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Bathroom cabinet Micro-forests **Space-saving workbench** Carved horse

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WOODWORKING CRAFTS

Issue 66



WELCOME

While we welcome the new year and hope for better things in the future, lockdowns continue across the world. Woodworkers everywhere have been affected by the pandemic, either negatively with an impact to their income or positively with more time to spend in their shed or workshop. Whatever your circumstances, we hope *WWC* will be a trusty companion to you throughout 2021.

In this issue, find out how to turn a beautiful chess set so you can play your own Queen's Gambit opening, refresh your skills at inlaying veneers, master the use of an orbital sander and learn how to get the most from your handscrew clamp.

To maximise that extra time in the workshop, spoil yourself by building an efficient, space-saving workbench (pictured above) ready to make an occasional table or finish the sideboard started last issue.

If you're looking for a smaller project, how about a shoe rack, a meat tenderiser or live-edge chopping board for your kitchen? And if you have carving in mind, we've advice on knife techniques, practising a chip carving pattern and creating a folk-style horse.

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

Happy woodworking!

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Woodworking Crafts magazine
(ISSN 1365-4292) is published every eight weeks
by Guild of Master Craftsman Publications Ltd,
86 High Street, Lewes, East Sussex BN7 1XN
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Subscription enquiries:
E: pubs@thegmcgroup.com

To subscribe online go to:
gmcsubscriptions.com

Cover and Welcome page photographs:
GMC Publications.

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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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LIVE EDGE CHOPPING BOARD

Mitch Peacock saves an evening's firewood to make a unique chopping board

My wife and I do enjoy a fire on these cold evenings, and the fuel is either workshop offcuts or scraps found in the woods. Sometimes, however, the larger of these pieces receives a reprieve, and is made into something more useful.

Materials

- 1 Last spring I acquired a length of European ash butt, partially spalted, and with twisted grain, from which I made a steam-bent table. Initially, seeing no use for one part of the butt, once split, it was destined for the wood burning stove.
- 2 Thankfully, following a request to make a chopping board, I found that the thickest end was just about the right size and easily separated with a jigsaw. Two small, African hardwood turning blanks, one of Tanga Tanga and one of Chamfuta, and an offcut of Padauk, provided the contrasting details.



The main board

- 3 Being from the outside of the butt, the board rocked like Buddy Holly, and what was to be the cutting surface resembled a washboard. To tackle both of these problems I set up my shop-made router planing jig.
- 4 Before too long, the board was thickened, with two parallel and flat faces.





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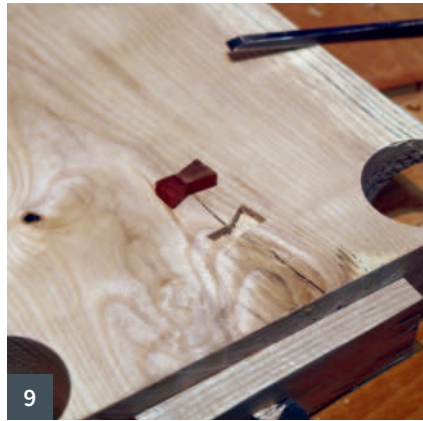
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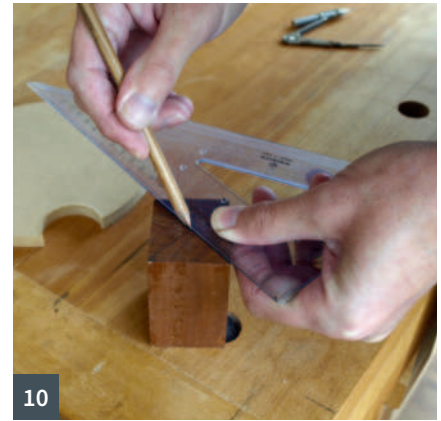
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PHOTOGRAPHS BY MITCH PEACOCK

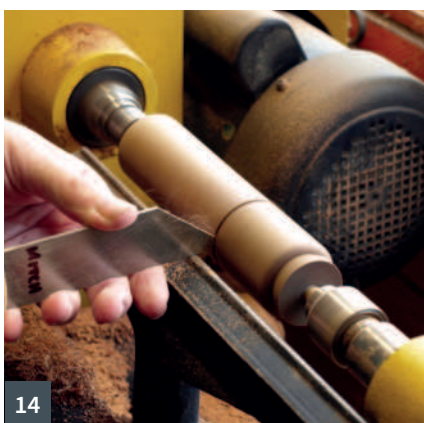
- 5 There was still a large amount of live edge, with a relatively narrow flat base to the board. To assure stability wherever pressure was applied on the top surface, I decided to add a squat leg in each corner. These would be cylindrical, and so I bored holes for them at the drill press.
- 6 The live edges were then attacked with a draw knife, removing any sharp edges and leaving an edge thickness that could survive work in the kitchen.
- 7 The top and bottom were then cleaned up with a smoothing plane, removing all milling marks and preparing the surface for its eventual finish.
- 8 A 'decorative Dutchman' or bow-tie was cut ...
- 9 ... and a corresponding recess prepared, to address a small defect in the top surface.

The legs

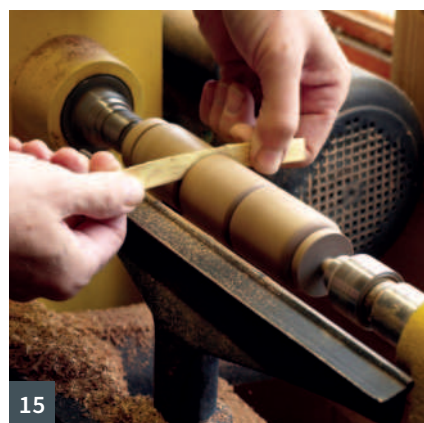
- 10 For interest, three legs were made in one wood, and the fourth in another. This is perhaps hardwired in my head, and many of my four-legged tables are designed with an odd one, either in wood species or shape. A template for cylinder diameter was cut using the same Forstner bit used for the holes in the board, and the leg blanks were centre marked in preparation for turning.
- 11 The blanks were first roughed into the round with a gouge ...
- 12 ... before smoothing out using a skew. I also find smoothing out a cylinder using a block plane on the lathe works extremely well.



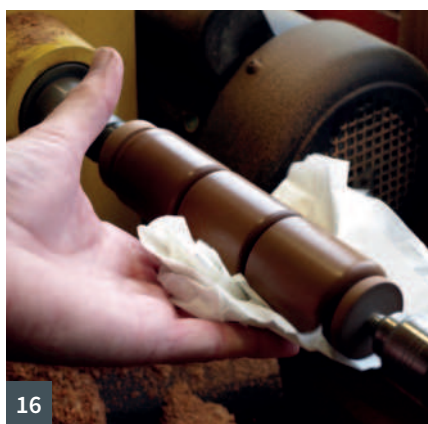
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- 13** Sanding was next, working up from 120 to 240 grit.
14 The longer blank was then divided into three legs.
15 The top and bottom edges had a small radius turned and sanded ...
16 ... and the legs were finish sanded with a paste abrasive. After parting off, the tops and bottoms of all legs were similarly treated.

The joints

- 17** Perhaps glue would have sufficed to attach the legs to the board, however, with varying grain directions I chose not to take any chances, and added dowels. Alignment is quite critical, and to save tedious marking out I made a custom dowelling jig to fit the recesses in the board, and one for the legs. The time spent on these will be recouped after making a few more chopping boards! The first jig is indexed, aligned to the centre of the corner recess, and used to guide the drill bit. A depth stop was used to bore to just over half dowel length.

- 18** Two dowels were used in each joint, and the spacer on the jig ensured the legs would sit a little proud of the cutting surface.
19 Legs were bored in the second jig; which is split through, aligned with rods, and clamps the leg as both halves are pulled together by two screws.

Food-safe finish

- 20** As the cutting board will be used to prepare food, it makes sense to use a food-safe finish, in this case Brandon Bespoke Wax Oil Treatment. This was wiped on with a clean paper towel, left for a few hours, and the excess wiped off. Next day the surface was buffed to a lovely sheen with another clean paper towel. I now have a few more cutting boards to produce, and the process has inspired me to make a table using the same techniques. All this from a piece of firewood!

SIX HANDSCREW TRICKS THAT YOU SHOULD KNOW

**Charles Mak explores
how to use handscrew
clamps – like a pro**

Not every woodworker – including some who may have a lot of clamps in their shops – owns or has even used handscrews. They can perform a variety of clamping functions beyond just holding two objects together. If you are unfamiliar with handscrews, you will find out here the basics of operating a handscrew, and learn about using handscrews as problem solvers in the shop.

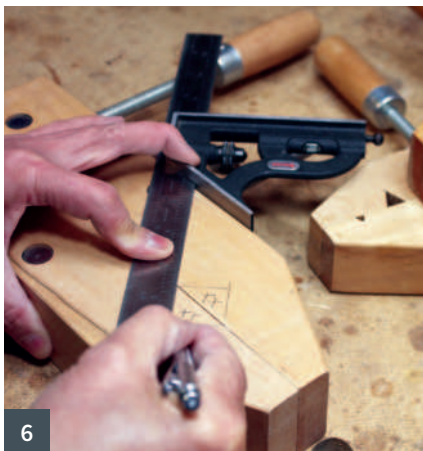
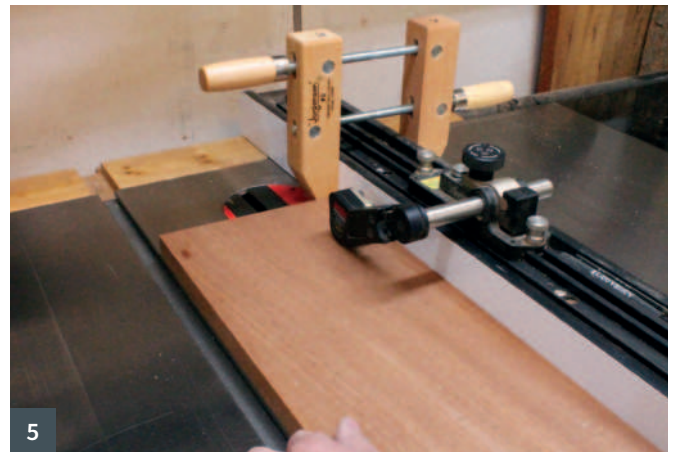
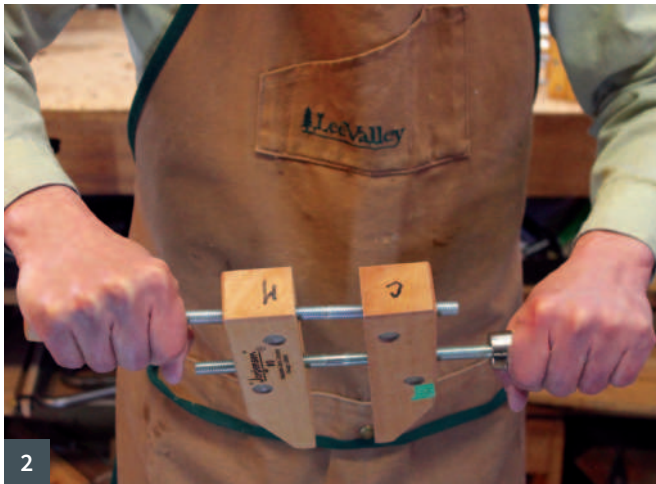
How to adjust and tighten a handscrew

It can be a little challenge to operate a handscrew for the first time since, unlike a regular clamp, you have two handles, not just one, to work with. To use the handscrew, follow these steps:

- i. Hold the front handle (tagged with a green tape) with the left hand and the back handle with the right hand (photo 1).
- ii. Start with the jaws parallel by turning either the left hand or the right until the jaws are more or less equidistant.
- iii. Rotate the whole clamp forwards like pedalling a bike or backwards as in back-pedalling with both hands to open or close the jaws to about the size of the work (photo 2).
- iv. Open up the front jaws slightly and slide the clamp in position over the work (photo 3).
- v. Turn the back handle clockwise to complete the grip (photo 4).

You only need to use the clamp a few times to gain the experience necessary to control this type of clamp.





PHOTOGRAPHS BY CHARLES MAK

How to use a handscrew like a pro

Unlike typical clamps with parallel pads or jaws, the jaws of handscrews can be set to a variety of closing angles, making them excel in clamping both regular and irregular objects. Here, I will however, focus on using handscrews as a shop aid for handling non-clamping tasks and challenges.

A CLAMP BUT ALSO A STOP BLOCK

A stop block is nothing but a block clamped in position as a reference point. A handscrew makes a perfect stop block because it includes both

elements of the clamp and the block (jaw). I use it on the router table, tablesaw, drill press and mitre saw as well (photo 5).

A CLAMP FOR THE ROUNDS

The flat jaws of a regular clamp offer only two contact points on a round object such as a handle, dowel or ball-shaped article. To increase the clamping surfaces and hence the gripping pressure, cut one or two V-shaped notches on the inside jaw faces (photo 6). A single V-notch is good for holding smaller spindles or rods (photo 7). With a handscrew V-notched on both jaws, I can secure a larger round body, such as a trim router to a bench and use the set-up as a light-duty router table (photo 8).



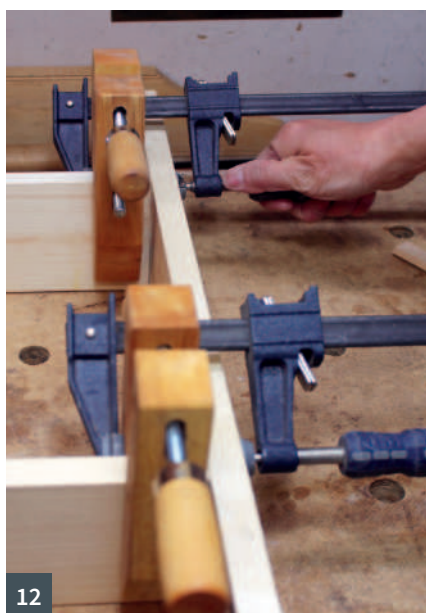
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A CLAMP AS A HOLDER

I have an assortment of methods to sign my work, including the non-electronic branding iron. Instead of trying to hold either the iron or the propane cylinder with my hand to properly aim the flame, I came up with a hands-free way of heating the iron – using a pair of handscrews.

First, secure the cylinder upright in a handscrew, and tilt the clamp up by placing a block underneath the handscrew (photo 9). Then use a V-notched handscrew to hold the iron and place the handscrew on a scrap so the iron's head is aligned with the flame (photo 10).

Whether you are a carver, a furniture maker or a plane maker who needs non-marring jaws for a certain task, handscrews, firm like our hands and not biting, can act as your third or fourth hand!

A CLAMP FOR SUPPORT

Like James Krenov, I prefer to hang cabinet doors with offset hinges. Those doors are usually narrow on their edges, making it hard to rout the hinge mortises or chop them by hand. I overcome that by

clamping with a handscrew to the door to provide a large registration surface for a machine or the palm of a hand to rest upon (photo 11).

A CLAMP EXTENDER IN ASSEMBLY

On the occasion that you are short of a longer clamp or two, you can pair a handscrew and a F-style clamp to finish the assembly job as illustrated in the mock-up here (photo 12).

A CLAMP FOR HANDPLANING

To plane a long edge, we can clamp one end of the board in a vice and support the other end with a deadman. Did you know that sometimes a handscrew can work like a deadman? Here's how. Clamp the board in the vice as usual, then support the other end with a handscrew which rests on the bench (photo 13).

Put simply, handscrews – clever problem-solvers no other clamps can compare – deserve to be in every woodworker's shop.

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MASTERING EDGE JOINTING

Edge jointing is a fundamental weapon of the maker's armoury, but it can be harder than it looks. Rob Stoakley explains the essentials

For woodworkers, edge jointing two bits of timber together by hand should be as natural as drawing breath, but as with many things in life, this seemingly simple task is made up of several individual processes that can make it more complex than it first appears.

There are a number of reasons to be able to edge joint effectively but mainly it's to make boards wider for use; for example, in carcass work or for a table top. However, within that premise are a number of slightly different alternative 'whys and wherefores' worth considering.

Removing material with a planer-thicknesser leaves a surface with minute, regular undulations, caused by the rotating knives in the cutter block and it is these scallops which need to be removed for a good edge joint. Straight and true they may be, but for edge jointing the job has only just begun.

The benefits of edge jointing

I've recently been preparing some material for a cabinet in English walnut and had managed to obtain all the material I needed (except for the back panel) out of one suitable board. Rather than cut out a whole new chunk of timber – and risk spoiling a 400mm wide board in the process – I decided to slip-match a couple of alternative leftover pieces together to form a wider piece. Only examination of the end grain

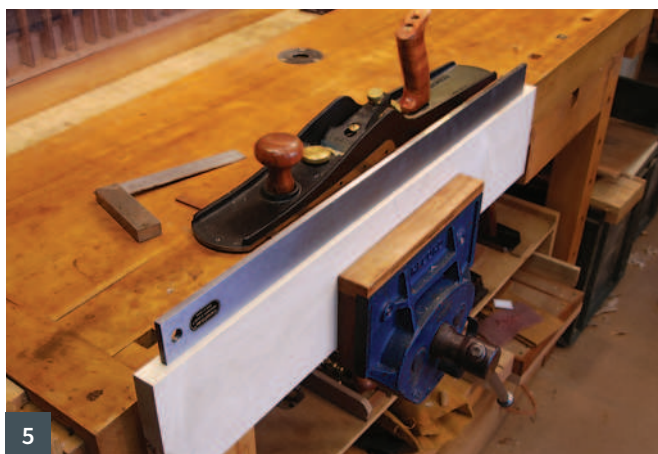
reveals the join, together with the sap, which in the overall scheme of the piece isn't going to be seen because it will be machined to 12mm thickness.

The bench

There are two different edge jointing techniques; both involve using a plane at the bench, either in the vice or on its surface. A couple of very basic aspects that are often overlooked concern the bench itself. It should be the correct height – the late Alan Peters maintained that his bench was permanently mounted on 150mm blocks of pine – but just as importantly, it should be dead level in both planes. If the vice has been fitted correctly, by default, the edge of a piece of timber secured in it ought to be horizontal. Human beings seem to have an inbuilt sense of when something is level, so by starting off with a horizontal surface, it's more likely to stay in that state as material is gradually removed.

The plane and the planing technique

Whichever sort of plane is used, the main requirement is that it should be as long as possible. This is in order to progressively flatten any bumps in the edge rather than ride over them, as would happen if a shorter No.4 or No.5 jack was used.



PHOTOGRAPHS BY ROB STOKLEY

1 Walnut end grain – showing the joints 2 Bench level in both planes 3 Hand position for edge planing. Note the position of the lead hand 4 Planing two thin boards together. The position of the lead hand ensures constant pressure across the length of the stroke 5 Planing a board dead straight is only one option

HOLDING THE PLANE

The iron can either be honed with a camber or straight across, depending on the user preference, but whichever method is used, the way the plane is held is always the same. The leading hand should grip the front of the plane with the thumb on top and the forefinger curled underneath, resting on both the sole and face of the timber. This provides a surprising degree of control and enables the plane to be moved laterally if a high edge inadvertently develops, though as we develop a 'feel' for when something is level, it becomes relatively easy to gauge when the surface is true. Just to make sure though, frequent checking with a reliable square should also be part of the process and shavings should be removed as required from high edges.

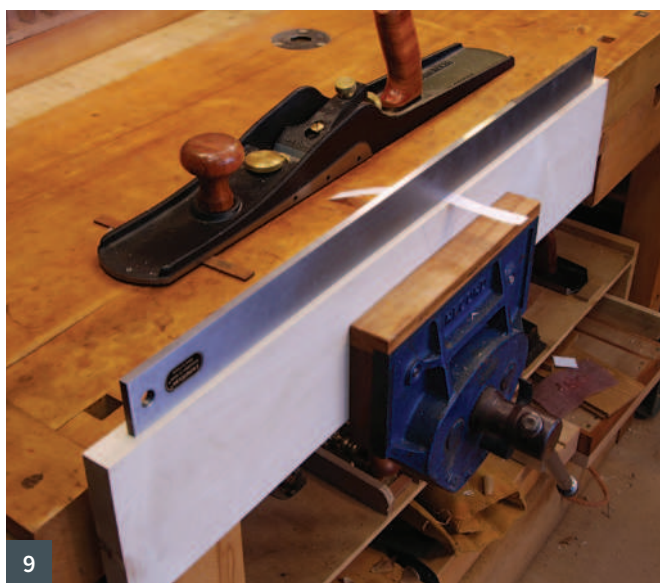
PLANING THIN MATERIAL

This technique works well with timber around 18–20mm, but what happens if the material is very thin, for example if a bookmatched panel were needed in the back of a cabinet? Balancing a large plane on the edge of a narrow strip of wood is fraught with difficulty, but is much easier if the pair are planed together; when two identical shavings are produced a perfect match should be the result as the boards are opened out on the bench. The alternative is to plane each piece individually on a shooting board using a long plane that can be used on its side – not something that can be done with the LV jointer. Happily though, my 710mm-long wooden jointer is more than up to the task!

BOOKMATCHING VENEERS

A further aspect is when thicker 2mm bandsawn veneers need to be either slip or bookmatched. This is impossible to do by holding them in a vice, so the only practical way is to plane them on a dedicated veneer shooting board, and for this I again use my long wooden jointer.

Whichever method is used, the result after frequent checking with a square and straight edge should be a board with a dead straight edge.



6 First 'stop' shaving 7 Second 'stop' shaving 8 Third 'stop' shaving 9 Board is slightly hollow so that the paper can slip in underneath 10 Both boards planed slightly hollow

The 'stop' shaving

It's natural to assume that two flat surfaces ought to be sufficient to obtain a good joint, but things are a little more complex than that. Under certain circumstances – if the timber isn't dry enough – the ends tend to come apart after gluing. To counter this undesirable phenomenon the boards need to be planed very slightly hollow, so that when clamped and glued, each end is in tension and ought not to 'spring' apart.

CREATING HOLLOW BOARDS

The hollowness in the boards is achieved by the progressive use of shorter and shorter very fine shavings beginning and ending at the points indicated by the red arrows in the photographs. By the time the second shaving has been made, it can often be a struggle with a long jointer to produce a third as the plane is now riding across the top of a slight hollow, but generally two or three 'stop' shavings are adequate.

THE DEPTH OF THE HOLLOW

The depth of the hollow can be measured by fitting a very thin piece of

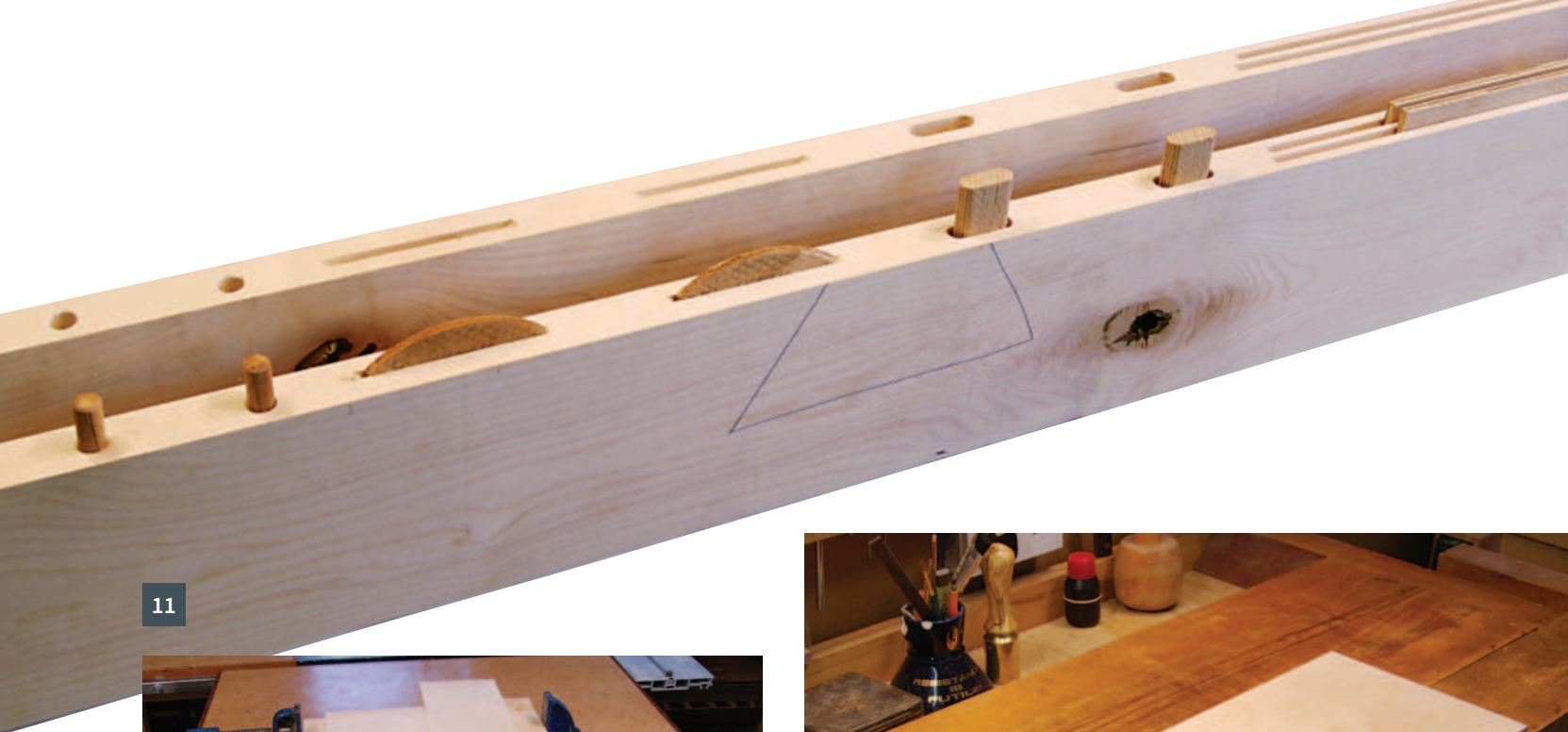
paper under the straight edge. In those far-off and thankfully distant days when almost everyone seemed to smoke, the golden rule was that the hollow should be the thickness of a 'fag paper'. As a vehement non-smoker, the paper shown is the thinnest I could find, but isn't quite 'fag paper' gauge!

Joining the boards

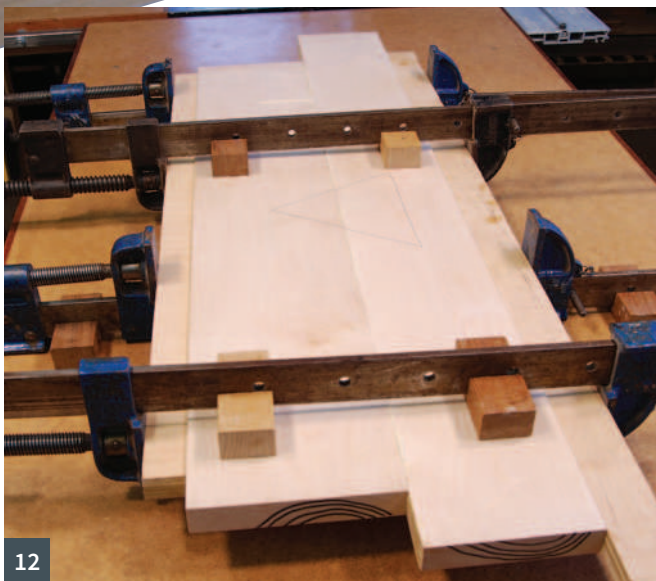
Having produced a pair of slightly hollowed, matched boards, the next job is to glue them together. Before the advent of modern adhesives, the only stuff available was animal glue which was used – and still is by some – hot, so the joint assembly time was understandably very short.

JOINING WITH GLUE

To join a pair of boards with hot hide or animal glue, both surfaces are lightly coated and then rubbed together quickly until the glue has 'grabbed' the timber so that the joint is almost instant. The boards are then put aside until the glue has cooled and set. The plethora of modern adhesives, with their longer open times, means that the gluing process



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11 Methods of reinforcing the joint **12** Gluing the boards with clamps under-and-over **13** The completed board

isn't quite as frantic as it once was. A number of different methods can be used to align the boards and at the same time add a degree of reinforcement to the joint.

OTHER JOINING METHODS

The easiest is a row of biscuits, followed by the Domino. There is some lateral movement with a biscuit as the slot is longer than the wafer and the same thing can be done with the Domino by machining the mortise wider than the insert.

Birch ply tongues or dowels can be used to reinforce the joint. Adding a row of dowels to an edge joint is perhaps the most difficult of all the methods discussed, as the alignment of each dowel in both boards has to be precise.

None of the methods outlined are mandatory, as a long grain to long grain joint is strong, but adding a row of biscuits, for example, makes the chances of joint failure slightly less than they might have been.

Board orientations

Having reinforced the boards, the joint can be glued with clamps going over-and-under to minimise any distortion as the pressure is wound on. Boards should also be orientated so that the end grain – as highlighted in photo 12 – flows alternately. This ensures that they remain flat to minimise the effects of any subsequent movement – i.e. 'cupping' – if the boards shrink a little more after gluing. Where boards are quartersawn, any further shrinkage will still result in flat boards.

Finishing the joint

Provided a degree of accurate working has been followed, the boards should go together seamlessly. Infuriatingly, mine never do, so there's always a certain amount of cleaning up. In the example of the completed board in photo 13, a little time spent with an assortment of planes was needed to produce a decent surface.

Edge jointing at the bench isn't a difficult technique to master and with a little practice it becomes almost second nature, the only requirement being the addition of a long jointer plane to the hand tool arsenal.

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FROM TINY FORESTS

Emma Gillies discovers how the Miyawaki method
is gaining ground in the fight against climate change





Forests are vital for the natural world and the existence of all life on Earth. According to global conservation organisation WWF, we depend on them 'for our survival, from the air we breathe to the wood we use. Besides providing habitats for animals and livelihoods for humans, forests also offer watershed protection, prevent soil erosion and mitigate climate change'. And yet a major cause of the latter is the alarming rate of disappearance of these carbon sinks. Experts estimate that the equivalent of around 36 American-football fields of trees are lost every minute because of deforestation – a figure that is both startling and unprecedented.

That's why afforestation – planting new saplings where none existed before – and reforestation – replanting trees where they once grew but have been destroyed – are so important to the fight against climate change. While environmentalists are constantly thinking up new ways to approach the issue, one idea is experiencing a resurgence: the Miyawaki method.

Mini-forests

This particular afforestation technique is named after Japanese botanist Akira Miyawaki, who, in the 1970s, found a way to recreate ancient woodland that could grow quickly and would require just a small patch of land. Using native plant species, his method involved planting saplings very closely together in nutrient-rich soil to create a dense mini-forest.

But what is it about this that encourages such rapid growth? Victor Beumer, senior research lead at environmental charity Earthwatch Europe, explains: 'Part of the methodology for making the trees grow faster is the dense planting. This makes the saplings compete with one another for resources – light, space, water and nutrients – and hence grow quicker.'

And space is not the only factor at play – as the densely packed plants fight for the limited resources available, over time 'there will be some natural mortality, with the strongest individuals reaching maturity'. Beumer says: 'This is why the combination of species planted is important – there has to be an even distribution of trees from all the forest layers, so that each can occupy a different niche.'

As the climate crisis becomes more apparent, the need to deliver impactful solutions with speed is critical. Usually to plant and nurture a new forest from scratch, it would take several decades for the trees to reach maturity. With this method, the growth rate is up to 10 times faster. Couple this with the fact that you only need a small bit of land – as little as 100m² – and it's easy to see why the technique is so appealing, especially in urban spaces.

According to Beumer, more than 3,000 of these forests already exist around the world, a number that's increasing significantly as awareness grows. At Earthwatch Europe, the goal is to plant at least 150 more in the UK by 2023. Meanwhile, its partner organisation based in the Netherlands, IVN Nature Education, has planted nearly

Three-month-old mini-forest at Bangalore Airport

100, having established Europe's first in 2015. For this initial project, IVN used the guidance and support of Shubhendru Sharma, an industrial engineer turned entrepreneur who revived the Miyawaki technique and began the Tiny Forest movement in 2009.

