the block as close to the dark material as possible before planing by hand to reveal the rich grain.

3 Having planed up the material for the box sides to the same size as a two-flute router cutter, machine two grooves to take the sides on one end of the block. The spacing is recorded with a pair of dividers and transferred to the other end of the block.

4 The grooves need to be cut shorter than the height of the box sides.

5 Slide the sides into the groove and mark the depth of the groove at the top end of the side pieces.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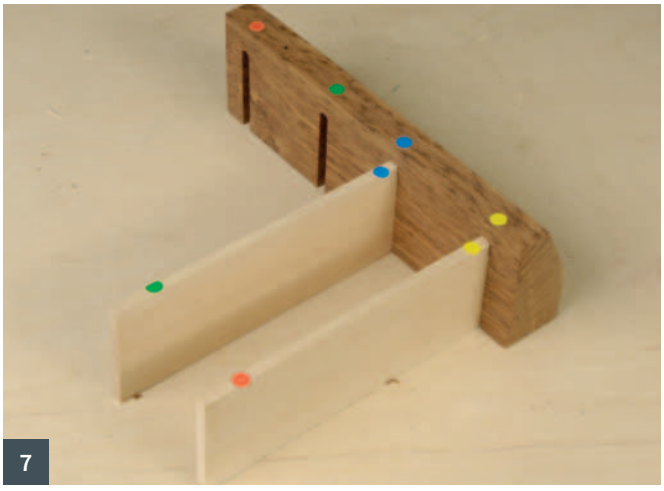
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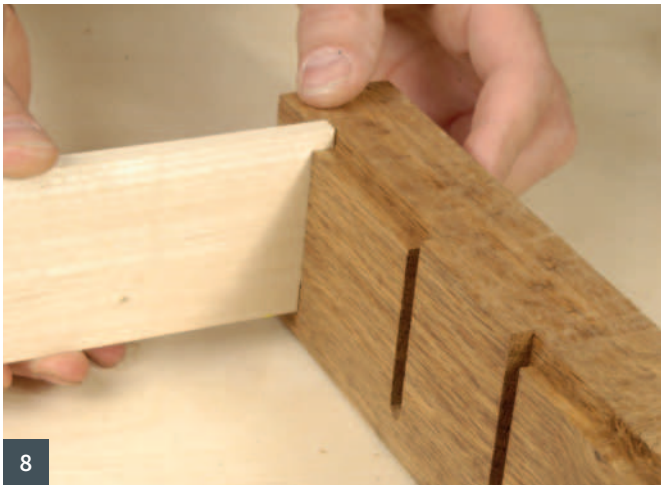
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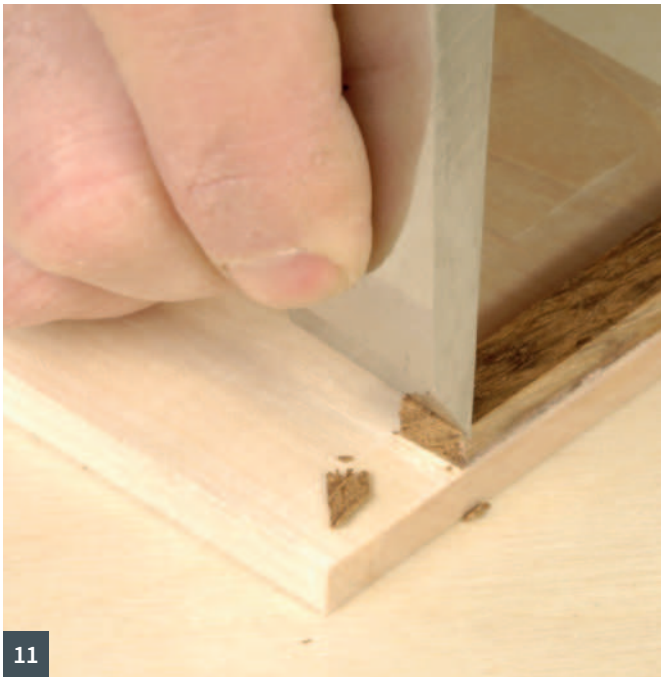
6 Create a small shoulder by removing material from the top corner of each side piece.

7 Trim and mark each component as they will fit together when the block is cut in two.

8 On the bottom of the block, machine rebates between the grooves to take the bottom. Then cut the block in two and trim the ends to match.

9 Clamp the ends to the sides and prepare the bottom. This can be trimmed to a good fit on the shooting board.

10 Make the lid and trim to fit lengthwise, but leave it over-width. Glue a block to the underside of the lid to register it in place against one side. Leave the blocks over-length by 1–2mm.



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11 When the glue has dried, trim the blocks so that the lid sits flush.
12 Mark the width of the lid from the other side and trim to finish.
13 Your finished wedge-end box will look something like this.

TALL BOOKCASE

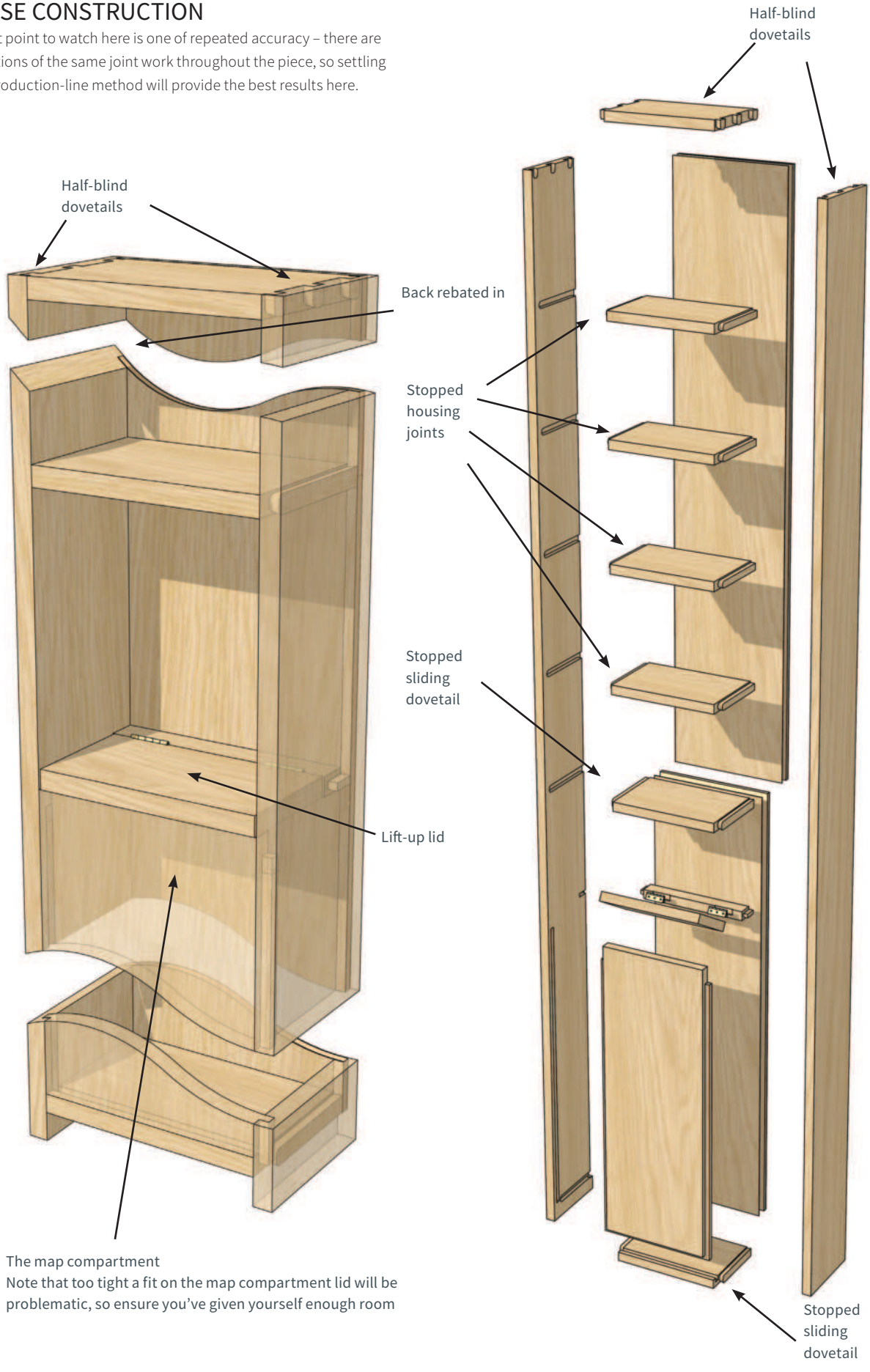
Oz Hassan takes the long and thin approach to bookcase construction, with a clever use of joints and a fine attention to detail

When looking for a piece of furniture to fill an awkward space in the home, bespoke furniture is usually the only option. This bookcase with a tiny 160 x 270mm footprint and a 2,240mm height is a perfect example. It converts an otherwise wasted area between the end of a bed and an existing cupboard into a useful space for storing paperback books and maps.

The project was built with planed oak, brought into the workshop and stored in the rack for a couple of weeks to settle. Note that planing longer planks with a 10in planer can be tricky with the shorter beds if you're considering doing this yourself. Colours and grain pattern should be as consistent and as complementary as possible. The two planks that were the best match were selected for the sides and front panel. The third plank was chosen for the shelves.

BOOKCASE CONSTRUCTION

The significant point to watch here is one of repeated accuracy – there are several repetitions of the same joint work throughout the piece, so settling down into a production-line method will provide the best results here.



The map compartment
Note that too tight a fit on the map compartment lid will be problematic, so ensure you've given yourself enough room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The sides

1 Even though the planks were pre-planed, the edges were not straight, and had to be straightened with a long guide and a router, which left a clean finish.

2 The sides were then cut to the correct width on the tablesaw using the straightedge against the fence. In-feed and out-feed roller stands were required for support. The sides were clamped together and cut to length.

The top, shelves and bottom

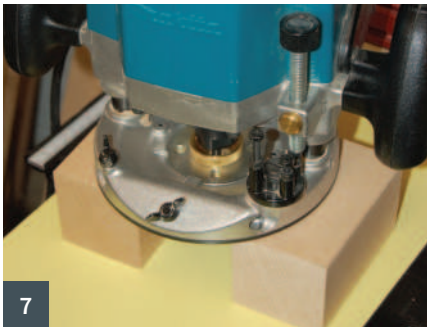
3 Because these pieces were very short the overall straightness of the plank they were cut from wasn't an issue. By chance, the plank was the required width so it was ready to go. A stop was positioned and clamped to the bench to avoid having to measure the lengths each time. The compartment lid was cut 4mm less than the internal width of the case to allow it to open and close without rubbing on the insides.

The carcass

4 The bookcase is held together with half-blind dovetails at the top and stopped sliding dovetails at the bottom. The bottom is also the base of the map compartment. For solidity I planned another stopped sliding dovetail on the lowest shelf. The other shelves are attached with regular stopped housing joints. The half-blind dovetails were cut on the dovetailing jig, and the fit was perfect.

5 I cut the tails first…

6 … and then the pins.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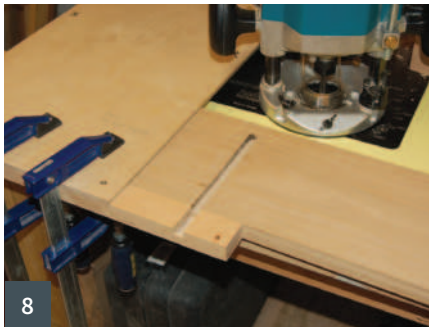
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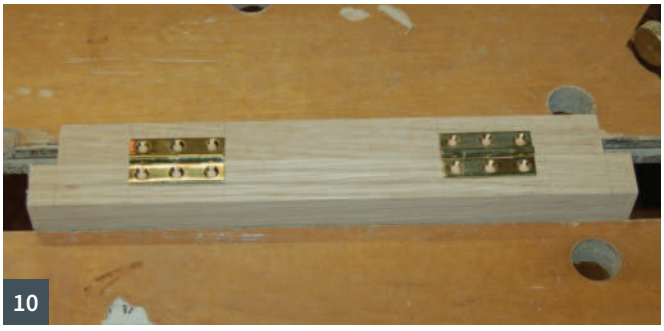
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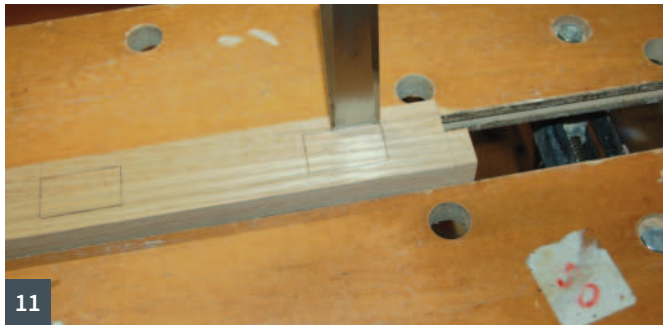
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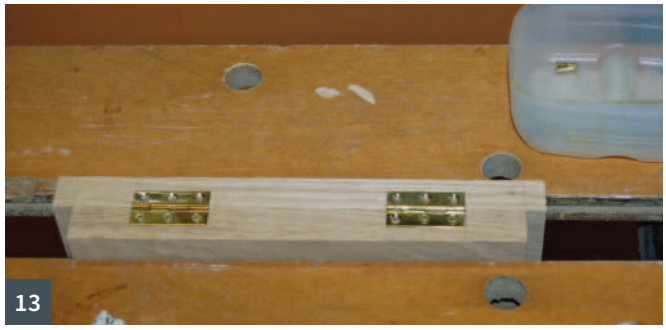
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PHOTOGRAPHS BY OZ HASSAN

The dovetail joints

7 With the dovetail joints, the depth of the cutter has to be fixed in the router. If it moves vertically the joint will be ruined. This means that between cuts, when the router is not being used, the cutter prevents it from being stood up. Rather than lay the router on its side, I use a couple of blocks to stand it on. To cut the sliding dovetails on the bookcase sides, first a straight cutter was used to remove the bulk of the waste and then a dovetailing cutter was used on the two sides to finish off, with a simple straight board clamped to the sides used as a guide. Be careful when making the second and third cuts: the router can suddenly be snatched into the joint, ruining the piece. The sliding dovetails on the shelves were cut with the same cutter that was used to cut the slots in the sides. The dovetailing jig was used but this time with a guide rail. The notches were then cut on the bandsaw.

The housing slots

8 To cut the housing slots I used a shop-made jig as a guide clamped to the piece and a standard 10mm straight router cutter. I always cut to a depth of 10mm. A slot the width of the cutter means you don't have to reposition the guide; only one pass is required. When cutting joints near the end of a piece, unless the jig has been made with a left- and a right-hand side you'll have to turn the piece through 180° to clamp it down.

9 The shelf was cut on the router table using a rebate cutter. When I built my router table I incorporated a lifting mechanism into it. With this, the cutter can be raised or dropped fractions of millimetres in seconds. The shelf was notched on the bandsaw.

The map compartment lid

10 The lid is attached to a small cross-piece with brass hinges. The cross-piece is jointed to the sides with mortise and tenons, cut to the same length as the shelves and then clamped together with the lid side by side, their centres aligned. The faces that would eventually be the undersides were outward facing in the clamp. The hinges were positioned so that they straddled the two halves and marked with a pencil.

11 A sharp knife and mortise gauge were used to mark the outline of the hinges, and then a chisel was used to emphasise the mark.

12 With the pieces still in the clamps I used a small router freehand to remove the waste, the depth of the cutter set by first setting the depth stop with the cutter level with the base. The stop was then raised by the thickness of the hinge. A chisel was used to remove the waste.

13 After the waste had been removed the hinges were replaced and the screw holes marked. The holes were drilled and steel screws used to open them to the correct diameter. The final fit will be with brass screws but they are softer and may be damaged by the initial use.


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Marking up

14 With the carcass assembled and on the bench the position for the cross-piece was marked. The carcass was then dismantled and mortises were then marked.

15 The mortises were cut freehand with a small router …

16 … and tidied up with a chisel. The tenons on the cross-piece were cut on the tablesaw for the shoulders and the bandsaw for the cheeks.

The map compartment panel

17 With the case assembled without glue to check the accuracy, I clearly marked with chalk where the slots for the map panel will be cut.

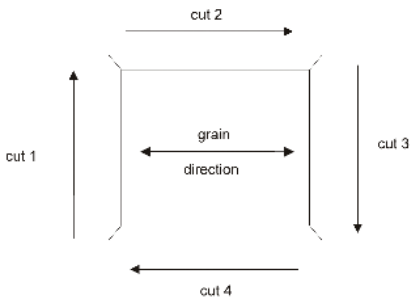
18 The two offcuts from the side planks were edge jointed with biscuits and clamped.

19 After the glue had cured, the panel was taken out of the clamps, the glue scraped off and the panel flattened.

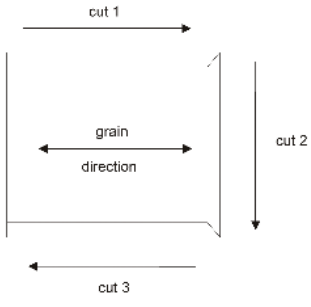
20 It was then carefully cut to width.

21 To allow for seasonal movement the panel is loosely fitted. A rebate on the sides and bottom, three sides only, of the panel will fit into slots in the carcass. The rebate was cut on the router table with the front of the panel face down.

22 The waste was removed with successive passes; each time the tool was raised a little until the rebate was the required depth. The process is identical to a fielded/raised panel in a door or drawer bottom.



23 FOUR SIDED BEVEL



THREE SIDED BEVEL

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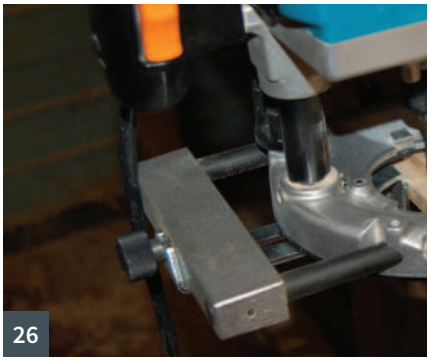

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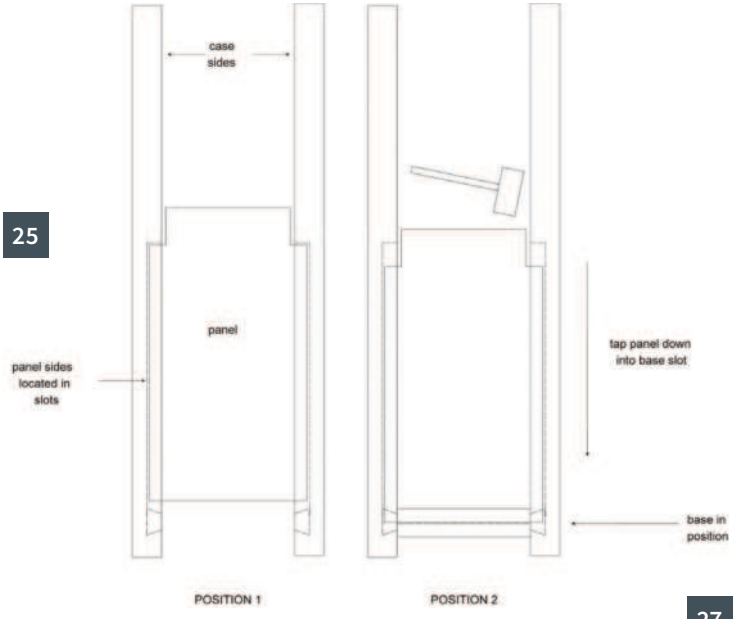

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27

23 When working your way around the panel making the cuts, the last cut you should make is the one along the grain. The reason for this is cutting across the grain will cause a little tearout. Cutting along the grain will remove it. If the last cut is made across the grain you'll be left with a visibly damaged panel.

The slots

24 The position of the slots had been marked with chalk when the bookcase was dry fitted. Those in the sides were routed with a guide rail. The slot in the bottom was cut on the router table. The front face of the panel will be flush with the front edge of the sides, so the position of the slots from the front edge of the bookcase was the same as the depth of the rebate on the panel. The slots were made with a 10mm cutter. This was a gnat's whisker wider than the rebate on the panel.

25 The length of the slots in the side was determined by the assembly sequence. The map compartment panel could not be positioned until the base was in place. So, the sides of the panel had to be notched to allow it to be slid into position after the base had been positioned but without exposing the slots in the sides.

The back

26 The sides were clamped to a long bench and the router used with a guide to cut full length rebates for the back. Oak-veneered board was cut approximately to size for the back panel. It was later cut to fit after the carcass had been glued up.

Finishing and assembly

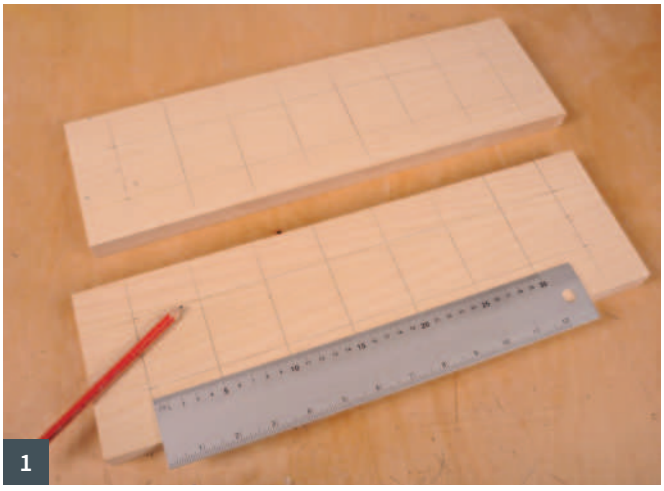
27 All components were sanded to 400 grit with a random orbital sander before final assembly. Doing this with the item in pieces is much easier and quicker and results in a better finish.

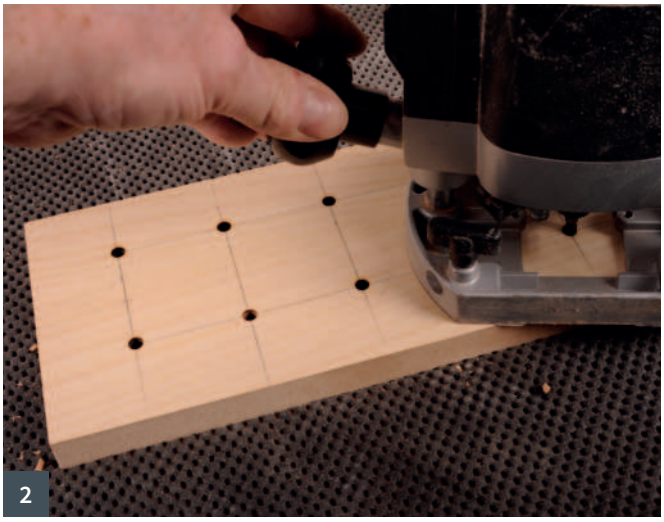
The glue-up was carried out on a long bench with a dust sheet laid down. The stages of assembly were:

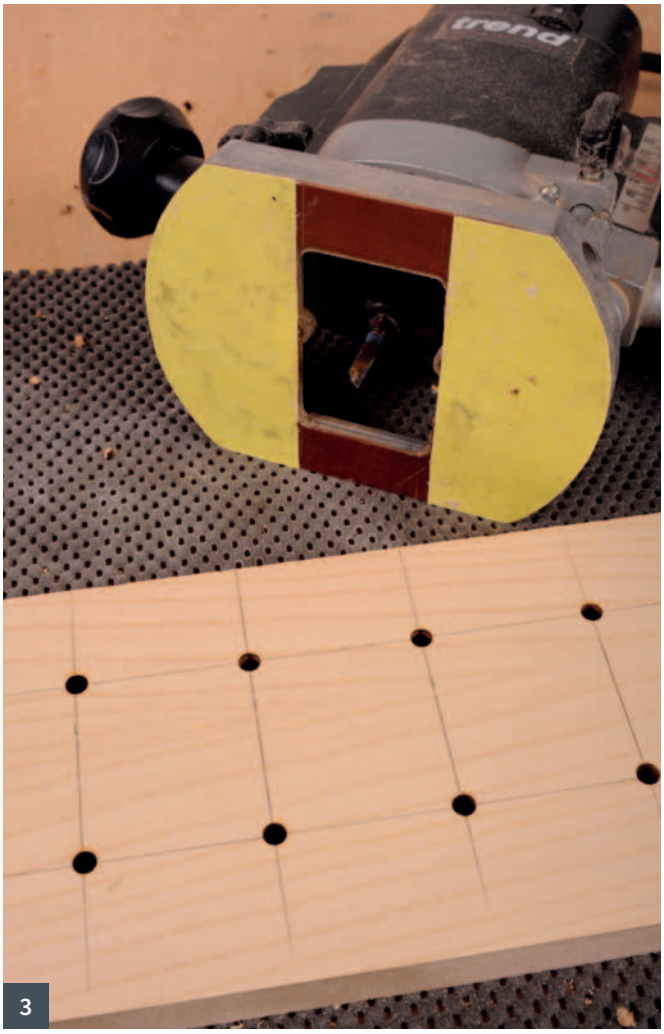
- The map panel was fitted into the sides without glue, allowed to move.
- The bookcase top was fitted with glue.
- The base was slid into position with glue on the sides only, not in the groove for the map panel.
- The map panel was tapped down into the base with a soft mallet.
- The other shelves were slid into position with glue
- The compartment lid cross-piece was inserted with glue.
- The case was checked for square. It was a little out so a little tap on the long corner with a soft mallet corrected this. On a smaller cabinet a long clamp may be used to draw the corners in.
- The bookcase was clamped up. The clamps with steel jaws were packed with small offcuts to prevent bruising the timber.

CUTTER SELECTION BOARDS

Storing cutters so they're ready to use can be tricky. Anthony Bailey has the perfect storage solution







PHOTOGRAPHS BY GMC PUBLICATIONS

Storing cutters in a way that keeps them ready for use is often a bit of a nuisance. They can be in cases or in single packets or worse still, simply loose clanking against each other. I wanted to find a better, more accessible way of storing them especially as I have rather a lot of cutters. This design of storage means they are easy to see and to access.

Each board can be lifted off the wall as required; the inverted U-shape underneath makes it easy to pick them up again. The boards simply drop onto matching L-shapes fixed to the wall.

YOU WILL NEED

- Board offcuts of 18mm MDF approx. 430 x 130mm
- Board offcuts of 9mm MDF in strips
- Offcuts of prepared softwood batten
- 40mm twinfast screws
- PVA glue
- Medium abrasive paper and disc
- 6.4mm and 12.7mm straight cutters

Making the boards

1 Find a suitable piece or pieces of 18mm-thick MDF, cut to size and mark out the cutter positions. I decided to make them 50mm apart widthwise, but with slightly deeper spacing from back to front so it was easier to lift any of the back row out for use.

2 Fit the straight cutter needed for the shank size required, e.g. 6.4mm for 6.4mm shank holes. Spraymount medium abrasive paper on the router base so the router stays still while you drill each hole. Set the depth of cut to about two-thirds of the board thickness. Aim the cutter carefully on each set of crossed lines in turn and plunge smoothly.

3 With care, the alignment of the holes should be very accurate. Slight scorching around the holes from drilling will easily sand away.

4 Sand all pencil marks away so the surface looks clean. Here, a board with 12.7mm shank holes is being sanded to a finish.

5 Now glue two battens underneath. One will sit in the L-shape that we are going to fix to the wall; the other will keep the board level when it is taken down and sitting on the bench.

6 Make up an L-shape for the wall. The trick is to make the batten a fraction wider than those under the cutter board. That way the board will lift in and out easily. If you cannot machine it to the required size, use a strip of veneer as a packer to do the same thing. Drill and countersink ready for the screws.

7 Use one screw to fix the L-shape to the wall, check and adjust the level, then put screws in the other holes. There need to be enough screws to support the weight of the board when loaded with cutters.

