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WOODWORKING CRAFTS

Issue 68

WELCOME



Now that summer has arrived and we are reunited with family and friends, we've got some great outdoor projects to help add to the garden fun. Build a large four-in-a-row game for the kids, a picnic bench to watch them play from, then a kitchen trolley and chopping board to wheel out to the BBQ.

Alternatively, if the weather lets you down, hole-up in your workshop learning to relief carve, or in your office with a quickly made, one plank laptop stand.

Improve your woodworking by honing your tool sharpening skills, your use of bent knives and get the most from your pillar drill. Discover how many different ways painter's tape can help you in the workshop, and if you have a piece of antique furniture, or have just acquired a

bargain that's a bit worse for wear, our latest restoration will help bring it back to life.

We've an exciting selection of even more projects, including making wooden jewellery, a puzzle of a box, a kite clock, mortise stools and a stunning box with sectional insert.

On page 115, WDS Components are giving away a Spencer Franklin Woodworking Hydraclamp Miniclamp with face plate to one lucky reader. To have a chance of winning this Hydraclamp valued at over £217, please email your address to wwceditorial@thegmcgroup.com

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

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WOODWORKING CRAFTS

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MORTISING STOOLS

Mitch Peacock makes a pair of mortising stools, or are they saw horses?

I first noticed a mortising stool in an old engraving. I say mortising stool, but clearly it was also used for sawing at. Lower than modern saw horses, these stools can be comfortably sat on, with a workpiece trapped below your legs, or seat, and no clamps are necessary while chopping mortises.



THE CARPENTERS' SHOP.

Engraving from the *Illustrated London News*, volume LIV, 26 June, 1869





Materials and design

1 England's 2021 winter lockdown provided plenty of time to make myself a pair of stools. One downside, however, was having to find the materials from what I had to hand. After a good search around, I decided mainly on some leftovers from my DIY construction projects; light studding timber, half-inch plywood, etc. With that decided, I designed a pair of stools that would be both light and strong, and whose bases could also overlap to give more utility.

Construction

2 Studding timber is rarely free of bow or wind, so I cut the parts to rough length and trued them up at the bench.
3 The boards for the tops and battens for the stretchers were also trued up, with the aim of making the joinery much easier.
4 The tops, or stool seats, are attached to the legs with an open mortise and tenon, which was marked out before ...
5 ...sawing and chopping ...
6 ... and finally cleaning to depth with a router plane.



7



8



9



10

PHOTOGRAPHS BY MITCH PEACOCK

- 7** Splayed legs give the narrow stools a lot of stability, and an eight degree cut on each end of them seemed about right.
- 8** The leg tenons are cut square to the top of the leg, not parallel to the sides.

- 9** A shoulder extends round three sides to give plenty of support to the stool seat across its width.
- 10** Splaying the legs does introduce a potential problem when pounding out mortises or using stools to stand on. To prevent the seat joints being stressed they received plywood gussets.



11



12



13



14



15



16

- 11** Wider ones could have been glued and screwed to the sides of the legs, but I chose to house them into the backs ...
- 12** ... by ploughing and chopping some stopped grooves, or housings. I figured that the ½-in wide and deep housing would equate to 1½in of glue surface area, and more than enough for the purpose – we shall see.

- 13** To ensure a good glue joint in the bottom of the housing, it was accurately cleaned to depth with a small router plane.
- 14** To prevent racking, wide stretchers were added in the length of the stools. These were marked out ...
- 15** ... and prepared for halving joints.
- 16** The legs were likewise prepared to accept the stretchers.



17



18



19

17 The assembly and glue-up were completed in one hit, using wedges to aid the clamping of the splayed legs.

18 For the second stool, dowels in the top of the legs helped to hold them tight to the seat during glue-up. Once cured, the joints were all flushed, and the seat edges bevelled to match the leg splay.

Stacking and use

19 The difference in leg spacing allows the stools to stack closely together; making a handy platform to stand on. A small gap between gives access for a panel saw when sawing thin material.



20

20 Mortises should be chopped over the legs, and my first impressions are favourable. Sitting on the work holds it tight and is faster than clamping it. A small movement of the head allows for judging plumb in both planes.

Conclusion

I can see myself using these stools often. Their lightweight construction makes them easy to carry around, which will save making another pair for my garage, and yet they are sturdy enough for all my needs.

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LAMINATED BEECH STAND

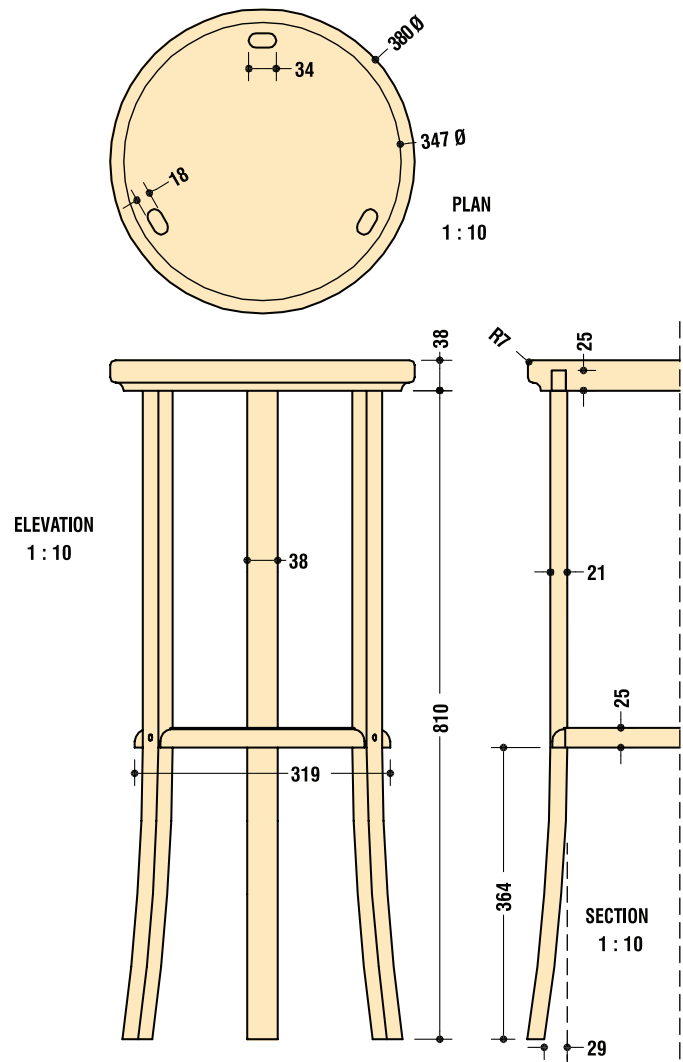
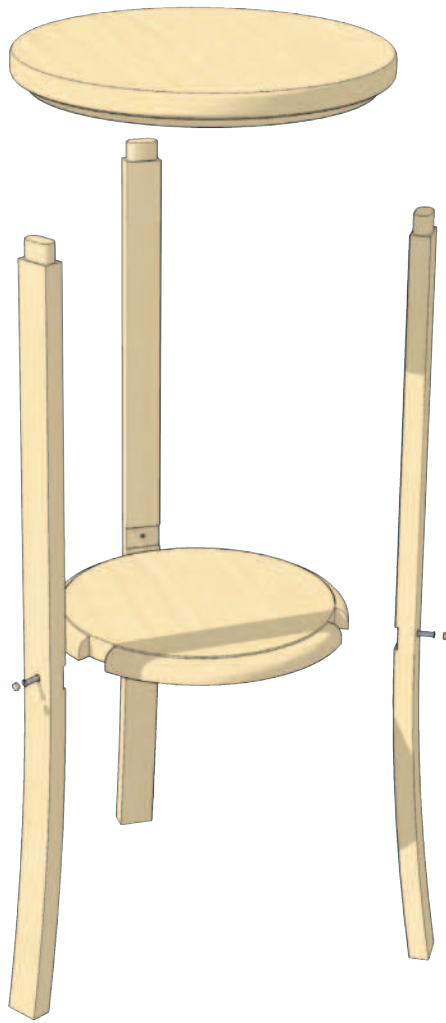
This contemporary take on an Edwardian plant stand requires a laminating jig. Anthony Bailey shows you how

An elegant plant stand topped by a leafy plant in a decorative container will brighten up a dull corner. This traditional stand gets its contemporary appearance largely due to the use of a light wood, in this case beech, but ash or maple would be equally good. The techniques used should stretch the average woodworker's abilities enough to make it an interesting project. The top is 38mm thick, but looks thinner thanks to a careful choice of moulding on the edge. There's a lower platform and the stand is supported on three flared legs.

YOU WILL NEED

- Planer thicknesser
- Bandsaw
- Tablesaw
- Clamps
- Router in table plus long straight bearing-guided cutter, large-diameter roundover cutter, guidebush & 12.7mm TCT cutter
- Pullsaw
- Chisel
- Ruler
- Spirit level
- Square
- Extramite glue
- Petroleum jelly
- Paper strips
- White spirit





Design

Use suitable raw timber stock for the top that is wide enough for over half the diameter – this one used 50mm-thick sawn beech. This is planed and thickened down then cut in half, glued and clamped together to make an oversize square blank. The lower platform is the same except the finished thickness is 25mm and roughly 315mm diameter, if necessary prepared as for the top. The legs consist of laminations. This technique is ideal for ash as well as beech.

Usually the narrow strips (lamellae) would be bandsawn to form the narrow strip components, but because I was not convinced my bandsaw was accurate enough to do the job I used the wasteful but more precise tablesaw.

Draw some angled lines across the blank piece you are going to cut into strips so you can reassemble the pack afterwards in the correct order for a better grain match. In order to arrive at the correct final thickness you need to cut 4–4.5mm-wide strips. Five strips will be required but cut an extra one in case of problems. The strips should be over-width to allow for thickening later on.

The degree of leg flare is a matter of personal taste balanced by the bending properties of the timber in question, plus the height at which the lower platform is going to be set. The drawings show how to estimate this shape by measurement rather than using a giant trammel. This latter method is perfectly possible, however, using the radius shown.



Making the laminating jig

- 1 To make the laminated legs, you'll need a jig on a board, the straight and flared shape being formed using prepared softwood to become a mould. Mark the shape on the softwood and bandsaw it out. Glue the pieces making up the mould until they are wide enough. Do not glue them to the board as they will be removed later on; instead, screw them on to the board from underneath with the screws properly countersunk in. Importantly, the jig needs a release agent, and petroleum jelly is perfect for the job. Apply it liberally, especially along the bottom corner where the jig meets the board as glue will be exuded in this area. Place strips of paper on the board, cut to fit neatly against the jig as a further means of release.



PHOTOGRAPHS BY ANTHONY BAILEY/GMC PUBLICATIONS

Laminating the legs

- 2 The glue has to be capable of setting rock hard without any movement, ruling out PVA which flexes when set. Instead, a powder glue such as Extramite is called for. Follow the instructions carefully as it can cause dermatitis and the mix can be lumpy when you really need it to be very smooth. Once mixed, apply with a slip of wood, on one of each of the meeting faces, but not both as the extra glue is too thick to exude completely from the joints. Place the glued pack into the jig, taking care to keep the ends level and at a suitable position so you end up with a flat leg section that is long enough; mark the jig to make for accurate repeats when making the other two legs up.
- 3 At least five clamps are needed to hold the pack into the jig starting where the flare begins. Make sure the strips are level but don't clean off the glue. Leave to set for 24 hours and DO NOT be tempted to undo the clamps before then because the glue must be allowed to set really hard. Repeat with the other two legs, making this exercise a three-day job. Now remove the last lot of paper and wipe the release agent away using white spirit on a rag, and also scrub the legs to degrease them. Place one leg into the jig and make a cam clamp to hold the leg against the jig firmly but without the amount of force required for laminating.
- 4 Feed the altered jig into the thicknesser mouth, setting the correct

depth including the board underneath so the cutterblock just skims off the glue, then re-pass to neatly finish the timber. Repeat this operation with all three legs. Note the jig fixing screws must not be too long as the jig itself gets thickened down at the same time! Now unscrew the jig, turn it over and refix to the board. Screw the cam in the new position and repeat the thickening operation on the other edge of each leg until you reach the final thickness of 38mm. You should now have three matching legs finished in both planes and needing to be trimmed to length.

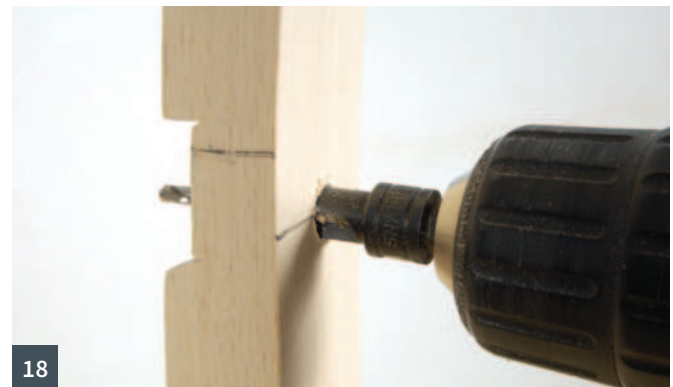
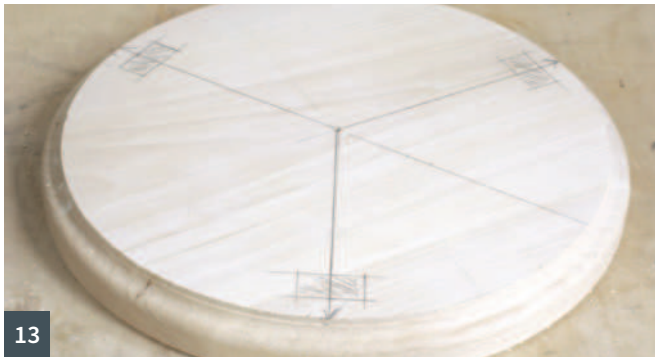
The top

- 5 While the leg glue-ups are setting you can get on with shaping the top and lower platform blanks. Make up a homemade trammel bar with a pencil to mark both circles and bandsaw slightly oversize. The finished shape is done on the router table using a special jig. I wouldn't claim it is unique but I haven't seen it described elsewhere and it does work. It is the same principle as bandsawing circles using a special fixed trammel point or jig, as described in steps 6–9.
- 6 Most router tables have a mitre protractor slot, often of a safety pattern where anything pushed into the slot cannot simply lift out but is trapped. I used slot fitments from some featherboards to make the jig. A screw goes through one of them underneath and into a pre-drilled hole in the centre of the blank.



- 7** Here you can see the underside of the sliding circle-cutting jig with a blank attached.
- 8** A long straight cutter is fitted in the router collet and a stop board is clamped beyond the cutter. The front edge of the jig base is cut away in a curve to avoid the router cutter having to work more than necessary.
- 9** Press the blank up against the cutter body between the blades and set the stop board against the jig base (it must slide under the blank). Withdraw the jig and switch on the router. Grasp the blank firmly and slide the jig towards the cutter which will then begin to bite and turn the blank anti-clockwise towards the cutter rotation. Do not let go of the blank until a section has been cut; if you do the cutter will just run idly against the blank, and if you don't grip the blank as you move it onto the cutter first of all, it will get caught by the cutter

- and spin the wrong way very alarmingly but worse still it will rip some of the end grain out. Repeat this rotation cut, moving the stop board back a millimetre or two each time until the correct diameter has been reached. Repeat this technique for the other blank and you will have two perfectly smooth, round, flat edged-blanks.
- 10** The underside of the top is wasted away using a large classical bearing-guided cutter.
- 11** This gives two successive curves plus a slight step, resulting in a much thinner appearance. This can be done on the router table or freehand.
- 12** The lower platform calls for a large-diameter roundover cutter set down enough to give a step shape at the top. All these operations should be done in several depth stages to avoid too much strain on the cutters.



Joining

- 13** The legs are mortised into the top so marking out must be accurate. I drew one line that ran through the screw hole and then made a mark by eye for the other two positions and used a ruler to check the distances between the marks on the circumference. They were almost exactly correct and needed only slight adjustment. Now draw a line through these two marks and the screw hole to create the 'pie chart' appearance. Mark the mortises the correct distance in from the edge, allowing for the leg tenon which will be shouldered.
- 14** Make up a jig to machine a mortise. This will rest against the circumference and is intended for use with a guidebush and a 12.7mm-diameter cutter. It gives a well-rounded hole. Here you can see the underside of the mortising jig showing the bandsawn detent which allows the jig to sit properly on the curve.
- 15** The jig is firmly clamped in place and overhangs the bench for mortising.
- 16** The tenons are marked and cut by hand. They need to be slightly shorter than the mortises to allow for glue squeeze-out.
- 17** Writing the joint letter inside the joint allows each one to be identified after the surface markings have been sanded away prior to assembly.

- 18** Next, the platform must be bridled into the legs, removing the least amount necessary from the legs to keep strength at this point. For accurate alignment, mark each bridle down from the top of the leg. The leg should slightly overlap the upstand edge created by the roundover cutter when the joint is assembled.

Assembly and finish

Dry assemble the table and use a counterbore bit through each leg into the platform so it just goes in enough to fit a beech plug after running a screw in.

Completely sand all surfaces and glue and assemble including screwing the platform in place, then place heavy weights on the table top to close the joints until dry.

Once the glue is set, place the table on a flat level surface, determining this with a spirit level. Place a block or ruler against the foot of each leg and mark a line. Draw across the flat of each leg using a square, saw carefully to the lines and sand the bottom edges. All that remains is to apply a finish. Bearing in mind that plant pots sometimes leak or get over-watered, a clear varnish is probably the best option.



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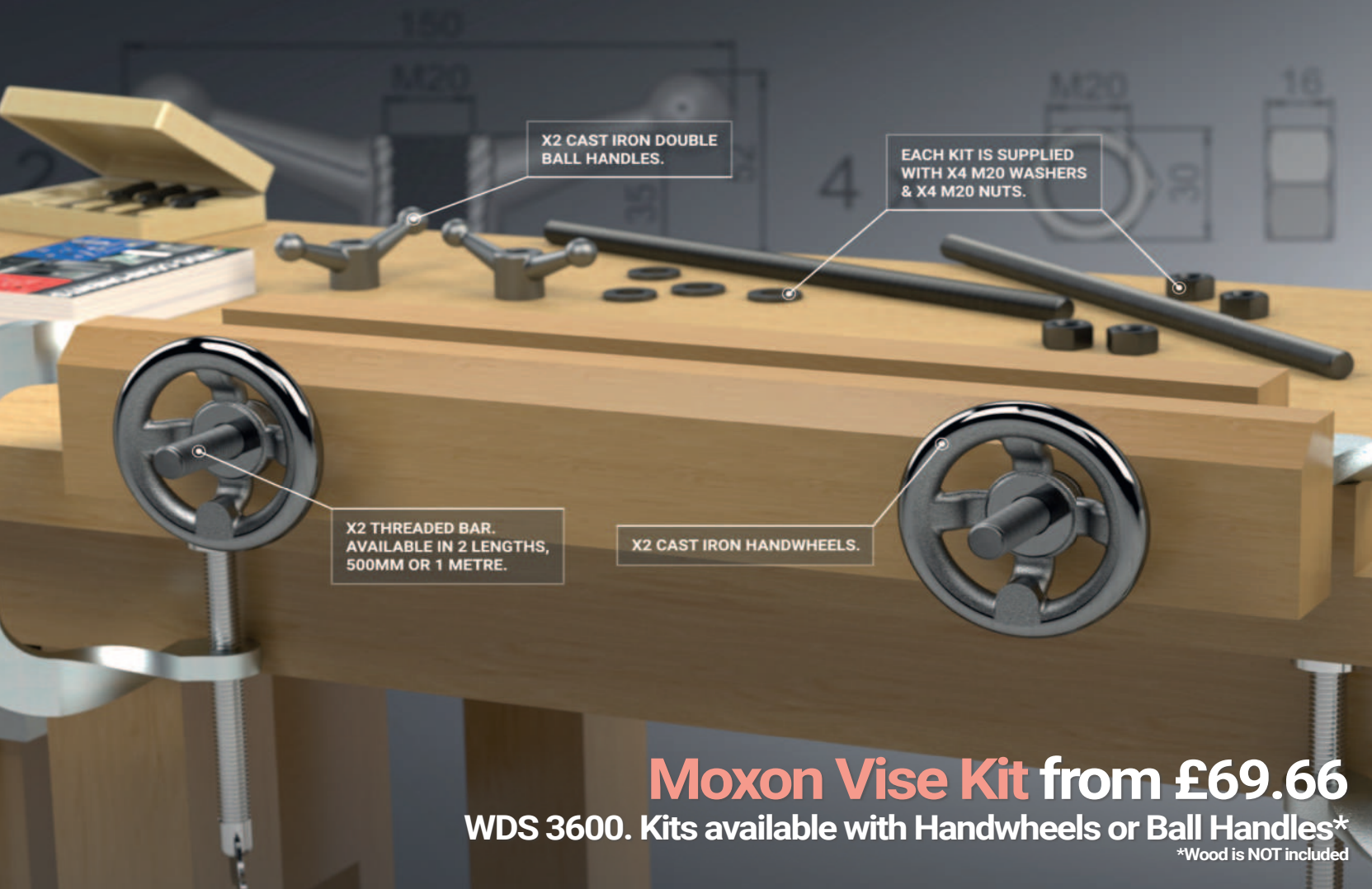


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KEEPSAKE BOX

Dave Clement makes a decorative box with Japanese-style inlay



The bulk of the box is made from a lovely piece of rippled sycamore that I'd been trying to find a use for months, while the contrasting elements are in American black walnut and utile. The ideas and techniques can be adapted to suit pretty much any size and any kind of timber – it's a great way to use up offcuts. I worked out that I had enough sycamore for the four sides and the bottom, while the rest of the components would come out of the walnut and utile.

As a timber machinist for a hardwood company by day and a furniture maker by night, I'm forever finding myself with an abundance of very pretty pieces of timber that are too small to use for furniture. As space is at a premium in my garage workshop, I recently decided to do something productive with some of these offcuts.

When I'm not making sawdust, I'm often to be found watching other people do it on YouTube, and I've always especially enjoyed Japanese woodwork and joinery. The precision, patience and aesthetics of it are always impressive. I decided to use my offcuts for a Japanese-inspired keepsake box. The idea for the decorative inlay on the top of my box came from kumiko and shoji screens, which are often used on a larger scale either as decorative wall art or in place of walls themselves when lined with thin paper. I also decided to add contrasting 'keys' to the mitred corners for both aesthetic and structural purposes.

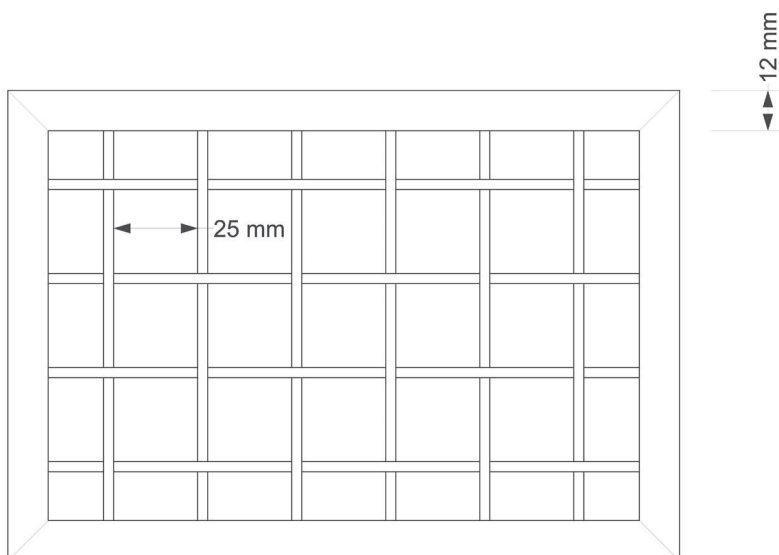
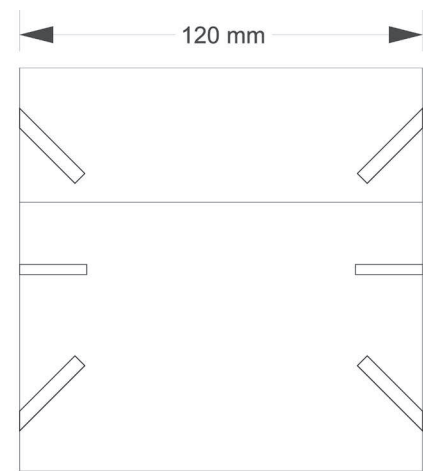
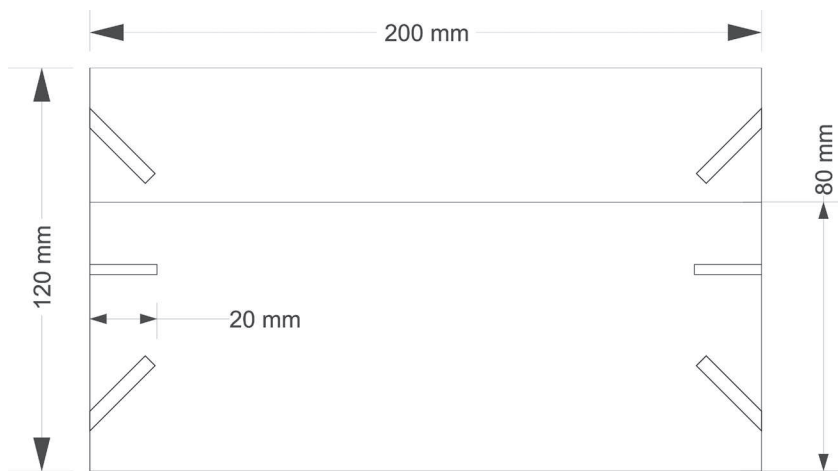
Sizing the materials

I started by bringing all of my material to width and thickness. The sides would end up 12mm thick, while the top and bottom came in at 6mm. I'm lucky enough to have access to a six-head moulder at work, so I used this to ensure accurate sizing and a clean finish. The rest of the work was carried out in my garage workshop at home.

Before cross-cutting for the sides, I ran grooves along the entire length of the sycamore board, set 6mm in from each edge, to accommodate the top and bottom. I achieved this using my tablesaw with an offcut clamped to the rip-fence for downward pressure, and just kept nibbling away until the groove would be a snug fit. If I were making a dozen of these boxes or using thicker material, I'd be inclined to set up a router or spindle moulder for this stage, but for a one-off the tablesaw did a fine job.

The box carcass

Next, I cross-cut my material using a sled I built for the same saw.



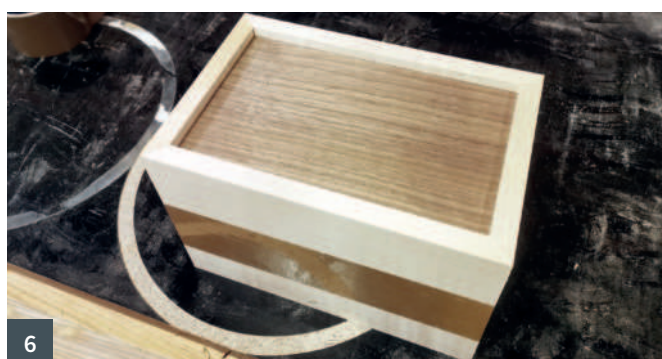
1 The box carcass was made from boards of rippled sycamore **2** Grooves were cut along the lengths of the sycamore boards prior to cross-cutting **3** The boards were cross-cut square ...

I wanted the grain to flow around the box, so I measured (twice!) and marked out 'end-front-end-back' along the board and numbered them to keep them in order. I cut the material square before tilting the blade and cutting the mitres, purely because it was easier on the saw and ended up more accurate (whatever saw you're using I'd recommend a nice new blade, especially for anything as hard as sycamore).

Again, if I had to make more than one of these boxes, I'd probably think about setting up stops to ensure all pieces are bang on the right

length, but in this case I just had to make sure the front and back matched and the two ends matched.

I cut the top and bottom to size, leaving a gap of 2–3mm on the width to allow for movement across the width of the timber, then sanded all the internal faces to 180 grit prior to assembly. I held everything together using parcel tape and my trusty frame clamp while gluing, measuring the diagonals to ensure it was all square. Once the glue was set, I gave the box a good sand all over to make sure every face was flat, square and clear of excess glue.



4 ... before tilting the blade to cut the mitres **5 & 6** The box was assembled and secured with tape before the glue-up **7** I measured the diagonals to ensure everything was square **8 & 9** A jig was used to hold the box on in position when cutting the keyed corners

For the keyed corners I made a simple jig that clamped to my cross-cut sled. With this in place I could present the box on its corner, set the blade height and angle and make my cuts. I machined the keys to match the kerf of my saw blade and glued them in place, and once the glue was dry I trimmed them flush.

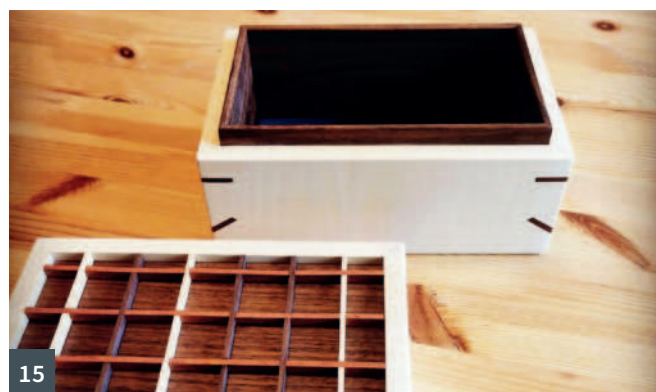
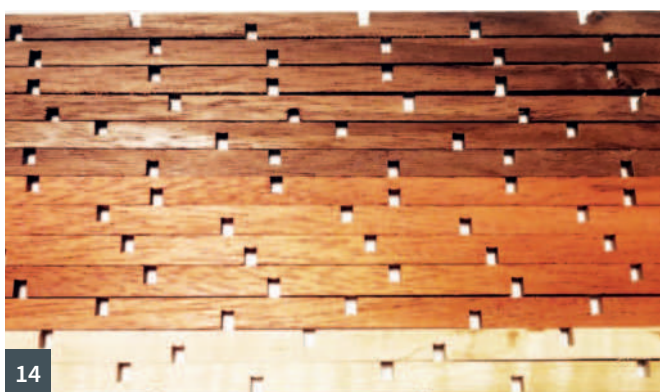
The next stage was cutting the top off the box, which I again did on the tablesaw, using the rip fence and setting the blade just high enough to cut through the sycamore. If you're more confident than me with a hand saw you'd lose less material that way, but I went for the easy option, leaving me much less planing and sanding to ensure a good fit.

Next, I made the black walnut lining for the box interior. I machined a strip wide enough that it would sit proud of the sides and provide a rim for the lid to sit around, and thin enough that I wouldn't lose too much of the internal dimension of the box. I went down to about 4mm before losing faith in my thicknesser. I ran a radius along the entire length on one edge, as I figured this would be easier than doing it on individual smaller pieces, and again sanded the internal face prior to cutting the mitred corners and fixing the pieces in place. If your mitres are a good fit you'll need minimal clamps, probably just one in the middle of each piece while the glue dries.

Making the inlay

With the main carcass of the box sorted, the next stage was the kumiko/shoji-style inlay on the top. Traditionally this is hand cut, uses no glue or nails and involves a much more complex design than the one I'm making here. For more complicated designs there are jigs you can make for bringing the material to size, cutting angles on the pieces and cutting the slots. There are many tutorials to be found online, and if you're anything like me it's easy to get stuck down a rabbit-hole watching these for hours!

I wanted my inlay to sit flush with the top, so I machined my material to thickness to match the recess, then, to make life easier (some might call it 'cheating') and help with accuracy, I cut grooves across the pieces at a depth of just over halfway. I did this using my crosscut sled on the tablesaw again, with the blade set to just the right height. I'd decided to try for a weave pattern to make things interesting, so the grooves needed to alternate between top and bottom. I put simple pencil marks on my crosscut sled to ensure even spacing. After this I ripped the pieces into strips to match the thickness of the grooves, with a fraction left on for sanding. I wasn't planning on doing



10 & 11 The keys were then trimmed flush **12** The black walnut lining was cut and fitted to complete the interior **13** Grooves were cut for the inlay for ease and to ensure accuracy **14** The inlay strips were cut to match the grooves **15** The complete box

this all without glue, but wanted them to be a snug fit nonetheless! I made sure I had plenty of pieces to experiment with and left the strips over length by 10mm or so with a view to trimming the 'screen' to size once assembled.

At this point I decided to apply my final finish to the box and the inlay pieces, as getting into all those corners would be a bit of a chore once the inlay was in place. I took the sharp corners off with a few strokes of a block plane, before sanding everything to 240 grit using my orbital sander and finishing by hand with 320 grit going with the grain. The whole thing is finished with tung oil, which is easy to apply and brings out those ripples in the sycamore nicely. I wiped it on with a clean lint-free cloth, then let it soak in for a while before taking off any excess. This process was repeated a few times to achieve the desired finish.

When it came to putting the inlay together, I immediately discovered I'd have to make some further cuts to achieve the weave pattern, so these were made with my extra-fine gent's saw, taking care to place the cuts on the underside of the pieces, so they'd be cunningly hidden and nobody would ever know. I secured all the pieces together with tiny dots of superglue, then cut the screen to fit snugly in the recess

using a fine saw and a sharp chisel. Again, if this is a snug enough fit, you'll need minimal glue. I applied a few small dots of superglue to the underside of the screen, then applied pressure until it was fixed in place. You'll want to apply the glue very carefully, as cleaning up any excess is a fiddly job.

Finishing

As a nice finishing touch, I lined the bottom of my box with some self-adhesive baize that I had left over from another project. I cut a small piece of hardwood to fit in the bottom of the box, leaving it a fraction under to allow for wrapping the baize over the edges. With the lining applied, I secured the piece in place in the bottom of the box with a few spots of glue, holding it in place with something heavy while it dried.

There was a fair bit of trial and error involved in this piece, but I'm really pleased with the outcome and it was a fun little challenge. These decorative boxes are a great way of using up smaller pieces of timber (nobody likes to waste it!), and are perfect if you're pushed for space in your workshop. I'll certainly be making more in the future.