It was at car manufacturer Toyota's factory in Bengaluru, India, that Sharma met Miyawaki, who had been commissioned to plant a forest there. After joining the botanist's team of volunteers, Sharma was so inspired that he left his job at Toyota to establish a start-up social enterprise, aptly named Afforestt. In his 2014 Ted Talk, Sharma explained what his motivation was behind this career change: 'I wanted to make more of these forests. I was so moved by the results that I wanted to [use] the same acumen with which we make cars or write software or do any mainstream business, so I founded a company which is an end-to-end service provider to create these native natural forests.'

Since its inception in 2011, Afforestt has helped international partners like IVN establish these diverse, green pockets around the world. As well as the Netherlands and the UK, mini-forests can be found in Singapore, Iran and Nicaragua, not to mention across the Indian subcontinent, in locations such as Delhi, Lahore and Rajasthan. The movement is well and truly making waves across the globe, bringing new life to urban spaces. Indeed, these forests can be especially beneficial for cities, where planting woodland isn't usually feasible. Nicolas de Brabandère, a Belgian naturalist and founder of Urban Forests, a European organisation specialising in this method, says they're 'suited to residential areas, places of work, city squares, parks, museums and commercial buildings, for example'. With that, the technique could help to bring cleaner air into cities, as well as better biodiversity: 'Forests are planted with native species only. They form a very varied habitat, which allows biodiversity to flourish. They're also very dense, creating a sanctuary for all the species living in it,' he says.

Of course, a haven for flora and fauna can also be one for humans. The Food and Agriculture Organisation of the United Nations has lauded the method, claiming that among other benefits – cooling the air, filtering pollutants, boosting property value and increasing urban biodiversity – these forests can help improve physical and mental health. Desolate and unused land could be transformed into a beautiful urban respite that has the potential to improve the wellbeing of those close by – as well as the volunteers who help to create it.

Having led more than 20 afforestation projects across Belgium and France, bringing together hundreds of volunteers, de Brabandère has seen first-hand how the process of actually planting these spaces can make a real positive impact on those who are involved, in many ways. 'Miyawaki forests bond communities around a common goal,' he says, 'creating an urban woodland for the common good. People come together to help plant the trees – they get to know each other, they might make friends, they will see the forest grow and become attached to it. They will walk around the space, look at nature, and see how a whole ecosystem comes together. They will talk about it and perhaps initiate more such forests elsewhere.'

Tiny Forests may not be the only solution to tackling global climate change, but they can be a part of the battle and play an important role in helping towns and cities on their journey to becoming carbon neutral. With the potential to improve wellbeing and bring members of the community closer together too, it certainly seems like a worthy technique to consider.

For more information, see earthwatch.org.uk, urban-forests.com and afforestt.com.



Planting a mini-forest in Zaandam, the Netherlands



The Zaandam forest, 18 months after planting



A 1m-wide forest strip in Indore



PHOTOGRAPHS COURTESY OF AFFOREST

HOW TO CREATE A MIYAWAKI FOREST

- Find an appropriate space. 'The surface area should be at least 100m²,' says de Brabandère, 'with no underground networks such as water, electricity and phone lines. It also needs to be no less than 5m from the nearest infrastructure so that the mature forest will not become a problem.'
- Prepare the soil. Adding natural, local materials, water retainers and perforators will encourage the saplings to establish quickly. Organic fertilisers will also provide nourishment.
- Use native species. It's recommended to have at least 30 different varieties to increase biodiversity and help mimic a natural forest.
- Plant densely in layers. The different saplings need to be close together – three to five per square metre is ideal. Plant as randomly as possible and avoid placing the same species all next to each other.
- Protect the soil and saplings. Cover the soil in mulch to insulate it and stop water from evaporating. It's also advisable to tie young trees to support sticks to make sure they grow upwards over the first few months.
- Nurture it. For the first two years, your mini-forest needs daily watering and regular weeding, but make sure not to cut the trees. After three years, the forest will be self-sustaining and can be left to tend to itself.



Mini-forest planted in the USA by Ethan Bryson



Mini-forests can be havens for wildlife

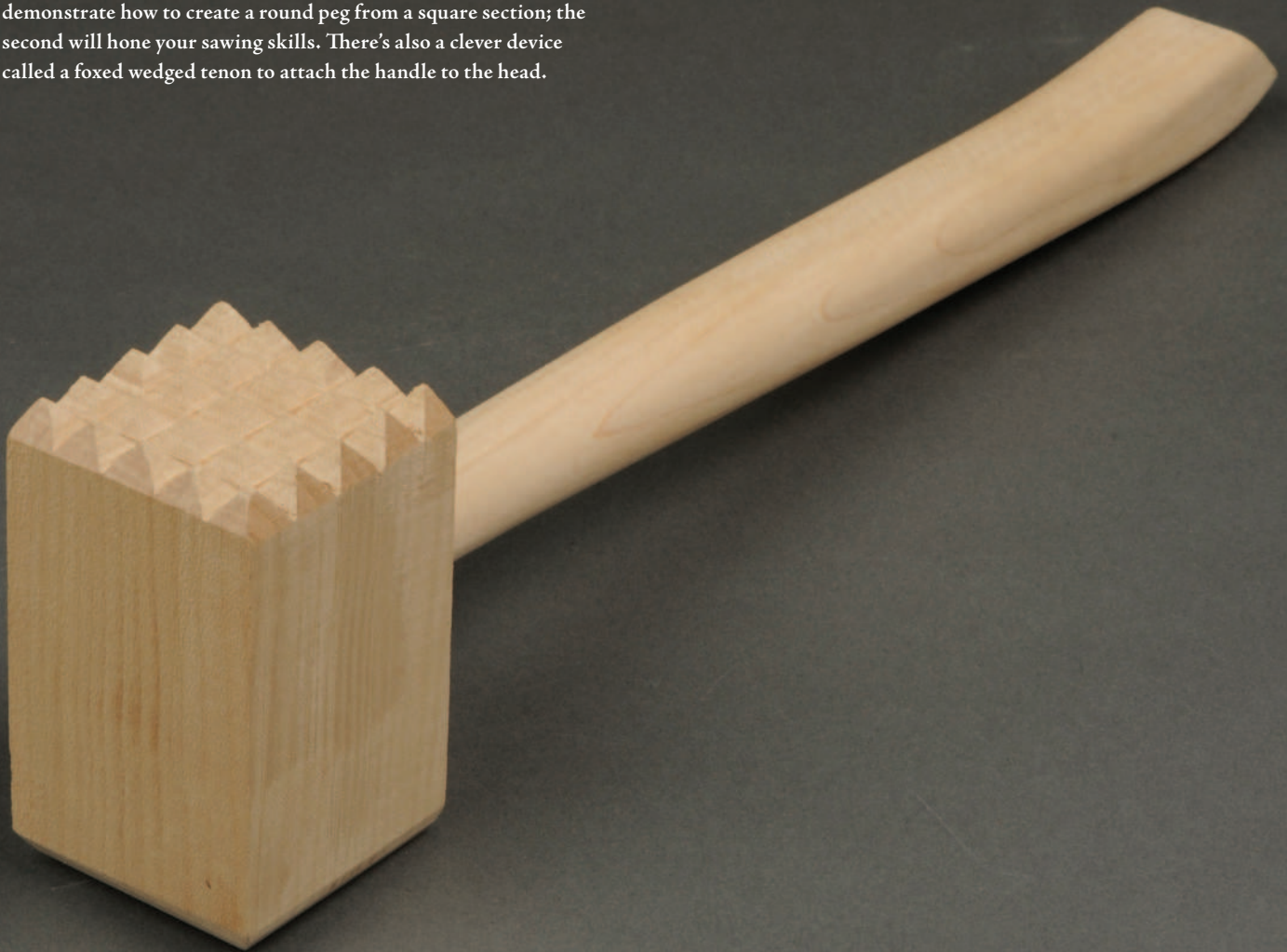


An acre of forest in Jaipur

MEAT TENDERISER

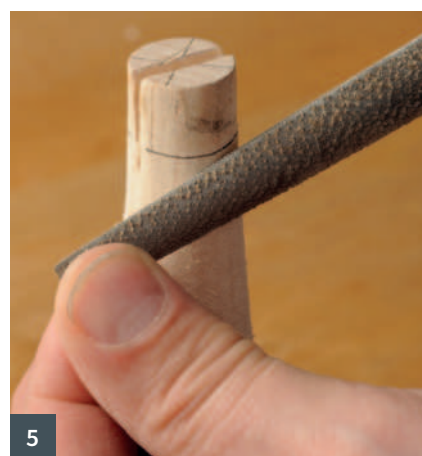
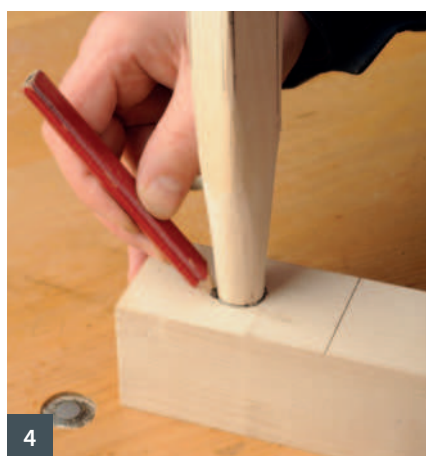
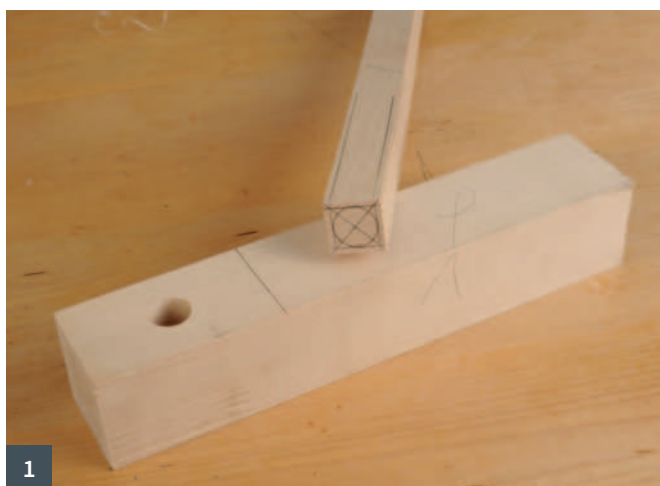
Derek Jones makes a handy kitchen utensil that will hone your woodworking skills

I hope you will notice the similarity between this useful kitchen implement and those found in every workshop and find the techniques transfer quite nicely to making something else. There are two main techniques in this project: the first will demonstrate how to create a round peg from a square section; the second will hone your sawing skills. There's also a clever device called a foxed wedged tenon to attach the handle to the head.



KEY
A = 50mm
B = 10mm
C = 5mm
D = 70mm
E = 18mm
F = 20mm
G = 24mm
H = 25mm

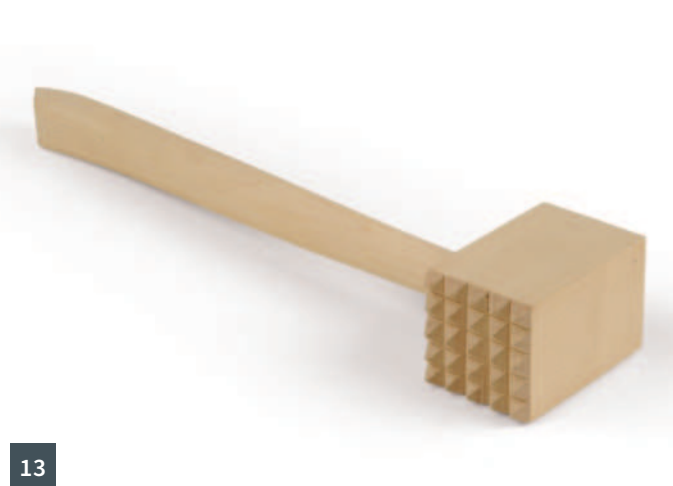




PHOTOGRAPHS BY GMC PUBLICATIONS

Making the tenderiser

- 1 Hardwoods such as beech, maple and sycamore are ideal for making kitchen tools. Start off by drawing the shape of the handle and the diameter of the round tenon at one end to fit into the mortise.
- 2 While the stock is still round, cut a small V-shaped groove to take a wedge in the end of the handle to a depth equal to that of the hole on the head.
- 3 With a block plane, start to shape the handle by first removing the four corners and working your way around. It is important not to go beyond the circle marked on the end.
- 4 As soon as you are able to fit the end into the hole, draw around the handle to record how much of it can be inserted.
- 5 Using a rasp, continue to shape the handle without going above the line. Keep checking the fit until the handle reaches all the way to the bottom of the hole.
- 6 A set of convex scrapers can be used to feather the shape into the rest of the handle and remove all the marks from the rasp and plane.
- 7 Using a marking gauge, section out the face of the hammer with equal spacing in both directions.



- 8 Using the finest saw you have – I used a Japanese saw – make cuts at 45° down to a base line equal to those on the hammer face.
- 9 Repeat the process in the other direction and from the other side to create a series of little pyramids.
- 10 Use the rasp to clean out the bottom of the trenches and adjust the tips of the pyramids to make them sharp.
- 11 The handle is held in place with a wedge made by paring a slice of timber against a block of timber clamped to the bench.
- 12 The wedge needs to be a reasonably tight fit so that it won't fit the V.

It needs to be cut over-length by the same amount that it falls short of the bottom of the V.

- 13 All that remains now is to slot the handle with the wedge in position into the hammer head and knock it into place. The wedge will drive itself home and expand the tip of the handle. Get this right and there will be no need for glue.



RIDING THE WAVES

The team at Otter Surfboards combine their twin passions for surfing and fine woodworking

We are all born makers. The 'makers' movement' can be identified with the satisfying feeling you get when you make something with your bare hands. Likewise, we can say that the makers' movement is based on hobbies that go from being a leisure activity to an economic force. One such example is the Cornwall-based business, Otter Surfboards.

James sanding the rails of a custom surfboard

PHOTOGRAPHS BY MAT ARNEY, COURTESY OF MOLL & MOLL



James in the Otter Surfboards workshop; there is joy in work when you make what you love

Otter Surfboards

Founded by James Otter, the company make hollow, skin and frame wooden surfboards and share the joy of making them through their workshop courses. Their surfboards are the product of the team's shared passions for surfing and fine woodworking; these are the driving force behind the workshop along with a strong concern for the environment. Wooden surfboards stand separate from the vast majority of petro-chemical derived surfboards found bobbing in line-ups these days; they glide and carry their momentum to help you flow through fat sections, they flex and recoil out of turns in a different and more controlled manner than foam boards, and they look like straight-up works of art.

Wood has been a principal material in the construction of surfboards since ancient Hawaiians started to shape wave-riding tools. At Otter Surfboards, they look back for inspiration to the construction techniques first pioneered by legendary waterman and surfboard designer Tom Blake in the 1930s, while looking forwards to a future of more considered and harmonious surf craft that enhance enjoyment and accessibility of waves by blending the best of old and new: traditional materials and techniques with modern refinements and construction methods.





Cedar, walnut and poplar surfboard awaiting its first splash in the sea

Be Maker Be Happy, by Carolina Amell, published by Monsa, RRP £20.99, available online and from all good bookshops.

ESSENTIAL KNIFE TECHNIQUES FOR CARVING

Jason Townsend shares five key knife skills for carving in-the-round

Knife carving has become increasingly popular over recent years. If you want to start this craft, there are many carving knives available to choose from, but there is no one size fits all in terms of blade shape. There are an untold number of different blade shapes and sizes out there and although you can start with a single blade, it is well worth experimenting with blade shapes and sizes to fit your particular style or particular task in hand. A good first blade would have a straight cutting face and be about 40mm long.

There is a lot one can do with just a knife, and it starts with five basic cuts, which form the fundamental basis for all knife carving projects. Here, I look at those five cutting techniques.



SAFETY CONSIDERATIONS

- When working with sharp tools, it is essential that you wear appropriate personal protective equipment (PPE) and observe some basic safety precautions. Always have some plasters handy just in case you do accidentally cut yourself – it can be easily done, even when you're simply reaching across the bench to grab another tool. I also suggest keeping some alcohol swabs handy too, so you can clean the area before applying a plaster.
- Gloves. Gloves. Gloves. A good quality pair of cut-resistant and stab-resistant gloves are an essential item in a woodcarver's toolbox. The pair of gloves shown on the right are made from a high quality Kevlar weave with nitrile coating on the palm for good grip and an extra cut-resistant layer where the thumb meets the palm. I cannot emphasise enough the importance of wearing at least one glove (on the hand that doesn't hold the knife).
- Leather digit guards are also worth looking at and can be worn on the thumb of your cutting hand and/or the finger and thumb of your non-cutting hand. They will not offer the same level of protection as a good Kevlar glove, but have their place in the toolbox.



PHOTOGRAPHS BY JASON TOWNSEND



1 Paring cut

The paring cut is where the knife is pulled towards you. Position the thumb of your cutting hand securely on the piece of work, place the knife blade on the work with your thumb outstretched and grip the knife between your palm and fingers. Pull the knife towards your thumb to make the cut. A leather guard on the thumb of your cutting hand and a glove on your non-cutting hand is a good precaution with this cut because the blade is coming towards you. The blade should be fully under your control though because it can only travel until your fist is clenched. If the piece of work is longer, you can move your thumb down the piece of work while keeping the blade in place and continue the cut.



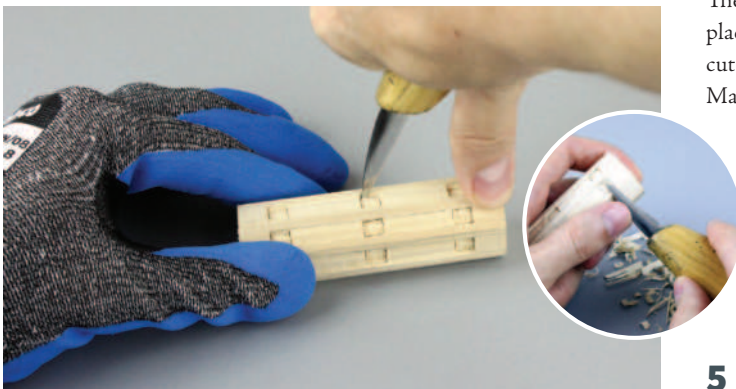
2 Thumb-push cut

The thumb-push cut is where the knife is pushed away from you. With this cut, the thumb on the hand not holding the knife does all of the work. Grip the knife between your fingers and palm with the thumb resting on the back of the knife, the blade facing away from you. Grip the work with the hand not holding the knife and place the blade on the work in front of the thumb of this hand. The back of the blade (or the back of the knife) should rest on this thumb. Extend the thumb so that it pushes the blade along the work to make the cut. This cut has a very high degree of control because the blade can only travel as far as you can flex the thumb of the hand not holding the knife.



3 Stop cut

This essential cut involves pushing the blade into the wood to make a cut that other cuts can butt up against. Holding the knife between your palm and fingers, place the thumb on the piece of work and lower the blade to the place where you want to make the cut. Push the knife down into the wood. You can use the tip of the knife for a smaller cut or the very base of the blade for a more powerful cut. You will only be able to go to a certain depth before the blade will be unable to travel further. Do not use too much force with this cut or you risk the knife slipping and causing an accident.



4 Stab cut

The stab cut is one that is essential in chip carving, but also has its place when used with knives that have a variety of blade shapes. This cut is most useful when trying to cut out a triangular piece of wood. Make two stab cuts and can then use a thumb-push or paring cut in order to remove the chip of wood. Hold the knife in a similar way to that for a stop cut but you want to bring the tip of the blade down onto the work rather than the cutting face of the blade. Knives with a curved cutting face are not so useful for this and knives that have an angled blade are the most useful. Again, don't use too much force with this cut because the blade will only be able to travel so far into the wood.



5 Scoring

Scoring is used in all sorts of contexts. Once you have marked a design out onto a piece of wood, you might score the wood along the lines of the design. You might also score with a knife to make a cut that another cut can butt up against, much like a stop cut. A variety of blade shapes can be used for scoring, but knives with a curved cutting face are probably not an appropriate choice; a straight cutting face is the most appropriate. As with the stop cut and stab cut, don't use too much force when scoring because the blade can only cut into the wood so much; it is much better to repeat scoring if you want a deeper cut.

CARVED HORSE

Peter Clothier's design
is an excellent introduction
to the craft of carving

This horse is a good beginners' project, needing only a few basic tools, and there are several techniques involved that will be useful in more advanced projects. I decided to use pine, because I like the way the grain gives added interest to the finished work.



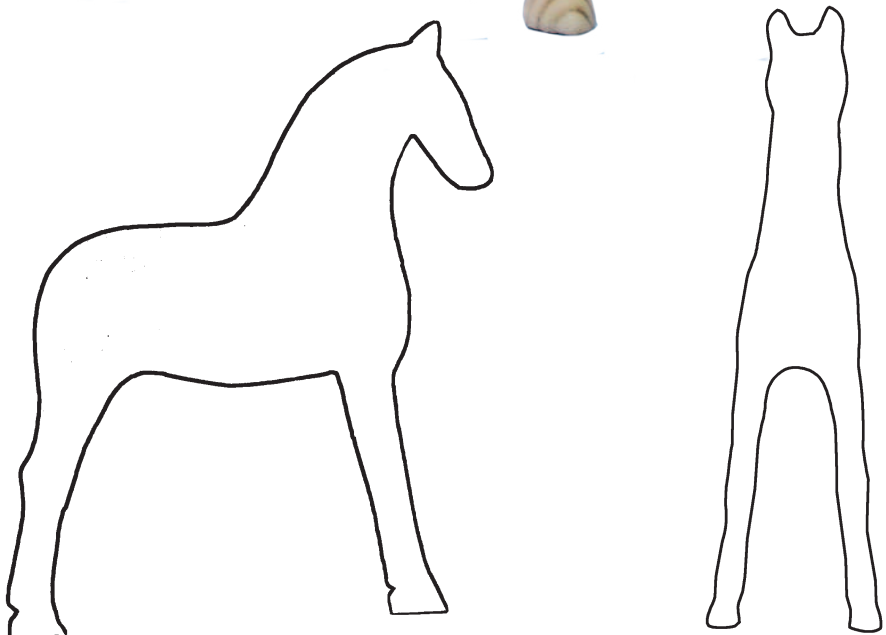
YOU WILL NEED

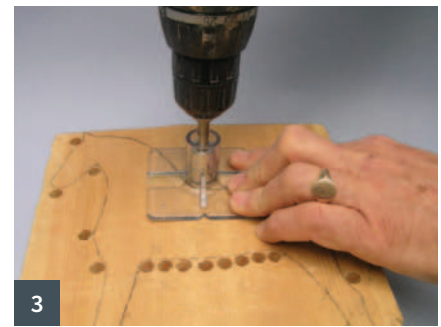
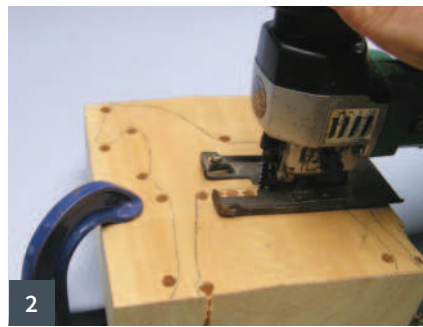
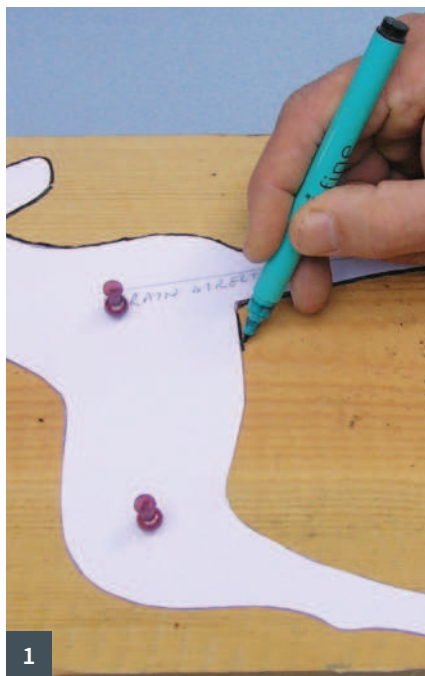
Timber:

- Pine: approx 225 x 75 x 250mm

Tools:

- Bandsaw or jigsaw, coping saw
- 3in vice & G-clamp
- No.7 and No.11 15mm gouge
- Mallet
- Riffler 8in
- Selection of rasps, small round file
- Abrasives – resin bonded type: 60, 100, 120, 150, 240 grit
- Spirit type sanding sealer
- 0000 steel wool and wax polish





PHOTOGRAPHS BY PETER CLOTHIER

Using the drawings

- 1 First, use a copier to enlarge the template of the horse's profile. If you use 75mm-thick timber then your horse template will be 240mm high and 210mm wide. Pin the template to your timber, checking that the grain is vertical and aligns with the legs. Carefully cut out the template and roughly position the template to avoid any imperfections in the finished work. Mark a line to establish where the feet will stand and then thumb tack the template to your timber, making sure that it is aligned so that in the finished work the grain runs along the length of the legs – the legs will break if the grain runs across the leg. Next, mark a clear line around the template, and draw diagonal hatch lines on the waste side of the line.

Removing waste

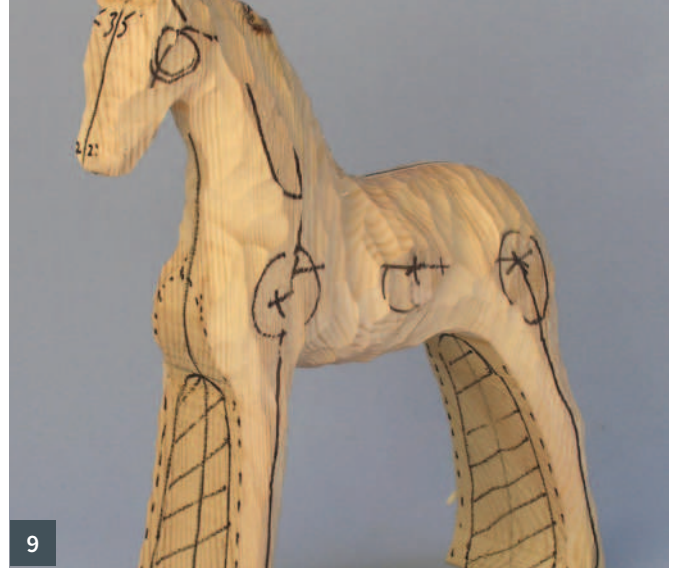
- 2 The first stage of the carving is to remove all the wood from the waste side of the horse outline. Use a bandsaw if you have one, or a handheld jigsaw with a deep cutting wood blade. Ensure that the wood is firmly clamped to the workbench during sawing and that the blade is clear of the benchtop.
- 3 For a neater and quicker job when removing waste, drill holes at the tight curves or pinch points around the outside of the shape. The

holes need to be vertical and this is ensured by using a bench drill press or a drill guide.

- 4 Use chisels, surform or a rasp to trim back any waste wood to the template outline. With the outline established, mark a centreline around the horse. The horse tapers from a width at the base of 75mm to 35mm at the ears and 50mm along the back. Mark the taper and chisel off the waste using a $\frac{5}{16}$ in medium gouge.
- 5 The head also tapers from 35mm at the ears to 22mm at the nose – mark this and then remove the waste with your gouge. To avoid damage, do not carve away the wood between the ears yet.

Marking out

- 6 Mark out clearly the important features of the horse. The high points of the shoulder, belly and hindquarters are marked with a cross and circle. The legs are marked out to show their width and along the front, a broken line shows the highline of the legs. The line running down the outside of the legs indicates the high line of the outer shape of the legs.
- 7 The waste wood between the legs is marked with hatch lines. The high point of the neck and cheeks is also marked. Avoid ink-based markers as they tend to soak into the grain and are hard to remove.

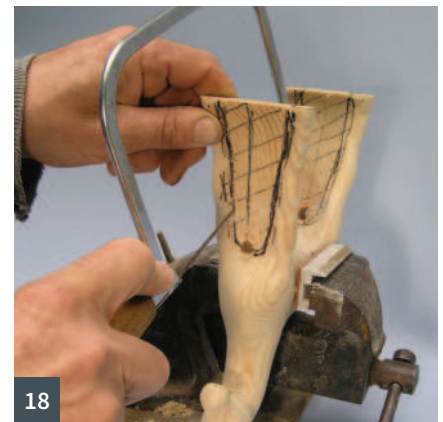


Carving the body and outside of the legs

- 8** With the work G-clamped to the bench, use a gouge to round off the body, neck – and very carefully – the legs. As the grain is awkward, be sure to carve slowly, taking small cuts. Do not remove any marking lines at this stage.
- 9** Here you can see the halfway stage of the carving with the marking out still in place and the general shapes established.
- 10** Carve away the marks and clean up the surface of the horse using a shallow gouge. You will notice that the lines indicating the high line of the legs are still visible and will be needed for proceeding to the following stage.

Removing tool marks

- 11** The carving has to be smoothed and the subtle shapes of the form developed. At this point it is more difficult to work with the wood clamped to the bench. I used a 75mm vice mounted on an octagonal plywood base G-clamped to the bench. Magnetic soft jaws prevented damage to the wood. This set-up allowed me to turn the work in any direction.
- 12** The tool marks are now removed with rasps and rifflers, and this also allows for further shaping.
- 13** Work all over the piece, smoothing and shaping, blending the forms into one another. As the shapes become more refined, more gouge work is needed to tidy the shapes and keep the two sides of the horse symmetrical. Shape the outsides of the legs and model the head and outsides of the ears using a riffler. The insides of the legs and ears will be separated later.

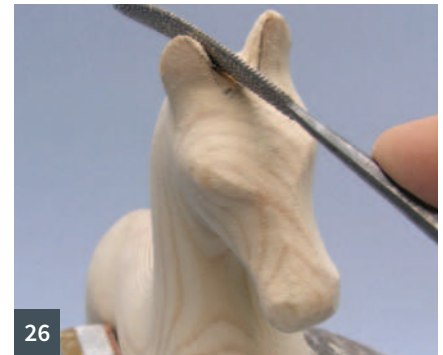
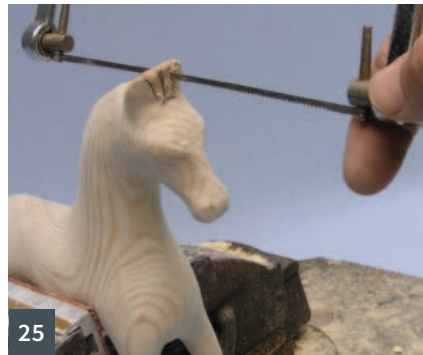
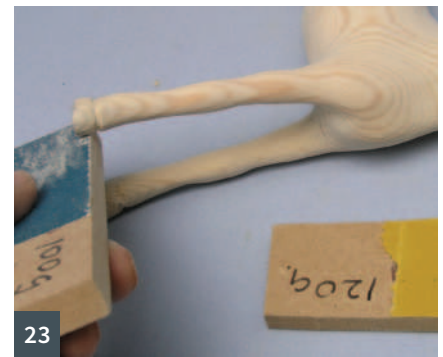


Using abrasives for a smooth surface

- 14** After the horse is shaped with a riffler, it is ready for the first sanding. The centreline is still visible, helping to ensure that the work remains symmetrical.
- 15** Use 60-grit paper wrapped around a 15mm dowel rod to sand out the marks left by the riffler. This grade also allows for a further degree of shaping, which will be needed around the outside of the legs and ears. Ensure all the tears caused by the riffler are carefully sanded. Take particular care when shaping the head and outside of the ears, outside of the legs and particularly over and under the body. Notice the shape of the hooves have been marked on the base.
- 16** Model the head and outside of the ears with 100-grit abrasive. Marking out the face helps to keep a balance to the head.