8 Your finished cutter selection board will look something like this.

4

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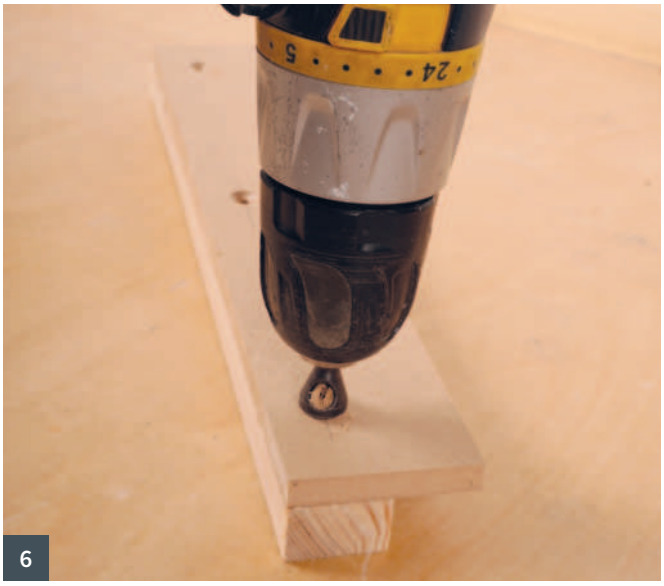

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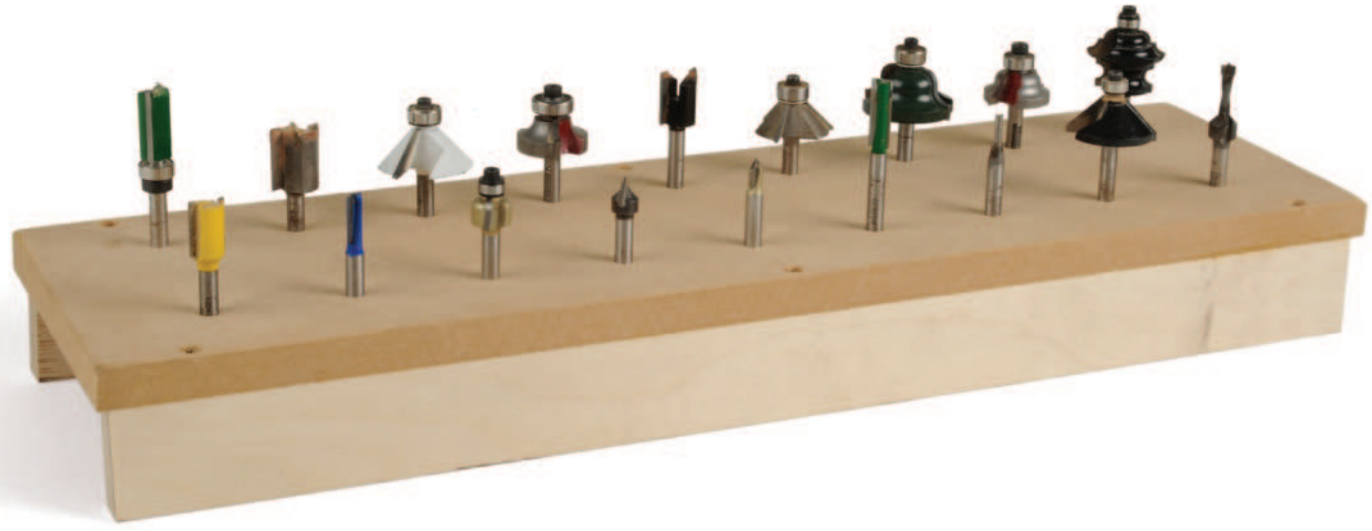

8

Find out about the latest products for your workshop

KIT & TOOLS

Odie's Oil From £48

Odie's Oil is a non-toxic, food safe, one coat, naturally effective, interior and exterior wood finish and stabiliser. The company's products use natural oils and waxes to protect wooden surfaces. The finish is easy to apply – simply wipe it on and buff it off. The wood surface and pores are completely saturated with the oils and waxes in Odie's Oil so there is no room for unwanted water, moisture or stains from wine, oil, grease, juice, etc. Odie's Oil contains no solvents, so almost nothing evaporates from the application during the drying process. Additional coats can be applied depending on wood species and desired visual effect. The Oil can be used on all species of wood and is formulated to work on even the oiliest of timbers. It contains natural UV inhibitors (sunscreen for wood!) and the finish becomes more beautiful with age.

Odie's Wood Butter can be applied to all interior and exterior wood, boats, bright work, doors, floors, decks, gates, fine furniture, patio furniture, bowls, cutting boards, kitchen implements and toys. Odie's Wax can be used where minimal colour change is required for paler woods; it can be used alone or in combination with oil or butter to build lustre and depth and increase protection.

OXI Oil is applied in the same way as Odie's Oil and will darken with age to give a vintage appearance. Odie's Dark Oil, Butter and WAX darkens wood and will also darken further with age. It immediately highlights colour contrast in the grain, emphasising blacks in particular. They are ideal on darker woods as well as any wood where a darker finish is required.

www.woodandmetalcrafts.com

Shaker Magnetic Catch From £69.50

Bunting has recently added the Shaker Magnetic Catch to its range of magnetic catches. The new Shaker Catch is designed for quicker installation, with only one screw providing secure fixing and is suitable for handmade in-frame doors for bespoke cabinets.

The catch is 29mm long by 20mm deep and 15mm high and features a chrome finish with a hidden screw head. Fixing requires only one No. 4 woodscrew, and raised bosses on the mounting surface prevent any rotation even though only one screw is employed. The magnetic strength of the catch generates a 5kg holding force.

There are different styles of catchplate available for the Shaker Magnetic Catch: a standard blank catchplate; a leather-clad catchplate that dampens down any noise from the closing of the catch; and a catchplate with a branded-embossed leather buffer.

The Shaker Magnetic Catches are available in packs of 25, 100, 250 or 500.

e-magnetsuk.com

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Surface Planer
152mm (6")

TSPL 152

NEW

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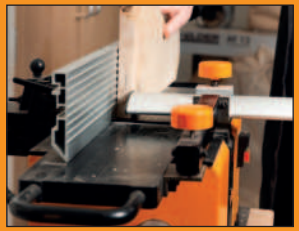
Perfectly partnered to Triton's ever popular TPT125 1100W Thicknesser, the TSPL152 is a must-have for any woodworker's workshop.

Push Blocks & Push Stick included



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3YR GUARANTEE

KATSUOBUSHI KEZURIKI

Mitch Peacock builds a Japanese kitchen utensil – a bonito flake maker

Being a woodworker with a social media presence, I am frequently challenged to make things. I graciously turn down most requests, as they rarely excite me, and how many bird boxes or whirligigs does one man need! One recent challenge did pique my interest, however: making a katsuobushi kezuriki. Admittedly, I didn't have a clue what it was to begin with, but the specific challenge of making it using a Japanese plane iron, wood, finish and nothing else, is just the sort of thing that can keep me in the workshop after the sun goes down.

A little research revealed that a katsuobushi kezuriki is a traditional Japanese kitchen utensil, similar to a mandoline, for flaking dried bonito fish. Essentially it consists of an open wooden box, atop which sits an inverted Japanese plane.

Materials

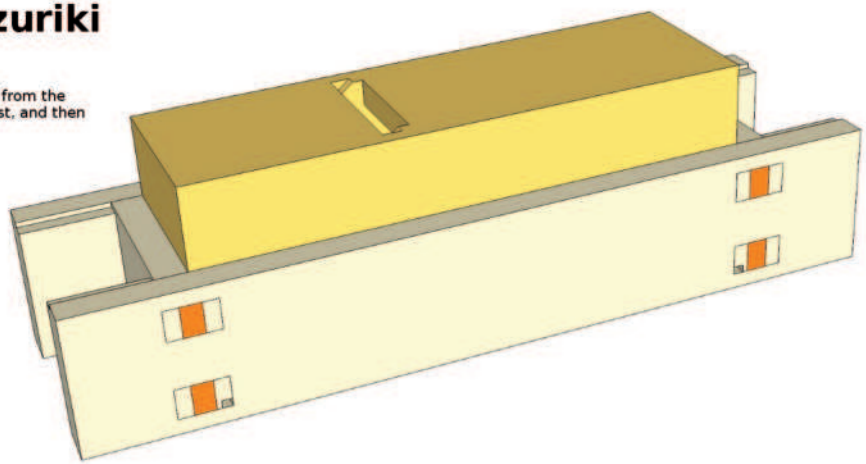
1 The continuing Covid-19 lockdown meant I had to rely on my own stock of wood. The plane, or kanna, needed a stable hardwood, and I opted to rip a section of quartersawn material from an offcut of English oak. As a board end, it did have some small shakes in it, but they shouldn't be overly stressed so long as the iron was fitted well. The box could be made predominantly from softwood, Scots pine in this case, with some European cherry (hardwood) fixings.

1

PHOTOGRAPHS BY MITCH PEACOCK

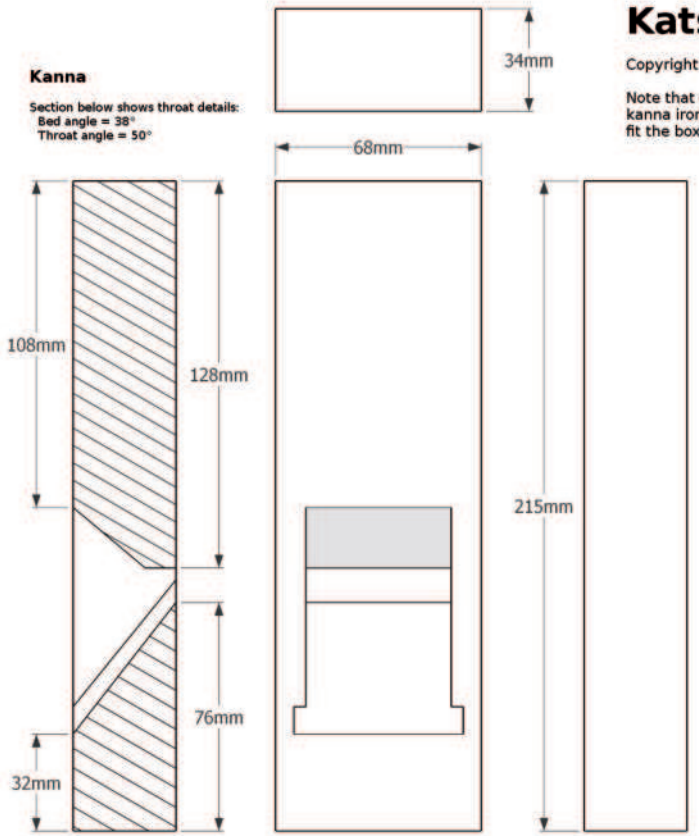
Katsuobushi Kezuriki

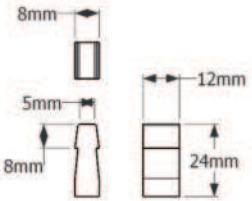
Note that exact sizing should be determined from the kanna iron being used, so build the kanna first, and then fit the box to it.

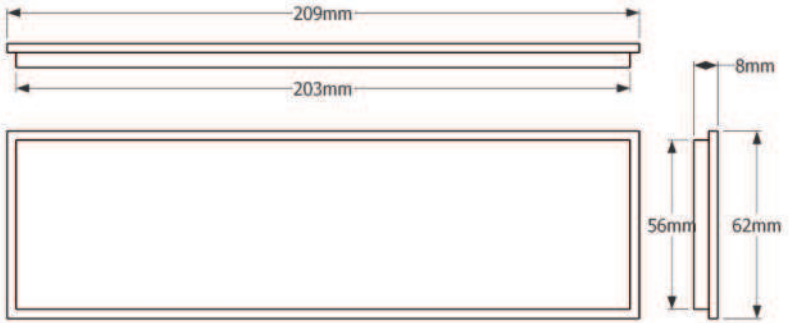


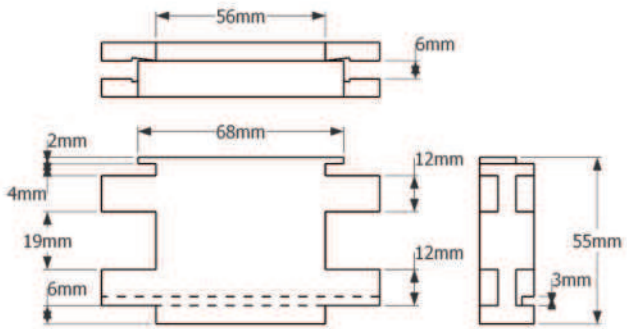
Kanna

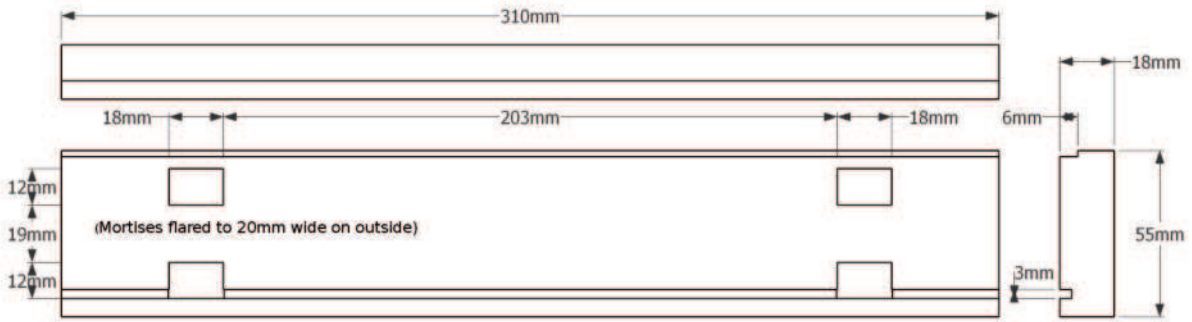
Section below shows throat details:
Bed angle = 38°
Throat angle = 50°









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Making the kanna

2 I chose to complete the project using just hand tools, and began by making the Japanese plane, or kanna. Using the plane iron to size the width of the kanna, I ripped the body from my oak offcut.

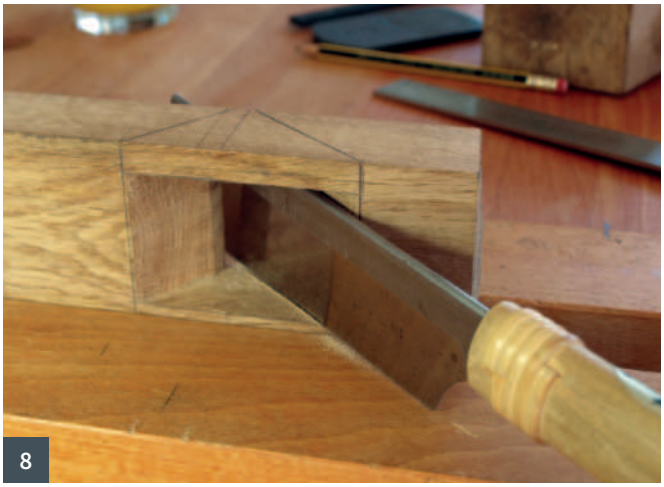
3 The body was trued by flattening one face, squaring the edges and thicknessing.

4 Its length was governed by the offcut, and I simply squared up the ends.

5 The easiest method of creating the mouth, throat and bed of the plane would be to slice each side off, saw the centre section appropriately and glue the pieces back together. However, my challenge didn't allow for glue, so I began by boring holes right through the mouth.

6 After much chopping and paring, the basic mouth, throat and bed were completed. The bed angle of 38° was taken from the one kanna I have in my workshop. As was the 50° slope to the front of the throat.

7 The plane iron, which is tapered in its thickness, is held in the body by grooves adjacent to the bed. These grooves must match the iron's taper, and so a wooden template was prepared that could be used to mark out for the cuts.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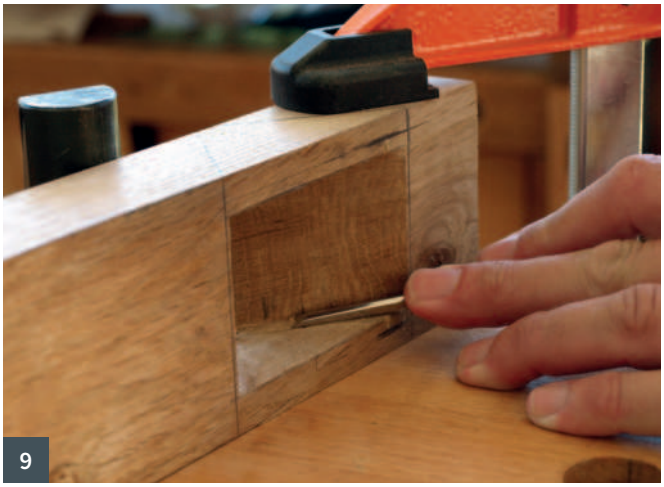
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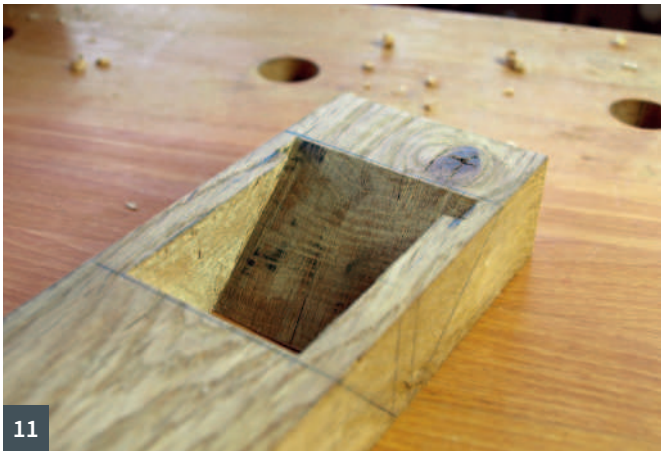
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8 The grooves were sawn …

9 … and the waste pared away. The depth of the grooves was made such that the iron could be adjusted laterally. The iron also tapers a little in its width, and there must be enough room to prevent it jamming between the sides of the plane.

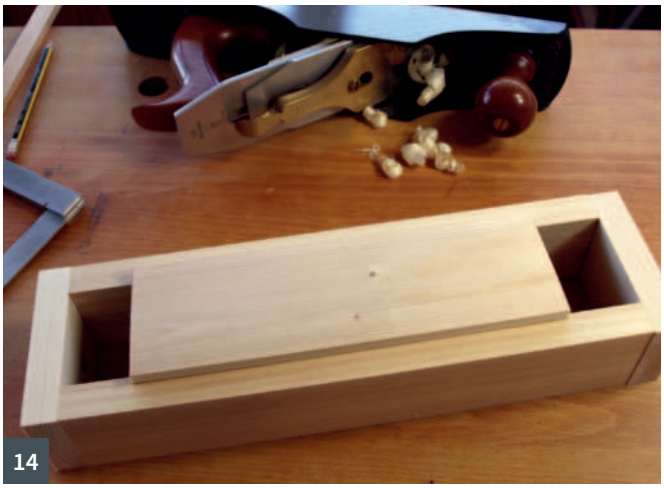
10 Bedding of the iron was achieved by applying graphite to the back, installing and removing it, and then carefully scraping down the high spots that were identified.

11 The iron should tighten up just before it reaches the mouth, such that once set, by tapping with a hammer, it will remain in place when a shaving is taken. If too much were removed during bedding, or the grooves were cut too wide, then paper can be stuck to the bed to tighten it up.

12 All the edges were eased on the kanna body, before it was successfully tested.

Making the box

13 With the kanna complete, the box was sized to fit. All the box parts were cut to size, allowing plenty of excess beyond the length of the kanna so that wedged mortise and tenon joinery could be used.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14 A 6mm rebate on the inside of the box will hold the kanna, and determines the length of the ends.
15 A groove was ploughed towards the bottom of the box sides and ends, which will eventually hold the box bottom in place.
16 Rebates for the kanna were cut at the top of the sides and ends of the box.
17 The box bottom was also rebated to allow it to fit within its groove.
18 Twin tenons were prepared on the box ends, to fit tapered mortises chopped in the box sides.
19 The top of the ends were left long enough to cover the rebates in the box sides, but elsewhere the rebates and grooves were left exposed to show the construction method.


15


17


19

20 To expand the tenons in the mortises, I made some hardwood wedges. In an attempt to prevent these wedges failing, remembering that no glue was allowed, I shaped them with blunt arrowheads which would catch in similarly shaped recesses in the tenons. The pine compressed enough to allow these to be driven home, and sprang back to capture them in place.

21 The tails of the wedges were sawn off flush, and the box sides were planed to remove marking out lines. The wedges held extremely well, and the end grain planed wonderfully.

22 The top and bottom edges were flushed, before all the external edges were chamfered.

Finishing off

23 Both kanna and box were given a mineral oil finish, and the box also got a coat of wax oil on top. Most wood finishes are food safe after they have dried and any solvents have evaporated, but it's reassuring to apply a finish that's food safe straight out of the jar. I've yet to get hold of a dried bonito block, but the kezuriki had no problems slicing carrots. However, don't tell the wife as I rather fancy the idea of keeping the kanna in the workshop!

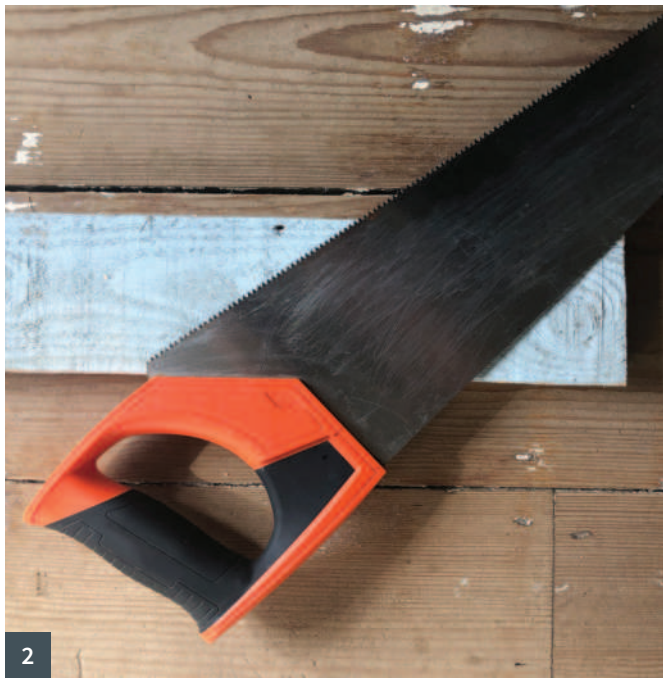
PALLET HEADBOARD

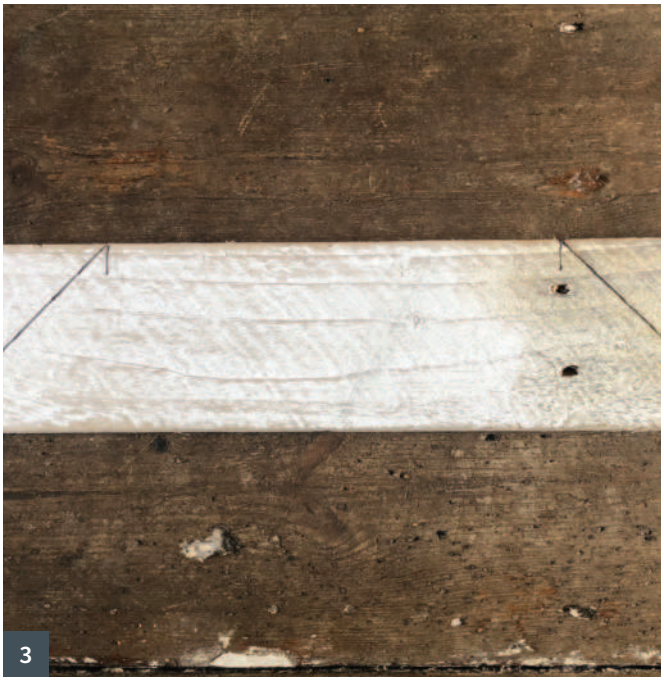
Emma Basden turns scrap wood into a stylish home accessory

With its striking off-centre diagonal design feature, this bedhead will make a fantastic centrepiece for your bedroom. This project is for a single bed, but you can easily scale it up for a double, queen or king-size bed – the process is exactly the same, no matter what size you are working to.

YOU WILL NEED

- Pallet planks (any type; the number required will depend on the dimensions of headboard you want to make)
- MDF or chipboard, just larger than the headboard will be
- Hand saw, jigsaw or power saw
- Drill
- 30mm wood screws
- Tape measure or ruler
- Combination square (to set a 45° angle)
- Pencil or marker pen
- Wood glue
- Wood filler
- Sander and sandpaper (120-grade)
- Chalk paint and paintbrush
- Beeswax and clean cloth to apply it





PHOTOGRAPHS BY GMC PUBLICATIONS

Making the headboard

1. Cut a piece of wood (MDF or chipboard) to just over the width of the bed you are making the headboard for, and establish how high you want it to be from the mattress when it is on the bed. For this project, the dimensions of the headboard were 1,000mm wide x 770mm high. This headboard will be attached to the wall so it does not need legs. To make your frame, take four lengths of wood and cut two of them to the width of the piece of wood and two to the length. Now take each piece of wood and cut the ends at 45° angles at both ends. There are several ways to do this: use a power saw that has a 45° cutting setting; set a combination square to 45° or use the 45° guide that is on every hand saw.
2. Next you will start to cut the planks (note that some of the planks have been painted and sanded to give texture to the design) again using 45° angles at both ends. First, you need to cut a perfect triangle. Take the first plank. From the top of the end, draw a 45° angle using the 45° angle on your hand saw (or use a power saw and combination square as described above) and make your cut.
3. For the second plank and all remaining ones, you need to measure the length of the last plank you laid (at its longest side). Mark this length on the middle of a plank, then mark your two 45° angles, starting at the marks you made when marking the length on the plank, and draw your cut line outwards.
4. Continue to cut and place the planks down. You will see they all fit neatly together.


5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5 To create an interesting pattern, draw a line down the middle or one-third of the way across the board, and cut the planks up to the edge of the line. This will allow you to start again on the other side of the line; if your planks are all the same width they should line up neatly.

6 Once you are happy with the design of your headboard, remove all of the cut planks and put them aside. Take some wood glue and spread it generously across the board. Lay your planks back down in the correct order and press them into the glue so that they are secure and leave to dry.

7 Once the glue has set and your planks are securely in place, take some wood filler and fill the gaps between the planks. With pallet wood, there will always be irregular shapes; the filler helps to even these out a little. Sand all the planks lightly to make sure they are smooth and that the filler isn't visible anywhere other than in the cracks.

8 Consider the colours of the planks and shapes that they make. For example, here the brown-stained planks all meet up in the middle to create chevrons. If you want to make any changes to the colours or to stain some of the planks, now is the time. Once you are happy with the way your headboard looks, apply some beeswax to the boards using a clean cloth.

9

9 To finish the headboard, cut a plank 100mm wider than the board and attach it to the top of the headboard with 30mm wood screws. The plank should stick out either side by about 50mm. You can attach heavy-duty picture hooks to the back of the frame, then hang it onto screws drilled into the wall. Make sure you use the correct rawl plugs so it's secure and safe (brick walls need plastic rawl plugs; plasterboard walls need metal plasterboard rawl plugs).

From *Pallet Craft* by Emma Basden, published by GMC Publications.
ISBN-13: 9781784944865

USING PLANES

John Bullar asks how many planes we need, how to use them and how to keep them in good condition

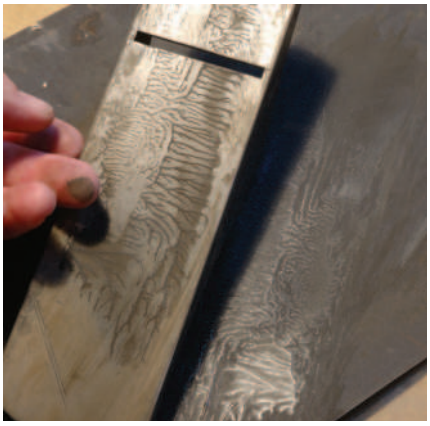
Some woodworkers collect a vast array of hand planes while others produce really fine work with just one or two. I admit, planes are desirable tools, but good new ones are expensive. So, what planes do you really need for handmade woodworking?

PHOTOGRAPHS BY JOHN BULLAR

Restoring old planes

To save a bit of money it is often better to restore an old plane of reasonable quality, rather than buy a cheap new one. So long as it has never been dropped, the body of the old plane will have been properly heat treated making it free of stress while a poorly made new one may be difficult to set up properly.

Strip the old plane of its components ready for restoring. The sides and the sole should be rubbed against wet and dry paper previously soaked in water then laid on thick glass. This cleans away surface rust while flattening the steel. The plane components are cleaned, polished then rubbed with furniture wax before re-assembling. This prevents any more corrosion resulting from damp air.



Rub the sole firmly to remove rust

After careful cleaning and adjustment the restored plane should work well

Block planes

The block plane is smaller than the bench plane, and is ideal for small fine strokes, trimming edges and joints. You grip the block plane with one hand, index finger pressing on the dimpled front screw while the thumb and other fingers grip the sides.

Block planes are ideal for trimming joints

A good setup

The cutter has a smooth, flat top surface which the chipbreaker clamps firmly against. This fit is very important as any gap here would collect small shavings, and then larger ones would pile up against them. A badly shaped or adjusted chipbreaker is one of the commonest problems with bench planes.

