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The Woodworker & Woodturner

August 2013

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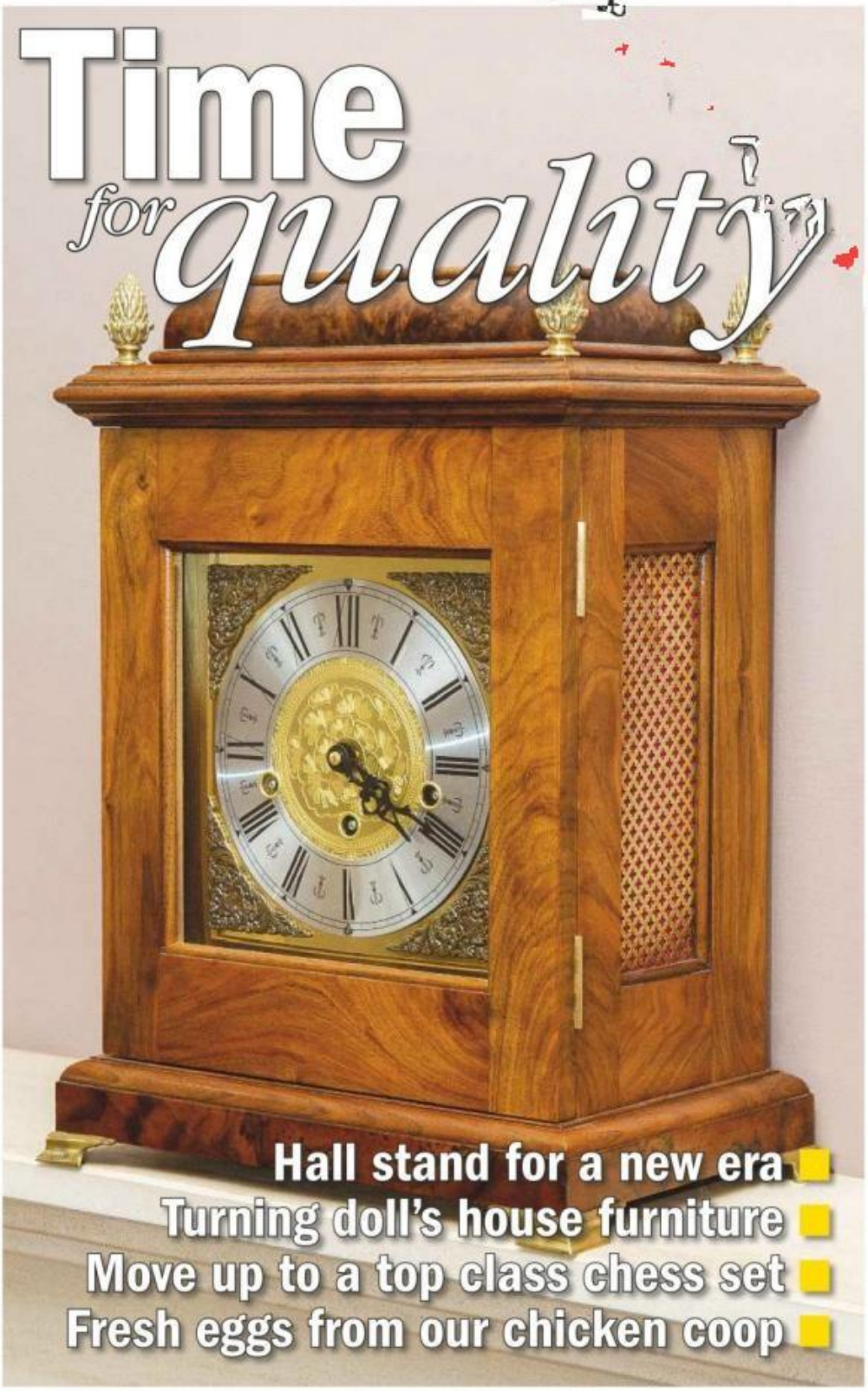

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welcome

It's hard to imagine how, or even to put it into words, but sometimes it's abundantly clear that a job has been completed with a very important ingredient - enthusiasm. This isn't exclusively the domain of the young: enthusiasm is on tap for anyone who has a passion for their chosen craft.

I've been fortunate enough to see some terrific woodwork recently – mostly furniture and the like – at various shows and exhibitions. Much of it has been the work of novices, young people and students, and all of it has shown signs of that special added property: enthusiasm. It's a funny thing, but it's almost tangible sometimes, and seems to radiate from a personal source and emphasise their every sentence.

A spark of inspiration

I think we're very lucky in our trade to be so in touch with whatever it is that engenders this special something. It takes just the slightest sight or touch of the main material to rekindle the spark and set our thoughts racing. Woodwork, more than nearly anything else, provides a working stimulus for so many creative people, as well as huge pleasure for a population of end users or participants in the results of the work itself.

I'm glad to say that I still love making things, and find it hard to resist any request that involves a woodworking related task. That's probably why my weeks seem terribly short and there just don't seem to be enough hours in the day. The music room (my current main project) goes in next week, but I've also managed to fit in a set of wardrobe drawer pull-outs – two of which are quadrant-shaped and pivot out on their corners – and to get some preparatory work done for an outsize front door which will reach the top of the 'to-do' list anytime soon.

Wearing two hats

Although it's great to still be on the tools, the only downside is having to share my time with my other great passion; editing this magazine! I'm currently doing all I can to bring The Woodworker to a new and younger audience, and to this end was fortunate enough to be given a modest public platform last week. I don't know if any readers in Yorkshire heard it, but while I was on site last Friday I managed to squeeze in an interview with Martin Kelner on BBC Radio Leeds. He was kind enough to give our magazine a breath or two of publicity's oxygen, and hopefully we kept the (as yet) non-woodworking listeners entertained for a sunny lunchtime moment.

So, the next time lassitude threatens to overcome you, get yourself out somewhere inspirational, and stand by to channel your newly kindled enthusiasm into project, task or chore; whatever it is, it'll be a lot easier now!

mark

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REGULARS

WOODWORK

TURNING

ON TEST

The Woodworker & Woodturner

August 2013

Published by **MyTime Media Ltd**
Hadlow House, 9 High Street,
Green Street Green, Orpington, Kent BR6 6BG

Tel: 0844 412 2262
From outside UK: +44 (0)1689 869840
www.getwoodworking.com

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BACK ISSUES & BINDERS
Tel: 0844 848 8822
From outside UK: +44 (0)2476 322234
Email: customer.services@myhobbystore.com
Website: www.myhobbystore.co.uk

EDITORIAL
Editor: Mark Cass
Email: mark.cass@mytimemedia.com
Production editor: Mike Lawrence
Email: mike.lawrence@mytimemedia.com

PRODUCTION
Designer: Malcolm Parker
Illustrator: Michael Lindley
Retouching Manager: Brian Vickers
Ad Production: Robin Gray

ADVERTISING
Business Development Manager: David Holden
Email: david.holden@mytimemedia.com
Tel: 01993 709545

Online Sales: David Holden
Email: david.holden@mytimemedia.com
Tel: 01993 709545

MARKETING & SUBSCRIPTIONS
Sarah Pradhan & Kate Scott

MANAGEMENT
Head of Design & Production: Julie Miller
Design Manager: Siobhan Nolan
Group Sales Manager: Duncan Armstrong
Chief Executive: Owen Davies
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print & digital media publishers

The Woodworker & Woodturner, ISSN 1752-3524, is published 13 times per year by MyTime Media Ltd. c/o USACAN Media Dist. Srv. Corp. at 26 Power Dam Way Suite S1-S3, Plattsburgh, NY 12901. Periodicals postage paid at Plattsburgh, NY. POSTMASTER: Send address changes to The Woodworker & Woodturner c/o Express Mag, P.O. Box 2769, Plattsburgh, NY 12901-0239.

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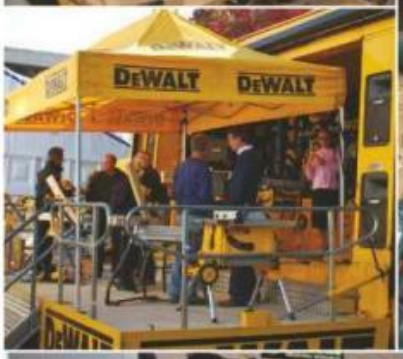

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In brief...

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STOP PRESS

- **George Callow**, a student from Chichester College, took the top spot for the UK with an almighty 'gold', at the coveted WorldSkills competition in Leipzig, Germany this month. **www.chichester.ac.uk**
- **Record Power's** new larger premises are at Centenary House, 11 Midland Way, Barlborough Links, Chesterfield, Derbyshire S43 4XA. Thei new 'phone number will be 01246 571020. **www.recordpower.co.uk**

Bandsaws by mail

EPS Services & Tooling in Wiveliscombe, Somerset, has launched a new online shop providing small-scale woodworking firms and hobbyists with narrow bandsaws in a range of lengths and sizes. **www.eps-services.co.uk**

Music on the go

The Bosch GML SoundBoxx Professional radio takes all standard Bosch batteries. It stores five AM and five FM stations, and can be connected to an MP3 player. It comes with a mains adapter, aux-in cable and two AA batteries for the display, and costs £106.80. **www.bosch.com**

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BY ANDY KING

Posh porch

A friend recently decided that the flat concrete slab over his front door needed changing for something smarter, and asked me if I could build him a proper porch with a pitched roof supported by gallows brackets. So I did...

This type of porch normally allows a little design flair to be introduced, in the form of pierced and shaped bargeboards, scalloped brackets and perhaps some open truss-style rafters, but in this case his wife made it clear she didn't want fancy; just plain and simple. Never mind, I thought; there's still a little scope to lighten it up with some moulded details.

Timber details

As the porch was going to be painted, I opted for off-the-shelf PSE (planed square-edged) 100 x 50mm redwood as my timber of choice for the woodwork that would be on view – the front gable truss and the gallows brackets. The concealed rafters could be cut from cheaper standard pressure-treated stock.

My only other instructions were that the underside of the porch roof had to be clad in matchboarding, and that it should project forwards by the width of three double Roman pantiles plus a cloaking tile over the front truss. I pointed out that smaller Broseley tiles are often used instead on porch roofs, as they look more in proportion with the scale of the structure, but what the customer wants, the customer gets!

Measuring up

With the design brief sorted, I needed a few relevant measurements. The most important is the width across the door opening for the gallows bracket positions, as this affects the size of the front gable truss.

If you have clear wall space on either side of the door, you can make your porch as wide as you like. However, you have to remember that the wider the span, the higher the ridge needs to go if you're looking for a specific roof pitch.

In this instance a small window beside the door meant I had to put the bracket on the pillar between them, and then maintain the same spacing on the opposite side for the other bracket so the ridge would be central to the door.

The pitch was simple enough to determine; I simply held up a couple of battens and altered their angle until my friend was happy. Taking the height from this gave me enough information to set out a rod for the gable truss.

The vital rod

A rod is a two-dimensional representation on a piece of board of what you're making. It's an essential aid as it acts as a reference to check back on while you work, enabling you to take off and transfer details of joints, shoulder lines, splays, bevels and the like, secure in the knowledge that everything will be accurate.

From my measurements I first set out the overall width (the span) of what is essentially a miniature roof. There will be an additional overhang for the rafters; this will be cut off at the fitting stage to take the fascia boards at each side of the roof.

I then marked the rise (the overall height) of the roof above the centre of the span, and used a length of the rafter timber to draw in the rafter lines and the positions of the birdsmouth joints over the gallows brackets. Finally I added the horizontal collar beam and the central king post, giving me an exact representation of the truss I wanted to make.