Separating the legs

- 17** Check that the marking out for the legs is correct and drill a 10mm hole at the junction of the front and back legs, and the body.
- 18** Use a coping saw to cut down the inside of the legs, then use a gouge to remove any large amounts of waste wood.
- 19** Refine the profile from the front using a riffler, then round off the legs and blend the tops into the body.
- 20** Sand with 60-grit paper. As the abrasive is very coarse, fine details such as the hooves and ears need to be rough shaped but will be fine-tuned later. Ensure that the horse is symmetrical and the legs and ears match; if not go back to the riffler or use the paper to make suitable adjustments to the shapes.



Sanding table

21 Look closely all over the surface of the work for any imperfections which need to be sanded out. It is easy to bruise the work now that the surface is becoming finer, so make a sanding table by fixing a piece of batten to some MDF or plywood about 400 x 300mm. This can then be held in the vice and if you make a pad of bubble wrap or similar material to rest the work on, this will protect it from damage.

Refining the hoof details

- 22** Use a small round file to make a groove around the hooves, or abrasive wrapped around a paintbrush handle to sand in a groove.
- 23** Use a homemade 100-grit sanding board to shape the angled part of the hoof. Work all over the carving, taking out little tears and dents. Carefully shape the head, the outside of the ears and shape the hooves so that they conform to the horseshoe outline.
- 24** Make the horseshoe shape on the hooves by sanding in a groove. Wrap some 100-grit paper around a paintbrush handle to help define the shape.

Separating the ears

- 25** Mark out the ears and remove waste with a coping saw.

26 Use a riffler to shape the ears – allow the shapes to flow into each other. Next, refine the head. Mark it out again if necessary and then using 100-grit paper and a sanding dowel, gently shape the face and under the neck.

27 Sand the ears using 60-grit paper. Try to define a good balanced shape to the ears. Soak your work and let it dry overnight. When dry, inspect the surface and sand out any minor imperfections – when that is complete, go over the surface with 120-grit paper. Give the horse a final soak.

Finishing the horse

28 Use 150-grit paper to achieve a fine unblemished surface and then using a clean brush or a piece of white kitchen paper, apply a thin coat of sanding sealer. Allow this to dry thoroughly and give the surface a light sanding with 240-grit paper, then apply another coat of sanding sealer. After this coat is dry, matt the surface with some 0000 steel wool and apply a good quality furniture wax polish. If it is likely that the horse will be handled by young children, for safety reasons do consider carefully any finish that you apply.

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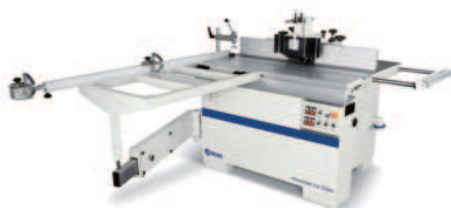
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RANDOM ORBITAL SANDERS

How they work

The term random orbital is a little erroneous, really. What you have is a circular rubber platen – usually with hook-and-loop fastening – to which a perforated abrasive disc is fitted.

The platen action is two-fold: one is orbital while the other is rotational; together it produces a random sanding pattern. Of course, at some point the action will repeat itself, so it isn't entirely random, but by that time the operator will have moved the sander on to the next part of the surface. This random sanding motion means, in practice, you have the more aggressive rotary sanding action tempered by the gentler orbital action. The result, if used correctly, is faster sanding with less effort and a better finish.



Hook-and-loop makes sheet changing very fast



The eccentric plate in the centre is clearly visible

Anthony Bailey shows how you can get the most from this useful power tool

Random orbital sanders come in a range of different types but strangely many woodworkers still stick with the more traditional plain orbital sander. There are good reasons for doing so but once you try a random orbital, there isn't any looking back because of the efficiency of the way they work.

What to look for

Generally, the quality of random orbital sanders is good because the two-stage sanding action has to be correctly engineered or it won't work properly. There are DIY as well as professional models. Not all machines are the same – as always, more money will get you a better tool.

Unlike some specific woodworking power tools that cannot be used for anything other than wood, such as a portable planer, for example, the random orbital sander is very well suited to automotive bodywork or boatbuilding and similar trades. Therefore you can buy perfectly serviceable machines being sold under different brands and from different sources to the more typical woodworking tool suppliers. You may find that these machines have a coarser sanding pattern than usual. When you buy a random orbital sander you need to check the technical specification first.

There are small sanders with a smaller orbit pattern intended for finishing work. These won't be the best for large area or general sanding so the standard larger tool with a larger orbit pattern is best.

Most machines use either 125mm or 150mm diameter abrasive discs although there are one or two unusual sizes as well.

Another key point is extraction, as sanding produces the worst, most dangerous dust that is extremely fine. Some tools only come with a dust bag or box. Really you need extraction direct from the tool or to use a downdraught table which extracts the dust directly from underneath the workpiece, and of course wear PPE as well for complete safety. More recently a Bosch random orbital sander which, it is claimed, removes all dust has come on to the market. It works very well until you sand over an open edge but it is a big step forward. It has another important feature in that the top half of the body is 'decoupled' from the sanding plate. This means vastly lower vibration being transmitted to the user. This is important because extended use of any vibrating machine can cause damage either of a temporary or more permanent nature including 'vibration white finger'. Both these key features are also shared with a Mafell standard non-random orbital sander. Hopefully other manufacturers will follow their lead soon.



A DIY model on the left and a heavy-duty professional model on the right



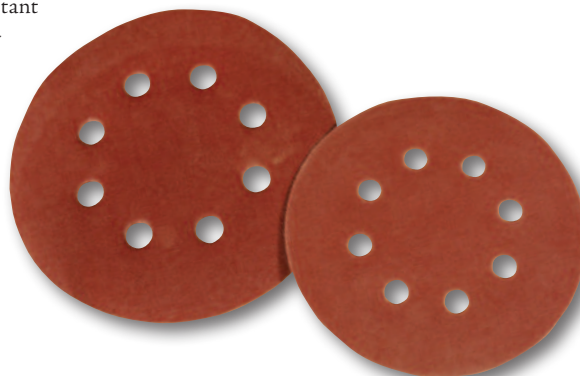
Care is needed to avoid any score marks



The 125mm diameter Skil is a general purpose model



Extraction is better than using a dust bag

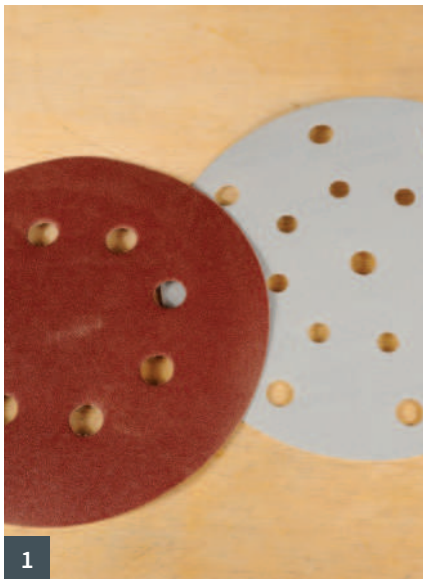


Disc change is between 125mm diameter and 150mm diameter



This Bosch model removes all dust

Usage tips



1 Use the right abrasive for right job, typically this will be aluminium oxide for sanding wood but finishing paper for finishing work; this is generally greyish in colour while alox is normally a dark maroon red or yellow.

2 There are several patterns of extraction hole in abrasive discs. Make sure you buy the correct sort for your machine as a non-match will result in little or no extraction taking place. You can buy plain discs but this is pointless since you need to ensure dust is removed as you sand.

3 The correct grit needs to be chosen for the job. Be aware that the faster removal rate of a random orbital means it is often safer to work with a grit one grade finer than on a normal orbital sander, especially when sanding veneered surfaces.

4 It is easy to adopt an angle of 'attack' that will remove serious defects and can even reshape surfaces. This may be OK for vehicle bodywork repairs but can be too aggressive on woodwork, so care is needed. Generally it is better to keep the platen flat on the workpiece, being sure to avoid applying excessive pressure.

5 A dedicated woodworking sander sits more naturally on the surface. Unless it is a small palm type machine, it will usually have a fixed or removable front grip. It is best to leave in place for more even support unless you are working into a tight corner.



6 When the sander starts up it will tend to leave a slight circular sanding 'shadow' on the workpiece which you probably won't spot but when a high finish is applied is likely to be noticeable in some lights. Therefore when you have sanded a surface, return to your starting area and sand over it to equalise the sanding pattern.

7 When sanding any new work it is important to have a plan. Generally it is better to sand components before final assembly; for example sanding a cabinet before applying mouldings. This allows you to sand evenly on all surfaces without the sander attacking mouldings and deforming the shape of it all. The sanding in the photo here is a mistake as the top is already fitted to this stool.

8 Move in even overlapping strips up and down the workpiece, then vary it by working across the board to even out the sanding effect. Since it orbits there should not be large obvious sanding

marks; however, finish with a fine grit to minimise the tiny orbit marks. Replace the paper regularly if clogging of the grits occurs, which will cause marking.

9 If you do need to sand into corners it may be better to use a detail sander with a delta-shaped head as the random orbital cannot get in there and you risk creating a slight rut in the surface attempting to do so.

10 Abrasives vary in their characteristics. Aluminium oxide is non-friable – it does not break down into smaller pieces with use – so it is quite aggressive, hence the need to take care both with choice of grade but also sanding technique. Finishing paper has a dry lubricated surface that reduces clogging and it is less aggressive and therefore better for more delicate work. This 3M sander has been used to flat off a first lacquer coat with fine finishing paper that remains completely unclogged after use.

A man, Derek Annand, stands in a large, rustic workshop. He is wearing a black zip-up jacket with a circular logo on the left chest that says 'TABULA RASA', dark cargo pants, and blue sneakers. He has his hands in his pockets and is looking towards the camera. The workshop is filled with wooden materials, including a large curved wooden structure in the background and several wooden sawhorses in the foreground. The lighting is dramatic, with strong highlights and deep shadows.

FINISHING WHAT NATURE STARTED

Derek Annand of Tabula
Rasa Design explains how
his live-edge furniture
celebrates the natural
beauty of wood



Derek Annand, the founder of Tabula Rasa Design, creates bespoke furniture using live-edge timber slabs; from shelves and desks, to wall art – each piece is carefully handcrafted to showcase the natural beauty of the wood and give a fallen tree a new lease on life. With his unique furniture, Derek unlocks the potential beauty within every knot, burr and wane.

Based in the picturesque Carbeth Guthrie Estate, 10 miles from Glasgow, he also offers woodworking courses for people of all abilities.

Derek's live-edge furniture seems to have struck a chord with the public in recent times and he has seen a surge in demand as people spend more time at home due to the Coronavirus pandemic.



Your signature style is live edge work. What appeals to you about this style?

Wood is a living material. I like to maintain this natural feel as far as possible allowing the wood to 'speak for itself'. As every board – even from within the same tree – is different, it means that every piece I produce is genuinely unique.

Live-edge furniture is very popular at the moment, why do you think that is? Do you think there's something about it that chimes with how people are feeling right now?

People are becoming less interested in mass production and are looking for unique pieces that reflect their personal taste and offer something different from the norm. It also seems to pick up on the growing trend for natural forms combined with contemporary styling.

How has the Covid-19 pandemic and subsequent lockdowns impacted on your work and business?

Like every business, Covid has had a massive impact on us, with most of the courses having had to be postponed and clients being more cautious due to the uncertainties that abound. However, we have taken the opportunity to invest in making a number of improvements to the workshop and its equipment/facilities.

As more people shift to long-term homeworking, have you noticed a difference in what customers want from their furniture?

It seems that people are looking for a blend of the beautiful with the practical. If you are going to be using something for a long time, having something that is aesthetically pleasing can help improve the experience.

Are there any particular types of wood you prefer working with and why?

I love working with characterful timbers, using what others might call 'flaws' to create stunning and unique pieces. I love native Scottish timbers but probably my favourite timber at the moment is rippled black walnut. This is very hard to find but a couple of years ago, I was lucky enough to get a supply of 500-year-old material from Spain.

Sustainability is a key part of your business. Could you tell us about your views on the importance of sustainability?

Beautiful hardwoods are a valuable commodity. I only use timbers that have been ethically felled and I focus on native timbers or timbers from well-managed forests.

Is it important to you to know the provenance of the wood you work with?

Whilst it isn't always possible to know the wood's exact provenance, I think it is important to understand that the wood has been responsibly harvested. I use predominantly native Scottish hardwoods which are readily traceable or timber that I have sourced personally – for example, the walnut from Spain.

What kind of tools do you prefer to work with and why?

I enjoy using both traditional hand tools and modern equipment. The important thing is choosing the most appropriate tool for the task in hand. Hand tools enable you to really 'feel' the timber, while modern equipment offers considerable time savings and helps in achieving the highest quality, which is a signature feature of the furniture produced at Tabula Rasa Design.

Tell us about your workshop.

The workshop is 6,000 sq ft. It is situated in the stunning Carbeth Guthrie Estate on the outskirts of Glasgow. Within the main body of the building, which houses the work areas and key machinery, there is a dedicated training section equipped with individual benches. All this is overlooked by a stunning mezzanine level 'tree house' where clients can discuss their requirements and course attendees can relax.

Linking the main workshop with the machine shop where the raw timber is first processed, is a 'social area' housing the most important machine of all – the coffee machine! Beyond the machine shop is a dedicated showroom which houses some key pieces allowing clients to get a feel for what their finished piece might feasibly look like.

Where do you find the inspiration for your furniture?

I draw my inspiration from a wide range of sources including past designs, modern trends and my own imagination. However, it is the natural features of a particular piece of timber that dictate the final design.

How does your design process work?

The majority of my designs develop organically and focus on letting the natural beauty of the wood drive the final product. As our website states, 'we finish what nature started'. Getting the design right is all about finding the proper balance of form, structure and function, and utilising sympathetic enhancements to highlight the features of the live edge slabs I focus on.

When a client has a very specific brief, I will liaise closely with them to ensure that the finished product matches (and hopefully exceeds) their expectations.

What is the largest/most ambitious project you've worked on to date?

The TR tree house in the workshop [shown opposite right]. This was always going to be a very ambitious project – trying to subtly build a treehouse in the middle of a workshop/industrial unit. We certainly had a few battles along the way. It took me and the super-talented James O'Keefe four months to complete the build and we are absolutely over the moon with the end result.

You also offer woodworking courses; what kind of subjects do you teach?

Tabula Rasa Design offers one- and two-day courses aimed at beginners/inexperienced woodworkers, as well as those who are looking to develop their existing skills. The courses have their own dedicated area in the workshop and combine a variety of traditional techniques with modern methods using both hand and power tools. The courses are very relaxed, and each attendee leaves with a unique item crafted by themselves. The courses range from producing a chopping board (focusing on some of the most basic woodworking techniques), to crafting a trinket box or a coffee/console table.

How easy is it to combine making and teaching, and what do you find satisfying/enjoyable about teaching?

The courses have proved very popular with many of the attendees being women who have had no prior woodworking experience. It is incredibly satisfying to see the attendees' confidence develop and the often amazed look on their faces at what they have been able to produce within just a few hours. It is a real pleasure to be able to pass on some of my skills and to share my passion for wood. The courses are run at the weekend and therefore tend not to interfere with any on-going projects. The courses offer a change of pace and a fresh approach which helps keep everything fresh, as well as providing a valuable source of feedback.

What do you like to do outside of work?

I am a keen climber and love to get on the mountains with my big dog Nevis at any opportunity.

tabularasadesign.co.uk

www.etsy.com/uk/shop/DesignTabulaRasa



PHOTOGRAPHS BY CLIPSE, THESE EYES AND DONALD STEWART

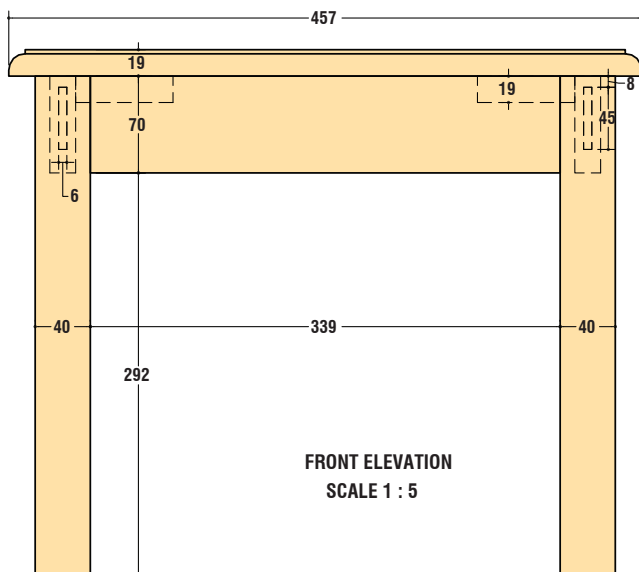
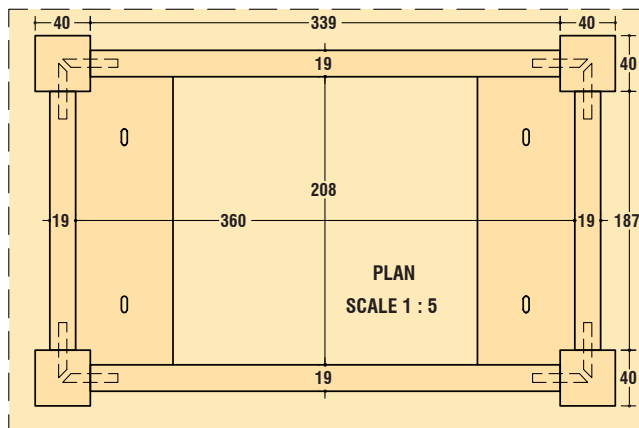
TREES FOR LIFE

For every fallen tree that has been reborn into an amazing piece of our furniture, Tabula Rasa Design plants another in Scotland. The company supports Trees For Life in their vision to restore the Caledonian forest to the Scottish Highlands.

treesforlife.org.uk

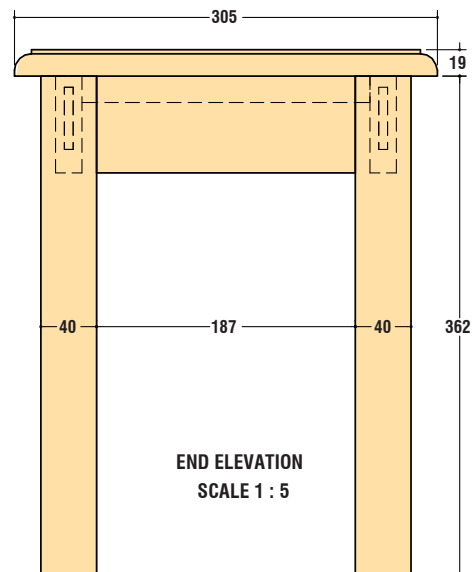
OCCASIONAL TABLES

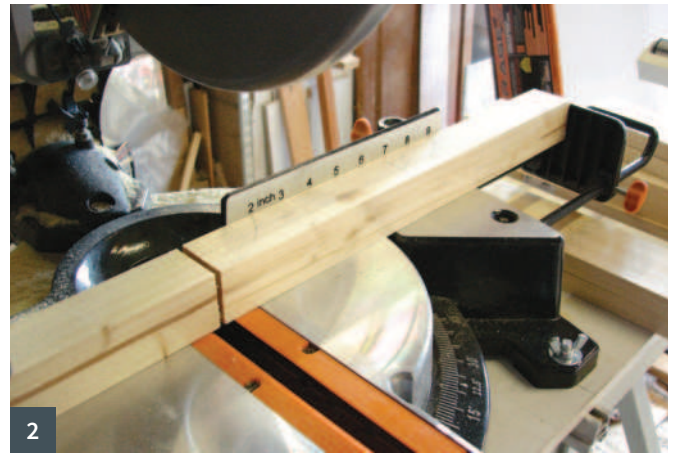
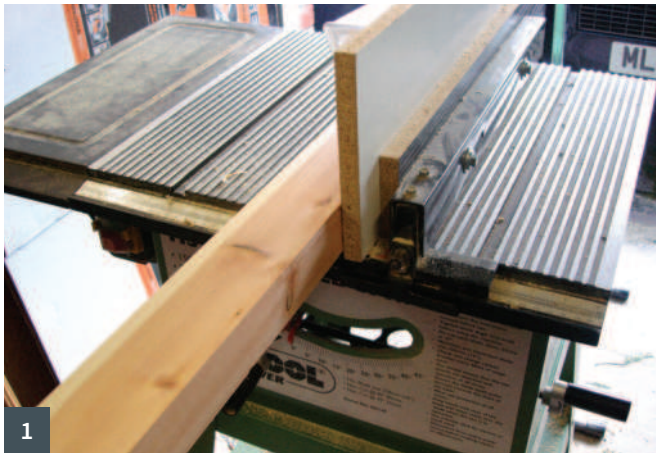
Dave Maunder makes a pair of simple pine tables



These tables were made to match a pine chest of drawers. The tables were to be 457 x 305 x 381mm high, and would be primarily used for snacks while watching the television. Construction of the tops was from planed boards biscuit jointed together. For the legs and rails I decided to use loose tenons – something I had never tried before – as I wanted to extend my range of skills.

The materials used were pine boards from my local timber yard. I checked the thickness of the narrower boards for uniformity with Vernier calipers and used these as supplied for the tops. The legs were made from nominal 75 x 50mm timber resawn length ways and then thickened to a square section.





Legs and rails

- 1 The timber for the legs was re-sawn on the tablesaw. With the sawn side up, I thickened the legs to give four planed sides then rotated the timber and re-planed each side to achieve a square cross section.
- 2 Using a stop on the mitre saw, all the components were cut to length. I cut an extra one of each component in case of mistakes/machining errors later on. I then marked adjacent joints on all the components.
- 3 I machined the mortises in the rails using a router. I used a homemade mortising jig, but two lengths of wide timber clamped each side of the component to support the router would suffice using the router's fence.
- 4 Once the mortises were completed, I then cut the loose tenons to length from 6mm-thick stock, on the mitre saw – I used some oak that was in my offcuts bin.
- 5 After fitting the tenons into the rails, I mitred them with a tenon saw. A mitre saw would be too severe on unsupported thin timber like this.
- 6 The leg mortises were cut using a chisel mortiser. Alternatively, you could drill out most of the waste with a Forstner bit and clean up with mortise chisels.



PHOTOGRAPHS BY DAVE MAUNDER

The top

- 7** When laying out the boards for the top, I alternated the end grain orientation to reduce the risk of cupping. Any edges not at right angles to the face were trued up using a bearing guided router cutter set against a straightedge clamped to the workpiece.
- 8** I lined up the boards for the top and marked the positions of the biscuit joints. I also drew two diagonal lines from the centre of one end to the far corners to ensure correct assembly of the boards at glue-up. With the boards laid on the bench, I placed the base of the biscuit jointer on the bench and lowered the height setting fence until it just touched the face of the board. This prevented the jointer from rocking and ensured uniform biscuit joint heights. If you're using thicker boards, place a plywood packer under the base of the biscuit jointer and adjust the cutting height as necessary.
- 9** The biscuit joints don't have to be exactly on the centreline of the board edge but they do need to be at a consistent depth from the face.
- 10** The boards were assembled dry with biscuits in place to ensure that

they would pull together easily when glued up. Then I glued up the top with two sash clamps underneath and one clamp inverted on top to keep the boards flat until the glue had set.

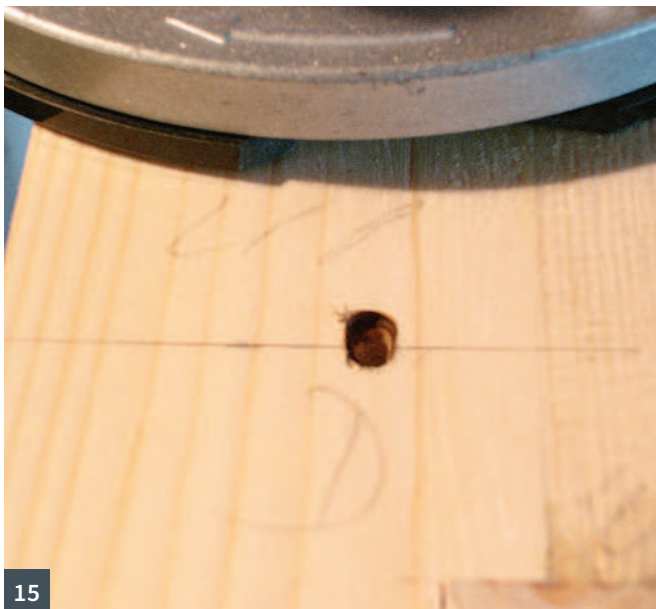
- 11** Good glue penetration will give strong joints with little evidence of glue lines when using polyurethane glue. With the boards alternated to reduce cupping, there is no uniform grain direction. So to reduce the risk of tearout I used a block plane at 45° to remove the excess glue and level the boards. A sharp blade is needed for this. Note the wafer thin shavings.
- 12** Using a belt sander, I sanded the top to 120 grit. With any machine sanding there is always a risk of over sanding the edges, so it's best to complete this procedure before routing the profile on the edges. The final sanding should be done by hand down to 320 grit and 0000 grade steel wool. The top was then trimmed down to near finished size on the tablesaw before planing the finished edge prior to profiling.



13



14



15

Assembly

- 13** The legs were glued up as two pairs, checking for square before the glue set.
- 14** Then the two sets of legs were glued together with the side rails, checking for square and clamp up. The mounting blocks were then glued in for the top.
- 15** I machined screw slots with a 4mm router cutter to allow for expansion/contraction of the top.

Hindsight and remedies

- 16** With any project it is always possible to see a better or easier method of construction after completion. As the top of one table was cut to size, a knot broke away from what was to become a finished edge. I did not want to cut down the top and glue in another board so I came up with the idea of using a piece of dowel to replace the knot. Using a 9mm Forstner bit, I drilled out the side of the top about halfway through and glued in a piece of 9mm dowel.



16



17

The dowel was then cut flush using a double-edged pull saw which has the teeth set to one side only. This helps prevent damage to the surface of the top.

- 17** The edges of the top were profiled with a round over cutter. On reflection, I should have drilled through the edge of the top to make a more convincing dummy knot, but I was able to disguise it by colouring the dowel and surrounding area. Lastly, I applied two coats of Danish oil and a coat of paste wax.



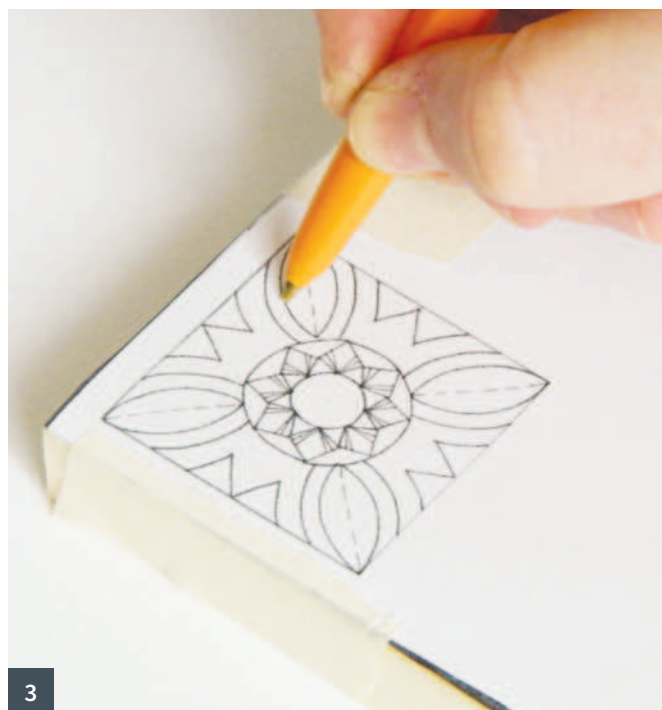
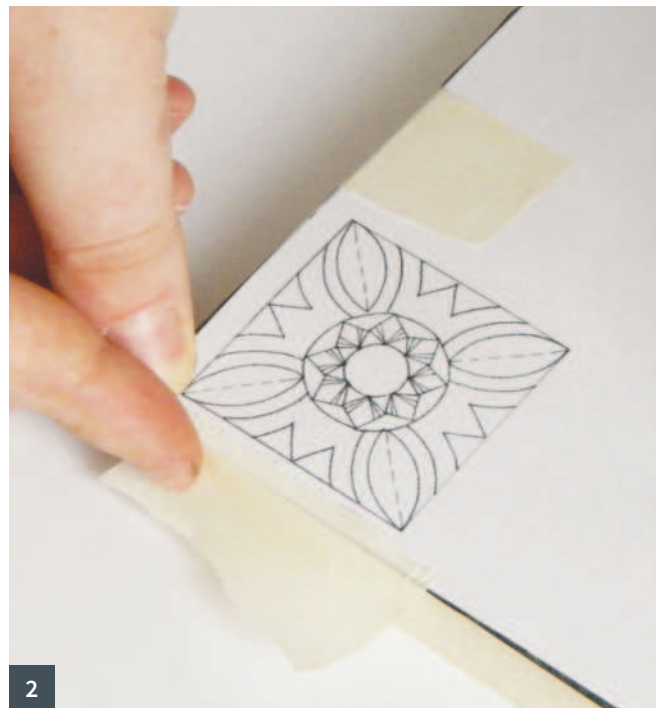
A GUIDE TO CHIP CARVING

Tatiana Baldina explains how to transfer and carve simple patterns, and shares her tips for carving sharp corners

In this article I will show you some of the basics of chip carving, beginning with how to transfer a pattern to a basswood board. I'll then guide you through the process of carving a simple pattern. A common error in chip carving is chipping in the corners. I'll explain how to avoid that and carve sharp corners instead.

Transferring the pattern to the board

Before you can start drawing your pattern, you need to prepare your basswood board. If you are a beginner, I would advise you to transfer the pattern using carbon paper. If you already have some experience, you can try drawing the pattern by hand.



- 1 Begin by laying the carbon paper, ink-coated side down, on to the board where the pattern should go.
- 2 Place the printed pattern on top of the carbon paper, then fasten these sheets to the board with masking tape so that they do not move.
- 3 Trace over the pattern using an HB pencil (a standard one,

not a mechanical one) or a ball-point pen that has run out of ink. Be sure to press hard enough with the pencil or pen to transfer the design on to the wood through the layers of paper.

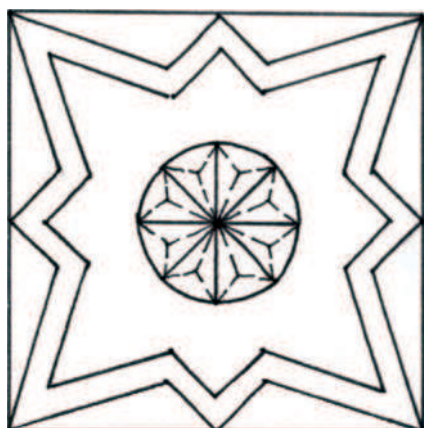
- 4 When you are sure that all the details have been transferred, remove the tape and sheets.

Carving the pattern

We'll now move on to carving, using a different design. This simple pattern consists of a continuous thin two-sided chip and an inner circle with eight three-sided chips. If you would prefer to transfer this pattern to the basswood board, you can copy the template below, and follow the instructions on the previous page for transferring a pattern to a board. If you prefer to draw the pattern directly on to the board, follow the instructions below.