A well set up chipbreaker is essential

Planing end grain can be tricky

A sharp plane shouldn't need much in the way of downward pressure

On the level

End grain shaves the same as long grain once the plane is well adjusted, so it is easy to level over joints like through-tenons. However, planing end grain by itself is trickier because, if you plane over the edges, they will tear. Chamfering the end grain first will stop the tearing, producing a clean finish.

Bench planes come in sizes and half sizes between numbers one and eight. The smaller sizes are lighter to handle and will smooth a surface even if it is not completely flat. Larger sizes need more patience but will flatten a large surface or straighten a long edge.

Plane with the grain – look for 'even' shavings to confirm this

A difference in the thickness of shavings suggests the need for adjustment

Fine adjustment

Final adjustment is made by planing a scrap piece of wood. You need to plane 'with the grain' but sometimes it is not clear which way that is, so try both ways. Once the surface is flat, shavings should spill out thin and even. The lever needs careful movement to level the cutter to an equal depth on each side.

With the blade honed to a razor-sharp edge and carefully adjusted for fine work, consistently even shavings can be achieved. The plane shown above produced shavings of one twentieth of a millimetre thick across the full width of the cutter. Even a timbe r like bird's-eye maple, with its thousands of tiny knots, can be planed to a silky-smooth finish.

The plough plane

The chisel plane

The rebate plane

Special planes

The plough plane has fences to guide it like the rebate plane, but its cutter is narrow for making a groove, sometimes known as a housing. It also has two vertical cutters to slice the side walls of the groove. The plough plane can be adjusted to take cutters of different width.

A hybrid between a chisel and a plane, the chisel plane is useful for removing squeezed-out glue from joints or cleaning up inside tight corners. It's certainly a nice tool but it is by no means essential – with care you can do these jobs using a chisel.

The rebate plane is designed to make a groove in the edge of a piece of wood, sometimes referred to as a rabbet. This plane has a couple of fences built in, one on the far side to limit the width of cut, and one on the near side to limit the depth.

Cabinet scrapers are useful for smoothing difficult surfaces

Scraping by

Not perhaps a plane in the conventional sense, the cabinet scraper is good value and an effective device for smoothing surfaces, especially the difficult sort that catch and tear under a smoothing plane. The rectangular steel plate has a neatly ground, square-edge which is then burnished over to form a hook.

As well as the hand-held sort, some cabinet scrapers like the Stanley No. 80 have a pair of handles to ease pressure on the fingers. The small flat sole also prevents the scraper digging into hollows.

The Stanley No. 80 cabinet scraper

The compass plane

Be careful to plane to the arc when using a spokeshave to smooth a curve

Round the curve

The compass plane is an expensive precision tool that can smooth the inside or the outside of a curve. The cutter mechanism is just the same as on a bench plane, but instead of being flat the sole of a compass plane is made from spring-steel plate. The adjustor knob on top pushes or pulls the sole into the shape needed for the curved wood.

Spokeshaves are useful for smoothing tight or complicated curves. They are simple tools that you can buy for a moderate price and with care can do the same job as a compass plane. They feel very different from a plane, but with a little practice they work in the same way and are enjoyable to use.

The planes you really need

It is always better to have a few good quality tools than a shed-load of poor ones. If I had to choose just two planes to work with they would be a 5½ bench plane and a low-angle block plane.

The 5½ bench plane

SHARPENING: A WOODWORKER'S GUIDE

We review the latest book from woodworker Randall A Maxey

One of the most important aspects of successful woodworking of any kind is having sharp tools. This new book from US-based woodworker Randall A Maxey will help ensure your tools are always in tip-top condition. It's a comprehensive guide that covers sharpening by hand, machine sharpening, traditional sharpening techniques and the latest innovations in sharpening technology.

It begins with the basic principles of sharpening, explaining bevel angles (illustrated with easy-to-follow diagrams) and giving an overview of all the different tools and supplies, with guidance on using abrasives, oil stones, waterstones, diamond stones, strops, honing guides and powered sharpeners.

The 'Sharpening in Practice' section is broken down by tool type, demonstrating how to sharpen chisels, hand planes, router bits, planer/thicknesser blades, drill bits, and carving, garden and kitchen tools. Such a comprehensive list makes this book useful beyond the workshop and you're bound to find something around the house that needs sharpening! All of the techniques are illustrated with clear photographs.

The book is aimed at a broad audience of woodworkers of all kinds so it should make a useful addition to your workshop bookshelf.

Sharpening : A Woodworker's Guide By Randall A Maxey is available now, published by GMC Publications priced at £16.99

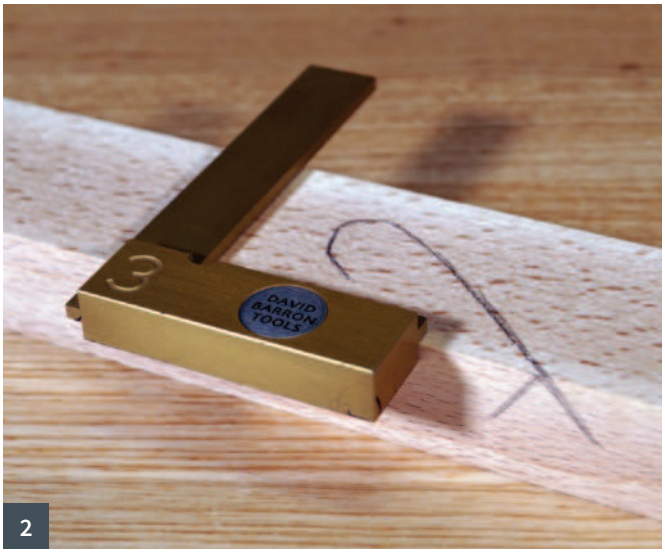
MULTI-JOINT PRACTICE FRAME

Matt Estlea's exercise frame will help you perfect your layout skills

This frame is inspired by an exercise project I first saw being used on the Level 1 Furniture Crafts course at Warwickshire College. At first glance it appears quite straightforward and for woodworkers with a few joints under their belt, it will be. But for those new to the craft there's a lot to be learned in such a small space. During my time studying at Rycotewood Furniture Centre, we occasionally had to make practice frames, small objects or, in one instance, produce various extruded shapes from a scrap piece of poplar using nothing but a chisel. I often found these tasks a bit of a chore as I wanted to get stuck into making something, however I cannot deny that they improved my woodworking dramatically. The great thing about these tasks is that instead of making a project and building multiple skills simultaneously, ultimately leaving your weaknesses trailing behind, you can optimise these practice projects to build on the skills you feel you are lacking.

The frame we are building here will focus entirely on hand tool usage and will emphasise the importance of accurate, clear marking out. When you're learning, this is usually where things start to go wrong and if some basic techniques aren't mastered now they're likely to stay with you for a very long time. At first the eager student will often rush the marking out stage and then wonder why their joints still turn out as gappy and loose as poorly maintained teeth. The answer is simple: they were cutting accurately but to inaccurate lines.

There are four joints on the frame: two lap joints (halving and dovetail halving), a mortise and tenon joint, and a bridle joint. First, we'll focus on marking out all the joints. I want to encourage you to take your time, adopt a methodical approach and check for accuracy every time you establish a layout line. After all they contain vital bits of information that will make your joints nice and tight.



PHOTOGRAPHS BY MATT ESTLEA

MARKING OUT: 1 Establish the orientation of all the components and mark them accordingly **2** Make your face and edge marks clear **3** Use a square to line up the component… **4** … then use the component to mark the line **5** Gauge the waste material from the same face…

Marking out

LAP JOINTS

The first thing I did was clearly number the components on the drawing and the corresponding components in front of me, as well as marking the face side and face edge of each component. The traditional way of marking these faces is by drawing the fish-shaped mark (see photo 2) on one face of the component and a V or arrowhead on the adjacent edge where the line terminates. These are extremely important marks as they identify the faces we will be referencing all our marking out from. You can get access to all four sides of the component with a square using these two faces. If you orientate the face edges to be on the outside of the frame, it guarantees the outside of the frame will be square. If you orientate them on the inside, it guarantees the inside will be square. Choose whichever orientation you like, just don't mix and match.

First, we are going to mark out the lap joints and bridle joint simultaneously. To do this I measured in 50mm from the left-hand end of one of the long components and knifed a line across the component using a square referenced from the face edge. Then without moving the square, I put one of the shorter components against it, held it in place and used the component to carefully mark a line on the other side, thus giving me two knife lines on the long component exactly the same width as the short component. Using the material itself to transfer a critical dimension is far more accurate than relying on a measurement or marking gauge sometimes. If you do the same process on the other long component, you run the risk of your measurements varying slightly and creating a skewed frame. To avoid this, simply flush the end grain up on both components and transfer the knife lines from one component to the other. Now you can square all four of these lines round all four sides of the components. Remember to reference the stock of your square off either the face side or face edge of the component and ensure the knife lines meet perfectly on every corner. Now do exactly the same process on the right-hand side of the frame for the dovetail halving joint and mortise and tenon, but use a very sharp pencil instead of a knife.

6 … as the opposing part of the joint **7** A mortise gauge will help to standardise the marking out for this joint **8** Project the mortise width from the tenon component **9** Single crisp knife marks will help with your joinery **10** Gauge marks for a 6mm chamfer all round

SHOULDER LINES

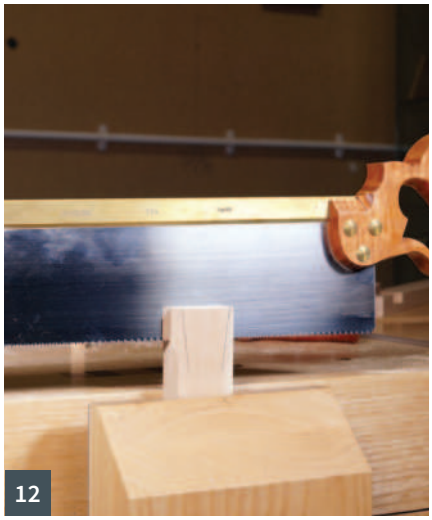
Next we need to scratch the shoulder lines on the shorter components. To do this, reference a square against one of the face edges, butt one of the longer components against the square and slide it up to the end of the shorter component, leaving roughly 0.5mm of end grain overhanging underneath. This means we can plane the joint flush after it is assembled. Remove the longer component and knife across the shorter component using the square. Similar to before, do this on both sides of one component, then accurately transfer it across to the other short component and square the lines around all four sides.

Now we are going to use a marking gauge to scribe the depths of both lap joints. Firstly, set the marking gauge to half the thickness of the stock, in this case 12mm. Scribe a line between the pencil lines on the long component where your dovetail joint is due to be nested and also between the knife lines of the lap joint on the other long component. It's very important you are referencing the stock of the gauge against the face side at this point. Do this on both edges on both components and do not forget to mark the waste.

We now need to mark the laps on the end of the shorter components. This stage catches a lot of people out because it's very easy to reference the marking gauge against the waste side of the lap joint, similar to what we did on the long components. However, in doing so, you are not referencing the stock of the gauge against the face side. The reason we are always referencing the stock of the gauge against a face side is because any minor discrepancies when setting the gauge to 12mm will be cancelled out when we assemble the joint. In fact, we could set the gauge to 7mm, for example, and still get a flush joint as a result, providing we are always referencing from the face side of course! Once this is marked out, do not forget to mark the waste material.

MORTISE AND TENON JOINT

When marking out mortises, you want the walls to be exactly the same width as your mortise chisel. Conveniently, the thickness of these components divided by three is 8mm, so that is the size of the chisel



CUTTING OUT: **11** Saw 1mm away from the marking gauge line **12** Remove the pyramid after sawing at 45° **13** Use a sharp chisel to establish gauge lines **14** Edges established **15** Remove the bump with a chisel **16** Check for contact on outside edges

to use. Now you need to set your mortise gauge heads to be exactly the same width as the 8mm chisel and adjust the offset of the stock to centralise the marking heads on the timber. Scribe between the lines on both sides of the mortise component and around the end grain of the tenon component. I'll say it again, remember your face sides. To mark the offset of the through tenon from either side measure 5mm in from each side, put a small pencil mark, and use a marking gauge against the face edge of the tenon to score a line from the shoulder line to the end grain. You'll need to reset your marking gauge to scribe both lines from the same edge, don't be tempted to use the non-face edge! Once that has been squared, round the end grain and both faces, butt the tenon component against the mortise component, line the corners up with the pencil lines and transfer the marking gauge lines to the mortise component using a knife and square. Scratch those lines down both edges and mark your waste.

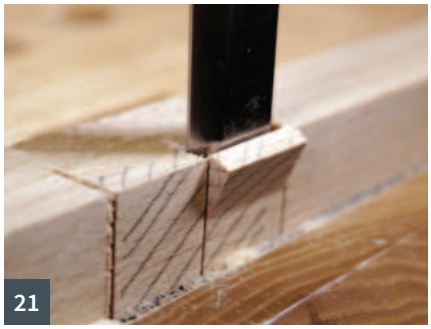
BRIDLE JOINT

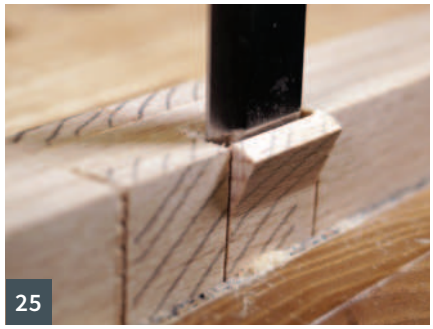
The bridle joint is as simple as using your mortise gauge to scratch around the end grain of the shorter component, and between the knife lines on the longer components. Just be sure to mark your waste as always. The final bit of marking out we need to do is for the small chamfers on the left-hand side of the frame. Again, nice and simple. Set the marking gauge to 6mm, score around all four edges on the cross grain and long grain. That's it, your marking out is complete.

Cutting the joints

THE HALF LAPS

To start with, we're going to cut the half laps into the ends of the shorter components. A method to make this easier is to tilt the component 45° in the vice. That way when we saw down the marking gauge lines, we only have to focus on following two of the three lines at a time. When sawing down the lines, make sure you are cutting in the waste side of the joint. I prefer to leave roughly 1mm of material between the saw cut and marking gauge line to chisel back to later. That way I can reduce the risk of ruining a component by having an 'off' day sawing. Also the crisp edge left by a chisel tends to give a better fit than a fluffy edge left by a saw. Saw in from both sides at 45°, then clamp the component upright in the vice and remove the pyramid in the middle that has been left over. Then crosscut the waste





17 Chop back to the shoulder line in small increments **18** Fine-tune with a shoulder plane or chisel **19** Follow the shoulder line down the front of the component **20** Weakening the waste material **21** Work from both sides when removing the waste **22** Lining up the shoulders with the marking lines **23** Tilting the material to 45° in the vice to help with sawing **24** Removing the pyramid of material left over after sawing at 45° **25** Splitting the waste material out of the bridle joint

leaving no more than 1mm between the saw cut and shoulder line.

There are various methods to clean up the faces of a lap joint. My preferred method is to establish the marking gauge lines around the edge first, and then remove the lump of material left over in the middle. To do this, I clamp the material in the vice and chisel down 3mm into the marking gauge line on all three sides. If you have 1mm of material left over after sawing, it's best to chisel back to 0.5mm from the marking line before committing to putting your chisel directly in it. This reduces the risk of splitting the timber in the wrong direction due to removing too much material at once.

After this is done, all you have to do is remove the little bump left over in the middle while being careful not to hit those outside edges. My preferred method when doing this is to get a very sharp chisel and pare in from both sides. Every now and then, check the face with a ruler to ensure there are no bumps. You're aiming for the ruler to touch both outer edges. These bumps can be removed with a chisel or a very finely set shoulder plane.

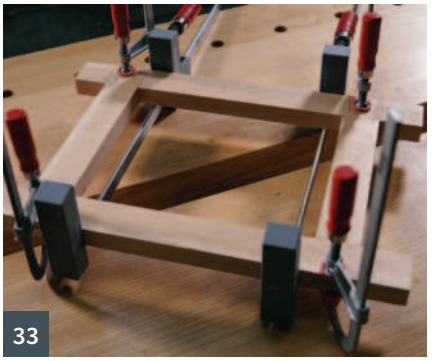
Now all we have to do is chisel down to the shoulder line. Again, if you have 1mm of material left over, it's best to remove half of that first, and then commit to chopping directly into the shoulder line. If you try to remove too much material here, the chisel will be pushed back below the shoulder line and give you a horrible gap.

DOVETAILS

With this process completed on both components, you can now focus on marking and cutting the dovetail component. Mark 3mm in from both edges of the end grain and square it across with a sharp pencil, then mark the dovetail down the face of the component using a sliding bevel. Personally I'm not too fussy about dovetail ratios, I think you should do what you think looks nice.

I prefer to stick between 1:8 and 1:6. Saw down the dovetail following the line all the way to the shoulder line and crosscut the waste off the edges. Again, I prefer to leave 0.5mm to clean up with a chisel. Simply clamp the component horizontally in the vice, put the chisel into the shoulder line and lightly tap it down while following the shoulder line on the front of the component.

Now the male parts of the joints are ready to go, we can focus on removing the material on the corresponding female components. For the simple lap joint, I crosscut through the waste leaving 1mm of material between the saw cut and marking line, and I also put a saw cut



26 Chiselling down to the shoulder line **27** Removing the square lump in the bridle left over after establishing the edges **28** Leaving 5mm of material at the ends of the mortise to use as a cushion **29** Using a narrower chisel to cut the exposed side of the mortise **30** Check the fit frequently **31** The through tenon before planing flush **32** Adding the decorative chamfers **33** Clamping the frame together **34** Seating the joints into their sockets

in the middle to weaken the material. Then I can clamp this in the vice and split off the material by chiselling into the side of the component. A word of warning: this is quite a satisfying thing to do and thus it's easy to get carried away with it. The important thing to remember is don't be a barbarian and try to split it all off at once. I would split half the material off, then half of that, then half of that, and so on until you get to 0.5mm of the marking line. Then put your chisel in the line, establish the edges by tapping down 3mm, remove the bump of material in the middle and check it with a ruler. Finally, chisel down the end grain walls in the same way as before, and by this point you should be left with a very snug-fitting lap joint.

DOVETAIL SOCKET

For the dovetail socket, firstly lay the tail on top of the corresponding component and line the shoulders up with the pencil lines you drew in the marking out stages. Carefully knife around the tail without letting it move and square the knife lines down either side of the component until they intersect with the marking gauge lines. Mark your waste, then remove the material exactly as you did with the lap joint. Just be wary that when removing the waste in a dovetail socket, you will be chiselling into a wedge-shaped cavity. Try not to damage the walls by whacking a chisel into them.

BRIDLE JOINT

To start with, we're going to cut the bridle joint on the end of the short components. Before doing anything, it's worth noting that when we remove the waste in the middle it's going to be difficult to clean the inside faces because the gap may be too small to fit a chisel in to. For this reason, you will need to cut as close to the marking gauge line as possible while still staying in the waste in order to make the gap as wide as possible. Alternatively, a dedicated paring chisel would work beautifully for this.

This is going to be sawn out in exactly the same way as the lap joint. Tilt it at 45° in the vice, saw down one of the faces and the end grain, flip it around and saw down the remaining third face at 45°. Then clamp it upright and remove the pyramid that is left over at the end. This means you only have to focus on two of the marking gauge lines at a time, as opposed to all three if you were to cut it with the component upright. Remove the waste with a coping saw or chisel and then start establishing the marking gauge lines with a chisel. You can do this by

FINISHED JOINTS: 35 The bridle joint **36** The dovetail halving joint **37** The halving joint **38** The mortise and tenon joint

chopping down about 3mm or so on all three faces while being careful not to damage the outer edges because they will be on show once the joint is assembled. Finally, chop into the baseline of the bridle joint to remove the leftover end grain and check it with a ruler. As always, you want the ruler to be able to touch both outer corners without rocking on a high spot in the middle.

For the corresponding bridle joint component, the process is very similar to the halving joint. Crosscut the waste material roughly 1mm from the knife lines and also saw directly in the centre of the waste. This will weaken the material enough for you to split it away with a chisel. To prevent it splitting in the wrong direction, work as before: chisel away half the waste, then half of that, then half of that until you get to within 0.5mm of the marking gauge line. Then the chisel can safely go into the gauge line and you can chop through from both sides into the centre. Grab yourself a ruler, check for any high spots and remove them with a shoulder plane or chisel.

MORTISE AND TENON JOINT

When cutting this joint by hand, in most cases you should cut the mortise first. The reason for this is because the mortise walls can be very easily bruised while being chopped out, consequently making the mortise wider than the gauge lines. Therefore if your tenon had already been cut, by the time you go and fit in the mortise, the tenon would be too small.

Because this is a through tenon, one side of the mortise is going to be hidden by the tenon shoulders and one is going to be on show. I used an 8mm mortise chisel, exactly the same width as the mortise walls, to start removing material on the hidden side of the mortise. That way if the walls got bruised it wouldn't matter. I did a series of small chops starting from the centre and working towards the outside, but left about 5mm of material before hitting the end of the mortise. The leftover material acts as a cushion for the chisel as you can use the mortise walls to lever out the waste. In order to prevent blowing out the other side of the component, I used a strip of masking tape around my chisel to act as a depth stop, which I set 5mm shy of the opposite face. Once I had reached a consistent depth along the entire mortise, I flipped the component round to work in from the other face. I decided to use a 6mm bevel-edge chisel to do this as I only had 5mm of material to remove before uncovering the other mortise. Using a narrower chisel meant I was unlikely to damage the walls on the exposed part of the mortise, thus creating a gap. I could then use a wider bevel edge chisel to accurately work back to the gauge lines as well as clean up the remaining material inside the mortise.

Now for the tenon. I cut about 0.5mm away from the marking gauge lines on all four cheeks and crosscut off the waste. Check the fit often when cutting this joint as it's very easy to go too far. I scribbled some pencil marks on the tenon before pressing it into the mortise to allow me to see where it was rubbing, which I could then remove with a shoulder plane or chisel. You can get away with a few small errors here and there with this joint as it is mostly hidden, however keep an eye on those marking gauge lines on the end grain of the tenon. They need to be spot on to produce a gap-free joint after assembly. As you're approaching the final fit, clean up those shoulder lines as we have done before and whack it together.

It's easier to add the decorative chamfers before gluing up. I used a block plane to do this as it gave me the most control on a small surface area. I tilted the plane to 45° and also skewed it upwards to shear the fibres off the back end of the component. This reduces the risk of breakout as the blade gently removes the material on the back edge, rather than punch it off.

To glue the frame together, I used four F-clamps to seat each of the joints in their sockets and two bar clamps to press the shoulders together. Notice how I clamped these to the inside of the short components, instead of in line with them. The reason for this is because if the end grain of the short components was protruding beyond the long components, you're simply applying pressure to the short component along its length, rather than pressing the long component into the shorter component. In hindsight, I would use four clamps to do this: two in the positions as shown in photo 33, and another two on the outside edges of the joints. Obviously this will apply more even pressure along those shoulder lines and give a tighter fit. Why didn't I do this in the first place? No idea. I was either being lazy or thick! Most likely a combination of both.

Wipe off the excess glue, plane those joints flush and there you go, your joint practice frame is complete. It may not serve you much in terms of functionality but I do hope you have learnt a thing or two along the way.

Thank you to Jamie Ward at Warwickshire College for supplying the plans for this frame.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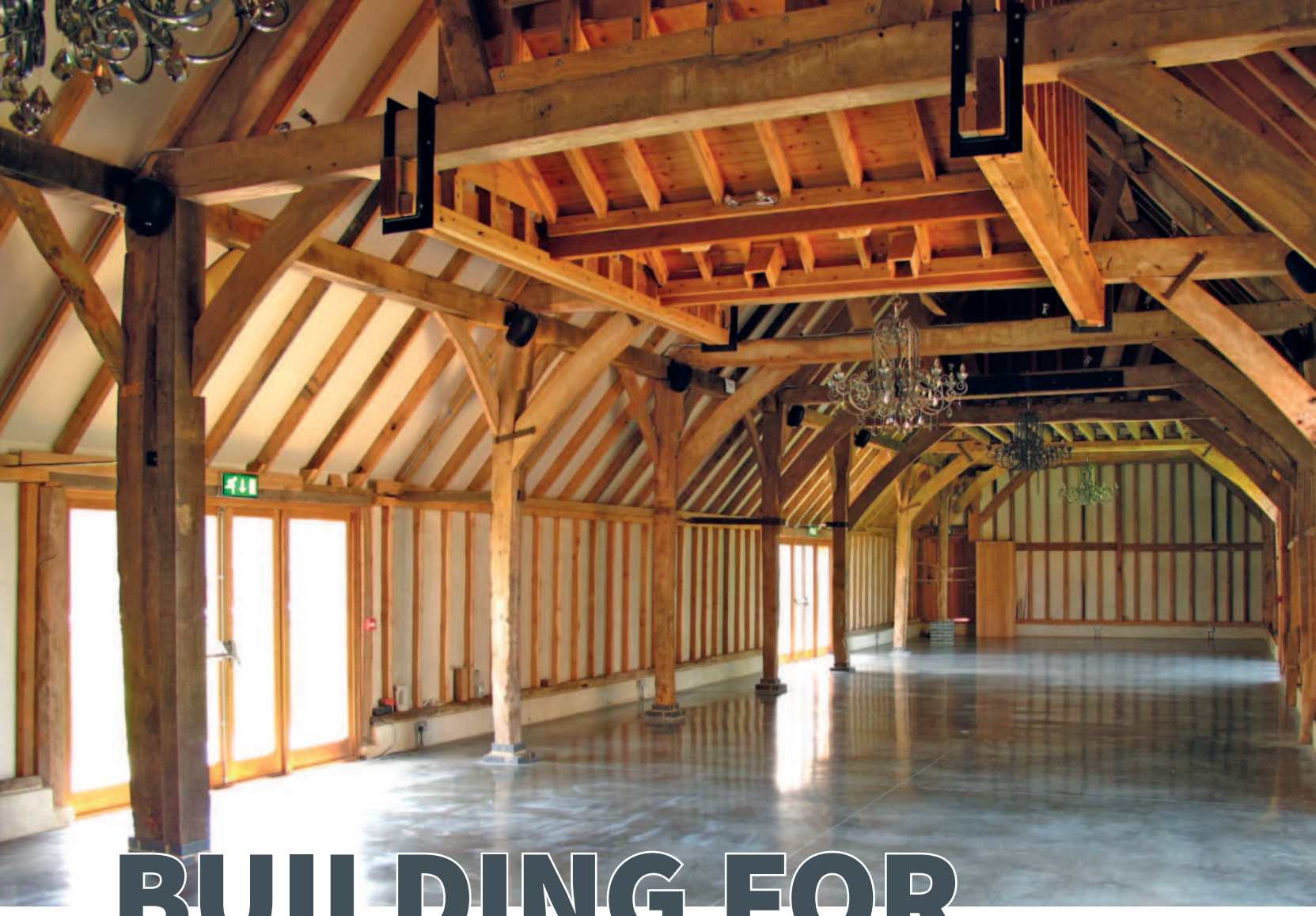


BUILDING FOR THE FUTURE

The team at Five Oak Projects tells us about their passion for building and restoring green oak structures

Green oak framing is the traditional craft of building structures from freshly cut oak timber, once a widely used form of construction in the UK. With its growing popularity today, one of the companies carrying out this craft is a family-run business based in the south of England – Five Oak Projects.

Having a passion for creating and restoring oak structures, Managing Director Oli Guthrie and his wife Liv set up Five Oak Projects in 2010. Their business is located at a farm at Long Sutton in Hampshire where they have a design office and workshop.

Oli's expertise includes the design and construction of oak-framed structures as well as the repair, restoration and conservation of historic buildings. He works with a skilled and experienced team who provide a broad range of services based around green oak framing. The company is extremely versatile and projects can range from barn conversions, homes, offices, annexes, gazebos and stables to tree houses, swings, sheds and wooden benches.

The beauty and workmanship that are involved in their projects is outstanding. For example, one of their designs featured in *Ideal Home* magazine in 2019 showed how a completely rundown and neglected Hampshire barn was stripped back to its original frame and restored into a remarkable house that became a much-loved family home.

Each and every project is bespoke and tailored to a specific brief agreed with a client. The company set themselves high standards and aim to be the best in everything they do. Their portfolio is a testament to the skill and expertise that goes into each and every creation and restoration.

PHOTOGRAPHS COURTESY OF FIVE OAK PROJECTS

TOP: Triple-width oak balcony on a flint house in West Sussex ABOVE: Solid oak frame entrance to a farm shop in Surrey
OPPOSITE: The Threshing Barn wedding venue at Southend Barns

Developing projects

While green oak framing is an age-old process, there are modern technologies that help with developing a bespoke design. When starting a new project Oli talks to clients about their ideas and illustrates how such a project might look. Once agreed, full CAD and 3D model drawings and engineering plans for building are drawn up for a client for each project before the build goes ahead.