A setting-out rod is an essential aid to easy and accurate working

Use it to transfer the positions of joints and other details onto the work

Draw in the tenon lines and outline the mortises with a sharp gauge

Cut the rafter mortises first, then use them to mark the cross-beam tenons

I cut all the tenon cheels by hand with my big Pax rip-filed tenon saw

Always test-fit your joints. Here's the angled tenon on the cross-beam

Check everything by laying the dry-assembled truss over the rod

Mark the hole positions on the tenons, then drill them closer to the shoulder

Marking out the joints

Mark up all the individual components by laying them on the rod, **photo 1**. Transfer the positions of cuts such as tenons and birdsmouths, **photo 2**. Draw in all the tenon shoulder lines and outline the mortises with a gauge, **photo 3**, ready for the next stage of cutting.

On angled intersections, such as where the collar beam meets the rafters, a mortise in line with the run of the beam would have to be angled, and this could lead to assembly problems. It's nearly always easier to form the tenon at 90° to the shoulder line, as this means a standard square-sided mortise can be cut, allowing for easier assembly.

This is one of the reasons why a rod works so well, as you can spot potential areas where the joint design may need altering before you cut (and waste) a single piece of wood.

Cutting the joints

I used my bench mortiser to cut the mortises in the rafters, **photo 4**, and in the centre of the collar beam. Each was a stopped mortise around 60mm deep.

A mitre saw makes life all the easier for cutting the bevel intersections. However, the ridge intersection is a butt joint linked by a bridle joint from the king post, so a handsaw will do the job equally well with no complex setting-up involved.

I cut all the tenon cheeks by hand; it can often be therapeutic to dispense with noisy machines once in a while! My big Pax rip-filed tenon saw was in its element here, **photo 5**, but any decent tenon saw of sufficient blade depth will do. You can even cut deep tenons like these with a small panel saw.

Shoulder lines can be cut with a mitre saw if it has a trenching option, but by the time you pack the fence to allow a full cut and alter it each time to suit left and right bevels where needed, it's just as easy to continue with the hand cutting.

The ridge intersection is a complex

The truss is now ready for assembly. Note the complex bridle joint at the top

Hammer in the dowels to draw the tenons tightly into their mortises

11

Trim the dowel ends flush and sand all the external surfaces of the truss

The gallows bracket components are joined together with a simple corner bridle joint

Test-fit the joint; the two components should go together tightly for maximum strength

Glue and screw the corner joint and check that it's perfectly square

Lay the brace across the brackets and mark the shoulder positions

bridle joint. The shape of the tenon on the king post is marked from the rod, and is half the thickness of the post. Cut the arrow-point shoulders with the tenon saw. The tenon fits into angled slots cut in the ridge ends of the rafters. Chisel out the waste and check with a straightedge that it's flat (or very slightly undercut) so the shoulder lines fit together tightly.

A test fit of each joint is always a good idea, **photo 6**, and I do this as I work so I know I'm keeping things as trouble-free as possible. With all the joints cut and fitted together, you can then drop the dry assembly onto the rod to check that everything is as it should be, **photo 7**.

Adding the details

If it all fits, the next step is to work out where the chamfer details are going to be. These can be marked on the rod if you wish, but I find it easier to mark them directly on the dry assembly to make sure I know exactly where I have to start and stop the cuts.

I've opted for a stopped chamfer on all the internal edges, using an offcut of the rafter stock to set the start and stop points. Once these have been marked, dismantle the frame ready for moulding.

I cut the chamfers on the router table, using a lead-in pin to allow me to introduce the cutter to the correct spot on each piece. You can use a fence instead, but you'll need to make marks on it to correspond with the start and end points of the cut. If you don't have a router table, a hand-held router will do the job just as well.

Tighter joints

Drawboring is a perfect way to tightening up the joints on angled frames such as this. Getting cramps on would need temporary angled blocks to get things pulling in straight lines, but the age-old technique of draw-boring eliminates the need for any of this.

First off, drill dowel holes through all the joints with mortised and slotted components. Then insert each tenon or mating component, making sure that the shoulders are pulled

Cut the angled tenons on the brace and use them to mark the mortises

Cut the through mortises, flipping the work end over end for a clean cut

Form the shallow curves on the bandsaw and smooth them with a spokeshave

Add chamfers to the curves using a lead-in pin on the router table, or a hand-held router

Glue the brace tenons into their mortises and secure each one with a single screw

up tight, and mark the inserted component through the drilled hole. You can use a pencil or a small flat bit to do this.

Remove each marked component and drill the same sized hole a couple of millimetres nearer the shoulder line from the mark, **photo 8**. You can see all the drilled components laid out ready for re-assembly in **photo 9**; note the way the angled joint between the king post and the rafters fits together.

Assembly time

Give all the internal hard-to-access surfaces a quick sanding ready for the glue-up. I prefer to use used polyurethane adhesive for external applications, but any exterior-quality glue will do the job.

Glue up all the joints, slide them together and drive in the dowels, **photo 10**. If you've done it right, everything should come up snugly and the assembled frame should sit perfectly over the rod. Once the glue is dry, **photo 11**, trim the dowel ends flush and give all the external faces a quick blast with a sander to finish the truss ready for fitting.

The gallows brackets

While you can use a rod to make the gallows brackets, they're such a simple structure that it's more a simple matter of getting the dimensions correct. The bracket dimensions will depend on your own roof, and will be dictated by the sizes of the tiles you're using. I laid mine out along with the cloaking tile, and took the horizontal measurement from them. The vertical leg of the bracket always looks better if it's longer than the horizontal one. Mine is about 300mm longer, which gives a more balanced look when the bracket is in position.

It's essential to keep the horizontal and vertical parts of each bracket at 90° to each other so the roof will sit level once the brackets are fixed in place. That means cutting your corner joints accurately, **photo 12**. Test-fit the components, **photo 13**, and use a roofer's square or some 3:4:5 geometry to check that the corner is a right angle, **photo 14**.

Preparing the braces

When it comes to setting the brace positions, you need to make sure they sit far enough forward along the horizontal member to give good support to the rafters. Position them too far back and there's a chance of a cantilever effect caused by some of the roof's weight being too far forward of the brace.

The brace has to be at 45° (or a little steeper) to do its job correctly. Lay it across the frame at the correct angle and mark in the shoulder positions, **photo 15**. Cut the tenons first, at 90° to the shoulder lines for ease of assembly as you did with the cross-beam tenons. Then place the tenon over the bracket to mark the mortise position, **photo 16**, and cut the through mortises, **photo 17**. I used my bench mortiser again for this operation, and worked from both sides of the wood for a clean cut.

Shaping the braces

Do a dry assembly to check the fit, and then apply the finishing touches to the two braces. I decided to introduce a double scallop shape for a bit of refinement to the basic profile, and then to apply a simple chamfer to the curved edges. I marked out the two curves, cut out the waste on the bandsaw and finished off the curves with a sharp spokeshave, **photo 18**. Then I added the chamfers on the router table, **photo 19**, using the lead-in pin as before.

Assembling the brackets

It's now time to fit the braces to the gallows brackets, **photo 20**. They're glued in place and secured with screws driven through the backs of the bracket members.

Carry out a quick check with a roofing square (or the 3:4:5 option) to make sure everything is hunky-dory, and it's all ready to take to site and fit. That's a story for next month…

BY TERRY DISS

Only a pawn in their game

This project gives you the opportunity to produce a modern chess set which is easy to play with. It will also make a handsome centrepiece on a table or sideboard when it's not in use

All the pieces can be made from lengths of square-sectioned wood. I passed mine over a table saw… with extreme care. However, unless you have a machine fitted with a sliding table or a rigid fence which runs smoothly at 90° to your saw blade, you shouldn't attempt the job in this way. Use hand tools instead.

Preparing the timber

Rather than staining timber to colour one set of the pieces, it's better to choose contrasting coloured timbers. Wenge or sapele will contrast well with maple, lime or beech, and you won't need much stock.

I used a flat-tooth saw blade in my saw table to make all the cuts. Never cut any piece unless it's long enough to hold securely with both hands on the fence. Remember to wear eye protection at all times.

Cutting the pieces

The dimensions for the six different playing pieces are given in **fig 1** overleaf. Start with the pawns, which are simple cubes. While it's possible to cut these on the table saw, it may prove safer to set a stop on the chop saw or, even better, to practise your hand skills and mark them out and cut them all by hand.

I used the following sequence for making the other five pieces using the table saw. Make a simple block with a protruding brass pin to sit against the saw's rip fence. This remains in position at the front of the saw table surface, and acts as a spacer to establish accurately the positions of the various enclosed cuts required on the king, queen, bishop and knight.

Complete all these cuts by carefully adjusting the pin block to the correct position for each piece you're making, using the dimensions given in **fig 1**. With the saw isolated, set the required height of the blade. Then make the cut, **photo 1**. Turn the stock through 90° and repeat the operation until all four surfaces have been cut. Remember to run through each and every piece that uses the same setting made with the pin block. It is always much more difficult to reproduce the settings in their original positions later on.

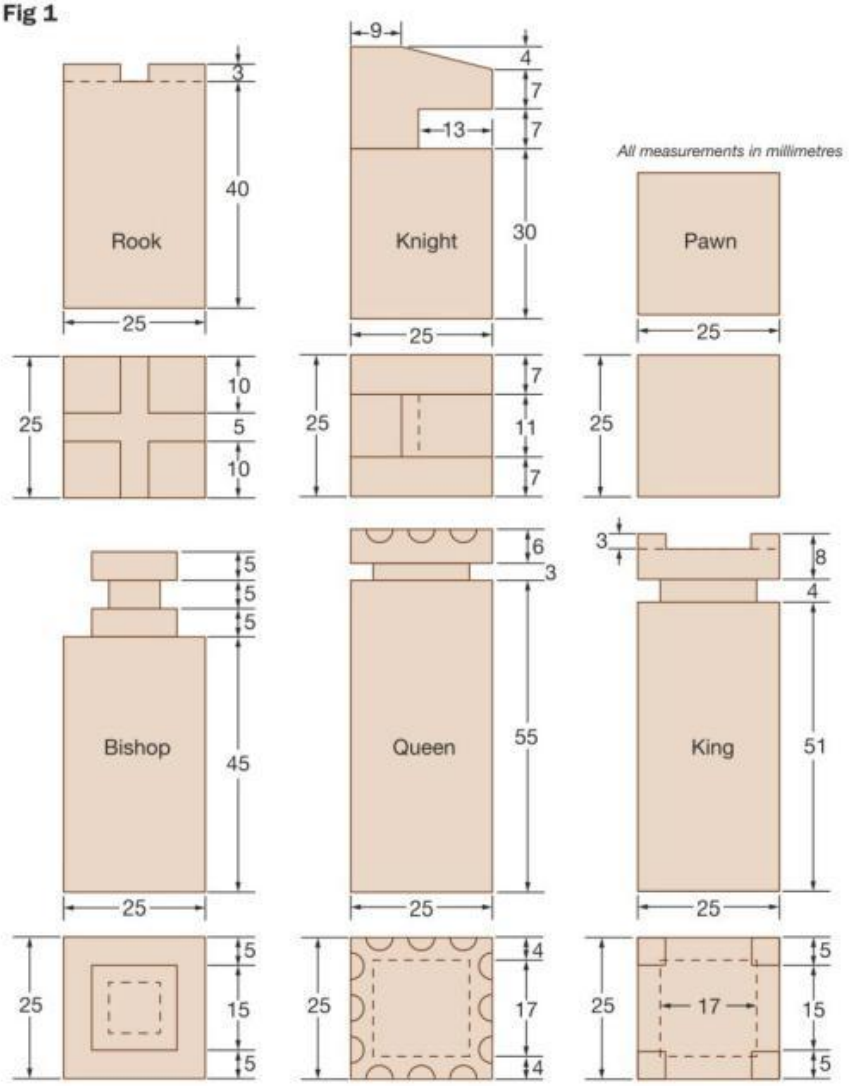
When all the machining is complete on the heads of the pieces, set the pin block to match the length of each one in turn and cut it to size, **photo 2**.