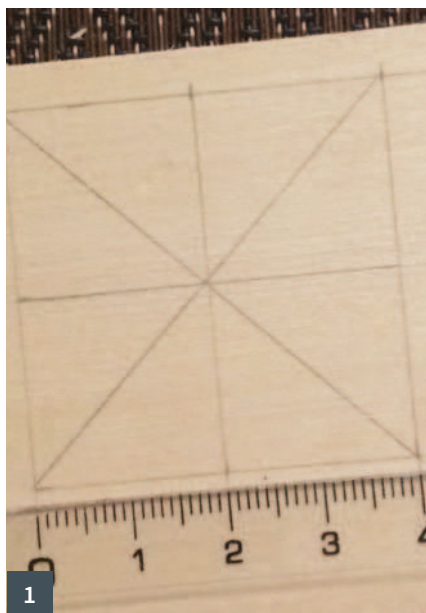
YOU WILL NEED

- Basswood board (at least 100–120mm square and 15mm thick)
- 0.5mm mechanical pencil with H or HB lead
- Ruler
- Compass
- Skew knife
- Sandpaper or leather strips for sharpening

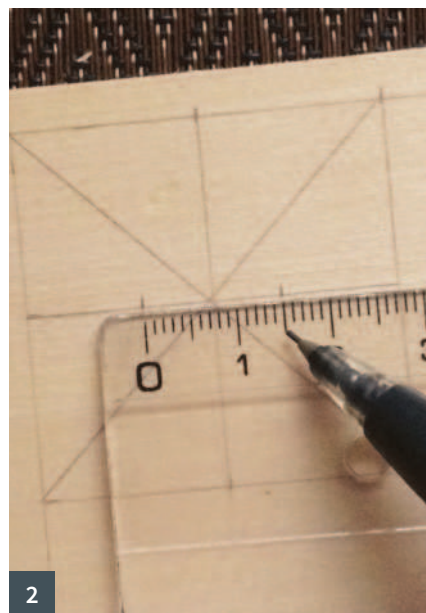


DRAWING

- 1 Draw a square with the sides 4cm long. Then draw two perpendicular lines that intersect at the centre and two diagonal lines that connect the opposite corners of the square.
- 2 Next, prepare a circle for the central pattern, which features eight three-corner chips. Mark a dot 7.5mm either side of the centre of the square.
- 3 Then draw a circle using a compass.
- 4 Next, mark a dot 5mm from the centre ...
- 5 ... and draw another circle inside the one already drawn.
- 6 You can immediately prepare this central pattern for carving and draw lines for stop cuts, since there are no other elements with stop cuts. Divide each section in half and put dots on the inner circle.



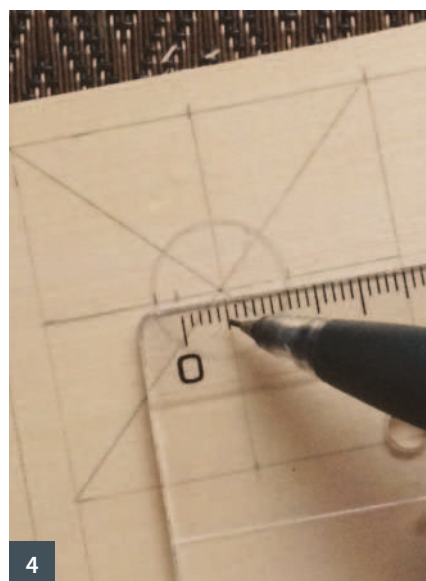
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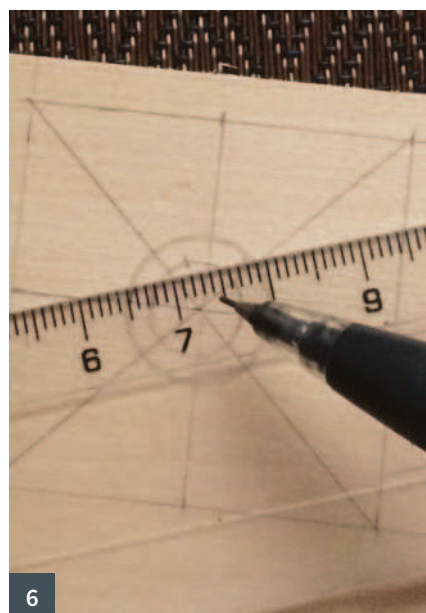
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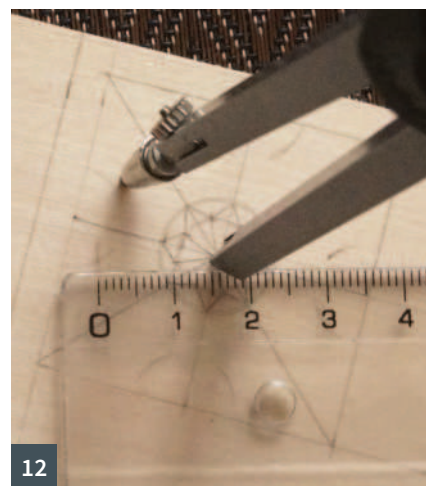
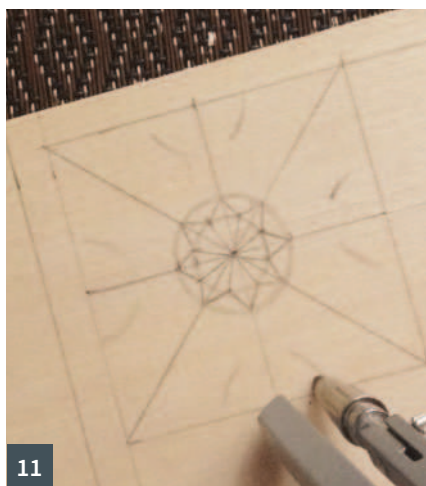
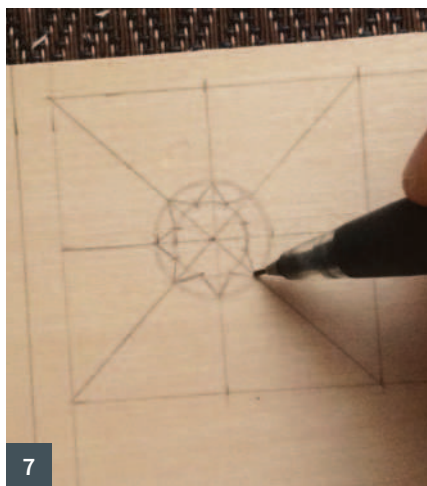
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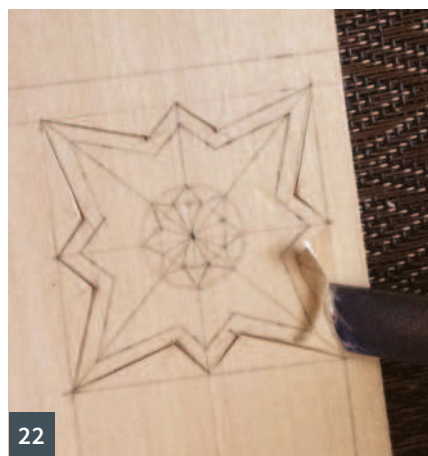
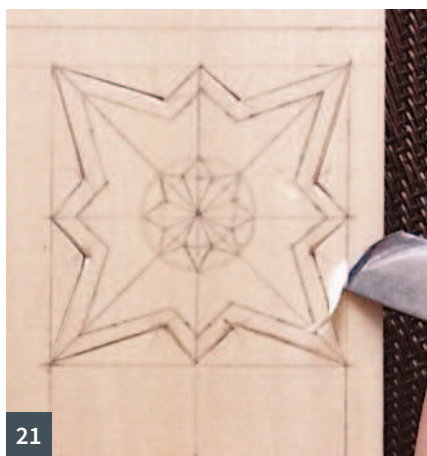
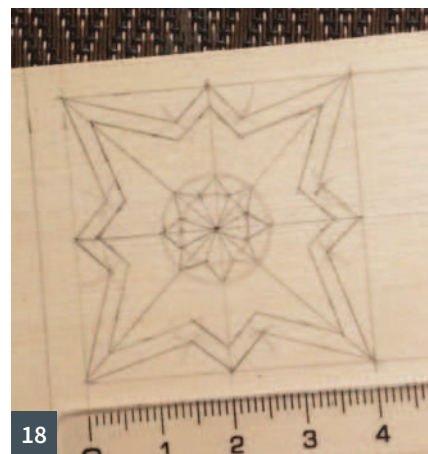
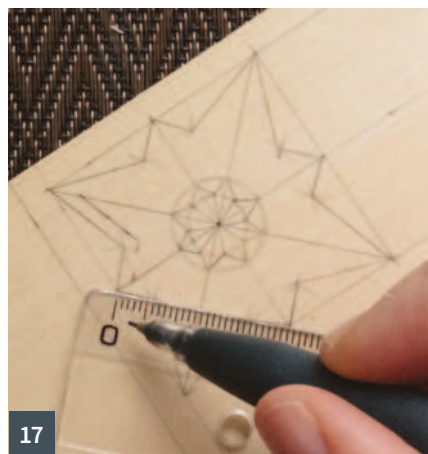


6



- 7** Connect the dots to the bases of the triangles on the outer circle.
- 8** Connect the dots on the inner circle of each section with the opposite ones.
- 9** By doing this you will obtain the perpendicular lines of each triangle of this pattern for stop cuts.
- 10** Now draw the triangles for the straight-wall chips, which form the pattern around the central circle. First, mark a dot 7mm from the dot where the perpendicular lines divide the sides of the main square in half, to the left and right sides of the perpendicular line.

- 11** Alternatively, to save time, mark a dot only on one side, and then make the rest of the marks with a compass.
- 12** To find the tip of the triangle, you need to draw another dot: mark this dot 15.5–16mm from the centre to the previously prepared dots.
- 13** Again, to save time, use a compass to draw the lines that will cross them.
- 14** Begin to connect the resulting dots, first with the dots where the perpendicular lines divide the sides of the main square in half ...
- 15** ...and then with the corners of the square.



- 16** Now we need to draw more lines on the inside of the resulting shape that will repeat this shape. Mark short lines 2–2.5mm from each side.
- 17** Then connect these lines.
- 18** The drawing is now finished and the pattern is ready for carving.

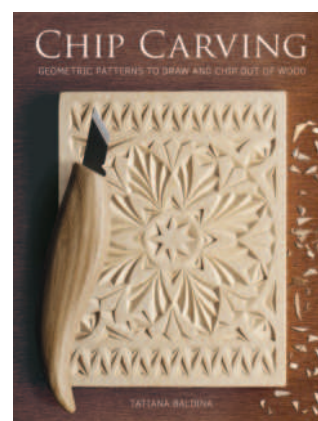
CARVING

- 19** To begin the carving, make stop cuts in the central pattern – the circle with eight three-corner chips. The rest of the elements in this pattern are straight-wall chips and line carving, so there is no need to do stop cuts for these. Begin to undercut and then carve the straight-wall chips that go along the sides of the main square on the inside. Since the sides of these straight-wall

- chips are long, push the knife tip deep into the wood.
- 20** Then gently lead the tip of the blade along the line of the straight-wall chip until you reach its base, keeping at almost 90°.
- 21** The first straight-wall chips to carve are those where the bases go along the grain. I started to carve the upper straight-wall chip; when I reached the middle of the base, I felt that my knife was slowly breaking the grain ...
- 22** ... so I had to change my knife grip and its movement towards me (the wrong cut was away from me).
- 23** On the opposite straight-wall chips, following my general rule, the movement of the knife was already away from me, and it went smoothly along the grain without breaking it.



- 24** Next, carve the remaining four straight-wall chips.
- 25** Now carve the central circle with the eight three-corner chips. Start by carving one of the chips whose base goes against the grain.
- 26** This will make it easier to control carving the next chips when the sides go along the grain.
- 27** Next, start on the line carving. First, for example, undercut the first line 1mm from it on the right.
- 28** Then make an undercut on the second line, next to the first one, which overlaps it, by slightly grabbing the first line with the tip of the knife to avoid chipping. When the undercutting on the right of all the lines is complete, start undercutting on the left to completely carve out the contour lines.
- 29** The carving is now complete.



Chip Carving by Tatiana Baldina, published by GMC Publications, RRP £14.99, available online and from all good bookshops.

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

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A spring in your step

It's time for a well-earned break as we reflect on how to beat boredom

Well, time flies and here we are in the springtime again. The countryside carries on as normal, flowers are blooming and the trees are getting their leaves back. On the other hand, we are still reeling from the lockdowns due to the Covid-19 virus, which has constrained us for many, many months now, and we have been wishing for it to end soon. Hopefully you are all keeping well and safe and have not got too bored while stuck at home.

This restricted time makes me think of when I was a kid on our six weeks' long summer holidays from school, when we would be at home getting under our Mum's feet trying to find interesting things to do, and mostly failing. Quite often, the interesting things would happen at the weekend when Dad was home from work and as a family, we would go out exploring, picnicking, kite flying or to the pond to sail our boats. The weekends always seemed so far away, and we used to whine at Mum, 'I wish it was the weekend!' to which she would reply, 'don't wish your life away, time is precious so make the most of it'. With little understanding of what she meant we carried on whining and getting bored, but as we get older it becomes clear that time passes by all too fast, so we do indeed have to make the most of it. That is a great reason why we take up woodworking as it is possibly the most satisfying



PHOTOGRAPH BY SHUTTERSTOCK

pastime there is. We can be creative and there is always more to do than time allows, so no opportunity to get bored. The other benefit is the admiring comments on the beautiful work that has emerged from a pile of wood during the time we have disappeared in the shed... socially distancing ourselves and making good use of our time no matter what.

WORDSEARCH

Cladding	Particleboard	Sharpen
Floorboard	Parquetry	Shellac
Finish	Router	Spline
Heartwood	Scraper	Spruce
Horsepower	Scrollsaw	Workbench

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

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.

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

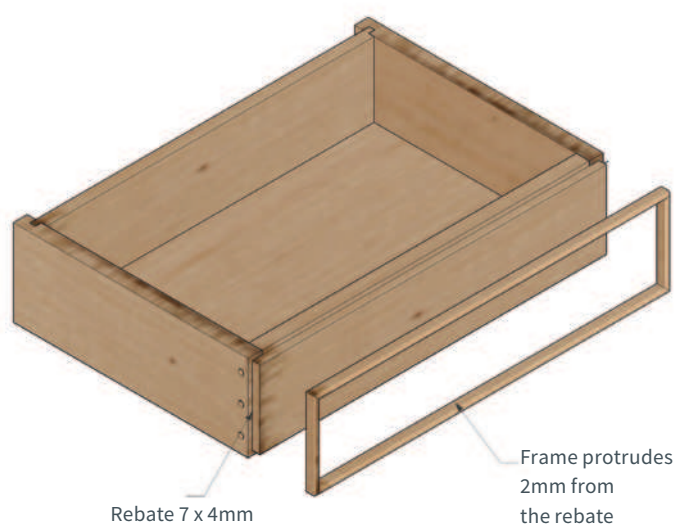
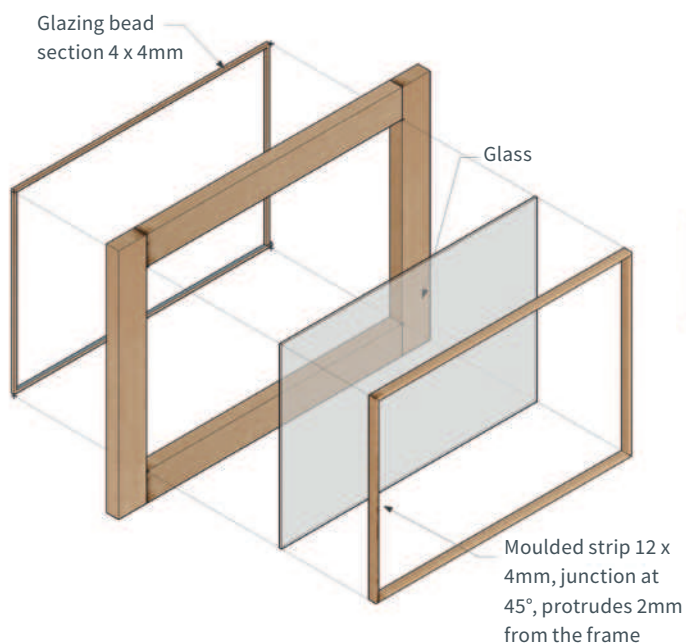


An (almost) quick cupboard – part 2

Giacomo Malaspina completes the challenge he set himself – to make a piece of furniture as quickly as possible

The last issue (*WWC 65*) saw me at the end of the first day of work, feeling uplifted by completing that part of the project, but also nervous about the next steps which, as you will see, are not simple. I'd given myself a deadline of three days for completing the work,

and at this stage I still needed to add the doors, drawers and hardware, then add the finish and paint. To get all of this done as quickly as possible, I set up a sort of production line to avoid too much handwork and to speed up the work.



Helpful tips

WORK WITH PRECISION



Assembly power tools need to be held tightly to perform at their best. The Domino's rotating tip tends to make the smaller pieces move laterally. To avoid this, the strips must be suitably clamped on the surface. For the milling on the edge, two nails acting as a rear stop are enough. For those in the front you need four. Three prevent lateral displacements and the fourth acts as a thrust bearing.

CHOOSING LOCKS



Assembling hardware can be a time-consuming and frustrating process. In general, it is better to purchase from the best-known brands, which will have assembly diagrams and good technical support. Another important element is the versatility, or the possibility of arranging the mechanisms in a right or left position. Other details, such as the partially foldable key to reduce clutter, can add a pleasing element to your design.

SAFE CUTTING



Cutting thin strips with the mitre saw is not a safe operation. The pieces tend to chip and the lack of back support causes them to vibrate until they break. For this process it is useful to build a support that closes the piece on three sides, this support is then mounted on the mitre saw bed. The cut created on the support is also a useful reference point in case you need to make adjustments to the ends of the small pieces.



1 If the mitre saw is equipped with a lateral stop, it can carry out repeated cuts. In a single cutting session, all the rails are cut to length, followed by the stiles **2** Sizing the stiles: here you can see the four rails next to the sides of the larger compartment. The space that remains in the centre, once divided in two, will give the length measurement of the four stiles



The doors

Excluding the preparation of the material, the doors are probably the fastest components of this cupboard to construct. Just cut the strips to size and join them with the Domino. Using this handy power tool, you can make a joint that is very similar to the classic tenon and mortise and has roughly the same strength. The main difference is that the joint is not visible from the outside and this detail, in a piece of furniture with clean, modern lines, can be an advantage. Another advantage is that at the end of the work it's not necessary to level the heads of the

joints with a hand plane or eliminate excess glue.

To speed things up even further, you can use power tools to make the final size adjustment. If the door frames are assembled exactly to the size of the space in the cabinet, they won't open with a fluid movement. Place the frames on the tablesaw to square and trim whatever needs to be removed to ensure the right tolerances. With this method, any out of squareness is also corrected. Just move the stop on the fence by a few fractions of a degree and you will get the cuts at the necessary angle.



3 The Domino is placed exactly in the centre of the contact area. If the heads of the pieces are cut squarely, just push them together and the joint will be complete. If a greater tolerance is required, mill one of the two mortises slightly wider and align the pieces during gluing **4** The tablesaw's precise settings brings the doors to their final size **5** Folding hinges require a shallow recess on the door and on the inner side of the cabinet. Make a template to speed up the process using a trimmer. The corners must be cleaned up by hand using a chisel **6** The SYMO system allows you to choose the external dimensions of the locks. You can mount the cylinder directly in the lock for a more discreet finish **7** The revolving hooks of the lock require the presence of two coupling pins. To make them blend in with the cabinet the metal originals were replaced by two drilled oak rods that are attached with screws **8** The lock that closes the pair of doors operates only on the one on the right. For a complete closure it is necessary to add a rod that protrudes on the back of the left door

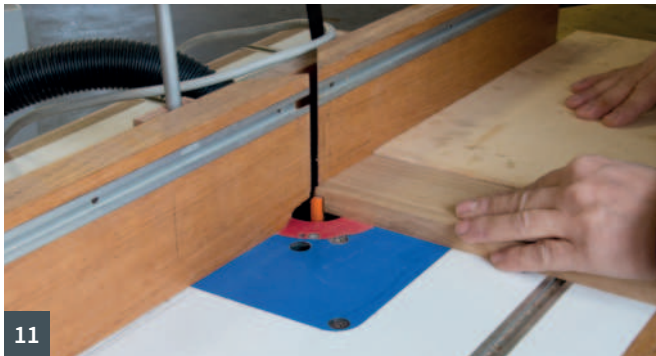
Once this has been done, you can move on to fitting the hardware. Typically, professional carpenters use cup hinges for doors. Their advantages are undeniable: they are quick and easy to install, sturdy and above all adjustable in all directions. The problem is that they are intrusive and aesthetically unsuitable for small furniture with reduced door thicknesses. However, if you want to mount the more discreet folding hinges, as I did, you can speed up the work by using the trimmer. Of course, a small template is needed but it will be useful for other jobs too. On balance, it took me an hour to fit six hinges. Time well spent if, in addition to speed, you aim for refinement.

This cupboard needs a door closing system that guarantees a minimum of safety. After searching online, I chose the SYMO 3000 by Hafele. It is a series of elements characterised by modularity and flexibility of use. There are two types of locks: the first, more complex, has a latch and two hook rods; the second has a single tilting bolt. The

SYMO 3000 can be mounted without large visible parts and therefore complements the cupboard in an inconspicuous way. With a view to creating a design that is as inconspicuous as possible, I customised the locking pins on which the largest lock holds. In place of the usual metal elements, perforated oak rods were used to pass the fixing screw to the cabinet. Doing this added 10 more minutes on my schedule but it was time well spent. When the lock is fully assembled, an internal stop has been added on the left door so that it forms a single body with the right one and can benefit from the same closure. The lock of the single door, the one on the far right, does not have hook rods but engages with the bolt directly in the thickness of the vertical partition.

The drawers

The construction of the drawers, with the exception of the bottom, involves the use of solid wood, and then the usual joining operations.



9 The closure of the single door seen from the inside. The swinging tab fits into a groove on the side of the vertical partition **10** Cutting the rebate for the sides is a simple process. It can be carried out with several passes on the tablesaw ... **11** ... or fewer passes on the router table. In both cases it is advisable to put sacrificial material on the back of the cut to avoid tearout caused by the exiting blade **12** Inside the front and sides there is a groove for inserting the bottom of the drawer. This can be made with either a tablesaw or router table **13** The groove will not be seen when the drawer is assembled as it is hidden internally **14** Nails allow fast and discreet fixing. For the best strength they must be nailed in on an angle

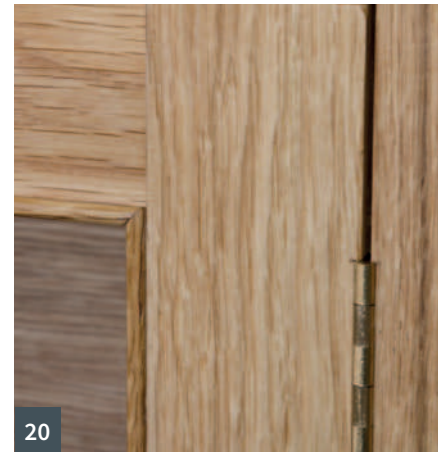
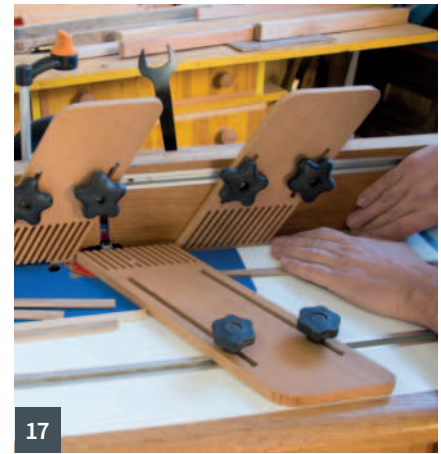
Using solid wood adds to the time for the project, not because of the production times, but for the necessary rest that the pieces of wood need after cutting them roughly to size. If, for example, 15mm-thick boards are used by cutting them from 35- or 40mm-thick boards, it will be necessary to let the freshly cut wood have a second seasoning of a couple of days. This way, any twists will show up before the material is assembled. Professional carpenters stock up on their most used wood thicknesses in order to have greater certainty about the degree of seasoning and acclimatisation to the microclimate of the workshop. So, with this in mind, I roughed out all the solid wood at the beginning of the project and then brought it to the final size after just 24 hours from the first cut.

A single oak board was used for the drawer fronts, while the humbler chestnut was used for the sides. Their construction was carried out entirely by machine, in a series of millings, to correctly dimension the pieces. I started with the joints to connect the sides to the front. They consist of simple rebates on the sides of the front equal to the thickness

of the sides and can be done quickly in different ways. The rebates can be made either on the circular saw or on the inverted router table. With the first method due to the thickness of the saw blade no less than three steps are required. With the second method with the larger diameter router cutter, two can be enough.

The choice of this type of joint was not accidental. In addition to being quick and easy to assemble, it allows you to make the grooves for the insertion of the bottom in a through way, i.e. from the front to the back of the side pieces. When assembly is complete, the heads of the sides will be hidden as will the areas of the front affected by the machining. The router table or the saw bench can also be used for the grooves. Lastly, the same reasoning also applies to the grooves which, on the rear part of the sides, house the back wall of the drawer.

Making the drawers in this way saves a lot of time but after gluing you need to reinforce the joint between the sides and fronts. Generally, to speed up the time, two nails are driven in with the nail gun and their holes filled. However, for this cupboard, I used 5mm wooden



15 The best way to stop the drawers is to fix the stop strips to the box **16** The glazing strips are cut from pieces at least 1m long so you can manoeuvre the pieces safely without having to get too close to the saw blade **17** To obtain very small torus profiles, make two passes on a concave radius trimming cutter. While carrying out this process, use hold-downs and feather boards to protect hands and reduce the vibration of the thin pieces **18** Use the disc cutter on the router table to create the recess on the front edge of the drawers for the edge moulding. This must be performed with extreme care, especially to match the 45° angles **19 & 20** The addition of discreet decorative elements has the advantage of not confusing the lines of the piece of furniture when observed from a distance. Close up, the decorative elements catch the eye bringing attention to the detail

nails which, in addition to being aesthetically more pleasing, have a much greater hold. Iron nails do not scare me, and I used them to fix the bottom of the drawer to the rear wall and to reinforce the joints between the latter and the sides.

The last operation, before finishing the second of the three working days, consisted of fitting the drawers inside their relative compartments. To avoid cutting or shortening the already assembled pieces, the drawers were deliberately left shorter. In this way, working from the back, it was possible to insert strips, glued to the cabinet, which have the function of setbacks.

The finishing touches

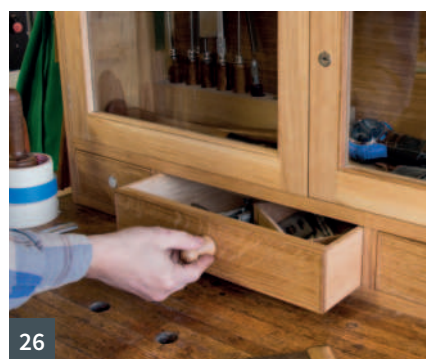
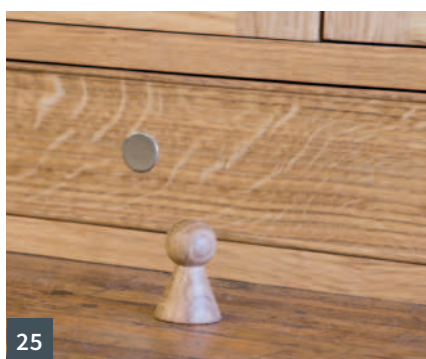
After inserting the drawers, the cupboard is already functional and only the knobs and glass are missing. For the doors, the most immediate solution for mounting the glass is to mount a straight cutter in the router table and cut the rebates around the internal perimeter of the door. Make sure to remove enough material to insert the glass and holding strips. This option has only speed on its side including the squaring of the round corners left by the cutter, as it aesthetically leaves much to be desired.

I decided to create the glazing strips for holding the glass by

adding rather than subtracting material in the accepted way of making glazed doors. I was inspired by simple frames found on some 18th-century French furniture, which just like my cupboard, was often made of oak. These are 4 x 12mm section pieces with one of the long sides shaped like a semicircular torus. Their assembly requires that the front protrudes in front of the door edge by 2mm. A small detail, not immediately perceptible but that catches the eye and embellishes a very schematic structure. Obviously, this meant I had to use the same process for the front of the drawers. In this case, given the presence of the wooden nails, the strips, while maintaining the thickness of 4mm, are only 7mm wide.

Making the edge moulding starts with two long planed strips, one at 12mm and the other at 7mm thick. A third strip, 4mm thick, is used for the glazing beads. The 4mm-thick strips are removed from all three with a circular saw. The tiny torus moulding was created by making two passes on a small concave radius trimming cutter installed in the router table. After this moulding process and a quick sanding, you can go directly to the assembly. The strips for the doors were cut off at 45° and put directly in place. For those to be fitted to the drawer fronts it was first necessary to resize them by returning to the router table again.

This last part of the of the job, I admit, was quite time consuming,



21 The moulded strip inside the door creates a stop for the glass. It is held in place at the rear by inserting nails **22** The magnets are inserted in a hole cut into the drawer front and held in place with a two-part epoxy adhesive **23** For the drawer knob, a hole is made for the insertion of a magnet. The magnet is then hidden by gluing a thin sheet of wood over it **24 & 25** The knob is finished by turning the added end piece and creating the desired shape **26** Bringing the knob close to the drawer enables the magnets to attract each other firmly and allow opening **27** An oleoresin finish is extremely fast and simple and can also be done when the furniture is assembled. The product spreads out in abundance and the excess is removed with a cloth **28** Oleoresins penetrate deeply into the wood and darken its tone slightly. As the product is absorbed, the effect decreases in intensity but reappears with following applications. The surface is smooth to the touch and very natural

especially with regard to cutting to size and gluing the numerous pieces necessary to complete the work on the drawers. The result, however, was satisfactory and the cupboard began to resemble something more than a simple box. This small success convinced me to make a change of plan: for opening the drawers I decided not to use the classic knobs but a nice system that matches the clean lines of the rest of the work. I ordered neodymium magnets with a diameter of 20mm (almost the same size as the visible parts of the locks) and built them into the centre of the front of the drawers. This process, defying fate, was carried out with the drawer assembled and painted.

The drawer knob is a turned oak block, which in turn contains another magnet (so be careful to orient the polarity to be opposite to those on the drawers). Just bring the knob close to the drawer and the magnets attract each other with more than enough force to opening the drawer. If you want to secure the cupboard, you can

put the knob inside one of the doors and take the keys with you.

The finish

The type of finish you use will affect the completion time. For this cupboard, I chose oleoresins, which have been gaining popularity lately. They contain mostly refined vegetable oils and spread very quickly with a cloth. They do not have dripping problems; they can be applied on the already assembled furniture and several coats can be applied to increase the covering effect and have a more full-bodied finish. They can be sanded and further finished with waxes for greater brilliance. Their characteristic is to enhance the naturalness of the base material, giving it a wet effect. However, this slight darkening of the wood must be carefully evaluated based on your needs or the environment in which the objects treated in this way are to be placed.

After three days, my cupboard was complete!

A HERITAGE INDUSTRY

We learn about the work of family business Hastings Bespoke



The company is based in an old creamery in Dumfries

Built on the foundation of three generations of the family business, Hastings Bespoke Ltd was set up to create a bespoke joinery company focusing on the heritage sector, working on historic houses, country houses and listed buildings.

The company creates period joinery and works on furniture that needs to be restored, replaced or reproduced. The work is bespoke, as products that are available 'off the shelf' are not normally suitable to meet the requirements of listed buildings.

Jack Hastings is the third generation to run the family business. Back in 2017 he decided to start Hastings Bespoke to focus on the workshop side of joinery. Although it is a separate company, it was set up to support the work of the main family business.

Hastings Bespoke, which is based in Dumfries, is located in a former cheese-making creamery built in the 1920s. The company is able to do site work and also has a large-scale modern workshop where the team of skilled craftsmen can complete all the bespoke joinery in-house. This allows the team to carry out its work with the greatest accuracy and efficiency.



The fully equipped workshop

PHOTOGRAPHS COURTESY OF HASTINGS BESPOKE

Joinery

The workshop's modern woodwork machinery allows the company to take on large-scale joinery projects. This may be creating new joinery for a property, restoring joinery or making reproduction pieces for listed buildings.

The company produces heritage period joinery for projects where new joinery recreates exactly the style required. For example, they may be working on a period property where the architraves require a special moulding. They take a template of the existing architrave and have new cutters made (to fit machinery such as spindle moulders) in the machine shop. They can then run new architraves that will perfectly match the existing ones.

There is also a separate paint shop where items can be either hand painted or spray-painted.