You can see more of Dave's work on Instagram: @davethewoodguy

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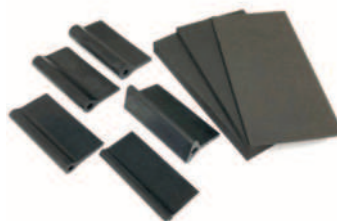
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USING BENT CARVING KNIVES

Dave Western shares his guide to northwest coast-style bent knives

Over the last few years, a large number of woodworkers have discovered the pleasures and convenience of carving with bent knives. I am particularly fortunate to live on the west coast of Canada where a vibrant Indigenous Art community has developed a number of versatile blade designs. These beautiful and highly functional blades enable carvers to undertake a vast range of complex concave and convex carving with far fewer tools than would be required using European-style gouges and chisels. Having been exposed to bent knives several years ago, I now find them an indispensable and favoured part of my tool kit. Although they may not be as readily available to British carvers as they are here, a number of exceptional Canadian and US craftsmen are now making them for the commercial market and they can be mail ordered with little difficulty.

What is a bent knife?

Bent knives differ from European-style hook knives in that they are seldom 'fair' curved. Most often they begin flat near the handle and increase curve as they near the tip. This varied radius allows the user to carve a variety of curves by simply altering the angle of blade attack and by subtly adjusting which region of the blade makes contact with the wood. The blades themselves can range from wire thin, short blades to hefty, wide blades of several inches length. Blade radii range from nearly flat to almost circular and the hooks can vary from sharp to

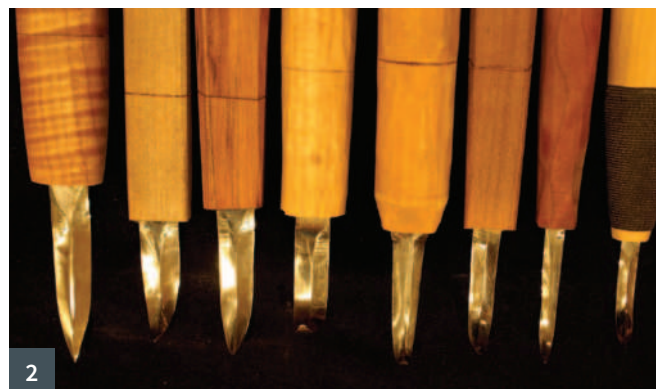
shallow, from just the tip to the entire blade. The bent knife is generally sharpened on both sides of the blade, a feature that allows multi-directional cutting. The bevel may occur on the outside or inside of the curve depending on the type of carving to be undertaken. Inside bevels are generally more aggressive and outside bevels allow the knife to cut tighter radii.

How are they held?

Whether shallow or deep, the principal purpose of a bent knife is to facilitate smooth cutting of curves. They are exceptionally aggressive, but are easily controlled and can be used for both rough cutting and delicate finishing. Although the cutting is primarily done on the pull stroke for maximum control, the knives cut equally well on the push stroke. They are most often held in a fist grip with the thumb protruding along the handle where it assists the wrist in levering the knife along the cut.

How are they used?

Thanks to the double-sided blade, the knife can be drawn or pushed. Well sharpened, it can be drawn along the grain or across it. A bent blade is remarkably versatile, but can be aggressive. Beginners should take care not to try and cut with them as they would with straight



1 A small sample of the dramatic variations possible with bent knife hooks **2** Bent blades come in many lengths and widths depending on what they will be used to carve **3** The thumb helps lever the blade through the cut, pushing out as the wrist and hand are drawn inwards **4** Reversing the motion allows a carver to cut on the push stroke **5** Holding the handle with two hands is the safest grip if more control is required or if a beginner is uncomfortable with a single-hand grip. Be sure to clamp the workpiece securely so that it doesn't move during the cut **6** For delicate work such as finishing, a 'pencil-grip' allows excellent control. It is not a grip for use when lots of material needs removing as it is tiring and can be hard on the fingers

knives. Bent knives are greyhounds and will take off like rockets if allowed. Inevitably this manifests itself in deep cutting that jams almost immediately and causes terrible frustration.

To properly cut with a bent blade, lay the back of the blade flat on the face of the workpiece and gently begin drawing the knife toward yourself. Even without an angle being applied, the tool will very likely begin grabbing at the wood and will start cutting.

As with gouges, the bottom of a curved cut can create some problems for bent knives. This area where the grain changes direction can easily be torn away or can cause the blade to jam. The bent knife can be used

to overcome this by cutting from both directions and even across the grain. Just be certain to keep the cuts very shallow.

How do I sharpen them?

Well-sharpened bent knives maintain their edges for a long time. Frequent honing will enable you to retain the razor-sharp edge that makes these knives the wonders they are. Sharpening is simpler than it might seem but it must be undertaken carefully and conscientiously to ensure the correct angles are maintained and maximum sharpness achieved.

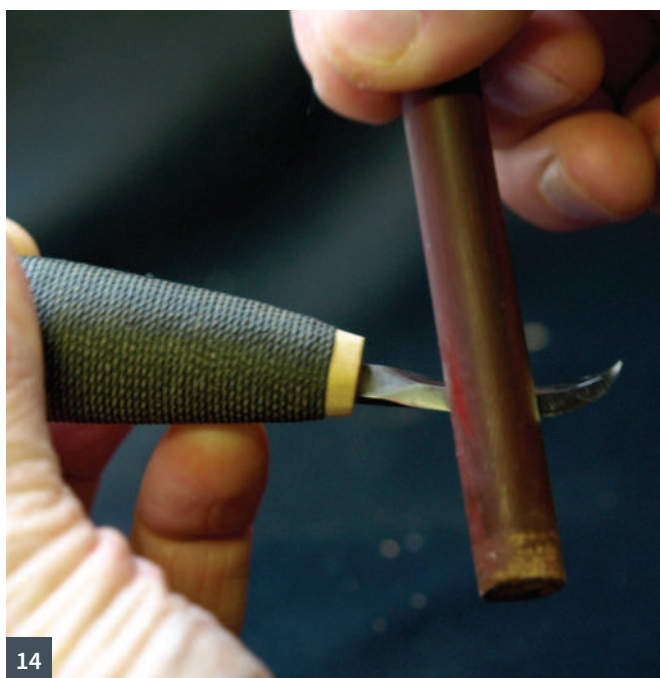


7 Holding the knife in the fingers (NOT in the palm) with the thumb trailing at a safe distance is a good compromise between a pencil grip and the more robust fist grips. It is imperative that the thumb be kept from the path of the knife blade. Holding the handle in the fingers gives tighter control and limits the sweep of the blade, keeping the thumb safer than it might appear in this photo! **8** Gently rock the blade side to side and you'll feel when the tool is lying down. When you are happy its back is flat to your piece, orient it to the direction you wish to cut and begin moving the blade along the wood **9** Even without applying any angle or pressure, the blade will begin to connect with the wood. Incrementally angle the blade so the back side is raised very slightly upwards as you maintain a flowing, unlaboured forward movement. If the blade starts to 'grab', lower the cutting angle until it stops. If it slides along without cutting, increase the angle until a shaving begins appearing **10** As you gain confidence, increase the cutting angle and the 'bite'. Like all woodcarving, don't try to take too much at once, or you will work too hard, the tool will cut too deep and inevitably there will be problems. With a bent knife, three quick shallow cuts are always better than a single deep one **11** Bent knives should maintain their edges for a long time but they will need frequent honing **12** Ensure your stone or rod is lying flat along the bevel taking care not to lift it, thus creating an unwanted secondary bevel. You can sharpen by pushing the stone outwards away from the blade in a diagonal motion (which prevents the stone being caught on the blade's edge and gives more control in the sharpening motion), or by sliding the stone along the blade from base to tip and back. Either way, exercise caution to keep the stone flat on the bevel at all times **13** As the stone or rod nears the hook, the angle of presentation must change to accommodate the radius or the tip will not be sharpened correctly. Follow the flow of the bevel at all times

What could possibly go wrong?

Aside from the usual problems that accompany all knives, such as getting slashed by them and cutting off too much material with them, the main problem for bent knives is damage to the blades. If the edges come in contact with other metals or hard objects, they are easily nicked.

A major problem, especially for heavy-handed beginners, is a tendency to snap the blade tips off. This happens when they are used to pry a cut, when they are dropped or bumped or when they are yanked out of a stuck cut.



14



15



16



17

14 If you find that sharpening the second bevel is awkward, turn the knife to face you and you'll be able to maintain your directional orientation **15** As with all carving tools, take good care of them and they will look after you **16** Mistreat them at your peril – occasionally, they can snap in half! **17** A commercially made knife centres this collection of home-handled knives. Making your own handle allows you to shape it to your hand or tailor it to the type of work the tool will be doing

Where do I get them?

Once upon a time, because they are handmade, bent knives were difficult to source unless you were 'in-the-know'. In the last several years, however, a number of metal craftsmen have stepped up to offer a range of fabulous blades at extremely competitive prices. A quick internet search will reveal several excellent makers all of whom are dedicated to making excellent tools. Many knives come complete with handles, but several makers will sell blades that you can finish at home

with handles made to your personal specifications and hand size.

Making your own handle is fairly simple and straightforward and is an excellent way to use up that beautiful scrap of wood that you've been storing under the bench for the last 10 years! A bent knife or two makes an excellent addition to a woodcarver's arsenal and even the most die-hard chisel and gouge aficionado will appreciate the versatility of these unique tools.

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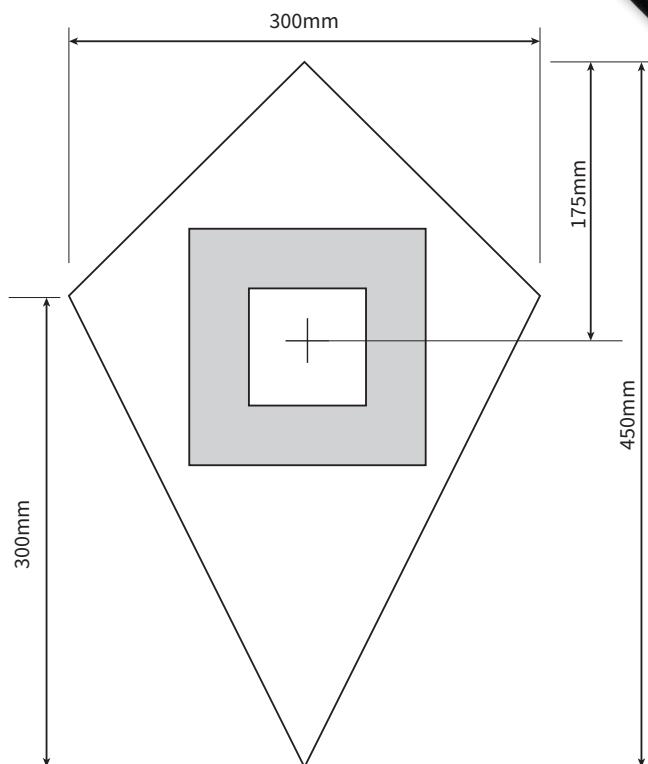
KITE CLOCK

Paul Maddock, aka The Quirky Clock Man,
makes a kite-shaped clock

I have been making 'quirky' clocks since 2014; it's a fascinating pastime as they can be made using basic woodwork techniques, as will be demonstrated here, through to more complex turning and router work. The ideas for design and artwork on the clock face are only limited by your imagination. I like to use natural and recycled materials as much as possible, knowing that each clock I produce is unique.

The aim of this project is to construct a basic clock from a piece of 9mm birch plywood. I have called it a kite clock as its form is similar to the shape of a kite. The plywood face will provide endless opportunities for decoration and enable you to develop your own ideas; some examples of alternative decorations are included at the end of this project. You could try out different shapes as well, such as a hexagon, octagon or even a dodecagon!

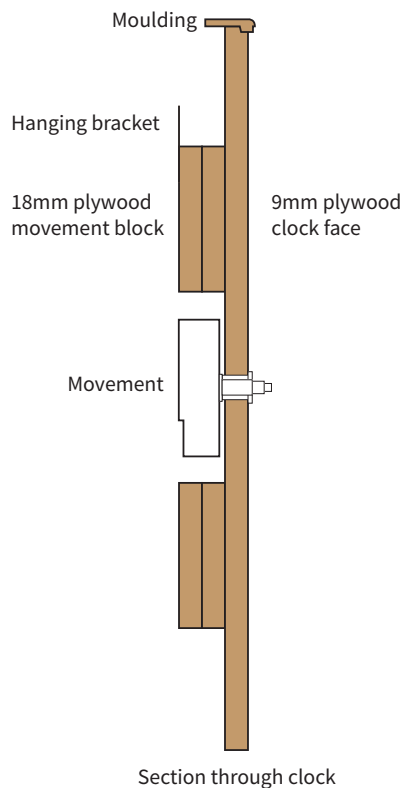
This clock can be made using only basic hand tools but a bandsaw makes life easier.



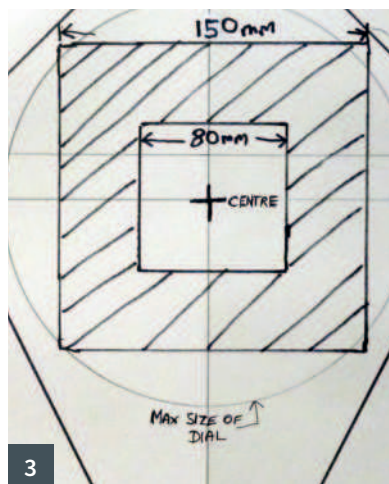
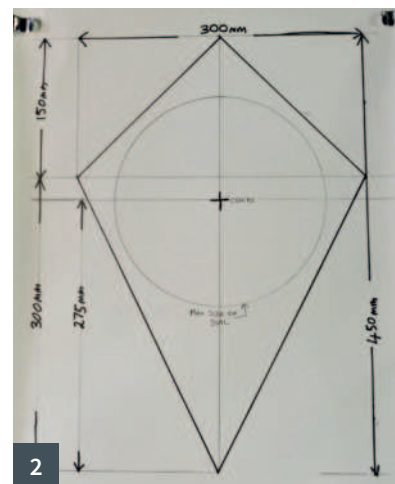
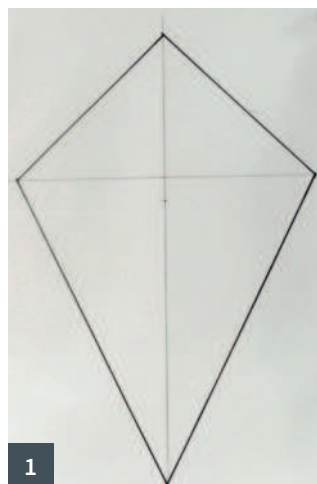
YOU WILL NEED

- 9mm birch plywood 450 x 300mm
- 1.5m moulding to lip the clock face
- Lining paper
- Masking tape
- 16 x 3mm countersunk screws
- 25mm x 3mm countersunk screws
- ½in No.4 brass slotted screws
- 12mm panel pins
- Wood glue
- Araldite adhesive
- Chestnut ebonising aerosol spray
- Black stain (optional)
- Chestnut gloss acrylic lacquer aerosol
- Black and white acrylic paint
- 32mm slotted mirror bracket
- Clock parts (I use Cousins UK but other suppliers are available):
 - Numerals 15mm high (Cousins ref. N56106)
 - Quartz movement (Cousins ref. J40130)
 - 85mm clock hands (Cousins ref. J46530)
 - Blind minute hand nuts (Cousins ref. J4860A)
 - Centre nut fixing tool (Cousins ref. S32056)

Anatomy of the clock



The clock consists of a plywood face which will be decorated and support the movement; a movement block that surrounds the movement and spaces the clock off the wall; and the lipping around the edge of the face and a hanging bracket



Design

- 1 Decide on the size of the clock you wish to make, this example is broadly based on external dimensions of 300 by 450mm, which is a suitable size for most small- to medium-sized rooms. Start by drawing a full-size plan of the clock on lining paper (this is available from DIY stores and decorators' merchants). Tape a suitably sized piece of paper to a piece of hardboard or similar. Dimensions are shown on the drawing opposite but these can be adjusted to suit your ideas.
- 2 The important point for a clock is the centre point for the dial, so give this some thought as you develop your design. For this clock, I wanted to find the centre point that would allow the largest dial that will suit the design. I used a Perspex disc with concentric circles engraved on it to locate the centre point and mark it on the design, as shown on this drawing.
- 3 The design can now be dimensioned up ready for transfer to the plywood. A movement block will be required to house the clock movement and space the clock off the wall. The hatched rectangle on the drawing in picture 3 shows the size and position of the movement block, which is centred within the dial.

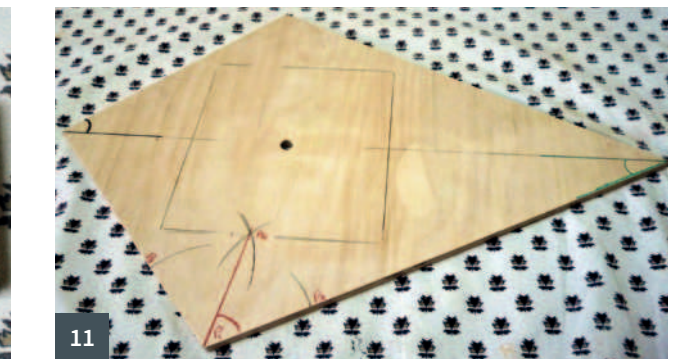
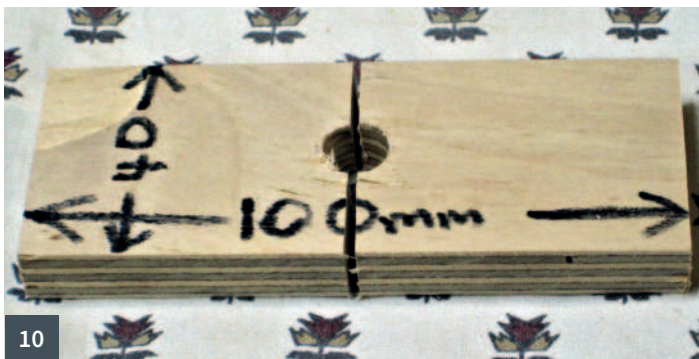
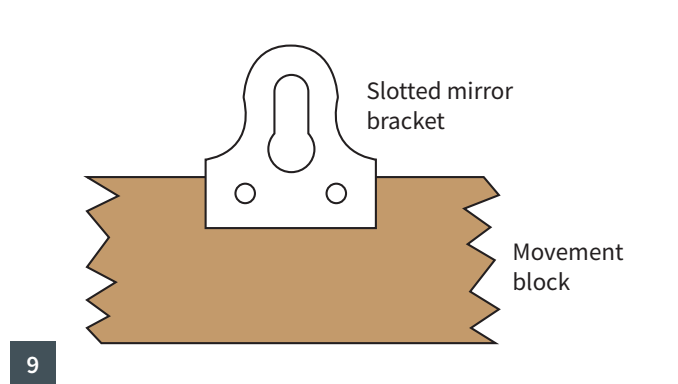
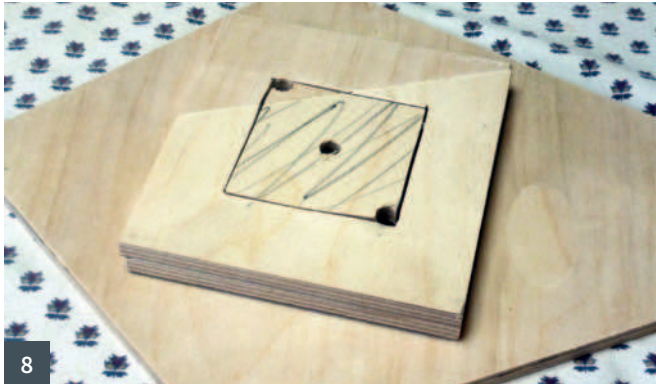
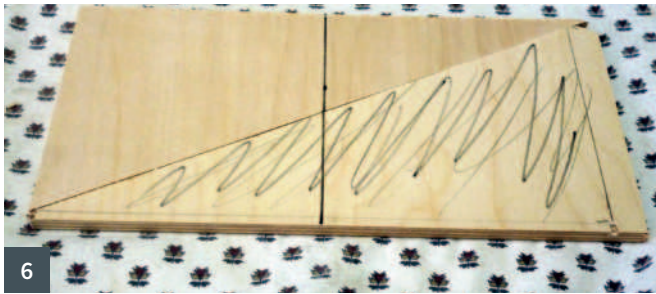
Making the clock face

- 4 When you have worked up your design, measure the size of the piece of 9mm birch plywood that you will need to cut out the shape, in this case a rectangle 300 x 450mm. Select a



suitable piece of plywood and transfer the design onto the good face. If birch plywood is not available, 9mm MDF can be used as a substitute. Cut out the shape using either a jigsaw or a bandsaw keeping to the waste side of the lines. Keep the triangular offcuts to make the movement block. Drill a 10mm hole through the centre point.

- 5 Clean up the edges with a smoothing plane taking them down to the line. Sand the face of the plywood using 320-grade paper to remove the pencil marks and leave a smooth surface for decorating.



Making the movement block

- 6 Take the two larger triangular offcuts of plywood and hold them in the vice together as you clean up the long edges. Then place them as shown here and mark them up to form two 150 x 150mm squares.
- 7 Cut along the lines and place the pieces as shown. Apply wood glue to the two centre pieces then 'fold' the other two triangles over on top of the first two so the joints overlap.
- 8 Using six 16mm x 3mm screws, secure the four pieces together. Mark out an 80 x 80mm square centrally on the block and then drill three 10mm holes through it, one dead centre and one in each of diagonally opposite corners. Place the block on the back of the clock face and align the centre hole with the hole in the face. Ensure the block is square to the axes of the face and draw round it so you can locate it later on. Mount the block in the vice and cut out the centre square with the jigsaw, using the corner holes to start the cuts. Clean up the edges as necessary. Next, drill a 3mm hole through each corner of the movement block ready to fix it to the back of the face. You can now put the movement block to one side for the time being.

Hanging the clock

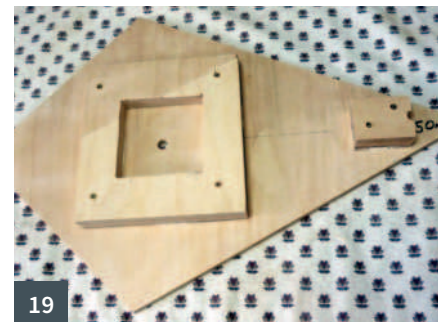
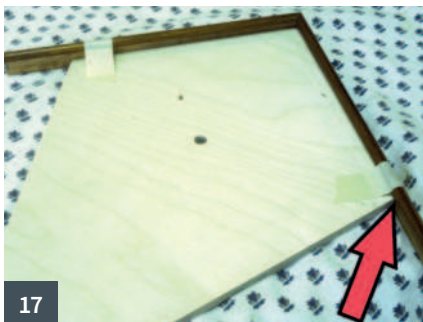
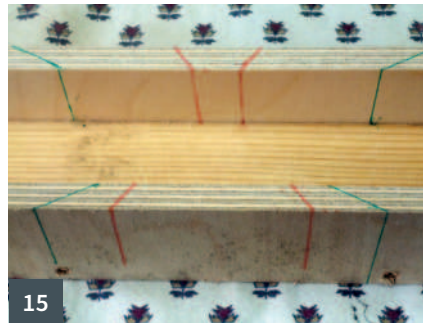
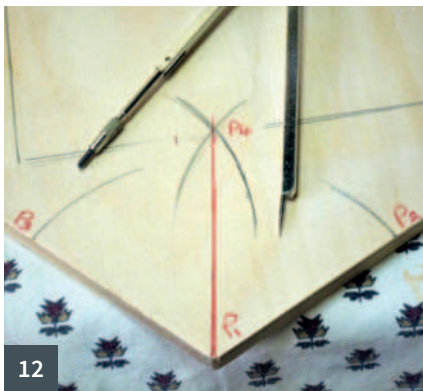
- 9 If you wish to hang your clock with the long point downwards, the

slotted mirror bracket can be screwed to the movement block so it can be hooked over a screw projecting from the wall.

- 10 If you decide to hang the clock with the long point upwards the mirror bracket will need to be fixed to a mounting block. To make this, cut a piece of 9mm plywood 40mm wide by 100mm long from the remaining waste, drill a 10mm hole dead centre and cut it in half. Apply glue to one side and fold the other on top of it. Mount the block in the vice and secure the two pieces together with two 16mm x 3mm screws. Drill two 3mm holes through the block ready to fix it to the back of the face and put it to one side.

Adding a moulding

- 11 Firstly, decide if you are going to fit a moulding around the perimeter of the clock. This provides a neat finish and is particularly useful for covering the edge of anything you might apply to the clock face, such as a piece of artwork or fabric. A selection of mouldings are available from many DIY stores in 2.4m lengths so you may find yourself spoilt for choice. Next you need to establish the angles for the mitres, on this kite shape there are three different angles. Working on the back of the face, draw a line from the top point to the bottom point along the 450mm axis, this will establish the green and black angles shown in the photograph.



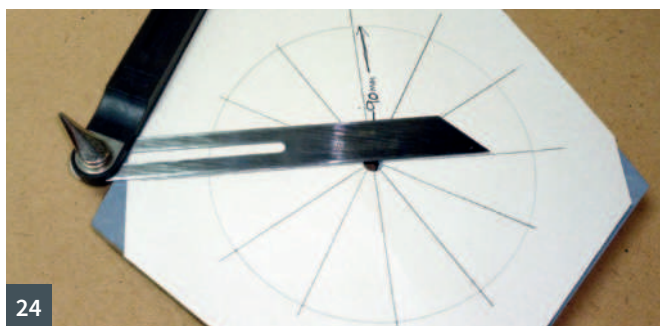
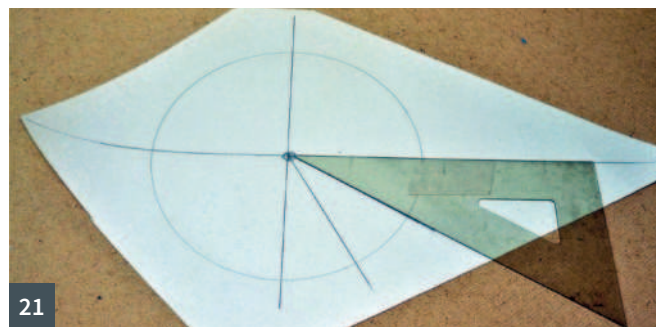
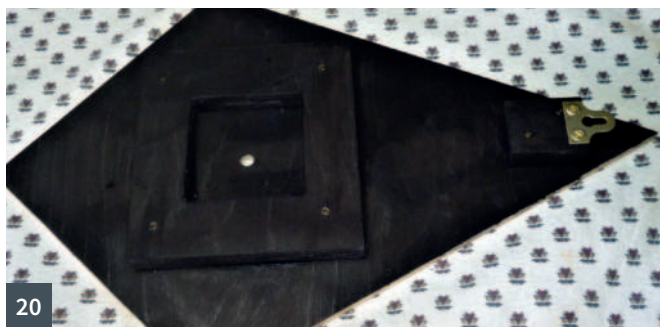
- 12** To establish the red angle take a pair of compasses, open them to 75mm and placing the point at P1, where the two edges meet, scribe an arc along each edge giving points P2 and P3. Next, place the point of the compasses at P2 and scribe an arc passing through the point where you estimate the bisecting line will occur. Scribe another arc from P3 and where the two arcs cross will give you P4. A line drawn from the meeting point of the two edges, P1, and passing through P4 will establish the mitre angle for this point.
- 13** To cut these angles you will need a bespoke mitre box. Take a piece of planed softwood approximately 50 x 25mm and 250mm long. The sides are made from 9mm plywood approximately 55mm high screwed to the base piece.
- 14** Set a sliding bevel to each of the angles in turn and mark the angle in both directions on the top edges of the mitre box.
- 15** Square the lines down the inside and outside of the mitre box.
- 16** Using a fine tooth saw make vertical cuts down the sides of the mitre box following the lines you have marked out. The saw shown is an Irwin pull saw with 22 teeth to the inch. Cutting the mitres can be a bit tricky until you have had some practice so cut four lengths of moulding 50mm longer than needed to allow a couple of attempts at cutting the angles if required. Using the mitre box, cut

the mitres on the ends of the two shorter lengths where they meet at the black angle. Note: in order to achieve a clean accurate cut it is important the piece of moulding is held firmly against the inside of the mitre box, it can help to use a small clamp while cutting.

- 17** Offer the pieces up, check the joint is a good fit and tape in place. Mark the length of the pieces of moulding at the location shown by the red arrow. Put the short pieces aside and repeat the exercise with the long pieces at the green angle. Now cut all four pieces at the points you have marked to suit the red angle.
- 18** Check they all fit, then tape the mitres and set them aside. When the time comes to fit the mouldings they will need to be finished to suit your artwork; for this project I decided to spray them black using Chestnut ebonising aerosol spray, before they were glued and pinned into place.

Completing the back of the face

- 19** Sand the back of the clock face to remove the unwanted pencil marks but leave those indicating the position of the movement block and hanging bracket mounting block, which should be set 50mm down from the point. Glue and screw the movement block and mounting block into place, using 25mm x 3mm screws as marked out earlier.



20 Stain the back of the face black as this prevents people seeing the back of the clock if it is viewed from an angle. Chestnut ebonising aerosol spray will do an equally good job. Fix the slotted mirror bracket with two ½in No.4 brass screws to the centre of the top of the mounting block or to the centre of the top of the movement block, depending if the long point is hanging up or down. Ensure the keyhole slot is not obstructed by the wood. If necessary, pare away some of the wooden block.

Decorating the clock face

- 21** The clock face can now be decorated any way you wish. I have kept to a simple design for this article using Arabic numerals on a painted background but feel free to do your own thing. Two alternative ideas are shown later. Whatever decoration you use, you will need to make a template to set the positions of the numerals. Place the clock face on a piece of lining paper and cut out a template to match the face, mark the centre hole. Set the compasses to 90mm and draw a circle. Draw a line from the long point to the short point which should pass through the centre of the circle. Using either a 30° set square or a protractor divide the circle into 12 segments. Cut a 10mm hole through the centre of the template and set it to one side.
- 22** This clock face was painted using black and white acrylic paints to produce a graded effect from light to dark grey. This is achieved by

squeezing a small quantity of the paints into two containers and then taking a little black on the brush and picking up a little white and then blending them as you paint using curved brush strokes. It is a good idea to practise on some waste wood to develop your confidence. When you are satisfied with the art work, set it aside to dry.

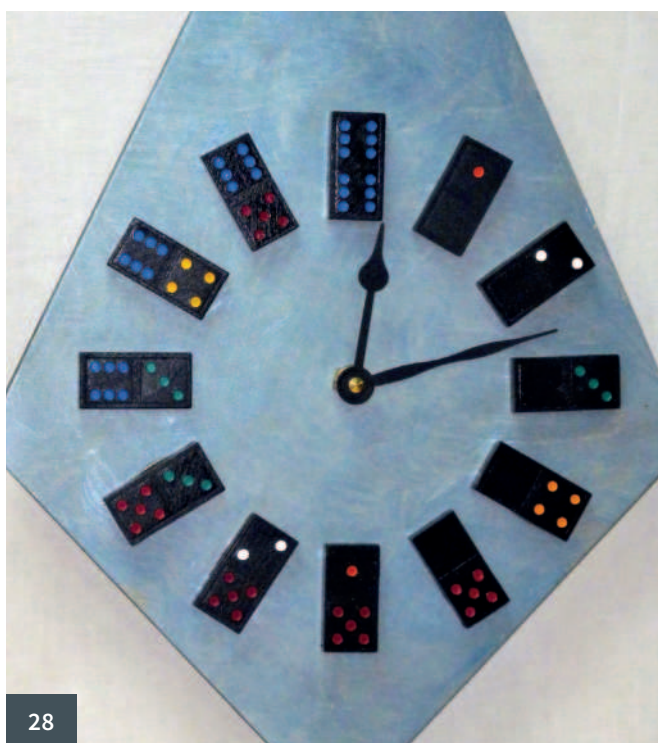
- 23** To fix the numerals, insert a 10mm dowel into the centre hole of the face plate, position the template using the centre hole, rotate it to align with the long axis and tape it in place. Use the point of the compasses to make a pin hole through the template at the points where the 12 division lines meet the circumference of the circle to mark the clock face.
- 24** Arabic numerals on a clock face are aligned with the bottom of the numeral set on an imaginary horizontal line, so set the sliding bevel to the horizontal line on the template.
- 25** Twist the numerals off the moulding strip and clean off the waste with a craft knife. Place the numerals in position and play around with them until you are happy with the positioning. Single numerals are positioned so the centre covers the pin prick made in the clock face. Where there is a pair of numerals the pin prick should be in the centre of the pair. Mix up a small quantity of Araldite and, using a cocktail stick, apply a smear of Araldite to the back of the numeral. Place it on the face and check the alignment with the sliding bevel. When the Araldite has set, seal the face with a coat of Chestnut Acrylic Gloss lacquer to bring out the colours.



26



27



28



29

Fit the mouldings, movement & hands

26 Apply wood glue to two of the edges of the face and tape two sections of moulding in place repeat for the other pieces. When you are happy with the mouldings fix them with two 12mm panel pins in each section. Remove the tape when the glue is dry. Place the soft washer over the shaft and insert it through the movement block and secure it with the centre nut, pushed in from the clock face. Tighten it with the centre nut tool. Place the long hand on the shaft and using the adjustment knob on the movement, align the hand with the number 12 position. Remove the long hand and fit the short

hand aligned with number 12. Refit the long hand and secure them in place with the blind nut, holding the long hand to stop the shaft turning as the nut is tightened by hand.