The brass pin in the spacer block sets the position of each saw cut. Work with great care

After shaping the head of each piece, reposition the spacer block and cut it to length

Use a small round file to cut the shallow indentations forming the queen's crown

Fig 1



Make four saw cuts to leave the top of the bishop measuring 15mm square

Make four more cuts beneath this top section to leave a section 9mm square

Repeat the cuts made in step 4 to form the third 15mm square layer of the piece

Glue strips of abrasive paper to lolly-stick offcuts to make sanding sticks

Use these to sand the grooves, then smooth all the outer surfaces on a belt sander

Round over all the external edges and apply the finish of your choice

Shaping the major pieces

QUEENS Follow the cutting procedure given on page 19 to fashion the head. Then use a small round rat-tail file to form three indentations in each top edge, **photo 3**, before cutting the piece to length.

ROOKS Form the castellations by making two cuts at right angles across the top using a Gents saw or a fine-toothed tenon saw. Remove the waste between the cuts with a sharp narrow chisel, then cut each piece to length.

KINGS Use the same procedure as the rooks for cutting the tops of the kings. Again, it's easier to form the character feature before the piece is cut to length.

BISHOPS The heads of these pieces can be formed in three stages on the table saw or by hand, as shown in **photos 4**, **5** and **6**.

KNIGHTS These are probably the most difficult of all the pieces to cut. While they can be created on the table saw with the aid of an angled jig, it's a challenge that should be attempted only by a skilled and experienced machinist. Instead cut the single groove by hand, and shape the head at a slight angle on a disc sander.

Finishing the pieces

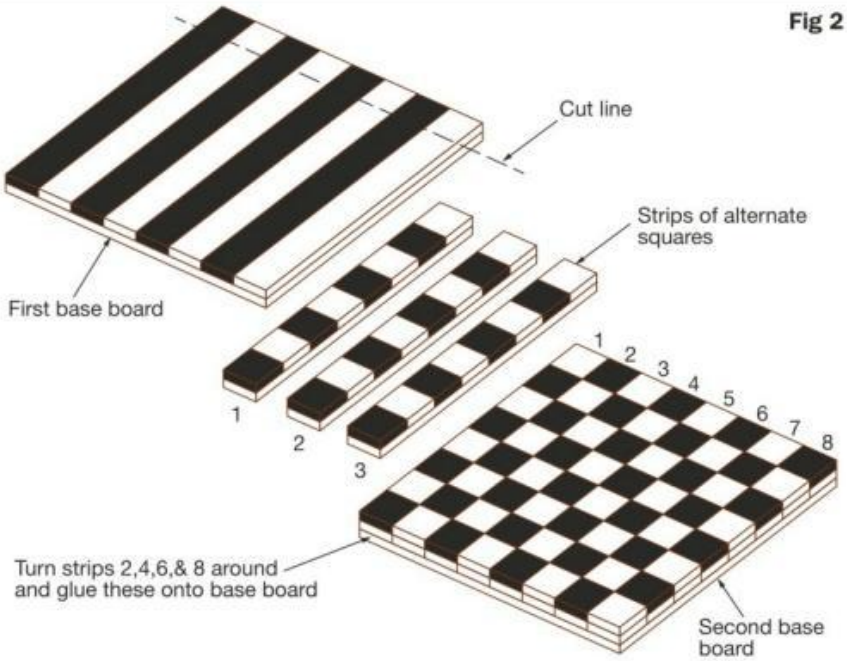
With all the pieces cut to length, it's time to clean up the grooves and the external surfaces. It's a good idea to make a selection of small sanding boards by gluing 120-grit abrasive paper to thin lolly-stick offcuts, **photo 7**. Use these like fingernail emery boards to achieve a good finish. Smooth the external faces on a flat-bed sander, **photo 8**, or rub them with the grain across a sheet of abrasive paper held flat on the bench. Don't forget to round over all the external edges, **photo 9**.

Either spray the pieces with cellulose lacquer, or use two coats of sanding sealer (de-nibbed with 320-grit paper between coats) and apply natural wax on top, buffing it to a good finish. Your chessmen are now ready for action, **photo 10**.

As a finishing touch, you may wish to glue a small baize square to the bottom of each piece. I prefer not to do this, but instead I drill a small hole in the centre of each pawn's base to identify the endgrain underside of each piece.

10 The six different chessmen look very striking made in contrasting woods

Fig 2



1 Tape the veneer strips together, stick them to the first baseboard and cut them at right angles

2 Glue these strips to the second baseboard and sand the face and edges

MAKING THE CHESSBOARD

It's a neat idea to make a matching chessboard using the same timbers for the squares as you did for the chessmen. All you need are some strips of veneer 4-5mm thick, pus a couple of squares of plywood or medium-density fibreboard (mdf) 6mm thick to act as base boards.

Preparing the strips

You need four strips in each colour, each measuring 45mm wide and about 360mm long. If you have a bandsaw, you can cut your own veneers from a piece of solid wood. Otherwise you can buy them from a supplier such as **Turners Retreat** (01302 744344 or www.turners-retreat.co.uk). Plane one edge of each strip square, place this edge against the saw fence and cut each strip down to 41mm wide. This extra 1mm gives you the opportunity to plane this edge straight and flat to give a finished width of 40mm.

Making up the board

Assemble all the strips as shown in **photo 1**. Tape them together and glue and cramp them onto one square of plywood or mdf. Cover this with newspaper, place the second board on top and weight it down while the glue sets.

Use your bandsaw again to cut one edge of the assembly at exact right angles to the lines made by the glued strips. Then hold this edge against the saw fence and cut eight strips across the grain as shown in **fig 2** (above) to produce eight strips, each consisting of alternate coloured squares.

Re-assemble these eight strips into a chequerboard pattern, tape them together and glue them to the second base board. Smooth the surface of the board with a belt sander, **photo 2**, and then by hand, using 120 grit paper or finer on a sanding block.

Plane all four edges square and prepare some suitable pieces of wood to act as lipping. Carefully mitre the corners and glue and cramp these to the base board.

Finish the board in the same way you used for the chessmen. Finally, add baize to the underside if you wish, set up the pieces and get ready for your first game.

By the way, the word chess derives from the Arabic word *shah*, meaning king. And checkmate comes from *shah mat*; 'the king is dead'. Not many people know that…

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CHICKEN

BY ALAN HOLTHAM

Ever fancied keeping a few chickens in your back garden and collecting your own breakfast eggs each day? Here's how you can house them in comfort and keep them safe from predators. If you followed the first part of my project last month, now's the time to finish off the coop, add the wheels and the outdoor run, and move in the new tenants!

The coop itself consists of four main frames screwed onto the legs and boarded in tongued-and-grooved cladding. It's raised off the ground for several reasons. Firstly, it allows maximum use of the space inside the run for the hens to roam around. Secondly, the area underneath provides dry shelter for feeding. Thirdly, it stops the inevitable vermin from nesting underneath – a common problem with ground-level coops.

You can make the run section as big as you want. I fitted a door into the end as I often let the hens out for some supervised free ranging in the garden. Do watch them carefully if you're particularly garden proud, though; all plants are fair game to a hungry hen!

Choosing materials

All the timber is available off the shelf. I used 70 x 70mm, 45 x 45mm and 45 x 32mm PAR redwood for the frame. I always spend that little bit extra to get redwood rather than cheap whitewood, as the quality is so much better. It's straighter and squarer, there are fewer knots and it cuts much more cleanly, all of which make it easier to work. It will also undoubtedly last very much longer.

The timber sections I've chosen may seem a bit over the top, but the coop needs to be really sturdy to withstand years of weathering and being dragged around the garden in the search for fresh grass. Skimping at this stage is just a false economy. Now let's get it finished.

Screw in a square ridge piece and a couple of intermediate supports for the tongued-and-grooved roof cladding

The side access door is another simple screwed frame clad in tongued-and-grooved boards. Leave plenty of overlap along the edges to minimise draughts!

Use strong galvanised tee hinges to attach the side door. As it stands proud of the side of the coop, you'll need a packing strip behind the hinges to bring them flush

Screw lengths of 70 x 22mm timber to the underside of the front and two side frames to act as a support for the sliding plywood droppings tray

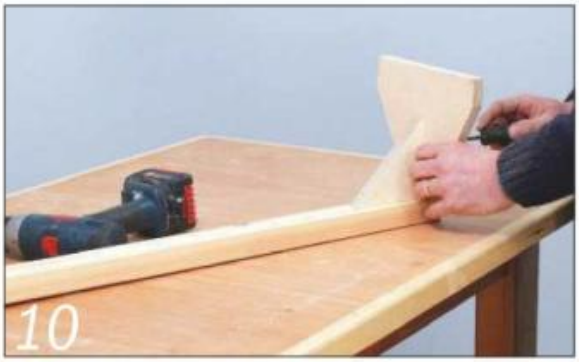
Fit the plywood tray in place and nail strips on above it to stop it lifting up. Leave plenty of clearance to allow for swelling... and muck!

A piece of the cladding attached to a packing block at the back end of the tray acts as a sturdy handle and completes this part of the job

Plenty of ventilation is important in chicken housing. You can just drill open holes in the roof apex, but I added some cheap stainless steel grilles

These just screw in place over a hole cut in the roof apex with the jigsaw, and give a much more professional look. The hens like them, anyway!

The pophole is covered by a piece of plywood that slides up and down behind some rebated strips. As before, don't make anything too tight a fit



The hens will need a perch of some sort, I made up a free-standing one by screwing an A-shaped piece of ply to one end of some 45 x 32mm wood

Here's how the perch fits inside the coop. The other end sits in a notched support fixed to the inside of the back wall

The base for the coop and the run is made from rough-sawn pressure-treated timber, as it will be in permanent contact with the ground

Wire-covered frames can then be made to enclose the rear and sides of the area under the coop

The rest of the run is another simple framing job, but keep the apex a bit lower so it will tuck under the coop roof

15

Put in a few intermediate pieces of framing to support the wire netting, and screw the run onto the front of the coop

I made a hinged access door in the roof to give me easy access to the pophole so I could shut it at night

I fitted another door at the far end to let the hens out if required. Screw the completed run down onto the pressure-treated base frame

At this stage I realised that the structure was a bit bendy along the length, so I stiffened it up with a few diagonal braces made from framing offcuts

19

Here's the completed coop, minus the roof as I wanted to fit this on site after treating the inside with preservative. I prefer using a spirit-based preservative for outdoor projects like this, as it penetrates the wood far deeper than water-based alternatives

The coop roof is 12mm exterior plywood covered with tongued-and-grooved cladding. You could use the cladding on its own, but it can to shrink in the sun and then the roof leaks; having plywood underneath keeps everything dry. Treat it all thoroughly with preservative before fixing it in place

I found these wheels on eBay and fixed them to a shaped board hinged on the underside of the run frame. You can also buy them from suppliers such as Hobby's (020 8761 4244 or www.hobby.uk.com)

This then swings round under the coop when you lift it up. It means you don't have to lift the other end so high to move it – important if the birds are inside!