Windows and doors

Hastings Bespoke supplies both the trade and customers with standard sash and case and casement windows or they can also work to individual specifications. This includes arched tops, curved tops and custom beading. In conservation areas they can be made to match exactly the windows that are already in place.

They make doors in a variety of different designs, such as traditional mortise and tenon lined doors, panelled doors, bar and lined doors for stables and garages and louvred doors for spaces that require ventilation.



Furniture restoration in progress



Gothic arch window frames



Restored windows

Furniture

Their furniture is handmade to order, with their range of work including handmade kitchens, stairs, bookcases and dining furniture. They often work in consultation with a customer to create a unique piece. Customers can suggest a simple design idea to the company who will prepare a free estimate. The next stage will be a finalised computer drawing with all the dimensions so the customer will see what the project will finally look like.

Once this has been agreed the company starts making the furniture. While it is being made customers are welcome to visit the workshop to see the piece at its varying stages of manufacture.

The future

Hastings Bespoke take great pride in the quality of service they provide and the work they do for all their customers. They are particularly proud of their work in the listed building and heritage sector and look forward to developing this further in the future. They also have plans to open a showroom on the second floor of their building.

You can find out more about the company's work on www.hastingsbespoke.co.uk and on Instagram on [@hastingsbespoke](https://www.instagram.com/hastingsbespoke)
Hastings Bespoke is a member of The Guild of Master Craftsmen, www.guildmc.com



Pine dining bench



Customised mouldings to match templates



Cutters are ground in house to machine new custom mouldings



Tulipwood bedside cabinets before painting



Tulipwood bedside cabinets after painting



European oak dining table



VENEER INLAYS

John Bullar shows how to create and apply oysters, marquetry, parquetry, stringing and banding

As well as covering furniture with wood grain that is independent of its construction, veneers are often used to create patterns or sometimes pictures on surfaces. Oyster veneers are built up from the natural rings seen in sliced-up branch sections. Parquetry is made by repeating geometric shapes while marquetry makes pictures from individual shapes. Banding and stringing are lines laid in grooves, or rebates on edges. Banding is often composite including veneers with crossed direction while stringing is generally cut narrower in the direction of its grain. Any of these patterns can be set into the wood or 'inlaid', or alternatively included alongside a face veneer where they are 'overlaid'.

Bandsaw set-up

Bandsawn veneers can capture special figuring from offcuts of wood that would otherwise have to be scrapped. Most bandsaws can be adjusted to produce special veneers; however, the process does require a little time and effort because the factory adjustments and standard bandsaw fence are only rarely up to the job.

A robust fence that will not deflect under pressure is essential. This can be made from 18mm MDF in double thickness, carefully screwed and glued at right angles to the base which is then G-clamped to the bandsaw table. Ideally, if there is a screw hole in the upper blade guide,

fit an adjustable bracing strut between the fence and guide. The gap between blade and fence can now be measured top and bottom; if necessary tweak the table angle to make the gap perfectly even.

Remember it is the inward-set teeth that will determine the thickness of veneer that emerges from the gap; I have always found that 2mm is ideal for most special veneers.

Oysters

Oyster veneers have nothing at all to do with shellfish other than the vaguely similar oval patterning of the heartwood which, when sliced, is reminiscent of an oyster shell. Walnut, fruit trees, laburnum or olive are normally used because of their strongly contrasting heart and sapwood colours and their better resistance to radial cracking.

A log will have higher moisture content towards the centre and so needs drying after it has been cut; however, being very thin with a large end-grain area, oysters will dry quickly in a week or two.

Normal methods of stacking between sticks with a heavy weight on top should minimise buckling. If the oysters distort badly while drying they can be softened with weak hide glue made flexible with glycerine. Sizing the end-grain surface with weak glue also prepares it better for making a strong bond.



1



2



3

PHOTOGRAPHS BY JOHN BULLAR

1 A sturdy fence on the bandsaw table with an adjustable brace to the blade guide is ideal for cutting veneers, oysters, strings and banding **2** An olive branch is offered up to the bandsaw, with its end pressed firmly against the fence, to be sliced into oyster veneers **3** A series of 2mm-thick end grain slices is produced, known as 'oysters' because of the elongated shape of their ring figuring

PATTERNING THEORY

Oysters can be combined in any pattern that appeals: random, geometric or mounted individually, surrounded by plain veneer.

The oyster can be shaped using a bandsaw, fretsaw or scrollsaw. Templates are used where the shapes are going to be repeated, otherwise each oyster can be used as a template to mark out its neighbours.

Where oysters butt against one another they need a gap-free joint, which may need adjusting with a plane or spokeshave. The pieces can be held up to the light to check for any mismatch between edges.

In any design, it is wise to think about the effects of wood movement. Tangential wood movement – the strongest type – around the oysters can produce splits in any direction, but these will not add together across separate pieces. Small oysters are unlikely to split especially if they do not include too much sapwood. The only cumulative movement across a number of oysters is radial, which is relatively small. Overall, any movement of the oyster veneer should be uniform and well contained.

GLUING METHOD

Once a pleasing pattern has been made and all the edges fitted, the

oysters need to be locked together ready for glue-up. I find it best to lay the oysters face down on a board and join the backs tightly with masking tape.

With the aid of a second board, turn the matrix of oysters over and apply gummed veneer tape to the front.

Once the veneer tape has dried, remove the masking tape and lay the oysters on the groundwork in a bed of glue. Being all end grain, the surface will form a relatively weak bond and could easily be starved of glue, so I find it best to use a fairly stiff mixture of powdered resin. Ideally there should be no variation in thickness between oysters but in practice there will be some.

The hollows will need to be padded out if a conventional veneer press is used. A vacuum bag press, however, will accommodate these imperfections, applying a consistent one kilogramme per square centimetre regardless of any humps and bumps.

Parquetry and marquetry

Parquetry is the technique of making geometric patterns with pieces of veneer or wooden floor tiles fitted together as on a parquet floor. A single shape or a small number of shapes are repeated to build up the pattern. Identically shaped pieces can be book-matched or slip-matched



4 A hexagonal template cut from Perspex sheet is used to mark out the oysters **5** The oysters are sawn into hexagons although many other shapes are possible including freehand fitting of one oyster to another **6** The honeycomb pattern is fitted together, first with masking tape on the rear, then with veneer tape on the front **7** In a vacuum press bag the individual oysters all receive the same pressure despite small accidental differences in thickness **8** Window marquetry uses each part as a template to shape its neighbours, working from the outside to the middle to build up complex patterns and pictures

alongside each other, or else rotated as in a tessellation pattern.

Many hardwoods have a deep lustre that changes with the direction of light. By arranging each piece of marquetry to exploit this, such as by rotating it compared to its neighbours, you can create an optical illusion with the appearance of three-dimensional depth.

Parquetry pieces having the same shape should all be interchangeable. The best way to check this after sawing is to stack them up and hold a square against the stacked edges.

Marquetry is the art of making pictures with individually shaped pieces of veneer; this forms the basis of Boulle work, which includes metals and shell, and intarsia, which includes inlay. Traditionally veneers are stacked up in a pad and cut with a fretsaw or on a manually powered mechanical frame known as a marquetry donkey. The modern equivalent to this is the scrollsaw.

Dyed or stained wood must be sealed, otherwise, under the influence of dampness absorbed from the glue or the residual moisture content, the colours will bleed from the edges into adjacent pieces.

Commercially produced marquetry is often made with laser-cut veneers based on CAD patterns. These should fit with immaculate precision.

WINDOW MARQUETRY

At only 0.6mm thick, modern machine-cut veneers are easy to shape with a craft knife or scalpel, making the old technique of window marquetry attractive for occasional work. Window marquetry is a simple technique requiring no equipment other than a sharp knife and a cutting mat. It gives the maker complete freedom to design and produce patterns with any complexity using any number of veneers.

A piece of veneer selected to form the outer border is marked with the pattern and then cut out to produce a shaped window.

The window is positioned over the next chosen piece of veneer, which can be moved around to identify the best figuring and grain direction. The inner piece of veneer is then cut using the window as a template.

This piece is glued edge to edge inside the window with PVA on an



9 Commercial bandings are sold by the metre; while initially eye-catching they rather lack character **10** Naturally patterned banding made from 0.6mm Macassar ebony veneer sliced to width using a cutting gauge **11** Broad rebates for banding can be cut by hand with a plough plane, narrow ones with a scratch stock or a specialised inlay cutter **12** Banding applied with a veneer hammer uses the grab property of hot hide glue to hold it in place **13** String lines are bandsawn from the previously planed edge of a thin piece of ebony in the same way as veneer

artist's fine brush. Working inwards, the next stage of the pattern is cut inside this piece to form an inner window, which in turn forms another template and so on.

Patterns need to be carefully chosen or adapted for window marquetry but with a steady hand and good near vision the finished results can be excellent.

Banding

Banding is laid in broad lines, sometimes overlaid around the outside of a veneered panel and sometimes inlaid in a shallow groove. Cross-banding has a grain direction perpendicular to its length, providing an attractive visual break. Veneers such as Macassar ebony, zebirano or rosewood that include natural colour banding are ideal for this.

Artificially patterned bandings are made by layering up pieces of wood, often laid at angles to give a diagonal element. After gluing, the composite board is sliced through on the bandsaw to reveal the patterns in the section.

Commercially manufactured bandings are available in metre lengths with any number of patterns. While these are designed to dazzle the eye, they tend to be rather characterless and repetitive compared to individually made designs.

Grooves to inlay banding can be cut either with hand tools such as a finely set plough plane or with a router. The grab property of hot hide glue applied by hammer veneering is particularly helpful to hold banding in place while it sets.

Stringing

Stringing lines are normally cut from a single piece of wood or veneer so the grain follows the direction of the line. Purfling is a specialised form of fine stringing made from two or three contrasting lines bonded together, as used around the edges of stringed instruments.

Wide stringing can be cut on the bandsaw while narrow pieces need to be trimmed with a dedicated slicing gauge or with extra care using a sharp marking gauge. A thicknessing gauge can be used to scrape the



14



15



16



17

14 The ubiquitous router makes intricate grooves for inlay, guided by a template or a pivoted arm. Straight-line banding and stringing grooves simply use the fence **15** Scraping, unlike sanding, will not create dust to cross-contaminate the wood grain **16** With the glue set and ebony string lines applied around the edge, the olivewood is sealed before fitting as part of a cabinet **17** A stunning piece of creative stringing in a Spirograph pattern by Waywood furniture

surface to produce a uniform depth.

Straight shallow grooves and rebates for stringing can be cut by hand with a scratch stock or with a specialised inlay groove cutter. The corners of grooves are generally shaped freehand with a thin chisel.

A router fitted with a fine cutter can make intricate grooves to take inlaid stringing. The router can either follow a shaped template, be guided by a pivot arm to produce a circle or by an ellipse jig.

Broad string lines may need to be steamed to soften them before they can be fitted around tight curves.

Inlaid surfaces

After the glue has set inlays must be levelled, but there are a couple

of points to watch out for. Thick banding and stringing are glued in place proud of the surface and then planed or scraped flat; however, at this stage commercial materials made from dyed woods sometimes reveal that the dye has not fully penetrated.

Sanding open-grained woods often fills the pores with dust, which is barely noticeable when it matches the wood, but contamination with dust of a contrasting colour will look dirty. Using a cabinet scraper to level the surface creates no dust.

Before any fine sanding is applied the surface should be sealed with something like shellac or sanding sealer. After sanding, any dust needs to be removed thoroughly with a vacuum cleaner before further finishing.

The ROCKING HORSE SHOP
www.rockinghorse.co.uk

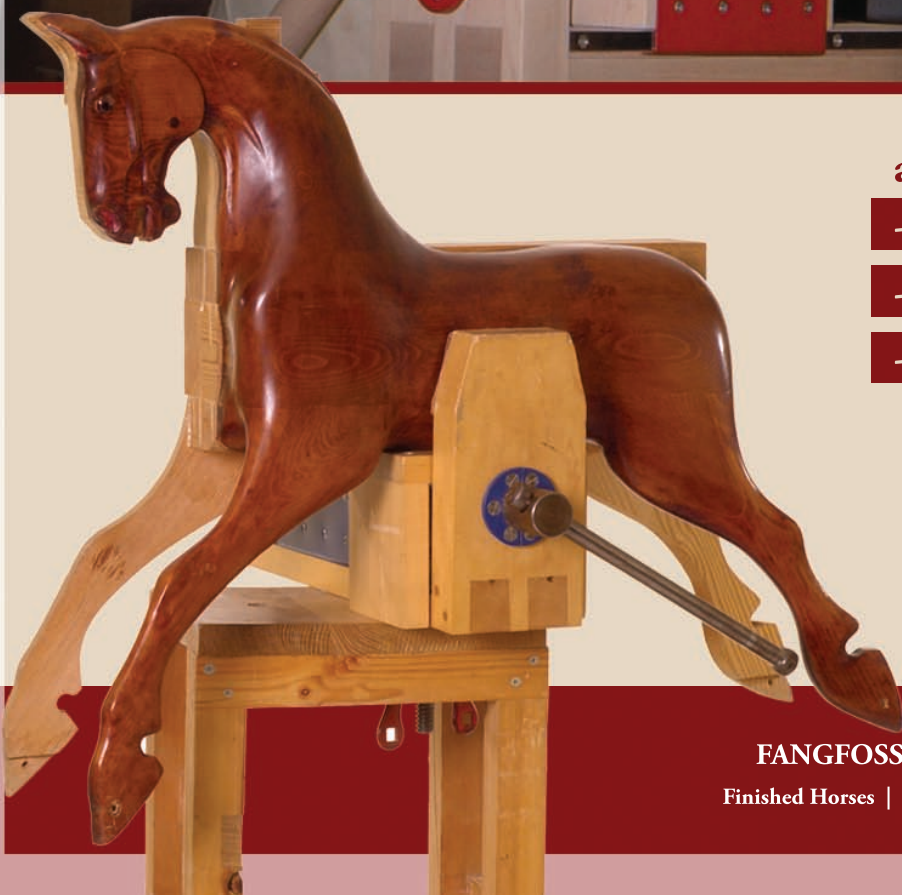


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BRIDGE SET BOX

Richard Parrott recycles timber
to make a presentation box for a bridge set



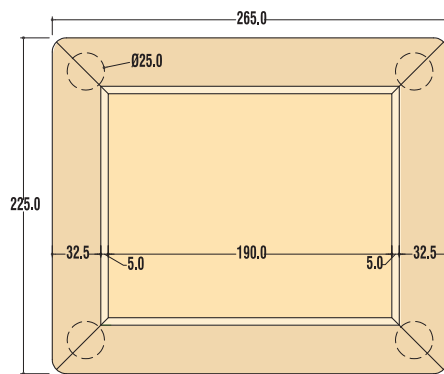
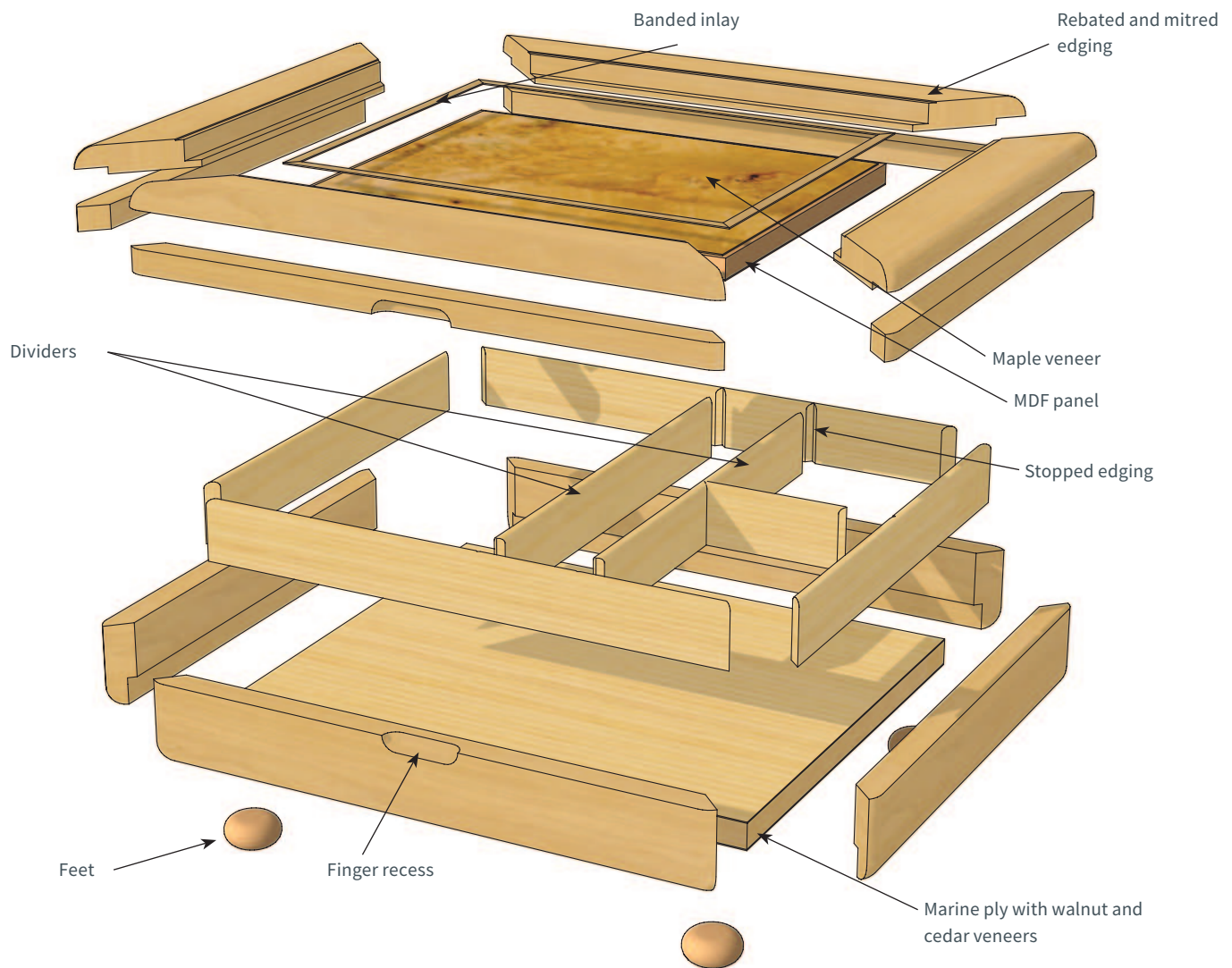
When the couple who ran our village film club as chairman and secretary retired from those offices I was commissioned to make them a presentation box for a bridge set, both of them being keen players. The box was to contain two packs of cards, scoring pads and pencils. A design featuring rounded edges was chosen.

I am a keen user of recycled materials and a friend of mine had given me a couple of walnut drawer fronts from an old chest of drawers.

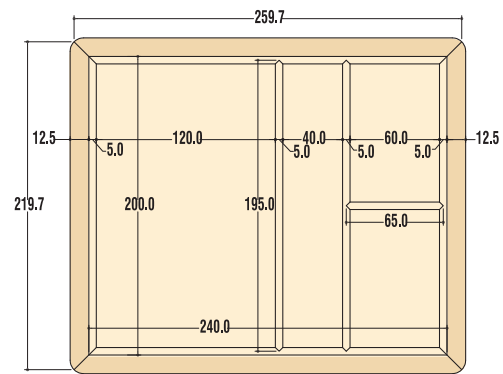
I decided to make the box from this but much of the wood was unusable due to splitting, winding and wormholes. However, I managed to salvage sufficient nice-looking stuff for this box. The lid has a maple burr panel surrounded by a decorative string. The bun feet were turned from an old walnut bedpost. The box is lined and partitioned with cedar of Lebanon that I had left over from making a kitchen dresser.

ROUNDING OFF

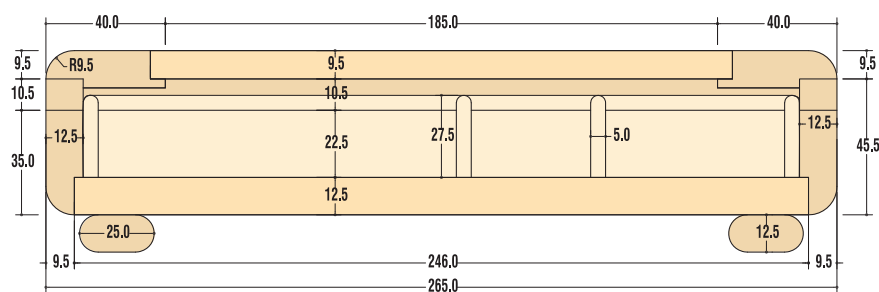
Rounding all the edges was accomplished with a 9.5mm roundover cutter on the router table before separating the lid. A stop block was placed to stop the cutter running past the end of the edge, so preventing any breakout, and a few strokes with a block plane later cleaned up the remaining 'lump'. The roundover was cut in three passes, the last being a light skim, and 180-grit paper was used to round off the corners followed with 240 grit on the palm sander to clean up the whole box.



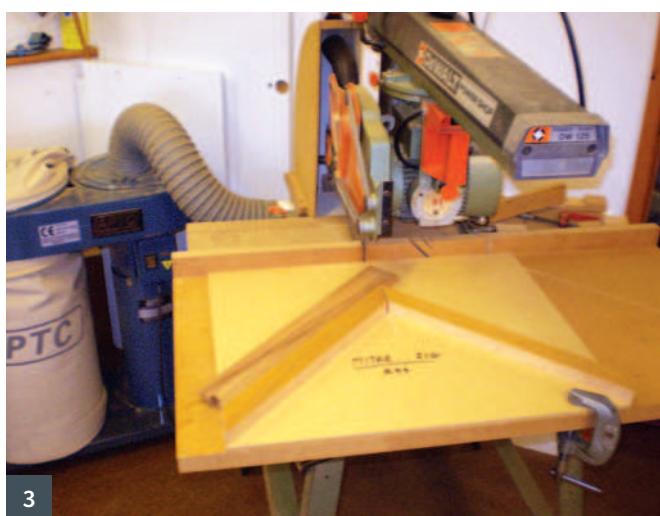
PLAN OF TOP



PLAN OF INTERIOR



SECTION



1 These walnut drawer fronts came from an old chest of drawers 2 Stringing surrounds the maple burr 3 The mitres needed hardly any adjustment 4 The recess for the box lock should be cut at this stage

Timber preparation

Both drawer fronts had a moderate amount of bow and twist and one had woodworm holes along one edge. They were about 20mm thick which gave plenty of scope for truing up as the box sides are 12.5mm thick.

I have a flat board 1,000 x 250 x 22mm with a shallow stop on one end which I use for thicknessing thin material on my planer/thicknesser. The drawer front was fixed onto this, convex side up, with one end against the stop and the other end pinned to the board with panel pins through its edge and well below the surface. The parts of the drawer front that didn't touch the board due to bow and twist were padded up from my large box of shims so that it was well supported throughout its length. It was then passed through the thicknesser repeatedly until a flat surface was achieved, removed from the board and turned over so the other surface could be flattened with the thicknesser.

I left it to settle for two weeks in my warm, dry workshop. A reference surface was then chosen to be the inside of the box – this was the surface with the least attractive figure. Any remaining wind was removed from this surface by hand planing and checked with winding sticks.

Using this reference surface the board was then thicknessed to 13mm after which it was examined carefully, the worm-eaten areas

sawn off and the board marked out for the box sides and lid frame. These were cut on the bandsaw and then prepared to length and width by hand in the usual way.

Mitre joints

For the box sides I chose to cut the mitres on the router table with a chamfer cutter. A minute amount of slop of the mitre fence in its slot was sufficient to make it necessary to true up the joints with a low-angle block plane. The mitres for the lid frame were cut using a mitre jig on my radial arm saw and these required almost no adjustment.

Before gluing up, rebates were cut in the box sides to take the bottom panel and the recess for the box lock was also cut at this stage.

The lid frame has two rebates, one on the top surface to take the lid panel and the other, 3mm deep, around the underside edge to fit inside the box sides. The box sides were then glued up and clamped in a band clamp. I made an accurately square board of 6mm MDF to fit exactly the internal dimensions, which was a great help in keeping the sides square while tightening the band clamp.

The corners of this board were cut off to avoid it getting stuck by any squeeze-out. The band clamp was also used to clamp up the lid frame.



5 The lid frame was secured with a band clamp **6** The bottom panel was glued into its rebate **7** Inlay banding sits between the maple burr panel and the walnut lid frame

Top and bottom panels

The bottom panel was of 12.5mm marine ply, which I veneered on the outside with walnut and on the inside with cedar of Lebanon. This was accurately dimensioned and then glued into its rebate.

From some leftover 9mm oak-veneered MDF I cut the top panel 5mm oversize prior to adding a maple burr veneer to the top surface and a cedar of Lebanon veneer to the underside, with its grain at right angles to the existing oak veneer.

When dry the panel was cut to fit exactly the rebate in the lid frame, the interior of the panel was given a couple of coats of Ronseal brushing wax and the inside surface of the walnut lid frame was given a couple of coats of sanding sealer before the lid panel was glued in place.

Inlay banding

A 5mm-wide decorative inlay banding was put between the maple burr panel and the walnut lid frame. The lid was cleaned up using a cabinet scraper and 240- and 320-grit paper. A few minute shrinkage splits had appeared in the maple veneer so I gave it a coat of sanding sealer in the hope of preventing further shrinkage. The lid was then glued to the box and clamped up.

Separating the lid

The lid was separated using the bandsaw, taking great care to ensure that the high fence was parallel to the blade. After separation the sawn edges were cleaned up with a finely set No.5 jack plane to obtain an almost invisible fit.



8



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8 The card packs are lifted via ribbons slotted into the side box lining 9 The finished interior 10 Ready for a rubber or two!

Box lining

The box lining and partitions are of cedar of Lebanon, planed to 5mm thickness with the top edges rounded over. The mitre joints and V-grooving were done on the router table before the linings and dividers were cut to the correct width.

After masking off the gluing surfaces, all the interior cedar surfaces received one coat of brushing wax and buffed up well after about an hour.

Before gluing in the linings and dividers the lock was fitted, the keyhole made and the hinge recesses cut. Some 9mm red velvet ribbon was used to lift the card packs out of their compartments and these were fixed by passing them through a 9 x 0.5mm slot in the side box lining and gluing them into shallow recesses on the back with a dab of Copydex.

A similar method was used to fix the 7mm double-sided satin ribbon lid stays but in this case a hole was cut in the lining and a plug cut to fit it. The plug was split in half with a chisel and a fine shaving taken of the

exposed surface of each half. The ribbon was then sandwiched between the two halves of the plug and pushed into the hole at the correct angle to produce a neat, tight fit.

The linings were spot glued to the sides of the box but fully glued along their bottom edges and mitre and V-joints.

Finishing

Finally, the hinges were fitted and the lock catch fitted to the lid.

The bun feet were glued and screwed into position. The box was well rubbed down with 400-grit paper and given four coats of Danish oil followed by a coat of wax.

The interior was not oiled as this often leads to a rancid smell after a while. Instead a single coat of brushing wax, which does not compete with the smell of the cedar, was applied and polished. Small felt circles were glued to the underside of the bun feet.

The box looked good and of course there is the delightful smell of cedar when it is opened. It was much appreciated by the recipients.



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TURNED CHESS SET

Richard Findley starts work on designing and making his own chess pieces

I have always wanted to make a chess set. However, the thought of turning 16 identical pawns had been overwhelming so the idea had been put away for another day. In recent years, I simply couldn't invest the time into making them, so it had always been something of a dream job to do. I'd imagined finding a set I liked the look of and copying the pieces, but now I want to come up with my own design. Considering the origins of the game go back almost 1,500 years, there have been enough chess sets made to inspire me, but it also makes coming up with something completely new difficult, to say the least, but I've set myself the challenge and I'll do my best to meet it.

Design

If there is a weakness in my skill set, it is in design. In my day-to-day turning work, I rarely design something from scratch. Usually, a customer brings in an item, or emails a drawing and tells me how many to make. My job is to make other people's designs come to life. When I do have to design something from scratch, I like to have a few guidelines to work to, so I decided some research was in order. With so many sets having been made before, there should be plenty of inspiration out there.

From my research, I found that almost anything goes, to a point. There are sets that suit all tastes, from classic Staunton ones that everyone will

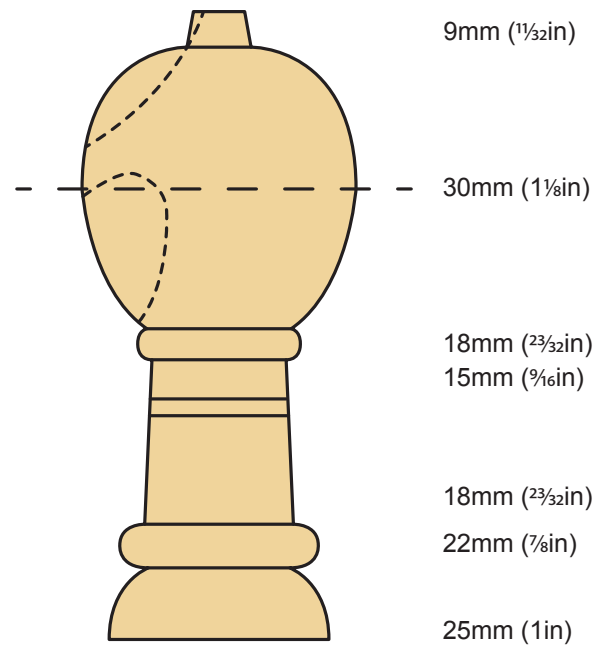
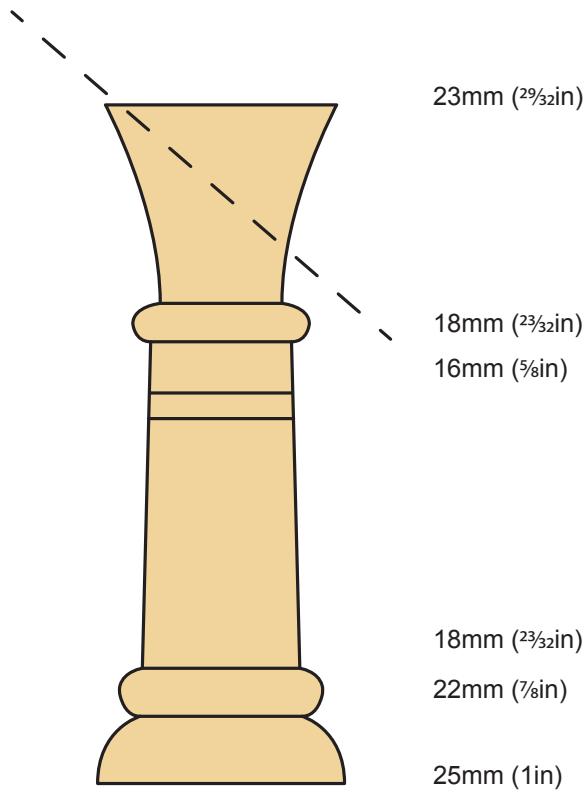
recognise to super-modern sets which use more abstract shapes to represent the pieces. My brother has a Chinese-inspired set in which we never have been able to properly identify which is the bishop, knight or rook.

'Proper' chess players can be fussy though, and demand sets with pieces that are clearly defined, so if I want to make something that can be approachable by anyone, from beginner to high-level player, I need to make the pieces easily recognisable.

Size also seems important. Travel sets are tiny, whereas tournament sets can be quite tall and there are even outdoor sets with incredibly large pieces. As a rule they tend to descend in size from the king to the rook, with the pawn being smaller again, but not always.

There needs to be something of a theme that makes the pieces a set, rather than just a group of chess pieces. So I will need to use certain elements or design features on every piece to tie them together and make them harmonious.

The wood is important too. A complete set has 'black' and 'white' pieces. I have most commonly seen boxwood used for the white, as it polishes to a light golden-brown colour, with the black often being an unidentifiable wood, usually stained black. Very expensive sets use more exotic woods such as ebony or dark rosewood and some antique sets are made with ivory. Often these sets are stained to a bright red colour to represent the black side.