27 Your finished clock will look something like this, although the possibilities for decoration are endless ...

Alternative designs

28 This version uses coloured dominos for hour markers.

29 This one was painted by Pauline Smith and uses chrome studs as hour markers. Note the different style of hands.

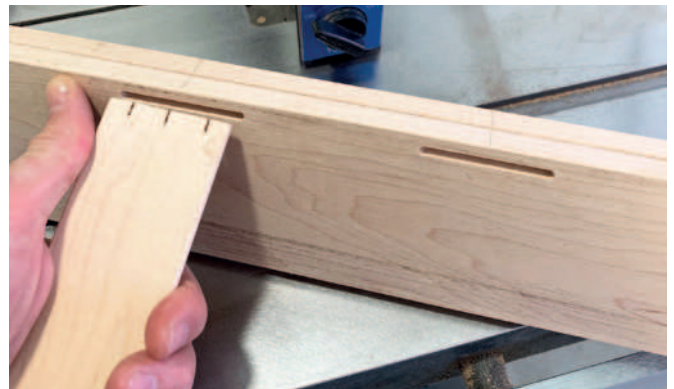
SCANDI WITH STYLE

Danish designer Henrik Tjaerby will make just about anything from wood – and takes an innovative approach to flat-pack and DIY furniture

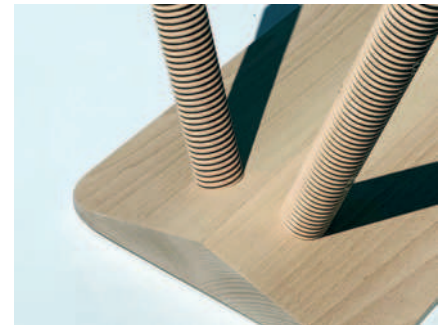
What have a woven bench that weighs just 3kg, a tiny spinning top, a wooden barn on stilts, a simple, Scandi-style dining table and a giant wooden Lego man got in common? They are all part of the diverse and eclectic work of Danish designer Henrik Tjaerby, who creates all sorts of weird and wonderful things in his tiny workshop in Galicia, Spain.

Henrik studied industrial and furniture design in Denmark and has been working as an industrial and furniture designer ever since, working in the UK, China and Japan. Currently living in Spain, Henrik works as a designer and consultant, collaborating with internationally recognised brands, as well as making bespoke furniture and interiors on commission. 'Since college it's always been my dream to have my own workshop,' he says. 'To me it's the best tool to develop a design – trying out different proportions, details, ergonomics and so on. It allows me to make "one off" bespoke pieces, as well as developing products with clients to suit mass production. I also just like spending time in the shop, making things with my hands, so it was an obvious thing to do.'

He adds: 'It takes a long time to build up a collection of tools and machines, but luckily I started back in college. It's a never-ending story – there is always that one machine on your wish list. But I've also learned to get rid of machines or tools that I don't use too often to clear up space and free up a bit of cash for upgrading machines if necessary.'







New take on DIY

Henrik's first ever project was a dining table with two benches that could be converted into a daybed. He explains: 'It was meant as a DIY project that people could make from just one standard 266 x 206cm sheet of MDF. The idea was to simply print the pattern in a magazine for people to use, like a dressmaking pattern.' His first electric hand tool was a Festool drill, which today, 25 years later, he still uses daily. 'I've dropped it, including into our well, used the handle as a hammer in desperate situations, left it outside in the rain and it still runs – even the batteries work! So I've pretty much stuck to Festool for all hand-held machines.

'Their Domino machines are amazing, including their connectors, and the whole track system is amazing, and cordless power is brilliant. For bigger machines I invested in Felder – they are great value for money and they look great. For hand tools I've been collecting Japanese tools forever, and bought most from Dictum, Dieter Schmidt and in Japan.' If he needs to cut costs he looks for second-hand tools. 'It is much better value than buying a new cheap machine in flimsy sheet metal. You can make some brilliant finds, and it's better for the environment as well,' he says.

Henrik admits his current workshop is tiny. 'I waste my time rearranging everything once a month. I've cut my workbench in half –

twice – making room for more machines or materials, so I'm definitely not staying.' He is waiting for planning permission to build a new workshop four to five times bigger than the current one.

Inspiration by design

Inspiration comes from architecture and sculpture – 'but also just little details in day-to-day objects,' Henrik says. When he's designing he will use any tool available, including sketching, CAD drawing and 3D printing. He says: 'I prefer to mock something up in the workshop. It's much quicker for me to fine-tune the proportions, judge the stability and check the ergonomics this way.' His favourite wood to work with is Canadian maple: 'Rock hard, beautiful grains and a light colour,' he explains, adding: 'But I work with oak, European beech, sycamore and walnut as well. I also like to work with local woods – especially eucalyptus.'

Other materials also feature in his creations: 'I work with marble, glass, metal, stone and ceramics – some of which are workable on traditional woodworking machines, only by changing the speed and abrasives or blades. The problem is the added oil for the cutting metal, water for cutting and polishing glass and marble, and the dust, which will not be properly collected with a standard extractor fan and filter. So you need to be organised and clear up after yourself.'



When choosing finishes his aim is for the wood to keep the exact finish and colour it had after the last sanding, carving or planing. 'Unfortunately this will not age well, so I tend to use oils with a white pigment to compensate for the otherwise darker result. I use all kinds of brands, but I like Osmo and Trip Trap.'

Going online

Henrik's Instagram feed is full of beautifully designed furniture featuring minimal fixings, intriguing joinery and beautiful turning, as well as handy tips for fellow woodworkers and charming videos of his little children helping out in his workshop and huge garden deep in the Galician countryside. One major recent project was his Horreo, a traditional Galician shed on stilts, which he built himself, mainly from recycled woods which took a lot of work to be usable. He even put up the framework all by himself in a *Witness*-style barn-raising using just ropes, wooden posts and his own strength.

Many of his works combine humour and innovation with traditional skills, such as a range of beautifully turned spinning tops which go from tiny enough to spin on his children's palms to as big as a substantial doorstep. He says social media is the best tool for makers like him. 'Many of us are one-man bands, so investing in advertisements, websites and so on is simply too costly and time-

consuming. With social media you can be sitting in a caravan somewhere carving spoons, and yet be exposed to a worldwide audience free of charge!'

Henrik's favourite project is one he has been working on recently: a series of flatpack furniture without any mechanical fixings. He explains: 'The legs are simply screwed in by hand, and the thread is made directly in the wooden seat and legs. Most flatpack furniture pieces hide their mechanical fixings, brackets et cetera, but I wanted to embrace this detail by making it visible in a nicer way.' His most challenging project was his woven bench. 'It was more about pushing the limits of the material – or using as little of it as possible,' he says. 'I like that the design is quite simple, yet it can still be developed into a lot more products. I'm currently working on a full series of furniture in the same concept using different woven patterns.' He is looking forward to building himself a bigger workshop once planning permission comes through and hopes it will give him space to work with more different materials. When he's not working Henrik loves to spend time with his family, fishing and climbing.

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KEEP IT SHARP

John Bullar takes a practical approach to keeping tools sharp and ready to use. Here he discusses the various methods he uses to get the job done



1



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3



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PHOTOGRAPHS BY JOHN BULLAR

1 Honing the edge of a cutter is a matter of holding it at the correct angle and drawing it over an abrasive surface like this diamond whetstone **2** Waterstones are superb for grinding away the surface of hard steels, but unfortunately the stone gets ground away in the process **3** There was a time when nearly every workshop would have had a grinding wheel by the door **4** An electric waterstone grinder provides the maker with a practical and rapid method of grinding at fixed angles

The edge of a cutting tool, such as a plane or chisel, is the line formed where the upper and lower surfaces meet. If the surfaces are flat, the edge will be straight and if they continue flat right up to the edge, it will also be sharp, but this is not always the best practical solution.

To make a cutting edge sharp, you need to shape it by rubbing away excess metal on an abrasive surface, normally referred to as a stone. This may be a coarse grindstone to remove material quickly, in the process leaving grooves in the surface and a jagged edge. The next stage is to hone near the edge on a fine whetstone, producing a more polished surface locally, and hence a straighter edge.

Cutting edge

When a penknife cuts into wood, the sharp edge shears the fibres while the angled sides of the blade act as wedges, forcing the severed surfaces apart. A chisel works in a similar way but with one side flat to be used as a reference face for producing straight cuts. The narrower the angle between surfaces forming the edge, the more effective the wedge will be, making cutting easier, but unfortunately this also makes the cutting edge finer so it blunts quicker, especially in hard or abrasive wood. A good solution to this dilemma is to make the initial grinding angle narrow, say 20°, for good wedge action, then hone a narrow strip

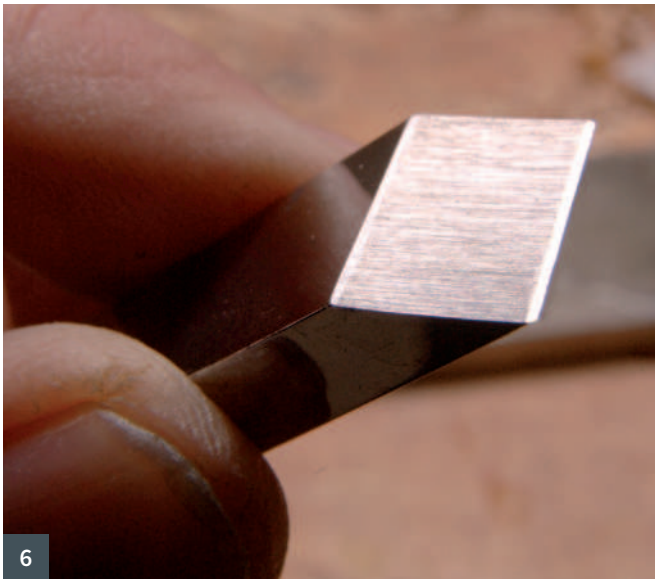
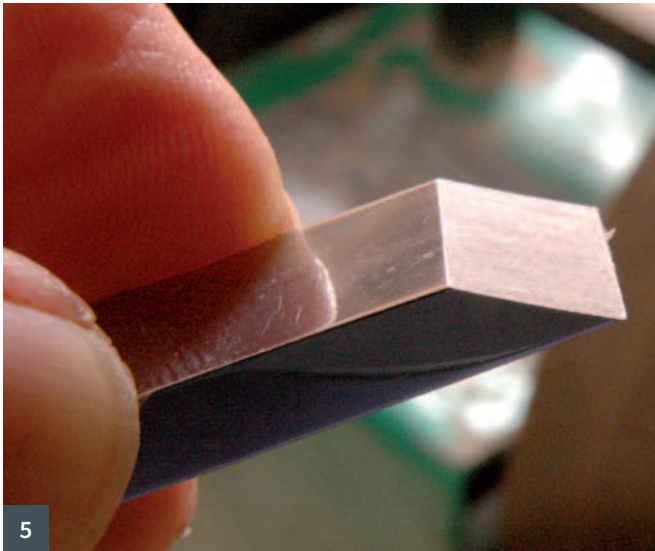
along the edge at a wider angle, say 30°, to resist the blunting effects of hardwoods. This is often referred to as a micro-bevel. The polished surface along the tip will also result in a cutting edge that is truly sharp. While the precise angles are not significant, reproducing the same angle each time is important if you want to avoid wasting time and good tool-steel.

Stones

Traditional stones were shaped from natural quarried material such as Welsh slate, Arkansas stone (a sedimentary rock occurring in different hardness and coarseness) or the Japanese Awase stones. Synthetic stones are made from sifted hard particles, often bound in a softer matrix, having the advantages of being more available, easier to control in grade and hardness, and cheaper.

Sintered silicon carbide particles in Carborundum is available in coarse grades and works well on soft steels, but it easily glazes on hard steels. This stone benefits from oil lubricant, and thin oil, such as paraffin, has the advantage of washing away particles while being relatively easy to keep clean.

Although softer, aluminium oxide is preferred in modern Japanese waterstones where it is fired as a matrix in a porous clay brick. Perhaps



5 The waterstone wheel produces a hollow grind with a small 'wire edge' **6** Two polished areas are visible on the hand-honed chisel – one on the cutting edge, the other on the 'heel' which holds a constant angle **7** After hollow grinding, honing by hand on a flat stone produces an accurately repeatable angle on the working edge

surprisingly this is more effective for use on harder steels because the surface of the stone itself rapidly abrades away. This continuously presents fresh cutting material to the steel as it does so, while water is used to flush away the abraded particles. Waterstones come in a wide range of grades; typically 800 to 1,000 would be used for sharpening while 6,000 or more for honing. The disadvantage for the user of waterstones is that they need to frequently flatten the face if it is to produce flat surfaces on tools.

Another synthetic system uses diamond particles trapped in the nickel-coated surface of a steel plate. Diamond being the hardest substance is of course very effective on steels of all hardness. To prevent diamond stones becoming clogged with metal particles, the base steel plate is sometimes perforated and supported by a soft plastic material, leaving dimples to collect the grinds in.

Lubrication

Stones need to be lubricated either with oil or water before they

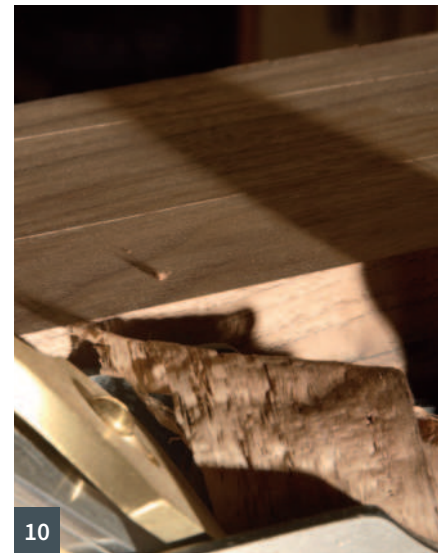
are used for sharpening. While oil is technically a better lubricant and protects steel from corrosion, it can be messy, especially when contaminated with metal and stone particles. Any contaminated oil left on a tool may soak into wooden surfaces, leaving them discoloured and repellent to glues and finishes. Water lubricant tends to be preferred by furniture makers who sometimes wipe the sharpened tools afterwards with light anti-corrosion agents such as camellia oil.

Sharpening wheels

There used to be a slow hand-turned grindstone wheel outside most workshops. This was hewn from a fine natural grit-stone and a skilful user could rapidly produce a near-flat tool surface with it.

Modern electric high-speed wheels remove metal quickly but they produce sparks and heat up the tool edge, leaving it weakened. However, once a tool edge has been shaped, re-grinding and honing will follow the same pattern, so there is no need to remove much metal.

For these reasons, most furniture makers prefer slow-speed electric



8 A good viable alternative is to use a honing guide to clamp a chisel **9** The same guide can be opened out to take plane irons and, by careful measurement of the protruding end, the same angle can be honed each time **10** Tramlines caused by sharp corners on a plane cutter **11** Curving the cutting edge guarantees there will be no tramlines

sharpening systems. These use a composite aluminium oxide wheel with the underside dunked in a water bath. Being smaller in diameter than the old hand-turned wheel, the surface produced on the tool edge is visibly concave, so the result is referred to as 'hollow ground'. The grit on these wheels is quite coarse, typically 220 grade producing a furrowed surface with a wire-edge. This 'wire' is a fine strip of steel beyond the edge, left attached by flexible filaments of steel. It must be removed to leave a clean edge.

Honing

Once a tool has been hollow ground, honing by hand on a flat stone is easy enough. The method involves laying the hollow side down against a fine stone of 1,200 grit or more, and pressing firmly on the upper surface of the tool while drawing the underside across the stone. The tool must remain in firm contact with the whetstone and not allowed to wobble. With a little practice you will produce two narrow polished bands, one against the cutting edge and the other at the heel of the

hollow grind. The advantage of this system is that it allows you to frequently re-hone the tool at precisely the same angle without relying upon measurements to get it correct.

A viable alternative is to clamp the chisel or plane iron in a 'honing guide'. This is a simple device that provides a wheel to support the underside of the tool while you run the edge across the whetstone. Careful measurement of the protruding end is needed to ensure the same angle is honed each time.

Plane cutters

The cutting edges of planes need to be straight for a wide even cut, however they will produce 'tramlines' on a wide surface if the edge is perfectly straight to the corners. The solution to this is to round off the corners when honing with additional strokes, applying extra pressure to each side in turn. This will produce a microscopically hollowed cut, but one that is more acceptable as part of a 'flat' surface.

Traditionally, plane cutters are ground to 25° before the edge is



12 Planing against the grain, fibres are lifted from the wood surface ahead of the cutting edge, leaving a torn finish **13** Planing with the grain, fibres are neatly shear cut or severed on contact with the cutter's edge **14** Setting the mouth fine holds down the fibres before they are cut while the chipbreaker applies back pressure and minimises unbroken chip length **15** Cutting across end grain, the mouth and chipbreaker do not matter but sharpness of the edge is everything

honed to 30° or so. However, unlike a chisel edge, a plane cutter only contacts wood with its upper face; the underside is supported by the plane's sole. While there must be a relief angle between sole and cutter underside to allow fresh cut fibres to spring back, for fine work on hardwood this only needs to be a few degrees. I find the edge can be honed to 35° or more for longer service without loss of performance.

Planes and grain

Ideally when flattening a wooden face or edge, we want to plane 'with the grain' so at the edge, the fibres can be seen rising towards the surface of the wood ahead of the cutter. However, this is not always practical because wood fibres change direction both naturally and at joints.

When a plane cuts 'against the grain', the fibres may be lifted from the surface ahead of the cutting edge, producing a torn finish. Fine-tuning the plane in two ways will help avoid this. The first adjustment is to reduce the mouth width so the fibres will be pressed down almost to the point at which the cutter severs them. This prevents them being torn ahead of it. To achieve this, the frog

must be moved forwards, moving the cutting edge with it towards the front of the mouth – alternatively in the case of a bevel-up plane, the loose front of the sole is moved back. The second adjustment is to unscrew the chipbreaker and move it down so its edge is closer to the cutter's edge – typically 1mm away for fine work. This applies backpressure to the freshly formed chips, also reducing the tendency to lever them off the surface.

For planing across end grain, the important factors are sharpness of the edge and fineness of the cut. If the plane judders, try backing off the cutter, otherwise it's back to the whetstone for more honing.

Stropping

For some purposes, we want a cutting edge to be curved and so one or both of the surfaces needs to be purposefully curved while still producing a sharp edge.

A long-established way of polishing a freshly honed blade of any shape or curvature and removing a wire edge is to rub it on a leather belt or 'strop'. This can be made more effective if the strop is impregnated with fine abrasive compound. Leather belts around



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16 Stropping carving tools on a leather wheel removes the wire edge and leaves them razor-sharp **17** This cutaway view of a mortise being chopped shows that a chisel must have a flat back if it is to cut in a straight line **18** This vintage plane iron has been stropped for many years, in the process rounding its upper face **19** Flattening and polishing the flat side of a plane iron with wet & dry paper on float glass **20** A furniture maker's plane should produce long, wide silky shavings, even from difficult woods like this bird's eye maple

wheels and disks are often fitted to slow speed electric sharpeners and are particularly useful for carving tools.

The disadvantage of stropping for some tools is that the soft leather deforms as the cutting edge is pressed against it and in time, this will round the surfaces leading to an edge. For a knife or carving tool this is acceptable and it may be for a smoothing plane, but for the cutter of a shoulder plane or the back of a chisel, this could be disastrous, as I will explain.

Flat backs

A chisel uses its flat back as a reference surface to guide the edge forward in a straight line. Any curvature of this surface, especially honing or stropping near the edge, would send the chisel off course.

Flattening the backs of plane irons and chisels can be effectively

done using fine wet & dry paper, dampened then laid on the surface of a thick sheet of float glass. Lay the cutting edge over the edge of the paper and draw it onto the paper for a few strokes to remove any wire edge, then press firmly near the bevel of the cutter while rubbing the flat side against the abrasive paper.

Conclusion

For most of us woodworkers, time spent sharpening tools is time we would prefer to spend making or designing our next projects, but work attempted with dull tools will inevitably be frustrating and the results disappointing. This means we need to establish quick and effective ways of sharpening that suit our equipment, efficiently fit into our patterns of working, and ways that encourage us to keep cutting edges razor-sharp.

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RECYCLING IN THE WORKSHOP



Geoffrey Laycock offers tips on recycling and reusing items

Whatever your views on the reality of climate change, it does seem a no-brainer that we have to change our attitude towards recycling, repurposing and an increasingly throw-away approach to life.

I recycle as much as possible. I use glass jars for storage, I keep aluminium cat food trays for mixing adhesives and stains. I still have tobacco tins for storing small parts – there was a time when just about every engineer in the country used these and they last for decades as wonderful stackable storage. I use old shirts for wipes – but not for rotating work on the lathe. I keep offcuts – don't we all? I keep numerous miscellaneous bits of 'things' that may be useful for something, sometime. For some reason my wife does not understand my collecting habit at all!

I have lots of wood to work my way through and the pile keeps getting bigger. Just a couple of weeks ago we had a mature sugar maple felled as many of the trees in our garden lacked any management before we arrived. One large piece is waiting to go off for planking, a number of pieces I will convert and then there is a pile of logs that will either go into the workshop or into a woodburner. These I have ambivalent thoughts on – they are effectively carbon neutral as the high levels of carbon dioxide released by burning timber is almost exactly the same as that taken up by

the tree during its lifetime. Of concern, though, is particulate pollution, especially what are called PM2.5 particles. This is soot so fine around 40 particles could sit on the width of a human hair and that's the reason we appear to be heading to a complete ban on woodburners in urban areas where airborne pollution is an issue. It's certainly looking likely in London and other primary cities and the main legislation to progress this is already in place through the various Clean Air Acts starting in 1956. It has never been seen as an important issue until now.

Will all this recycling help the survival of our planet? Personally I think it makes little difference as, on the whole, humankind continues to extract and use whatever raw materials can make a profit, the population grows at an alarming rate and eventually people density will exceed food production ability. The continued expansion of that will have reduced our tree population to less than required for carbon dioxide capture and oxygen generation to maintain our atmosphere. I subscribe to the idea put forth decades ago by James Lovelock – the Gaia hypothesis. The idea that earth is a self-regulating system suggests that eventually it will take control and sort itself out – and I suspect on current evidence it's likely we won't be part of that future. Unless we do make real changes.

PHOTOGRAPHS BY GEOFFREY LAYCOCK

TURNED WOODEN JEWELLERY

Nick Arnall has a step-by-step guide to making bangles, earrings and pendants

Handmade jewellery is always a popular gift for someone special, and these items are quick and easy to produce. I have covered the basic principles of turning jewellery in this article but there are many ideas you can try, as well as different decorative effects.

Jewellery fittings can be sourced from your local woodturning outlet or craft shop. The only thing I struggled to find were tiny eyelets so I could make matching earrings for the pendants. The amount of wood required is only small so it will not cost a fortune.

The timber should be decorative, either in grain or colour. Remember that there are also other materials that lend themselves to these items such as Corian, gemstone, acrylic, horn or the GPS alternatives. For the earrings, I used pen blanks.

Finishing choices

I re-applied spray lacquer once the jewellery was finished to achieve coverage of the entire piece. This allowed for the choice of a satin or high-gloss finish. The choice is yours but remember – if it is too glossy it may no longer look like wood and instead look and feel like plastic.

Health and safety

Protect your eyes and lungs at all times, and work at a speed that you feel is comfortable and safe. When working with exotic timber take extra care as these are hazardous to health – some exotics are very nasty indeed. When working with small items don't take the risk, it simply isn't worth it. Always keep your hands on the safe side of the toolrest, never over the top.

TIMBER REQUIREMENTS

Timber:

Bangle: 90 x 35mm

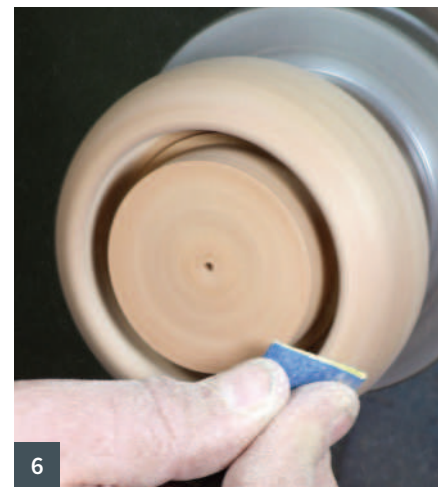
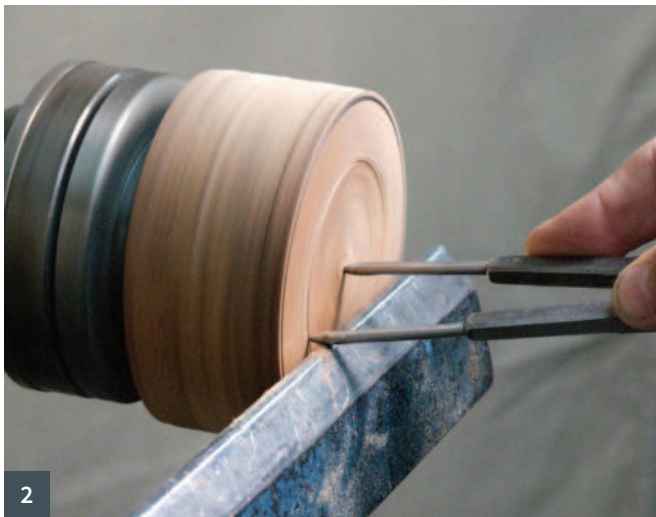
Earrings: 15 x 150mm

Pendant: 10 x 60mm



Bangles

- 1 This bangle is simple to make using two methods of chucking. Using a screw chuck that has a maximum face diameter of 60mm on the outer edge, and with small chuck jaws and a screw chuck fitted, mount the blank. True to round using a 10mm-long grind bowl gouge. Alternatively, rough to round with a 10mm spindle gouge.

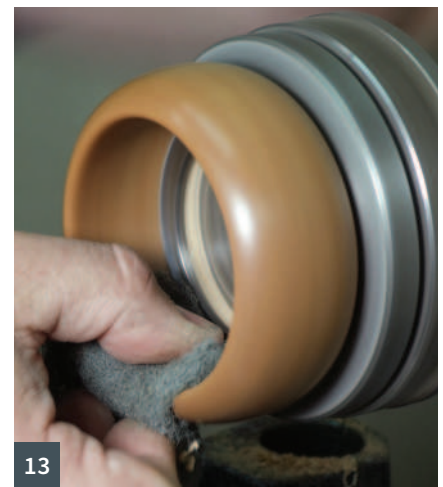


PHOTOGRAPHS BY JANE ARNOLD

- 2 Mark 70mm across the face using the dividers. This will be the hole for the wearer to put their hand through.
- 3 Turn a right-hand half bead with a 10mm spindle gouge. Repeat for the left-hand side. Alternatively, you could shear scrape the outside shape using a 10mm point tool or a 10mm round skew chisel.
- 4 Using a parting tool, plunge halfway into the wood inside the scored line as parallel to the bed as possible. Remember to make

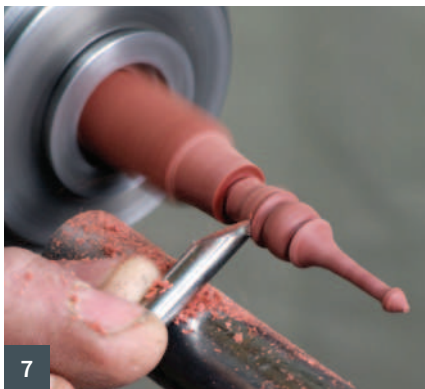
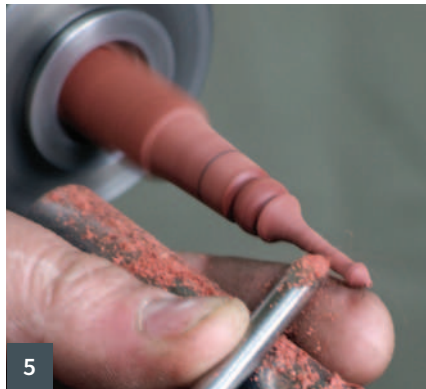
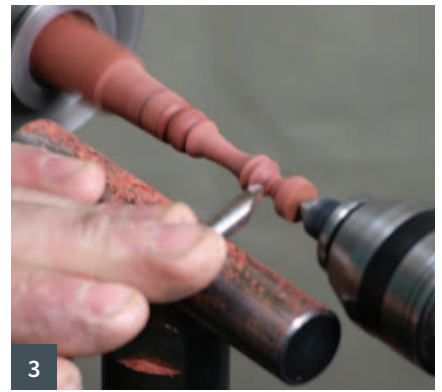
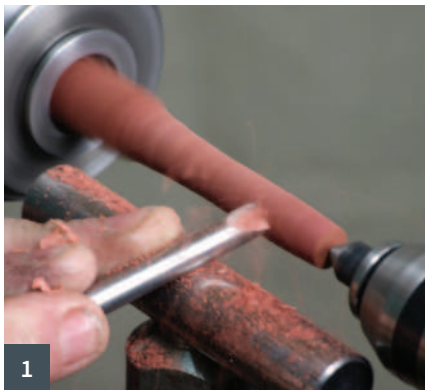
the gap wider as you go deeper to avoid overheating and binding the tool.

- 5 With a 10mm point tool, radius the edge.
- 6 Do some sanding to the piece ...
- 7 ... then seal, polish and lacquer.
- 8 Tape the bangle in place with four bits of tape and then wrap tape around the circumference to hold it in place.



- 9** Part through the last section of wood to release the bangle from the centre. I saved the centre for future use by parting through without reverse chucking. This removes the risk of not parting through in the same smooth, continuous cut.
- 10** Remove the bangle from the waste block and mount hard against the face of the chuck. Open the jaws gently to grip the bangle.
- 11** Gently true the inside with a 10mm-long grind bowl gouge

- and radius the edge as in step 5.
- 12** Carefully sand the inside – this may require reverse chucking. I used wax as a lubricant to avoid overheating.
- 13** Remove the excess wax. I used Nyweb/Webrax to do this.
- 14** With the bangle removed from the chuck, some hand sanding will be required before applying a finish by hand.
- 15** The finished bangle.

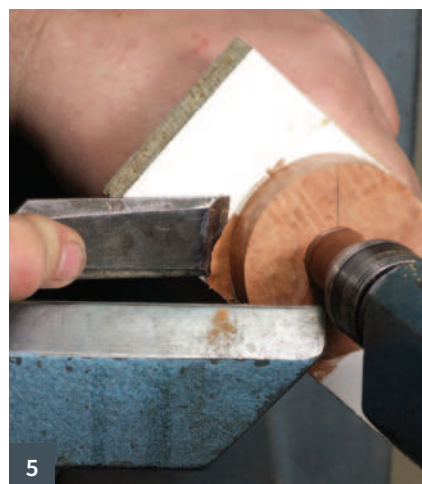
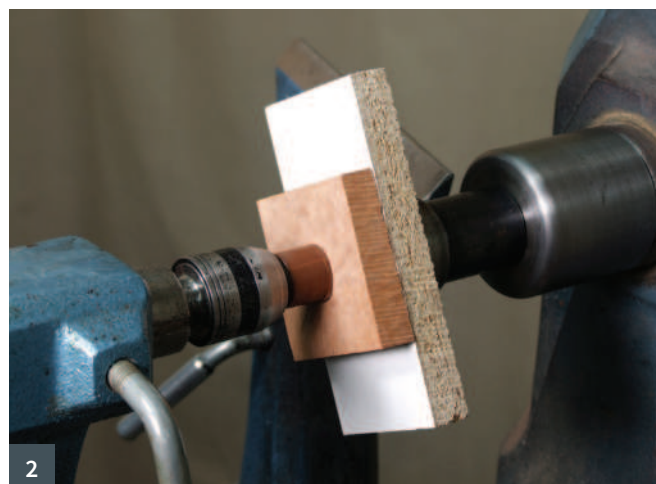


Earrings

- 1 Mount the blank in the chuck using the smallest jaws available and rough to round. If needed, mount between centres and make round as not all chuck jaws will accept square stock. As an alternative, rough to round with a small roughing gouge with no tailstock support.
- 2 Mark the key points and turn the bead.
- 3 Reduce the neck to allow for some shaping of the top.
- 4 Further reduce the neck and fit the earring fitting to the top.
- 5 Fine-tune the neck to the final shape.
- 6 Part into the wood to define the final length of the piece.
- 7 Create the drop finial at the bottom but make sure you don't go too small as support is needed while sanding.
- 8 Carefully sand the piece, however, do not apply too much side pressure. Then seal the piece.
- 9 Gently cut away the drop. Repeat steps for the second earring to make a pair. When complete, assemble the bits together using a good quality adhesive that will stick wood to metal.
- 10 The finished pair of earrings.

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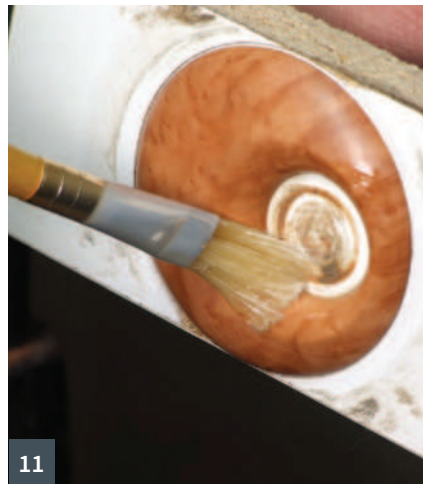
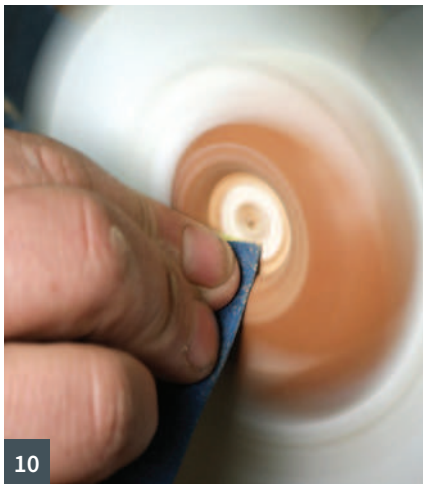




Pendants

- 1 Prepare a back/mounting board with a centre line, a centre hole and another hole offset by 10mm from the centre hole. These are marked and drilled to fit the screw chuck being used.
- 2 With the back plate mounted on the centre screw chucking point, apply double-sided tape to the back of your blank. Align the grain in your chosen direction and press onto the backing board. Centring the grain alignment is of key importance at this stage.
- 3 With the tailstock in place for added support, true the side

- of the blank with a 10mm-long grind bowl gouge.
- 4 Using a 10mm point tool, scribe through to the backing board.
- 5 Using a sharp chisel, remove the waste wood.
- 6 Remove the tailstock using a long grind 6mm bowl gouge. Start to dome the face and ...
- 7 ... shear scrape the face with a 10mm round skew chisel. Then sand and seal.