The planning process is an essential part of the job of getting the construction underway. The groundwork is prepared and the timber components manufactured offsite before the oak frames are put up and the build can develop. Oli sees completing a complex build as an exciting, stress-free and enjoyable process, as the team works together with the client to create a thing of beauty – a sustainable and valuable high-end building.

In 2017 Five Oaks Project were named as winners in the BUILD Sustainable Building Awards as Best Oak Framing Design/Build Company – South England, highlighting the company as one of the most outstanding performers in their field.

The following year Southend Barns near Chichester, West Sussex, won an award for Best Barn Venue in the UK Wedding Awards of 2018. Oli and his team had worked with Southend Barns by renovating the Dairy Barn and 200-year-old Threshing Barn, creating a stunning ceremonies room and wedding party venue within the beautiful South Downs. This was a major restoration project of beautiful old buildings, plus a fully equipped kitchen. With their vaulted ceilings and exposed beams the venues radiate rustic charm, and the Threshing Barn is a stunning choice for a wedding reception. The renovation of Southend Barns was a huge, but immensely satisfying project for the team.

Conservation in action

Of course, while the company may have a number of exciting projects at different stages of development, there may be other projects in need of urgent attention – and fortunately Oli and his team are on hand with a wealth of experience and expertise in the renovation, restoration and conservation of listed buildings.

Five Oak Projects were called out to make emergency repairs to a Grade II listed oak-framed granary in Mattingley, Hampshire at the end of 2019. The building was at risk of collapse and the client was anxious to work with restoration experts to not only shore up the building without causing further damage, but to also ensure that any works carried out were sympathetic to the longer term goal of completely restoring it. Oli and his team were on hand to ensure the building was secure enough to make it through the worst of the winter.

Having successfully achieved this, they commenced on a comprehensive plan of essential repairs in early 2020. They were determined to retain as much of the original fabric of the building as could be usefully reused, without jeopardising the integrity of the structure. The worst of the rotting timbers were removed, sometimes only sections of beams, with new air-dried oak spliced and jointed with the old timbers to form a solid, faithful and long-lasting repair.

Working onsite at all times, mainly using hand tools, new sections of oak were handcrafted to fit into place. Crumbling sections of bricks between the timber frames were carefully dismantled, sorted and cleaned. Replacement bricks were sourced from reclamation yards, so that the panels could be reinstated to complete the east elevation completely, matching the original structure and form of the building.

With the structural repairs completed, the building was redecorated, including the use of natural breathable clay-based paint, ensuring the building has been conserved for many generations to come. Oli and his team found the journey from its perilous condition to a new lease of life compelling, challenging and hugely rewarding.

New projects

While the Coronavirus outbreak in 2020 affected Oli's schedule in the short term, the team was back in action in the summer to catch up on lost time – including an ongoing restoration project, new barn, repair works and a new porch – and was pleased to see the finishing touches made on a six-bay Surrey barn with dormer windows and oak cladding.

Hot days in June were an ideal opportunity for the team to work on a traditionally styled oak-framed boathouse on a new man-made lake in Alresford, Hampshire. Designed to sit on the side of the lake in front of a wooden bridge for access, the boathouse provides plenty of room to shelter a large boat and hang a number of kayaks and paddleboards in the rafters. Accessed via a wooden bridge to the rear, the boathouse has enhanced its setting beautifully. This was another highly individual and enjoyable project completed by the company.

Oli and his team continue to go from strength to strength. As they work, the overriding feeling running through each build is the magic, value and satisfaction that comes from building with oak. The joy of traditional green oak framing is that it creates long lasting, durable and healthy buildings that are sustainable and conserve resources for the future.

fiveoakprojects.com

All-weather bar and entertainment area at Southend Barns

A canvas-covered oak-framed marquee for outdoor entertaining

Upright oak posts and two large circles of oak paviours in a Hampshire garden

Oak-framed open-sided boathouse with a cedar shingled roof and space in the rafters to store kayaks and canoes

A pair of tree houses, linked by a rope bridge and built using wood felled from the surrounding woodland

PHOTO FRAMES

Fred and Julie Byrne use their scrollsaw to create unique picture frames

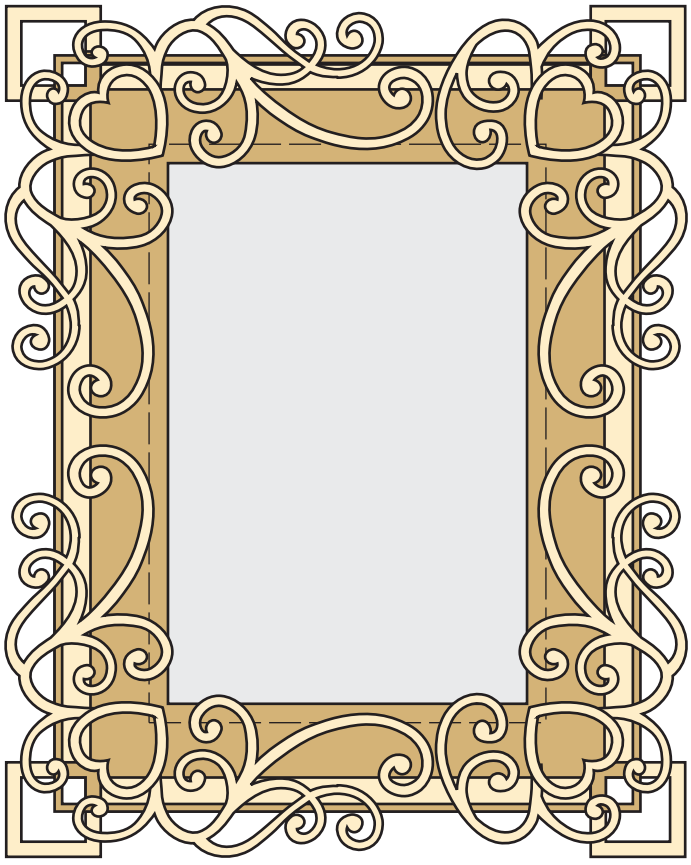
Photo frames are one of the easiest things to make on the scrollsaw. They can be as decorative as you like with lots of swirls and curves or, on the other hand, quite minimalist with just a touch of elegance. Here are just a couple of ideas to get you started. Feel free to change the patterns around to suit yourself – size and wood choice can be governed by the scraps you have to hand.

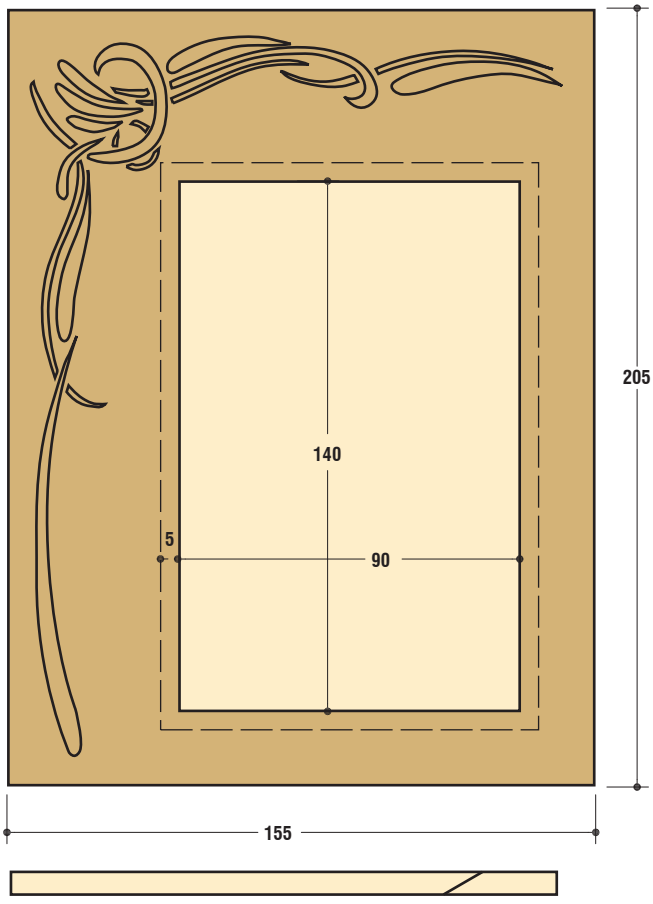
We recycled the glass from unwanted frames and used 6mm mahogany for the fascia, 3mm obeche for the decorative swirls and 6mm plywood for the backs. With a simple stand to prop them up, they couldn't be easier to make.

Making a false table top for the scrollsaw

If your scrollsaw does not have a zero-clearance insert to support these thin woods while cutting out the small fragile pieces, you can improvise by making a false table top from either plywood or Perspex, as we have.

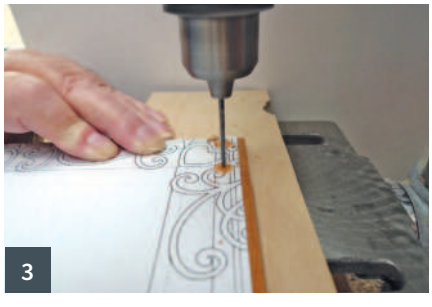
First cut a piece of Perspex (3mm or 4mm is fine) to the approximate size of your scrollsaw table and use a strip of masking tape to mark the place where the blade goes up through the table. Next, draw in a pencil line and make the cut. Alternatively, drill a small hole to take the blade and secure the Perspex to the table by placing masking tape on the four corners.

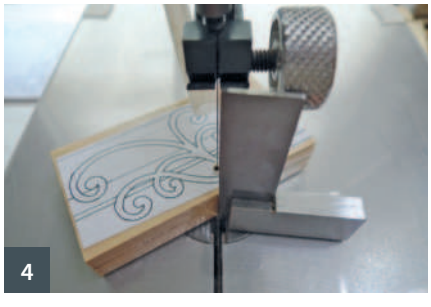




YOU WILL NEED

- Scrollsaw – No.3 blade
- Pillar drill – 2mm drill bit
- 200 x 160 x 6mm mahogany (frame fascia)
- Six x 95 x 50 x 3mm obeche (decorative swirls & curves)
- Four x 48 x 48 x 3mm obeche (decorative swirls & hearts)
- 225 x 180 x 6mm plywood (frame backing)
- 150 x 100 x 3mm plywood (back opening)
- 145 x 12 x 6mm mahogany (stand support – landscape)
- 200 x 12 x 6mm mahogany (stand support – portrait)
- 150 x 100 x 2mm glass
- Extra wide sellotape
- Ruler, pencil, scissors, bradawl
- 180, 240 & 320 grit sandpaper
- Glue stick
- Wood glue
- Four small clamps
- Finish of choice
- Picture frame turn & fixings





Getting started

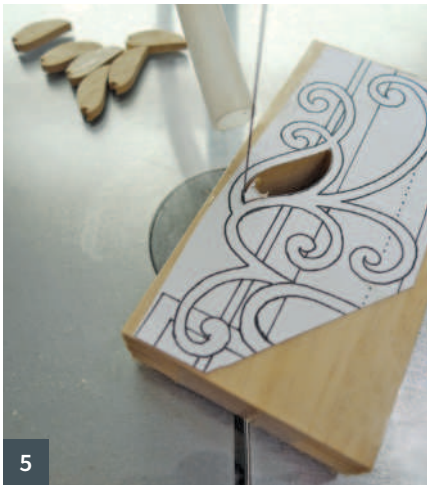
1 Make four copies of the pattern: one for the decorative swirls and curves; the second for the frame fascia; the third to be used for the frame backing; and the fourth to keep as a reference. Prepare the wood by sanding the surfaces smooth – it is far easier now than when the wood has been cut into small pieces. Measure and mark out the 3mm obeche for stack cutting. Cut the decorative swirl patterns into two sections and secure each stack with the wide sellotape.

2 Glue the larger swirls onto the stack of six and the smaller swirl with heart attached to the stack of four.

3 Next, drill all the blade entry holes using a 2mm drill bit.

Cutting out

4 Use a fine No.3 blade and be sure to check that the blade is square to the table, even when making the inner cuts – this will ensure that the bottom piece of the stack is as true as the top piece.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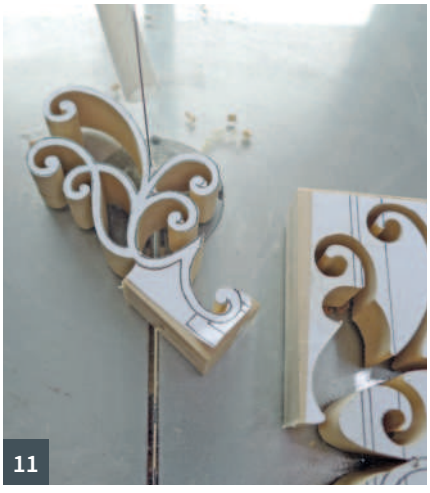
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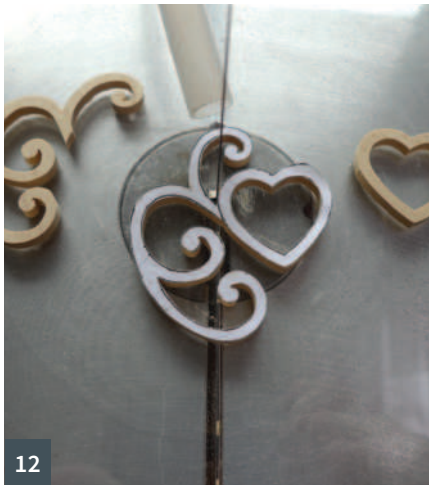
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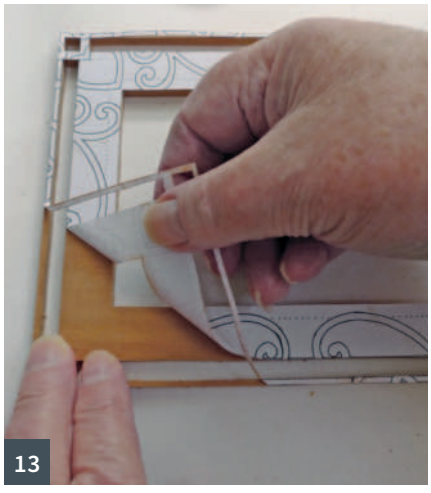
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PHOTOGRAPHS BY FRED & JULIE BYRNE

5 First cut all the inner pieces within the decorative swirls and the inner detail within the frame backing and fascia, returning to the corners to remove the waste.

6 Next, cut out the main slots on the main frame itself.

7 Cut out the centrepiece within the fascia following the inner line, again returning to each corner to clean out the waste.

8 Draw a pencil line along the dots on the pattern, on the back section of the frame, to define the centreline more clearly for cutting. The same can be done when cutting around the outer edge.

9 Cut the insides of the curves on the decorative pieces first, so that the stack remains intact until the last possible moment.

10 Once the inside curves have been cut, continue to cut around the outer edges.

11 Try to keep a section of the stack intact while removing the waste material from within the corners.

12 Then remove two of the lower side decorative swirls from the heart, as only two are needed – see pattern.

13 Next, remove the patterns and any sellotape from all the pieces.


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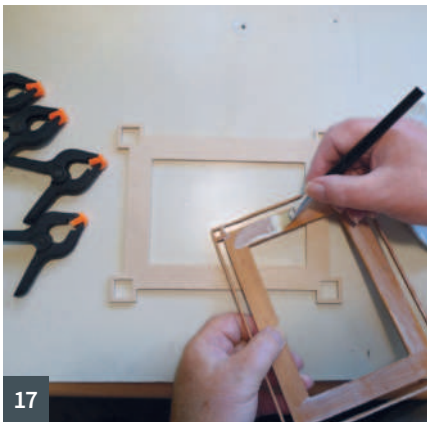
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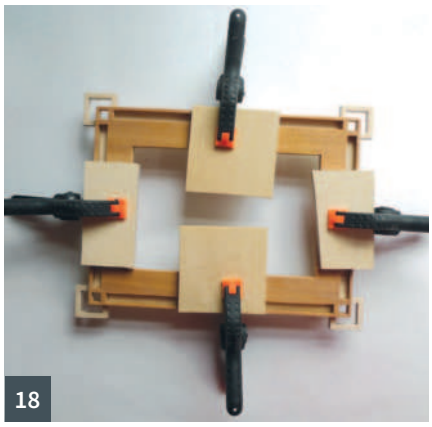
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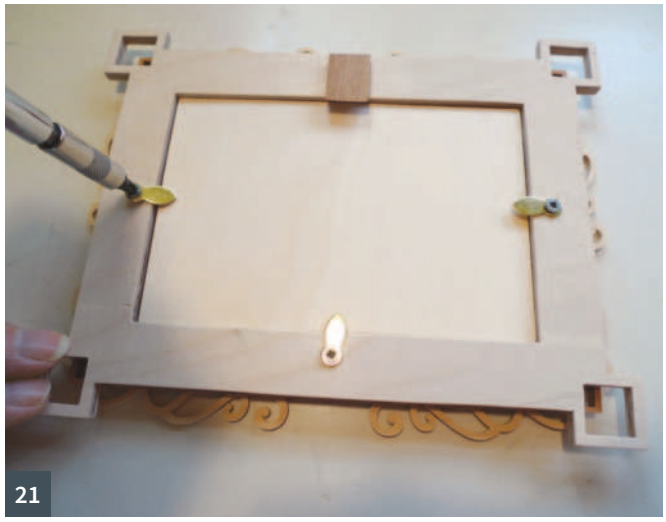
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14 To make the back for the opening, place the frame backing onto a piece of 3mm ply and trace around the inner shape and cut to size.

15 Cut the stand support for the frame – see the pattern for the size of the support.

16 Carefully hand sand the delicate pieces with a fine 320-grit sandpaper and lightly round over the edges, removing burr at the same time.

Gluing up

17 First apply glue to the back of the fascia, then align the fascia onto the backing of the frame.

18 Secure using small clamps and allow to dry.

19 Glue and clamp the small section of the stand onto the centre top of the backing.

20 Referring to the pattern, position the decorative swirls and curves onto the frame fascia and then spot glue each piece in place and again allow to dry. Next, apply a finish of your choice.

Finishing

21 Attach the small picture frame turns to the back of the frame to hold the back plate in position, place the glass within the frame and then the photo. Attach the back plate and then place the stand under the fixed centrepiece. And there we are – a lovely picture frame!

WOOD AWARDS 2020 SHORTLIST

We showcase some of the projects nominated for this year's awards

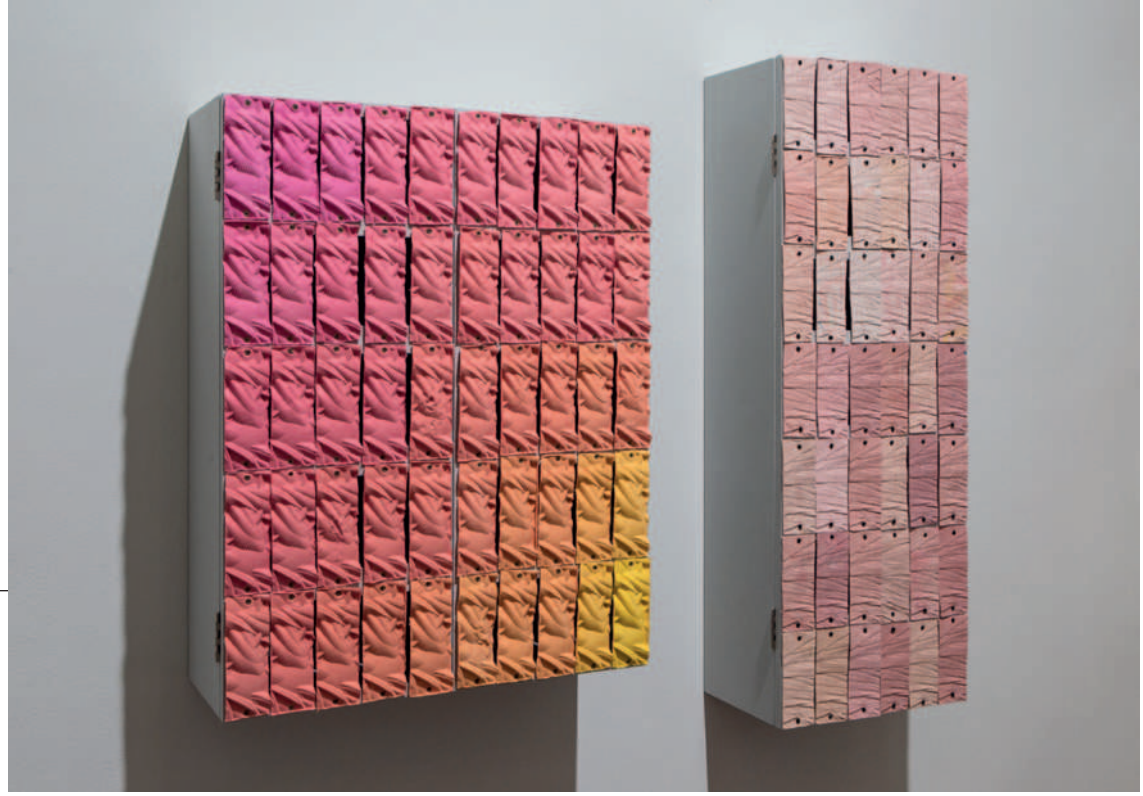
Seventeen structures and nine product designs have been nominated for the Wood Awards 2020 shortlist. The independent judging panel visits all the shortlisted projects in person, making this a uniquely rigorous competition. An online exhibition of the shortlist was launched on 14 September during the London Design Festival and can be viewed here: woodawards.com.

Established in 1971, the Wood Awards is the UK's premier competition for excellence in architecture and product design in wood. It aims to encourage and promote outstanding timber design, craftsmanship and installation. The Awards are split into two main categories: Buildings and Furniture & Product. Unfortunately the Student Designer category had to be postponed this year as many students have been unable to complete their projects due to the Covid-19 lockdown. All 2020 student entries will be rolled over to next year. The winners will be announced in November.

Bespoke furniture

PHOTOGRAPHS COURTESY OF THE WOOD AWARDS

Duo sofas designed by Studio Woodgate and made by Benchmark Furniture for the Royal Opera House



The Semi Synthetic Series designed and made by Peter Marigold

Serpentine Postbox designed by Studiomama and made by Benchmark Furniture for the Serpentine Gallery

The Beehave designed by Studio Marlene Huissoud and made by Benchmark Furniture for Science Museum London

Production furniture

Barking Up The Wrong Log. Table and chairs designed and made by Charlotte Kingsnorth

Bundle Trestle designed and made by Studio Thor for Shaper Tools

Chamfer Dining Table designed by Ben Fowler and made by MARQUE Sussex

Tenon Table designed by Daniel Schofield and manufactured by L. Ercolani

VWork collection designed by Pengelly Design and manufactured by Modus Furniture

Buildings

The nominations in the Buildings category are:

- National Automotive Innovation Centre, Coventry. Architect: Cullinan Studio
- The Handlebar Café, Winchester. Architect: ArchitecturePLB
- Stroud Christian Community Chapel, Stroud. Architect: Nicolas Pople Architect
- Dulwich Pavilion 2019, Dulwich. Architect: Pricegore
- The Royal Exchange Theatre – The Den, Greater Manchester. Architect: Haworth Tompkins
- Hurstpierpoint Performing Arts Centre, West Sussex. Architect: Burrell Foley Fischer
- Swimming Pool Hall at King's College School, Wimbledon. Architect: David Morley Architects
- Harris Academy, Sutton. Architect: Architype
- MOTHER..., Wicken Fen. Architect: Studio Morison
- Frindsbury Manor Barn, Rochester. Architect: The Heritage Design & Development Team
- Bumpers Oast, Tonbridge. Architect: acme
- Two and a Half Storey House, London. Architect: Bradley Van Der Straeten Architects
- Redhill Barn, Devon. Architect: TYPE
- The Rye Apartments, London. Architect: Tikari Works
- House for Theo + Oskar, Surrey. Architect: Tigg + Coll Architects
- Brockeridge Stair, Bristol. Architect: CaSA Architects
- Wooden Roof, London. Architect: Tsuruta Architects

BOILER COVER

Alan Holtham uses bendy MDF to conceal an unsightly boiler

Although they are getting smaller and neater, central heating boilers could never be described as elegant, and then all the associated electrical and pipe work makes them look even worse. I was recently asked to box in a particularly unattractive one which was mounted at floor level, leaving the top fully exposed. The brief was to produce a design to cover up the boiler, but at the same time minimise the amount of space taken up in the already cramped room.

Safety

On a safety note, it is important to check that the boiler you intend to cover is in fact suitable, as many of the older types require free air circulation in order to operate safely and it is extremely dangerous to restrict this air flow by enclosing them in a cupboard. Most modern boilers are fitted with a double flue, which draws in all the air it needs and exhausts the fumes through the same pipe. These boilers are classed as 'room sealed' and can be safely boxed in. Get qualified advice if you have any doubts.

Easy access

From a plumber's point of view it is important that the boiler can be serviced easily, and a close fitting cupboard makes this job a nightmare. The recommendation is to leave at least 150mm clearance all round the boiler, but the room was just not big enough for a cupboard of this size, so I settled on a much tighter design that was freestanding and could be easily removed. I did incorporate a small door so that the controls and filling loop could be accessed without moving the whole cupboard.

Bendy MDF

The answer came in the form of bendy MDF, which is available in 6mm-thick sheets. One face is cut with a series of regularly spaced fine grooves, resulting in a very flexible panel. This can be bent to quite a tight radius and seemed ideal for this purpose, although I must confess that I had never used it before, so the whole job was going to be a literal learning curve!

These bendy MDF panels are relatively cheap and easily available in 610mm widths from most of the big DIY stores. It is produced in much bigger sheets, but I was not able to source one in time, so had to use smaller sheets. In retrospect the job would have been much better if I could have formed the whole shape from one larger piece.

The mould

To form the curved panels, make a mould with pieces of 12mm MDF, cutting out three equal rectangles to match the size of the cupboard footprint; cut them carefully as they will be used subsequently as top and bottom boards in the actual cupboard.

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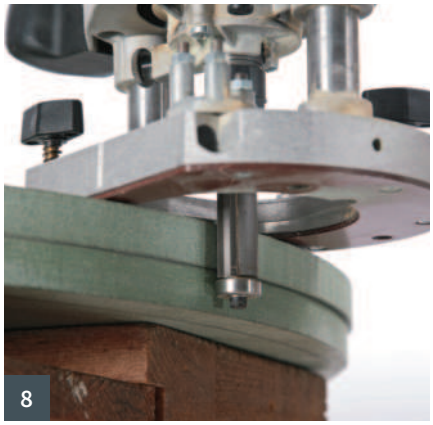
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Dimensioning and marking out

1 This low-level boiler is an eyesore, and making it more pleasant to look at is long overdue.

2 A tablesaw will make light work of the cutting, but you could also use a hand-held circular saw.

3 Use a large compass to pencil in the required curved section on one of the pieces, and mark the pivot point clearly.

4 Use a jigsaw to cut out the shape, but leave 2mm or 3mm on the waste side of the line.

5 Fit a large trammel bar to the router and using the pivot point previously marked, swing the router round to trim the waste neatly back to the line and blend in with the straight section.

6 Use this first piece as a template to mark out the other two pieces, and again saw round the curve just clear of the line.

7 You could trim the other two to shape in exactly the same way, but I find it easier to use the first one as a template for the router, so stick it very carefully onto the next piece using double sided tape.

Cleaning up with a router

8 Then use a bearing-guided trimmer to follow around the template and trim the other piece back to be a perfect match.

9 I cut out three pieces, but realise now that I would have been better with four or five to minimise the amount of distortion during gluing. The mould was formed by screwing these three to some scrap panels of chipboard fixed at right angles.

Forming the curved front

10 The MDF panels bend quite easily, and it's not necessary to dampen them in any way. To get two good sides to the cupboard wall, you need to laminate two sheets together with the cut sides facing inwards.


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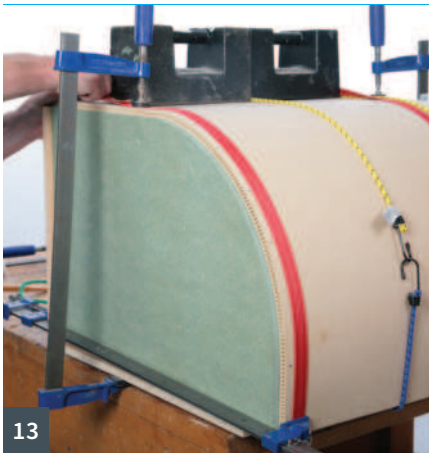
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PHOTOGRAPHS BY ALAN HOLTHAM

11 Start the lamination process by pinning the first sheet to the top of the mould, and bend it carefully around the curve, giving it time to take up the shape rather than forcing it down.