Research

I've always loved the look of the 'Edinburgh' or 'upright' set so I took a look at some of these pieces first. These tend to be tall and slender with a column-like body and an identifying 'head' on top, indicating what the piece is. As I looked through, I made sketches of details that caught my eye. I need to be conscious of not copying directly, but if I can harvest ideas and bring them together to make a new design, then hopefully I can come up with something recognisable but unique. The risk of this approach, though, is that I could end up with the Frankenstein's monster of the chess world.

The knight

The elephant in the room here is, of course, the knight, famously represented by a horse's head but most definitely never, ever referred to as 'the horse'. I've done a bit of carving in my time but I want this to be a woodturner's chess set. I know that sometimes they are made using the German technique of ring turning, but I feel that is a lot of work for just four knights. Alternatively, I could bandsaw out a horse's head shape, then fix it to the base, but I wonder if this would look a bit lifeless.

I looked deeper into the internet for ideas and, after some time, came across a website called Chess Museum, which is a treasure trove of images and inspiration. One set that caught my eye is called the Space Age Universum set, which was inspired by rockets and satellites. While it is nothing like what I'm after, the knight jumps out at me as it is, at least in part, turned off-centre to produce a version of the familiar shape. This gets my grey matter working: could I turn the knight off-centre in some way to produce the shape? The one in the picture is complex and would still need some carving, I think, but it has given me the inspiration I need.

Samples

From all of my sketching during my research, I am beginning to form a solid idea for my set. I decide to draw the full set, still as a sketch, but roughly full-sized, as I imagine the pieces. I am pretty pleased with how they look on paper and it is certainly a good base on which to build.

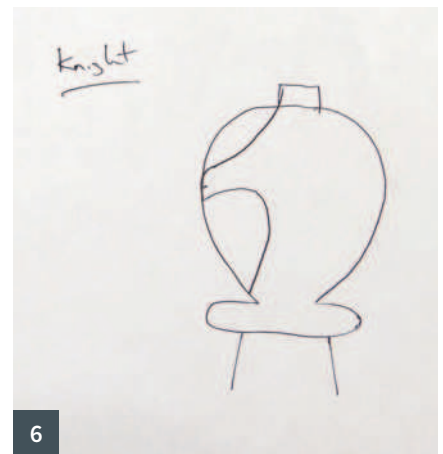
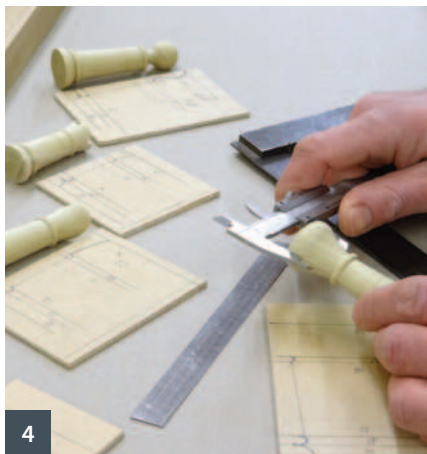
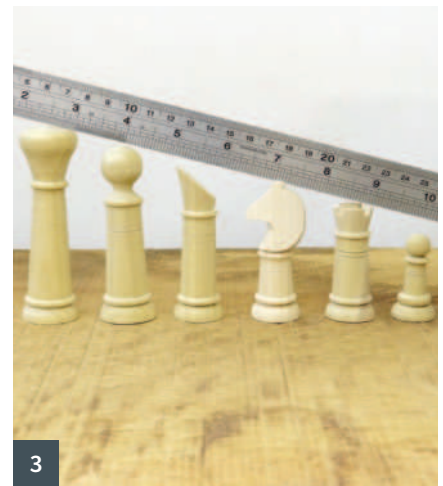
The next step is to try turning something and see how it looks in three dimensions. I know from experience that a 2D pencil drawing and a 3D wooden object don't always fully translate. The fact that these chess pieces are only small means that each shouldn't take long to make and the wood can be offcuts, so the investment in time and timber at this stage will be minimal but well worth it when it comes to my final design.

As a secondary reference, I have a box of various bits and bobs from when I was young which contains part of a chess set, a few standard dice in various sizes and a set of poker dice. It's one of those odd boxes that probably should have been thrown out years ago but for some reason had lived at the back of a drawer, perhaps waiting for today when I open it up and can use the few chess pieces in there to study the scale and proportion. They are quite a bit smaller than my planned set, but having a physical reference like this is useful.

The plan

After several hours of turning and experimentation, I have a set of pieces in tulipwood that I am happy with and will be the basis of my set. From these I make storyboards, as I would for any production job, and I am ready to prepare my timber and make a start on the job for real.

Oak is my favourite wood, and having experimented with ebonising, I like the idea of an all-oak chess set with the 'white' pieces simply oiled and the 'black' pieces ebonised with a vinegar and steel wool solution. This alone should make it distinctive, as I've never seen it done before, but in combination with my design should be a unique but familiar chess set.



PHOTOGRAPHS BY RICHARD FINDLEY

1 A collection of my sketches with the final group sketch **2** My box of games oddments contains part of a chess set **3** Tulip prototypes complete, evenly reducing in size **4** Making the storyboards from the prototypes **5** Attempt 1 was a fail but points me in the right direction **6** Sketch to move from the diamond to a more rounded head shape

Making the knight prototype

I decide to begin with the knight, undoubtedly the most difficult piece to make. My idea of turning it off-centre looks like it will work, on paper at least, so I cut a piece of 50 x 50mm tulip around 100mm long and put it between centres to see what happens. I've always found visualising off-centre turning very difficult but I think I have my head around this one.

Based on my original inspiration of the Universum set, I turn the horse's head to a sort of diamond shape on the true centre. I then offset the piece by a random amount and hold it tightly between centres. As I begin to turn there is a slight cracking sound and I immediately stop the lathe to inspect it. I remove the piece and take a look but can't see any problems. It is only when I replace it in the lathe and tighten it once more that the crack becomes apparent. The waste wood at the top of the piece is too thin to resist the pressure, so I cut a second block, a little longer so I can have a more sturdy waste block, and try again.

This time I achieve something closer to what I was after, although the base is too tall and the diamond shape of the head doesn't quite work. I make adjustments in the height of the base and, after a couple of new sketches, this time turn a curved shape for the head.

I should explain how I shape the head at this point. After turning I have a base with a ball on top. The ball has a cut on one face, produced by the off-centre turning, which looks a little like a smile

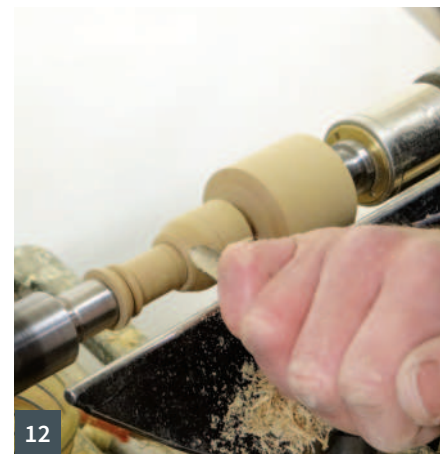
on the ball. This forms the neck and chin of the horse's head. I draw pencil lines front and back, around 6mm apart, to show how thick I want the nose and the back of the horse's neck and take it over to my belt sander.

Recently, I made a jig to hold my belt sander securely and safely on its side, essentially making it into a finishing machine, with a table and square stop block. The jig is made from birch ply and sits on my bench, held firmly by my vice. This gives access to the flat base plate of the sander, but also the rounded end, which is useful for profiling. Apart from the lathe, this is the only machine I use to make the knight.

I cut off the waste block from turning and sand each side of the ball, tapering the shape to the small nub at the top, which forms the ears, and flaring slightly at the intersection between the horse's head and the column-like base. The sides of the horse's head are slightly wider than its nose and mane, so I rock the piece slightly as I sand it, regularly checking my progress and developing the shape of both sides to keep it as symmetrical as possible.

The final touch is to use the rounded end of the sander to sand a hollow curve from the nose to the ear, which transforms it into the recognisable knight. I am so pleased with how well this turned out. I have never heard of a knight being made in this way before – although it may well have been done like this before – so this is unique.

I decide this one, although it looks great, is a little tall, so I adjust the



7 & 8 Adding pencil lines front and back before profiling **9** My sanding jig, which holds my belt sander safely on its side **10** The progression of my prototypes to the final sample on the right **11** The 15mm offset to produce the profile with the ray fleck on each side **12** Turning the shape prior to offsetting

height of the ball I turn for the head and, after three more attempts, I settle on a design that I am happy with. I just hope that I can replicate this in oak.

Turning the oak knights

After making the prototypes I know that I need a 50 x 50 x 115mm block of oak with an offset of 15mm. As before, I turn the block into a cylinder and turn the column-like base of the knight and the 35mm ball for the head. I leave the nib that will become the ears a little thick at 12mm for this part for strength, taking them down to the required 9mm only once I've completed the off-centre turning.

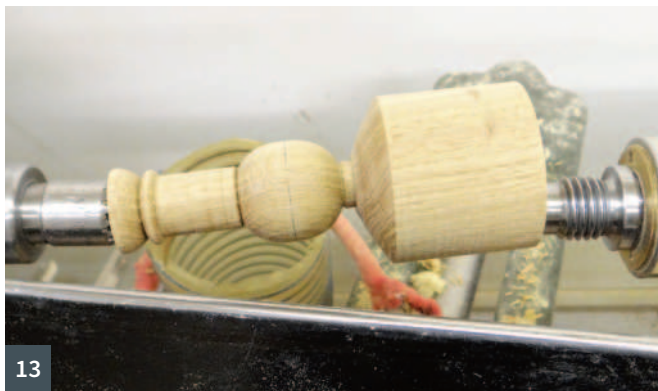
I deliberately position the 15mm offset so the grain should present the distinctive oak ray fleck on the sides of the horse's head. With the wood held in the off-centre position, I set the toolrest at an angle to allow the wood to spin, but keep my gouge as close to the work as possible. I am driving the knight with an Axminster Evolution drive centre, which grips even when the work is tilted like this, and a live ring centre in the tailstock. I double and triple check everything is securely held before turning on the lathe, standing to one side and wearing my air-fed full-face visor, as always. I turn at 1,850rpm to help achieve the smoothest cut possible as sanding isn't an option for this part of the turning, at least not with the lathe running. The wood is a blur but I have a pencil mark at the centre of the ball which shows me where I

need to begin the cut. Slow, steady and smooth, with regular checks, is the order of the day here. The cut is essentially a cove – I slightly undercut the right-hand side to accentuate the curve under the horse's chin. The left side, from the base of the knight, is a flatter curve and creates the neck.

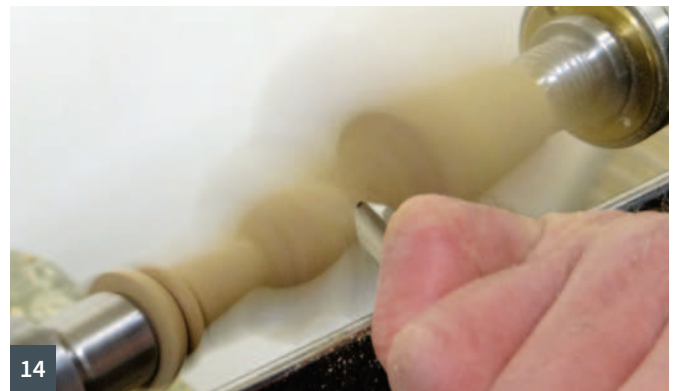
Satisfied, I place it back on centre, reduce the ears to 9mm and sand with 240 and 320 grit, finishing with a fine abrasive pad. I turn all four knights to this stage before cutting off the waste block and moving over to the sander.

As before, I mark the 6mm portion, which will remain un-sanded, and get to work. The oak is noticeably slower to sand than the tulip had been, being so much more dense. I keep the knight moving over the belt, swapping sides and checking my progress to keep the symmetry. Happy with the sides I add the curve from the nose to the ears with the rounded end of the belt sander, add a little round to the nose and the shaping is done. Doing the four together means I am really in the swing of things and each one becomes easier to do. I compare them and notice one is slightly different, but a couple of light touches on the sander quickly puts that right.

The belt is 100 grit, so rather coarse, but it works well for its purpose. I hand sand with 180 and 240 grit to smooth them out further. I sand the curve of the neck with rolled abrasive to make sure any turning marks are removed and the four knights are ready for finishing.



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13 Mounted on the lathe, ready to turn the offset **14** The wood is a blur as I turn the offset **15** The knights are turned and ready for shaping **16** The 6mm flats are marked front and back **17** Sanding the sides of the knight **18** Using the round end of the sander to shape the horse's nose

Making the bishops

During my research, I noticed a very modern metal set in which the bishop had a sloped top. Had the picture not shown all of the pieces in their starting positions, I would have found it difficult to identify several of them as they all looked quite similar, but the bishop jumped out and seemed quite obvious to me. The sloped top would be relatively easy to achieve while keeping the style of the piece the same as the rest of my set. Many bishops have an angled cut into them and a 'hat' shaped to mimic a mitre, which is in itself quite angular, so I think this will work well.

I turn an initial tulip prototype with a flared top, then a second with a slightly different, teardrop-shaped top. I use my sander to produce the angled top. I prefer the first with the flared top and, once I compare it to the rest of my prototypes, I decide it needs to be just a tiny bit shorter than the first, so my third and final prototype is created, from which I make my storyboard and my final oak bishops.

The turning is quite straightforward compared to the knight, the

simple half bead and small full bead at the base, which runs through the entire set, is simple skew work, followed by the column with another small bead at the top. The flare is cut with a planing cut from 23mm diameter at the top to meet the bead.

Once sanded, I turn the other three the same and take them over to my sanding jig. I present them to the belt freehand, as I had with the knights, and gently sand the angle from the top of the flare to a point above the bead, which I gauge by eye. I regularly check my progress and adjust the angle to present the same grain pattern on all four bishops. This sanding operation makes it easier to burn the wood as there is less movement of the piece against the belt than there had been with the knight, so I make sure I avoid burn marks by easing pressure and using a fresh part of the belt as I get to the final shape. I compare the four and adjust one that doesn't quite match. As I had for the knights, I hand sand the angled slope and soften the sharp edge and these can sit with the knights ready for finishing.



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19 The finished knights **20** Prototype bishops **21** Marking the bishop from the storyboard **22** Turning the bishop **23** Sanding the angled top **24** Before and after sanding **25** The finished bishops

Conclusion

I am a long way from a complete set but with the knight done and looking really good I am confident about the rest of the set. In the next issue I will tackle the rook with its distinctive castellated top, the royal

pieces and then I can look forward to some production turning with the 16 pawns. I can't wait to see how the ebonising looks and the final oiling should completely change the look again.

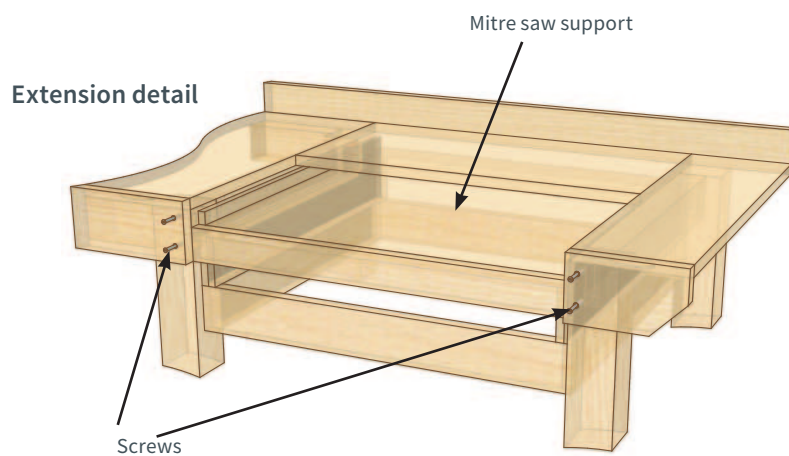
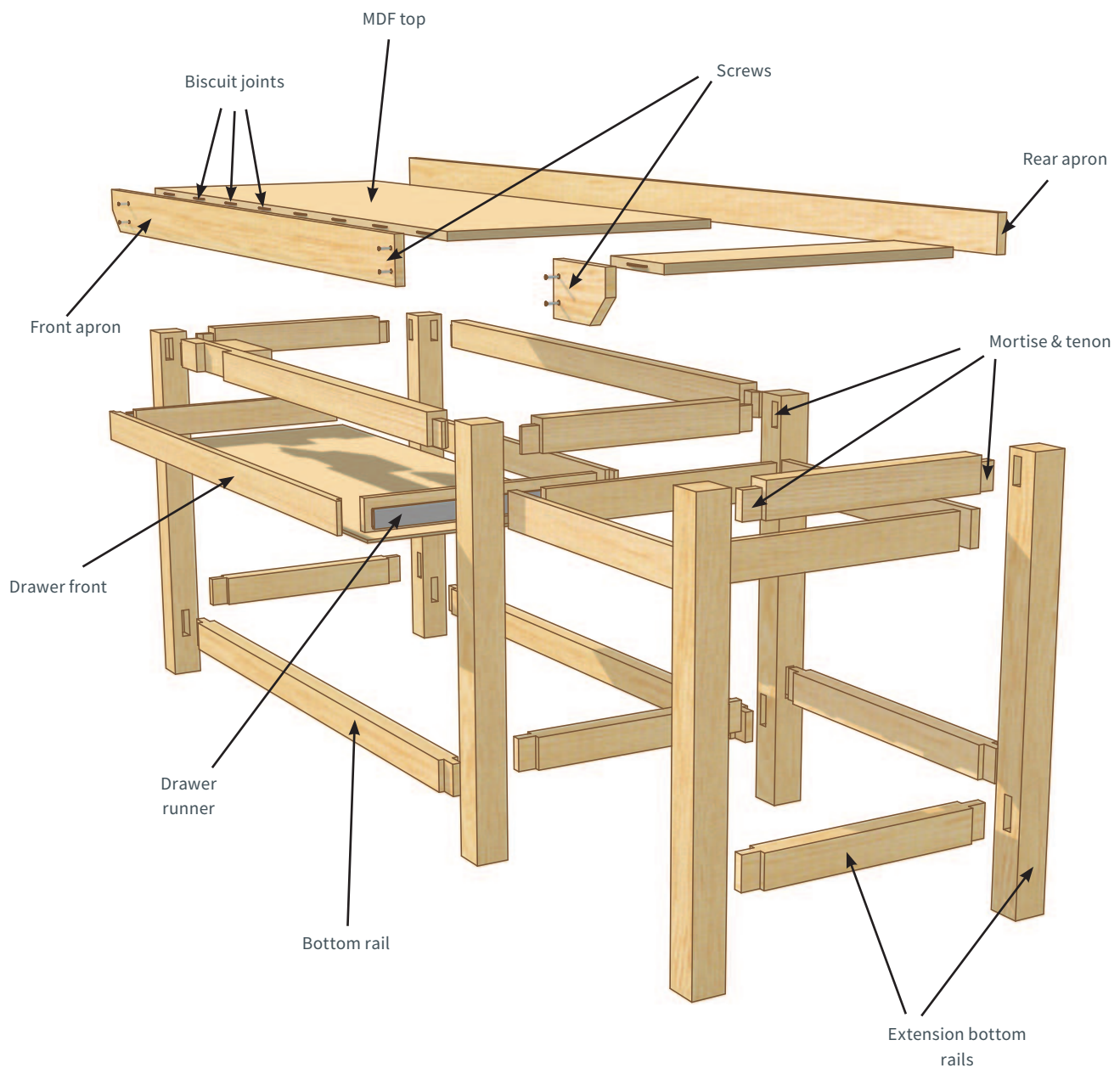
A person is shown from the waist down, wearing a light-colored shirt, dark trousers, and black shoes. They are standing at a custom-built wooden workbench. The workbench has a light-colored wood top and legs. A blue bench vice is mounted on the side of the workbench. A yellow and black Ryobi cordless drill is on the workbench. The workbench has two drawers underneath, which are open, revealing various tools and equipment inside. The person is using a hand plane on a piece of wood on the workbench.

SPACE-SAVING WORKBENCH

Christopher Hall builds this unique bench to help organise your workshop

The bench is the heart of the woodworker's workshop and should meet all the criteria on an individual basis – height, width, length, etc., but above all, it needs to be compact and functional. Ideally, and space permitting, the bench should be about 2.4m long by 630mm wide. I like bench height to be half my height. It is better to be slightly higher than this, rather than lower.

My bench is made from joinery quality softwood with an MDF top, and incorporates a Ryobi EMS1426L 250mm mitre saw, and an ART03 router table fitted into the top. Underneath are two sliding drawers where my power and hand tools are laid out for easy access. A cutting list is detailed opposite.



YOU WILL NEED

Legs: length to suit x 70 x 70mm

Rails: 520 x 70 x 45mm including 2 x 40mm tenons

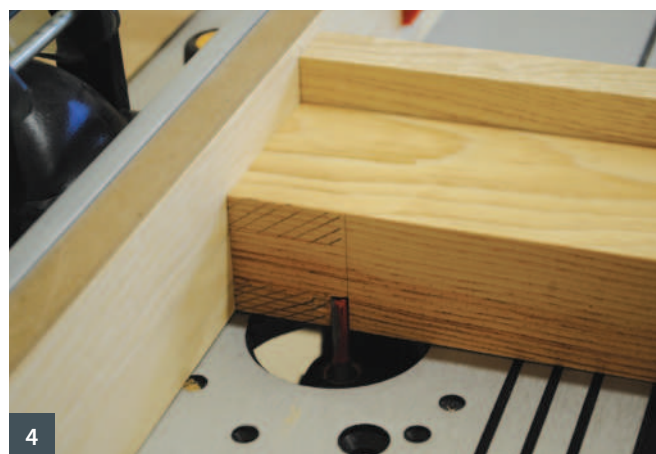
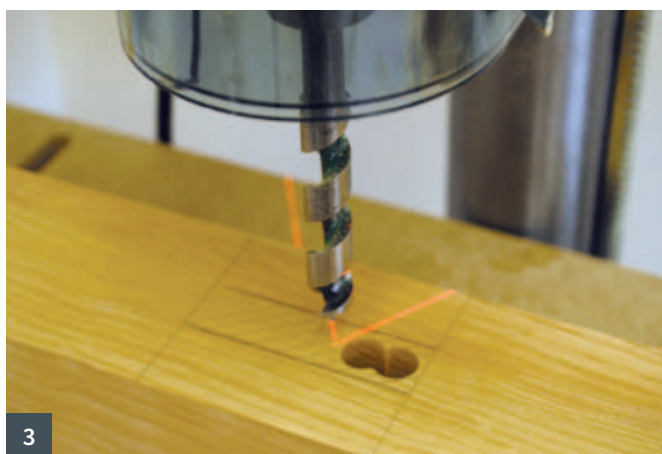
Stretchers: 1440 x 70 x 45mm including 2 x 40mm tenons

Top: 1,600 x 610 x 18mm MDF

Apron: 1,600 x 100 x 20mm ash or beech

Drawer material: 70 x 20mm

Extension frame: 70 x 20mm



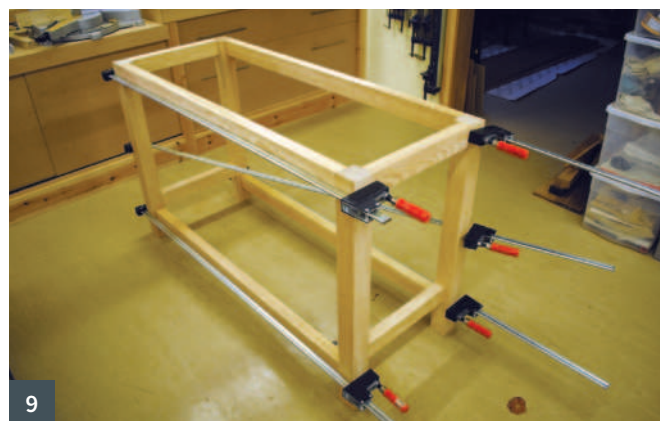
Legs and rails

The legs and rails are mortised together with the underside of the bottom rail being 100mm from the floor. This allows your feet to go under the bench when standing close to it, and also leaves enough room to retrieve items which have fallen under the bench. The mortise width is approximately half the width of the rail – in this case 20mm and 45mm deep – and is best cut out with a mortiser or a pillar drill set to a depth 5mm deeper than required.

- 1 Cut your legs and rails to length.
- 2 Then mark out the mortise and tenon. I used a standard mortise marking gauge for the job.
- 3 The mortise is drilled out with the pillar drill set to a depth 5mm deeper than required to allow for any excess glue or air being trapped,

which will stop the joint going together tight and properly.

- 4 Tenons are easily and accurately cut on the router table using a 6mm straight cutter fitted into the router, set to the depth of the mortise line. The scrap piece behind the tenon is to avoid breakout.
- 5 Cut the cheeks of the tenon on a bandsaw or, alternatively, do it by hand with a tenon saw. I used a stop block behind the blade set to the point of intersection of the two cuts. The bandsaw is set up with the width of the tenon set from the fence, and with a travel stop in front of the workpiece to avoid travelling too far into the shoulder of the tenon.
- 6 Where the two tenons meet at a right angle within the leg, it is necessary to mitre one side of the tenon to make sure that the tenons, when they come together within the leg, do so and do not foul each other.



7 It's always worth doing a dry fit of the joints as you go along.

8 Prior to gluing-up the end frames, check all the joints for fit and squareness and then sand all the components, making sure all the edges are maintained at a perfect right angle. At this stage, do not soften the edges.

9 When the two end frames have dried, the horizontal stretcher rails can be glued-up, joining the two ends to form the bench. It is important to make sure that when assembled the frame is square, so use a diagonal sash clamp. Before gluing together, sand with a palm sander using 120 grit, and finish with 320 grit on the random orbital sander. Use sash clamps to bring the joints together and set aside for the glue to go off.

Coach bolts

10 An alternative jointing method is to use a 25mm M10 dowel and 125mm coach bolt to hold the sides and rails together, rather like in a bed construction.

11 The dowel bolt is fitted flush with the inside of the rail, with a 10mm slot cut with a tenon saw and chisel, which will allow the bolt to lay in the groove. This is best done on the pillar drill with a Forstner drill bit.



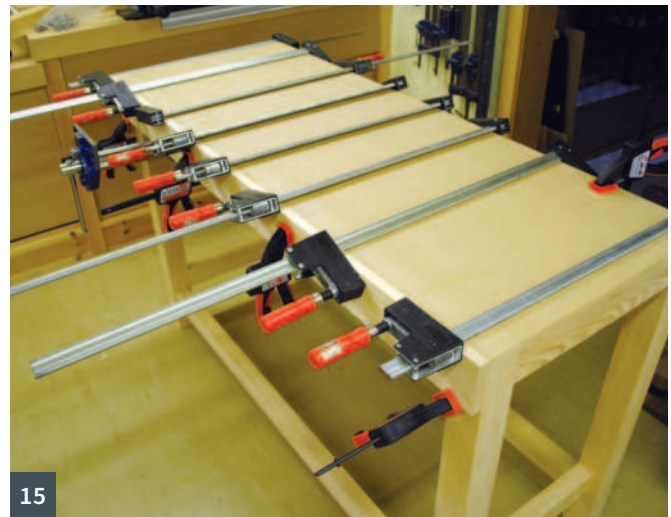
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12 Fitted dowel and bolt. When the bolt is engaged through the leg into the dowel and tightened, it will form a very strong joint. You can also apply glue for extra security.

The vice

Now it comes to fitting the vice. Determine where you want your vice positioned. If you are right-handed it is normally fitted just inside the front left leg; if you are left-handed, it goes inside the right leg.

13 First of all, the vice block needs fitting. A 7in quick-release vice is ideal for this size of bench and should be let into the front rail by the thickness of the jaw. The vice is then bolted onto the vice block and front rail. It is important to fit this level and square. The cutout in the front rail is best made before assembling the main frame.

14 Recess the heads of the bolts below the level of the rail so the top can rest flat on the top rail. The vice should be recessed into the top rail and attached by four bolts to a vice block glued and biscuit jointed to the front rail. The bolts are sunk just below the surface of the rail. Note – use lock nuts and washers on the bolts, and check them for tightness every so often as the wood is bound to shrink.

Top and apron

A perfectly flat surface for the benchtop is much preferred by professionals, as tools left at the back of a bench in a tool well always

attract unwanted dents in the workpiece when the full width of the bench surface is required, so I always advocate the benchtop is made from a sheet of 18mm MDF.

15 The front apron is attached to the top by glue and biscuit joints 200mm apart. Fit the top assembly to the legs by screws through the apron into the front legs and the back of the top from underneath the rear top stretcher rail. Note – do not glue the top to the frame, as you may need to replace the top at some time.

Drawers

I made the drawers quite simply with lap joints, and with the drawer base glued and nailed to the bottom. The drawers are supported by runners, which are 13mm wide, so allow 25mm off the overall width of the drawers. I cut the half-lap joints on the router table and then glued and clamped the frame. I have deliberately not put a groove in the sides to take the drawer bottom as I wanted to glue the bottom directly to the frame to give it added strength, as inevitably the drawers will get loaded up with heavy tools. Cut the 6mm MDF bottom and check for square before gluing and nailing it to the bottom of the drawer – this ensures the drawer is perfectly square – essential for the runners to work properly. The height of the drawers can be fitted to your own requirements, but make sure the top drawer clears the turn pin of the vice when the drawer is pulled out.



16 I cut the lap joint on the router table, but make sure a piece of scrap is at the outfeed side of the cut, so as to avoid any breakout.

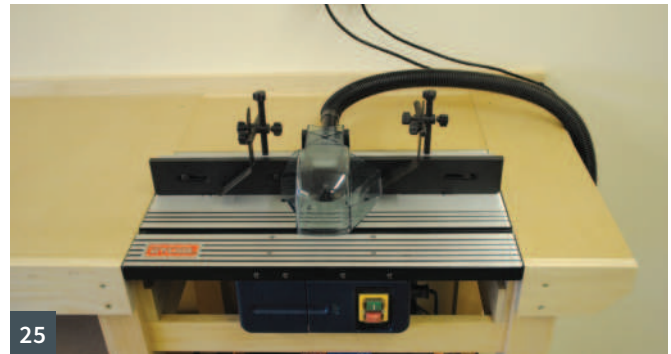
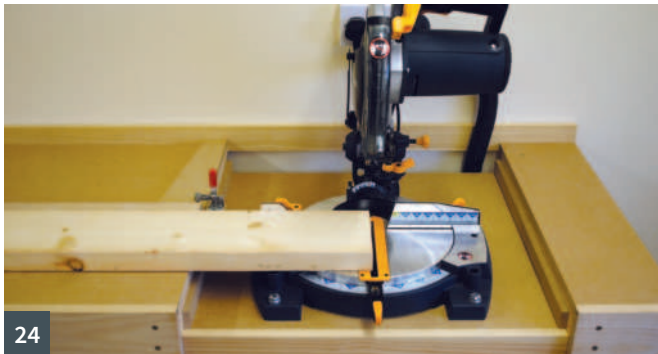
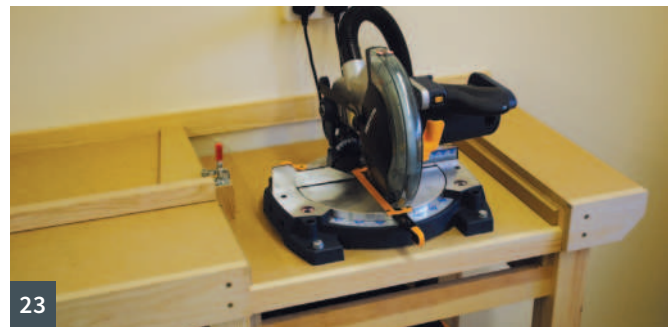
17 This should produce nicely fitting joints.

18 After cutting the drawer components to size, do a quick dry fit to check all is well.

19 Then glue and clamp up the sides, and nail the bottom into place. Ensure the frame and bottom is square before nailing up – this procedure should be very easy.