You can now start stapling on the wirework. I used 25mm welded wire mesh, which is stiffer than traditional chicken wire. You'll need tinsnips to cut it cleanly. For similar products, go to www.meshdirect.co.uk

A couple of galvanised handles fitted at the rear of the coop will give a bit more leverage for lifting the heavy end when you need to flip the wheels underneath it

The final job is to add a simple plywood ramp leading up to the pophole. I fitted this with a lift-off hinge so it can be removed easily when you're wheeling the coop round the lawn

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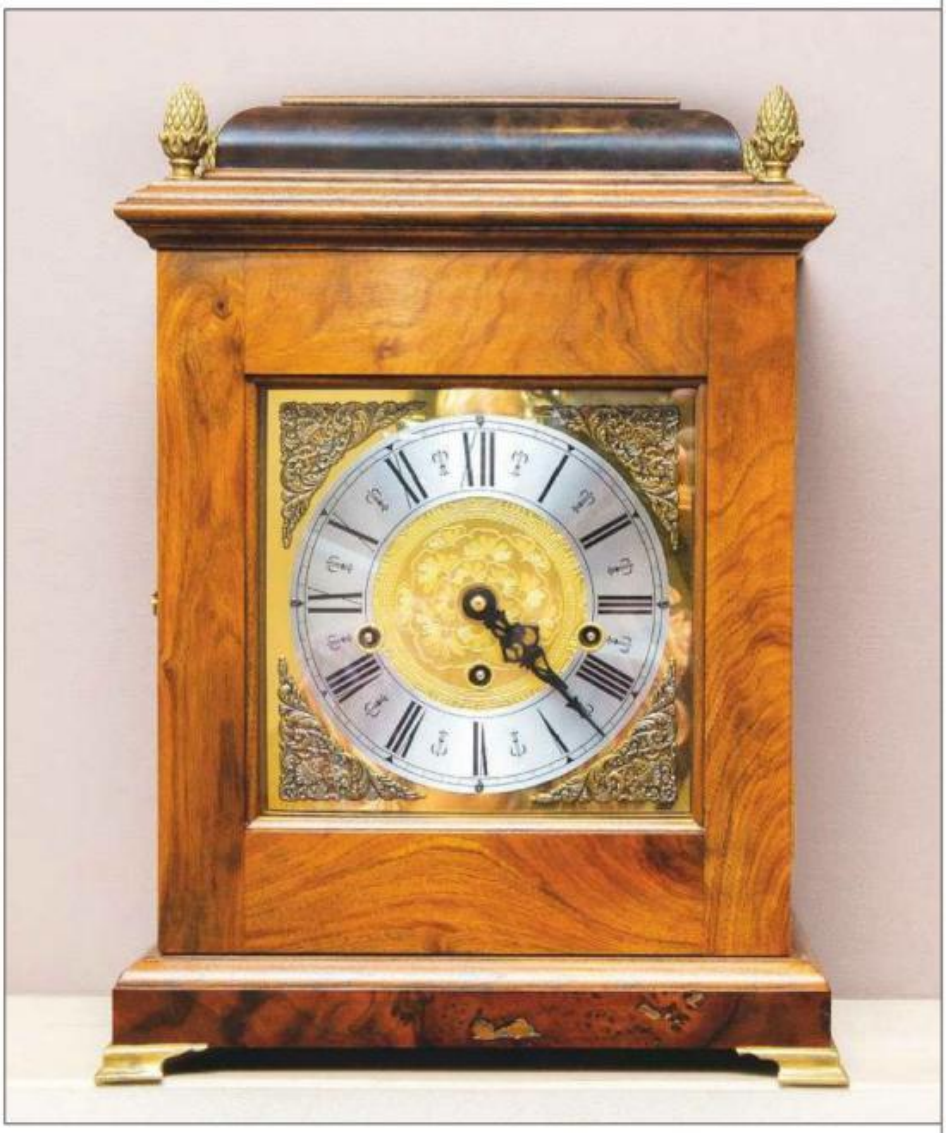


BY PETER DUNSMORE

As time goes by...

Why 'bracket', I hear you ask? Well, these small pendulum clocks were once driven by hanging weights, and were therefore mounted on a small shelf or wall bracket. When spring-driven clocks took their place, the style – and the name – persisted

This square-faced Georgian-style bracket clock is best made from solid walnut throughout, with the case covered in walnut veneer. There's a good reason for this apparently perverse choice. The side frames and the front door are made with profile-and-scribe joints like those in panelled kitchen cabinet doors. The exposed edges forming the lipping around the side frame fretwork and the front door glass will then be seen as walnut rather than another core timber, and this will match the figured walnut veneer on the face of the case.

The clock is designed to take a Hermle 1051 020 movement, which is available from Timecraft (details on page 35).

The right cutters

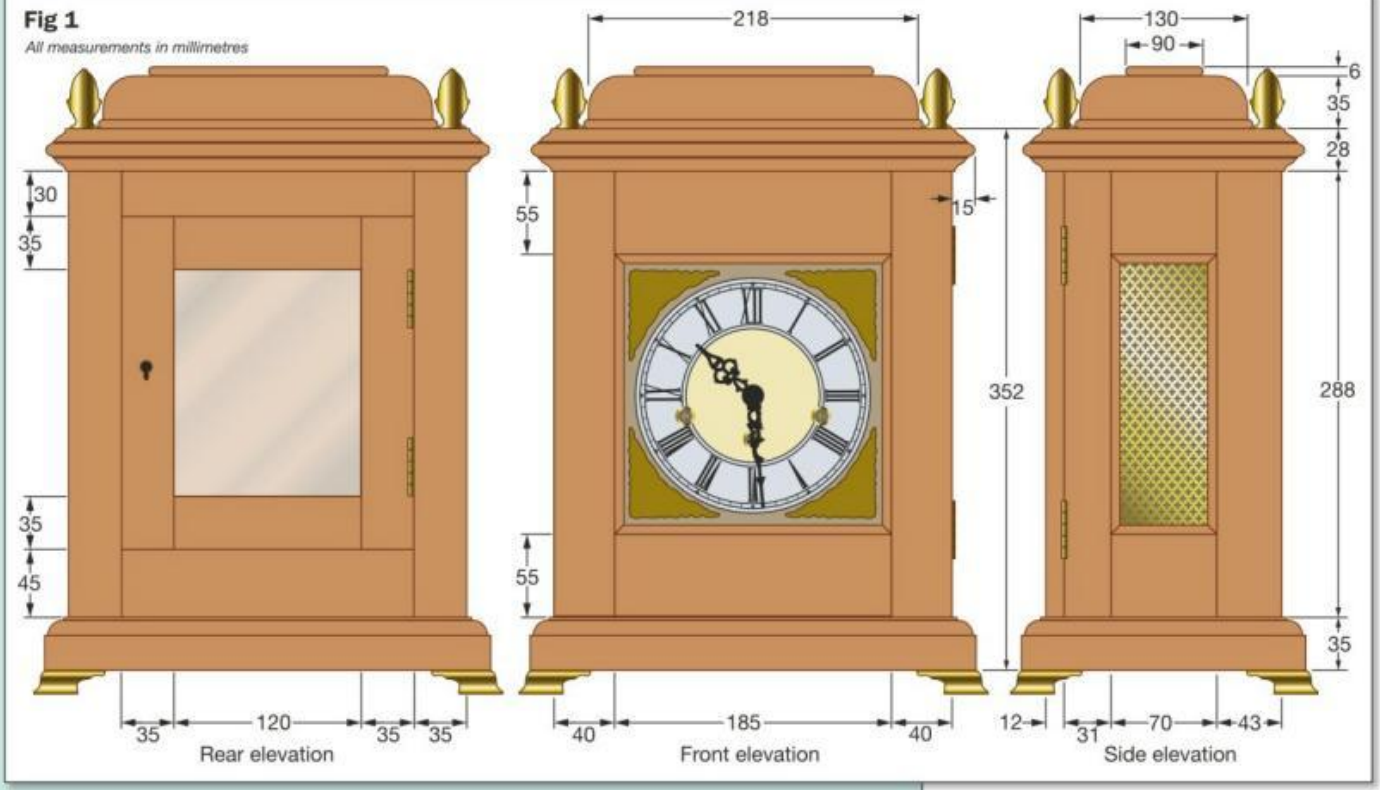
The profile-and-scribe joints are made using two complimentary bearing-guided cove and ovolo cutters, each with a 4.8mm radius; I used Trend 46/263 and 46/12 cutters. Accuracy is essential to get a good join, and this is best achieved using a router table with some means of fine adjustment of the cutter height.

Case components

The best way to understand the construction of this clock is to visualise the component parts that make up the basic box.

■ The two side frames are handed pairs, with the narrower stiles at the front (see **photo 5**).

Fig 1
All measurements in millimetres



BRACKET CLOCK CUTTING LIST

All dimensions are in millimetres

Part	Qty	L	W	T
SIDE FRAME				
Front stile	2	288	31	12
Rear stile	2	288	43	12
Top rail	2	100*	55	12
Bottom rail	2	100*	55	12
REAR FRAME				
Stile	2	288	35	12
Top rail	1	210†	30	12
Bottom rail	1	210†	45	12
DIAL MASK				
Stile	2	288	70	12
Rail	2	125†	100	12
FLOOR	1	250	155	35
TOP (from)	1	800	100	35
BELL TOP				
Main layer (from)	1	800	57	35
Top layer (ply)	1	150	90	6
Locking bar	1	160	60	6
FRONT DOOR				
Stile	2	288	40	12
Rail	2	210*	55	12
REAR DOOR				
Stile	2	213	35	12
Rail	2	145†	35	12
MOULDING				
Top (from)	1	1000	28	15
Base (from)	1	1000	35	15

* includes an allowance for cutting profile-and-scribe joints
† includes an allowance for machining – see text
You will also need a quantity of walnut veneer, four 40mm brass butt hinges, a brass door hook and eye and various decorative brass fittings.

■ The rear frame fits into rebates cut into the inside faces of the side frames (see **photo 8**); these joints are subsequently veneered over.
■ The dial mask, the component that carries the clock face, is set back from the front of the clock to make room for the clock hands and to prevent them from rubbing on the inside of the door glass. It slides into grooves cut into the side frames (see **photo 8** again).
■ The floor fits into a rebate cut along the inside lower face of the side and rear frames (see **photo 9**).
■ The top is simply glued to the sides and keeps the case square. A moulding around the top and the base of the case hides the edges of these pieces. The decorative bell top is secured to the top of the case using screws and wooden toggles, which will be invisible when assembly is complete.

Making the side frames

To make the outside of the case a little more attractive, I decided to stick some figured walnut veneer to one face of the boards I was using, with PVA adhesive evenly rolled out using a wallpaper seam roller. A couple of pieces of carpet tile cut to size and glued to chipboard offcuts make an excellent veneer press, using cramps to provide the force.

Next, cut the veneered timbers to length and plane them square. I use a thicknesser and feed the walnut strips through on either side of a longer piece of scrap mdf, **photo 1**. This prevents the snatch that often occurs at the beginning and end of the process

and can easily ruin the look of the joints on a decorative piece such as this.

Mould the inner edges of the side frame components using an ovolo cutter. Then cut the lower and upper rails to length, checking that their ends are square, and use the cove cutter to cut the profile on both ends of the rails to a depth to match the mouldings cut on the stiles in the previous step.

To reinforce the joint, cut a 3mm wide slot into both parts to a depth of 6mm. I made a simple fence to provide maximum support for the wood as I cut the slots, **photo 2**. The result should be similar in appearance to the traditional profile-and-scribe joint used on many cabinet doors, but minus the tongue, **photo 3**. Sand a piece of plywood down in thickness to fit the slots, **photo 4**, and glue and cramp the two frames together, **photo 5**. Remember to make handed pairs; each front stile is narrower than the rear one to allow for the thickness of the front door.

Cutting the side frame rebates

When the glue has dried, sand the surfaces smooth. Then use a bearing-guided rebate cutter (the Trend 46/44 cutter is ideal) to form the recess on the inside face of each side frame to receive its decorative brass fretwork, **photo 6**. Take progressively deeper cuts as you work, and move the wood in a clockwise direction over the table. Then cut a further rebate 20mm wide along the lower edge of each side frame to accept the floor panel (visible in **photo 9**).