- 8** Move the backing board to the second screw/chucking point and mark the opening with a pencil to check the positioning.
- 9** Turn away the waste to expose the backing board and to create an opening.
- 10** Sand to blend the surfaces if needed.
- 11** Then seal the wood.
- 12** With a sharp chisel, carefully ease the piece away from the backing board and remove the glue/tape.
- 13** Hand sand the edges to remove any sharp points and seal the back.

- 14** The finished pendant.
- Remember that it must be hand and body friendly.

PICNIC BENCH

Alan Holtham designs and builds an unusual version of a garden favourite



This is a great outdoor project that will only take a couple of days to build, and will bring hours of pleasure to your summer alfresco dining! Despite its simple appearance, quite a lot of thought went into the design process, as I had a number of criteria to fulfil, while trying not to make the job too complicated.

For a start, I wanted to avoid the standard A-frame style that is commonly used in every pub beer garden and picnic area the world over. Although a well tried and tested design, my issue

with it is that you have to 'thread' yourself through it onto a seat – not ideal for your older guests. Secondly, I wanted a table that has wheelchair access for a friend of mine, rather than have him stuck sideways on the end of a conventional picnic table. Thirdly, the table had to be quick and easy to dismantle so it could be put away during the winter and, fourthly, it had to be made for a low a budget using standard off-the-shelf materials and minimal power tools.

Making the joint jig



- 1 All you need are a couple of pieces of timber about 350mm long to straddle either side of the workpiece, and a couple of pieces of MDF with edges machined perfectly straight.
- 2 Using a scrap of the actual workpiece material as a spacer, screw the first piece of MDF across the two jig components at the required 60° angle. You need to calculate the distance between the two MDF guide strips, and for this you need to work out the guidebush margin (gbm) which depends on the relative diameters of the cutter and guidebush you're using: $\text{Guidebush margin} = (\text{guidebush diameter} - \text{cutter diameter}) \div 2$
- 3 For an internal template such as this, the margin must be added to each edge of the workpiece dimension, and you can then attach the second strip accordingly. If you're making an external template where the guidebush follows the outside edge, subtract the margin from each edge of the workpiece dimension.

- 4 In this case, I was using a 30mm guidebush and a 12.7mm cutter which, for simplicity, I called 13mm. So the gbm is: $(30 - 13) \div 2 = 8.5\text{mm}$.
- 5 With the jig assembled, make a few trial cuts to check how well the joint fits. Don't try to be too clever in making this really tight, or you will have difficulty assembling the joint, particularly if the wood gets damp and swells.
- 6 It needs to be a sliding fit that just requires a light tap to get it seated, and it took me three attempts to get this perfect, as you can see in this photograph. I often find trial and error like this on test pieces is the best method for good woodworking.
- 7 The trick is to initially make the gap between the jig guide rails slightly too narrow, as you can then easily unscrew one and plane a fraction off to ease the joint. It is much harder to close up the gap if you have initially made it too big.



PHOTOGRAPHS BY ALAN HOLTAM

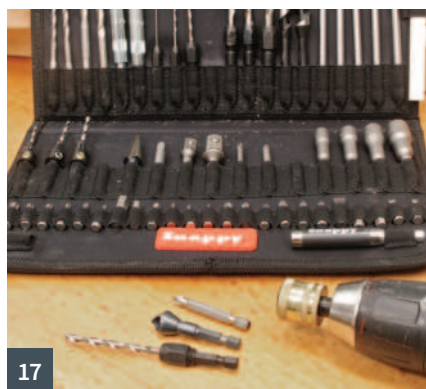
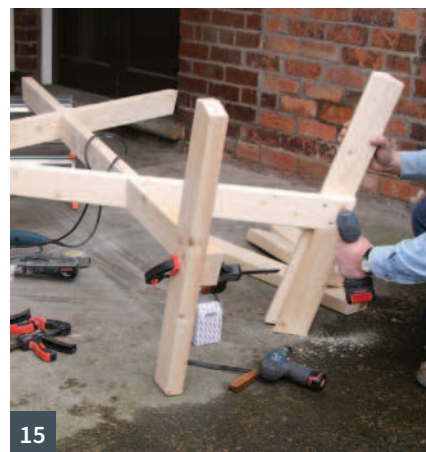
Materials and tools

- 1 With all this in mind, and after some extensive internet research, I settled on a hexagonal design with three double seats that are easily accessible from either side. For the material, I used 95 x 46mm carcassing timber which is relatively cheap, and although not finished to the standard of PAR material, is certainly a lot smoother than rough sawn. It also has the corners machined to a smooth radius, which makes the finished project a lot more user-friendly, with a minimum of work.
- 2 The slight disadvantage is that each piece has regular ink markings along its length, carrying information about the grade. As I was going to paint the finished bench, this was not really an issue, but if you anticipate using a clear finish then either sand off the printing, or feed each piece through a thicknesser, taking off just a very light pass. There is also a tanalised option for extra durability, but this is considerably more expensive.
- 3 As the basic shape of the table is hexagonal, you need to make a lot of angled cuts, so a mitre saw is almost essential but before you start, make a trial cut to check that the angle is spot on and the cut is square.
- 4 To minimise waste, I bought 4.2m lengths of material which are quite awkward to handle on your own, but a roller stand or trestle will make the sawing process easier and also safer. Roller stands are

like a third hand in the workshop and to my mind, are worth their weight in gold, particularly the ball type.

Making the frame joints

- 5 Lay out the three components of the main frame and mark the position of the half-lap joints – remember the joints need to be cut on opposite edges on each piece. As the whole structure of the bench depends on these joints being good, I decided on a method using the router to form the perfect joint. This produces a perfectly sized cut-out with minimal effort, but it will require you to make a very simple template jig to use with a long straight cutter and a guidebush in the router (see the previous page for details about how to make the joint jig).
- 6 It would be very messy and time-consuming to rout out the whole joint so with the trenching stop on your mitre saw set up for depth, cut to within a couple of millimetres of the marked joint.
- 7 Use a chisel to knock out the majority of the waste, taking care not to split the waste off too deep.
- 8 Then clamp the router jig in place and machine out the joint to the perfect width and depth.
- 9 The triangle frame should now fit together, requiring just a light tap with a rubber mallet to seat the joints properly.



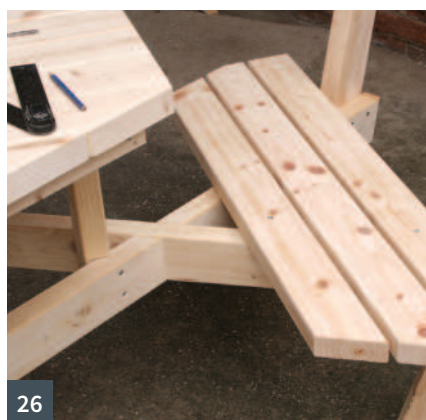
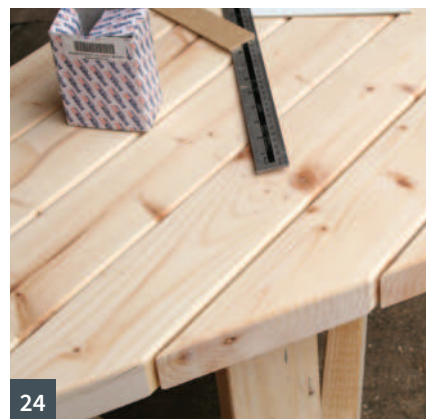
10 For the sake of neatness, I used a small rounding over bit in the router to radius the cut edges of the joint to match the existing edge profile.

Making the legs

- 11** The six legs can now be cut to length with the 15° angle on one end to produce the necessary inclination.
- 12** I could have cut this same angle on the top end of each leg as well, but thought a double angle would look neater.
- 13** All cut ends and edges are radiused to match the long edges and for jobs like this, I love using my palm router, which is so light and manoeuvrable.
- 14** Although I did not require a super smooth finish, as it is a picnic bench meant for outdoor use, a quick brush over using a random orbit sander with a 120-grit disc made a huge difference to both the feel and appearance of the timber, which was worth doing.

Assembly

- 15** Now you can start the assembly, which is initially quite tricky if you are working on your own, but I used a combination of paint tins and blocks to hold the main frame level while screwing on the legs. Use a spacer to ensure that each cross rail is fixed at the right height on each leg.
- 16** I think it always looks neater if you deliberately overlap the pieces to be joined, rather than try to get them flush, but this is a matter of personal opinion – decide which you think looks best for yourself.
- 17** Another good tip, particularly if you only have one drill and are drilling, countersinking and screwdriving in quick succession, is to use a quick-change chuck system. This allows you to make very quick changes to the drill set-up.
- 18** The basic frame will soon take shape, a process made so much easier if you have a perfectly flat surface to work on. If not, use wedges under each leg to avoid introducing distortions.



- 19** The table upright supports require careful shaping to be a close fit in each apex. I could not think of a way of doing this using a machine or power tool, so I resorted to cutting them by hand.
- 20** The uprights are again just screwed in place – I used two screws from one side of the joint and one from the other.
- 21** The table top frame is made from the same material but ripped down the middle – a single screw is enough to hold each corner joint as it all stiffens up when you fix on the top boards.

Making the table top

- 22** So that's the framework complete and now it just requires covering to form the seats and table top. To make the whole thing appear lighter, I reduced the rest of the material down to 40mm, which is still plenty strong enough but stopped it all looking too chunky.
- 23** The slats for the table are screwed through from the underside

using hardboard spacers to maintain an even gap. Where possible, screw through into one slat from either side of a frame joint to increase its rigidity.

- 24** The challenge is to ensure that the smallest part of the hexagon top is still big enough to get a secure fixing onto the frame.
- 25** With the top complete, radius all the edges as before, and then give it a thorough sanding, as the timber is not the best quality and does feature some quite large knots and areas of torn grain.

Making the seats

- 26** Each seat is made from three slats fixed from the top, with angled ends to make it easier to walk in and sit down.
- 27** The seat back is just a single slat screwed onto the angle of the legs. I did consider letting this in to produce a bigger bearing surface but in reality, just a single screw through the arris of each leg seemed to be quite sufficient.



28



29



30



31

Finishing touches

- 28** If you anticipate using a parasol, drill a suitably sized hole in the middle of the table and again, use your router to radius the top edge for a neater appearance.
- 29** The completed bench. It took me about 12 hours to get to this stage, and what had been a rough sketch with approximate dimensions, actually worked out quite well! I was particularly pleased that the seat arrangement still allowed easy wheelchair

access as required in the original brief.

- 30** Now it was just a question of dismantling and reassembling on-site. It only took about 10 minutes with my drill driver to reduce the bench to its component parts.
- 31** To finish, I used a coloured preservative which I've always found to withstand the weather well, even in direct sunlight. Apply this as you reassemble the bench, so that all the joint surfaces can be covered as well.

Tips for assembly and disassembly



1



2



3

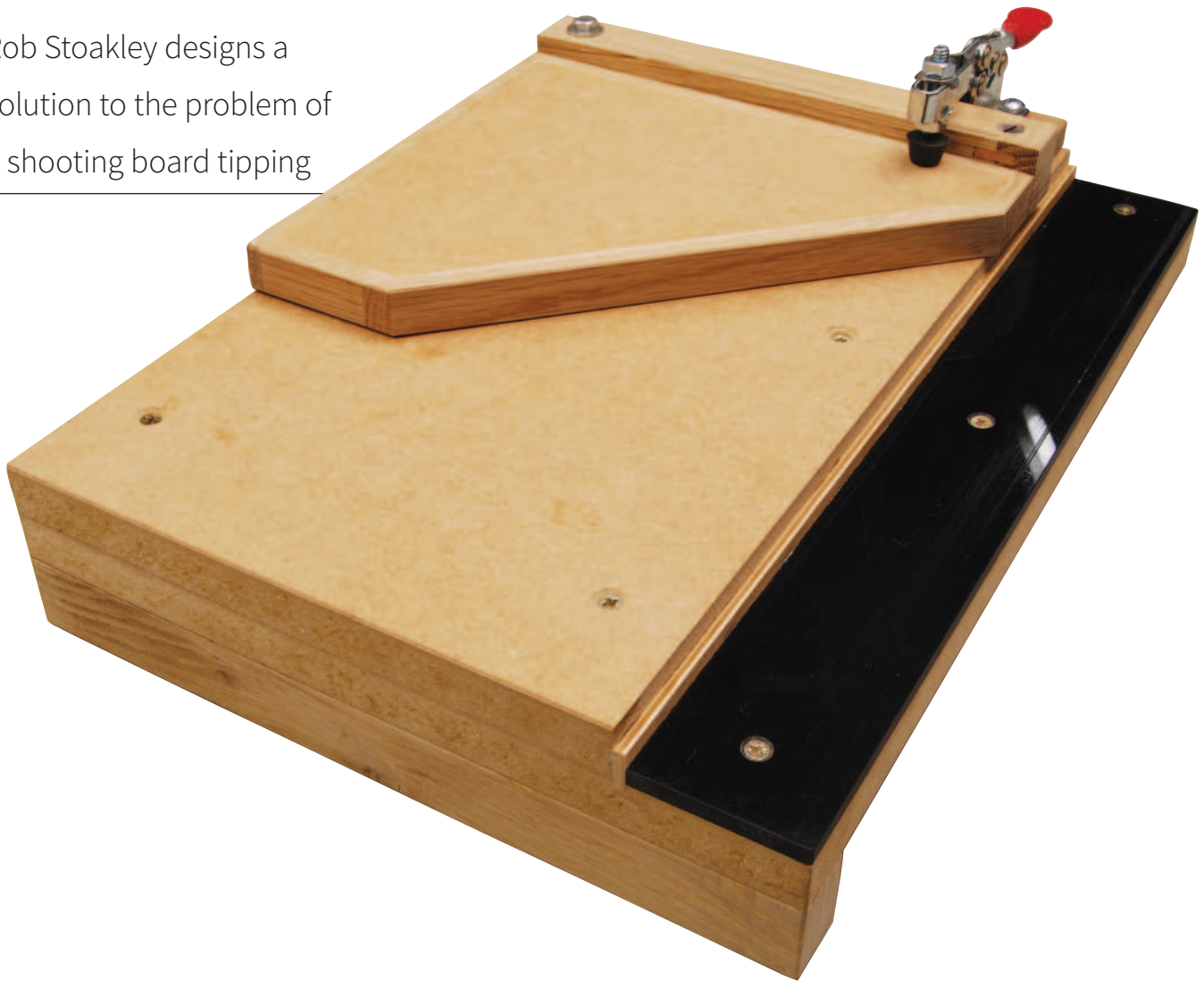
- 1** If the bench will only be assembled once, it is fine to just countersink the screws well below the surface.
- 2** However, one of the requirements for this bench was for it to be easily dismantled and I always find that if you countersink screws too deep, they tend to break away

the surrounding timber when you remove them.

- 3** You can overcome this by using cup washers, or even better, washers that fit flush into the countersink, then you'll have no problem with subsequent dismantling damage.

TIP-TOP SHOOTING BOARD

Rob Stoakley designs a solution to the problem of a shooting board tipping



The resourceful woodworker will probably use any number of useful jigs and indeed some are essential for safe working practice on many machines. Most of these jigs are easily made to suit the particular application, and are generally knocked up from odds and ends of material that seem to find their way inexplicably into remoter, dustier corners of the workshop.

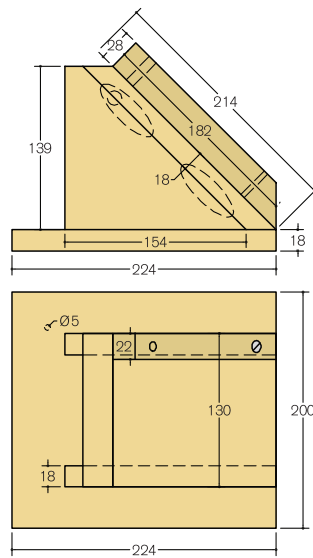
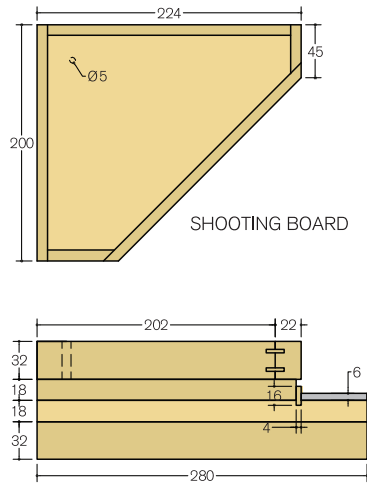
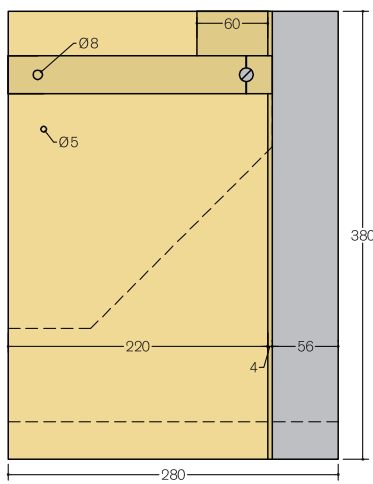
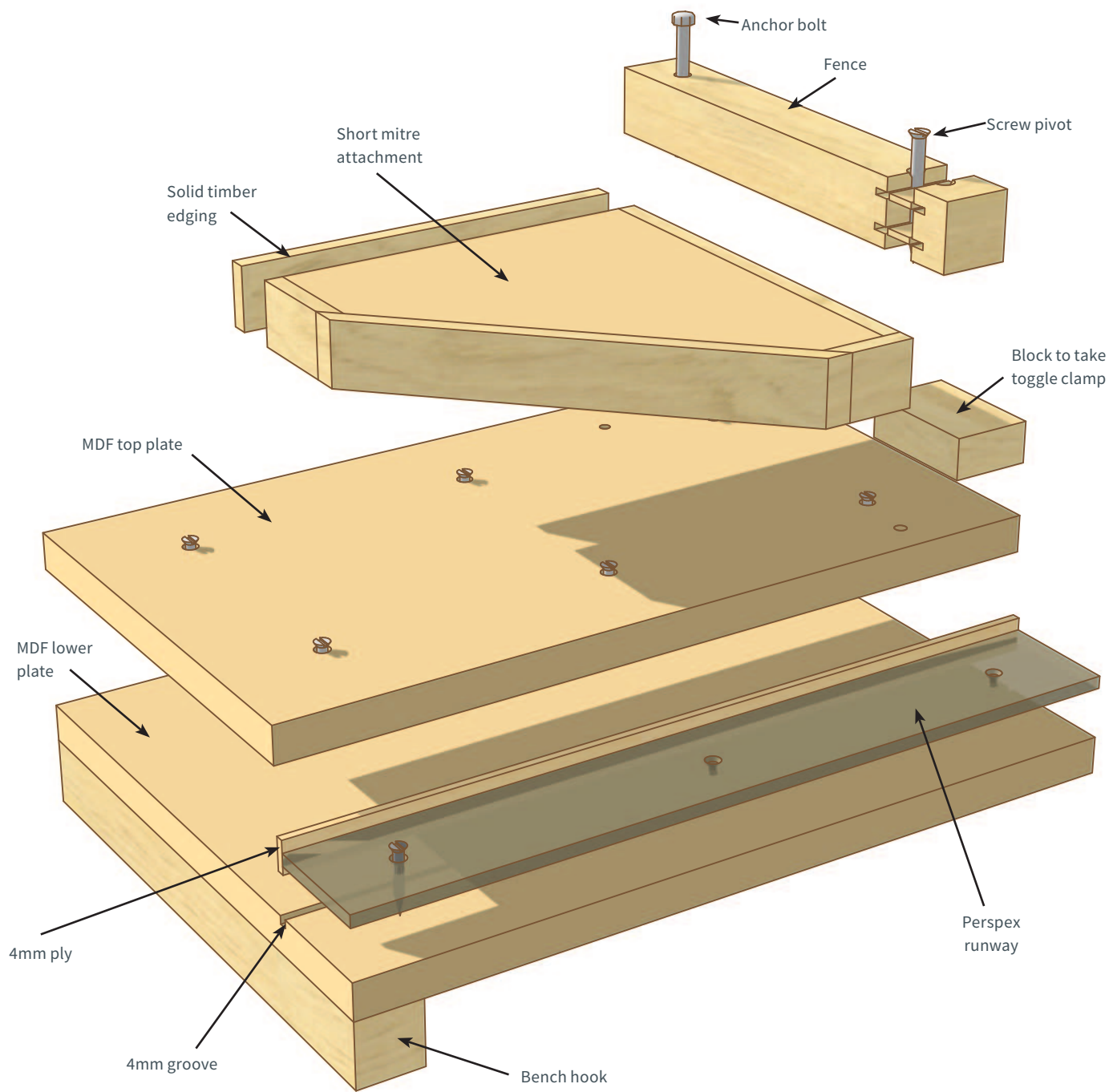
Perhaps the original and most used – at least for hand work at the bench – is the trusty shooting board (shute), variations of which seem to have been around since some bloke in a shed first pushed a plane over a piece of timber to smooth it.

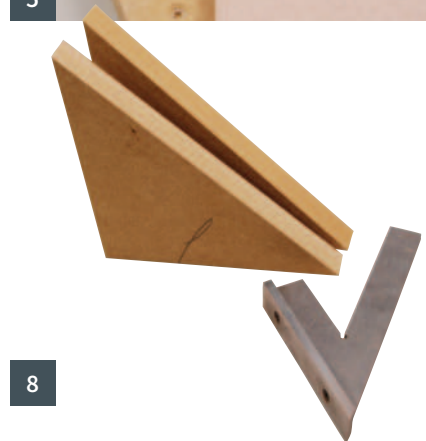
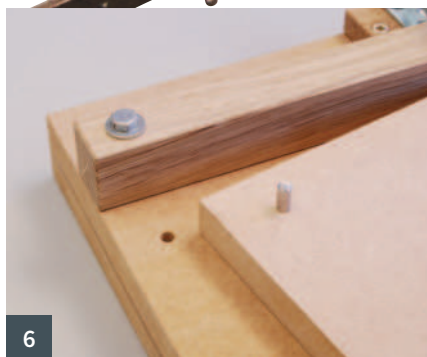
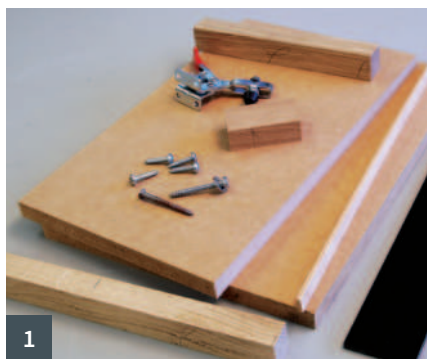
This design was initially conceived by my friend Pete Newton and was adjustable in all planes but with sufficiently accurate making I found these were not needed. I have, however, added one or two cunning and devious improvements to the design which make it even more failsafe.

Planes, even a dedicated LN No.9, which is meant to be used on a shooting board, will tip, harder, granted, with a No.9, but it can still be done. The action of tipping the plane will inevitably, over time, wear away the running edge of the shoot and more importantly, the end of the fence, with a corresponding risk of some inaccuracy or breakout in the workpiece. My improvements solve this problem.

Dimensions with these sorts of boards are not critical, but an indication of size is given in the working drawing. Even the thickness of the material used is not crucial, only the angles are important and those are easy enough to get absolutely spot on.

There's little doubt in my view that this shooting board with its mitring attachments is probably one of the most useful jigs at a maker's disposal. Mine lives permanently under the bench and seems to be in use every five minutes... and is especially useful at drawer-making time.





PHOTOGRAPHS BY ROB STOKLEY

Main board

- 1 The two main pieces are prepared – one piece (top plate) is smaller by the width of the plane runway.
- 2 A 4mm groove is routed into the lower plate. This will receive a piece of ply about 10mm wide which is sufficiently high so that it will bear on the sole of the plane, usually about 5mm, directly underneath the iron. This is the first modification and prevents the plane from removing bits of the upper surface of the board in use.
- 3 All three pieces can then be assembled with glue and screws. Note that the screw nearest the toggle clamp is offset. The low-friction runway for the side of the plane is made from an oddment of 6mm acrylic Perspex, cut oversize, screwed into place and then bearing-cut for a flush fit.

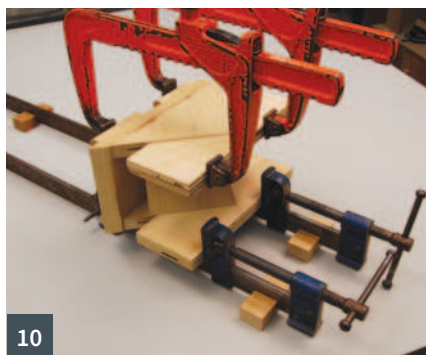
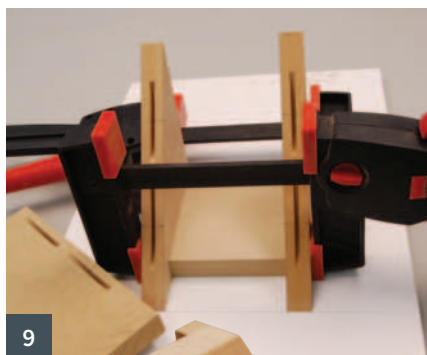
Main fence

- 4 A length of oak is glued and screwed to the underside at this point to hold it against the side of a bench when in use. The fence is held in place by two screws, the one nearest the runway being a traditional steel or brass countersink screw with a plain shank; this acts as a pivot. The hole in the fence for this screw is a tight fit – a little candlewax here helps to lubricate – while the hole at the other end is drilled 8mm to accommodate a 6mm coach screw. This gives

a small amount of adjustment either way so that as soon as the fence is shooting correctly at 90°, it can be locked in place. The position of the fence is governed by the toggle clamp, which is screwed to the board via a suitably sized block of oak. After preparing some material – oak in this case – over-long, cut off a small section and biscuit it back onto one end to form a T-shape, trimming it flush when the glue has set. This is the second cunning improvement: if the long grain is removed if the plane tips, another sliver can be glued in place, sash-cramped, trimmed and re-shot flush again, something that could not be done quite so easily with end grain.

Locating mitre attachments

- 5 Each of the mitre attachments is located onto the board via a steel pin in one corner and is prevented from moving on the plane's return stroke by securing it with the toggle clamp. The marking out for the pin needs to be done accurately so that there is a small amount of material to be removed on each of the attachments to ensure a snug fit against the main fence.
- 6 I used some 5mm steel rod for the pins and drilled the hole in the attachments at 4.5mm to achieve a really tight fit, and the hole in the board at around 4.8mm, enough to ensure a tight sliding fit when lubricated with a little candle wax. Each of the attachments has a



small 'pull' routed into the edge near the pin to make it easier to pull apart from the main board after use.

Short mitre attachment

- 7 The short mitre attachment is made from an oddment of 18mm MDF and lipped all round in oak. The short leading edge at the plane runway is made slightly over-size so that it is shot in when fitted to the board for the first time. The 45° slope on the attachment should be almost true and if not can be adjusted with a jack plane so that by a process of trial and error on a test piece it will produce a 45° angle.

Long mitre attachment

- 8 This is perhaps the trickiest thing to make but easy enough if tackled in the correct sequence. Begin by selecting a piece of material for the base which should be slightly wider than the intended width by a millimetre or so – for ease of cleaning up later – and wide enough to accommodate the toggle clamp and the desired width of the mitre shoot. I opted for a width of around 130mm here, enabling a mitre of around 110mm to be shot. The two sides of the attachment are prepared next. These must be shot in precisely, using another mitre shoot, so that two identical pairs are produced with 45° corners. Then prepare the bracing pieces linking the two triangular sides; these are biscuited together. At the same time, the slots can be cut in the triangles for the top and base biscuits, remembering to keep the location pencil marks for transcribing later on.
- 9 A trial assembly must be done at each stage on a dead-flat surface – I used a piece of melamine-faced chipboard – with a pencil line as a reference point. If everything is correct, the bracing part can be glued to the triangles and left to set.
- 10 The long mitre on the underside of the top is then roughly cut on the bandsaw, leaving a little to plane off, after which the four biscuit slots can be cut and a dry fit carried out on the reference surface.

When satisfied with the fit, glue on the top, using appropriately shaped formers. After the glue has set, the rough underside of the top can be planed flush.

- 11 Provided all the pieces have gone together accurately, it should now be possible to place the attachment on the reference surface and check that the slope is a true 45°. If it is not, then carefully plane off one or two shavings from the underside just to bring it spot on.
- 12 After marking, drilling and fitting the pin to the base, as with the short mitre attachment, transfer the biscuit slot positions on the underside to the base, mark and cut the slots, then dry assemble. It is essential that the lower edge of the attachment runs squarely along the front of the base with the very minimum of overhang.
- 13 The top section can then be cut square and cleaned up, ready to receive a pair of 45° gluing formers to ensure that the attachment is glued firmly to the base – any discrepancy here will throw out the mitre. Once a dry run has been tried successfully, the assembly can be glued and left to set.
- 14 The completed long mitre attachment can now be fitted with a fence. Offer up the completed attachment to the main fence and shoot to fit it in.

Long mitre fence

The long mitre fence is essentially a smaller version of the main fence, minus the long-grain end, and assembled in the same way but with the end cut at 45°. I opted to secure the adjustment screw in a 15mm cross-grain dowel, but this is not essential.

Testing, testing

If the critical parts of the shoot have been made accurately, then there should only be a few passes with the No.9 to shoot in a long mitre that is accurate in both planes, that is, square on the corner and at 45°. If it is not square, then some adjustment of the fence will be needed to just nudge the test piece true.

A craftsman and his tools

When should you blame your tools?

Time for a well-earned break as

Alan Goodsell ponders the issue



There is a popular idiom that states 'It's a poor craftsman that blames his tools'. This appears to make the assumption that the poor craftsman uses the excuse that it is the tools causing their bad quality work and not their lack of ability, so, does the quality of tools matter? This is a trickier question to answer than first imagined, the obvious answer is, of course the quality of tools matters, that is what we have always been told, but is that in fact true? I have seen some truly remarkable work created by talented craftsmen using the most rudimentary or poor-quality tools, but I have never seen great work created by poor craftsmen using good quality tools. However, good tools will make it easier to produce good work for the talented craftsman. For example, a bad quality hand-plane will have low quality steel in the blade that will not hold a sharp edge, so no matter how skilled the operator is, the time it takes for the blade to go blunt and start producing a bad finish is fast compared to a good plane with a high-quality steel blade that will

stay sharp longer. Now bear in mind that good quality tools tend to be a lot more expensive and ... I'm not sure about you, but I don't have bottomless pockets to buy them on a whim. The question then is can inexpensive tools do what they need to? The answer to this is often 'yes, they can', and a reason they are inexpensive is mostly due to their build quality and therefore longevity. If I am not a prolific user of a particular tool, I don't need to buy one that will last forever under heavy-use conditions so the inexpensive tool will be more than adequate for my purposes. As long as I match the tool to my requirements, I will do a good job with it. My cheap router will produce pretty much the same work as my expensive one, but it will be thrown away quickly as it will wear out fast.

The upshot of all this deliberation is that craftsmen blaming their tools *does* always mean that they lack skill, and this is either their woodworking skill or their skill at choosing the tools they need to produce good work.

WORDSEARCH

Bandsaw	Carpenter	Mortise stool
Beech	Chestnut	Pillar drill
Bradawl	Grain	Stave
Bridle joint	Lathe	Timber
Cabinet	Log	Toolbox

O	H	O	N	E	C	A	R	P	E	N	T	E	R
P	M	T	D	T	G	B	A	N	D	S	A	W	T
I	O	N	L	C	S	R	I	E	T	N	D	N	U
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L	T	O	O	B	R	S	T	I	O	D	E	X	T
A	I	J	G	I	T	E	I	T	N	L	I	A	S
R	S	E	O	N	T	T	R	I	R	T	D	T	E
D	E	L	C	E	L	I	A	M	A	O	L	T	H
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H	R	T	I	E	V	A	T	S	D	T	D	R	G

SUDOKU

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

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

PHOTOGRAPH BY SHUTTERSTOCK

A collection of various woodworking tools is scattered across a rustic wooden surface. In the top left, there's a wooden handle and a red-handled tool. In the top right, a red square is visible. On the left side, a black and red tool is partially shown. In the bottom left, a hammer with a wooden handle and a black head is prominent. In the bottom right, a large circular saw blade is visible. The background is a rich, textured wood grain.