12 Cover the exposed face with a film of PVA glue using a brush or a roller, but be aware this does use up serious quantities of glue, as a lot of it disappears into the grooves, but it will build strength when it dries later on.

13 Coat the face of another sheet and then stick the two faces together, holding them tight on the mould using a variety of clamps and straps. Be careful here of distorting the shape between the supports by overenthusiastic tightening. I wasn't and had to redesign the door as a result, as you'll see later.

14 Leave the job overnight for the glue to thoroughly cure, and you should end up with two perfectly curved but rigid panels when you return.

Fitting the cupboard

15 Dismantle the mould and use one of the curved MDF pieces as a base for the cupboard, cutting it to fit round any pipe work if necessary. Cut a couple of softwood uprights tall enough to clear the flue.

Forming the base

16 Cut the bottom strip off one of the curved panels with a jigsaw and then plane the cut edge perfectly square.

17 Glue and screw this in place around the baseboard, working from the middle outwards to make sure any gaps are pressed out.


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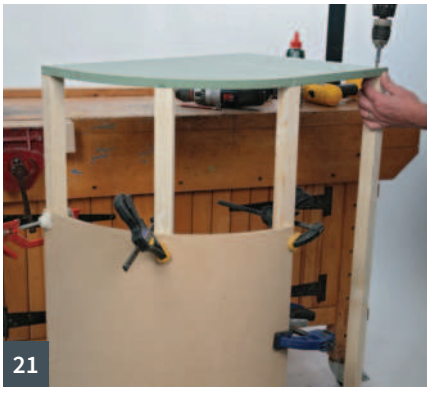
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18 Take care with the screws, as I discovered that the inner laminations are prone to breaking out if you drill too close to the edge. Don't worry about using plenty of screws as they will be covered by the trim which is fixed later.

19 Now you can fix the uprights in place, screwing through the baseboard and through the ends of the curved section. Make sure that these uprights are square to the edge of the strip and the baseboard itself.

Creating the side of the cupboard

20 Cut the other panel down, leaving it short to form an opening for the door, and then glue and screw this in place adding a couple more uprights to provide some extra strength.

Fitting the MDF and top panels

21 While it dries, screw another of the curved MDF pieces from the mould onto the end of the uprights to form the top, again making sure everything continues to remain square.

22 Fit the top curved section using sash clamps to pull everything tightly together to effectively minimise the joint lines.

23 I planned to inset the door flush with the rest of the curve, so left the necessary rebate on the uprights. I changed my mind later as the laminated piece left for the door was not particularly flat. A quick redesign was called for, and I decided to use a separate solid piece, fitting it over the opening, so I now had to use strips of 12mm MDF to fill in the rebate.

24 The top is a piece of maple-veneered MDF cut out in exactly the same way as the baseboards using the router with the trammel, but remember to make it bigger to accommodate the trims that are added later.

Homemade bendy MDF for the top and bottom trims

25 The top and bottom trims are made from homemade bendy 12mm MDF. I had to kerf this myself using a multiple grooving jig, so that they could be bent to the required shape.

26 My narrowest long cutter was 3mm diameter, and I used this to form the grooves so that it required a 3mm strip in the base of the repeat cutting jig.

27 Cut the grooves across a piece of MDF wide enough to form both top and bottom trims. I spaced the grooves at 8mm, cutting them 9mm deep. If you use a smaller diameter cutter, you'll need a long thin cutter that's strong enough.

28 The glue-covered trims can be bent gently around shape and then held in place with clamps and pins.

29 The top is edged with a thin strip of maple planed down to 2mm thick: proper edging clamps make it much easier to hold curved lippings like this in place.

Final touches and fitting the door

30 All the joints and remaining screw holes, along with the grooves in the trims are filled with Polyfilla and then sanded thoroughly.

31 To fit the door I used a piece of 12mm stock. Put a radius around the edge of the door to match that on the trims and top. A knob and magnetic catch finish the job.

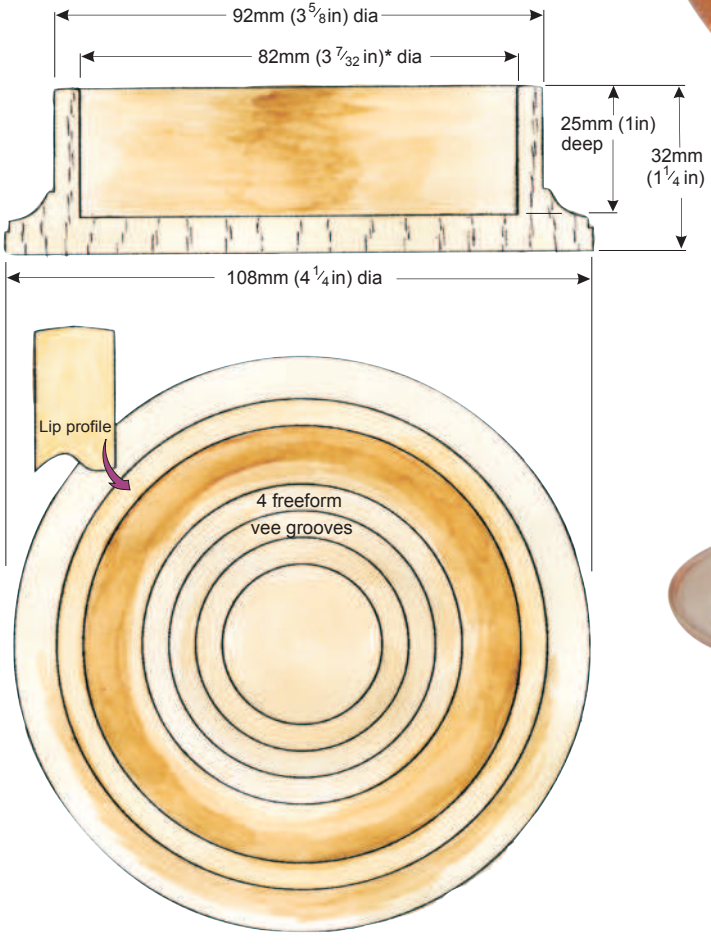
32 Finally, prime with thinned down undercoat and build up more full strength undercoats, flatting down between and finishing with two coats of gloss.

TURNED WINE BOTTLE COASTER

Sue Harker's simple turning project can accommodate any size of bottle

We are all familiar with cup coasters to protect tables from heat and watermarks. However, not all of us have a wine bottle coaster to protect from the wet patches a chilled bottle of wine often leaves behind.

The sizes shown in this project can accommodate most bottles of wine, including champagne. If you prefer you can make deeper versions, but you can also add texture, colour, liming wax, gilt cream or ebonising lacquer, all of which totally transform the project and are very effective.



*This diameter will accommodate the majority of wine bottle sizes (taken as 71 to 81mm dia). However, if your favourite tipple falls outside of this range (eg: sparkling wines), the dimensions will need to be adjusted accordingly.

YOU WILL NEED

- 10mm standard grind bowl gouge
- 10mm long grind bowl gouge
- 3mm parting tool
- 10mm bedan
- 19mm skew chisel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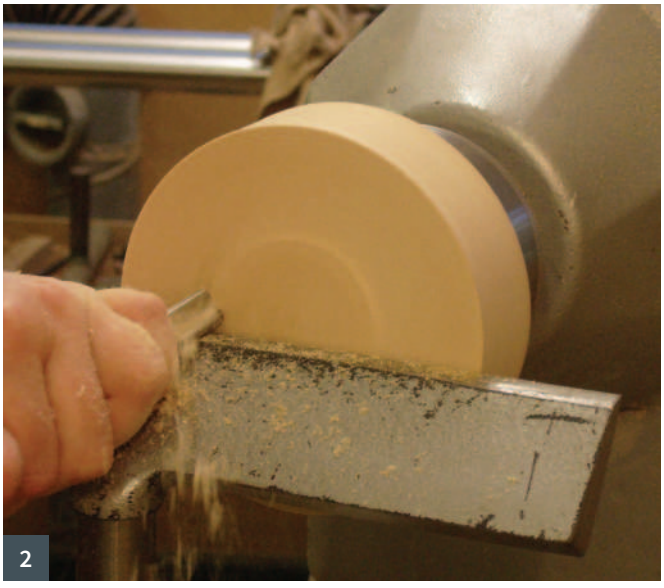
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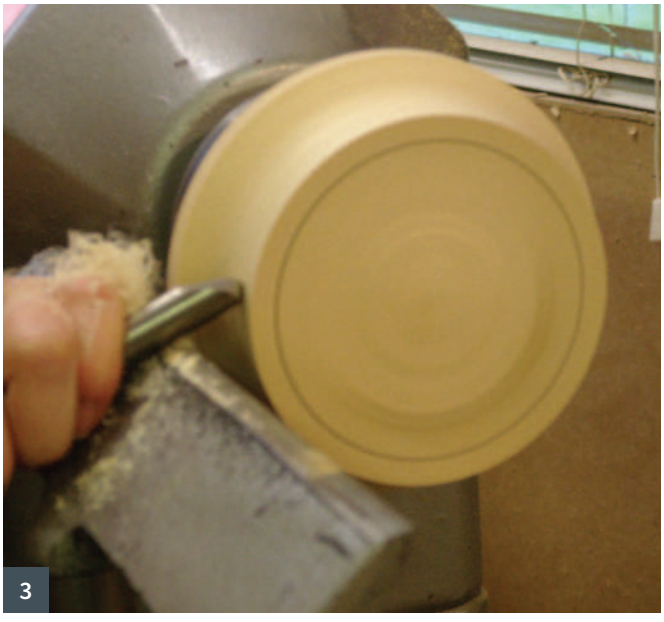
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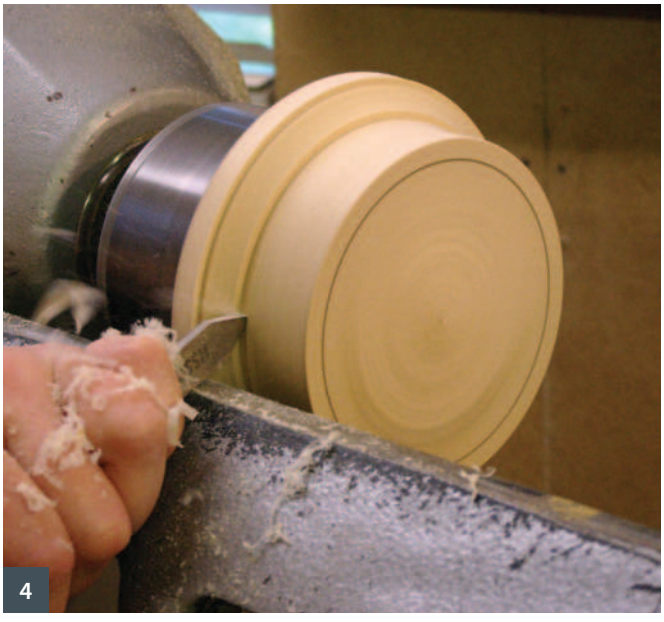
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PHOTOGRAPHS BY SUE HARKER

Making the coaster

1 Mount a small bowl blank approx 130 x 40mm on the lathe using a recess cut with a 48mm Forstner bit. True up the sides using a 10mm bowl gouge ...

2 ... and also true up the front face. A couple of light passes should do the trick.

3 Shape the outside profile using a 10mm long-grind bowl gouge. Reduce the top 25mm to a cylinder approximately 102mm in diameter and shape the remaining 13mm to extend to the full diameter.

4 Use a 3mm parting tool to add detail to the bottom section.

5 Hollow out the centre using a 10mm bedan. The recess should be approximately 90mm wide and the depth should then be determined by the thickness of timber being used. For this piece of timber the depth is 22mm. As a rule I hollow to within 16mm of the overall thickness. However, if you have cut a very deep chucking recess this needs to be taken into consideration and a thicker bottom may be required.

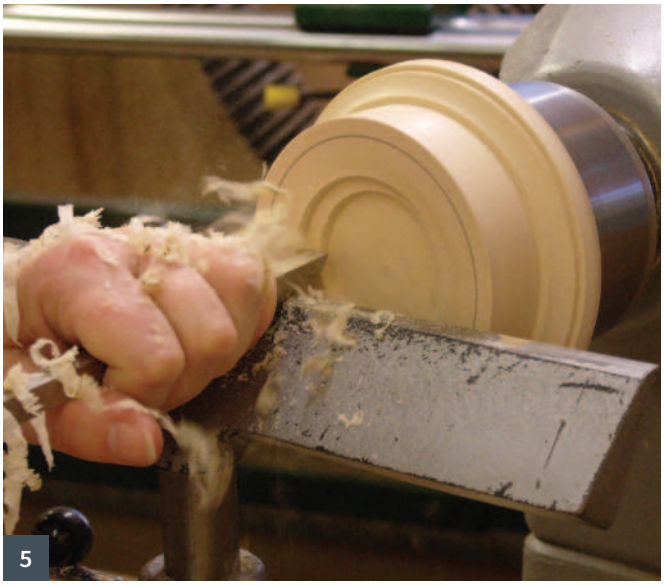
6 After cutting to the correct depth and creating the recess, finish the bottom using a scraper.

7 Cut several V-grooves into the bottom for decoration using a 3mm parting tool.

8 Round over the top edges of the coaster using a long-grind bowl gouge.

9 Sand down to 400 grit and ensure all defects have been removed. Then, take a piece of kitchen roll and apply a coat of oil to the coaster. Ensure safe disposal of cloths soaked in oil, as they can self-combust. Either lay them out flat to dry or put them in an airtight container.

10 The coaster then needs to be reverse-mounted using the 90mm recess cut, as used earlier. Ensure that the coaster is not over tightened as it will mark the timber. If the coaster will not fit on your chuck then a jam chuck can be used to reverse mount it. The base now needs to be trued up and the centre slightly undercut to remove the chucking recess before being sanded and coated with oil.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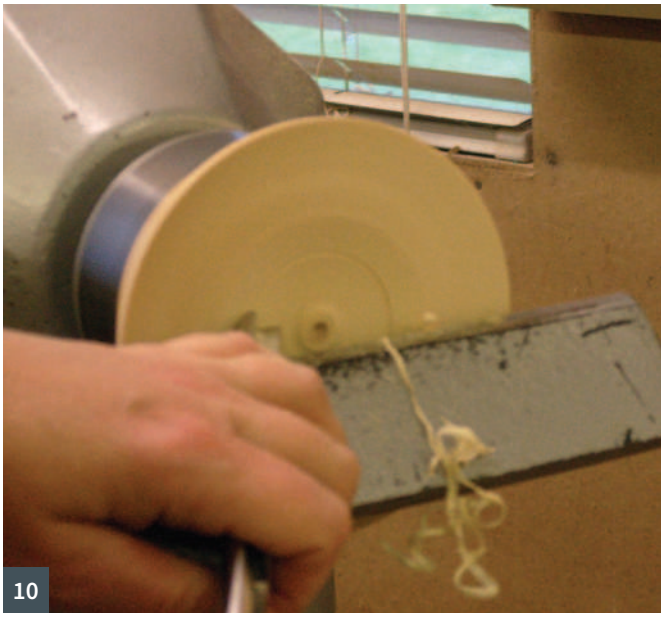
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UNDER NO ILLUSIONS

From building chairs that aren't quite what they seem with illusionist Zach King to crafting the perfect family dining table, Chris Tomes has wood all worked out

Chris Tomes, who runs furniture and carpentry business Gift & Grain, became an undercover YouTube sensation when he teamed up with his friend, the illusionist Zach King, to build a series of chairs that aren't quite what they seem. The California-based woodworker recalls: 'Zach and I have been friends for a number of years now. We went to the same university in Southern California. He was studying film and I was studying theology. We first met in a student-run lip-sync and dance competition called Mock Rock. It was totally silly and outside both of our comfort zones, but it was pretty fun. He ended up dating one of my good friends and they got married a couple of years later. Our wives are really close and our kids are about the same age.

'His wife ordered an entertainment center from Gift & Grain and when I was delivering it to their home, we ended up chatting about a project he wanted to tackle for his film studio. This project was the optical illusion chairs and, after some time designing and figuring out the details, his team landed on four chair design ideas.

'Zach's team is full of really talented designers and filming and editing wizards. They found the design ideas for the optical illusion chairs and sent me a couple of photos for reference. We replicated some designs from really talented woodworkers and artists from around the world. I designed all of them in my CAD software before I started using wood. Some of them I built out of cardboard first, in order to get the right angles and dimensions. A few I had to build multiple times because I kept iterating and finding better ways to create the illusion. I went back and forth with Zach and couple of guys on his team in order to make sure the chairs would work and we finally landed on the designs in the video.'

As you might imagine, creating optical illusions that also work as

PHOTOGRAPHS BY CHRIS TOMES

stand-alone furniture pieces can be tricky – in fact, Chris says he faced 'every challenge you can imagine'. 'Since I was only working from a couple of internet photos for the designs, it really was like starting from scratch. The biggest challenge was taking the designs from the CAD software to real prototypes. Everything looks great on a computer, but when I started trying to get the wood to curve and behave in ways it didn't want to, things got tricky. The black chair [which appears to be facing in the opposite direction from its real orientation] was the most difficult. I built close to 20 cardboard prototypes before even starting to build it from wood.'

He adds: 'The thing with optical illusion chairs is that all the weak points are the most visible spots, and the strong points have to be hidden. It took a lot of patience and coming to terms with the fact that I would have to build multiple iterations of all the designs before getting them just right. I built all the chairs to be fully functional as stand-alone pieces. Some were a little more delicate and couldn't be tossed around too much, but all were able to be used as normal chairs after filming. After the video aired, I had a ton of requests for entire dining sets built from the different optical illusion designs.'

Chris says making these complicated designs helped him learn to 'be ready to fail and find joy in the creative process'. 'Working on these chairs for Zach's studio forced me to find creative solutions to problems I had yet to face in my normal builds,' he explains. 'Taking on new, difficult projects that are outside your comfort zone helps you to expand your understanding of your trade and come up with innovative ways to accomplish your goals. The end result, no matter how frustrating it was to get there, is so worth it!'

Early joys

Chris started out in woodworking when he was just a kid, and his dad taught him the basics of how to use hand tools. 'I've always found a lot of joy in building and creating,' he says. 'I started building furniture like most woodworkers, using dimensional lumber and screws and nails. Eventually, I learned there is better wood out there and began building with high quality materials and learning from other woodworking professionals.' He also had a great woodworking class in school, where he learned to use all the major power tools such as table saws, lathes, routers, joiners and bandsaws. 'We made clocks, cutting boards, salt and pepper shakers, bowls, and eventually my teacher just let me start building whatever I wanted,' he says. 'I still can't believe he allowed me free rein of all these awesome tools at such a young age, but I am so thankful that he did! That class sparked my desire to continue designing and creating quality pieces. That was almost two decades ago and since then, I've just been learning from anyone and everyone who will share their wisdom with me. We live in an era when you can learn pretty much anything from YouTube and social media. Sometimes I wish I had pursued an apprenticeship because I know there are still gaps in my training, but I am very thankful for the professional woodworkers who have helped me get this far.'

The first major woodworking project Chris completed was a dining table for the first house he bought with his wife. 'We had a massive open space that was perfect for a long dining table,' he recalls. 'We love creating memories around meals with good friends and family, so it felt really special to be able to build the table that would allow us to do that. It ended up being 10 feet long and weighing a few hundred pounds, but we have countless memories from that table. It has survived two moves and now resides on our back porch, ready to make even more memories as a patio table.'

Making memories

Tables continue to be at the heart of Chris's work, and his favourite piece he has worked on so far was a massive dining table for his wife's aunt and uncle. 'They wanted a bar-height table that could accommodate their nine-person family,' he explains. 'The entire time I was building it I was picturing them all sitting around it, enjoying good food and making lasting memories. With all my custom tables, I include a hidden compartment with a wooden journal that acts as a sort of guest book for those who sit around the table. I love knowing that the fun memories that are made around that table will be recorded in that journal and reflected back on down the road.'

Building memories is the key thought behind his business, Gift & Grain. Chris says: 'My goals for business are the same as my goals for life: to create space where people feel loved, supported and valued and to build lasting memories. My wife and I are passionate about being a positive influence in our community and I started Gift & Grain with the same mindset. To this day, we donate 25% of our profits to non-profit organisations that provide meals to families in need. We are blessed to be able to put food on our table and enjoy good meals with our two daughters, but I realise not everyone has that luxury. So even though most of my clients end up buying higher end tables, I still feel confident we are making a difference in our world by providing meals to local families who are less fortunate than us.'

Chris has always had an entrepreneurial spirit and loved building his own brand. 'Nothing gets me more fired up in business than having endless possibilities and being able to pursue whatever I find the most passion in during a given season,' he says. He got the business going thanks to a good friend who was running a start-up incubator which helped him with everything from setting up his limited liability company to branding.

Working from home

Chris works from home in a three-car garage he has converted into a workshop. 'I've had to be really strategic in how everything is set up and it limits the number of builds I can have going on simultaneously, but I get to work from home and be close to my wife and two daughters. I wouldn't trade that for anything,' he says. The home workshop has also made it easier for him to carry on working during the Coronavirus pandemic. He says: 'The Covid-19 era has reminded me what is most important in my life: loving others, supporting our community and maximising the time I have with my wife and our girls. While business has been slower, I am so thankful for the time it has afforded me with my family and close friends. Looking to the future, it has inspired me to be more generous with our profits and how we pour into our community. Many of those around us have struggled to make ends meet, so I want Gift & Grain to be a blessing to as many people as possible.'

Chris's go-to woods are walnut and white oak, which he says are versatile, readily available and 'just plain beautiful'. 'I also work with a good amount of alder, ash, mahogany and poplar. For special projects, I'll pull out some paduk or teak to shake things up a bit. I may be a little

weird, but I judge a wood by how it smells when I cut it. Walnut smells like heaven when it is cut. Poplar has a sour smell, so I usually wear an extra mask when I cut that. Paduk smells like fresh-baked cookies when it is cut, so I love when I have a project that requires paduk.' He has also worked on some mixed media projects, and enjoys combining metal with wood. 'There is something rugged about mixing metal and wood. You get the roughness of the metal which is balanced out by the clean, natural elements of the wood,' he explains.

In terms of tools, Chris aims to use as few as possible. 'There is something really special about getting up close and personal with the different woods I build with. I've found that the more processed the wood gets, the less connected I feel to it. So even though I often use my table saw, mitre saw, joiners, routers and planers, I try to use hand tools whenever possible. Sure, hand tools take a bit longer, but it is way more satisfying than simply running wood through massive machines.' His favourite finish is Rubio Monocoat. 'They started as a high-end flooring seal company but have pivoted to offer furniture finishes as well,' he says. 'Their products are far superior to anything you'll find in a home improvement store. They take some practice to learn how to use well, but once I learned the nuances of their stains, I've never looked back.'

Chris takes inspiration from his travels and from working with interior designers and other creative people. 'The driving force behind my own designs is a balance of form and function,' he says. 'The consumer furniture market is saturated with good-looking, low-cost pieces that are designed to last a couple years then be thrown away. I am passionate about building high quality furniture that not only looks great, but will stay with a family for multiple generations. I am inspired by a lot of mid-century designers as well as modern artists who like to think outside the box. I try to forecast design trends and plan accordingly when I work with clients who want to be part of the design process.'

He adds: 'I would love to empower other woodworkers to take risks in their designs and think outside the box. Working with Zach and seeing his studio in action gave me a huge respect for other forms creativity, so I would love to keep collaborating with artists in different genres to come up with neat ways to design furniture.'

Chris's current project is a new dining table for his own home. 'My wife always jokes that all our friends and family have Gift & Grain pieces, but most of our furniture is still store-bought,' he admits. 'It feels good to be building something my family will use for a long time. As far as future pieces coming up are concerned, I have a few cool clients who I am designing pieces for that I'm excited about. I'm trying to focus mostly on dining tables, because they bring me the most joy and I have the most fun building.'

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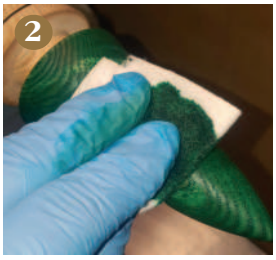
CHESTNUT
PRODUCTS
FINISHING SCHOOL

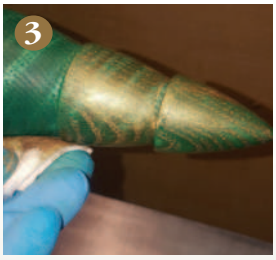
Decorating a Christmas Tree

WITH ANDY MATTHEWS

1 Turn a Christmas Tree shape using an open grained wood such as Ash or Oak. To get the best effect from this method use a Liming Brush to open (deepen) the grain even more.



2 Stain the tree part with Green Spirit Stain using a cloth or brush, taking care to only stain the parts you want to be green. If you want to colour the 'pot' or the trunk this should be done now. Once dried, spray on a coat of sanding sealer to seal the pores of the wood, which will give a more dramatic effect later.



3 Using a cloth, apply Gilt Cream to the whole of the green area. Apply quite liberally, ensuring that it is totally covered (we've used Gold here but Silver or Copper are also very effective).

4 Wait just a couple of minutes, then using a cloth dampened with oil (Lemon Oil is great for this but most will do) wipe off the surplus Gilt Cream so that it only remains in the open grained areas.

5 Polish using WoodWax 22 or Microcrystalline Wax to seal and protect the Gilt Cream and to make the greenery shine. Now, where's the star for the top?

See our YouTube channel for more tips!

More information available from your local stockists or contact us at:

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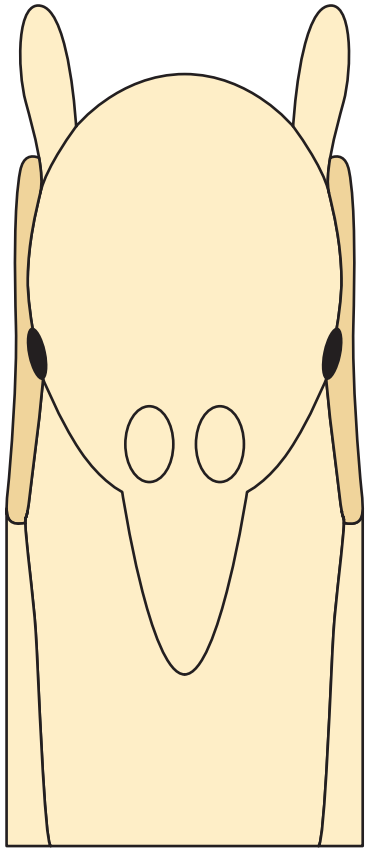
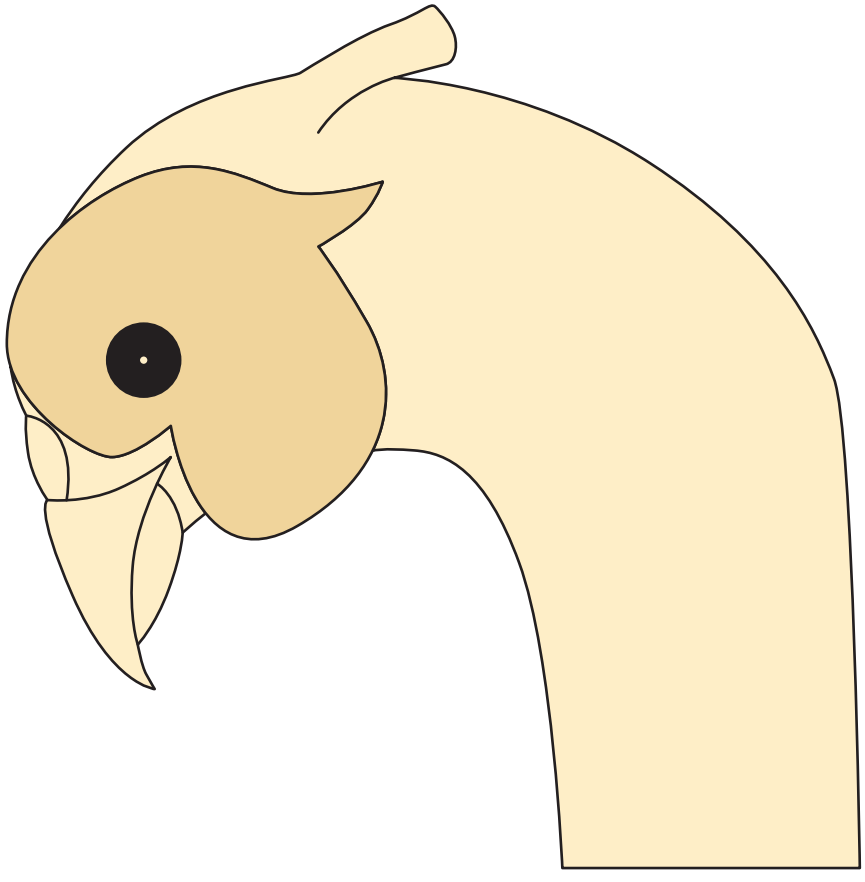
CARVED PHEASANT HEAD WALKING STICK

Woodcarver Paul Purnell makes a colourful walking stick topper

A spin off from carving-in-the-round is the carving of fancy walking stick heads. This is a simple project of a cock-pheasant head. The addition of feathers, texturing and painting makes for a more realistic effect. This design of the head is for a tall hiking stick, which will be gripped by the shank. If you wish to adapt this project to a short walking stick, where the head is to be used as the handle, I would suggest flattening out the tufts, to lie more to the side than the top of the head. This will also be more comfortable to hold.