Making the dial mask

The clock face is screwed to a panel called the dial mask. This is made from 9mm thick oak, veneered on the front face in walnut, and is constructed from four pieces of timber joined together using shallow tongue-and-groove joints, **photo 7**. Cut the tongues with a bearing-guided rebate cutter, and the grooves with the same slotter you used for the reinforcing tongue on the sides.

The dial mask slides into grooves cut in the inside faces of the two side frames, **photo 8**. Although the inside of the clock will rarely be seen, the dial mask will be visible when the front door is opened to wind the clock up. The front face of the dial mask is set back 14mm from the front edges of the case sides. This will stop the movement shaft from fouling on the glass.

Making the rear frame

The final component of the case to be made is the rear frame, which incorporates the opening for the rear door. This provides access to the movement to adjust the pendulum length. It's made in a similar way

Feed the wood through the thicknesser on either side of a carrier strip of mdf

Mould the rail edges, then cut the profile and a groove on the rail ends

The result resembles a profile-and-scribe joint, but without the tongue

Sand a plywood tongue down in thickness to fit snugly in the slots

Assemble the side frames, check them for square and cramp them up

Cut a recess on the inside of each side frame to receive the brass fretwork

Assemble the veneered dial mask using shallow tongue-and-groove joints

The dial mask slides into grooves cut in the inner face of the side frames

Make up the rear frame and test its fit. Note the rebates for the floor panel

Cut some walnut veneer and glue it to the rear frame to hide the joints

Stick the walnut strip to the edge of the bearer using double-sided tape

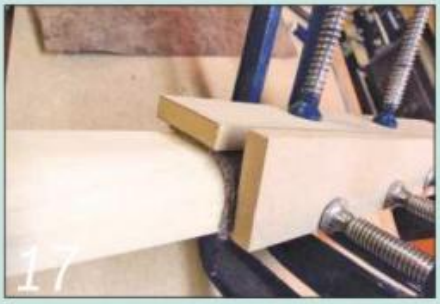
Use a sunk bead cutter to form a bead in the centre of the walnut strip

Then use the ogee cutter to form an ogee on either side of the central bead

Cut the moulding to length, mitre its ends and glue it round the top panel

Veneer the timber for the bottom moulding and then form the edge profile

The rear door is a simple frame assembled with mortise-and-tenon joints



Make the bell top sections by gluing veneer to a quadrant-shaped softwood moulding

Machine a slim walnut lipping and glue it into a rebate cut in the quadrant

Cut the four bell top sections with mitred ends as shown and glue them together

Attach the bell top to the case using two small wooden toggles and a couple of long screws

to the dial mask, using shallow tongue-and-groove joints. Solid walnut is used to make this part of the case, but the decorative veneer is not applied until the frame has been glued in place as it's used to hide the joints between the timbers. Check the rear frame for fit, **photo 9**. Don't forget to cut the rebate for the floor panel along the lower edge of the rear frame, to match that on the side frames.

Assembling the case

When you're satisfied that everything fits together well, it's time to assemble the case. Glue the rear frame, the side frames and the floor panel together, check that everything is square and set the assembly aside to dry. Note that the floor panel is not a simple rectangle, but has two small projections on its front corners to cover the front edges of both side frames.

Cut some walnut veneer to size and glue this in place on the rear frame to cover the joints, **photo 10**. Judicious use of cramps and softeners will be required at this stage.

Making the top

The clock case top is a simple frame made of four pieces of timber joined together in such a way as to leave a narrow slot in the middle (visible in **photo 20**). This will allow the fixing of the bell top to the case at a later stage. This, too, is veneered to compliment the rest of the clock.

The top mouldings are made using walnut planed to the dimensions shown. However, a difficulty arises when it comes to cutting the profile on the router, owing to the small section of timber being cut. I overcame this problem by using a suitable piece of scrap timber about 60mm wide but planed to the same section as the walnut. I stuck the walnut to the edge of this bearer using double-sided tape, checking that both pieces were level, **photo 11**. I also attached two shorter lengths of walnut to the other side of the bearer to help support it on the router table.

Cutting the top mouldings

I used two cutters to make this particular moulding – a bearing-guided sunk bead cutter (the Trend 9/95) and an ogee cutter (Trend 19/62). The moulding is made in several stages. Begin by using the sunk bead cutter to form a bead in the centre of the walnut, **photo 12**, taking a pass from each side to create the bead in the middle. Then use the ogee cutter and increase the depth of cut to form an ogee on either side of the central bead, **photo 13**.

You can now remove the finished

moulding from the bearer, cut it to length, mitre its ends and glue it in place round the top of the clock. Use cramps and carpet-tile softeners to hold it firmly in place until the glue dries, **photo 14**.

Cutting the bottom moulding

The moulding at the bottom of the case is simple in comparison, relying on a rounding-over cutter (the Trend 7/5) to form it. Begin by planing the timber to the section shown on the cutting list; then glue some walnut veneer on one face and allow it to dry. When it has, use the cutter to form the moulding, **photo 15**. This will cut the mould and trim the veneer in one pass, and makes for a very neat finish. Cut the pieces to length with mitres on the ends, and glue them in place round the base of the clock case.

Making the rear door

The rear door is a simple frame made with routed mortise-and-tenon joints, **photo 16**. Use a bearing-guided rebate cutter to form the recess on the inside face for the 2mm glass that will be fitted when the case has been polished. Then square up the internal corners with a sharp chisel. At this stage you can also cut the recesses for the 40mm brass door hinges and the mortise for the door lock (plus a small keyhole).

Mount the face on the dial mask. Then fit the movement and the other hardware

To prevent the door from pushing into the case when it's closed, glue some thin strips of walnut on the inside of the case all round the door opening to act as a door stop. These strips will also reduce the amount of dust finding its way into the case and onto the movement.

Making the bell top moulding

The bell top is a feature typical of clocks of this period and is straightforward to make, despite its complex appearance. Begin by taking a length of smooth straight-grained timber. I had a couple of pieces of sycamore that I could glue together to make up the required thickness. Use a large rounding-over bit in a router table (or, alternatively, a bench plane) to cut a quadrant profile on the block, ensuring it is uniform throughout its length by checking it with a simple cardboard template, and smooth it with abrasive paper.

Now glue the veneer onto the curve and hold it in place using two strips of mdf, some cramps and some carpet tile softeners, **photo 17**. When the glue has dried, machine a shallow rebate along the bottom edge of the veneered moulding, and prepare a small walnut lipping with a hockey-stick profile. Glue this into the rebate in the underside of the moulding, **photo 18**.

Now you can cut the four sections of the moulding with mitred ends and glue them together to make up the bell top, **photo 19**. The use of a disc sander on the mitred ends will help to get the fit perfect. Finally, glue a small piece of 6mm plywood veneered in burr walnut on top of the bell top, and hide its edges with a small half-round walnut bead. This part is better glued in place after all the components have been polished.

Making the front door

The front door is made in a similar way to the side frames, using the cove cutter and rounding-over bit to make a smaller version of the profile-and-scribe joint. Glue veneer onto the timber before cutting and profiling it, as this makes a very neat finish between the veneer and the lipping. Instead of using plywood reinforcing strips in the corner joints, cut some walnut strips across the grain and use these instead. This avoids the unsightly plywood being seen along the top edge of the door when it's opened.

As with the rear door, you need to cut a rebate to take the 2mm thick glass pane. Remember to square the corners with a chisel. Before polishing the door it's a good idea to cut the recesses for the 40mm hinges and the corresponding recesses on the case. The door is held closed by a simple brass hook and eye.

Finishing the clock

Apply a suitable finish before fitting the movement. After rubbing down where necessary with fine abrasive paper, I brushed on a couple of coats of button polish with a polishing mop and allowed it to dry before rubbing it down with 0000-grade wire wool. I then wiped the surface clean and French-polished the clock with a polishing rubber to obtain a full-bodied finish. When this had dried thoroughly, I cut it back with more wire wool, applied a dark wax and buffed the surface up to a soft sheen. Then it's time to attach the bell top to the top frame using

two softwood toggles and a couple of long screws, driven up into its underside from beneath the top frame, **photo 20**.

Now you can fit all the hardware and finish the project. Locate the clock face accurately on the dial mask using a square and some masking tape, and screw it in place, **photo 21**. Fit the brass fretwork in its rebates after gluing some suitable fabric over its inner face to keep dust out; secure each piece with strips of wood about 4mm square. Fit the glass panes in the doors and secure them in a similar way. Finally, fit the movement by screwing it to the rear of the dial mask. Add four brass feet to the base and fit the door hook and eye. Now, where's the winder?

FURTHER INFORMATION

Clock mechanisms
- Timecraft
- 0151 526 2516
- www.timecraft.co.uk

Decorative brassware
- Marshall Brass
- 01508 548403
- www.marshall-brass.com

Router cutters
- Trend Machinery
- 01923 249911
- www.trend-uk.co.uk

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Machine screw	M4-M8
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BY MICHAEL FORSTER

Deb's delight

There's something intensely personal about jewellery. It's your treasure, and it deserves somewhere equally unique in which to display it and keep it safe. What's better than a jewellery box?

My client commissioned this lovely box as a wedding present for her daughter Deborah. It was to be in contrasting timbers with dovetailed corners, but the two most vital elements were the interior colour – purple – and the size. The wedding was to take place in America, and the box had to fit into the permitted hand luggage and yet be a large as practicable.