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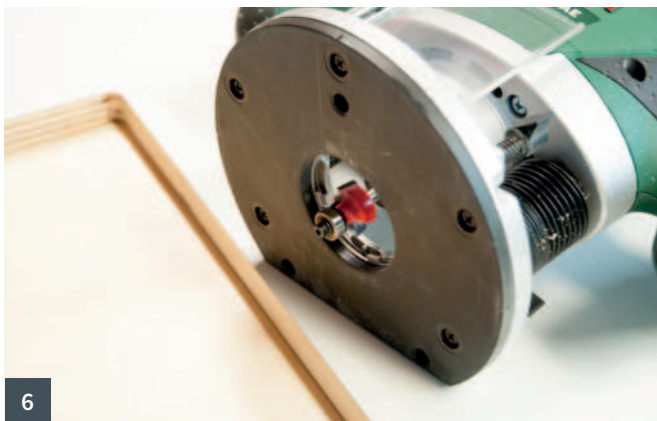
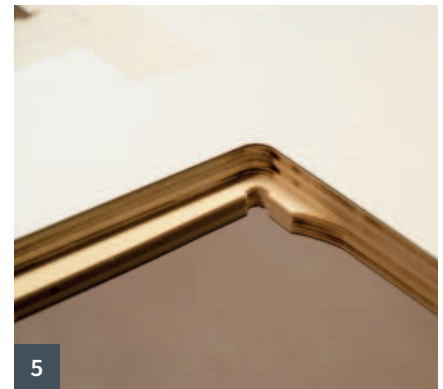
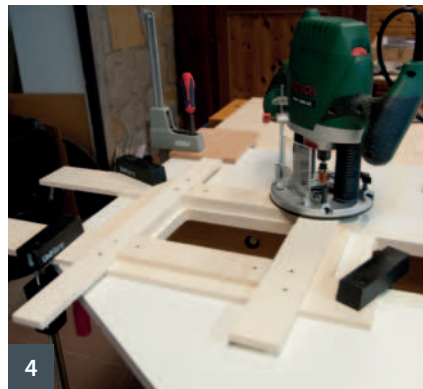
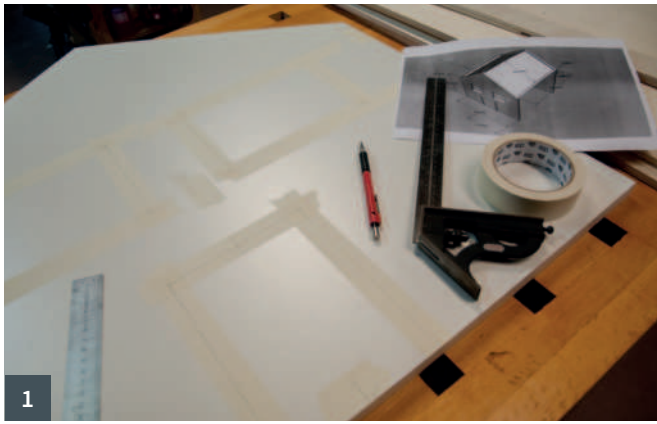
**LOOK OUT FOR THE
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CHILDREN'S PLAY HOUSE AND DESK – PART 2



Alessandro Minenza and
Francesca Ramaglia add the
finishing touches to their
multifunctional activity centre

At the end of the article in the last issue, we had constructed and assembled the basic house. Now it's time to add the doors, windows and accessories. Finally, the chalkboard finish on the roof will turn the play house into a drawing desk.



1 The door and window openings are drawn on adhesive tape with the help of an adjustable square in order to maintain their squareness with the base and sides of the panel **2** Holes are drilled at the corners of the openings. The first is to let the blade in, the others to help it turn without burning or chipping the wood **3** The saw does not have to follow the line exactly but just enough to prevent micro-chips from spreading beyond the final shape for the openings **4** To finish the internal edges of the openings, create a template with overlapping and crossed plywood strips and the excess material can be removed **5** The internal corners of the openings are rounded, making it safer for babies and easier to clean. Given the high thickness of the material, you will need to take several passes with the cutter to get the right depth **6 & 7** All edges were carefully rounded off with a half-round cutter and finished with sandpaper. This avoids chipping and the possibility of injury caused by the sharp edges left by the prior cuts

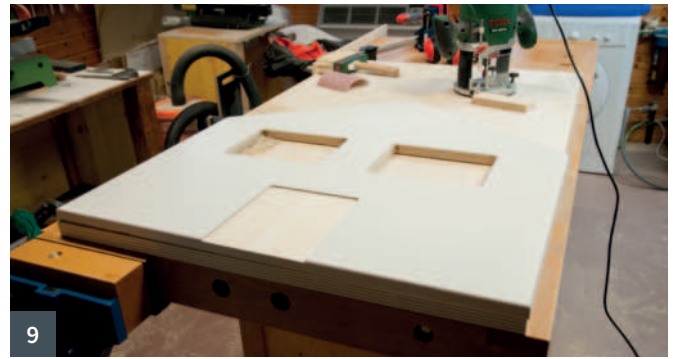
The door and windows

Having disassembled the structure, we calculated the dimensions of the door and windows directly on the walls. Once we were satisfied with the proportions and the position, we made the windows by first drilling holes in which to insert the jigsaw blade. Then, most of the material was removed and then trimmed with the router and straight cutter.

As this house will be played with by children, it is necessary to avoid any element that could constitute a danger. Laminated plywood can have sharp edges so, once the shaping was complete, we rounded all

the internal and external perimeter edges using the router.

When it was time to open the door, we realised that it could excessively weaken the wall, which was already partially compromised with the construction of the windows. We decided to make a simple recess, only a few millimetres deep. The colour difference between the lining and the interior of the panel will create the illusion of an opening. Once the cutting was finished, we sanded the exposed wood with a wooden block covered with abrasive paper.



PHOTOGRAPHS BY ALESSANDRO MINENZA AND FRANCESCA RAMAGLIA / COURTESY OF LEGNO

8 The door of the house was created by cutting a couple of millimetres of material with the router, whose movements were guided by a template made with scrap **9** For cutting, work from the inside to the outside of the shape so as to always have the right support for the base of the router **10** Ready to make the junction between the roof panels and the poplar edging strips using the biscuit joiner **11 & 12** The shape of the base on two sides of the fireplace was created by joining two boards cut at the right angle with the mitre saw **13** The strips for the remaining faces of the chimney have been trimmed with the same angle but this time on one of the heads of the pieces

Details in solid timber

We added some details in solid poplar to the plywood structure: we decided to create a chimney pot that would act as a pen holder, a balcony in which to store chalks and erasers, as well as two edging strips for the final part of the two pitches of the roof. The latter will serve as a support for paper, markers and other drawing materials.

We roughed out the material with the bandsaw and planed it to prepare the pieces to the final size. The roof edging strips, once planed, are ready and only need to be cut to length (using a mitre saw or hand saw) and joined to the respective panels using the biscuit joiner.

The chimney was designed so that it can be placed astride the ridge of the roof so it will be possible to move it to different positions, or even bring it inside the house. Its shape includes, in the lower part, angled cuts to match the panels of the roof. To make them, we again used the adjustable square (whose setting had remained unchanged since the last

work on the saw bench), with which we set up the mitre saw. To create the two V-shapes we worked on single strips and then joined them with the biscuit joiner. Using the mitre saw, we cut these strips to length. From the remainder of the same two pieces we cut the other two faces of the chimney pot and the bottom of the pen holder.

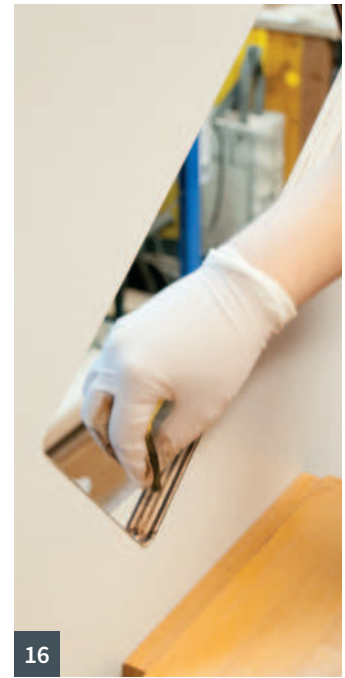
Preparing the pieces of the balcony was easier because it does not require angled cuts or particular shapes. The only trick is to work on the narrow sides. These have a recess that turns the long side into a kind of hook that slips onto the larger windowsill. Obviously the bottom is raised above the base of the box. To fix it you can use a router or, more quickly, use the biscuit joiner. Once this piece was finished we rounded all the external edges of the chimney and the balcony to prevent the small recipients of our gift from getting hurt. Given the shape of the pieces, the saw bench was used in place of the router.



14



15



16



17



18

14 Note the cutout made on one of the faces of the balcony (also present on the opposite side), which is necessary to fit it into the rear panel of the house. The rear face of the balcony is joined to the two sides by means of pins, which, in addition to guaranteeing the seal, also gives a decorative element **15** The finishing process on the chimney and balcony are quite difficult even using a small cutter. The large surface of the router table gives the work support while it's being cut **16** The colour was applied only on the internal pieces (i.e. those corresponding to the window openings), followed by sealers and water-based paint. These last two products were also applied on the perimeter edges of the bilaminated panels, on the poplar pieces and on the surface of the door of the house **17** Chalkboard-effect paints are rather dense so it is preferable to roller them rather than to apply the finish by brush **18** The chimney in place on the roof

The finish

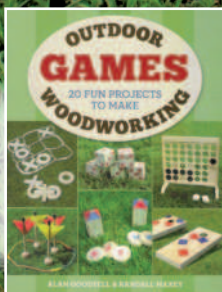
Given the choice of material we used for this project, much of the structure does not require any type of finish and it is just applied to the edges of the various panels, to the surface of the door of the house, to the half of the roof made of poplar plywood and to the elements in poplar. To liven up the project, we decided to differentiate the edges of the external panels from the internal of the window recesses so we applied a dark walnut stain only to the latter, followed by a coat of

water sealers and two of transparent varnish. The perimeter pieces, as well as the poplar elements and the surface of the door of the house, were only treated with one coat of sealer and two of water-based varnish, sanding between one coat and the other. Finally, for the half of the roof made of poplar plywood, we applied a coat of primer followed by two coats of chalkboard-effect paint. Then it was ready to deliver to our grandchildren!

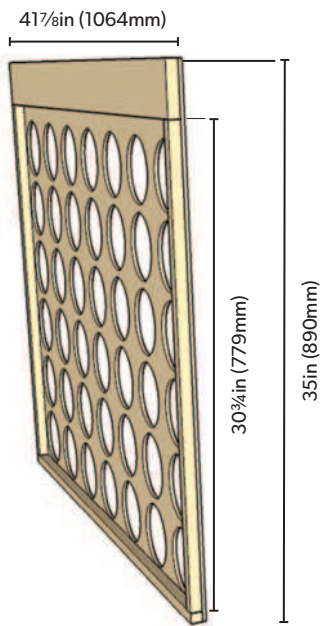
Outdoor 'join four' game

Alan Goodsell and Randall Maxey make an oversize garden version of a classic game

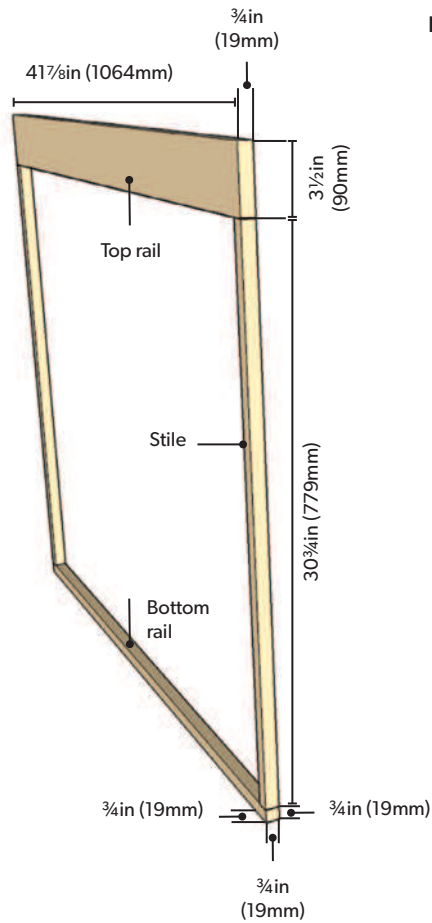
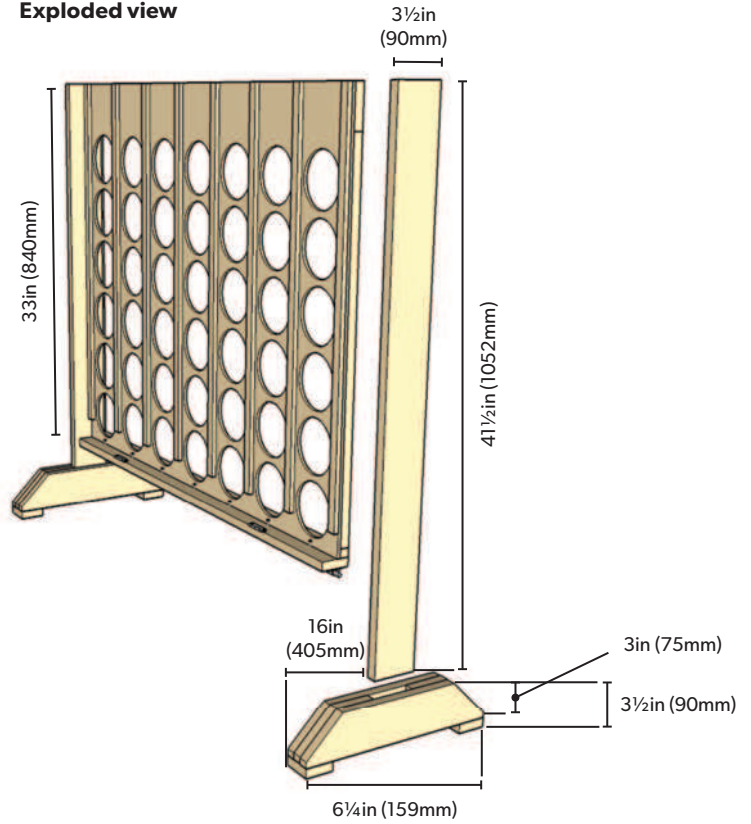
This strategy game, known by many different names, is scaled up here for parties or outdoor gatherings where people want to exercise their competitive spirit. Two individuals or two teams compete to get four discs in a row.



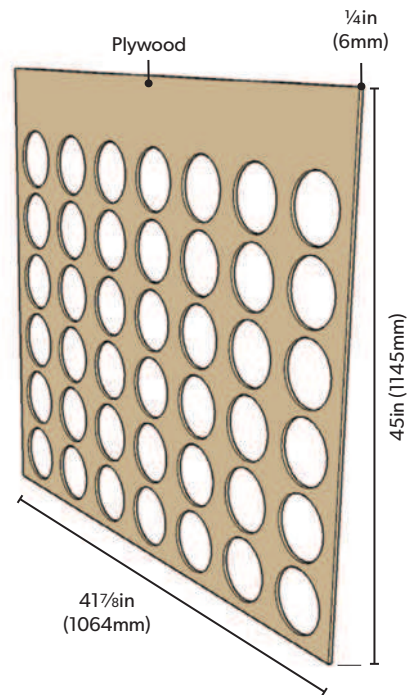
Outdoor Woodworking Games by
Alan Goodsell & Randall Maxey, GMC
Publications, RRP £14.99, available
online and from all good bookshops



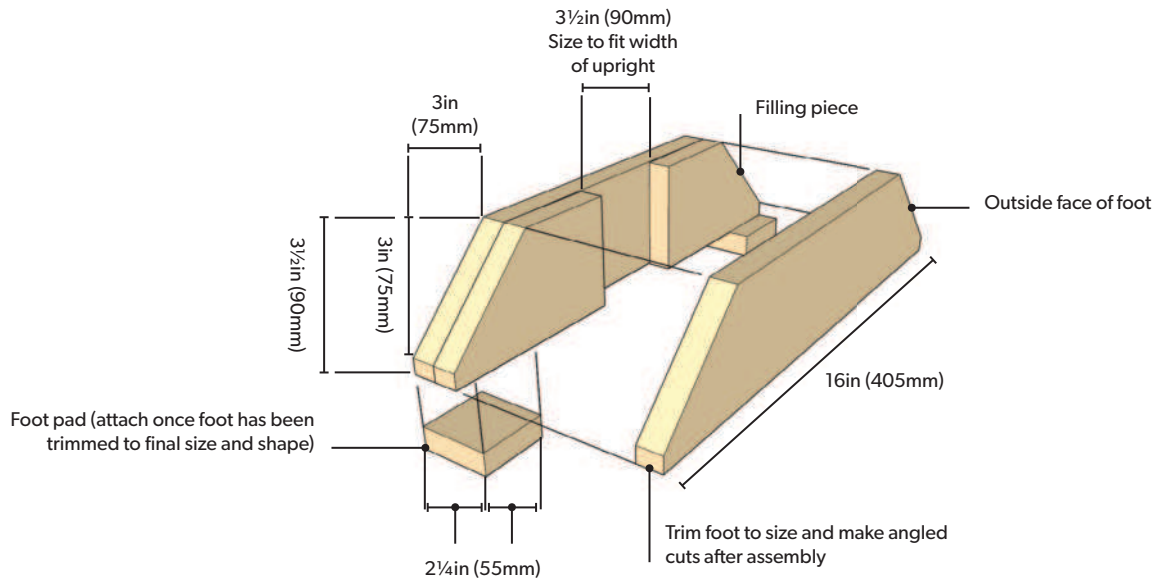
Exploded view



External frame



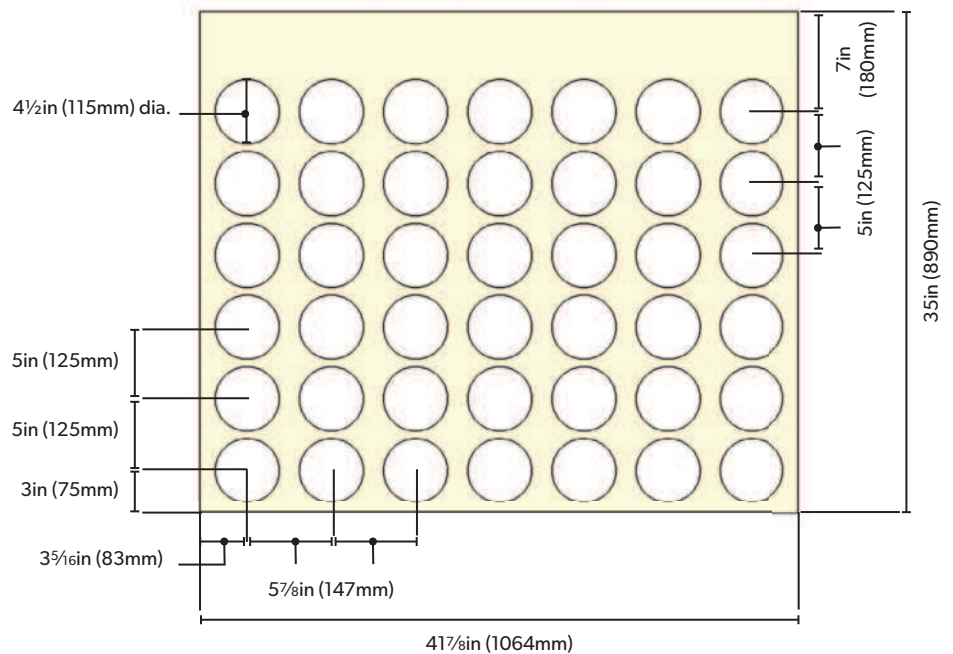
Foot assembly

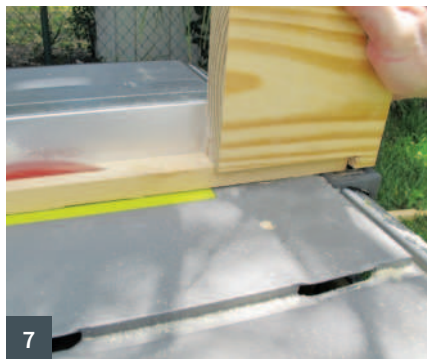


YOU WILL NEED

- Board faces: 2 @ 1,064 x 890 x 6mm plywood
- Top rails: 2 @ 1,064 x 100 x 25mm softwood
- Bottom rails: 2 @ 1,064 x 19 x 19mm
- Frame stiles: 2 @ 779 x 19 x 19mm
- Dividers: 8 @ 840 x 10 x 19mm
- Disc release: 1 @ 779 x 19 x 19mm
- Foot outside faces: 4 @ 405 x 25 x 100mm
- Foot filling pieces: 4 @ 159 x 25 x 100mm
- Foot pads: 4 @ 50 x 50 x 19mm
- Discs: 42 @ 125mm dia. X 5mm
- Circular saw with straightedge guide
- Mitre saw, or mitre box and handsaw
- Tablesaw
- Bandsaw or scrollsaw
- Portable drill with 12mm bit
- Holesaw, 115mm or smaller, or compact router with circle jig
- Square
- Straightedge
- Small brads
- Clamps
- Flathead woodscrews, 8 @ 32mm, No. 6 and 12 @ 50mm, No. 8
- Roundhead or flathead woodscrews, 7 @ 32mm, No. 6
- Wood glue
- Hinges with screws, 2 @ 50 x 25mm
- 50mm barrel bolt with screws
- Powered sander or sanding block with 80-grit sandpaper
- Dark wood stain

Layout of holes in plywood panels





1 Use a square and a long straightedge to lay out the size of the plywood panels **2** A straightedge guide for the circular saw ensures smooth, clean cuts **3** Use a holesaw to make quick work of the holes. Sand before continuing **4** Rip the frame pieces to width at the tablesaw, using a push block for safety **5** Attach the top frame to the outside face of each panel **6** Glue and clamp the remaining frame pieces in place **7** Rip the dividers to 10mm thickness from 19mm boards **8** Glue and tack the dividers in place, using temporary spacers to position them accurately **9** If you need to, adjust the width of the dividers for consistent spacing

Making the panels

Construction of the game board starts with two 6mm plywood 'skins' that have large holes drilled through them so that the colours of the discs show through when playing the game. Each plywood panel is surrounded by an external frame to stiffen the plywood. Separating the pair of panels are thin dividers that form tracks to guide the discs as they are dropped between the panels. A trapdoor at the bottom holds the discs in place during play and provides an easy way to remove them when the game is over. This entire panel assembly fastens between two upright leg assemblies.

Start by cutting the plywood panels to their final size, using a large square and straightedge to help ensure square corners. We used half-sheets of plywood from the hardware shop. Clamp the panels together with the two best-looking faces inside, aligning at least two adjacent edges so they are flush. Keep the panels clamped together while cutting

them to size and drilling the holes. As a final check before sawing, measure across the diagonals; the measurements should match. Clamp a straightedge to the plywood so that the blade on the circular saw aligns with your layout marks, and then make the cuts.

The next step is to lay out and drill the holes. Be sure to place a scrap piece of plywood under your panels to contain breakout and protect your work surface. To drill the holes, you can use a holesaw. This can be tricky to use – you need to feed it slowly into the wood while running the drill at high speed. It's a good idea to practise on some scrap stock first. It also helps to drill a 5mm pilot hole to help guide the holesaw. If you feel uncomfortable using a holesaw, you could drive a small brad or round-head nail (finish nail) into the centre of the hole and use a router and home-made circle jig to cut out the hole. Another option is simply to drill smaller holes using an ordinary drill. Sand the plywood before continuing.



10 Temporarily clamp the panel frames together and check that the discs drop freely in each slot **11** Apply glue to the dividers **12** Clamp the panels together, ensuring the edges are flush **13** Attach the disc-release trapdoor to one of the bottom rails with a pair of hinges **14** Drive No. 6 woodscrews, centred under each row of holes, to act as stops as the discs are dropped **15** Attach the barrel bolt at one end of the disc-release door **16** Mark the bolt location on the leg assembly **17** Drill a stopped hole 12mm deep in the leg assembly for the barrel bolt to engage **18** The barrel bolt aligns with the hole in the leg assembly

Assembling the panels and frames

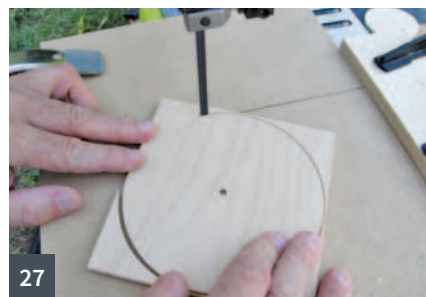
After the holes are drilled, you're ready to attach the outside frame pieces to the good face of the plywood. Be careful when handling the plywood, because it will bend easily and could break. All the rail pieces are made from 25mm stock with a finished thickness of 19mm. The top rail is made from 100mm-wide boards with a final dimension of 90mm. The side and bottom frame pieces are all a final dimension of 19mm square. Cut the top and bottom rails to length and glue them in place; it's a good idea to have plenty of clamps on hand. Cut the side frame pieces to fit between the top and bottom rails and attach them with glue.

The vertical dividers that form the slots for the discs are 10mm-thick strips ripped from 19mm stock. You can cut these at the tablesaw. You'll need eight dividers, each 840mm long. Glue the two outer dividers to the inside of one of the plywood panels, flush with the top edge and sides of the plywood. Since the dividers should ideally be centred between the rows of holes, cut several spacers from scraps that are 130mm long. Use these to position the remaining dividers, without gluing them in place. You may need to trim the width of the dividers to maintain 130mm between them. This ensures that the 130mm-diameter discs drop easily from top to bottom. Use the spacers to

ensure the proper distance between dividers while gluing the dividers to the first panel. To help position them, you can use small brads to tack the dividers in place. Use clamps to ensure a good glue bond, and wipe up any excess glue before it sets. After removing the clamps, apply a thin strip of glue to the dividers and clamp the second panel assembly in place, ensuring the edges of the two panels are flush. Once the glue is dry, sand everything smooth.

The disc-release mechanism is a simple board that acts as a trapdoor. It's attached to the bottom rail with a pair of small hinges. Small No.6 woodscrews are strategically positioned along its upper surface to keep the discs from falling too low when dropped into the slots. The trick is to position the screws so that they clear the bottom of the frame and rotate into the slot when closing the door. Once you have made the discs, you can adjust the height of each screw to stop the disc 6mm below the bottom edge of the lower hole in the panels.

A barrel bolt engages a hole in the leg to hold the door closed during play. This is centred on the width of the door and placed flush with one end. The sliding bolt engages a hole drilled in the leg assembly. To mark and drill this hole, temporarily clamp the leg and panel assemblies together, making sure their top edges are flush and the panel is centred on the leg.



19 Centre and square the leg upright on the outer face of the foot, then mark its location **20** Attach the filler pieces, using the upright as a guide for placement **21** Attach the outer face with glue and screws **22** Lay out and cut the angled corners of the feet **23** Insert the uprights into the feet, making sure they're square before fastening them with screws **24** Attach the foot pads to the leg assemblies **25** Fasten the legs to the panel assembly with screws into the top and bottom rails **26** With the disc blank on the pivot pin, slide the jig forward until it contacts the stop to align the pin with the front edge of the blade **27** Rotate the blank to cut out the disc

Making the feet

The feet are glued up from three layers of 25mm stock and incorporate an upright member to hold the panel assembly. Start by cutting the outer faces and filling pieces for the feet oversize to allow for trimming to final size later. Cut the 100 x 25mm upright to 1,054mm in length and use it to mark layout lines on the inside of one of the outer foot faces, using a square to help with alignment. Centre the upright on the length of the outer foot face. Glue and screw the filler pieces in place, using the layout lines as a guide and keeping the top and bottom edges flush. Glue and screw the opposite outer face to the fillers. Trim the glued-up blank to final length, making sure to keep the opening for the upright centred on the blank. Use the mitre saw to make the 45° cuts at the ends. Insert the upright and use a square to align it while you fasten it with screws. Cut the foot pads and attach them with glue and screws.

Now you can bring everything together. Centre the panel assemblies on the uprights, keeping them flush at the top. It may help to do this with the assembly upside down. Attach the panel assembly by driving 50mm woodscrews through the uprights into the top and bottom frames.

Making the discs

Making the 84 discs can be done quickly with the right set-up. We

found some slightly thinner plywood at the hardware shop. Since it's slightly less than 6mm thickness, it will drop more easily into the slots. To cut the discs, we used a simple circle-cutting jig for the bandsaw. It's a piece of plywood with a guide that fits into the mitre slot or against the edge of the bandsaw table. A small screw acts as a pivot as you rotate the blank through the blade to create the disc. The pivot is aligned with the front edge of the blade, and a stop clamped to the back of the bandsaw table stops the jig to maintain this alignment. To make the 125mm discs, drill a 3mm hole centred in an oversized blank, roughly 135mm square. With the circle jig pulled away from the bandsaw, place the blank over the pivot. Slide the jig and blank into the blade. When the jig contacts the stop, rotate the blank to cut out the disc. Pull the jig away and remove the blank. Sand all the discs smooth, paying special attention to the edges. Use a dark wood stain to colour half of the discs.

Playing the game

Each player or team has 21 discs all of one colour, and players take turns to slot them into the frame so that they slide down and fill one of the holes. The winner is the first player who covers four consecutive holes either vertically, horizontally or diagonally.

A workshop with a large window overlooking a lake and forest. The window is divided into a grid of panes, showing a view of a body of water, a forest, and a blue sky with clouds. The workshop floor is cluttered with various tools and materials, including a red toolbox, a yellow mug, and a wooden workbench. The text "A WORKSHOP WITH A VIEW" is overlaid on the image in white, bold, sans-serif font.

A WORKSHOP WITH A VIEW

SJÖBERGS
COP. HÄRNES



Oskar Boström left a media career to become a woodworker. Here he tells us about his craft and his picturesque workshop in northern Sweden



‘There’s a special feeling to finding old wood and making something new with it, finding a new lifecycle for old materials.’

After a successful career in the television industry, Oskar Boström turned to woodwork, converting his two-car garage into a workshop with a stunning view of the local Swedish landscape. Oskar’s work includes house repairs, furniture making and wooden boat restoration. He tells us more about his love of woodworking and boats here ...

TELL US ABOUT YOUR BACKGROUND IN WOODWORKING.

My woodworking journey started as a child with my father. His passion was for old wooden boats and I quickly found the same interest. My father was not a professional, he had woodworking as a hobby actually. He worked as a graphic designer so this was spare time work for us. I think this helped me realise that you can do what you want and not only what you can. It's all about patience...

Though woodworking was a big part of my early life I studied media and graduated as a technical producer and photographer. I worked for 20 years in television but a few years ago I suddenly realised I had to do something else. In short, the feeling for wood made me quit my job and I started a small business where I restore houses and make things for clients in my workshop. I often work alone but sometimes I work with other self-employed friends.

Social media became a big part of [setting up the business]. Since I'm a photographer it was an easy step to connect with the audience and hopefully inspire some.

'[I realised] you can do what you want and not only what you can. It's all about patience ...'

WHAT KIND OF HOUSE RESTORATION PROJECTS DO YOU WORK ON?

At the moment I'm restoring an old garage for a family. They want a small, heated garage/workshop. Besides that, I'm restoring a lot of old window frames at this time of year.

WHAT KIND OF NEW PIECES DO YOU MAKE, FURNITURE, ETC?

There's a special feeling to finding old wood and making something new with it, finding a new lifecycle for old materials. A month ago I finished a table for a client made out of old barn flooring. An amazing project!

WHAT ARE YOUR FAVOURITE PROJECTS TO WORK ON?

At the moment everything that relates to boats is a little special for me. But other than that I think there's always a special feeling to recycling wood that is in its way to the bin, or restoring old houses.

WHAT KIND OF WOOD DO YOU LIKE TO WORK WITH AND WHY?

Good quality Swedish pine, Hart pine. The smell and the colour is amazing. And, of course, mahogany.

WHAT TOOLS DO YOU LIKE TO WORK WITH?

I love hand planes! My favourite is my Lie-Nielsen block plane. Because I often work with battery tools there's a special thing to hold on to a totally manual tool sometimes.



PHOTOGRAPHS BY OSKAR BOSTROM

TELL US ABOUT YOUR SJÖBERGS WORKBENCH?

One of my dreams has been to own a real quality workbench, and one year ago it became reality. I got a Sjöberg Elite 2000 that I really love working with. The quality and accuracy is amazing and it has really turned into more of a relationship working with this bench. You have to be able to rely on your tools and gear. That includes your workbench. This bench is magically stable and the quality of the materials is uncompromising.

HOW DID YOU BECOME A BRAND AMBASSADOR FOR SJÖBERGS?

It has always been a dream to own a Sjöbergs bench. And when they found me on social media and liked my imagery, it felt like a perfect match!

YOUR WORKSHOP HAS AN AMAZING VIEW, COULD YOU TELL US ABOUT THE PART OF SWEDEN YOU LIVE IN?

I live in Umeå in northern Sweden where the winters are long and cold. The temperature drops below minus 20°C for long periods during winter and in the summer the nature really explodes. Outside my workshop window, almost a spectacle takes place between the seasons. It really is an honour to be able to stand there and look out while I do carpentry. But then I built the window myself too!

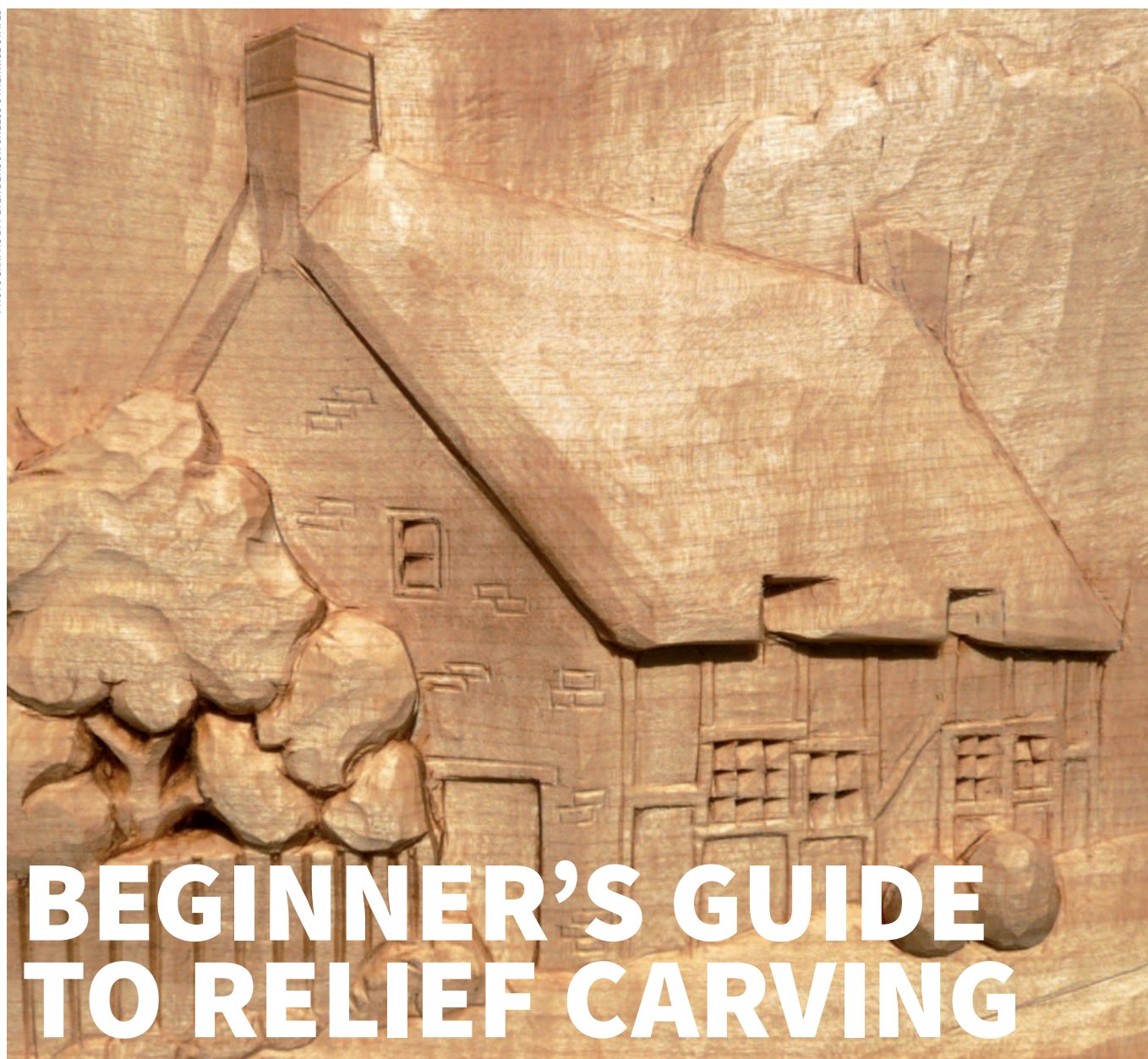
WHAT APPEALS TO YOU ABOUT WOODEN BOATS?