20 Next, I fitted the drawer runners in place. I clamped the runners in place before screwing them up. Note the stop block at the front of the drawer, as it is important to make sure the drawer runner is exactly at the front of the drawer, otherwise the drawer will not run square to the frame.

21 The drawers are nice and wide to provide easy access to your tools.



Mitre saw and router table extension

To get maximum use out of my bench, I've included an extension at the end which will take a mitre saw and router table, as well as space for a drum extractor. The mitre saw and router table extension is made in the same way as one of the end legs, and is attached to the main bench by a lower horizontal rail tenon and mortised together. The width is determined by the width of the router table. A frame is made to support the table exactly the same width, and is screwed to the sides, ensuring the table top is level and parallel with the bench top. A vacuum extractor will then fit conveniently under the workbench, ready to be attached to any of the power tools.

22 The extension table is made in the same way as the frame ends, with the height of the mitre saw supports dictated by the model of mitre saw. This ensures lengths of timber lay flat on the work table top.

The width is determined by the router table, as it is wider than the mitre saw.

- 23** The mitre saw is bolted to a piece of MDF and is easily lifted off the frame when the router table is required, and vice versa.
- 24** An extension fence to the mitre saw is clipped onto the bench when longer pieces of stock are being cut.
- 25** Once the router table support frame has been fitted, the router table can then be lifted off, leaving a frame ready to support the base board for the mitre saw. Inner shelf support strips are fitted to the sides of the frame to enable the mitre saw to sit lower in the bench and level with the benchtop. A lift-on lift-off extension frame is made to complement the mitre saw fence, extending it to the length of the bench – essential when cutting long pieces of stock accurately.
- 26** And now your bench is finished and ready for use.

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DRAWERS MADE SIMPLE

Don't want to make dovetails? Anthony Bailey has an alternative

Drawers don't need to be built using dovetails, although this method is very strong. An alternative to this more complex way of doing things is this simple method that just requires well prepared timber, thin ply and a router table, plus a straight cutter or a groover. Follow my easy-to-follow guide and well turned out drawers are sure to follow.

The key to all drawer boxes, whatever jointing method used, is that the sides fit strongly enough onto the drawer front that it can resist the strain of opening the drawer each time. With dovetails, the front set can be 'blind' – that is they fit into the ends of the front panel so they cannot be seen when the drawer is closed. With other jointing methods, this isn't possible, and the result would be an ugly looking front face with the end grain of the side pieces on display. To counter this problem, most modern built drawers have a 'planted-on' front panel, which neatly hides the drawer box joints. This extra thickness needs to be allowed for when calculating the drawer sizes. Allowance also needs

to be made on the drawer width if there are modern drawer runners instead of the traditional construction. Modern runners typically take up an extra 25mm of width – the amount the drawer box needs to reduce – and the plant-on front needs to be wider than the box to hide the resulting gap.

Making the drawer box

- 1 Work out the overall size of the drawer box – the back and front will be tongued into the sides, so take off the drawer sides' thickness and add back the tongue length needed to create the tongue and groove joint. A good starting point is to use a 6.4mm straight cutter to create the groove and penetrate no deeper than 7–8mm if the stock thickness is 18mm. You will now have the length of the front and back components. The sides, of course, run fully from front to back.



- 2 Set up the router table for machining the grooves. If you use a straight cutter, the components will be lying down; if you use a groover mounted on an arbor, they will need to be machined in the upright position. You need to fit a through fence for a continuous running surface, and a square push block or mitre protractor to keep the workpieces running square as you push them over the cutter.
- 3 Once all the side components are grooved, the same cutter can be used to make a groove in the sides, front and back to accept the drawer bottom.
- 4 Now fit a 16mm or 19mm straight cutter, or even better, a tenoning cutter in the router table. Set it up to machine the tongues on the

front and back panels. Do a test on an offcut first to ensure a nice tight fit.

- 5 Cut the drawer bottom ensuring it is a fairly close fit in the drawer box, as it will help to hold it square. Now glue up the drawer box with the bottom in place, clamp and check for square, and leave to set.
- 6 Cut and sand a plant-on front to suit the drawer aperture size, giving no more than 2mm clearance on any edge, and once the drawer is fitted, screw the front on from the inside. Most handles or knobs are fixed from the back so do this first. Your drawer box is now complete.

MAKING A WINDOW

Anthony Bailey explains how you can use your router to cut window profiles

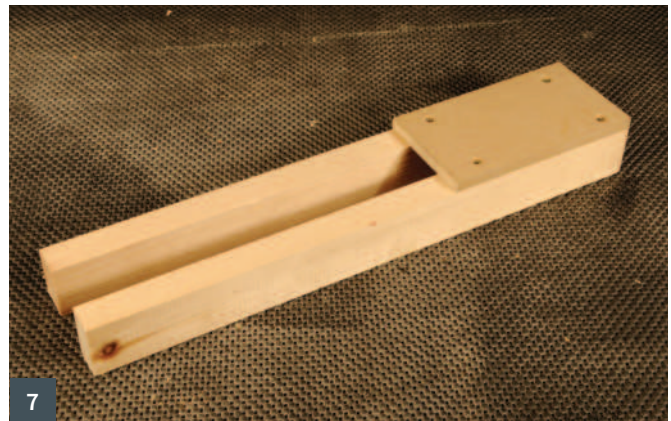
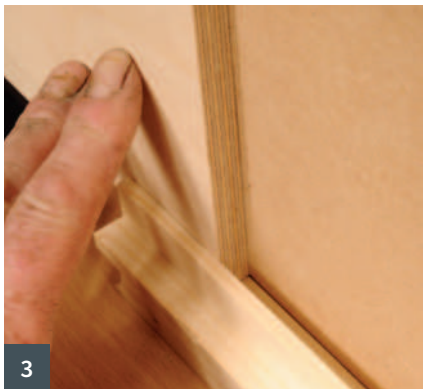
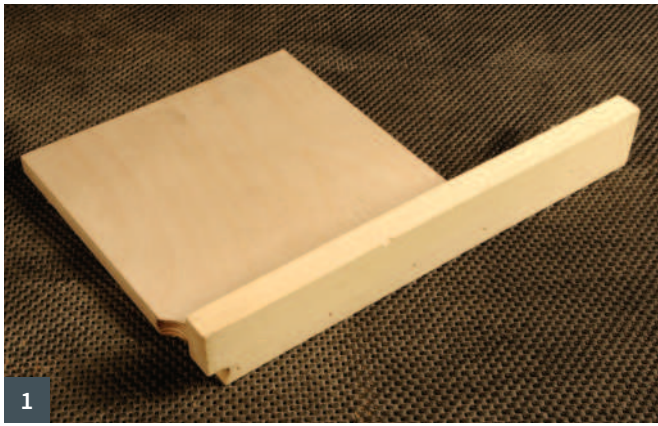
Normally you would get a joiner or glazing company to make up new windows when it comes to replacement time. However, supposing you could make your own? A joiner would use a spindle moulder and the correct tooling to do the job, but there are router cutters available that are suitable for making your own windows. In this article, I'll show you how it's done.



CONSTRUCTION NOTES

- Conventional window joinery uses through mortise and tenons, which give added strength to the whole assembly. With these cutters, that just isn't possible. I chose instead to pre-drill through the stiles into the rails once the glue had set, and fit long screws to put the strength back in.
- Despite accurate measuring I found my short glazing bars were slightly short, so I remade them. I suspect that however much care you take, the same thing may occur. To mitigate this possibility I would add 1–1.5mm to each as they can be shortened with care if necessary.
- The two standard frame types are sash and casement. There isn't much to distinguish them, and joiners I have worked with call them all sashes as the construction is identical. A lower sash window has a bevelled lower 'drip' edge and grooves at the sides for the cords, while the upper sash also has the side grooves and shaped horns where the stiles extend beneath. A casement or hinged window may have a rebated profile with drip grooves that plug into the outer frame.

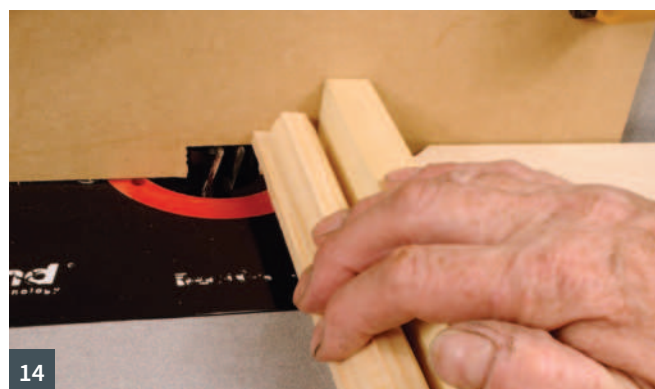
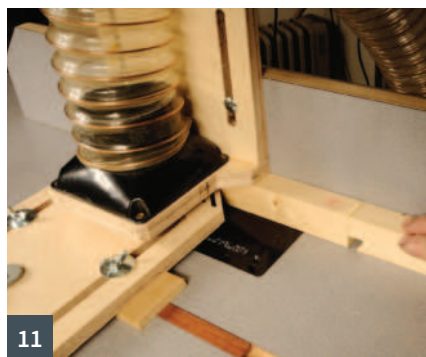
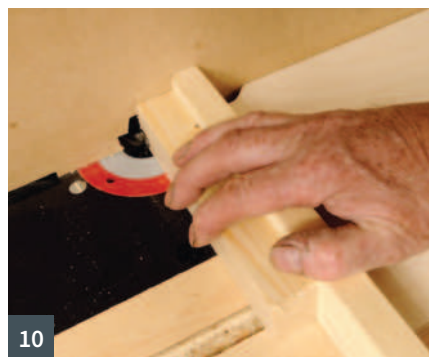




The jig

- 1 Because of the complexity of making window frames, more than one jig is required. First up is a perfectly square pushblock. This simple device is an underrated, but very effective aid. It safely supports each component being scribe cut without any need for the table fence to be parallel with the table itself, as would be the case with the mitre fence.
- 2 The second jig is designed to fully support each glazing bar after the rebates have been machined on the reverse side. This operation removes a lot of wood so there has to be a way of preventing vibration, tearout and a component turning over as it feeds through – all while keeping the operator's fingers safe.
- 3 So, to start, machine the rebates on your test piece and find or plane a board to the same thickness as the rebate width. Check the test piece sits squarely when the board is positioned on the sub fence.
- 4 Pin the board to the sub fence ensuring each component can slide underneath without riding up as it passes over the cutter.

- 5 Now, find some slips of wood that are the same thickness as the wood between each rebate. Providing all components are machined to the same thickness, they should all be able to slide through without getting stuck.
- 6 Pin the lower strip so each component can just slide under without any play. The upper strip is there to hold the front board, which is added last. This will trap each glazing bar, preventing any sideways movement and avoiding any supporting finger contact. The front board is added last.
- 7 The third jig is very simple. The purpose of it is to fit tightly around each frame component, including the glazing bars. The top board is the height register so the two battens should always sit level with the moulded edge of each glazing section. This creates a sort of mini mortise box that the router can sit on, to machine the stub mortise holes. The open end allows working at the ends of the frame stiles and is clamped tight to prevent slippage.



The cutters

- 8** These are the cutters I used with my router. From left to right: Wealden sash bar scribe, Trend version on 1/2in shank, Wealden ovolo scribe, Wealden tenoning cutter for making the rebates, and lastly a 6.4mm straight cutter.

The window frame

- 9** It is essential to make a precise cutting list for this process to work. Start with the overall frame size using the old frame – if it is available – as a guide to stock dimensions. Make it a tight fit as you can always trim it to fit, not the other way round. Allow for the amount that the scribed components need to fit into their neighbouring components.
- 10** The first cut is the scribing cut. It helps to do a trial profile cut first so you can see the shape and understand how the scribed part will connect to it. Now swap cutters and do all scribe cuts using the pushblock and a through sub fence.
- 11** This apparently complicated rebating set-up consists of a large bore extraction port, also acting as a hold down, and spring fingers for

sideways pressure, clamped firmly so it cannot slip. Note the spring fingers are raised up on 9mm MDF, so pressure is applied at mid-height of the glazing bars as they are rebated. One short glazing bar is used to propel the first one through and so on, thus making for safe, controlled machining.

- 12** These test pieces show the machining progression from left to right: scribe cut, one rebate, both rebates.
- 13** Now, using the second jig, the moulding profile is machined. The cutter needs to be set at the correct height to match the already scribed ends. The sub fence, complete with attachments, is clamped in place and the glazing bars are run underneath, first checking with a test piece that the cut width is correct. Note the stiles and rails are machined without the front board on the fence.
- 14** Assuming all components are successfully machined, the stub tenons need to be formed on the glazing bars and top and bottom rail. Fit the rebate cutter and set the height and depth with a plain sub fence in place. Use the pushblock to support each component, but this time use a slim, loose fillet of wood to fill out the rebate nearest the pushblock so it gives proper support.



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15 Here is one of the short horizontal glazing bars in its finished state. The scribed end will plug into the adjacent component once a shallow mortise is machined.

16 Lay out the components and measure and mark where the mortises need to be. Bear in mind that the rails will fit into haunched mortises, i.e. they stop short of the ends so the rails are locked in place and cannot simply slip out of place. Fit jig number three over a stile, press the top board down, and check the open end is flush with the top while clamped in the vice.

17 Machine the mortise to depth using just one fence and, in this case, a 6.4mm straight cutter. The mortise ends are chopped square with a narrow chisel.

18 Repeat the operation on the glazing bars but bear in mind the mortise will go right through. Again, the ends are squared with a chisel and the tenons that go into the vertical glazing bar will need to be trimmed so they meet comfortably in the middle.

19 The rail tenons have their outer corner chopped away to fit the haunched mortise. Check the fit of all tenons before glue-up and final assembly.

20 Clamp the window frame up tightly and check for square and that it isn't twisted. Clean up the glue, unless you use PU glue as I did, in which case clean up only once it has set hard.

21 The finished window frame.

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WOOD AWARDS 2020 WINNERS

We celebrate the work of this year's winners

The winners of the UK's annual Wood Awards were announced in November 2020. The judges selected six structures and three products that represent the best of British architecture and product design in wood.

The Wood Awards was one of the few design competitions to go ahead despite restrictions imposed by the Covid-19 pandemic. The independent panel of judges always visits all the shortlisted projects in person, making this a uniquely rigorous competition. This year, the usual judging process had to be adapted, but the competition persevered, and the judges still managed to see each project.

woodawards.com

Gold Award & Private Architecture winner: The Rye Apartments

Location: London

Architect: Tikari Works

Structural engineer: Webb Yates

Wood supplier: Stora Enso

CLT subcontractor: Eurban

3-layer board: Binderholz

Wood species: Austrian spruce

The judges chose the Rye Apartments by Tikari Works for this year's Gold Award, which is given to the 'winner of winners'. The residents' quality of life is at the heart of the design for these sustainable apartments. The project was driven by two key considerations: how to resist standardised or default positions within housing design, and how to minimise the materials, embodied carbon and cost. CLT was used for the superstructure and all the internal walls and staircases. The CLT is exposed throughout, creating large, light-filled spaces. Delicate spruce strips form dropped ceilings in the hallways and bathrooms. Kitchens cabinets are made from CNC grooved three-layer spruce ply boards and the worktops are made from recycled paper.



PHOTOGRAPHS BY JACK HOBHOUSE

Bespoke Furniture joint winner: Duo

Designer: Studio Woodgate

Maker: Benchmark Furniture

Client: Royal Opera House as part of 'Legacy' for LDF 2019

Project facilitator: AHEC

Wood supplier: Morgan Timber

Wood species: American red oak

Duo is a pair of deceptively delicate sofas designed for Alex Beard CBE, Chief Executive of The Royal Opera House. When first tasked with the project, Studio Woodgate started by observing the space at the Royal Opera House. The existing sofas were the same height as the chairs in the room. A lower sofa would create a different dynamic to the room. The approach was to create something more comfortable than a bench but not as soft as a sofa. The light rectangular arms have a curved chamfer detail with cleverly hidden metal rods to ensure the sofa is robust. A subtle 2mm radius runs around the edge of the wood throughout the piece. The two end frames for the arms were made up from solid timber and shaped on a 5-axis CNC machine. The seat and back are made from a solid timber frame and sit on a nook cut into the end frames secured by a metal dowel. The seats are upholstered in tan leather.



PHOTOGRAPHS BY PETR KREJCI

Bespoke Furniture joint winner: The Beehive

Designer: Studio Marlène Huissoud

Maker: Benchmark Furniture

Client: Science Museum London as part of 'Legacy' for LDF 2019

Wood supplier: Morgan Timber

Wood species: American red oak

Sir Ian Blatchford commissioned Marlène Huissoud to create a beehive to feature in a new permanent gallery at the Science Museum focused on the future of agriculture. Marlène's artistic outlook is rooted in the natural world. Rather than a traditional, house-like beehive, Marlène created something more organic. The log-like hive is a refuge for wild bees rather than a place to make honey. The piece was hand carved and the red oak was then blackened using a scorching technique. It took 100 hours to add the tactile engraving details to the surface using a pyrograph. It was then covered with propolis, a dark resinous material produced by bees, to seal the gaps. This protects the timber and the bees from disease and also attracts bees with its scent.



PHOTOGRAPH BY PETER KREJCI

Commercial & Leisure winner: Frindsbury Manor Barn

Location: Rochester

Architect & client: The Heritage Design & Development Team Ltd

Structural engineer: The Morton Partnership

Main contractor, joinery & wood supplier: Dolmen Conservation Ltd

Wood species: British oak

This Grade 1 listed barn, originally built in 1403, was damaged by fire in 2003. A third of the barn was re-built in locally sourced green oak. Large quantities of curved timber were selected for braces and tie beams. Extensive stone repairs were also needed, and 95,000 Kent peg tiles were used to re-tile the old and new sections of the barn.





Production Furniture winner: Tenon Table

Designer: Daniel Schofield

Manufacturer: L.Ercolani

Wood species: Ash, oak (Italy)

Designer Daniel Schofield has taken a pragmatic approach to the design of the Tenon Table. Material has been removed where it is not needed, leaving the base weighted and stable which naturally creates the joint for the top. The oversized wedged tenon has become a focal point that highlights the construction of the piece and the quality of craftsmanship. A combination of wood turning, CNC machinery and hand jointing have been used to create each piece. The table is available in two sizes.



Education & Public Sector winner: Swimming Pool Hall at King's College School

Location: Wimbledon **Architect:** David Morley Architects

Client: King's College Wimbledon

Structural engineer: Price & Myers

Main contractor: Knight Harwood

Timber contractor: B&K Structures

Joinery: Suffolk and Essex Joinery Ltd

Wood supplier: Metsa Group Ltd

Wood species: spruce, pine, fir, larch (European)

The Swimming Pool Hall is one of three linked pavilions comprising a new sports centre. From outside, the roof sweeps down to respect the boundary with a Grade 2 listed building. Internally, it sweeps up to accommodate a viewing gallery. Curved glulam beams support CLT roof panels with integral timber acoustic linings. The roof's geometry and pale stained finish reflect natural top-light and artificial uplighters, eliminating the need for any light fittings above the pool.



Interiors winner: Brockridge Stair

Location: Bristol **Staircase & joinery design:** Future Joinery Systems Ltd

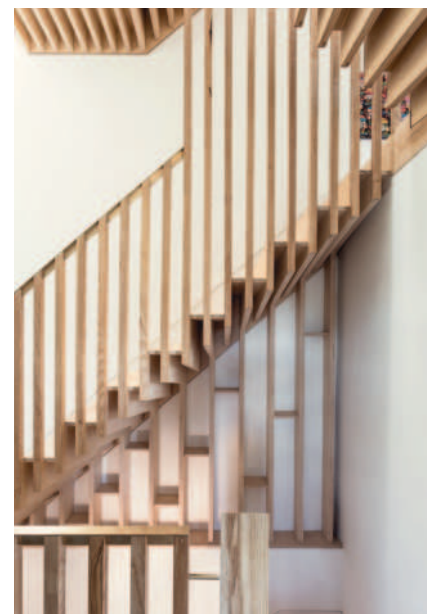
Architect: CaSA Architects **Structural engineer:** Mann Williams

Digital fabrication: FabLab Cardiff, Cardiff Metropolitan University's School of Art & Design

Joinery: Silverthorne Joinery & Carpentry

Wood supplier: Hanson Plywood Limited **Wood species:** ash, birch

This prototype staircase is part of a UK government funded R&D project to enable digital fabrication directly from BIM modelling environments. The stair rises three floors and is cantilevered from flush-mounted stringers. The parts were CNC machined and assembled onsite using standard tools. The new platform developed during research allows designs to be defined parametrically, enabling the user to configure bespoke objects to specific requirements. Parameters such as height, width, depth and material thickness can be user controlled. Digital manufacturing is enabled directly from CAD or BIM software via the platform, which enables faster fabrication, better pricing information and reduces errors and waste. Items can be locally fabricated through a distributed manufacturing network model open to any CNC enabled workshop. The process greatly improves construction efficiency, supports Covid-19 social distancing restrictions, and increases the type and complexity of work undertaken by smaller site-based joiners.





Small Project winner: Wooden Roof

Location: London

Architect: Tsuruta Architects

Structural engineer: Webb Yates

Main contractor: JK London Construction

Joinery: Pracownia Wystrój Wnętrz Art Deco -R

Wood supplier: Arnold Laver

Wood species: Accoya (New Zealand), ash (Canada)

This conservatory, built for a Grade 2 listed house, sits in a north-facing garden. One solid piece of wood, enclosed by four seasons glazing units, forms the entire structure and acts as the building's envelope, structure, insulation and cladding. The pieces were all CNC fabricated and were light enough to be assembled manually onsite. The beam cross junctions were fixed without any glue or mechanical fixings. Each wood section is wide and deep, which helps to emphasise natural light and cast shadows throughout the space.

Structural winner: National Automotive Innovation Centre

Location: Coventry

Architect: Cullinan Studio

Client: University of Warwick

Structural engineer: ARUP

Main contractor: Balfour Beatty

Joinery: B&K Structures

Quantity surveyor, cost consultant

& project manager: Rider Levitt Bucknall

Timber engineer: engenuiti

Wood supplier: Rubner Holzbau GmbH,

Ober-Grafendorf, Binderholz GmbH

Wood species: CLT, spruce glulam (European)

The National Automotive Innovation Centre is the largest research and development centre of its kind in Europe. The walls were assembled using a pioneering system of prefabricated, self-spanning timber and CLT mega-panels that could be erected quickly. As one of the largest timber roofs in the world, the glulam CLT lattice structure unifies the many activities housed beneath a single umbrella. Each bay is slightly pitched above to create a nominal fall for the roof, tapered internally within each bay.



PHOTOGRAPH BY HUFTON CROW



BOOK STAND

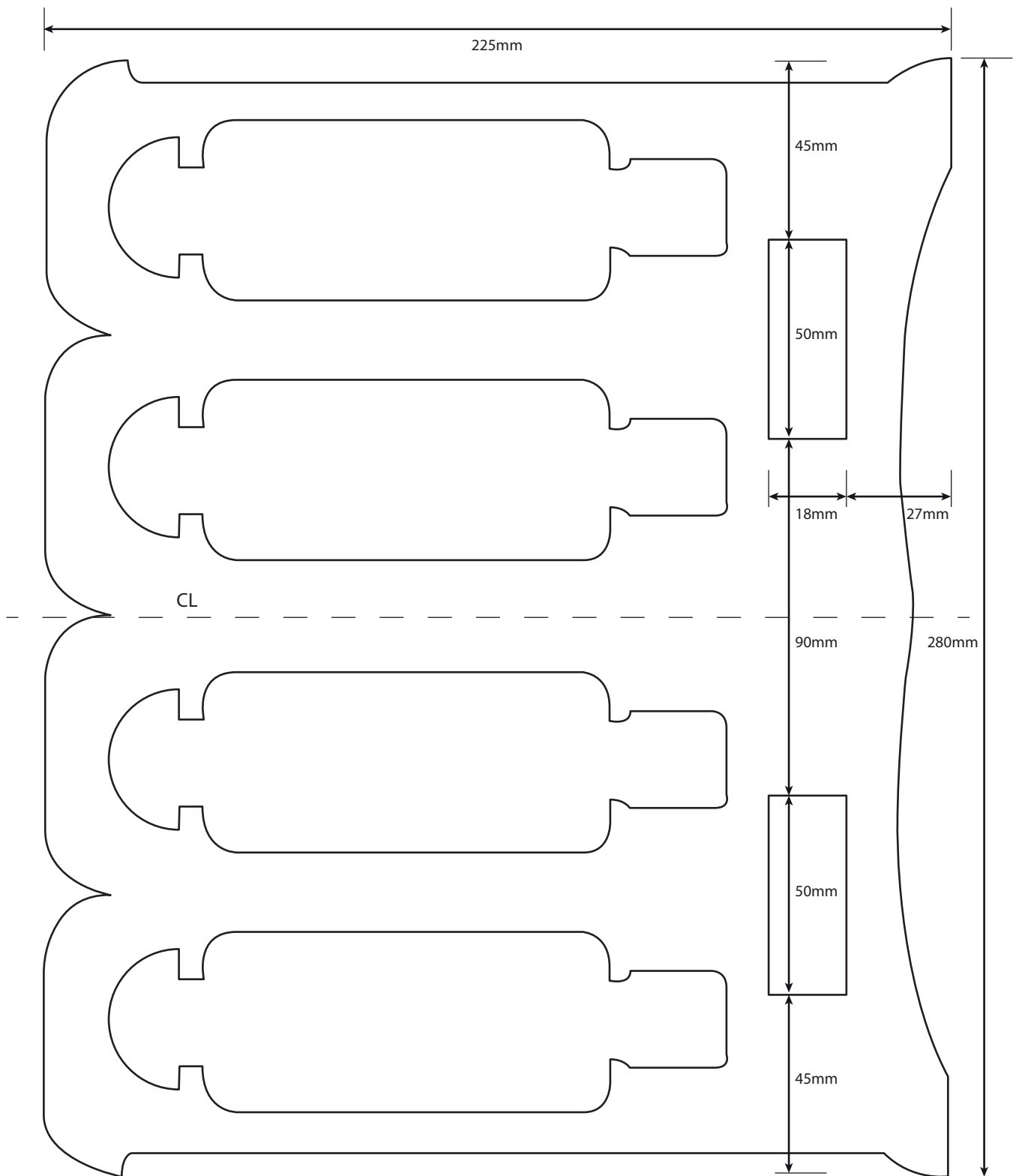
John Everett uses his scrollsaw to make this handy flat-pack reading accessory

This project, while supporting most sizes of book quite adequately, is a genuine flat-pack item. It comes apart and can be reassembled in seconds, needing no nails, screws, glue or anything else to keep it together. The book stand consists of five pieces – a book panel, two feet, which also act as a support for the base of the book, and a couple of brackets that support the book panel and lock everything together.

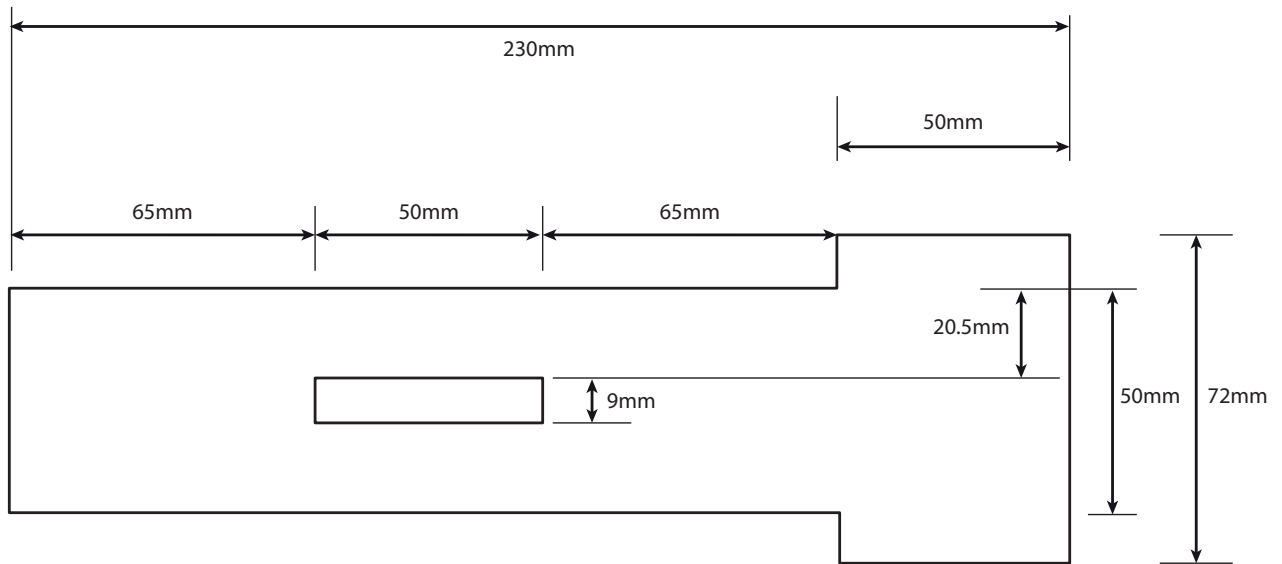
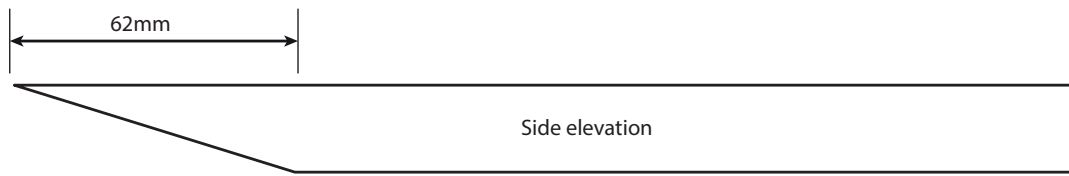
This example was made from 6mm MDF for the book panel, 9mm MDF for the locking brackets and 18 x 72mm pine for the feet. You can of course use other materials if you prefer, but if you are using different thicknesses of material, remember to adjust the slots in the feet accordingly.