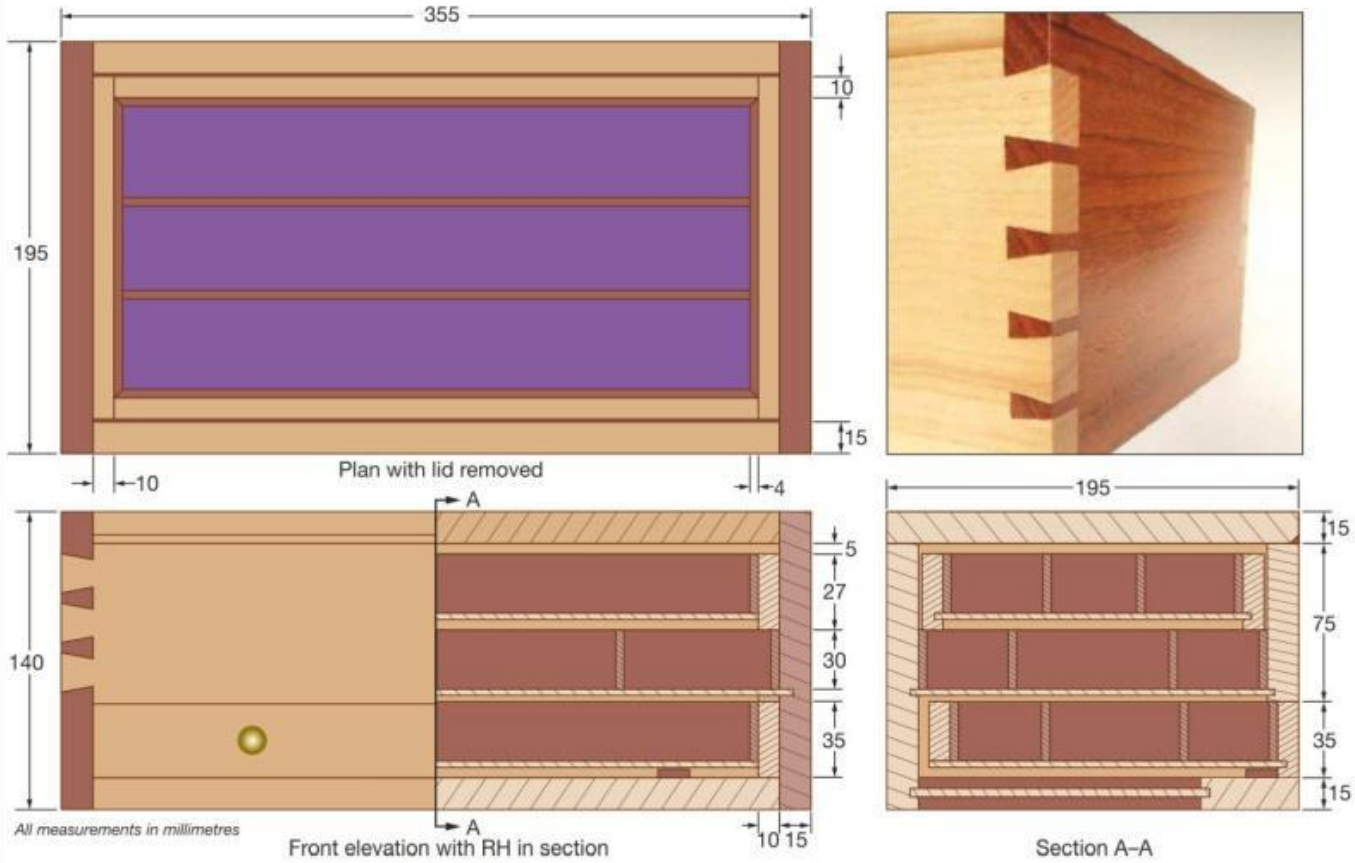
Triple decker

We discussed some further details, and agreed that it would have three layers. As the box is quite large I suggested that too many trays might end up cluttering the dressing table when in use, so one tray and one drawer with a fixed compartment in between seemed best. We opted for a plain slab lid hinged on brass pivot rods. After examining various examples in my offcuts rack, the client specified ash and padauk as her timbers of choice and purple pig suede as the lining fabric.

Practical considerations

I was aware that this design could present difficulties at the glue-up stage, as fitting two plywood panels into their grooves could cause alignment issues. I therefore designed the carcass so the dust board could be fitted in a second glue-up after the main carcass

Fig 1



The carcass dovetails were cut with a dovetail saw and sharp chisels

I half-assembled each joint dry to test the fit before gluing them up

3

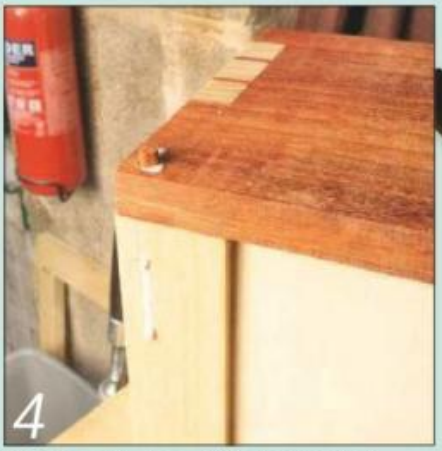
Assemble the carcass. Note the holes in the sides for the lid pivots

had been assembled. This was achieved by fixing the bottom rail in place with dowels cut from scrap padauk, rather than using the stub tenons I had first envisaged. With its rear edge grooved and located onto the ply, I decided that a single dowel at each end would hold it firmly, especially if I glued the ply into the groove. For the same reasons I didn't include the drawer runners and kickers in the carcass work, but cut and glued them in place later.

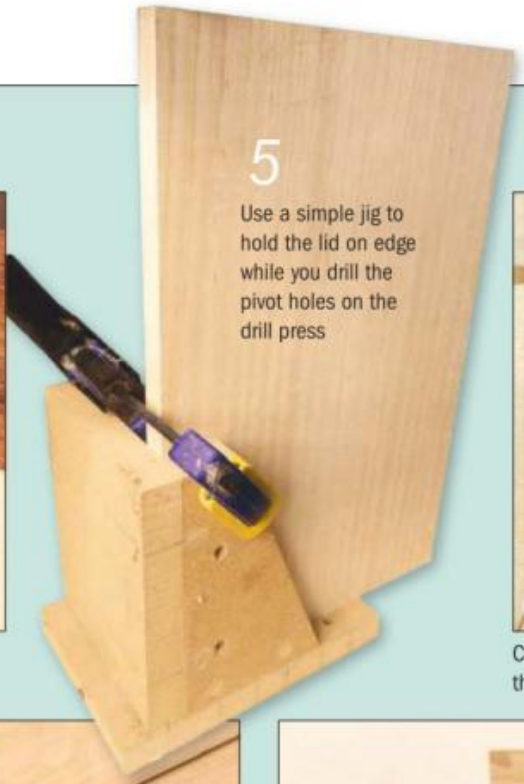
Pivoting the lid

Another similar consideration concerned the lid pivots. I sometimes set these rods into blind holes, assembling the lid as part of the glue-up. However, this can require repeated trial assemblies to ensure that the lid opens to just the right angle, and this is not very desirable with dovetails since it can spoil the joints. With a dovetail, the first fit is the best.

So to enable the lid to be fitted after glue-up, I decided to drill the pivot holes right through from the outside of the box and then to cut plugs from padauk scraps to conceal the rod ends. An alternative would have been to make the dowels a feature by using a contrasting timber, but I thought that might just look confused rather than stylish – and in such dark timber the dowels are quite unobtrusive.



Glue the rail in place, drill holes through it and tap in the two locking dowels



Use a simple jig to hold the lid on edge while you drill the pivot holes on the drill press

Cut a small chamfer on the back edge of the lid and gradually round it off

Use temporary over-long brass rods to hold the lid while you test its fit

The tray dovetails are cut in the same orientation as those on the carcass

Cut the drawer components to size and test the fit of their side pieces

Re-thickness the drawer front to 10mm and aim for a good sliding fit

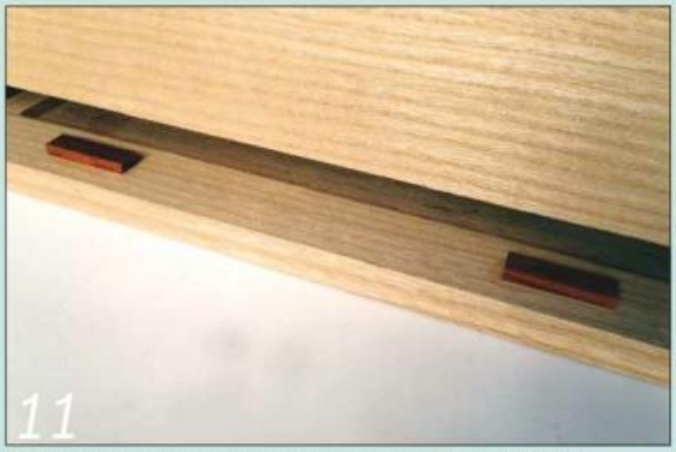
Preparing the stock

I usually buy my timber in 100mm thick boards and then rip them to produce quarter-sawn boards for stability. In addition, I always prepare timber in two stages, first cutting it oversize and then leaving to acclimatize in a dry domestic environment. This also allows for the movement caused by the releasing of internal stresses as the boards are cut. Once I'm happy that the boards are stable, I do the final truing and dimensioning. In this case, I also had to edge-joint the boards to make up the depth of the box.

Cutting the dovetails

To ensure that the two ply panels would align properly, I routed their stopped grooves first while the front board was still at full width. Then I marked the dovetails for the corners using the bottom edge as my datum, and checked that the grooves ran within the tails. Finally, I ripped off the material for the drawer front and set it aside.

Cutting the dovetails was straightforward, using a rip-tooth dovetail saw and sharp chisels, **photo 1**. As I mentioned earlier, I don't normally like trial fits on dovetails. However, in this instance I allowed myself the reassurance of half-assembling each



Use an offcut from the drawer front to position the two drawer stops

Fit the suede in the fixed compartment and add the liners and dividers

Stick a length of ribbon to the base of the tray so it can be lifted out

Make individual ring rolls by sticking suede to strips of foam plastic

joint dry just to be sure, **photo 2**. They were a little on the tight side, and I was glad that I wouldn't have too much else to cope with during the glue-up.

Positioning the pivots

Before tackling the glue-up I plotted the position for the holes for the lid pivots – short pieces of 4mm brass rod. I set a gauge to half the thickness of the carcass and lid timber, and used that to mark a cross on the top rear corner of each end panel. Then I drilled the holes in the carcass ends on the drill press and set the gauge aside so I could use the same setting for the holes in the lid.

Starting the assembly

I assembled the four sides and the base of the main compartment first, **photo 3**, and waited for the glue to dry before sliding the bottom dust board into place. I then planed the ends of the bottom rail so it was a close fit between the box ends, ran a bead of glue into the groove, slid it into place (locating it over the front edge of the dust board), cramped it in position, cleaned off the excess glue, and let it go off before drilling through it for the dowels.

A handy hint

Care is needed when gluing dowels into blind holes, as air pressure and excess glue can mark the surface of the timber. Usually this is dealt with by grooving the dowel, but that would have spoiled the appearance of the box end as well as drawing attention to the dowel. So instead I drilled a tiny relief hole on the underside of the rail to meet the bottom of the dowel hole and allow air and excess glue to escape, **photo 4**. It almost worked!

Finishing the carcass

This is a good stage to fit the runners and kickers that enable the drawer to run smoothly without tipping. I simply cut them from scrap ash and glued them in position. One the glue was dry, I gave the whole carcass a good clean-up with a sharp, finely-set plane, flushing down the joints, removing any machine snipe and ripples and generally making it all look beautiful!

Tackling the lid

This needs to be in place before the height of the tray is measured to ensure that the tray clears the bottom edge of the open lid as it's removed and replaced. I marked the pivot hole positions with the same gauge setting I used for the sides, and set the lid into my vertical drilling jig (**photo 5**) ready for the drill press. It's important to get these holes as well aligned as possible so the rods can be a close fit without binding.

Now the lid can be shot in and the fitting process begun. The back edge needs to be rounded to allow the lid to open, and if this is done just to the lower quadrant, the lid will stand open a little past the vertical. Getting this right is a matter of trial and error, which is why I needed to be able to remove and refit the lid during the process without dismantling the box. I marked the initial chamfer with pencil lines, **photo 6**, but thereafter relied on my eye as I rounded off the successive cuts.

To make this trial-and-error fitting process easier, I keep a couple of over-length brass rods handy and use them to locate the lid temporarily, **photo 7**, only inserting the short pivots at the final assembly stage.

Fitting the lid

The final task before fitting the lid is to apply finish to any places that will be tricky once it's there – like the rounded back edge, the pivot corners and the corresponding places on the carcass. Practically, it makes sense

simply to finish the lid completely at this stage. This also has the added benefit of helping to protect it from finger marks during later handling.

The lid can now be placed in position, the short brass rods pushed into place and the plugs inserted with just a dab of glue toward the top of each plug to ensure none finds its way into the joint with the lid. I cut the plugs off slightly proud with a fine saw and flushed them down with a block plane before sanding and finishing the outside of the box.

The tray and the drawer

The tray is dovetailed with its base grooved in, and its dovetails are cut in the same orientation as those on the carcass, **photo 8**. while the drawer is also of straightforward traditional construction, using the piece cut from the carcass for its front panel. This will need to be re-thicknessed to about 10mm. I used traditional half-blind dovetails at the front and through dovetails at the rear, with the plywood base sliding into its groove after assembly, secured by a single tiny screw driven up into the underside of the drawer back.

Ensure that the drawer sides and front are a good sliding fit in the opening as part of the preparation, **photos 9** and **10**. I fitted a couple of plain screw-in brass knobs, which I felt went well with the simplicity of the general lines while leaving the hand-cut dovetails as the main visual feature. The drawer also needs a couple of stops to align it with the carcass front when it's closed. I cut these from scrap padauk and used an offcut from the drawer front as a gauge to position them accurately, **photo 11**.