The history, the feeling and the woods. And then I love being on the lake. It's from my upbringing with my father too, so there is a lot of nostalgia in the interest.

My biggest project now is an old wooden boat, *Trygg*, that I found this past summer and is now standing next to my workshop in our garden. It's an old Swedish mahogany yacht built in 1924. The boat is a big project but my goal is to have her ready for sea in 2024 when she turns 100 years old.

You can see more of Oskar's work on Instagram @oskarsnickrar





BEGINNER'S GUIDE TO RELIEF CARVING

Peter Benson shares his carving know-how to help you get started

Relief carving involves many of the same basic principles and tools as carving in-the-round. Holding the timber is different however and can be done by clamping onto a simple bench top or using a large bench hook. Most carvers will find a suitable method depending on their own circumstances.

What is relief carving?

Before we get started, we need to be sure what we mean by a relief carving. Carvers seem to have varied ideas about this – some feel that anything with a flat back is correct, irrespective of how deep it is and how much of it is actually carved in-the-round. Others think that it describes anything carved out of a thin piece of wood, no matter what the shape is.

I subscribe to the third opinion, which is that a relief carving is one

that has a flat background and involves a degree of foreshortening and/or perspective. The subject is given the illusion of depth by skilful use of these techniques, which creates the appearance of being carved from a much thicker piece of timber. In my view, if there is no illusion or foreshortening in a carving, it doesn't really become a relief – it is a flat-backed carving in-the-round. The carving can be very thin, forming a shallow relief of similar style to the pattern on a coin, or it can be quite deep, meaning that the subject can be very nearly, but not completely, the correct thickness or depth. The degree of perspective or foreshortening involved will obviously be greater the thinner the original piece of wood was to start with.

I would stress that this interpretation is only my opinion and others will have their own views. I have not found any definitive description of exactly what this type of carving should be, so until I am convinced otherwise, I will go with my current thinking.



1 This street scene demonstrates what a vanishing point looks like

Preparation

Unlike carving in-the-round, where you can start carving with only a fairly rough idea of what your carving will be, with relief you really need to have decided pretty much everything you wish to include in your piece. At least you need a detailed drawing of the carving so you can transfer this to your timber.

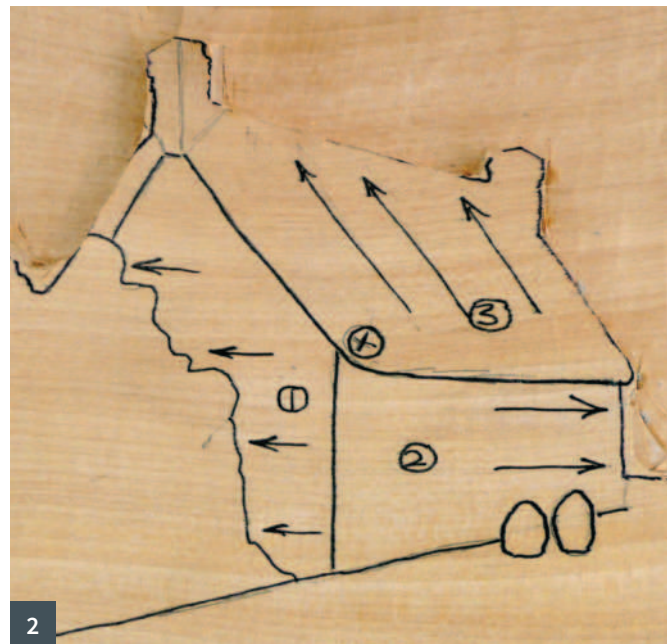
There is one technical point here that we cannot really overlook – the place of vanishing points when using perspective. Any design that includes horizontal lines, particularly like those in buildings, will involve vanishing points of some kind. A picture can generally have one, two or three points of perspective, depending from which point it is viewed, meaning that it will have more than one vanishing point. The carver should check with all horizontal lines and see where they meet. This may be at a single point or more and may be within the picture or outside it. Wherever these points are in your original picture, they should be the same in your carving or the final result will not look right. I have seen some very well-carved relief carvings where the carver has got the perspective very wrong, often with conflicting and confusing vanishing points. Once you have an understanding of how perspective can affect a picture, any deviations can scream out at you, making the picture very wrong.

Transferring designs

Once the design is decided upon it needs to be transferred to the timber; here is where most novices encounter their first problem.

They painstakingly draw their pattern onto the surface of the timber without considering that they will very quickly be cutting off all their lines. Worse still, they start the carving very carefully trying to retain the lines they have drawn, losing almost any chance of getting any depth into their work.

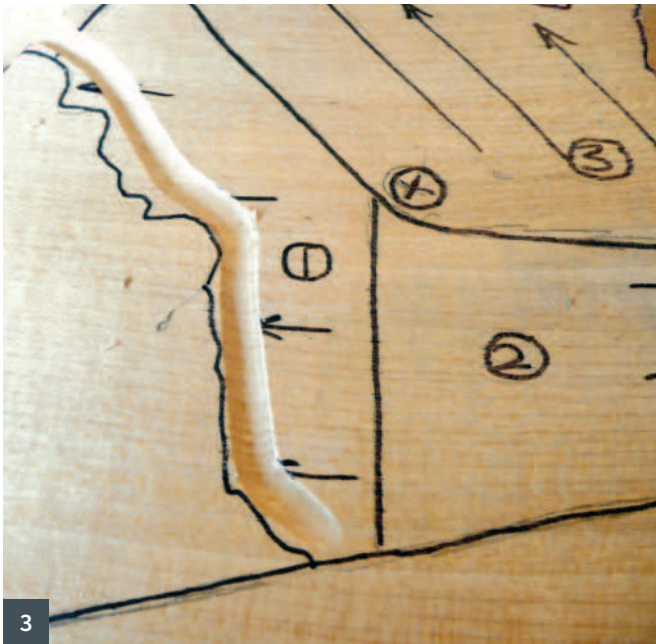
I always advocate drawing your pattern onto a clear acetate sheet with a very fine permanent marker pen and only transferring the outline of



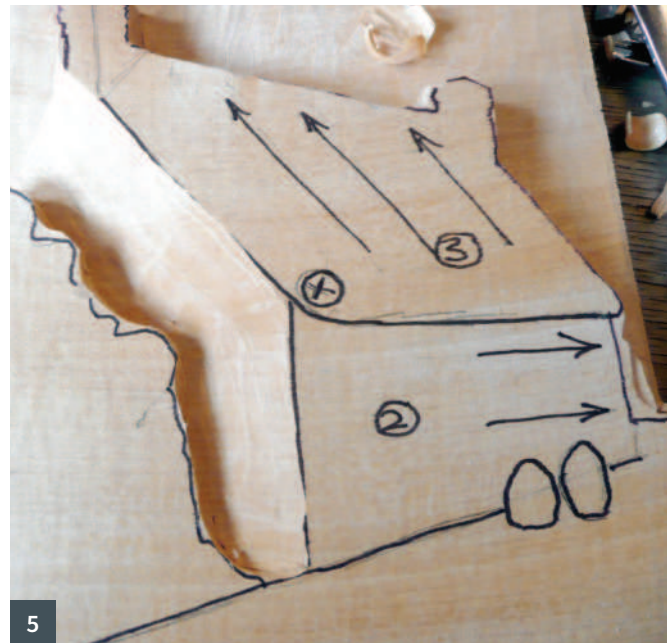
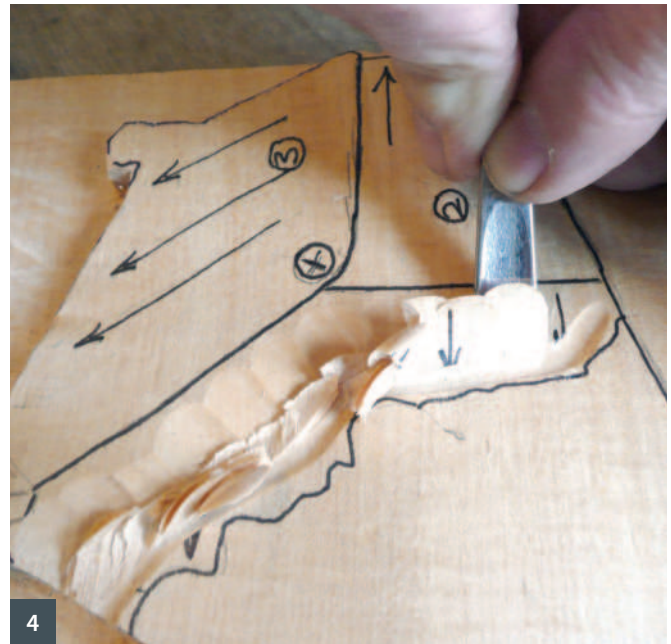
2 The background has been removed and the three different planes marked

your pattern onto the block at the beginning so you can see where you need to remove wood for the background. By putting location marks on your block and sheet where you will not be carving you can always locate the pattern in the same place to check your design.

You may have heard the expression that relief carving is done from the back. What this means is you need to remove the bulk of your waste material to establish where the deepest part of your carving will be and work forward from there. This way, you know exactly how much wood you have available and will make the best use of it, avoiding



3 The boundary of the bushes has been marked ... **4** ... and the side of the house pared down **5** The first plane has been carved



what I see so often, all the detail in the first 6mm or 12mm and no real appearance of depth.

The drawing of each section of your carving can be transferred from the acetate to the wood by laying it over the wood and drawing underneath. In order to cut round this detail I advise using a veiner rather than a chisel or V-tool as you will cause far less damage and avoid breaking away.

Once you have a channel around your outline, you can cut round with a chisel or shallow gouge to get a vertical edge from your outline to the background causing minimal damage. There is nothing worse than seeing half-moon cuts in the background of a relief from careless edging. Always be aware of the grain direction when doing this. Cutting obliquely across the line of the grain will avoid creating splits along the edges that cause important pieces to break off. You may even be able to leave a small amount of extra wood on the background as a safety measure and then clean this up in the final stages.

Adding angles

Once you know how much wood you have to play with you need to study your pattern and sort out where all the angles are and carve these as well as you can without including any detail. You will probably find it very helpful to draw this detail using your acetate to check whether you have got these angles right.

Creating perspective

At this stage you should make any adjustments to your design to get the correct perspective and foreshortening. Any experimentation should be done by drawing with your pencil not with your carving tool. You are actually drawing a relief with a pencil and giving it some depth with your carving tools and shouldn't lose sight of this.

This process is best done by standing your carving upright and stepping back from it to view the effect. You might also like to consider where it is likely to be displayed and from which direction the light source will be coming. The success of a relief carving can actually come

down to how effective the use of shadows has been and these cannot be easily seen when the carving is lying flat on the bench. Once you are happy, use a gouge or V-tool to mark the boundary of the bushes, then a wider, flatter blade to pare down the side elevation of the house. Remember to check regularly to make sure the perspective is correct.

Adding detail

Once you are happy with your basic design and angles, you can start adding the detail, keeping in mind at all times how much of an illusion you need to include in order to get the effect of depth and distance.

One problem that will inevitably arise at this stage is that if there is any ground visible in your design, it will almost certainly be rising as it disappears towards the back of the carving. Also, anything that is vertical such as trees, posts and standing people will look as if they are falling over backwards because of the angle with the ground.



6 If there is any ground visible in your design it will almost certainly be rising as it disappears towards the back of the carving **7** My philosophy is that if something breaks off I change the design as it is very difficult to hide glue lines **8** Verticals cut back at the bottom create depth in the foreground

One way to overcome this problem is to set back the bottom of all verticals between 6–13mm so they lean forward quite a way at the top. This will also have the effect of increasing the amount of foreground you have available for detail work.

Dealing with common problems

As I have already mentioned you will need to give yourself escape routes and protect vulnerable areas, but no matter how careful you are, things can still go wrong. These little disasters can often end up with an improvement in the end product as long as you don't start sticking pieces back on. My philosophy is that if something breaks off I change the design if I possibly can, as it is very difficult to hide glue lines. Remember a simple point: the solution to nearly every carving problem is to simply take off more wood. All you need to do is work out whereabouts you need to remove it!

If legs or ears break off animals, you have little option but to glue or reject, but with humans broken arms, legs, feet, hands or heads can usually be transplanted, hiding the join in clothing. One consideration that will minimise the likelihood of disaster is to carve the most difficult parts first so, should anything go wrong, you haven't wasted a great deal of time on your piece.

Bear in mind that every carver that there has ever been has made mistakes at some time or other – this is not a reflection on your ability, so don't cry in your beer. Take care when you work and if something goes wrong, have a good swear and put it right. The chances are you will be the only one who will ever know anyway!

Finishing

One final point about this type of carving is that, in order to maintain the crispness of the cuts and create clean shadows I don't advise the use of any kind of abrasive to get a good finish. If your tools are sharp and your technique careful, the finished piece should not need any sanding. I also advise the use of a finishing oil of some kind as opposed to sanding sealer or varnish as this doesn't need any rubbing down and can be waxed when dry. You can, of course, finish with a colour wash if you prefer; I find acrylics best for this approach.

BEDSIDE CABINET RESTORATION

Kevin Jan Bonner rescues
and restores an antique
mahogany cabinet

In general, the first stage of furniture restoration is to spend some time collecting information and posing questions about your chosen project. From this information you should then form an action plan.

However, often it is not until you have spent some time stripping the project that you become fully aware of what is in front of you. That is what happened with this cabinet. It is a common experience and illustrates a very important principle of furniture restoration.

Bedside cabinets

One-third of our lives is spent in bed. This must make the bed and associated furniture the most used that we possess. Some beds require side tables while others require shelves and such like built into the headboard. Whatever your preference the fact remains, we all sleep a little easier knowing that our treasured piece of night-time paraphernalia is close at hand. Whether it be a glass of water, an alarm clock or a bedside lamp, you've got to have somewhere to leave your bits when you're in the land of nod.

This particular bedside cabinet is a wonderful example of the way in which much furniture echoes architecture in its design. Plinths, friezes, columns, mouldings and pediments are all features that appear in classical architecture and have been echoed in furniture designs for centuries.

This small cabinet was donated to me by a neighbour as it was unwanted and about to be thrown out. It is rare that you find such high-quality mahogany and craftsmanship begging for a home, but people throw things out for all sorts of reasons.





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PHOTOGRAPHS BY KEVIN JAN BONNER/GMC PUBLICATIONS

1 The bedside cabinet before restoration 2 The speckled effect caused by rubbing in plaster to fill the grain 3 The long-neglected underside of the cabinet

Assessing the cabinet

The cabinet is well made from a richly coloured, solid mahogany, and was probably made around 1900. It is finished with a standard French polish. The door hinges are a little loose but there are no signs of structural damage. The joints are firm.

The top has a large, circular black ring and the cabinet is very greasy and grubby, but both of these problems should be solved when the piece is stripped.

There is a blemish in the wood that is a common feature of furniture from this age; a white speckled effect in the grain. This is due to the process employed at that time, of rubbing plaster into the rough grain of a wood to create a marble-smooth surface for French polishing. Once the plaster was located in the grain, one of two further processes were employed to make it invisible. The wood was either stained, in which case the white plaster grain filler was coloured along with the wood, or wiped over with linseed oil, which made the plaster invisible and imparted a rich, dark tone to the mahogany.

The reason that the plaster has now become visible is that over the last 100 years or so, either the stain has faded or the linseed oil has dried out. So, the remedy to this problem is to apply a new stain or to wipe over with linseed oil. Both remedies require the finish to be removed.

I decided to keep this as a bedside cabinet and restore it as a gift for my brother. Because he keeps all of his loose change, cups of tea, boiled

sweets and keys on his present bedside table, the finish needs to be robust enough to cope with these excesses. The colour of the mahogany is perfect so it does not need a stain. I think a clear polyurethane satin finish would be most apt.

Stripping

The first stage of the restoration was to strip the cabinet. On the flat surfaces, I used a 76mm-wide wallpaper stripper. I began with the sides first then moved to the front, the top and lastly the insides of the cabinet, resorting to a wire brush only on the mouldings and in the tighter corners where a wire brush can clean up most efficiently. I also used the wire brush to clean the brass door pull before I removed it.

One of the bonuses of stripping furniture is that the stripping operation also cleans it. All of those mucky corners that nobody has shone a torch in for many a year get the equivalent of an exfoliating scrub. In keeping with this cleansing operation, I always inspect the underneath and backs of furniture and make sure that all the dirt, dust and spiders, dead and living, are removed. If these areas look particularly unpleasant – as they did in this case – I give them a thin coat of Danish oil to satisfy myself that all has been attended.

After this operation, I felt confident in bringing the cabinet into the house without fear of transporting woodworm or some unfamiliar or unclassified species into our living quarters.



4 The cabinet plinth, with its badly damaged and peeling veneer **5** Stripping revealed the variation in natural colour **6** Stripping did not remove the black ring on the cabinet top

Discovering unexpected faults and changing plans

A close inspection also has other benefits; it forces you to examine every nook, cranny and splinter. Often, it is not until you have stripped a piece that you realise just how many faults and blemishes there are ...

In this case, it started with the plinth. While stripping, I realised that the plinth was not solid timber like the rest of the furniture, but pine with a mahogany veneer. This is a most annoying oversight on the part of the designer. Because the plinth rests on the floor, it is the part of the furniture that is most likely to be subject to dampness and to abuse such as being kicked or being dragged across the floor. On this cabinet, one side of the plinth had veneer that was peeling away and in need of repair.

Then, when I was stripping the old finish from the side of the cabinet, all of the colour was removed with the finish, revealing that some of the beautiful mahogany colour was not as nature intended, but as the Victorian French polisher who finished the cabinet had intended.

The wood here was a lighter and most inferior colour, so the French polisher had engaged in a little deception (or should that read 'craftsmanship?') to match the inferior timber with the rest of the cabinet. This means that I will have to copy the Victorian's deception skill, and match the inferior, lighter areas with the prime mahogany.

The black ring on the cabinet top, which I had hoped would be removed with the finish, was still very much apparent with all the finish gone; in short, the stripping process had revealed much more than my original investigations had shown.

Perhaps most importantly, my closeness to the furniture over the day made me look at it differently, and as they say, the more you look the more you see. The classical facade began to annoy me although it was what initially gave presence to the piece. It is almost like a model of a classical building. The more I looked at it the more it disturbed me, yet I couldn't put my finger on what was wrong.

Finally, I realised what was niggling me. It was the overwhelming monumental, architectural look applied to an inconsequential piece of furniture. It was almost a pastiche, an outrageously pompous design for such a humble piece. Consequently, I cannot help viewing it with a little humour – and just a little distaste.

While staring at the cabinet over a cup of Earl Grey in the late evening and mulling over these thoughts, it dawned on me that I would like to respond to the cabinet's inherent deception and particularly to that air of architectural pomposity posing in a wimpy bedside cabinet.

I formed the idea that, although the outside should be returned to a standard mahogany finish to reflect the original intentions of the cabinetmaker, I would paint the inside of the cupboard with something outlandish like a bright pink or a yellow. Alright, maybe it's not



7 The black ring was removed by scraping carefully with the tip of a chisel **8** PVA glue was applied to both the pine ground and the mahogany veneer
9 A clean cloth was used to apply an even stain to the whole cabinet

everyone's cup of tea, but it put a spring in my step at the end of a hard day's work. Besides, it will make the cabinet a little quirky, which is always pleasing to me and should also tickle my brother.

Removing the black ring

The remedy for this was simple and the black ring was easily dealt with. The faint marks were very easily removed by scraping the black tentatively with the tip of a 6mm chisel.

Tightening the hinges

The hinges on the cabinet were very loose, and closer inspection revealed why; somebody had removed some of the screws. I removed another and took it to the local DIY store to get more of the same size. I then filled the holes with a little PVA glue, replaced the missing screws and tightened the existing ones.

Repairing the veneer

There were no pieces of veneer missing from the plinth, so it was just a matter of gluing the old veneer back into place. Before gluing, I ensured that the surfaces to be joined were clean and free of grit or any other obstruction that would interfere with the smoothness of the veneer. I did this by slipping a folded piece of fine grade sandpaper between the wood and the veneer and pulling the sandpaper back and forth, being

careful to blow out all the dust that was formed in the process.

Following this preparation, I coated each surface with a thin and even coating of PVA glue. Allowing this to dry for about 10 minutes, I then used an ordinary domestic iron, set on a medium heat, to iron the veneer into place. Always place a sheet of paper between the iron and the veneer to prevent the iron sticking to the wood if there is any glue on its surface. It also allows the iron to glide over the surface easily and stops the wood from being burnt.

PVA glue is 'melted' by heat, so the iron melts the glue, forces the veneer flat and pushes the pine plinth and the mahogany veneer together. The moisture in the glue saves the wood from drying out and shrinking or becoming too brittle. The bond is instantaneous, so no clamping is required.

Staining and obscuring 'deviant' wood

I used a shop bought, red/brown oil stain that experience tells me works well on mahogany. My first step was to give the entire piece an even stain, applying the oil with a sweeping motion. This stains both the wood and the plaster grain filler.

I then applied a coat of satin polyurethane varnish to the cabinet. To prepare the finish I stirred the tin well, decanted the varnish into a container and added 20% white spirit. I applied the varnish with a 50mm brush, brushing quickly so as not to disturb the stain on the surface of the wood.



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10 The satin varnish was brushed quickly over the stained surface **11** The white undercoat on the interior **12** The yellow paint added the finishing touch

Do not spend hours lovingly stroking and restroking varnish over a stained surface in an attempt to get an even coating. This will just remove all of the stain, mix it into the varnish and make the whole surface blotchy and patchy. Remove any drips or runs after two minutes, with a dry brush.

Once the varnish was touch dry (this usually takes about 60 minutes on a warm day), I gently wiped over the inferior, light-coloured areas with a cotton cloth dipped in some oil stain. Because I wiped over the varnish before it had completely hardened, the stain coloured the varnish, as desired, evening out the colour differences. I used a swiping motion to apply the stain and allowed it to dry overnight.

Applying the varnish

My next step was to decant a little varnish into a container and thin it with oil stain. This creates a mahogany-coloured varnish. I applied this coloured varnish only over the light areas, using a different brush and a clear, uncoloured varnish to work over the dark areas. I repeated the process, allowing each coat to dry, until the light-coloured timber matched the good quality timber. On reaching the desired effect, I gave the whole project one final coat of clear satin varnish to seal it all in.

That was the theory anyway. In reality, I had to remove the whole patchy mess first time around and start again. This is because I made

the mistake of being too impatient and applying the stain too soon. The varnish hadn't dried enough and the stain went on very blotchily. I learnt from this and the second time, the finish improved considerably.

Even after my years of experience in restoring furniture and applying finishes things still go wrong. The only answer is to slap your wrist, strip it all off and start all over again. Each time you re-do a finish you will learn something new. Do not settle for second best – this road leads to degradation and self-abuse each time you look at your unsatisfactory work.

Painting the interior

I gave the inside of the cupboard two coats of white undercoat, rubbing down between applications. At one stage I was quite taken with the combination of white and mahogany and was going to leave it at that. However, I soon realised that I admired the colour combination because it emanated a cool, classic feeling and that was the opposite of what I wanted.

I eventually opted for a bright yellow colour. I mixed just a few drops of bright yellow gloss paint into a white satin decorators' paint and stirred vigorously. I applied three coats of this, rubbing down between coats. The resulting effect served my intentions perfectly and my brother was over the moon with the cabinet when I presented it to him.

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ROOTED IN NATURE

Sophie Carthy looks into the benefits of a volunteering holiday

The rooster's sunrise song is a programmed internal alarm, stirred by the anticipation of dawn. Like most animals – including humans – these early birds have circadian rhythms, or daily cycles of activity, roughly following the ebb and flow of day and night. The rooster, however, likes to get a head start on his daily chores, which is why his crow is often heard while the rest of the world sleeps.

Stepping into this organic rhythm, Joshua Miller left the bright lights of New York City in 2013 for the farmlands of southwestern Australia, embarking on a volunteering holiday, where he worked on farms, vineyards and homesteads. Originally planning to set out for six months, his journey evolved into an 18-month world tour of significant self-discovery.





PHOTOGRAPHS BY SHUTTERSTOCK



Swapping skills for shelter

An organisation called Worldwide Opportunities on Organic Farms (WWOOF) connected him with his 'hosts', for whom he worked in a variety of locations, including a construction project in southern France to complete an off-grid eco house, and an Australian B&B, where he helped in the garden. His fondest memory is of an elderly, widowed woman who hosted him on her vineyard in northern Portugal. Trying to make ends meet, she needed help with her jam-making company and sausage business, both of which she supplied to the local community. 'I will always remember shovelling gallons of mud out of a water tank to irrigate the vines,' he says, 'and enjoying some of the freshest wine on the planet.'

WWOOF is a global movement founded in the early 1970s to connect people in a non-monetary skill exchange. Volunteers (or WWOOFers as they've become known) live alongside their hosts, helping with daily tasks and experiencing life in a more rural setting. In return, food and lodging is provided, as well as exposure to the intricate workings of farming life.

Ranches, homesteads, orchards, vineyards and cooperatives make up the types of accommodation on offer and hosts welcome volunteers of any age and background (however, under-18s must be accompanied by an adult). Each participating country has its own WWOOF group, in the form of an online portal. An annual fee provides a one-year membership to the website, where volunteers and hosts can upload their profiles and connect with one another. All hosts are vetted and verified to ensure that accommodations are comfortable and safe.

WWOOF is just one of the many organisations that invites travellers to connect to their roots – for instance, helpStay is a skill-swap programme where volunteers can tailor their experiences around skills they already have, such as teaching, working with animals, building, hospitality and community work. Similar to WWOOF, helpStay offers the non-monetary exchange of skills for free board and lodging with a variety of hosts.

For those interested in rewilding, the Trees for Life charity in the Scottish Highlands offers residential volunteering opportunities during its Conservation Weeks. Ten places are open for volunteers to live and work in the surrounds of Inverness for seven days at a time. Trees for Life has planted over one million trees and created 10,000 acres of new Caledonian Forest, with almost all its conservation work carried out by volunteers ranging in age from 20 to 70.

The charity's hope is that volunteers come away feeling like they've discovered more about themselves in four substantial ways:

- 1 By doing something positive and empowering people to help the planet, a working holiday is given distinctive purpose.
- 2 Spending a week working amid forests, rivers and mountains encourages a connection with the wilderness.
- 3 Living, eating and working with like-minded people is inspiring as well as humbling, as people share space, sleeping quarters and work tasks.
- 4 Education about forest restoration is taught through practical work and direct observation, providing real-world experience.

If travel is off the table...

Volunteering online or e-volunteering is another way to connect to a new community and learn different skills without having to travel. The United Nations Volunteers (UNV) programme works with global organisations, teaming them up with individuals to address sustainable challenges. They have myriad options for all skill levels, ages and abilities, regardless of location.

London-based undergraduate student Hind Dihan was connected with Cameroon-based civil society Association for Community Awareness (ASCOA) by the UNV programme. Writing and editing for the society's website and newsletter, Hind describes how the experience has had a positive impact on her life: 'It's been a chance for me to use my voice and make a difference in the world. [ASCOA's] initiatives to help fight climate change [come] at a time when the world really needs it. Their goals and passions are so similar to my own, and it's been such a rewarding experience.'

More than just a way to gain practical knowledge, volunteers of all ages speak about the shifts that occur through this greater connection with the world, predominantly a deeper appreciation of, and dedication to, service, community and simple living.

For Joshua, his working holiday served as a pivotal point in his life, rooting him to the person he truly wanted to be. He never moved back to New York City, instead now living on the US's west coast, and is an advocate of eco-friendly living. His exposure to a slower pace of life helped him to realise his needs: 'It turns out that I require much more space for creativity and self-expression, and my life in a dense city like New York was just not going to provide that amount of space. I also learned a deep respect for indigenous cultures and ancient civilisations that know how to live in harmony with the Earth.'

An ode to simplicity, the insights offered by nature are ones of great 'unlearning'. Stripping back to what is truly necessary, plants and animals follow their own rhythm – one that is free of complications. Rising with the sun, they seek little more than what will nourish them to last through the day. They look no further than dusk. The cow does not long to be a sheep, nor do the vines strive to burrow underground. Each element sits comfortably in and of itself, rooted to its identity, knowing its purpose. Even the rooster (despite periodic opposition to his untimely song) remains true to his quest – a purpose as unique as the comb on his head.

GET INVOLVED

WWOOF

wwooof.net

HELPSTAY

helpstay.com

TREES FOR LIFE

treesforlife.org.uk

UNITED NATIONS VOLUNTEER PROGRAMME

onlinevolunteering.org

Check the organisations' websites for the latest information on restrictions.

Also, please visit gov.uk for the most up-to-date travel advice and any quarantine requirements that may be in place.





Runic-style inscriptions



A MAN OF LETTERS

His commissions range from Oxford colleges and royal tombs to award-winning gardens and dragon-inspired dinghies. Marc Fovargue-Davies looks at the work of acclaimed designer, sculptor and IBTC tutor Gary Breeze

Gary Breeze has been one of Britain's best-known designers, sculptors and letter cutters for almost three decades; his commissions so far include the Bali Bombing Memorial, the tomb of King Richard III, Princess Diana's memorial at Althorp and the cloister garth at Christ Church College, Oxford. He is also a consultant at the Royal Mint, where his designs include both the Battle of Britain 50p piece, and the coin celebrating HM the Queen's 95th birthday. It comes as no surprise then, that his two garden designs for the Chelsea Flower Show both won gold medals.

The second of those gardens was the Broadland Boatbuilder's Garden, for the International Boatbuilding Training College (IBTC), Lowestoft, and included a three-quarter scale replica of the 11th-century boat found in Norfolk's River Chet in 2013: so what drew Gary to the College and why, six years later, is he still there?

Rescuing craft skills

Letter cutting is an ancient craft, widely used by the ancient Egyptians, Greeks and Romans, but like many others, it was mechanised during the Industrial Revolution. The new processes could certainly create good quality lettering quickly, but did very little for graphic design, with bland, uninspiring results. Boatbuilding underwent a similar process, with increasing mass production resulting in the loss of skills that could help make something rather more human.

The art of hand cutting letters was revived in the 1920s and 30s by the sculptor, font designer and printmaker Eric Gill, who was also part of the Arts & Crafts movement – a reaction against the Industrial Revolution. Gill's apprentices included David Kindersley, who in turn taught David Holgate, a sculptor whose work can still be admired in Norwich Cathedral. It was with David that Gary served his own apprenticeship.

The revival of boatbuilding as a craft in Britain took a little longer;

while many were quick to adopt fibreglass as the building material of choice, others remained unconvinced. Like letter cutting, the main problem was being able to resurrect, maintain and pass on the many skills involved, so the IBTC was set up in Lowestoft in 1975.

Stone, wood – and coins

The influence of traditional boatbuilding started even before Gary arrived at Lowestoft; a year at the University of Southampton's Department of Archaeology as artist in residence involved time at the Roskilde Viking Ship Museum in Denmark, which resulted in a large body of work – including some rune cutting, as can be seen in the photo opposite. This suggested that wood might well have something to offer him in terms of both design and construction.

The opportunity to explore that idea in depth came in 2015. Feeling the need for a break from his other work, he took 'a course that no-one else has done; one of the great things about IBTC is that they'll create a bespoke course for you. I did a 12-week joinery course, then a course in small boat building. Somehow, I never quite got round to leaving...', Gary explains. The courses resulted in the *Hopeful Puffin*, a dinghy built for his daughter Rosalind – a big fan of Cressida Cowell's *How to Train Your Dragon* books. In one of these, the *Hopeful Puffin* was built by two of the characters, Hiccup and Fishlegs, during shipbuilding lessons. Since that probably didn't happen at Lowestoft, they didn't have Gary to cut the name into her transom – or to carve the dragon crouching on her tiller, either!

Gary admits that these days, he prefers working with wood rather than stone; it's lighter, has a useful grain and breaks less easily. That said, although they're different processes, requiring different tools, stone carving has significantly influenced his wood carving. Stone carving typically involves just one or two chisels, while many wood carvers use quite a few; however, Gary's wood technique is derived from his stone

carving – defining his smaller than usual tool kit.