YOU WILL NEED

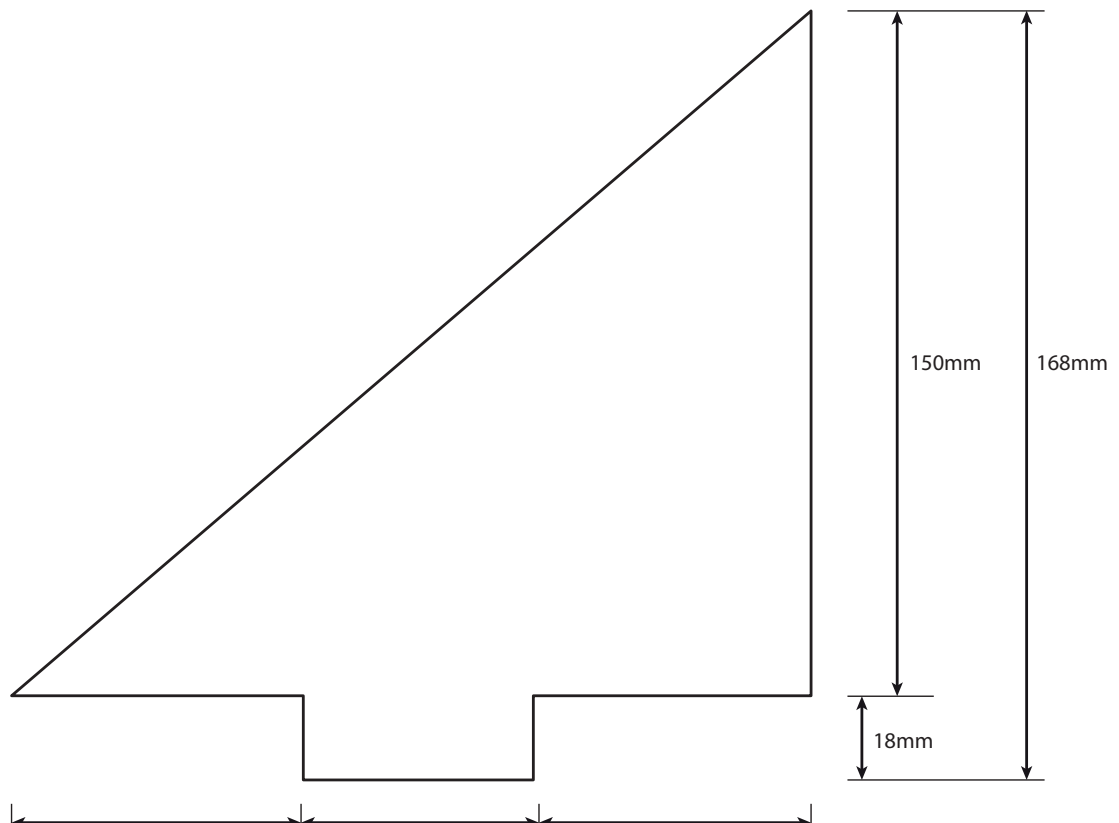
- 6mm MDF, 225 x 280mm for the main panel
- 2 pieces of 9mm MDF, 170 x 168mm for the locking brackets
- These brackets being roughly triangular in shape can be cut from a single piece of MDF, not much larger than the sizes given for each individual bracket
- 2 pieces of 18mm pine, 72mm x 230mm for the locking brackets
- No.7 skip-tooth blade, for the MDF
- No.10 general-purpose blade, for the pine
- Drill bit to make starter hole (the size of bit is not critical as there are no small internal cutouts)
- Decorating materials of your choice



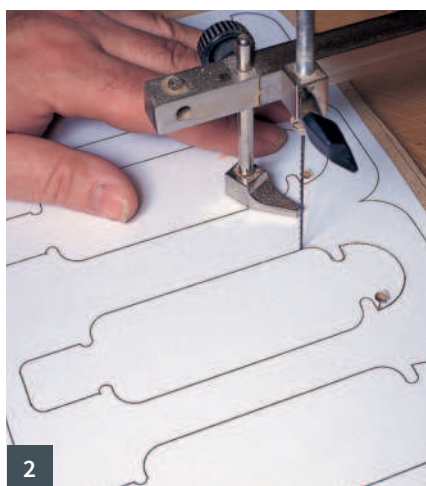
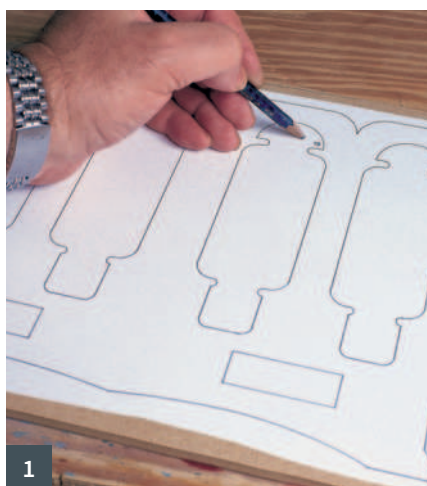
Book Panel



Feet
(Cut two)



Bracket



PHOTOGRAPHS BY GMC PUBLICATIONS

1 Marking the starter hole positions on the book panel before drilling **2** The scrollsaw set-up to make the internal cutouts in the book panel **3** Cutting out the two brackets together by stack sawing. This ensures they will both be precisely the same shape when cutting is completed **4** A coarse blade set up in the scrollsaw ready for cutting out the pine feet for the book. This type of blade will enable faster cutting to be carried out along the grain of the pine **5** Checking to see if all the parts of the book stand fit together properly

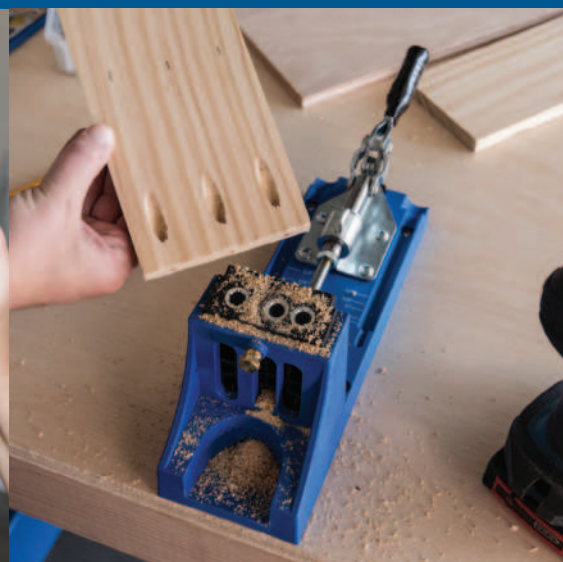
Making the book stand

- 1** Make up the three cutting patterns to the sizes shown or modify them if you wish. If you intend changing the dimensions, or are using different thicknesses of material, remember to change the size of the slots in the book panel. Mark and cut blanks from 6mm and 9mm MDF. Cut out the pine blanks.
- 2** The blanks for the brackets and feet can be made up into stacks, so that two pieces can be cut at the same time. Use double-sided adhesive tape to attach the blanks together, making sure you put the tape in the waste areas. The brackets will make a stack of 18mm in height, which is well within the capacity of almost any scrollsaw, and the pine makes a stack of 36mm.
- 3** Mark and drill clearance holes in the book panel. Fit the skip-tooth blade and set the hold-down device. Make the outside cut first, this will make the book panel easier to handle on a smaller scrollsaw. Then make the internal cutouts. Take good care to follow the lines on the cutting pattern precisely, making the curves smooth and the lines straight. As the column pattern is repeated, any discrepancies will show up. Once you have completed the cutting of the main panel, sand off any saw tearout from the back of the panel.
- 4** Cut out the brackets. Do this while the skip-tooth blade is fitted. The brackets are a straightforward external cut, but make sure you cut accurately as a close fit is needed to make all the parts of the completed project lock together. When you have cut out the two brackets, clean up any saw tearout.
- 5** Cut the feet from the pine, making sure the grain runs along the length of the two pieces. Drill a starter hole for the joint, which is a mortise-type slot. Set up your saw with the No.10 general-purpose blade. Remember, when cutting softwoods such as pine, that the blade will cut much faster across the grain than along it. Cut out the sockets first and then refit your blade to make the simple external cut. The feet need to be tapered to allow the panel to lean backwards sufficiently to prevent the book from slipping off the stand. This can be done on the scrollsaw, or using a plane or a belt sander. Use whatever you have available and then sand the feet smooth ready for decoration.
- 6** Put the five parts of the book stand together to test for fit before you decorate. Make sure the pieces fit firmly. Make any small adjustments that may be needed, such as trimming the angle at the back of the feet. Don't forget to allow for a thickness of paint, if you intend painting the final piece. Decorate the book stand. When all the paint, varnish or whatever you have used has dried thoroughly, check again that everything will fit together properly.



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CORNER CABINET

James Hatter creates extra storage space with this useful bathroom corner cabinet

Corner cabinets are an effective way of making use of a room corner for extra storage. This design is for a small wall-mounted cabinet above a washbasin. While mine extends 230mm along each corner and is 600mm high, with two fixed shelves, and has a 232mm-wide and 575mm-high door opening, the design can be adapted to any required size.

MDF is used for the cabinet carcass, shelves and door, while the door frame, shelf front trims and door inlay are oak. The components are joined together using adhesive and either biscuits or screws.

The cabinet components are cut and dry assembled, then dismantled for sealing and painting. The MDF components are painted white, while the contrasting oak parts are clear varnished.

YOU WILL NEED

From 18mm MDF:

- Side strips, 2 off – 600 x 30mm
- Door stiles, 2 off – 574 x 40mm
- Door rails, 2 off – 229 x 40mm

From 12mm MDF:

- Top panel, 1 off – 212 x 212mm
- Bottom panel, 1 off – 212 x 212mm
- Shelves (makes 2), 1 off – 212 x 212mm

From 9mm MDF:

- Left back panel, 1 off – 600 x 212mm
- Right back panel, 1 off – 600 x 221

From 3mm MDF or hardboard:

- Door backing panel, 1 off – 511 x 166mm

From 18mm oak:

- Door frame sides, 2 off – 600 x 25mm
- Door frame top, 1 off – 232 x 25mm
- Door stiles, 2 off – 574 x 40mm

From 12mm oak:

- Bottom panel front trim, 1 off – 325 x 12mm

From 6mm oak:

- Shelf front trim, 2 off – 325 x 12mm
- Side trims, 2 off – 600 x 15mm

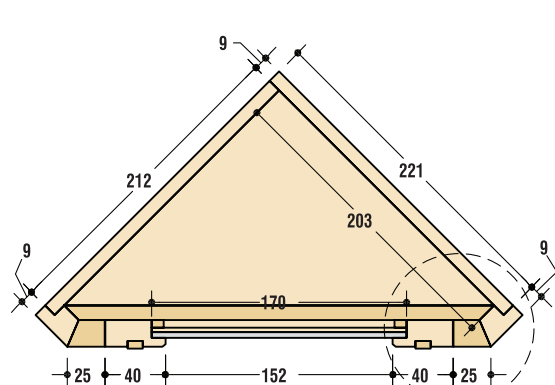
From 5mm oak:

- Door inlays, 2 off – 574 x 10mm
- Door inlays, 2 off – 229 x 10mm
- Panel retaining strips, 2 off – 511 x 8mm
- Panel retaining strips, 2 off – 166 x 8mm

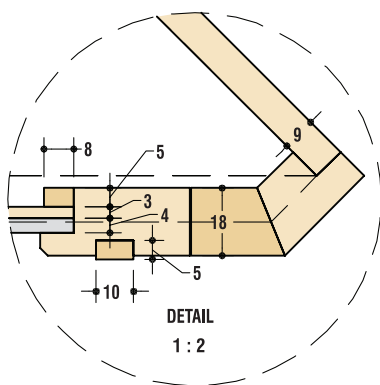


TOOLS & MATERIALS:

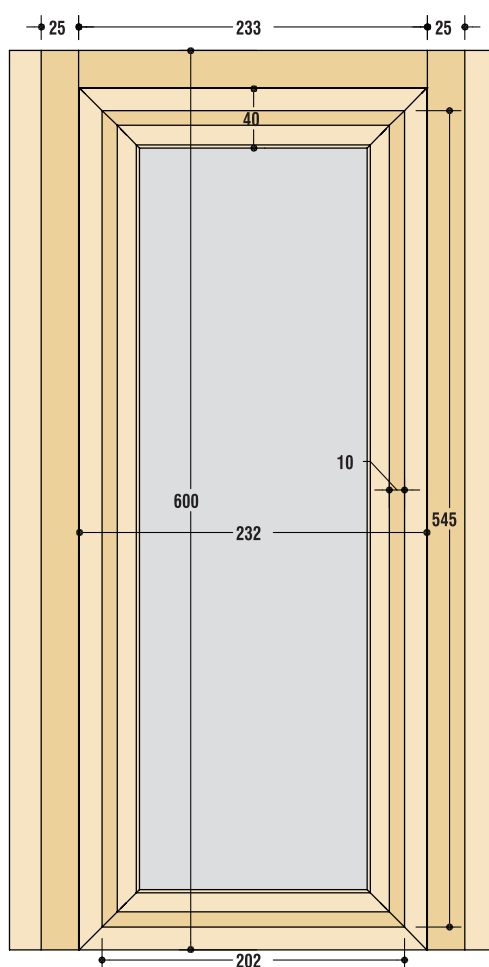
- | | |
|-------------------|-----------------------|
| • Radial saw | • Nos.0 & 10 biscuits |
| • Table router | • Chamfer cutter |
| • Biscuit jointer | • Screws |
| • Drill-driver | • Sealer |
| • Band clamp | • Paint |
| • Brad-point bit | • Varnish |
| • Piece of ash | • Brush |
| • Oak plugs | • Roller |
| • Panel pins | • Flush hinges |
| • PVA adhesive | • Magnetic door catch |
| • Rebate cutter | |



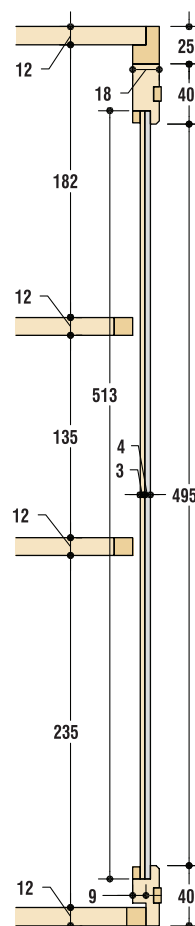
PLAN
1 : 5



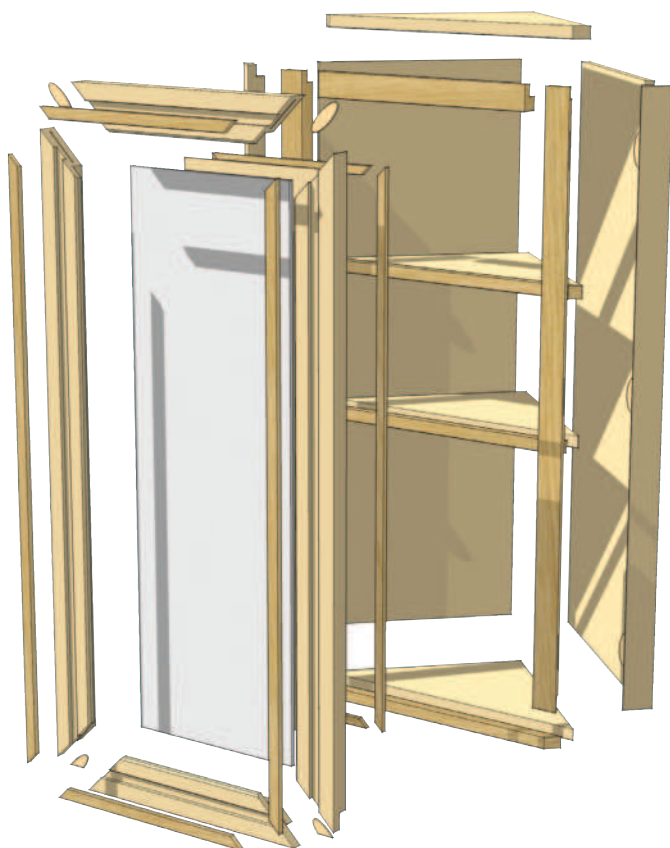
DETAIL
1 : 2



FRONT ELEVATION
1 : 5



SECTION
1 : 5



Panel work

Using a radial saw, cut two 212mm squares using 12mm MDF for the top and bottom panels. Use one for the top panel by marking 17mm along two sides and cutting off the unwanted corner. A radial saw is useful for this. The bottom panel is a diagonal cut giving a 45° triangular piece having two 212mm side lengths. Attach a length of 12 x 12mm ash to the front of this panel using 25mm panel pins and adhesive. Cut off the ends of the trim to match the top panel overall size.

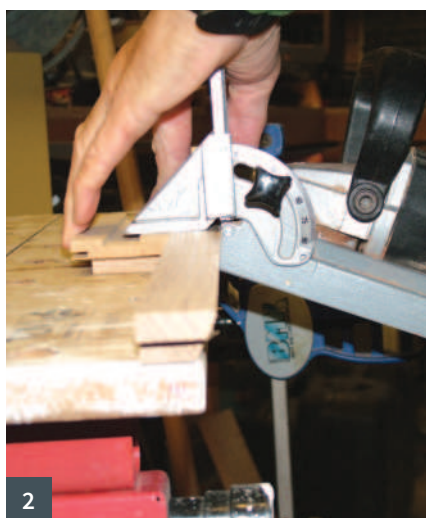
The back panels use 9mm MDF. Cut to size and mark the positions for the screw holes to attach the rear of the boards together, and for the top and bottom panels and side strips. Drill 3.5mm clearance holes and countersink. Mark the position for the shelves and drill 3.5mm clearance holes for the attaching screws.

Side strips

These strips join the front edges of the back panels to the door frame sides. Cut two lengths of 30 x 18mm MDF with one long edge at a 22.5° bevel. The top and bottom of each strip requires a 12 x 9mm rebate for the top and bottom panel joints, while the other long edge requires a 9 x 9mm rebate to take the front edge of the back panel. These can be achieved by using a rebate cutter in a table-mounted router.

Door frame

The door frame requires two lengths of 25 x 18mm oak for the sides,



1 Cut the top, bottom and shelf panels to size **2** Cut matching biscuit slots in the side strips and the door frame sides **3** Attach the oak front trim to the bottom panel with panel pins and glue **4** Assemble the pre-painted panels using screws and adhesive **5** Add the shelves, making sure they are square to the back panels **6** Glue and screw the side strips and the front edges of the back panels

with a 22.5° bevel along one edge and a 12 x 9mm rebate at each end.

Mark and cut three matching size 0 biscuit slots in the bevel edges of the door frame sides and the side strips, then drill and counterbore a single 3mm clearance hole at the top and bottom of each door frame side and side strip for the screws that will attach these to the top and bottom panels.

The frame top requires a length of 25 x 18mm oak with a 9 x 12mm rebate cut along the top inside edge. Drill and counterbore two 3mm clearance holes for attachment to the top panel.

Shelves

Cut a 212mm square of 12mm MDF. Draw a line diagonally and cut to form two equal-sized triangles.

Prepare front trim strips using 12 x 6mm oak. Cut these to length with the correct 45° angle at each end.

Pre-assembly

Join the two back panels together using 3 x 20mm screws. Next, join the top and bottom panels to the top and bottom of the back panels

using 3 x 25mm screws. Fix the shelves into position with 3 x 20mm screws, then attach the side strips with 3 x 20mm screws into the top and bottom panels and through the back panel.

Put dry No.0 biscuits into the slots of the side strips, line up the slots in the door frame sides and attach at the top and bottom with 3 x 20mm screws.

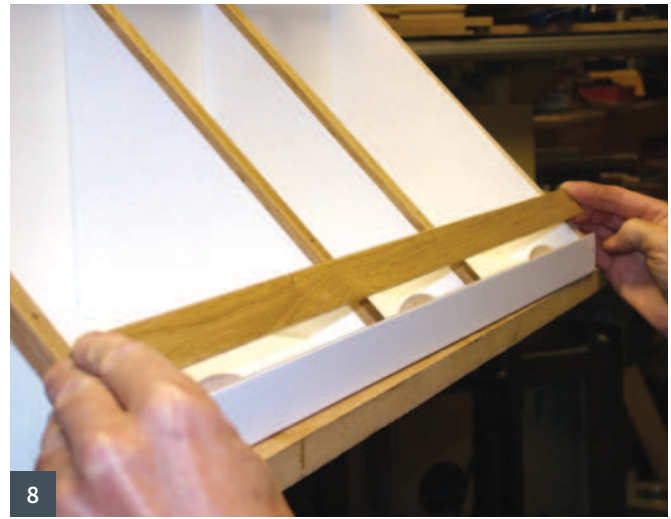
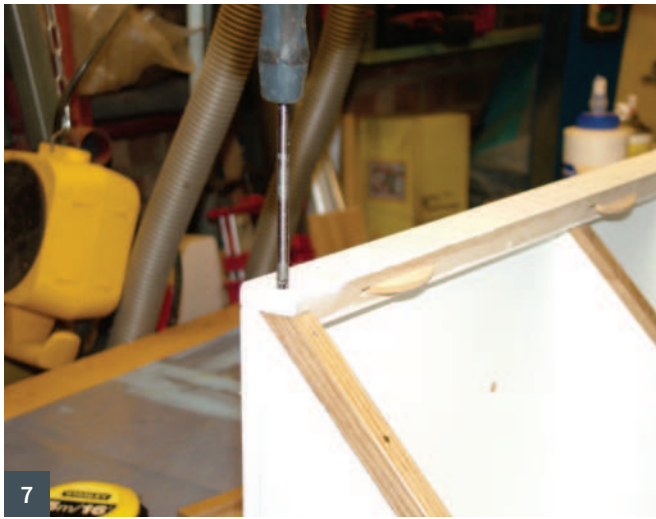
Trim the door frame top to length and attach to the top panel with 3 x 20mm screws. Check the size of the door opening then disassemble.

Door

The moulding for the door rails and stiles is made from 40mm-wide strips of 18mm MDF. Each strip requires a 9 x 12mm rebate along one edge for the mirror and backing panel, and a 10mm-wide and 4mm-deep groove centrally along the top face of the strips, using a table router fitted with a 45° chamfer cutter. Take off the corners of the moulding strips.

The inlay comprises 10mm-wide and 5mm-thick oak strips. Glue these into the moulding grooves, then cut the mouldings to length with a 45° mitre at each end. Reinforce the mitres with No. 10 biscuits.

PHOTOGRAPHS BY JAMES HATTER



7 Screw the top and bottom of each side strip to the top and bottom panels **8** Join the sides of the door frame to the side strips using biscuits and glue. Use oak plugs to fill the counterbored holes at the ends **9** The top of the door frame is attached with screws and glue **10** Mask off the door frame, fill the counterbored screw holes and repaint the side strips **11** Insert the oak inlays into the grooves cut in the door rails and sides

The length of the required slots is longer than the available length of the mitre face so position the slot so that it does not break through the mitre point. This will result in the biscuit protruding into the panel rebate, so cut a notch at the end of the biscuit to avoid this.

Form the door by joining the door sides together using the modified size 0 biscuits and adhesive at each mitre joint. Use a band clamp, and check for equal diagonals. When set, sand the door's inlay, and remove any sharp edges.

Cut a 9 x 15mm rebate along the bottom inside edge of the door so that it fits over the front edge of the bottom panel. This will expose some of the biscuit so use a little filler to cover. Check that the fit in the door opening gives approximately 1.5mm clearance at the top and sides then put a slight bevel along the opening edge.

The door uses two 50mm electro-brass flush hinges to attach it to the door frame. Mark the hinge screw hole positions on the door edge and counterbore with a 6mm brad-point bit to a depth of 10mm. Insert a wood plug into the hole with adhesive.

Prepare a backing panel for the mirror glass using 3mm MDF or

hardboard. Also cut retaining strips of oak to hold the mirror and backing panel in position.

Final assembly

Re-assemble the components in the same order as the pre-assembly, using PVA, screws and biscuits, then fit the screw heads attaching the side strips with filler, and use oak plugs to fill the screw holes in the door frame. Sand the door frame and apply two coats of satin varnish. Mask off the sides of the door frame and apply a final coat of white paint to the side strips.

Clean and fit the mirror panel in the door rebate and place the backing panel over this. Attach the retaining strips using 15mm brass panel pins. Attach the door hinges and mark the positions for the screw holes in the door frame edge, and mount a small magnetic catch on the underside of the top shelf.

Applying the finish

Mask the oak strip on the front of the bottom panel and apply a primer



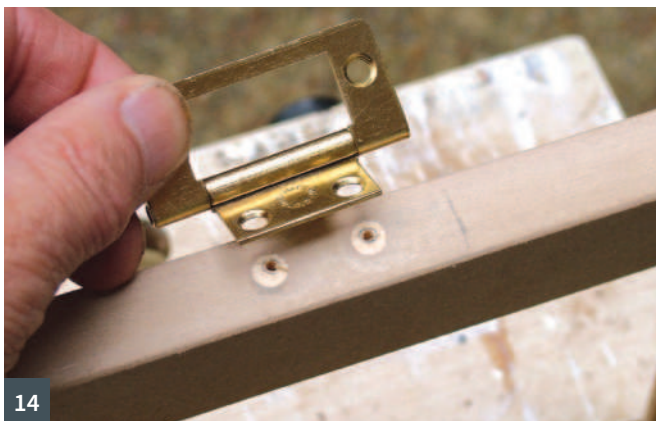
12



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13



14



16

12 Each door mitre is strengthened by a No. 10 biscuit which must be notched to avoid obstructing the panel rebate **13** Join the rails and stiles together with biscuits and glue; hold securely with a band clamp until set **14** Using wood plugs in the MDF door edges will provide a secure fixing for the hinge screws. Offer the door to its frame and mark the corresponding hinge positions **15** Use trim strips, suitably scribed if necessary, to give a clean cabinet-to-wall edge **16** The completed wall-mounted cabinet

and undercoat to the component surfaces and top and bottom edges of the back panels. I brushed on Rustins quick-dry MDF sealer then rolled on a white acrylic primer/undercoat. The rear of the back panels are sealed and given a coat of clear acrylic varnish.

The finishing coat for all inside surfaces is an acrylic quick-dry satin top coat. Apply varnish first to the front trim strips for the shelves, and then attach them using 20mm long brass panel pins and adhesive.

Apply a coat of acrylic varnish to the door sides. When dry, mask the oak inlay and apply two coats of undercoat and one top coat. Remove the masking tape and clean off any paint that may have strayed on the inlay. Apply a coat of varnish to the oak inlay and surrounding paintwork and

panel retaining strips. The backing panel is painted white.

Fixing to the wall

With the door temporarily removed, drill four 4.5mm clearance holes in the back panels. Level up the cabinet and mark the attaching hole positions on the wall. Drill for wall plugs, and then attach to the wall using 4 x 45mm screws and washers.

Walls are very rarely square or plumb so use 6 x 15mm oak strips to finish off the side edges of the cabinet. Scribe and cut these if necessary, then varnish the strips before attaching them to the cabinet sides using 15mm brass panel pins.



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SHOE RACK

You can make Andy Standing's handy storage project from just one plank of wood

This simple shoe rack will keep your shoes neatly out of the way and takes up little space. It is easy to make but relies on tight joints to keep it secure, so take care when cutting them. I have made the rack in pine, but you could just as easily use a more exotic hardwood if you prefer to create something a little sturdier.

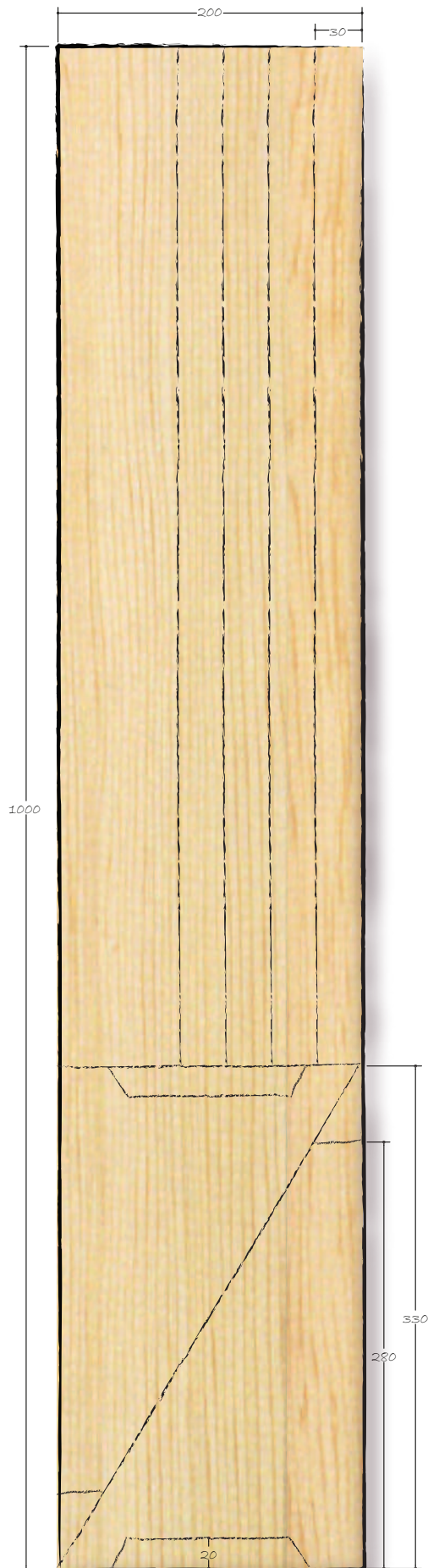
YOU WILL NEED

- Plank of pine or your preferred hardwood
- Saws
- Plane/block plane
- Sliding bevel
- Pencil
- Chisels
- Glue
- Abrasives

Making the rack

- 1 Mark up the plank and then crosscut the end piece that makes up the two sides.





- 2 Cut it diagonally – this is an easy job for a bandsaw, but you could use a handsaw or jigsaw if you prefer.
- 3 Place the two pieces together in a vice and plane both the sawn edges at the same time to make the pieces identical.
- 4 Now mark the cutout for the feet. Use a sliding bevel to mirror the slope of the front and make each foot 30mm wide. Join the two with a horizontal line 20mm up from the base.



- 5 The tip of the triangular sides needs to be removed, so mark a horizontal line 260mm from the base and saw the top off.
- 6 Again, the bandsaw can be used for shaping the feet, though a jigsaw or coping saw would also do the job.
- 7 Rip the four rails – they are all 30mm wide.
- 8 Now mark out the rebates to go on the rails. These are set

- 10mm in from the ends of the rails. The simple method is to lay the rails flat on the bench and then stand the ends on them. Mark the joints with a pencil.
- 9 Use a tenon saw to cut down the sides of the joint – they should all be about 12mm deep. Make a cut on each side of the joint and then several across the width.



12



13



14



15

- 10** Pare out the waste with a chisel.
11 Form a small chamfer around the exposed ends of the rails ...
12 ... a disc sander is ideal for this, but you could use a block plane or even a chisel to achieve the same result.

- 13** The joints alone should hold the rails in position fairly tightly, so only a dab of glue is needed.
14 The precise position of the rails is not critical.
15 The finished shoe rack.

Hand planes

The history of the humble plane



PHOTOGRAPH BY SHUTTERSTOCK

PLANE ORIGINS

The hand plane is an ancient tool that originated thousands of years ago and its use is well documented through time. Originally, planes were made of wood with bronze cutting blades or irons and later on, when metallurgy progressed, the irons were made of iron and then steel. The irons were held in place with a wooden wedge.

WHY PLANES?

The hand plane is an extremely versatile tool, and its main function is to remove rough surfaces on wood and also to reduce it in size. It is the perfect tool for preparing wood for further use after the plane has accurately sized it. Hand planes come in a wide variety of sizes depending on whether they are used for straightening long wood or fine shaving smaller pieces. There are also numerous other planes for applying mouldings and producing curves or grooves.

PARTS OF A PLANE

Mouth: the slot in the sole of the plane that the blade goes through, as do the wood shavings.

Iron: the blade which cuts the wood and is made of steel.

Depth adjustment knob: controls the cutting depth of the iron.

Tote: the main handle for pushing the plane.

Knob: the forward hand grips this to guide the plane.

Cap iron: reinforces the iron and when the shavings come through the mouth it curls and breaks them.

Lateral adjustment lever: adjusts the iron sideways to ensure an even cut across the plane's width.

Cam lever: adjusts the front part of the plane's sole to adjust the size of the mouth.

Frog: a wedge that holds the iron at the angle required for the plane's purpose.

Sole: the flat bottom of the plane.

Lever cap: holds the cap iron and iron to the frog.

POPULAR PLANE TYPES

Smoothing plane: a general-purpose plane for preparing wood for finishing, up to 10in (250mm) long.

Shoulder plane: the iron is flush with the side to the plane so it can produce flat surfaces into a corner.

Moulding plane: these come in a wide variety of shapes and the shaped iron produce a moulding on the edge of wood.

Router plane: has a narrow blade in the centre that cuts shallow mortices and grooves.

Finger plane: these are tiny planes controlled by the finger for small cuts on small pieces of wood.

Bullnose plane: the iron on this plane is at the front with no body in front of it so it can cut right into internal spaces.

Combination plane: the jack of all trades as irons of many shapes and sizes can be fitted into it.

Compass plane: has a thin steel sole that can be adjusted to a curved shape so the plane can plane internal and external curves.

FAMOUS PLANE NAME

Every seasoned woodworker has heard of the Stanley plane and probably has at least one of them. These cast-iron bodied hand planes were originally made in the mid-1860s by Leonard Bailey and the patents were bought years later by Stanley Rule & Level, who then transformed into Stanley Works.

PLANE CUTTING DIRECTION

In the west we push our hand planes to produce thin shavings and a smooth finish on wood. We have to make sure that we cut with the grain and learn to look at the side of the piece of wood we are cutting to ensure the majority of the grain is rising at an angle away from us. Cutting against the grain will pull the iron into grain and produce splintering or tearout. Using a different thought process, Japanese planes are designed to be pulled so the observation of grain direction also has to be reversed.

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