Fitting out the interior

The interior configuration of any jewellery box is of course up to to the individual owner's preferences. I included the long sections in the tray so there would be somewhere to lay out chains and necklaces, while the simple divider grids in the other compartments give a good variety of spaces for smaller items such as brooches and earrings.

The tray and drawer are lined all round in padauk, mitred into the corners at the shooting board using my bird-house jig – see *The Woodworker* June issue, page 46. The dividers are planed to fit using just the traditional shooting board set-up.

The fixed compartment already has padauk ends, so it simply needs liners to give a visual unity to the sub-compartments, **photo 12**. I planed these to be a close fit between the box ends and then half-lapped the dividers together.

The finished box offers a range of storage options in its three compartments

It's obviously best to do all this fitting work – and to apply the finish – on the internal fittings, before the suede lining is done. Don't actually fix anything in place yet, as the linings and dividers will go in on top of the suede in the base.

Lining techniques

All the suede lining material is fixed to cut-to-size card backing pieces using double-sided tape or aerosol adhesive. The tray needs a ribbon to provide finger-grips for lifting it out, **photo 13**, and I stuck this in place before adding the lining, saturating it with Copydex adhesive so the adhesive soaked right through the tape.

The suede-covered card goes on top of the ribbon, and then the liners and grids are simply pushed down into place over the suede. In the case of the tray, the bottom edges of the short liners will need to be relieved where they pass over the ribbon to prevent them from rocking over the extra thickness. I did this quite easily by slightly arching the bottom edges on the bobbin sander. A spokeshave would be a good alternative.

Storing rings

Ring rolls give a touch of class to any jewellery box and are very easy to make; this box has them fitted in two of the compartments, **photo 14**. I make each roll individually by gluing suede to strips of foam plastic, and fit them dry so they're held in place by friction alone and can be removed if the client prefers a plain compartment. See *The Woodworker* Summer issue page 46 for more details on making the ring rolls. And that's Deborah's box finished, **photo 15**!

FURTHER INFORMATION

Brass rod
- B & Q stores
- www.diy.com

Pig suede
- Alma Leather
- 020 7377 0762
- www.alma1938.com
- GH Leathers
- 01933 311116
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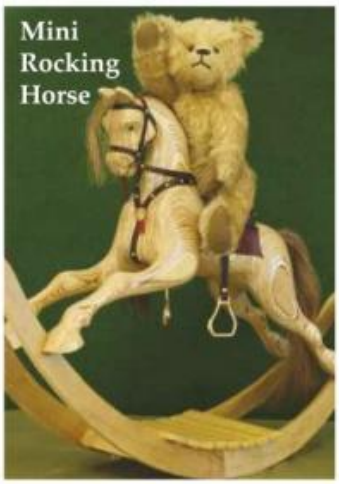

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BY ANDY STANDING

MNO are for...

The aim of this series is to provide you with snippets of interesting and, I hope, useful information concerning all aspects of woodworking. It will explain some of the mysteries for those new to the craft, and will I hope inspire and entertain everyone else

The idea of pottering through the alphabet and looking at woodworking topics that begin with each letter in turn generates some unusual entries. But it's an interesting exercise in lateral thinking, because in a curious way one topic seems to lead on to another, even if there's no obvious link between them as you first consider them. Here's my latest batch; please read on, and see what useful nuggets you can pick up from my trawl through subjects beginning with the letter M, N and O.

MORTISE

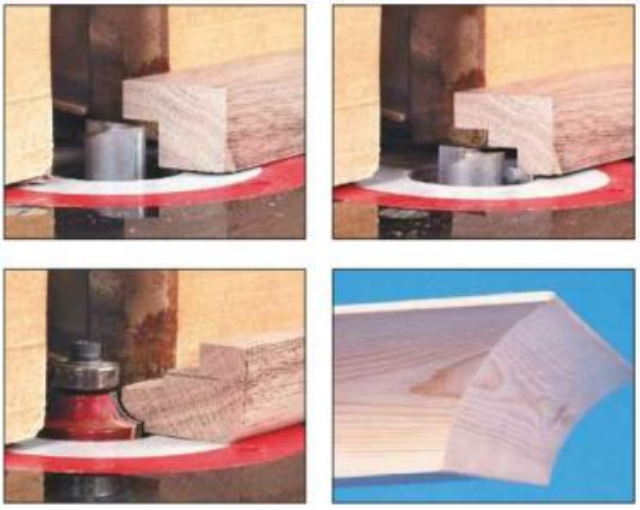
A mortise is basically a square or rectangular hole cut in one piece of timber to receive a matching tenon – a shaped projection – on another piece. The two components fit together to form a mortise-and-tenon joint, and, when correctly made, this is extremely strong. It's usually (but not always) a corner joint, and the two components meet at a right angle. The mortise-and-tenon joint is one of the oldest of woodworking joints. It's extensively used in furniture construction for tables and chairs. As with all woodworking joints, the mortise and tenon has evolved and there are many variations of the joint to suit specific uses.

MOISTURE CONTENT

A growing tree contains a huge amount of moisture, and when it's felled and converted into boards this moisture remains and must be allowed to evaporate before the timber will be stable enough to use. Wood is a hygroscopic (water-absorbing) material even when it's 'dead'. This means that it reacts to its environment by releasing or absorbing moisture in sympathy with the atmosphere, and this causes it to shrink and swell accordingly. This is why doors sometimes bind on damp days but are fine in dry weather. Ideally the moisture content of the timber needs to be as close as possible to the ambient humidity of the place where it is to be used. Consequently timber that's to be used in centrally-heated houses should be dried down to around 10 to 13 per cent moisture, whereas timber for garden furniture can have a far higher moisture content. If possible it's best to store any timber you buy for a few weeks in the environment where it is to be used, though this is often not practical..

MDF

Medium-density fibreboard (mdf for short) is a man-made board that's manufactured from wood fibres that have been mixed with synthetic resin and then compressed into boards. This process produces a smooth-faced and stable board that can be worked in the same way as solid wood. It makes an ideal base for veneers, and also takes paint well. It's available in a range of sheet thicknesses from 6mm to 32mm. The drawbacks are that it produces very fine dust when machined, so a dust mask and workshop extraction must be used. Mdf is also dense and heavy, and is highly prone to water damage so it can't be used in damp situations. It's possible to buy lighter weight mdf and also a water-resistant variety, though obviously these cost more.



MOULDING

The use of mouldings is an integral part of woodworking, and particularly of furniture making. Not only do they add decoration to a project; they also serve a more practical purpose. Because timber swells and shrinks with the change in ambient moisture, this means that gaps around drawers and doors and between boards can change their size. What was a perfectly fitted drawer in a slightly damp workshop soon becomes a lot looser when kept in a centrally heated room for any length of time. A carefully placed moulding round the drawer front or the aperture can disguise this movement and make it much less noticeable. Mouldings can also alter the appearance of an object, as they allow you to emphasise certain features and perhaps to disguise others. Mouldings can be machined directly onto the piece, using a router or spindle moulder, or alternatively made separately and then pinned in place. A wide range of commercially made mouldings is available in softwood. hardwood and even mdf, and most builders' merchants, sawmills and DIY stores will hold them in stock.

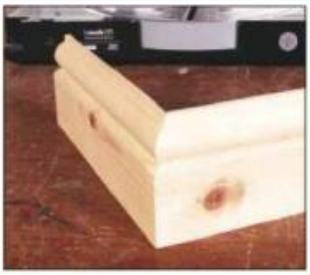
MARQUETRY

Veneer is not just used to mimic solid timber; it can also be used to create designs and pictures. This process is known as marquetry. It offers a huge range of possibilities for creating unique objects. There is much antique marquetry furniture which can be extremely beautiful. Tabletops and cabinet fronts are favourite places for marquetry application.

Parquetry (below) is another type of marquetry that uses purely geometric shapes to create repeating patterns. With clever veneer use, these patterns can even take on a three-dimensional effect.

MARKING KNIFE

For true precision when marking out joints, a marking knife should always be used instead of a pencil. Marking knives are made in a variety of designs, but the basic principle is that they have their blades sharpened with a single bevel, so that the flat back of the blade can be run against a rule to mark an accurate line. The advantage of using a marking knife is that, unlike a pencil, it severs the fibres when used across the grain. This makes a shallow groove which will guide your saw perfectly.



MITRE

A true mitre joint is one where two components join end to end to make a right angle. The ends of each piece are cut at 45°. The joint is extensively used in picture framing, and when fitting decorative architectural mouldings such as architraves and skirting boards. The joint itself is inherently weak as it relies on end-grain gluing, so it's normally strengthened with loose tongues, splines, biscuits, nails or specialist metal vee nails. Mitres can be cut at angles other than 90°, but the angle cut on the end of each component must be exactly half that of the finished angle. They must be very accurately cut, as any mistake will be effectively doubled when the joint is assembled.

MUNTIN

In woodworking, the word muntin can refer to two different things. It is most commonly a vertical frame member placed between a pair of panels on a wide panelled door, and runs parallel to the stiles. It can also be a horizontal strengthening bar that supports the separate panels in the base of a wide drawer or the dust board below. It should not be confused with a mullion, which is a vertical divider between the panes or casements of a window.

MAHOGANY

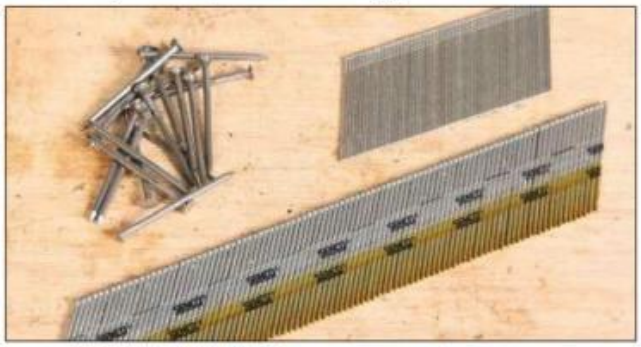
Mahogany is perhaps the most prized of the exotic hardwoods, for several reasons. It is an absolute pleasure to work, finishes wonderfully and looks beautiful. The best mahogany comes from central and south America, with the most favoured being Cuban or Honduran, though due to over-exploitation these two varieties are now rarely available commercially. Brazilian mahogany is still available, but care must be taken to ensure that it comes from a sustainable source and is not simply the product of illegal logging. Mahogany is also grown in Africa, and though it's not the same as the American mahogany it's still an attractive choice for fine furniture.

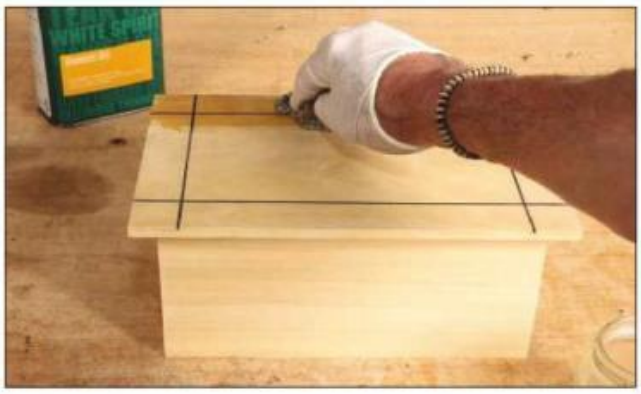
MARKING GAUGE

The marking gauge is a traditional woodworking tool that's used to mark lines parallel to the edge of a workpiece. It has a sharp steel pin fixed into the end of a wooden beam, and a sliding fence or 'stock' that is used to set the distance. There are several variations of the marking gauge. The cutting gauge is identical, apart from the fact that it substitutes a small blade for the steel pin. It is used for marking across the grain where the pin of a marking gauge might tear the wood fibres. Another variation is the mortise marking gauge, which has a pair of marking pins that can be adjusted independently so that you can mark both the position and the width of a mortise. High-quality versions of these tools tend to have brass inserts in both the beam and the stock to increase accuracy and reduce wear.