While I have listed the tools and equipment I have used, carving, to me, is about achieving the end result with anything you have to hand. For example: the dimples of this project were carved with diamond ball cutters but they could easily be achieved using the end of a nail or other similar pointed tool. With practice and experimentation you will find the tool and style that suits you. Above all else, enjoy your carving.





YOU WILL NEED

Tools:

- Bandsaw
- Rotary carving tool
- Coarse carbide cutter
- Selection of diamond burrs
- Selection of blue ceramic cutters
- Carving knife
- Junior hacksaw
- 12mm wood drill
- Scalpel/craft knife
- Cushioned sanding drum
- Cloth abrasive – various grits
- Hazel shank
- Buffalo horn spacer
- Brass ferrule
- Epoxy putty and glue
- Glass eyes: special pheasant 9mm
- Acrylic paints

Wood:

- Lime – 100 x 90 x 450mm

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Roughing out the head

1 Cut out a template of the side view, then mark out the blank – ensure the grain runs vertical. Cut out the side view with a bandsaw. The head is to be fitted to the shank by a dowel that will be carved from the shank. To do this find the diameter at the top of the shank and add 2mm. Find the centre point at the bottom of your blank and with this measurement mark a square around the centre point. Use a 12mm drill bit to make a hole to the depth of 32mm.


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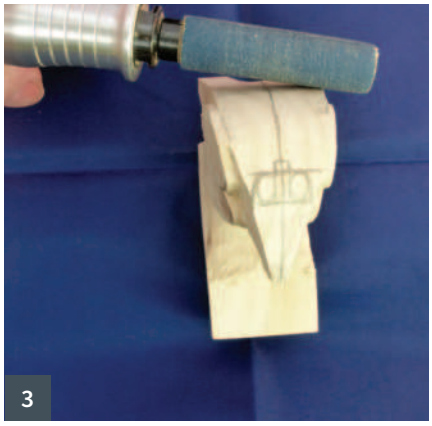
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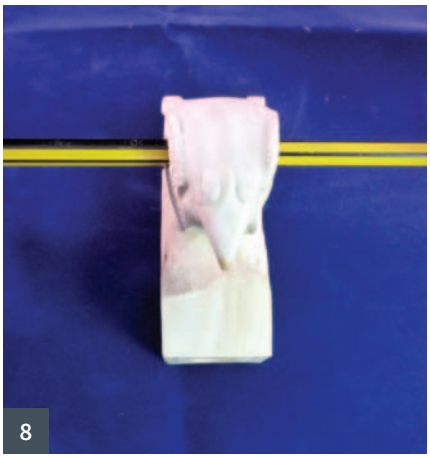
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PHOTOGRAPHS BY PAUL PURNELL

2 Draw a centreline around the blank and all features to be carved, and rough out the head, beak, tufts and wattle using a coarse, blunt-end typhoon cutter. Do not remove any material from the bottom of the neck.

3 Remove wood in small steps. After each step sand with 120-grit abrasive. Whenever a stage of carving removes the pencil marks, draw them back on again.

4 Continue to refine the beak, nostrils and tufts using a blunt-ended diamond cutter. The nostrils are small, oval flaps that open on the outside edge. To represent these, cut small slits with a scalpel.

5 Separate the upper and lower sections of the beak using a carving knife. Be careful when carving the tufts as the grain goes across, so leave a bit of thickness.

6 Continue working on the beak and nostrils until finished. Sand everything with a combination of sanding methods. Start sanding with 120 grit, finishing with 400.

7 Mark out the positions for the eyes using small pins. Make sure that the pins line up from both the front and top of the head.

8 The eyes for this project are 9mm two-coloured pheasant eyes. Drill the two holes using a medium, flamed burr. Ensure the eyes fit freely into the holes. Leave a gap of about 1mm all around the eyes, which allows for some fine-tuning of their final position. Check alignment using two pencils from both the front and above.

9 The wattles are domed around the eyes and slightly concave above and below them. Use the medium flame to define these areas. Sand the wattles down to a thickness of 2mm and gently round over the edges from the front face. Finish sanding with 400 grit.

10 Mark the small featured area below the eyes. Use a 1 and 2mm diamond ball burr to achieve the dimples on the rest of the wattle. Dimple in a random manner to a depth of about 1–2mm.


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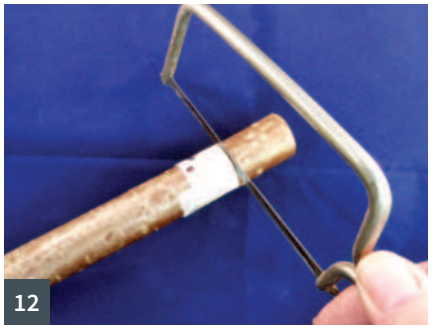
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11 Here is the pheasant head, ready for the eyes to be fitted in due course.

Preparing the shank

12 Mark the depth measurement of the hole drilled in the bottom of the neck together with any spacer on the end of the shank. Transfer this to the shank and make a mark. Using a straight edge piece of paper, wrap the straight edge around the shank at the bottom of your mark. With a junior hacksaw, cut around this line to a uniform depth around the shank. Assuming the diameter of the top of the shank is around 25mm, the width of a junior hacksaw blade is roughly the right depth of wood that needs to be removed to form a 12mm dowel at the centre of the shank. To be safe, cut down to a depth of around ¾ of the blade width. Make a mark in the centre of the shank and use this and the depth of the hacksaw cut for reference when carving to form a dowel.

13 Cut a notch around the circumference of the shank with a carving knife.

14 With the knife, carve away the shank to form a round dowel that will fit into the 12mm hole drilled in the blank. Work methodically around the circumference until the dowel is a good fit. Do not try to force the dowel as it may split the wood of the neck. Drill a 12mm hole into the centre of your spacer and chamfer the edge that will be up against the shank. This will make it sit better.

15 Once the dowel is the correct size, place the head on and turn it until you find the one point that gives the best fit. Mark the shank, spacer and head at this point.

Roughing out the neck area

16 Rough out the neck and spacer while in situ on the shank, using the coarse typhoon cutter. Wrap a couple of layers of masking tape around the shank to prevent any damage from the cutter. If you find that the head is slightly loose at this point, use a wrap or two of masking tape around the dowel until the head fits tight enough to be carved without movement.

17 Continue carving the neck with the typhoon and the medium flamed burr. The ideal finished piece should have the back of the neck in line with the back edge of the shank. Make sure you leave enough material to allow for the several rounds of sanding.

18 Use a cushioned drum sander to sand down through the grits, from 120–400. At this point the back of your carving should look something like this, after the sanding process.

Feathering and texturing

19Mark out the feathers, ensuring correct flow and outline with a diamond flame burr. Remember to leave an area that adjoins the shank free from texturing and painting


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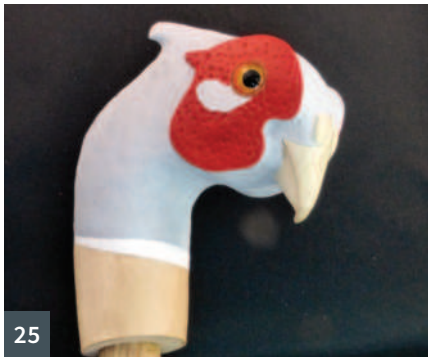
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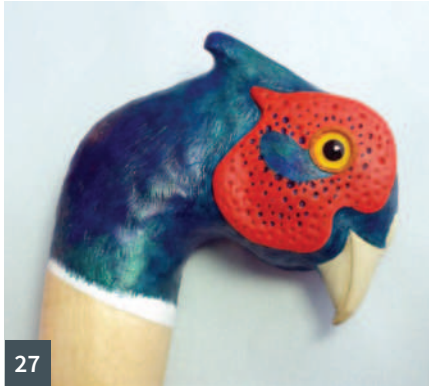
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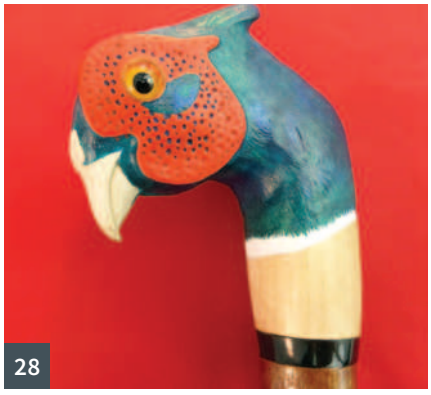
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20 Knock off the shoulders and tips of feathers using the same diamond burr. Lay the burr more horizontally for this step and do not carve too deep; the idea is to achieve gentle undulations.

21 Now, sand the feathers down through the grits to 400.

22 Use the bull-headed ceramic stone to create soft waves. Use a carving knife for a couple of splits and the diamond-shaped blue stone for the final texturing. Work from the bottom upwards and from the base to the tip of each feather. Ensure you overlap the feather beneath.

23 When texturing the feathers try to achieve a forward and reverse 'C' shape. Add some 'S' shapes to break up any uniformity. Do not texture in straight lines.

24 Next, fix the eyes using epoxy putty. For the eye-rings, roll out a small amount of putty into a thin worm, around 1mm. Place this around the eye and press lightly into place. Shape the putty to form a ring around the eye to a width of 1mm. Using a craft knife, or similar, lightly press indentations into the eye-ring.

Painting and fixing

25 Water the paints down to the consistency of non-fat milk and use several layers to build up colour. Apply a light-grey gesso undercoat, paint the wattle with medium cadmium red mixed with a hint of raw umber, then paint the white strip at the bottom of the neck. Use buff titanium with a hint of yellow ochre and raw umber on the neck. Once dry, apply a couple of weak washes of raw umber to dull the beak and create darker shadows.

26 For the remaining areas mix phthalo green with a touch of phthalo blue. Apply three to four coats and a hint of Windsor violet to a few patches.

27 For the final coat you want some iridescence. To do this use an iridescent blue and green paint straight from the tube or mix an iridescent medium into the final mix of phthalo green and blue.

28 Apply several coats of finishing oil to the shank. Fix the head and spacer to the shank with epoxy glue. If the stick is for show purposes only, finish the head with a matte indoor varnish. If it is to be taken outside, use an outdoor varnish. Finish the tip of the shank with a brass ferrule. Your finished project should look something like this.

TRADITIONAL FRENCH POLISH

Kevin Jan Bonner restores a damaged table and demonstrates that French polishing is easier than you might think

Many people take a sharp, deep intake of breath at the thought of French polishing – it has earned itself a reputation as a very complicated and highly skilled craft. However, a traditional French polish finish is not as complicated as you might have been led to believe.

This side table is of a very robust design and is structurally sound, however, its age was showing in its blemished finish. My aim was to restore it to its original condition.

Stripping the old polish

I had planned to use a stripping technique called antiquikstrip. Instead of removing all of the finish, antiquikstrip removes just the top layers. If the finish is thick enough, you can remove all the layers that contain the scratches, white marks and discolourations with layers of polish still remaining. If the finish is thin, this will rub the polish back to the wood, leaving just a thin foundation coat of French polish in the fibres.

However, you can never guarantee that antiquikstripping is going to be successful and on this occasion it was not. The existing French polish finish was so thick that over the years patches of it had flaked off. The antiquikstrip technique works by dissolving the existing French polish so that it becomes liquid and is redistributed over the surface by the scrubbing action, hopefully covering and correcting any blemish. However, the flaked patches on this table top were too large to compensate for in this way. So I had to abandon this method and use chemical stripper instead.

Applying the French polish

For traditional French polishing, the polish is applied with a carefully constructed polishing cloth known as a rubber. This is made from cotton wool wrapped in cotton cloth. The liquid polish is poured into the rubber and wiped over a section of the furniture leaving a very thin smear of polish on the wood. (This process is known as a pass.) Because this smear of polish is so thin, and because the polish has meths as a solvent, the coat of polish dries very quickly. By the time you have coated the furniture with one pass of the rubber, the polish where you first started is usually dry enough for you to start another pass. Many hundreds of passes can be applied to build up a high gloss finish.

The process is carried out over three days. The first day's session is referred to as 'bodying in' and lays down the foundations of the finish. Typically, the French polish soaks into the fibres of the wood overnight to provide a firm foundation for the second day's session, 'building up'. This is where the thickness of the polish is built up on the foundations of the previous application. This creates a finish that sits above the surface of the wood. The polish is applied in a number of passes, as for bodying in.

The third day's session is reserved for 'spiriting off'. No polish is applied. The existing semi-hard polish is burnished to a flawless high shine with a new rubber that contains nothing but meths.

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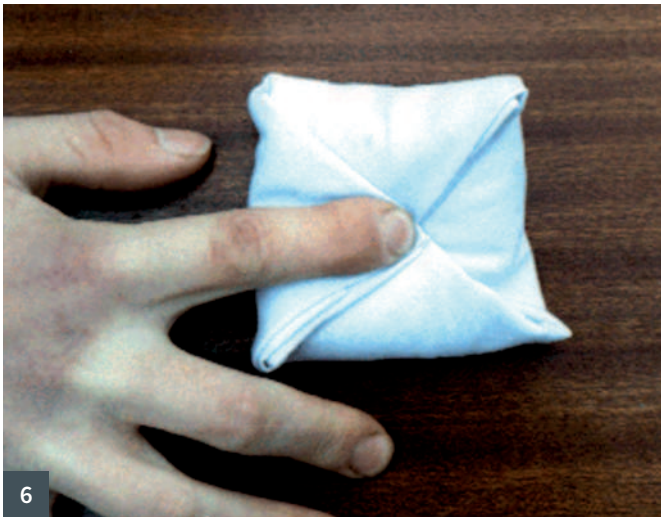
1 The side table is in good structural condition but the finish is damaged
2 Beginning the antiquikstrip process



PHOTOGRAPHS BY KEVIN JAN BONNER

3 Start making the rubber by folding a piece of cotton material into a pad about 127mm square **4** Squeeze a large enough ball of cotton wool into your hand so your fingertips just touch your palm **5** Place the cotton wool in the middle of the cotton square and mould it into an egg shape **6** Fold the corners of the cotton cloth over the cotton wool to form the 'fad'

Making a rubber

The French polishing rubber is constructed from pieces of cotton cloth folded around a large ball of cotton wool. See photos 3–10 for how to make one. The rubber should be very firm to the touch, well packed with cotton wool, and with the cotton drawn up and tied very tightly so that there are no creases in the base of the rubber.

If you rub the rubber quickly over the palm of your hand, the friction caused by the texture of the cloth will warm your hand. It is this abrasive quality, constantly burnishing each layer of polish as it is applied, that creates the unique shine of a traditional French polish finish.

Charging a rubber

Now you must 'charge' your rubber with French polish. For this table I used garnet polish, which is dark brown, thinned down with meths to a watery consistency. To charge the rubber I poured the mixture into the opened top so that it soaked the cotton wool interior, then wrapped the cotton wool up again and squeezed hard in order to push the polish through the bottom of the rubber. To distribute the polish evenly around the base of the rubber, I squeezed it down onto a piece of clean card. It took a few applications of polish to get the quantity right and the base of the rubber evenly coated.

Bodying in

I decided to polish the top, then the legs, and finally the bottom shelf. For the first pass, I started in the top left-hand corner and wiped the rubber from left to right in a straight line, following the grain of the wood. When I came to the right-hand corner, I lifted the rubber off the wood and moved it down a couple of inches to wipe in the opposite direction – from right to left until the whole top had been covered.

I wiped on the second pass in the same way, except this time the passes were made working across the grain, moving from top to bottom until the whole surface has been coated. For the third pass, I used small, circular polishing movements, again moving up and down the length and breadth of the table top.

This changing pattern of polish application ensures that the polish is evenly distributed and that no bits are missed, but more importantly, it guards against the polish building up a streaky quality, which would occur if the same pattern was used to apply it for each pass.

The cardinal rule for the whole process is to always keep the rubber

7 Place the fad in the centre of another square of cotton cloth, then move it 25mm closer to a corner, as shown **8** Pull the sides of the outer material up around the fad to cover it **9** Twist the loose material above the fad **10** You have now created a rubber, which should be held as shown here

moving over the surface – never allow it to stop. If you do, the meths from the rubber will dissolve the hardened layers of French polish and cause the rubber to stick to the surface. As you pull the rubber to unstick it, you will create rough patches in the otherwise pristine surface.

If you do feel the rubber sticking to the surface, there are a number of things you can do. Some advocate the traditional remedy of flicking raw linseed oil onto the surface. However, you can also speed up the motion of the rubber or lessen the downward pressure on the rubber, and improve your polishing action so that you do not slow down at those sticking points. You should also avoid turning the rubber onto its side as you are polishing. The rubber is stickier on the top and sides because the polish exudes from these areas but does not get rubbed into the wood. It therefore remains on the rubber, thickens and dries out. This sticky polish can cause problems. However, the simplest method is to stop polishing for 30 minutes, allow the surface to harden a little and become less sticky, and then continue.

After the third pass, I began again, repeating the cycle of three passes until I had applied perhaps 15 passes and built up a thick coat of polish.

I repeated the sequence of passes on the bottom shelf and the legs. It is not possible to be so particular with table legs because of their shape, but the principles remain the same. I wiped the polish over the length of the leg, then wiped across the width, and finished with circular passes of a fashion – as far as possible. If I find areas that are difficult to reach, as in the reeding of the legs for this table, I scrunch the rubber up to the required shape and apply the polish with its tip. On another piece of furniture it might be more fitting to construct a smaller rubber for intricate work like this.

Once I had achieved a thick coating of French polish over the whole table, I stopped to allow it to dry overnight and soak into the fibres of the wood.

Building up

The next day the table had lost some of its sheen. This was because the polish had soaked into the fibres of the wood before it hardened overnight. I rubbed the table down lightly with wet and dry paper to remove any slight imperfections, and repeated the previous day's process to restore the shine.

By the end of the session I had applied another 15 or so passes and the polish was now raised above the surface of the wood. Again, I left this to harden overnight.

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Spiriting off

Day three and the polish was ready for the final treatment – spiriting off. I made up a new rubber, charged it with methylated spirit and then rubbed it around the palm of my hand until the meths started to dry. It is important that the rubber isn't too wet at this stage. Rubbing very lightly and very fast, I started to burnish the semi-hardened French polish on the table top. The polish is softened by the fumes of the meths, and the abrasive quality of the cotton burnishes the French polish to a superlative shine. I continued polishing in this way for 30 minutes.

This is the most rewarding and the most tiring part of the process. It can be addictive, so beware. In the past I have become so enthusiastic that I have rubbed all the French polish away, back to the bare wood, chasing that most seductive of surfaces – the high gloss French polish.

I finished off by applying a very thin coat of wax. This layer supplies a measure of protection against the natural enemies of French polish – water and heat.

11 The ideal quantity and distribution of polish on the rubber
12 Holding the rubber correctly for good contact with the surface of the wood **13** I used the tip of the rubber to apply polish to the reeded legs
14 The traditional French polish finish has revitalised the badly blemished surface of this much used side table

URBAN TREES

Alice Whitehead meets the city dwellers encouraging everyone to turn over a new leaf, plant trees and reap the benefits of green streets

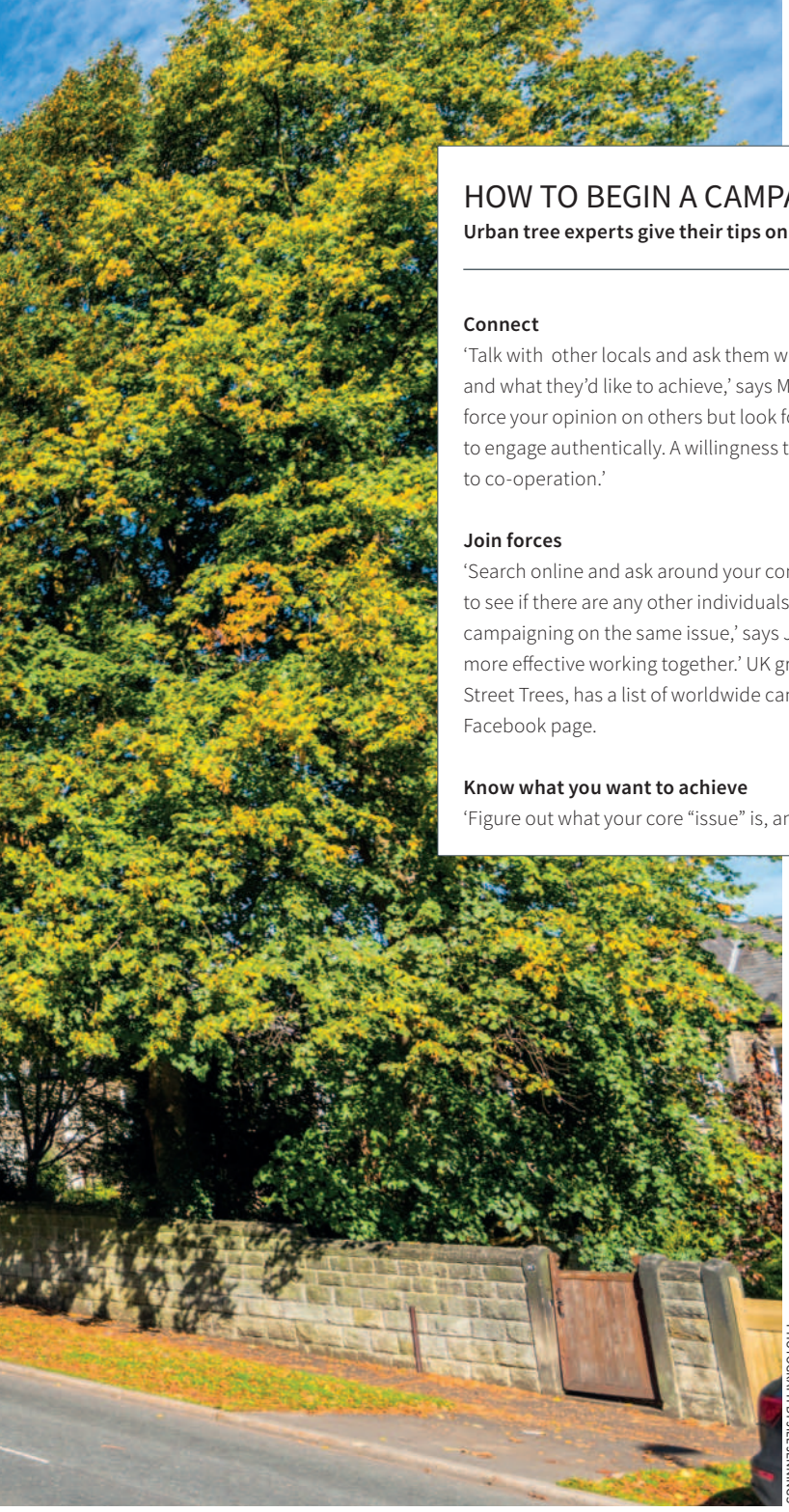
When Bernadette Russell takes a walk among the young walnut trees near her home in inner-city Deptford she calls it her 'forest time'. Like many of her south-east London neighbours, she admires the smooth olive-brown bark and the crushed leaves that smell of polish, but she can also revel in the fact these are 'her trees'.

In 2018, she planted 12 with the help of Trees for Cities, a UK charity dedicated to greening up the grey with urban trees. Now, as a volunteer supervisor for the organisation, she can lay claim to 27,000 such plantings across the capital.

'When you plant a tree, you're creating a moment for people to enjoy and take ownership of nature, and also connect with one another,' says Bernadette, who is part of a sprawling canopy of environmental campaigners and organisations bringing urban forests to the concrete jungle. They view trees as air-conditioners, water filterers, crime stoppers and as powerful tools for community wellbeing and sustainability. And with estimates suggesting that 68% of the world's population will be living in urban areas by 2050, the establishment of healthy green areas is becoming a central component in urban planning.

Feel-good factor

It's widely accepted that people feel better around nature. A Danish review of more than 130 studies shows exposure to woodland can significantly reduce levels of physical and emotional stress. Recent research by the University of Wollongong (UOW) in New South Wales, Australia, found that people in urban areas had a lower risk of developing psychological distress if they had more trees within walking distance of their homes. UOW associate professor Xiaoqi Feng suggests this is because 'green, leafy trees can provide sensory relief in areas dominated by hard surfaces' and that 'vibrant colours, natural textures and fresh aromas all provide distraction and relief' from our stressors.



PHOTOGRAPH BY JILL JENNINGS

HOW TO BEGIN A CAMPAIGN

Urban tree experts give their tips on protecting and planting greenery in your area:

Connect

'Talk with other locals and ask them what they know, and what they'd like to achieve,' says Melissa. 'Don't force your opinion on others but look for opportunities to engage authentically. A willingness to listen can lead to co-operation.'

Join forces

'Search online and ask around your community to see if there are any other individuals or groups campaigning on the same issue,' says Justin. 'You're more effective working together.' UK group, Save Our Street Trees, has a list of worldwide campaigns on its Facebook page.

Know what you want to achieve

'Figure out what your core "issue" is, and what you want to happen,' says Melissa. 'This is important as rushing in without a focus can lead to lack of effectiveness, burnout and disillusionment.'

Make use of social media

They have their detractors but various platforms are useful to forge connections and get things started. 'So many effective campaigns have used social media to raise their profile and gather support from a huge audience,' says Joseph, 'it's difficult for an authority to ignore hundreds of people.'

Have fun

'Organise a meet-up after a volunteer event, play music, encourage and teach children to become comfortable getting dirty. Why try to protect life if that life isn't worth living?' says Justin.

Bernadette has helped plant thousands of trees

PHOTOGRAPH BY BERNADETTE RUSSELL

This view is supported by Joseph Coles, urban tree lead at the UK conservation charity The Woodland Trust, which also protects and plants trees. 'We have a deep, instinctive connection with trees,' he says, 'and urban specimens are often our closest access to nature. These are the ones that can help inspire people to choose and live healthier, more sustainable lifestyles.'

Planting and pollution

Evidence on the ground suggests other factors are also at play. Research by the University of Chicago shows residents of Toronto, Canada, who live on tree-lined streets have fewer physical conditions such as heart disease and diabetes, and the US Forest Service estimates that 850 US lives a year are saved thanks to the air-cleaning qualities of trees.

The reason? Canopies act as oversized nets, intercepting harmful pollutants that can make urban areas hazardous to live in. It's thought a single specimen can absorb as much as 48lb of carbon dioxide per year, releasing enough oxygen back into the atmosphere to support two human beings. In the UK alone, this could save the equivalent of £1billion per year in healthcare costs and lost productivity.

Such is the evidence in favour of urban greenery, that in Liuzhou, in the Guangxi Province of China, planners are building the world's first Forest City – with more than 40,000 trees – in an effort to combat the country's poor air quality. In New South Wales, meanwhile, campaigners see them as a possible means to combat the urban heat-

island effect, a worldwide phenomenon that sees towns and cities reach temperatures 8 to 12° higher than rural areas. Research suggests surface and air figures could be lowered by the presence of trees, which both provide shade and transfer water from the land into the air via evapotranspiration.

'We couldn't understand why there were so few young or established trees in our area,' says Melissa Chandler, who has helped plant more than 300 trees across the Central Coast of Australia as part of campaign group Grow Urban Shade Trees (GUST). 'The heat-island effect leads to significant health issues here such as heat stroke and heart failure. And because people are forced to stay indoors, they don't get any exercise and their mental health and stress levels suffer. It feels amazing that generations of families will benefit in myriad ways from the clean air and shade our trees will provide.'

Small is beautiful

But projects don't have to be on a large scale to have a significant impact. Below the Hammersmith flyover, a concrete monolith that carries 90,000 vehicles a day across west London, a small copse is making a big difference to the pupils of St Pauls CE primary school. A 2017 air-quality audit of 50 of the capital's educational institutions for five-to-11 year olds saw the school labelled the 'second most polluted in London'. This prompted teachers, parents and the wider community to organise a campaign to increase levels of education about pollution and green up their area. Together with Trees for Cities they removed a concrete area of playground and planted 17 saplings. The creation of the woodland, which began in late 2018 and was completed last summer, has seen almost a 50% drop in air pollution levels.