Not everything needs chisels; the cloister garth at Christ Church College, Oxford, involved significant landscape architecture and planting to fit the project into context, while at the other end of the size scale, coins present unique difficulties of their own. They have to carry the unique design, but the lettering in particular, must be legible. For that reason, the more usual V cut is relatively rare, and the lettering is often square cut instead, as well as typically bolder than in larger applications. The rest of the design can be quite delicate, as with the floral elements of the coin celebrating HM the Queen's 95th birthday, or quite dramatic, as in the Battle of Britain 50p piece.

Letter cutting at Lowestoft

The letter-cutting course taught by Gary at the International Boatbuilding Training College is a weekend course, so it won't make you an expert overnight; but it will get you thinking in the right way. As a designer, Gary reckons that it's actually not all about chisels, with the pencil being at least as important; a beautiful bit of carving won't hide poor design, but a beautiful design that has been quite crudely executed, can still be wonderful.

Teaching also raises the question of mistakes. David Holgate was famous for pointing out that 'everyone makes mistakes; a craftsman is someone who can hide them.' Gary's view is, characteristically, more nuanced: 'Mistakes are small, since you're only removing small amounts of material. In some ways, hand-produced work can be seen as a whole series of tiny mistakes and so no two letters are ever quite the same. In spite – or maybe because of that, the result is often more appealing than the 'perfection' of machine cut letters.

The course focuses on the V cut, which is the norm since it solves so many problems. It's at least as legible as a square cut, which takes around three times longer, and can result in more vulnerable edges. On huge letters, you might still start with a V cut on each side, then flatten the central area. Tracing, working with grain direction and the importance of attention to detail are also covered, putting equal emphasis on training both eye and hand.

Not all woods are equal though; favourites include teak and iroko, with oak being harder and more difficult – although all three are regularly used for boatbuilding. Fruitwoods and American walnut are Gary's top picks for carving.

A change of tack at Lowestoft?

IBTC offers many other short courses, including Timber Technology, Ropework and Splicing, Caulking, Lofting Theory, Painting and Varnishing and even a three-day Router course. There are longer courses too, like those that resulted in the Hopeful Puffin. All are led by people who are not only highly skilled at what they do, but are also engaging communicators.

The skills you acquire are transferable – if you can build a boat out of wood, you can build pretty much anything out of wood; graduates of the college have gone on to make timber-framed buildings commercially, while some of the team are currently building a new cap and fantail for a tower mill. Perhaps the best thing about learning a new skill, is that it's not an end in itself, so much as a change of course. As Gary's exploration of wood has demonstrated, not everything is set in stone.

garybreeze.co.uk

For more information about the IBTC, visit: www.ibtc.co.uk



PHOTOGRAPH BY GARY BREEZE

Christ Church cloister fountain and olive tree, Oxford



PHOTOGRAPH BY LYN TUPPER

The Hopeful Puffin dinghy



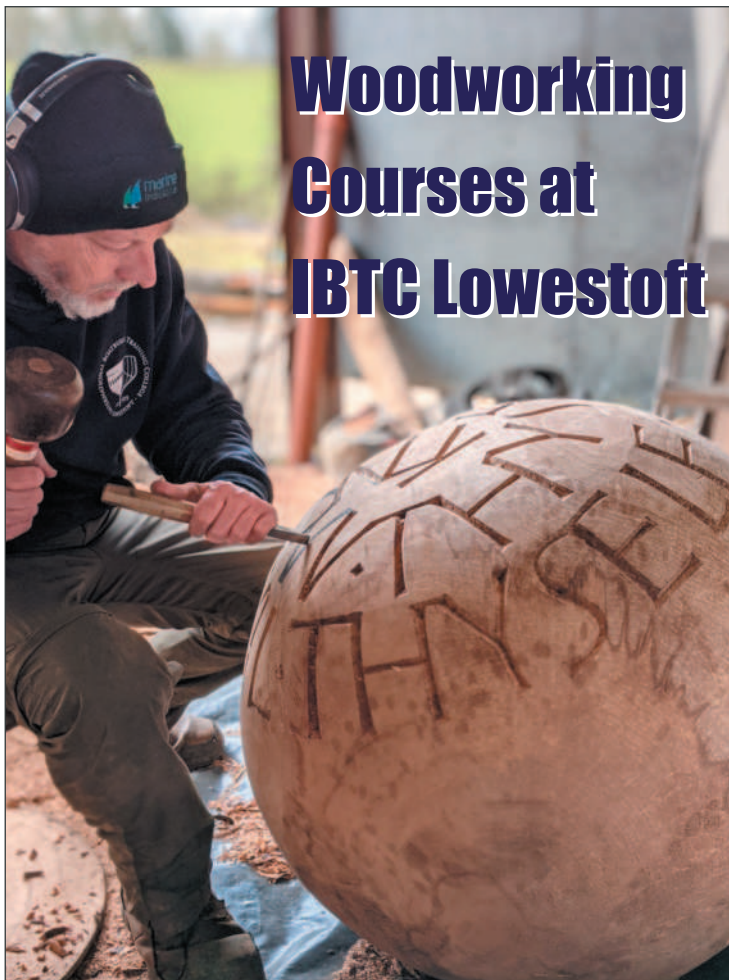
PHOTOGRAPH BY GARY BREEZE

Carving for the tomb of Richard III in Leicester Cathedral



PHOTOGRAPH COURTESY OF THE ROYAL MINT

Commemorative coin for the Queen's 95th birthday



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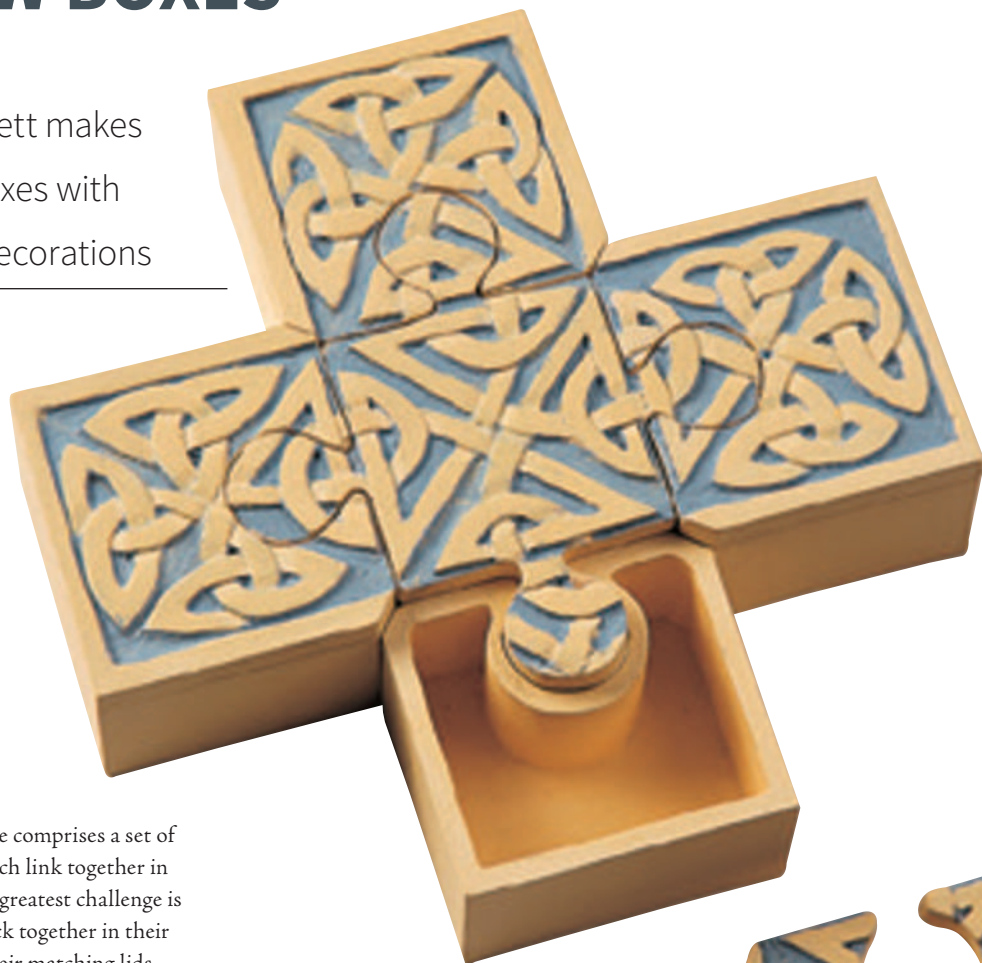
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KNOTWORK JIGSAW BOXES

Glenda Bennett makes
five linked boxes with
Celtic-style decorations



This challenging piece comprises a set of five lidded boxes, which link together in a jigsaw fashion. The greatest challenge is to fit all the boxes back together in their correct place, with their matching lids, when the project is finished.

Once all the boxes are set up together, the knotwork decoration on the lids forms one continuous thread weaving from box to box, so reinforcing the link. The continuity is intentional, a symbol of eternity.

The equal-armed cross with interlace is a common element of Celtic decoration, and occurs on several pages of *The Book of Kells*, most prominently flanking the figure of Christ and St John. Several elaborate book covers and book shrines also feature this design in embossed metalwork and the notable cross slab-stone of Ulbster in Caithness, Scotland, also bears the same pattern.

I chose to make this project in MDF, partly because it is readily available in the thickness needed, partly because it is extremely easy to work and also because I wanted to use a paint finish. As always when using man-made materials, particularly MDF, dust masks must be worn at all times, due to the resins that are used in the manufacturing process.

YOU WILL NEED

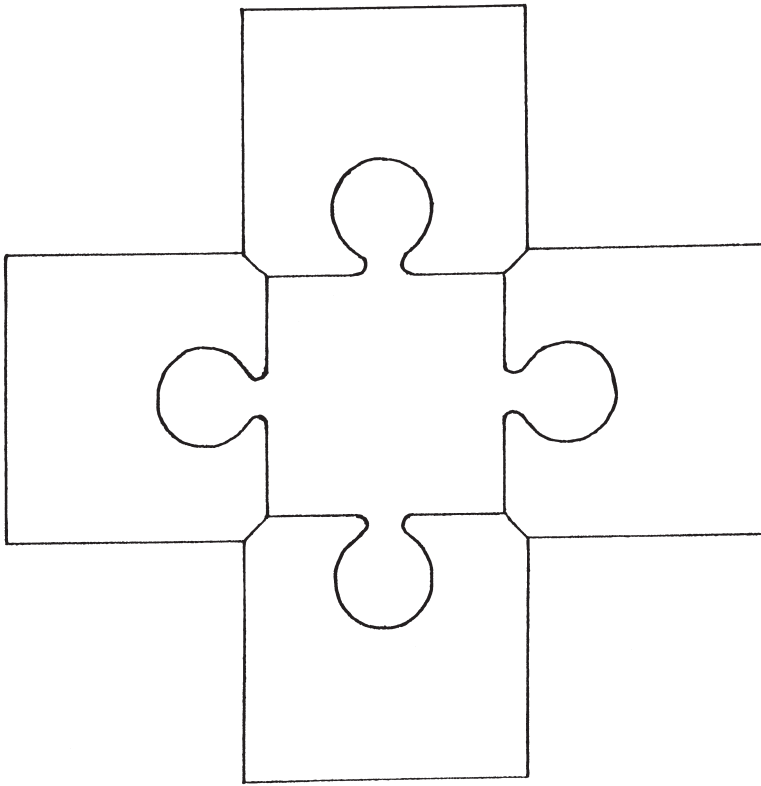
Materials:

- Photocopies of the templates
- 190mm square pieces of MDF, 1 each of 4mm, 6mm and 30mm
- Spare 4mm thickness MDF
- Double-sided sticky tape
- Repositionable spray adhesive
- Carbon paper
- Impact adhesive
- MDF primer
- Emulsion paint
- Paintbrush (12mm)
- Candle and 0000 sandpaper (optional)
- Clear wax polish

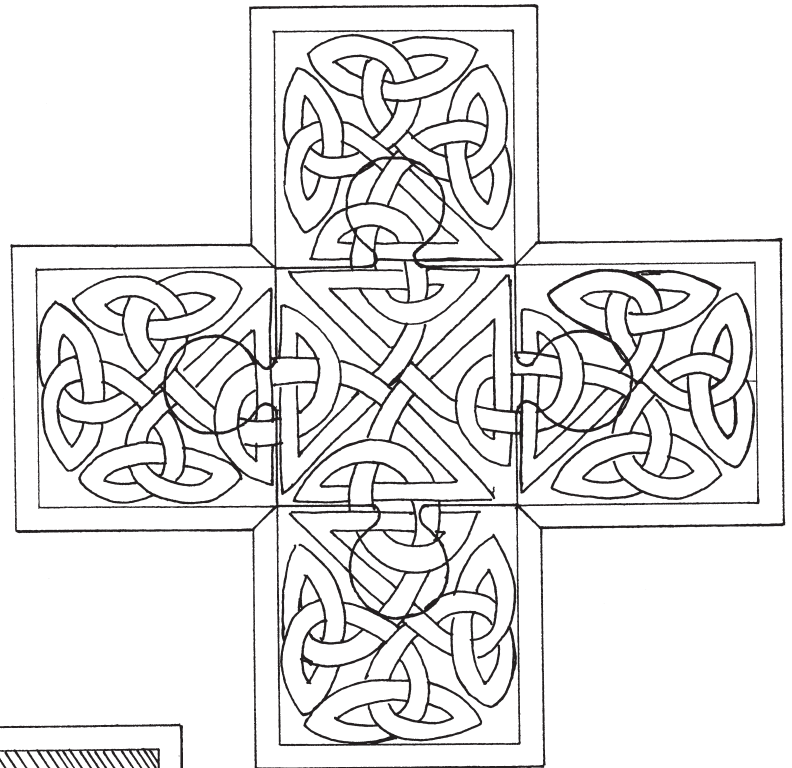
Tools:

- Dust mask
- Scrollsaw or hand fretsaw
- Small chisels and gouges
- Drill
- Craft knife or chip knife

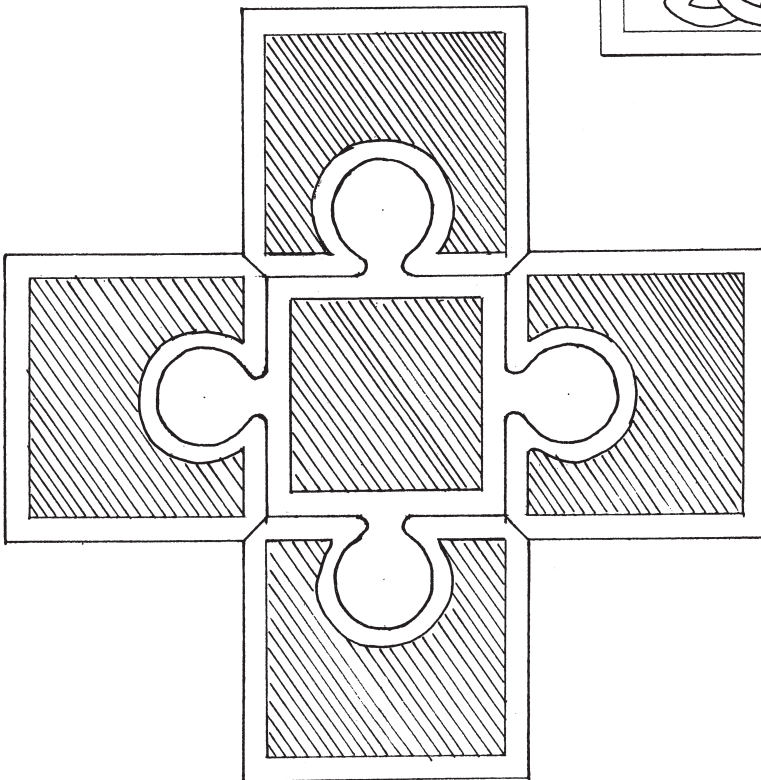




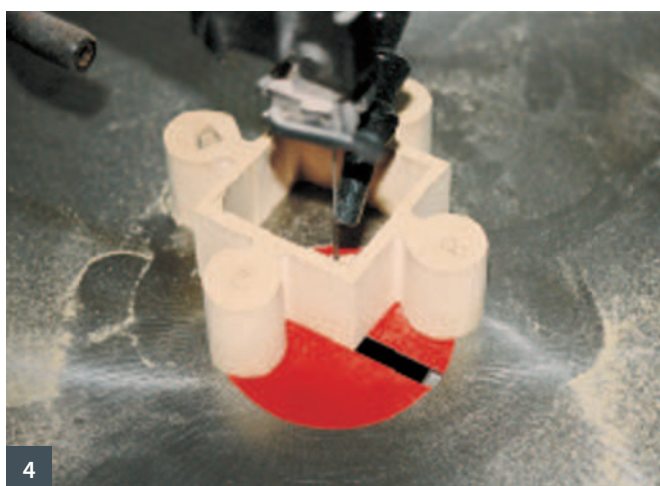
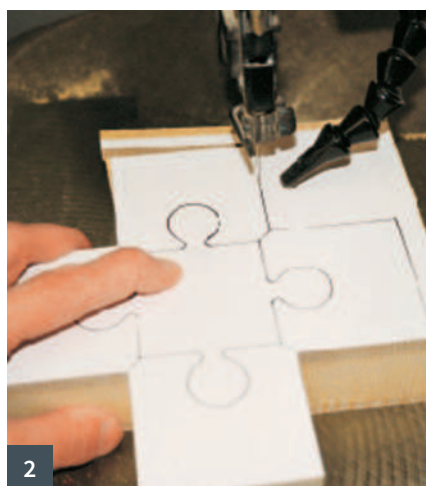
Template 1



Template 3



Template 2



1 Stick the pieces of MDF together using double-sided tape **2** Cut around the outside of the boxes **3** Next, carefully cut out the jigsaw shapes **4** Mark and cut out the box cavities **5** Use the box body to mark out the lid

Preparation

- 1 Prepare for cutting by stacking the three pieces of MDF and firmly fixing them together using double-sided sticky tape between the layers. Place the 4mm piece at the bottom, the 30mm in the middle, then the 6mm on top. These will be the box components of base, body and lid respectively.
- 2 Stick the box template 1 onto the top using spray adhesive. The boxes are now ready to be cut out on the scrollsaw but, before beginning, use a set square to check that the blade is perfectly vertical as, if it is even slightly out of true, you will only be able to slide the boxes up or down in one direction instead of both.

Making the boxes

- 3 Cut round the outside of all the boxes first, before attempting to separate the jigsaw shapes.
- 4 Very carefully cut out the jigsaw shapes. Each has to be done in one sweep to give a good clean single cut, so take care negotiating the corners and curves. If you are not completely confident about it, practise by making some spare template copies and cutting them out using waste pieces of MDF. You will soon become confident enough to tackle the real thing. Fortunately MDF is inexpensive, so it's not the end of the world if you do make a mistake.
- 5 When all four 'arms' have been separated from the centre box, mark

each part of each box with the same letter or number. This makes it easier to identify the correct pieces when it comes to reconstructing it all. Carefully separate the three layers of MDF on all five boxes.

- 6 Taking the middle section of each box, mark a line 4mm in from the edge. The centre will be cut out to make the box cavity. The four 'arm' boxes can be cut following the whole box shape, but for the central box just cut a square and do not attempt to cut into the protruding circles (unless you're a complete masochist). Template 2 shows how it should look. Drill a pilot hole in the middle waste area, thread the scrollsaw blade through and cut along the marked line.
- 7 Make a rebate to hold the lids in place from the spare 4mm MDF. Using the box body as a template, draw a line round the inside of the cavity onto the MDF, numbering each piece to its corresponding box. Cut these out using the scrollsaw or hand fretsaw.

Assembly

- 8 Assemble each box, using impact adhesive to give a strong bond. Apply a layer of glue, 4mm wide, to the edges of the base to correspond to the walls of the box, and to the underside of the middle section. Press together when dry, according to the manufacturer's instructions. Glue the rebate to the underside of the lid, making sure that the lid will sit correctly on the box before applying final pressure to the join. Above you can see



6 Glue-up each box **7** Transfer the knotwork design to the box lids **8** Here you can see the progression of the carving **9** Apply an appropriate primer **10** Finally, paint the design in your chosen colour

the four sections of the box glued and ready to assemble.

- 9** Assemble the five boxes into their finished shape, so that the knotwork design can be transferred to the lids. The best way to do this is to stick a photocopy of template 3 to some carbon paper using spray adhesive, then cut round the outside of the design. Use masking tape to hold this in place on the boxes and trace the design onto the lids. Lift the template in a few places to make sure the design has transferred successfully before removing it completely.

Carving

- 10** All the carving is done while the boxes are joined, so that the lines of the knotwork follow smoothly from one lid to the next. Take a sharp chip knife or craft knife and score along the pencil lines. Next, very carefully reduce the background between the ribbons, using a small gouge. Ideally, the background should be reduced to a depth of 2–3mm.
- 11** Once all the background has been reduced, create the weaving effect of the interlacing by reducing the ribbons on either side of each crossover point. Always be mindful of the way the ribbons weave regularly under and over.
- 12** In photo 8 above you can see the progression of the carving, clockwise from the top: the design has been scored along

the lines, the next lid has had the background reduced, the next shows the 'weaving' completed, and the final lid has been sanded and is ready to be painted.

Painting and finishing

- 13** Paint all the parts of the box with primer. I used a quick-drying acrylic primer, as I would be finishing with water-based emulsion paints, but always use a primer that is compatible with the final finish. When the primer is dry, sand it smooth, as it will have raised the fibres of the MDF. Apply two coats of cream emulsion paint, or whatever base colour you choose. When this is dry, apply the blue paint (or whatever colour you prefer) to the background. If your skills with a fine paintbrush are limited, you may find the following method useful: take a wax candle and rub it over the raised surfaces of the knotwork, making sure all areas are fully covered. Next, paint in between the knotwork without worrying if you get paint on the top surfaces. When the paint is dry remove the wax by rubbing down with a very fine grade of steel wool, preferably 0000. This should leave the two colours separate, with a slightly distressed type of finish.
- 14** Apply a thin application of clear wax polish to all the outside surfaces, so that the boxes slide apart easily. All that remains is for you to put the boxes back together. Good luck!

Five brilliant uses of painter's tape for a furniture maker



Charles Mak shares some of his favourite masking tape tips for woodworking

Although painter's tape is intended mainly for painting tasks, woodworkers have found many other uses of it. For example, we can use it as a depth guide by wrapping it around a drill bit, or we could employ it as clamps for edge banding or angled joints such as mitres (**photo 1**). Tape proves to be an all-around problem solver in much of my furniture work, whether as a quick epoxy glue mixing surface or for controlling glue squeeze-out. Here are five other examples of how tape can help you in the shop.



1 Using tape as a clamp



2 Highlighting where to stop cuts **3** A handy installation marker **4-6** Tape can protect surfaces from tool marks

1 Using tape as a marker

A thin pencil line on a surface can be difficult to see while the same line made on a tape is far more visible and also harder to rub off. For instance, when I make stop cuts on the router table or tablesaw, I use the line-on-tape method to show where to stop the cuts (**photo 2**). In some cases, tape alone can serve as marks without the use of a pencil. Recently, I used two pieces of intersecting tape to record the position of where a case was to be installed to its top (**photo 3**).

2 Flush-trimming with tape

Sometimes, even a flush-cut saw can leave scratch marks on a surface when trimming a plug or dowel. To avoid that, I put a strip of tape on the sawplate just above the teeth (**photo 4**). With two fingers slightly pressed on the plate to steady the sawing, the finished cut shall be scratch-free (**photo 5**).

You can also protect a surface from other tools, for example, by taping off a corner of a card scraper or the end portion of a rasp or file (**photo 6**).



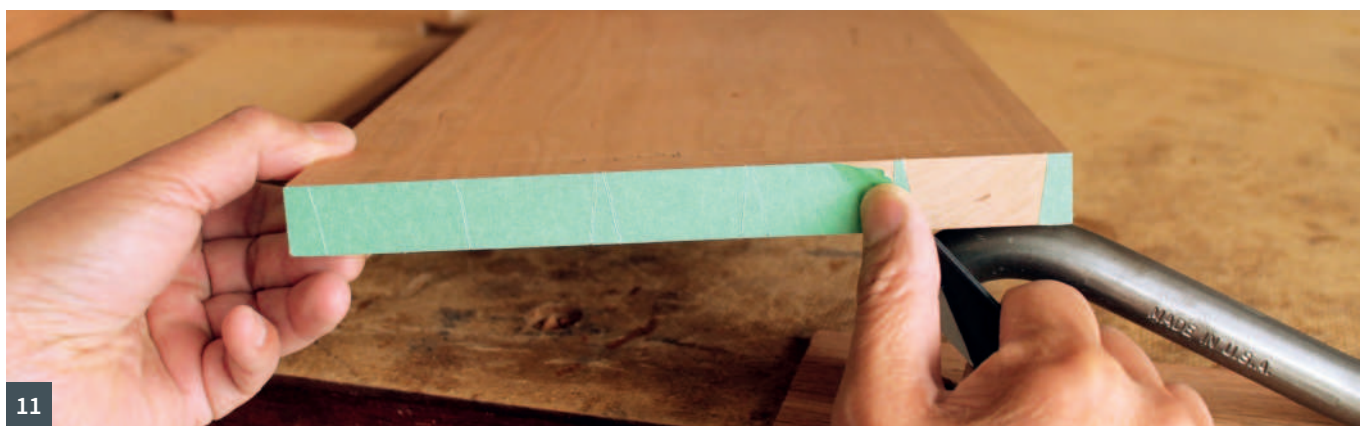
7–10 Marking dovetails using tape

3 Marking dovetails with the aid of tape

Renowned British craftsman Alan Peters was known for his method of marking out tails with a pair of dividers. Peters had another sharp dovetail tip – on the marking of pins from tails. He rebated the inside face of the tail board on both ends before cutting the tails. The shallow rebate made it easy to register the tail board against the pin board for laying out the pins.

William Adams, an American woodworker, found a different way of executing Peters's method – by using masking tape as follows:

1. Apply a few layers of tape on the inside face of the tail board where the baseline is to be scribed (**photo 7**).
2. Set the marking gauge and scribe the baseline, cutting through the tape, onto the board (**photo 8**).
3. Peel away the tape above the baseline to reveal a ledge which serves like a rebate (**photo 9**).
4. Mark out the tails as usual and cut out the tails.
5. Lastly, rest the tail board in position on the pin board as guided by the tape, and mark out the pins from the tails (**photo 10**).



11



12



13



14



15

11 Tape can improve sawing accuracy 12–15 Using tape for extra precision

4 Using tape for precision results

Paired up with a sharp knife, tape can provide a visual precision far better than a pencil line. For instance, some dovetailers make knife lines through tape on the end of a tail board to enhance sawing accuracy (**photo 11**). The same trick can be used to check precision tools such as a combination square. As an illustration, these steps allow you to examine how true a square is:

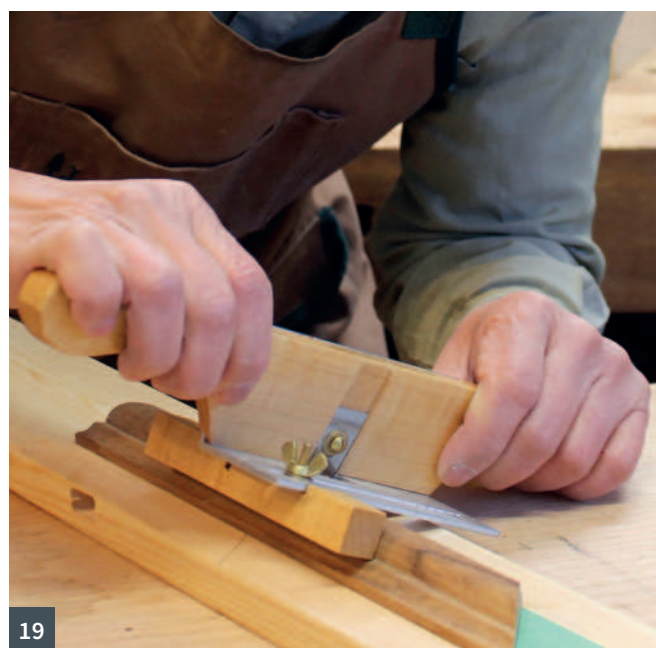
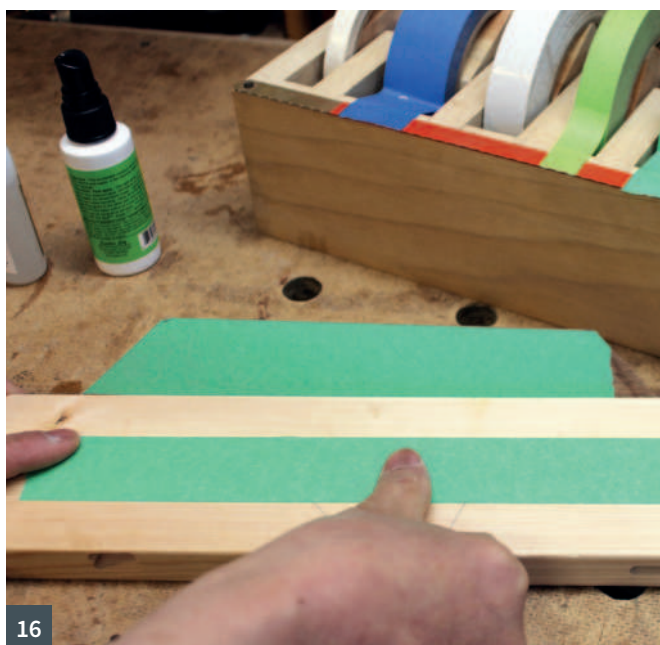
1. Get a board and true one side straight (**photo 12**).

2. Stick a strip of tape in the middle of the board.

3. With the square held firmly against the board's straight edge, knife through the tape and peel it off (**photo 13**).

4. Flip the square over, put the knife in the scribed line, and butt the blade of the square against the knife (**photo 14**).

5. Check the blade against the tape's edge for any gap. The square is dead square if the blade meets the tape at the top (**photo 15**).



16–19 Making strong, double-faced tape

5 Making a super strong double-faced tape

The final trick here is often used by seasoned luthiers in conjunction with CA glue – to make double-sided tape that is much stronger than the regular kind. Let me illustrate their technique with a piece of moulding that I planned to work on with a scratch stock.

To start, gather a roll of painter's tape, CA glue, an accelerator and a scrap board. Simply follow these steps to secure the work:

1. Apply a strip of tape on a scrap board as well as on the back of the moulding (**photo 16**).
2. Run a thin bead of thin CA glue to the scrap (**photo 17**).
3. Spritz the accelerator on the back of the moulding, and press the work down on the scrap (**photo 18**).
4. After a minute or so, clamp the board to the bench, and the moulding is ready to be worked on (**photo 19**).

5. To remove the work, knock it off from the board with a mallet (the bond is that strong!).

This CA glue trick will come in handy for a woodturner who runs out of double-faced tape in the middle of a turning project, or for a cabinetmaker who needs a way to attach cauls semi-permanently for some angled joinery glue-up.

There are things that I use in almost every single furniture project: pencils, ear plugs, measuring and marking tools, and – tape. That is why I buy tape in packs, in the same literal sense that a wordsmith buys ink by the barrel and paper by the ton!

VACUUM VENEERING AND LAMINATING WITH AIRPRESS

Successful veneering can be done in your own workshop with these portable systems



Before April 1993, when AirPress managing director Peter Hoggard launched the UK's first commercial portable vacuum bag press, if you wanted to veneer flat panels, your options were very limited: you could invest in a flatbed press (big and expensive), you could learn the art of hammer veneering with animal glue (outdated and impractical for anything other than restoration and perhaps some high-end reproduction work), contract your work out to a specialist veneering company (maybe, maybe not) or invest in a load of clamps or a big pot of

contact adhesive (not going to work). It is safe to say that the AirPress portable vacuum press arrived at a time when most workshops avoided veneering and laminating. Since then, AirPress has provided a cost-effective solution for thousands of workshops with its range of quality portable vacuum bag presses, benchtop membrane presses and floor-standing membrane presses, and the impact can be seen in the expanded design portfolio in all of the woodworking industries, from furniture makers to kitchen manufacturers, shopfitters, boatbuilders and more.



ABOVE Ethereal desk by Marc Fish, laminated using the portable AirPress system **TOP** The Industrial AirPress in use in Marc Fish's workshop

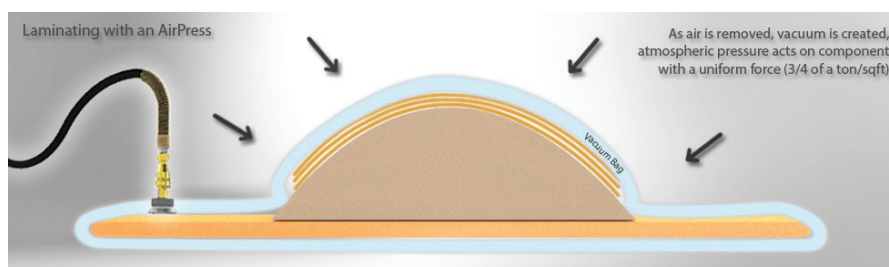
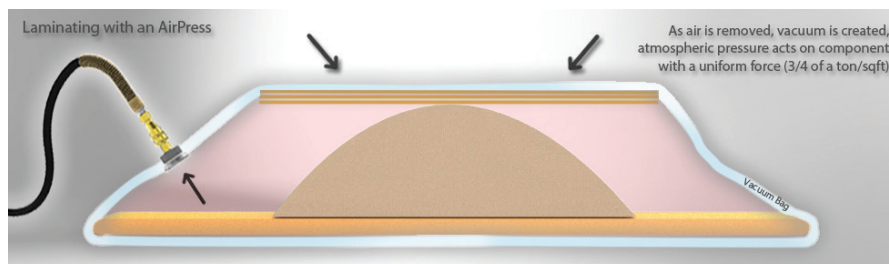
The technology

Contrary to what many people think, a veneer is not sucked on to a panel. When you create a high vacuum in a vacuum bag the air outside the bag pushes against the bag and the veneer, as there is an imbalance of pressure between the vacuum inside the bag and the atmospheric pressure outside the bag. Although we cannot feel that pressure because we have air inside our bodies, the pressure equates to in excess of $\frac{3}{4}$ ton per square foot or about 9 metric tonnes per square metre, with the added advantage that it is an absolutely uniform pressure. But it is not just in the woodworking world that vacuum technology is used: engineers in other industries like aviation, yacht building, manufacturers of luxury car interiors, wind turbines, aerospace and other fields have all recognised the advantages of vacuum pressing.