'Where there was once just a very grey playground, the children now have a woodland where they can interact with nature and take lessons outdoors,' says the school's headteacher Claire Fletcher. 'But it offers so much more than this. The children play differently under the trees, with calmer games and more relationship building. For us this shows the real power of greening.'

Across the pond in Baltimore, getting trees on the streets is doing more than improving air quality. Surprisingly, a University of Vermont study revealed a 10% increase in tree canopy in the Maryland city corresponded with an approximate 12% decrease in robberies, burglaries, thefts and shootings.

Justin Bowers, director of programmes at the Baltimore Tree Trust, which planted 2,500 saplings and recruited more than 500 volunteers last year, has seen first-hand how greening a city can also have a positive impact on factors often associated with higher temperatures, such as asthma, heat stress and aggravated crimes. Through its Urban Roots apprenticeship, the trust also offers employment and job-readiness skills to local people. 'More and more research is showing that having trees in close proximity [to people] improves mental wellbeing and ameliorates physical stressors, which together create a life worth living – and worth protecting,' says Justin.

The great tree divide

What the Baltimore project also demonstrates is that for such schemes to be effective, the right trees need to be planted in the right places. Bigger specimens equal bigger benefits, but studies have also shown that the closer they are to people, the greater the improvements in health and wellbeing. Historically, however, they have been unequally distributed among communities, with lower socio-economic areas having fewer trees. This is particularly evident in Baltimore's Broadway East, one of the city's poorest (and hottest) neighbourhoods, where canopy cover is six times less than the nearby affluent garden suburb of Roland Park – a mere 15-minute drive away.

The trust's goal is to reach a 40% canopy by 2037 (it's at 27% today), however, like many campaigns it has been hit by funding constraints. Sadly, many politicians are unable to see trees as a long-term investment and there is also indifference and resistance from urban planners, utility companies and even some residents. But with studies showing urban forests can contribute directly and indirectly to 15 of the 17 sustainable development goals set by the UN, their impact on health and wellbeing cannot be underestimated.

'We evolved with trees and have an emotional connection to them,' says The Woodland Trust's urban tree lead Joseph. 'There are protests going on across the world against felling. The quicker society allows people to proudly claim to be a "tree hugger", the numbers wanting to protect them will grow and the more powerful their voice will become.'

For London campaigner Bernadette it's also about a legacy: 'I love the fact that when I look up into the branches of my tree, I know it will outlive all of us. That offers us something hopeful. Planting a tree is one of the best gifts you can give to the planet and its people.'

PHOTOGRAPHS COURTESY OF ST PAULS CE PRIMARY SCHOOL

Planting trees made a significant difference to air pollution levels at this Hammersmith school

PHOTOGRAPHS COURTESY OF THE WOODLAND TRUST, PHIL FORMBY

Street trees in Nottingham

FIVE GREEN STREETS

Tampa (bottom left)
This Florida city is a world leader for trees, according to calculations by Treepedia, with more than one third of the city (around 36%) given over to tree cover.

Trnava
In 2017, this Slovakian city was awarded the title of European City of Trees for its city-wide initiative between students, government and business to increase its canopy.

Paris (below right)
Mayor of Paris Anne Hidalgo has announced an urban forest planting scheme for Place de l'Hôtel-de-Ville, Gare de Lyon, Palais Garnier and the banks of the Seine. It's part of a wider goal to make 50% of the city's surfaces greener – and the whole city carbon neutral – by 2050.

Toronto
Ontario's capital has some 10 million white-cedar and maple trees, covering 26% of the city. Combined, they remove an estimated 1,905 metric tonnes of air pollution per year.

Birmingham (bottom right)
The UK city was recently recognised as a Tree City of the World for its canopy of more than 1 million specimens.

PHOTOGRAPHS BY SHUTTERSTOCK

ICE-LOLLY LOVESPOON

Dave Western indulges his sweet tooth and uses ice-lolly sticks to carve a traditional-style lovespoon

I can't begin to count how many times over the years that friends and acquaintances have suggested I try carving a lovespoon from matchwood or an ice-lolly stick. I've always laughed it off, but the combination of Covid lockdown boredom and a particularly tasty frozen Skyr Bar led me to the realisation that this project was, indeed, a possibility.

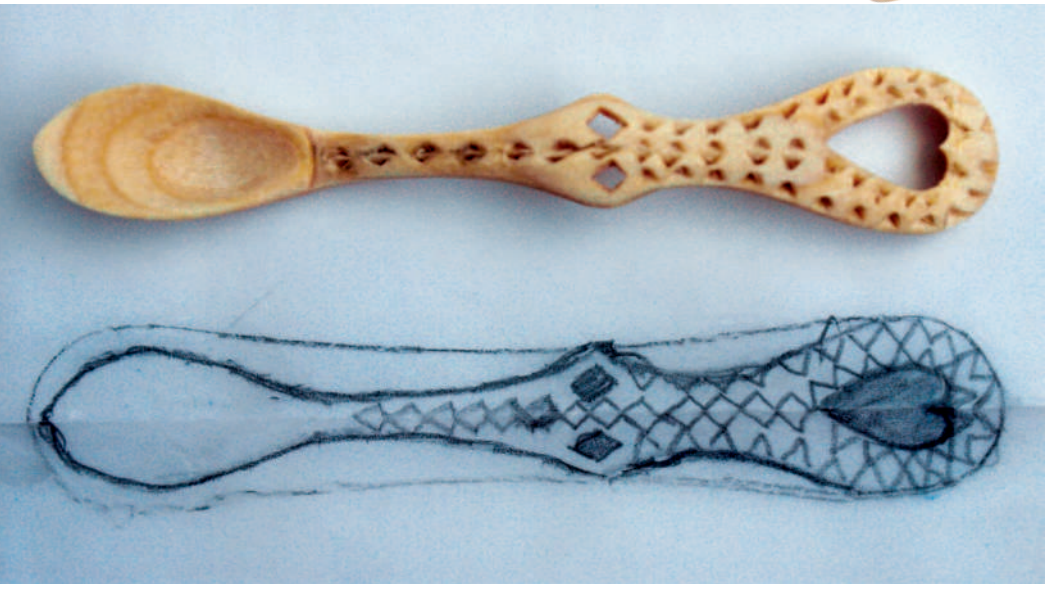
I can't honestly say whether it was artistic inspiration, a desire to create something useful from as much waste material as possible or just all-out gluttony for more of those frozen treats, but I decided that my ice-lolly spoon would be carved from a stack rather than from a single stick. Despite the small scale of the project, I also wanted to endow the carving with many of the features I carve into my full size lovespoons. I wanted the spoon to have a sweeping curved handle with a gentle doming to the front face and with a bowl that was elegantly cranked towards the stem in the manner of good quality antique lovespoons. I also envisioned the handle ornamented with some fretted symbols (in this case a love heart and a pair of diamonds indicating prosperity) and richly ornamented with as much chip-carved border patterning as I felt I could stuff into the space. Despite its diminutive size (approx 90mm long by 15mm wide by 10mm overall thickness) the spoon can be readily carved with a bit of patience and is a fine small-scale version of a classic lovespoon. It is also an ideal opportunity to indulge in several of your favourite ice-lollies completely free of guilt!!

YOU WILL NEED

- 5 or 6 ice-lolly sticks
- Straight knife (25mm blade length)
- 6mm #9 gouge (or similar)
- Carbon paper or photocopy pattern
- Abrasive papers

Optional:

- Scrollsaw
- Drill
- File
- Scraper



The pattern for the spoon

PHOTOGRAPHS BY DAVE WESTERN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Carving the lovespoon

1. Begin by gathering a small stack of lolly sticks (five or six should be sufficient) and gluing them together using carpenter's yellow glue.
2. Have a good look at each stick to make sure there aren't any pieces missing or deformities that will hamper good, sound glue joints. These sticks aren't necessarily carving-grade timber, so you may have to discard some or move them around in the stack to achieve the best joints. Once you are happy that everything looks good, spread a nice even (but not too thick) layer of glue on each surface to be joined.
3. Then use small clamps to seal the joints up nice and tight. If you lack clamps, you can use some masking tape to hold the stack together and then apply a couple of heavy objects such as a few books or a brick or two for gluing pressure. If you are patient, you can just use masking tape to glue the stack up one section at a time, but you have to be handy with it to create enough pressure to glue the entire stack in one go using tape as a clamp.
4. With the stack of sticks nicely glued and cured, you can either freehand sketch the spoon pattern to the top working surface or use carbon paper to trace the included sketch directly to the wood. If you have access to a photocopier, you can make a printout that you can adjust to fit your particular ice-lolly stick perfectly and then glue the pattern directly to the workpiece with a regular glue stick or hobby glue.
5. Once the spoon's outline has been transferred to the workpiece, begin rough shaping the spoon blank. If you have access to a scroll saw or jeweller's saw, this can be done quickly and neatly, however, it can be equally undertaken using a simple straight knife and a bit of patience. When using a straight knife, be cautious not to inadvertently chip off the bulbous areas at the crown and the bowl and not to damage the two protruding points near the mid-way point of the handle. Endeavour as much as possible to keep the side edges at a consistent 90° to the front face of the spoon. It is easy to wander off course and misshape the handle if the 90° angle isn't maintained around the entire pattern.
6. You can now begin to cut out the details. Dealing with the small fretted symbols can be a bit tricky if you lack a drill press and scrollsaw, but they can be drilled out by hand or can simply be excavated by repeated shallow cuts with a finely tipped straight knife. If using a straight knife only, begin shaping the symbols and excavate about 2mm in depth. Then wait to finish excavating until later in the project when the back has been thinned down and there is less material left to cut through.
7. Having satisfied yourself that the outer edge of the pattern has been cut as cleanly and accurately as possible, draw out lines along the side edge of the blank to guide shaping the curve of the handle and stem and the tilt of the bowl. I use a pencil for this just in case I need to make adjustments. Don't make the area where the bowl meets the stem too thin, as this will most certainly create an area of structural weakness that will be a constant breaking danger. Be sure to leave enough material that once the back has been shaped, the spoon's handle has a generous 5mm of thickness and its bowl has about 6mm depth.
8. Again, if you have access to a scroll or bandsaw, you can do this shaping quite quickly, but a straight knife will achieve the same result in just slightly more time. Be cautious when carving along the handle's sweeping curve not to chip out the area where the bowl rises back up. Work 'downhill' from both directions as much as is necessary. Also note that because you are dealing with a stack of thin slices, each slice may have its grain travelling in an opposite direction making your shaping slightly trickier than it would be with a consistent block of a single piece.


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9 Sight along the block frequently to ensure the surface stays flat and even and you aren't removing more material from one side than the other. When complete, the curve should be smooth and fair without bumps and dips and it should be flat from side to side without any hint of a 'list'.

10 Give the bowl area a bit of definition where it joins the stem by raising it approximately 2mm. Scribe a line across the handle following the curve of the bowl to this depth using the tip of your straight knife, then gently shape the stem area down to visibly define the area. This will make shaping the bowl a more straightforward operation and will clearly separate it from the handle.

11 I chose to really jazz up the handle portion of the spoon by slightly doming the face area. To do this, I marked a line that paralleled the front face of the spoon at a depth of approximately 2mm. I ran this line around the entire spoon, save for the bowl area.

12 I then used my straight knife to gently dome the face area. Keep the centre of the face as the high spot and use rounding cuts rather than a wide chamfering cut to create a dome rather than a peak. Be gentle and use shallow cuts here to avoid chipping out too much stock.

13 With a satisfactory dome in place, you can use a scraper, file or abrasive paper to smooth the dome to a fair and consistent curve. The dome need not be exaggerated to add plenty of visual appeal to the handle, so don't get too carried away with the shaping!

14 With the handle curved, domed and smoothed, I hollowed out the bowl using a small 6mm #9 gouge. Any small gouge or bent knife will work for this but you may have to spend a bit more time cleaning up after the initial cutting. Take your time with this process and avoid the urge to cut too deeply. As with the handle shaping, you will be cutting through several layers of wood and the various grains may react differently, so take shallow, cautious cuts.

15 When you are happy that you have achieved a nice, fair bowl shape, you can tidy it up with some abrasive paper. I opted to use some cloth-backed fine abrasive so that I could pull the abrasive along under my finger and achieve a nice rounded, fair surface. Paper abrasives will work equally well but will require a bit more time and patience to ensure the bowl gets nicely shaped with no dips or bumps. Constantly check the depth of your cut with your fingers to ensure you don't take out too much and burst through the back of the bowl.

16 At this point, you can re-glue your paper pattern to the spoon handle or re-draw the chip-carved decoration by hand. I opted to freehand draw mine back on using a pencil. I wanted the spoon to have the free and very handmade look of older lovespoons, so I didn't worry too much about getting the pattern perfect. If you prefer more accuracy and consistency, then I recommend gluing a photocopy pattern to your work, as it is much easier to draw with precision on paper than it is on a curved bit of wood.


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17 Use the tip of a fine and sharply honed straight knife to mark out and cut the basic chip-carved triangles which form the border and decorative patterns on the spoon's handle. As I discovered to my chagrin on more than one occasion, the variety of layers means some sections can be quite sturdy and some very soft, so press the knife in cautiously and resist the urge to use too much cutting force. The knife needs to be really sharp to get good, clean, crisp cuts, so take some time to sharpen up before undertaking this part of the carving.

18 With the face carving complete, draw a parallel line around the edge of the spoon to a depth of approximately 3–5mm and then remove the stock from the back of the spoon using a straight knife. As with the front face, keep the cuts shallow and cautious and aim for a nice, flat back that doesn't list from side to side. You'll need to remain aware of grain directions as you travel through the various layers and always try to cut 'downhill' as you approach the low spot at the mid way point of the handle.

19 Give the back of the bowl a good rounding with the straight knife and a file. Use some fine abrasive paper to ensure a nicely faired and rounded surface that is smooth to touch and consistent with the bowl's inner face. Spend some time and effort on the bowl; it is the unsung part of the spoon that can make or break your whole project. A sweetly made bowl is the counterpoint to the busy handle and is as equally eye-catching, so effort spent making it as beautiful as possible is effort well spent!

20 A final once over with files, scrapers and abrasive papers to knock off any rough spots and create a touchable, finished spoon is necessary at this final stage of carving.

21 Take as much time as is necessary to ensure there are no scratches or blemishes that will show up when the oil or wax finish is applied as they are very difficult to deal with once the spoon has been finished.

22 Because the spoon is so small, I gave mine several dips in Danish oil rather than messing around with brushing or wiping it on. I was careful to thoroughly dry the spoon between coats and gave it a light buffing with 1,000-grit wet and dry abrasive during the last coat to give it a silky, satin feel to the touch. If you lack finishing materials, the spoon can be left unfinished, or can be given a quick wipe with beeswax polish or mineral oil.

23 Here you can see the finished spoon to scale.

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CDP152B	450 / 12	£149.98	£179.98
CDP202B	450 / 16	£189.00	£226.80
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CBS190B

• Great for both home & professional use • Induction 300W motor • Table tilts up to 45° • 9" throat size

£189.98 EXC.VAT £227.98 INC.VAT

REMOVABLE DUST TRAY

CBS225

Clarke PROFESSIONAL BANDSAWS

Top Quality Bandsaws - ideal for professional workshop use. Strong steel body with solid cast iron table

• Table tilts 45° • Adjustable blade guide • Supplied with stand, 4TPI wood cutting blade, rip fence, mitre guide, mitre gauge and push stick • Induction motors • Includes stand

MAGNIFIED MITRE GUIDE

QUICK RELEASE FENCE

SOLID GROUND CAST IRON TABLE

DRIVE-BELT TENSIONING

CBS300

FROM ONLY £219.98 EXC.VAT £263.98 INC.VAT

MODELS ALSO FEATURE:

MULTI-STEP DUST EXTRACTION OUTLET

FLEXIBLE LED WORKLIGHT

REMOVABLE DUST TRAY

BLADE TENSIONING CONTROL

MODEL	THROAT DEPTH	MAX CUT 90°	MAX CUT 45°	EXC. VAT	INC. VAT
CBS250B	250mm/10"	100mm	75mm	£219.98	£263.98
CBS300	305mm/12"	165mm	115mm	£398.00	£477.60
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* 'V' Twin Pump
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7/250	2 HP	7	24ltr	£94.99	£113.99
11/260 NEW	2.5HP	9.5	24ltr	£109.98	£131.98
8/550 NEW	2HP	7.5	50ltr	£119.98	£143.98
7/510#	2HP	7	50ltr	£119.98	£143.98
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PC40	3.5HP	20Amps	£269.00	£322.80
PC60	5.5HP	32Amps	£319.00	£382.80

Clarke CONTRACTOR ROUTERS

BOSCH

• Powerful heavy duty machines ideal for trade and DIY use

CR4

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*was £107.98 inc. VAT

MODEL	MOTOR (W)	PLUNGE (mm)	EXC.VAT	INC.VAT
CR1200	1200	0-55	£44.99	£53.99
POF1400ACE*	1400	0-55	£84.99	£101.99
CR4	2000	0-66	£99.98	£119.98

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• Stands come complete with bolt mountings and feet anchor holes

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STANDS FROM ONLY £47.98 INC.VAT

With sanding belt
*8" whetstone & 6" drystone

MODEL	DUTY	WHEEL DIA.	EXC.VAT	INC.VAT
CBG6RP	DIY	150mm	£35.99	£43.19
CBG6250	HD	150mm	£37.99	£45.59
CBG6RZ	PRO	150mm	£42.99	£51.59
CBG6RSC	HD	150mm	£56.99	£68.39
CBG6SB#	PRO	150mm	£58.99	£70.79
CBG6RWC	HD	150mm	£59.98	£71.98
CBG8W* (wet)	HD	150/200mm	£59.98	£71.98

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CRT-1

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BEST SELLER

• Converts your router into a stationary router table • Suitable for most routers (up to 155mm dia. Base plate)

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Clarke CONTRACTOR JIGSAWS

CON750

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^was £33.59 inc. VAT

*DIY #Professional

MODEL	POWER (W)	DEPTH OF CUT (WOOD/STEEL)	EXC. VAT	INC VAT
CJS380*	420W	55/6mm	£15.99	£19.19
CON750#^	750W	80/10mm	£24.99	£29.99
Bosch PST700E*	500W	70/4mm	£44.99	£53.99

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• Simple, easy to set up & use for producing a variety of joints • Cuts work pieces with a thickness of 8-32mm • Includes a 1/2" comb template guide & holes for bench mounting

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CDTJ12

Clarke WOODWORKING VICES

Record

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WV7

MODEL	MOUNTING	JAW (WIDTH/OPENING /DEPTH)mm	EXC.VAT	INC.VAT
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Record TV75B	Clamped	75/50/32	£22.99	£27.59
Clarke WV7	Bolted	180/205/78	£29.98	£35.98
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CSS400C

• 50mm max cut thickness • Air-blower removes dust from cutting area • Table tilts 0-45°

BEST SELLER

MODEL	MOTOR	SPEED RPM	EXC. VAT	INC. VAT
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CSS400C	90W	550-1600	£119.98	£143.98

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CMS250S

‡ was £226.80 inc.VAT

MODEL	BLADE DIA/BORE (mm)	MAX CUT DEPTH/ CROSS	EXC.VAT	INC.VAT
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C2MS210MP	216/30	65/305	£139.98	£167.98
C2MS250MP‡	255/30	90/305	£179.00	£214.80

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PHOTOGRAPH BY SHUTTERSTOCK

PUSH STICKS

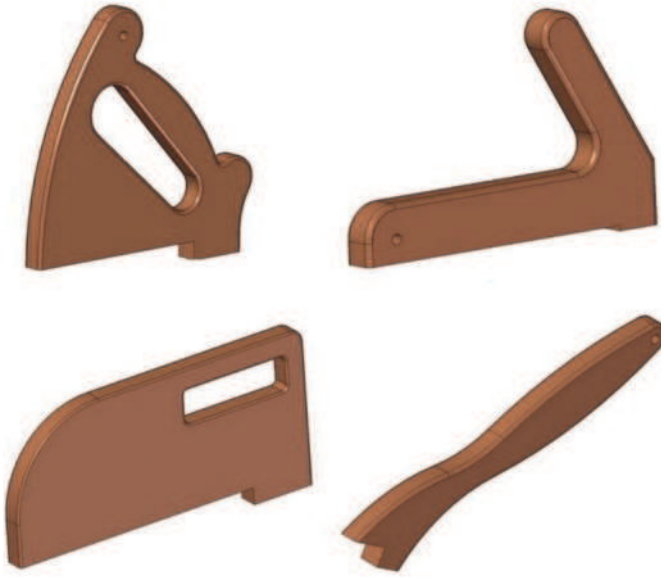
Alan Goodsell tells you all you need to know about making, buying and using push sticks

Humans have become the dominant species on Earth mainly because of our opposable thumbs, which make us dexterous and creative. That isn't to say that our fingers are any less important and without them we would be not so handy – thumbs need something to work with or they are just digits waving around in thin air. Their importance is why we need to take great care of them, it is unimaginable how life will be changed if an injury occurs and one or more of them are lost.

For woodworkers using tablesaws, router table and bandsaws this is where push sticks come in. They keep our hands and fingers away from the cutting edge of the tool and the danger of it removing any of our digits. A push stick is essentially a simple device, it is a length of wood or plastic with a notch in the end that will hook on to the workpiece and allow it to be pushed while keeping fingers away from the blade. If the push stick makes contact with the tool's cutting edge the only damage will be to it and perhaps a new one will be required, and they are a lot easier to replace than fingers!

1

2



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PHOTOGRAPHS BY ALAN GOODSELL, UNLESS OTHERWISE STATED

Homemade push stick

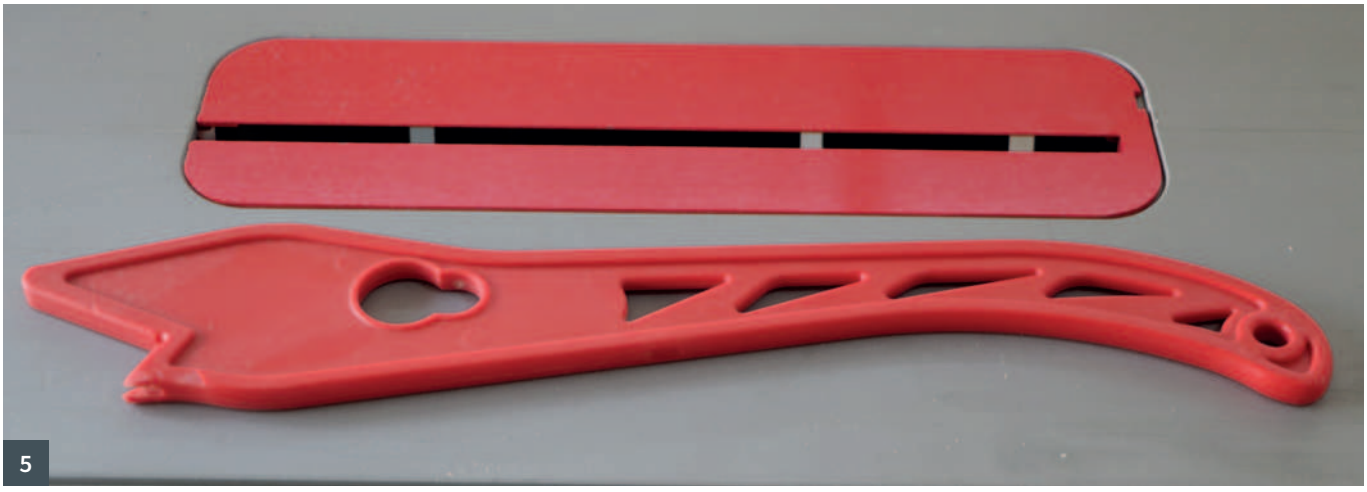
1 The simplest form of push stick has a bird's mouth notch cut into the end of a stick of wood. This is the type my father showed me how to make when I was just a boy and learning the rudiments of woodworking. We would find a piece of wood in the scrap pile that was about 45cm long and 40 x 20mm but pretty much any scrap will do. Once you've got a suitable piece of wood, mark the bird's mouth notch on the end of the stick with a piece of scrap wood that has a right-angled end.

2 Then cut to the line using a bandsaw, tablesaw or hand saw. When my father made push sticks, the angle of the bird's mouth was never measured and, in reality, it doesn't matter what the angles are as long as the push stick feels comfortable in use.

Shop-bought push sticks

3 There are many off-the-shelf push sticks available, most of which are designed by woodworkers and so will do the job admirably. Some are designed for a more specific task than just the simple push stick. Here you can see a selection of shapes that are popular with woodworkers; some may cut their own sticks out of wood or ply and others may prefer to buy them ready-made, often made from plastic.

4 This type with the long surface and a handle allows the user to exert some down force on the work to keep it flat on the bed of the machine. The handle offers a firm grip but it doesn't distance your hand too far from the cutting edge so it may not be a favourite one to use. For cutting larger boards, however, this push stick proves more useful.



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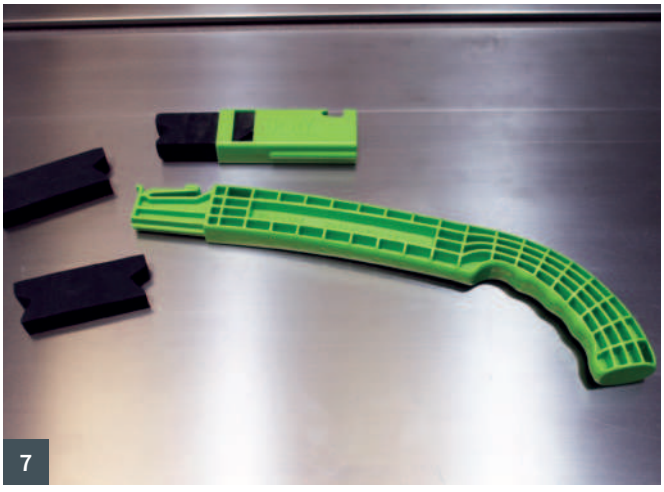


5 This is the generic, plastic push stick that will probably come with your tablesaw. These sticks are well made and are perfectly adequate for most situations where you need to keep your hands away from the saw blade. If damaged these push sticks are easy to find in most tool and hardware stores and are inexpensive to replace.

6 This push stick has a good angle for pushing and the cranked end allows you to use it with a straight wrist.

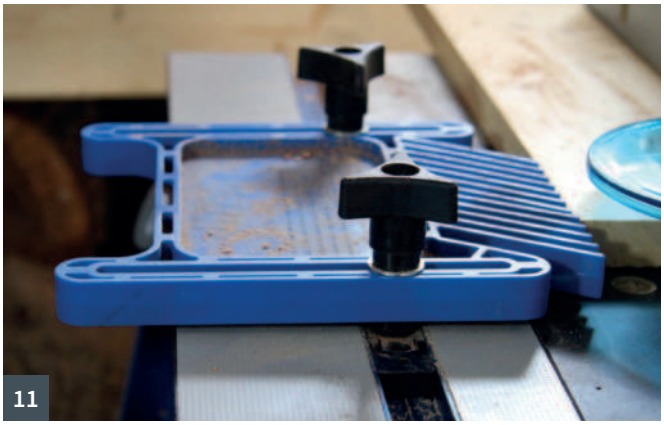
7 This push stick is a great design and is versatile but it's a bit more expensive than the generic type. It has replaceable, double-ended EVO foam ends, which are supposed to absorb vibration.

8 Its ergonomic design means it can be comfortably used for extended periods.

9 The detachable end piece is designed so you can fabricate your own handle for it, but it could also be used when a short push stick is required. The bright green colour will make it easy to find and if the end is damaged by the saw blade it can be quickly and easily turned around or replaced.

Using push sticks

10



11

PHOTOGRAPH BY SHUTTERSTOCK

12

10 Using a homemade push stick is much like a bought one but you may have to crank your wrist.

11 When running a piece of wood through a saw, or any other machine, you have to bear in mind that the work needs to be held against the fence too. This can be achieved using feather boards but this takes time to set up…

12 …so if you are just cutting a few pieces it can be easier to use a push stick on the side of the wood. The push stick may need to be shorter and have a different angle but a homemade one can be made to suit your height and angle preferences, so it is comfortable to use.

Bought push sticks supplied by Infinity Cutting Tools: www.infinitytools.com

PUSH STICK REGRET

At a woodworking shop I worked at years ago I was setting up a machine near one of the guys running planks through the giant circular saw and heard a rather nasty bang. The sawyer had got distracted while pushing wood through the saw, forgot to pick up his push stick and accidentally sawed the top off his finger. He was a tough old character and tried to make light of it, but I could see that the damage was extensive, and he had lost the end of his finger. We quickly rummaged around to try to find the piece that was cut off so it might be stuck back on again, but no luck as it was lost in the piles of chippings and dust around the saw.