SUCCESSFUL VENEERING WITH THE PORTABLE AIRPRESS

Vacuum veneering is surprisingly easy so long as you stick to a few simple rules. While some veneers, like burrs and curls, will require flattening before pressing, most veneers are flat enough to cut, joint, tape and press. However, no veneers lie perfectly flat and when placed on top of a glued substrate, they will touch in some places and not in others, resulting in slight wave patterns. If you then press this veneer against the inside of a vacuum bag, the atmospheric pressure will push down hard on the areas that are touching the substrate, locking it in place and preventing the rest of the veneer from lying flat, which can in some circumstances end up as cracks, bubbles or even wrinkles. Thankfully, this is easy to avoid!

To prevent this from happening and facilitate the vacuum veneering process you should make a baseboard out of 18mm MDF to place inside the bag. Do not be tempted to use melamine-faced board or other non-porous materials for the baseboard as the bag will seal around the face of the board, trapping air around the panel that you want to veneer. The corners and edges of the MDF baseboard should be rounded to avoid damaging the bag when in use. There is no need to rout a pattern of grooves in the baseboard, as this can mirror a pattern in the glue line when pressing. Every AirPress system comes with 10cm-wide breather fabric which acts as a pathway for the air to escape from the bag, preventing trapped air.



The range includes different bag sizes to suit furniture makers' needs

VACUUM VENEERING A PANEL

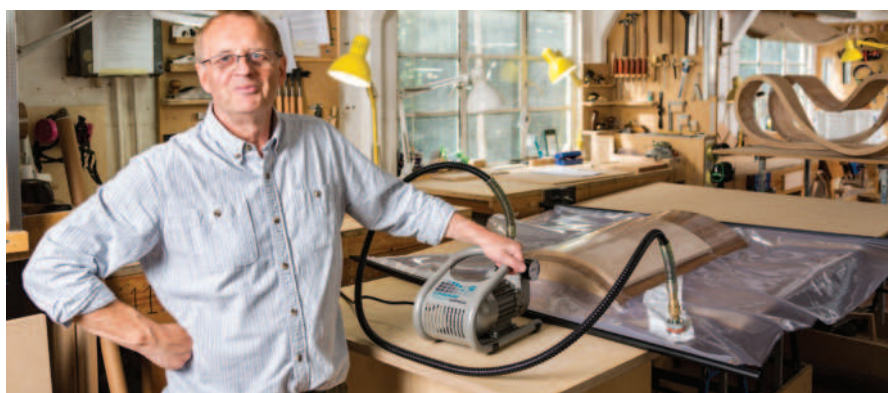
There are two ways to veneer a panel: one side at a time or both sides. When veneering one side at a time, put the baseboard into the bag and slide the panel veneer side down on to the baseboard, with newspaper in between to keep the baseboard clean. Pressing this way ensures that your veneer will be pressed perfectly flat and it does not matter how far the veneer overhangs your panel, as it is flat against the baseboard. When the glue has cured sufficiently for the panel to be taken out of the bag, the veneer can be trimmed flush with the edge and the other side of the panel can be pressed the same way. It is important to press the second side as soon as possible to avoid cupping the panel when the veneer on

the first side starts to dry out and shrink.

If you want to veneer both sides at the same time you will need to place a thin MDF caul over the top veneer; 6mm-thick MDF is perfect for this, but it will be necessary to trim the veneer to overhang about 5mm and the MDF caul about 6mm. Pressing both sides together cuts the overall pressing time in half and ensures distortion-free veneering. However, if you have different sizes of panels you will need to cut different sizes of cauls, so it is sometimes more practical to veneer one side at a time.

THE SYSTEM

AirPress offers four different systems in the portable AirPress range with different bag



AirPress managing director Peter Hoggard with a portable AirPress vacuum bag system

PHOTOGRAPHS COURTESY OF AIRPRESS



AirPress offers a range of portable vacuum pumps

sizes and vacuum pumps to match the size of the bags. The company puts quality first when it comes to its components. There are two types of bags included in the range: the 500microns thick, high frequency welded vinyl bags and the 600microns thick seamless polyurethane bags – twice the thickness of some competitor systems. Of the two, the polyurethane bags are better suited for laminating shaped work as well as flat work since they are more flexible and have a degree of stretch. If you only intend to veneer flat panels, the lower cost vinyl bags are a good option. AirPress makes custom bags to any size in addition to the five standard sizes, and the bags are sealed with a two-piece extruded bag closure developed specifically for this job.

All of the AirPress systems come with high quality, dry running, rotary vane pumps, designed to run continuously while the glue cures. They are fitted to powder-coated, tubular steel carrying frames and are rated to match the size of the bags; the bigger the bag, the faster the pump will remove the air to prevent pre-curing.

Each kit comes with a hose assembly fitted with spring guards and quick release, valved couplings, and an aluminium through the bag with a quick release, valved plug making it easy to isolate a bag when setting up a second bag for multi-bag pressing.

THE PORTABLE VACUUM PRESS RANGE

STANDARD AIRPRESS

This is the kit for anyone who only needs a 1,900 x 1,350mm vinyl bag. It has a 4m³/hr vacuum pump on a tubular steel carrying frame and everything you need to run that bag – perfect for woodworking enthusiasts, box makers and musical instrument makers.

PROFESSIONAL AIRPRESS

Matching a faster 8m³/hr vacuum pump with the larger 2,600 x 1,350mm vinyl bag, this

press is ideal for flat panel work and is fitted with two vacuum ports to run up to two vacuum bags at the same time.

PROPLUS

The ProPlus is identical to the Professional AirPress except that it comes with a 2,600 x 1,350mm, 600micron thick, seamless polyurethane bag. It is the most popular press in the range and perfect for both flat and shaped work. If your budget will stretch to the ProPlus it's the recommended choice of the mid-range presses for professional furniture makers.

INDUSTRIAL AIRPRESS

Fitted with a 16m³/hr vacuum pump on a tubular steel frame on castors and a four-port manifold to run up to four bags at the same time for faster productivity, and with a 3,200 x 1,350mm polyurethane bag, it is not surprising that this is fast becoming a best-seller with its ability to evacuate the biggest bags in the shortest time to prevent pre-curing of the glue.

ADDITIONAL PRODUCTS

AirPress does not just develop portable vacuum bag systems, it also designs and manufactures the BenchPress range of vacuum membrane presses for easy laminating flat and curved panels, silicone heater mats for accelerating the curing time, vacuum chucks for bowl and platter turning, the VacPot vacuum clamping system and in addition supplies handheld glue spreaders and veneering and laminating adhesives.

With the exception of the glues and glue spreaders, AirPress designs and assembles all its products in-house, with a focus on quality and attention to detail. AirPress is the best-selling vacuum press brand in the UK and also sells its products around the world.

Service is also a key focus for the business, and with a background as a furniture designer and maker, MD Peter Hoggard is always at the end of a phone to offer advice and tips on vacuum veneering and laminating.

You can view all of the AirPress products on its website: airpress.co.uk



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MODEL	BLADE DIA/BORE (mm)	MAX CUT CROSS	EXC.VAT	INC.VAT
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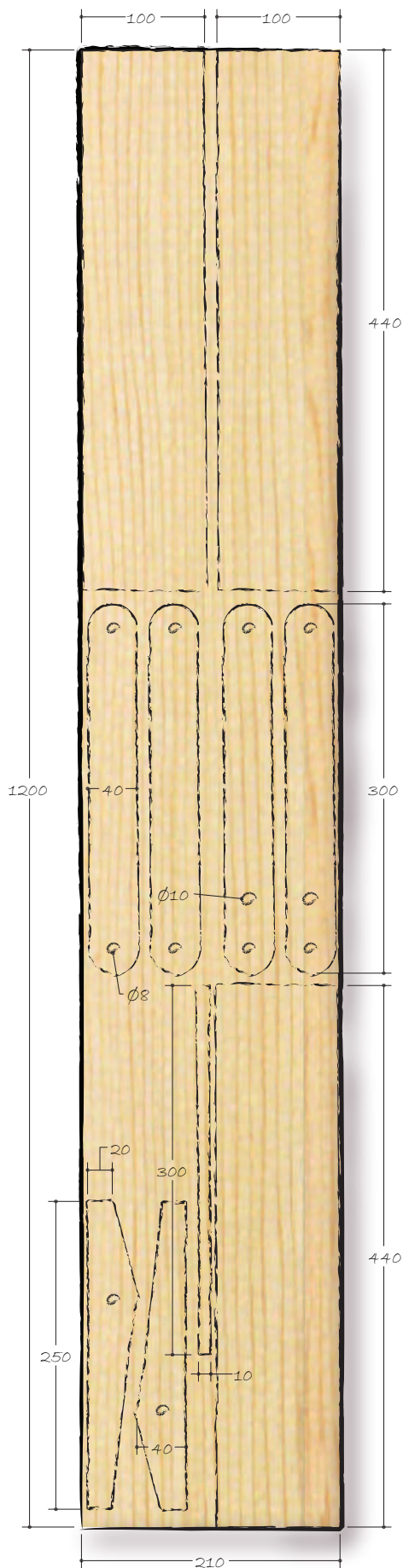
LAPTOP TRAY

Andy Standing builds a computer stand using just one plank of wood

Laptop computers are amazing machines, allowing you to work or play wherever you are. However, actually using them on your lap for any length of time can become tiring. The base can become rather hot and it can be uncomfortable and cramped staring down at the screen. Here is a design for an adjustable laptop tray or stand that will allow you to use your laptop anywhere in comfort, even lying in bed.

YOU WILL NEED

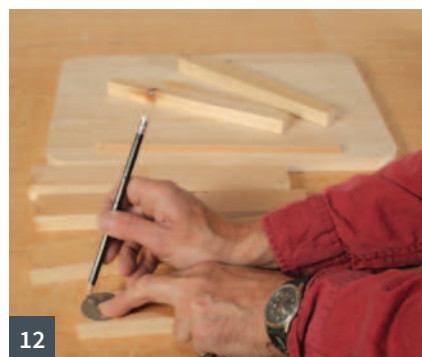
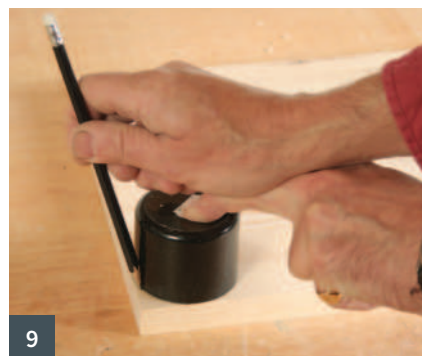
- 4 x 8mm pronged tee nuts
- 4 x 8mm wingnuts
- 4 x 8mm x 50mm bolts plus washers
- Tablesaw
- Biscuit joiner
- Clamps
- Disc sander
- Bench-mounted sander



PHOTOGRAPHS BY ANDY STANDING

Making the tray

- 1 Start by marking out your board.
- 2 Crosscut the board using a hand or tablesaw.
- 3 Now rip the components to size. For stability, it is wise to make the tray from three strips jointed together.
- 4 Lay the boards side-by-side on the bench, making sure that they are arranged with the growth rings on the end grain running in opposing directions on each board – this helps keep the tray surface flat. Mark the positions for the biscuit joints.



- 5** Cut the slots with a biscuit joiner to take the biscuits.
- 6** Glue the boards together. Make sure that the biscuits are generously supplied with glue for maximum strength.
- 7** Clamp up securely and leave to cure.
- 8** Once the glue has set, remove the tray and clean up the surface with a sander. If it is uneven, use a smoothing plane first.
- 9** The tray corners need to be rounded off. Use any suitable circular object as a template to mark the corners. An aerosol lid was used here.

- 10** Remove the majority of the waste with a saw.
- 11** Then smooth the curve with a disc sander.
- 12** The four legs also have rounded ends. A large washer was used as a template here.
- 13** Mark the positions of the bolts and tee nuts.
- 14** Bore 8mm holes for the bolts and 10mm holes for the tee nuts.



15



16



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19



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15 The pronged tee nuts are inserted into the lower holes on the two legs and into the holes on the tray support bars.

16 You can tap them into place with a hammer but I prefer to press them in, either with a clamp or alternatively, insert a bolt and using a large washer and a nut, pull the tee nut into the timber.

17 Drill a pair of 4mm diameter holes in the tray support bars ...

18 ... and attach them to the underside of the tray.

19 To prevent your laptop sliding off the tray, attach a small stop bar along the edge – this is 10mm square and 300mm long. Use pins

to hold it in position. Punch them below the surface and cover the heads with a dab of filler.

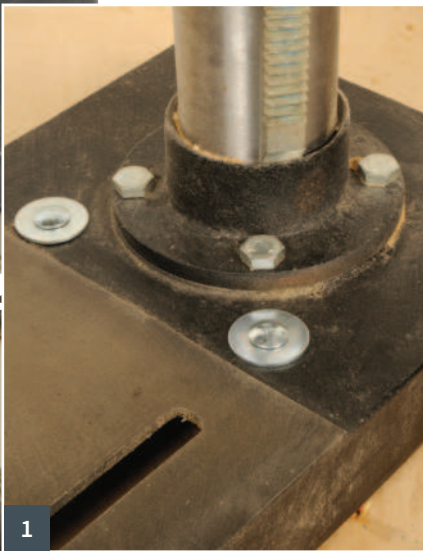
20 Assemble the tray as shown. If you find it difficult to tighten the wingnuts sufficiently to hold the legs tight in position, make up some double-sided washers from abrasive paper and sandwich them within the joints to provide additional friction.



PILLAR DRILL TECHNIQUE

Anthony Bailey takes you through the basics of using the handy pillar drill

Most of us have a cordless drill, which is fine for many tasks but if you find you need accurate, properly centred drilling without tearout, then a pillar drill and the correct selection of bits are the sensible way to go. Here are some useful tips and techniques to help you get the most from this invaluable workshop machine.

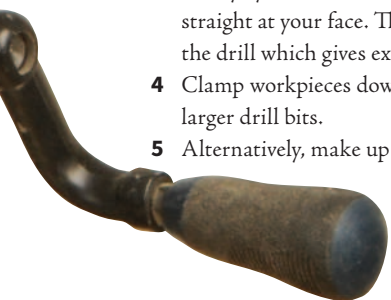


Using the pillar drill

- 1** Pillar drills are rather heavy, so it is important to permanently bolt the machine down in an area where you have some room either side for longer workpieces. Make sure all components are correctly and safely tightened up before attempting work. If your pillar drill is a multi-speed type, select a pulley belt setting that suits most general work.
- 2** You need a work vice for the work table, which should be bolted down. It is used for small work and metalwork. Always ensure the table is centred on the drill bit so it will go through the centre hole if through drilling, or use a sacrificial board underneath your workpiece.
- 3** Safety eyewear is essential because swarf or chippings can fly straight at your face. There is also a flip-down adjustable guard on the drill which gives extra protection.
- 4** Clamp workpieces down to avoid them being flung sideways by larger drill bits.
- 5** Alternatively, make up a special table with a fence at the back – the fence holds the workpiece in line and allows drilling of a series of holes in a line.



- 6** Because the drill and workpiece are fixed it is possible to make concentric or overlapping holes with ease. If you have a bench-mounted mortiser, they can often double-up as a drill press as well.
- 7** Choose the correct drill bit for the job. Engineering bits for metalwork, bradpoint bits for wood, spade bits for larger crude hole drilling, but for preference invest in sawtooth or Forstner bits for much more accurate and clean-cut holes. Make full use of the depth stop facility – it avoids accidentally drilling through into the table but also gives reliable and repeatable depth of drilling. Don't force the pace – the drill in use will find its way soon enough unless it is blunt, in which case sharpen or replace.



KIT & TOOL NEWS

Find out about the latest tool releases

MAKITA XGT WOODWORKING AND CARPENTRY TOOLS

Makita has expanded its 40VMax XGT range of high-performance tools with the addition of a new Brushless Combi Drill, Brushless Brad Nailer and Brushless Circular saws.

The versatile HP002G 40VMax XGT Brushless Combi Drill has drill, hammer-drill and screwdriver modes, a mechanical two-speed control (high and low), a variable speed trigger and 21 torque settings for full user control. It has a rotational speed of up to 2,200 rpm and in hammer mode will deliver up to 33,000 blows per minute (bpm). The HP002G features an all-metal gear construction and aluminium gear housing to ensure long-term durability, even with high levels of use.

The new 40VMax XGT Brushless Brad Nailer (FN001G) is compatible with 18Ga nails between 15 and 40mm, has a magazine capacity of 100 and will drive up to 5,000 nails on a single 2.5Ah battery charge. The slim nose design makes it easy to drive nails securely and accurately into areas such as a narrow groove on a baseboard, while the driving depth adjustment allows easy adaptation to the task and material. It also features an ergonomically designed grip and low-recoil mechanism to make it comfortable to use, and for safety the FN001G has a trigger lock and anti-dry-fire mechanism.

Also added to the range are two 40VMax Circular Saws. The RS001G and RS002G are 40VMax XGT Brushless Circular Saws with 185mm and 260mm blades respectively. Both feature Makita's Automatic Torque Drive Technology (ADT), which automatically adjusts the cutting speed according to load conditions for optimum performance. With a maximum speed of 6,400 rpm, the RS001G offers a maximum cutting depth of 65mm and a bevel angle of up to 53°. The RS002G is capable of delivering up to 4,000 rpm with an impressive 95mm cutting depth and a bevel angle of up to 56°. The RS002G also features Makita's Auto-Start Wireless System (AWS), which allows the tool to connect to compatible dust extractors via Bluetooth when fitted with an AWS chip, so the extractor can run automatically while the tool is in use, meaning simple dust management for a cleaner and healthier environment.

The new combi-drill, brad nailer and circular saws all feature Makita's efficient and effective brushless motor that minimises friction and energy wasted as heat. This maximises the tools' performance and run-times per battery charge for greater productivity.

Alongside the new tools, three new job site radios have also been launched. The MR001GZ01 has stereo speakers and a digital AM/FM radio tuner as well as an AUX-IN socket for connection to an external source. The MR002GZ01 offers the same AM/FM function and AUX socket as well as Bluetooth for wireless connection to a mobile device. Finally, the MR003GZ01 is capable of receiving DAB/DAB+ frequencies in addition to FM signals.

www.makitauk.com





TRITON COMPOUND MITRE SAW

Triton Tools has launched the TCMS254 1800W Sliding Compound Mitre Saw 254mm in Europe and the UK. The new mitre saw features a 254mm 60T TCT blade and a powerful 1,800W motor to help woodworkers cut up timber with precise, clean cuts at any angle.

A dual-bar smooth-sliding cutting head and extended blade channel gives the saw extra reach to crosscut timber with a maximum capacity of 64 x 318mm, and the saw can make compound, 0-45° right bevel, 0-47° left bevel, or 0-50° left or right mitre cuts, all at preset or micro-adjustable angles.

With safety in mind, the TCMS254 has large, durable, sliding infeed and outfeed tables with side stops and extenders to provide support for longer boards, while the clamp and sliding fence assists in securing workpieces. Other features include an adjustable calibration laser for precision cutting, depth stop for trench cutting, dust bag and fixing holes for mounting to a bench or compatible mitre saw stand.

www.tritontools.com

CLARKE ELECTRIC BANDSAW

Ideal for DIY and hobby use, the Clarke CBS205 205mm electric bench top bandsaw allows for accurate cutting in all types of wood. Its tilting table, mitre gauge and rip fence provide the facility to produce accurate straight, cross, rip, mitre and bevel cutting. For added stability, the CBS205 can be bolted onto your worktop surface using the four holes on the base (bolts sold separately).

The bandsaw is supplied with a push stick, work table, rip fence, table inserts, 4mm and 3mm allen keys, 10mm spanner and fixings.

www.machinemart.co.uk



HYDRACLAMP PRIZE GIVEAWAY

WDS Components are giving away a Spencer Franklin Woodworking Hydraclamp Miniclamp with face plate to one lucky reader.

This dynamic adjustable woodcarving clamp allows the user to hold up to 6kg giving the user flexibility to carve up to 45° angles.

To have a chance of winning this Hydraclamp valued at over £217 please email your address to wwceditorial@thegmcgroup.com



KITCHEN TROLLEY

Mark Constanduros uses his router to make
a kitchen work trolley complete with chopping block

No sooner had I bought and moved into my small cottage than I realised that my kitchen was rather lacking in the worktop department. I sat down for a few hours with pencil and paper trying all possibilities to redesign the room so as to create more surface area. Each time my brilliant plans were thwarted by something like a door or window.

In fact I had abandoned the search when, some time later, the solution presented itself to me. Flicking through an old book, I spied a design for a kitchen trolley complete with a chopping block – just the job!

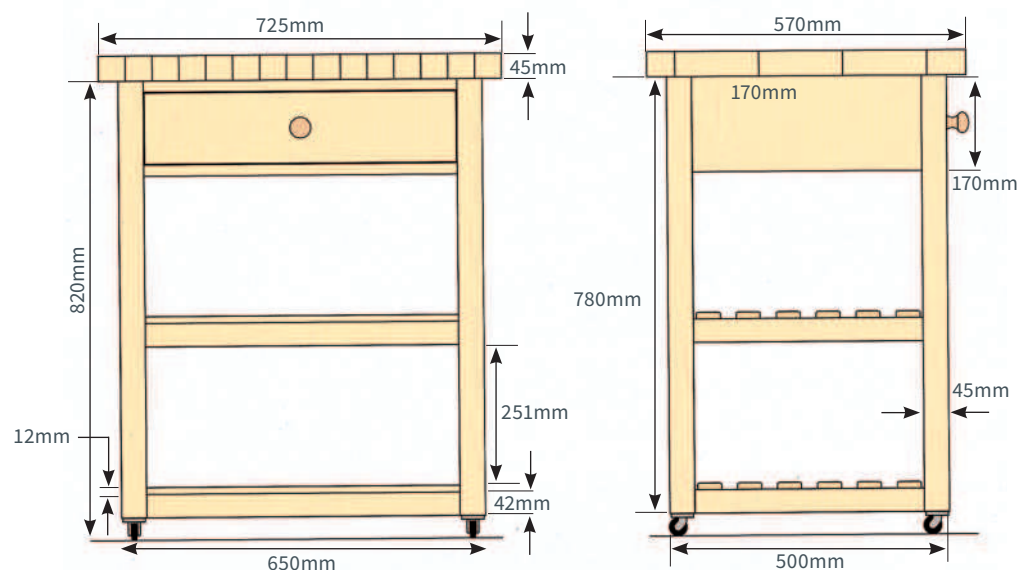
So, revising the design slightly, I set about making one to suit my own kitchen. Its construction is based upon the use of a router.

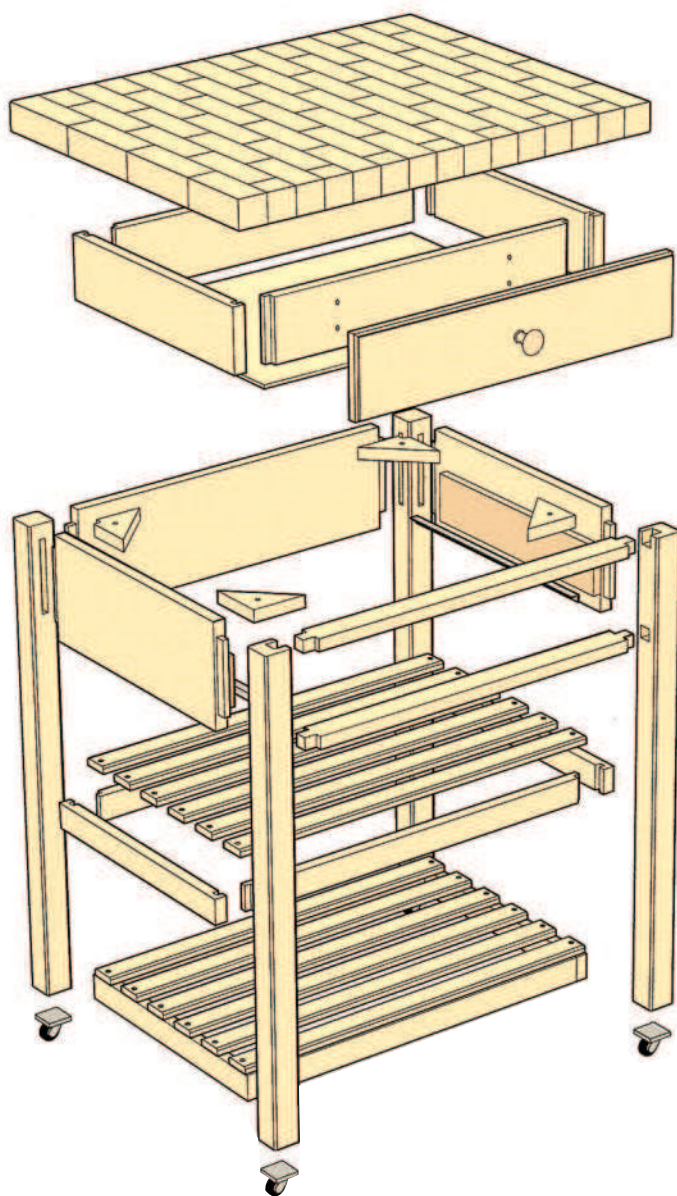
A visit to the local DIY store produced the timber and hardware components. A sort through the pile of pre-machined pine revealed some straight lengths. Then it was a simple matter of selecting drawer runners, castors and screws.



YOU WILL NEED

- 8mm diameter straight two-flute cutter
- 10mm diameter straight two-flute cutter
- 18mm diameter straight two-flute cutter
- 3.5mm rounding-over cutter
- A fine adjuster is a useful accessory





The frame

- 1 Cut four 45 x 45mm legs to the full 820mm height of the trolley then, from the end chosen as the top, mark mortises centrally and the width of the tenon minus haunches. Cut the mortises with an 8mm diameter straight two-flute cutter and set up the router using an offcut of the timber of the same dimensions. Fasten it securely to the bench with a clamp alongside another piece of wood of the same thickness. This supports the baseplate of the router and allows a side fence to be used when routing the mortises. Set the side fence and depth stops to position and carefully rout the mortise in a series of steps so as not to strain the router or cutter. When happy with the result, continue to rout the mortises on all the legs. Then rout the mortises and housings for the rails above and below the drawer front.
- 2 Mark out the tenons and again practise machining on scrap. With an 18mm diameter straight two-flute cutter installed in the router

and a side fence fitted, the tenon is machined on either side of the rail. Set up the depth stop and position the side fence so that the shoulder of the tenon is cut with it running on the end of the tenon. Then use the router freehand to cut away the waste timber in a number of stages. When done, cut off the end and haunches – size isn't critical for the tail piece – and place in the mortise to check for a good fit. If it isn't, adjust the settings on the router and try again until it is – fine adjusters on the depth stop and side fence are useful for precise settings but they are often an extra. Mark the rails for their tenons and rout them all, then trim to length and cut their haunches.

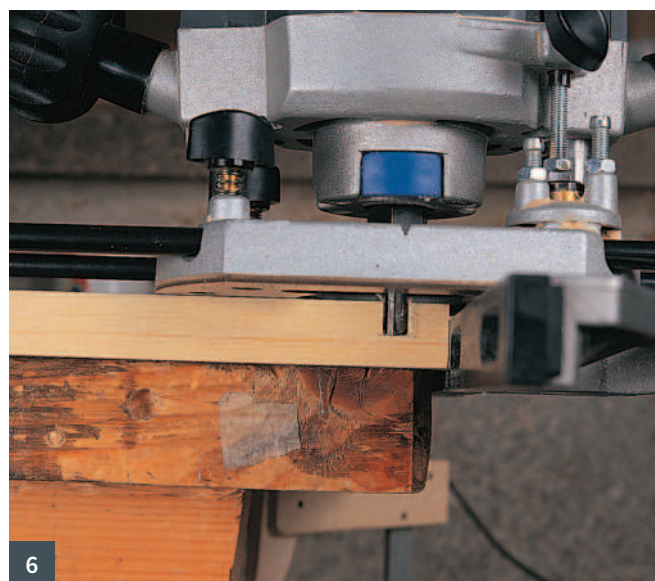
- 3 Cut the top and bottom drawer rails to length and notch them to fit their housings. Round off the edges of the legs with a 3.5mm rounding-over cutter, then sand all the components thoroughly before gluing and cramping the frame together. A screw through each end of the top drawer rails holds it in place.



4



5



6

PHOTOGRAPH BY MARK CONSTANTIDROS

- 4 When dry, glue and screw the 90 x 90mm triangular corner blocks, through which the chopping block is screwed, flush with the upper edge of the rails.

The slatted shelves

- 5 The shelves are the full width of the frame from leg to leg, minus 7mm, which is the size of their rounded edges combined. Measure the relevant dimensions which are necessary for cutting the timber to length, not forgetting to calculate for the housings.
- 6 The frame for the shelves is made from 42 x 20mm timber and is constructed by using a single cut from an 8mm straight two-flute

cutter to create a housing. To hide the joint behind the legs, rout the housings in the shorter rails, cutting about two-thirds of the way through – a piece of timber fixed to the bench will help to support the router while machining. With the same cutter, rout the tenons to fit the housings, making sure the face and edges are flush. Sand up the components, then glue and clamp the frames together – measuring the diagonals ensures that they're square. Cut six 43 x 12mm slats to length for each shelf then, using the 3.5mm rounding-over cutter, rout the top two edges. Drill and sand the slats before fixing them to the frame with brass screws. The finished shelves are then screwed to the legs from inside.



The drawer

- 7 The drawer box is made from 100 x 20mm timber. The runners, obtained from the DIY shop, are the bottom-mounted variety which allow the 6mm plywood drawer bottom to be screwed directly onto the underside of the drawer box through the bottom.
- 8 The drawer uses the same bare-faced housing joint as that on the shelf frames. The drawer box width is the measurement between the two front legs minus the thickness of the pair of drawer runners, normally 25mm – a thin piece of wood on either side of the rails is needed to pack out the runners flush to the legs. The runners are positioned 20mm back from the front face of the leg, which is the thickness of the drawer front. The 400mm depth of the drawer box is the same as the length of the runners. After routing the joints and assembling the drawer box, check that it is square across the diagonals. Then make a false drawer front the size of the aperture less about 1.5mm all round, position it centrally, and screw to the drawer box from inside. For decoration and before fixing, use the 3.5mm rounding-over cutter. Set it so it cuts a little step and rout it around the edge of the drawer front, starting across the grain to avoid breakout. The last job is to fit the 38mm diameter wooden knob.

The chopping block

- 9 Normally a chopping block is made from beech laid on its end-

grain, but to keep costs down, pine makes a reasonable alternative. I used four, 850mm lengths of planed timber 152 x 50mm, and one length of 75 x 50mm. Lay them side by side and glue them together in board, with the narrow piece on one side. When the glue has dried, cut 16 slices 45mm long off the end. With the grain running vertically, place the strips together so that the 75 x 50mm pieces are on alternate sides, and stagger the joints by 32mm, like brickwork. With the layout planned, mark their positions in relation to each other and move the pieces apart. Next, spread copious amounts of waterproof glue on the joining faces and place them back together, lining up the marks and clamping them up tightly. Once the glue is absolutely dry, cut the top to size and sand the top thoroughly so that it is nice and flat. The top is screwed to the frame from the underneath through the corner blocks.

Finishing

Castors are available from most DIY stores. Mine are a little small and not lockable. It is possible to get larger, lockable ones but they may have to be ordered and will be more expensive. When the height of the castors is known, the ends of the legs can be trimmed off to accommodate them before they are fitted. I applied three coats of clear matte polyurethane varnish, chosen for its resistance to water and durability. Because the chopping block is to be used for food, it should be treated with vegetable oil.

Odd names

We investigate the etymology of some of the more unusual tool names



BASTARD FILE

This type of file is not so-called because of its parents' marital status! Rather, the theory goes that the tool's name originated in medieval English heraldry, where a coat of arms with a diagonal stripe, running from the top right to the bottom left, indicated people born out of wedlock. This diagonal stripe matches the angle of the single row of teeth on the bastard file, which has a coarseness between coarse and second-cut. You may have heard other explanations for the name and if you have, please let us know!



PHOTOGRAPHS BY SHUTTERSTOCK

BRADAWL

The strangely named bradawl was not invented by someone called Bradley but is a tool used for making a hole. You may ask 'why is a bradawl different from an awl?', and the answer is not complicated: an awl has a pointed tip, and the bradawl has a flat tip, like a small screwdriver. Their handles are designed to fit the palm of your hand so a good twisting action can be achieved to create a pilot hole for screws.



HAG'S TOOTH

With a name that's rather unkind to a certain type of lady, a 'hag's tooth' router plane is a very simple tool. It comprises a cutting edge that is held in place below a flat sole. The tool is held by the handles on the right and left sides, and often used by holding one side in place while rotating the other side. It can be used with the blade facing away from you or towards you.



RIPSNORTER

Many tools have generic names and a popular one is 'Hoover,' which people associate with a vacuum cleaner. In woodworking a Skilsaw is a generic name for a circular saw as Skill used to be a leader in their manufacture. Another unusual and once popular name for that saw is a 'ripsnorter'. There is no documentation as to who coined the name for the saw, or why, but a dictionary definition for ripsnorter is: something exceedingly strong and exciting. As useful as these saws are, they are indeed that and many shy away from using them for that reason.

SHINGLE FROE

This strangely named tool might look primitive with its simple design, but they are still in production today and widely available. The shingle froe was introduced to the USA by colonial settlers, who used it to split shingles and other types of wood while building the earliest homes in America.



TORPEDO LEVEL

The torpedo level is not designed to go underwater or blow anything up but is simply a short level with pointy ends that looks somewhat like a torpedo. Almost every woodworker will have one in their tool box, and not a nice wooden one like the one shown here but probably a bright yellow new plastic one. They are really handy for that quick levelling task and will easily fit in a pocket.





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