As we were not too far from the hospital, it was decided that it would be quicker to drive him there rather than call an ambulance, so I bundled him in the car and drove off, making sure to wrap up his hand well so blood didn't get all over my car. We got to the hospital only to be told that they didn't deal with amputations, so I had to take him to another one, thankfully not too far away. While we were heading there, I could see he had turned snow white with shock and was on the point of passing out with pain. As soon as we arrived, he was quickly whisked off and tended to. I waited while he was being treated and after quite some time, he emerged with colour back in his cheeks and a nicely bandaged-up hand. We drove back to the workshop to pick up his things before taking him home and the guys all welcomed him; they had been busy while we were away and found the remains of his finger. The saw had actually minced it and the pieces had a coating of wood chippings on them. The guys, in a display of dark workshop-humour, had placed them in a pork scratchings bag and presented him with them.

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REBATE CUTTERS

Anthony Bailey takes a look at this somewhat undervalued but incredibly useful router cutter

The title of this article is very slightly misleading because it should really be 'how to cut rebates'. After all, if there are better ways to machine rebates then we need to look at that as well. However, the rebate cutter, I think, is rather underrated. Yes, we probably all own one but it gets only occasional use and in reality more rebaters in different sizes would be useful if we had them to hand.

The average starter set rebate cutter is usually quite small and can cut only limited size rebates as a result. This is fine for fitting small back panels or letting glazing into a photo frame but not much else.

It seems obvious, but a rebate cutter is so because it usually has a bearing, although there are a few exceptions to this. It is not a plunge cutter but an edge cutter and therefore can be quite wide in diameter once you add the bearing diameter in the middle. One exception is the stepped rebate cutter for inserting Tonk (library strip) which has no bearing. Another unusual rebate type is the 'undercut' bearing guided cutter used to create decorative undercuts; this cutter has the bearing above and the cutter is flush at the bottom with no projecting nut and washer.

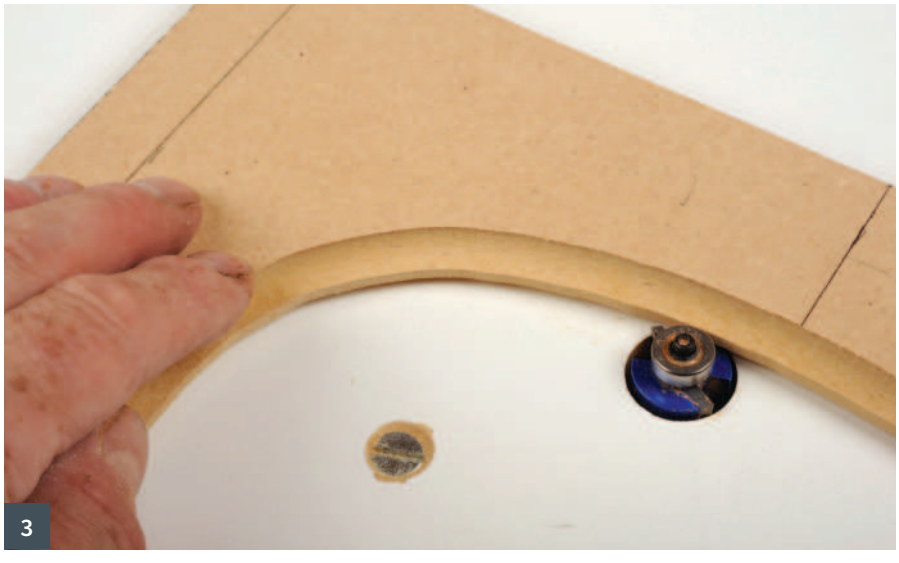
A further point is that you can obviously create rebates without using a rebate cutter. Any straight or straight-sided cutter can, in theory, be used just as well provided it is with some form of guidance. This can be on the router table using the table fence or freehand using a standard fence or jig.

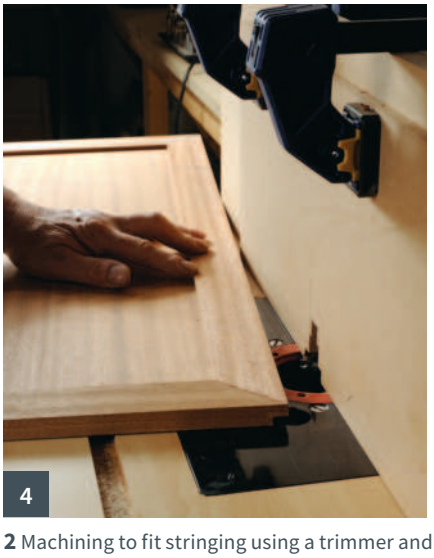
A good example would be inlaid stringing for a newly veneered box lid. If you used a bearing-guided rebate cutter the cut width might not match the stringing width and, more importantly, the bearing would run over the slightly uneven veneer and waste glue, so the rebate would be uneven. So when you are considering machining a rebate your considerations are: should you use a dedicated rebate cutter of the correct size and have you got a suitable size bearing, or instead, do you use another cutter without a bearing, but with some other sort of guidance? The more choices you have to hand the easier it is to find a solution to this potential problem.

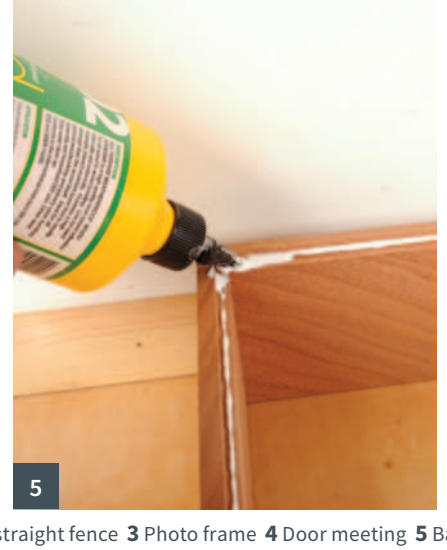
PHOTOGRAPHS BY ANTHONY BAILEY/GMC PUBLICATIONS

1 Rebate cutters, left-right: 4mm width rebater; 12.7mm width rebater; 19mm dia. straight; 19mm dia. Tonk; 21mm dia. up-shear and 21mm dia. down-shear plus bearings; 50mm dia. multi-bearing rebater with five bearings; 25mm dia. tenoning; 25mm dia. bottom trim

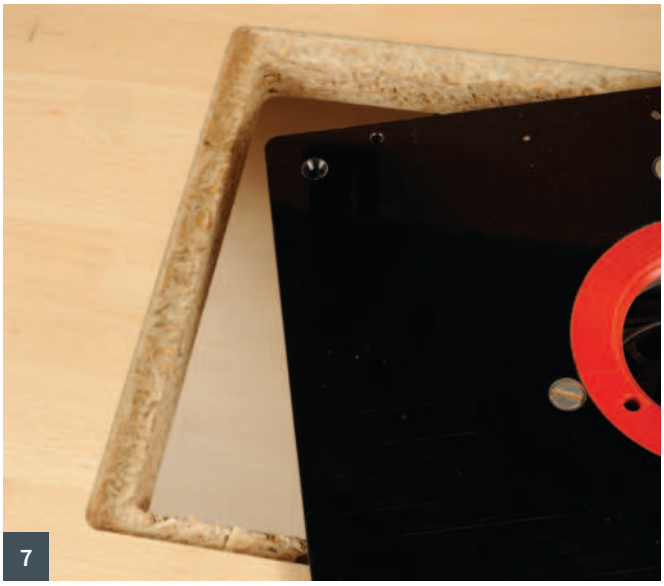
Typical rebate uses







2 Machining to fit stringing using a trimmer and a straight fence **3** Photo frame **4** Door meeting **5** Back panel **6** Box lids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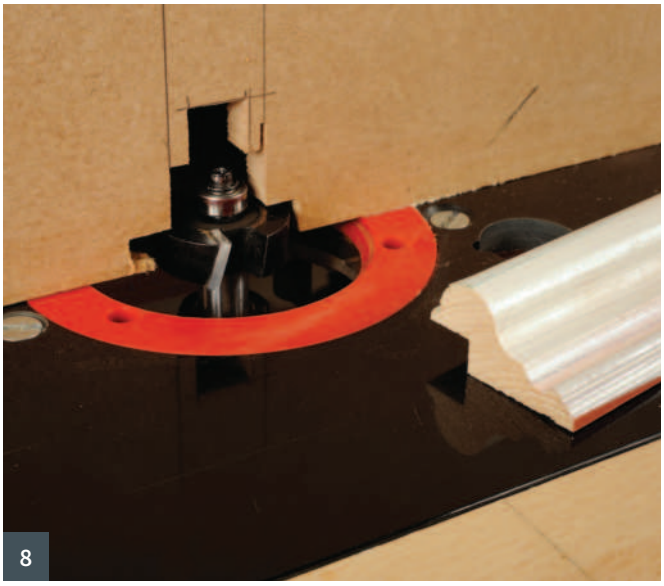
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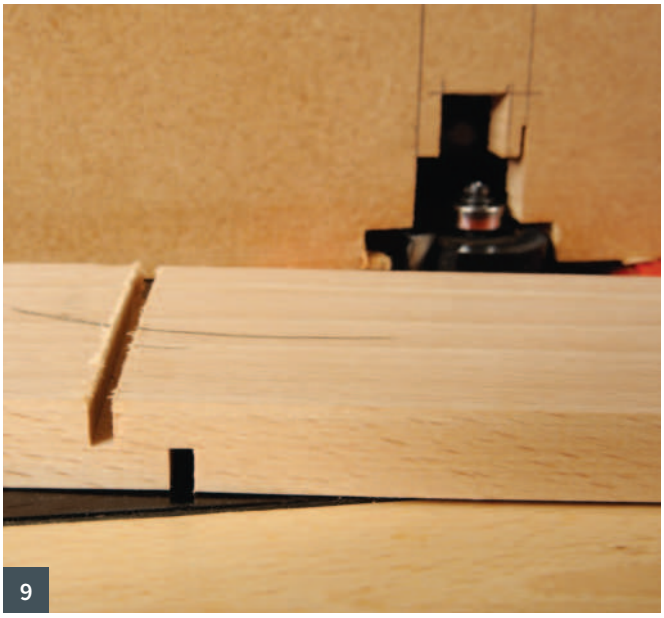
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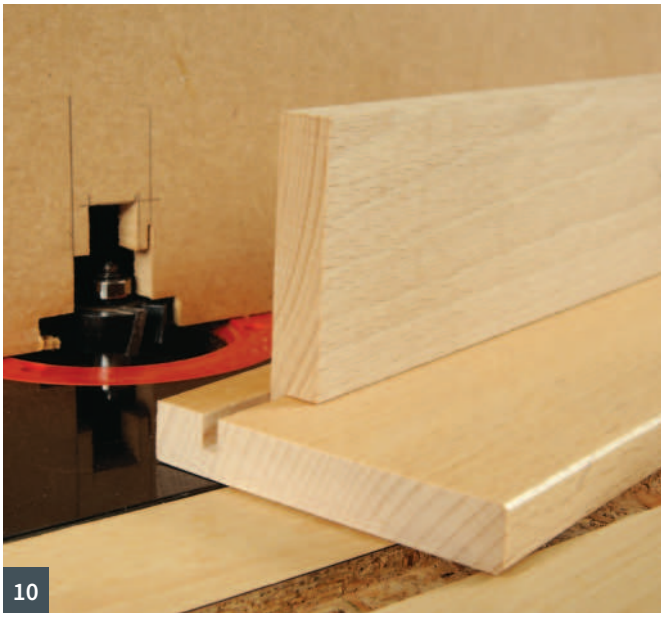
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7 Router table insert **8** Bolection moulding **9** Lap joints **10** Tongues – to fit grooves **11** Box stringing **12** Tonk (library strip)

Tips for using rebate cutters


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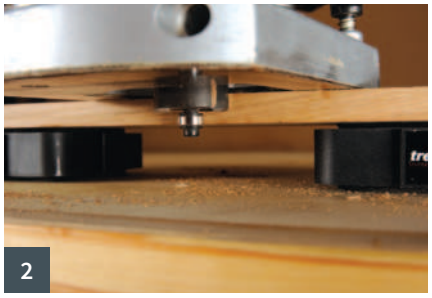
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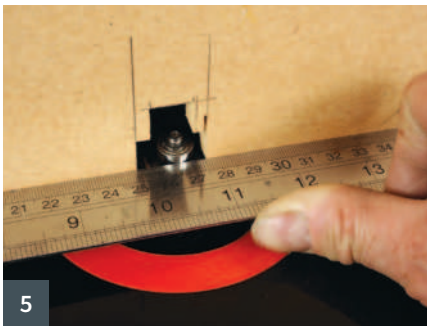
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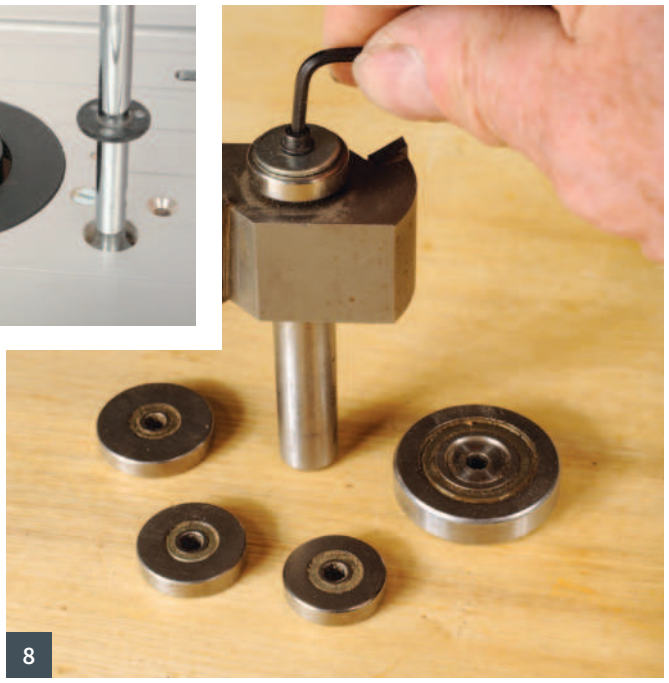
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1 Bearings are often interchangeable between cutters, so keep all loose bearings, machine screws, washers, glue shields (supplied with laminate trimmers) and Allen keys in a safe container so nothing gets lost.

2 When freehand edge working with bearing-guided cutters on thinner stock the bearing can hang down lower; in this instance support blocks are needed to keep the Allen screw holding the bearing in place, clear of the bench.

3 The equivalent operation on a router table is perhaps better dealt with by setting the fence well forward of the bearing, so a full height but very shallow 'pre-scoring' cut is made before doing one or more passes to full width.

4 Because of their cutting action rebate cutters have a tendency to disappoint because they can tear the wood away leaving a ragged rebate, especially with brittle opposing grain hardwoods. The usual solution working freehand is to make the cut in several passes to final depth so not too much is taken out in one go.

5 You could of course use a large diameter straight cutter for the same result on the router table but a key advantage is being able to set the rebate width exactly by placing a rule across the cutter opening against the bearing. I use this method with all kinds of bearing-guided cutters.

6 If you need a rebate of a size you don't possess you can use a straight cutter so long as it is a 'fenced' cut. I use a tenoning cutter a lot and it tackles rebating as well as machining tenon shoulders.

7 If you are machining the rebate for two halves of a box lid you will need to make sure before you start that you always machine into the cutter feed direction, the outside means going anti-clockwise around the box and the internal rebate is done clockwise. Always start in the middle of one side, not running into a corner as you have better vision and less resistance as you start cutting.

8 A multi-bearing set is invaluable because in one cutter you can accurately make repeat rebates in any size the bearings will allow. If you need to make large rebates you should consider a ½in shank set in a large router, thus avoiding straining both router motor and the shank on a much smaller ¼in set.

9 The bearing can usually be changed for a different diameter bearing. If you have a set of cutters you may find you can swap bearings around, thus giving you a greater range of rebate size options.

10 In common with all bearing-guided cutters, the rebater can work around curved and unusual shaped profiles. However, when you are reliant on the bearing and working on a photo frame, for example, you will need a rebate on the back for glass and a backing board on top of that, you then need a moulding around the front inside edge. You need to plan your machining so either cutter doesn't have trouble running because the bearing surface has been machined away by the first cutter.



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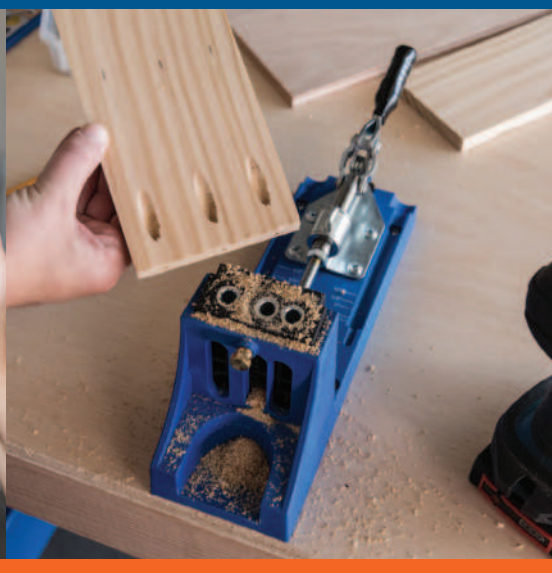

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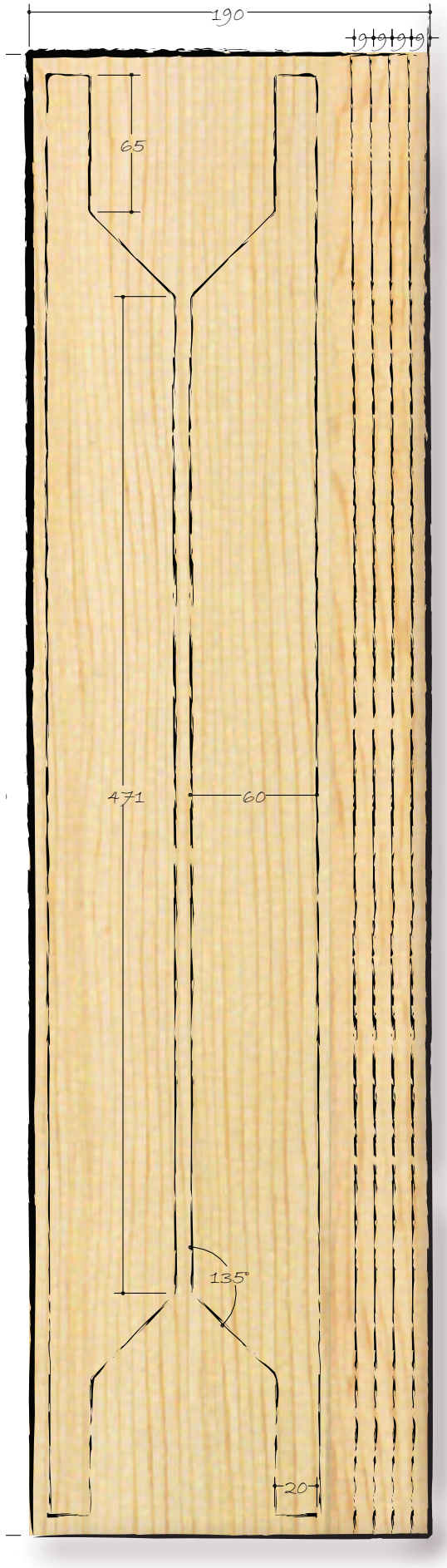
BATH RACK

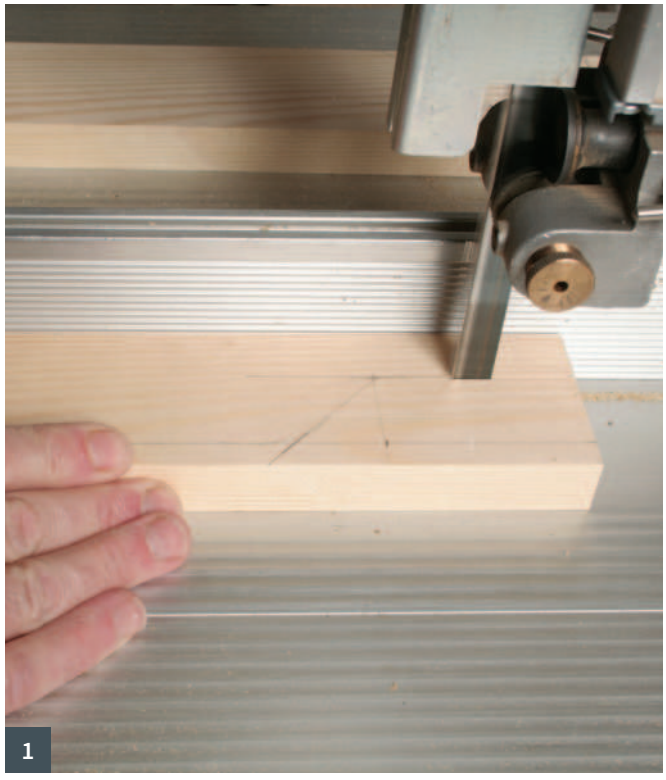
Just one plank of wood is all Andy Standing needs to make this handy bath accessory

There are few things nicer than a long soak in a hot bath after a hard day's work. To help you make the most of your bathtime experience, here is a simple design for a bath rack that can hold all the necessities, and perhaps prop up a book as well. It is a fairly simple project to make, though there are some repetitive tasks where simple jigs or guides can help.

YOU WILL NEED

- Saw (tablesaw or bandsaw)
- Router table with round-over cutter
- Sander
- Drill and countersink
- Screwdriver

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Making the rack

1 Before you begin, check the measurements against the size of your bath, and make any necessary adjustments. Start by cutting out the two side pieces. A bandsaw is ideal for this, though a jigsaw or a handsaw is fine.

2 Use a mitre fence to cut the 45° angles.


3


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3 Mount a bearing-guided round-over cutter in your router table.

4 Machine the top edges of both sides.

5 Alternatively, if you don't have a router table, use a hand plane to take the sharp edge off and produce a rounded edge with multiple passes.

6 The next job is to make the slats. These are 9mm thick and 160mm long. Rip several lengths off the board. Always use push sticks when ripping narrow sections.

7 Crosscut the slats to length. You will need 20 slats.

8 The slats will be fixed to the sides using screws. This means that they must all be drilled and countersunk at both ends. If you have a pillar drill, clamp a couple of offcuts to the table to act as guides to hold the slats in position. Ideally, use a 4mm drill bit with combined countersink.

9 Now all the slats must be carefully sanded. Unfortunately the only way to do this is by hand. Take care to remove all sharp edges and corners.

10 The slats are fixed using 4mm by 20mm screws. Start attaching the ones on each end, which will then hold the sides in position. Then simply arrange the remaining slats evenly along the rack. You can do this purely by eye, though if you want the spacing to be perfect, you will have to work out the gap and make a spacer piece.

11 Give the rack several coats of oil to protect it.

12 The bath rack looks fantastic in its setting, and will help you while away the hours in the tub. Job done!


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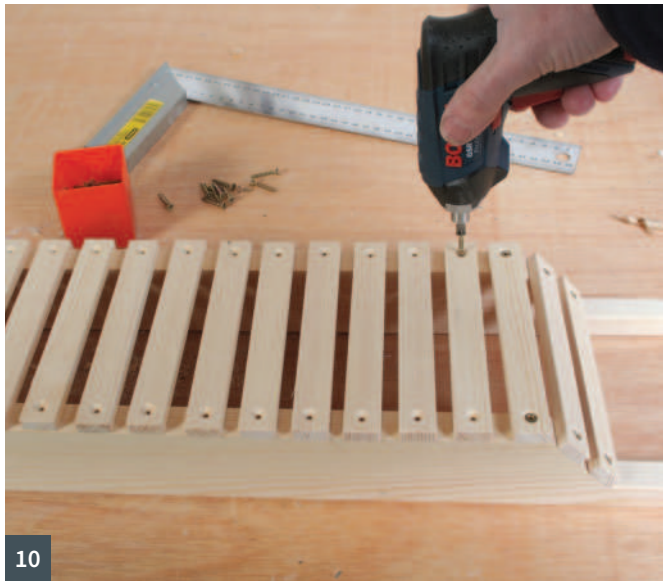
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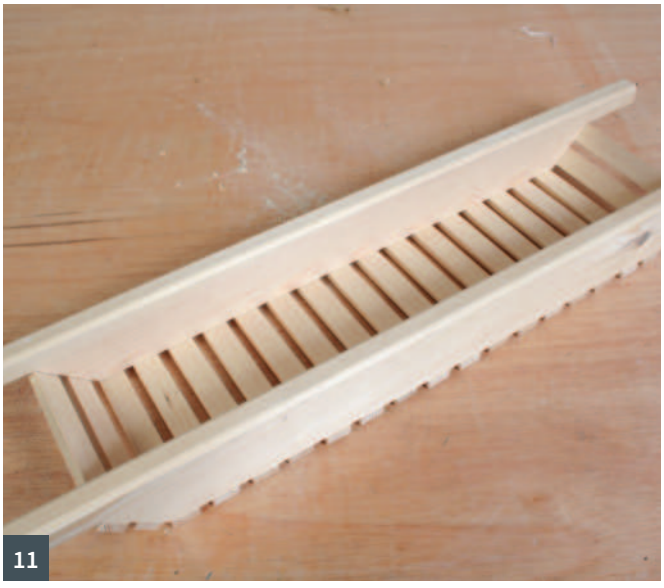
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Measure twice, cut once

The proverb is a golden rule for all woodworkers, so let's rediscover this indispensable tool, from the ribbon-type tape measure to the latest technology

THE FIRST MEASURING TOOL

In ancient Egypt, the human body served as a measuring reference, with dimensions expressed as the width of a thumb or the length of a foot – but of course these sizes always varied. So the Royal Cubit, the first attested standard measure, was introduced. It was defined as the distance from the Pharaoh's elbow to his fingertips, and was notably used for the construction of pyramids. It was used as early as 2700 BCE for the construction of the Step Pyramid of Djoser. After that, there were many systems of measurement in different times and places, until the late 18th century when the metric system came into use in almost all countries in the world.

METRIC VERSUS IMPERIAL

The French Revolution actually brought order out of chaos. The metric system was introduced in France in the 1790s to facilitate trade by establishing a uniform measure between and within nations. The imperial system, on the other hand, came into use across the British Empire in 1826 and lasted until the UK officially adopted the metric system in 1965. As a result, most tape measures come in both imperial (inches and feet) and metric units (centimetres and metres). Today, the USA, Myanmar and Liberia are the only countries that have not adopted the metric system.

FROM RULER TO TAPE MEASURE

Apart from body parts, the first actual measuring tools were marked strips of leather used by the Romans; the ruler, however, was not invented until the 16th century. In the 19th century, English steelmaker James Chesterman created the first spring tape measure, or what he advertised as the 'steel band measuring chain'. Its success, however, was far from immediate as his design was bulky and very expensive, so it wasn't until the mid-20th century that the tape measure overtook the popular folding wooden carpenter's ruler.

HAPPY TAPE MEASURE DAY!

American Alvin J Fellows took the tape measure to the next level in 1868 when he patented the 'spring-clip tape measure'. This innovation allowed the user to lock the tape measure when it was extended. It was such a major design improvement for the user, from the seamstress to the carpenter, that the day he received the patent is now celebrated every 14 July in the USA.

BLACK DIAMONDS AND RED NUMBERS

To anyone other than builders, the markings on the tape measure are often a mystery but they can be very useful when you are trying to locate studs in walls and joists under floors to fix that shelf, kitchen cabinet or mirror. The numbers in black boxes enable you to identify 12in spacing in stud walls and 24in for studs in sheds or outbuildings. The numbers in red boxes appear every 16in, which is a common distance between the centre of each wall stud. Black diamonds are marked every 19¼in, often the distance between the centre of joists and also used for building a chimney that fits within stud spacing.

IT'S ALL IN THE HOOK

The hook conveniently enables the tape measure to be attached to the edge of any corner, plank or sheet material that you are measuring and a slot, called a nail grab, to hook onto the head of a nail. The hook, being loose, allows for a true zero by compensating for measuring the inside or outside edge of a surface. Most new tape measures have a handy magnet to hold it in place or retrieve that wayward screw.

THE CURVE

Ever wondered why the tape measure's blade is concave? It's designed to help the blade stay rigid when it is extended.

ACCURACY

The accuracy of your measure is displayed on the blade with marks like 20°C and 50N (which means that it is accurate at a temperature of 20°C with a force of 50 Newtons) and with Roman numerals in a circle, I depicting class 1 and II for second class. If that isn't accurate enough for your needs you could consider leaving the humble tape measure behind in favour of point-and-shoot technology. The latest digital tools offer the high-level precision accuracy of laser measurement, quickly and easily measuring across longer distances than their metal cousins.

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