NAIL

Nails are made in a vast array of styles and sizes, ranging from heavy construction nails down to delicate moulding pins. Traditionally nails are inserted using a hammer,, and the larger the nail the heavier the hammer needs to be. Nowadays however, powered nailers are increasingly used instead. These may be pneumatic, gas-powered or electric. They're faster to use and more accurate than hammers, and you can't hit your thumb. This also means that the nails are now supplied in strips or on rolls to be fed into the nailer's magazine. Nails are used primarily in the construction and joinery areas of woodwork. Furniture and cabinetmakers rarely use any large nails, but occasionally use fine panel or moulding pins.





OIL

Oil is one of the easiest and most practical of all wood finishes. Unlike French polishing or spraying, little experience is needed to produce excellent results. The oils used are all derived from plants, rather than the mineral oil that you put in your car! Modern oil finishes are very easy to apply and are surprisingly durable. Many manufacturers produce Danish oil, which is based on natural tung-tree oil with additional ingredients such as driers incorporated to speed up the otherwise slow drying process. Unlike lacquers and varnishes, oils penetrate the wood surface and provide protection from moisture and resistance to heat and alcohol. Oils are simply brushed or wiped on to the timber with a soft cloth and allowed to penetrate. The finish is built up by applying several coats until the required sheen is achieved. Should the surface become damaged, a light sanding followed by a fresh coat of oil will usually solve the problem.

OSB

OSB stands for the rather clumsily named oriented-strand board, with one of the most recognisable brands being Sterling Board. This is a three-layered board made from long strands of pine shavings. The strands in each layer are laid in one direction, and run at right angles in the next layer in a similar fashion to plywood. OSB is a cheap board that's mainly used for shuttering work and for the roof panels of cheap garden sheds.

ORBITAL SANDER

The orbital sander is a hand-held power tool primarily used for finishing work. It has a square-edged sanding pad onto which abrasive can be clipped or held in position with Velcro fastenings. The pad moves with an orbital motion, describing tiny circles of around 2.5mm in diameter. This leaves a very fine finish. The advantage of an orbital sander is that it can be used up to edges and in corners, whereas random orbital sanders, with their circular sanding pads, cannot.

OILSTONE

This is the traditional craftsman's tool for sharpening chisels and plane irons. It is usually made from carborundum or similar material, and mineral oil is used to lubricate the tool as it is sharpened. A variety of grits is available to suit everything from coarse grinding to fine honing. In recent years diamond stones have become more popular because of their resistance to wear and the fact that they can be lubricated with water.

BY FRED & JULIE BYRNE

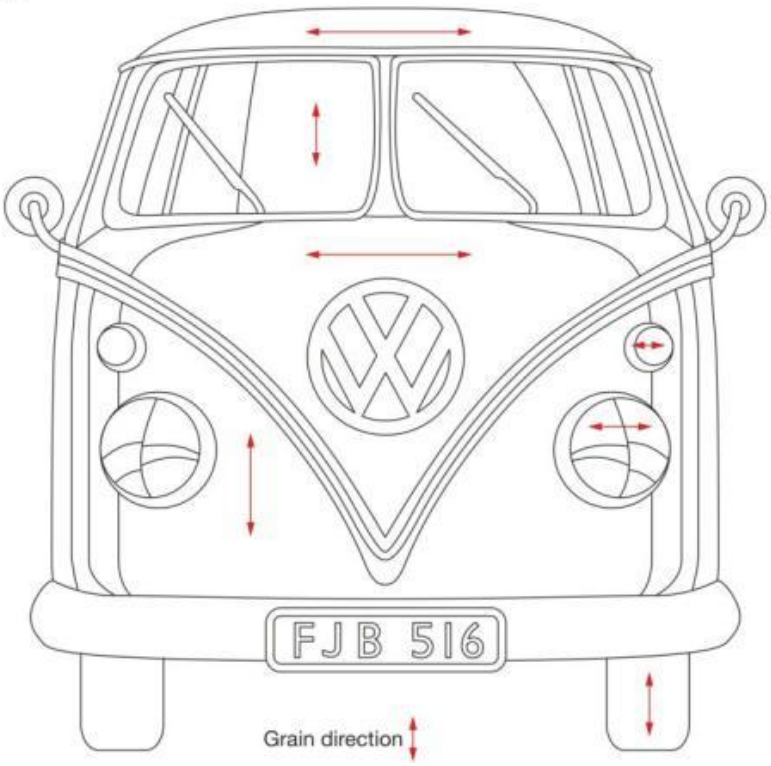
A 1960s icon

What can you say about the iconic VW camper van? It holds a special place in the heart of any hippy who can remember the 1960s! If you still can, here's how to make your own VW icon to hang on the wall as a reminder of happier (or even hippier) days

1 Cut out the various pattern sections and stick them to wood of the appropriate thickness

The original concept for the Volkswagen Type 2 Kombi (the Beetle was Volkswagen Type 1) began life in 1947 on the sketchpad of Dutch car importer Ben Pon. The first production model – soon to be nicknamed 'Splitty' thanks to its two-part windscreen – began to roll off the production line in Germany in November 1949. A single curved windscreen eventually replaced the splitty in 1967, along with various other changes to the original specification. Production ceased in Europe in 1979, but the Kombi continued to be made in Central and South America for another 30 years or so. It will finally stop in Brazil in December this year – the end of an era indeed.

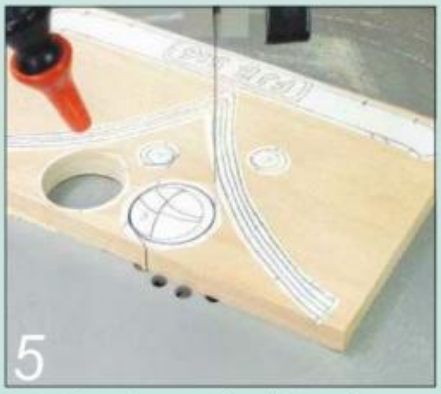
Fig 1



Use a twist drill bit in a pillar drill to make the blade entry holes for all the internal cut-outs

Use a small square or a geometry triangle to set the blade at 90° to the table

Cut out and remove the headlights and sidelights from the 6mm thick wood



Cut out the replacement headlights and sidelights from the 9mm thick wood

Happy days

VW camper vans became synonymous with the carefree, no-strings lifestyle of the counter-culture movement, and the affection for these endearing vehicles continues today. The time and money enthusiasts still spend restoring and driving them clearly demonstrates their enduring appeal. You simply can't help but smile when you pass one; after all, it's unlikely to pass you! So, with California Dreamin' playing in the background, let's get started on our camper van tribute!

Tools and materials

To make this three-dimensional artwork you'll need a scrollsaw plus Nos 5, 3 and 2 reverse-tooth blades, a pillar drill with 1 and 3mm drill bits, a sharp craft knife and some scissors. A small disc sander will also come in handy. Throw in some PVA, stick and aerosol adhesives, some fine abrasive sheets and a roll of masking tape, and you're just about done.

As for materials, we used tulipwood 6mm and 9mm thick, plus some 2mm and 6mm thick plywood and a small quantity of wood veneer, but other woods will do just as well. For decoration and finishing, we used sanding sealer, acrylic paints and varnish and some clear wax polish.

Start with the pattern

Decide at the outset how big you want your finished icon to be, and enlarge our sketch on a photocopier. A design that will fit an A3 sheet is probably big enough. Take four copies – one for reference, and three to cut up.

Cut out the various sections of the patterns and stick them to wood of the appropriate thickness (see the following text for details) with aerosol adhesive, **photo 1**. The arrows on **fig 1** show the direction in which the wood grain should run on each piece.

Use the pillar drill fitted with the 3mm drill bit to drill the blade entry holes within the headlights and sidelights. Then change to the 1mm bit to drill the entry holes in the VW sign, **photo 2**, the windows, the number plate and the small holes within its letters and numerals.

Make the first cuts

Start work with a No 5 reverse-tooth blade in your scrollsaw. It's important to set the blade accurately, so use either a small engineer's square or a geometry triangle to confirm that it's at exactly 90° to the table, **photo 3**. This will ensure that all the cut-out sections will fit snugly together. Repeat this procedure whenever you need to loosen or change a blade.

To begin, cut out and remove the headlights and sidelights (on 6mm thick wood) from within the front panel pattern, **photo 4**. These holes will be filled later by replacements on the thicker 9mm wood, **photo 5**, which will then project realistically from the 6mm thick front panel when they're fitted into it. Continue cutting out all the main sections of the pattern from the 6mm and 9mm thick wood.

Tackle the cut-outs

Change to a smaller No 2 blade to cut out the waste wood within sections, such as the glass in the windscreen, **photo 6**, the number plate surround and the wiper blades, **photo 7**. Then cut out the thinnest parts such as the VW badge, **photo 8**, and the letters and numerals within the number plate, which are all stuck to 2mm thick plywood. Work slowly and with care!

Once all the pieces have been cut out, peel off the paper patterns and label similar pieces on the underside with a pencil, **photo 9**. For example, put an R to indicate the right-hand wheel, lamps and wing mirror. Then mark the position of each wheel on the bumper, **photo 10**.

Sanding and shaping

The design already has a few relief variations thanks to the different wood thicknesses, but with a little more sanding and shaping it will take on an even more refined three-dimensional look

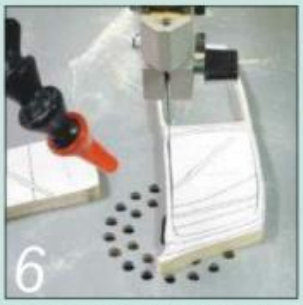
Use a disc sander to reduce the thickness of the bumper by 2mm; this will make the number plate surround sit slightly proud of it, **photo 11**. Next, thin down the inner section of the number plate by 2mm so the letters and numerals will finish flush with the surround.

Now hand-sand all the other pieces, working down through the grits, to give everything a more rounded and finished look, **photo 12**.

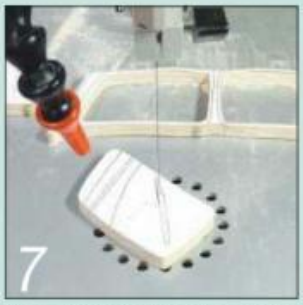
Making the backing board

Place the main pattern pieces in position on a piece of 6mm plywood, and use a strip of masking tape to hold the main ones in position while you draw a line round the perimeter, **photo 13**. Once you have done this, trace around the inner sections by removing one piece at a time, **photo 14**.

Cut all around the outer edge of the backing using a No 3 reverse-tooth blade, **photo 15**, and remove any burr from the edges with fine 320-grit abrasive. Finish off this stage by sanding the reverse side of the board before applying a sanding sealer and setting it aside to dry.



Change to a No 2 blade to cut out the waste wood within the windscreen frame



Then cut out the two windscreen wiper blades from within the windscreen waste

Cut out the thinnest parts such as the VW badge and the letters and numerals from 2mm wood

Peel off the paper patterns and label mirror-image parts such as the wheels with an L or an R

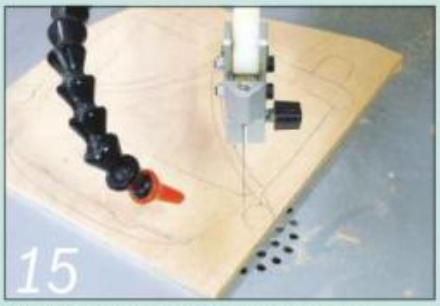
Check the fit of all the parts and mark the wheel positions on the bumper

Reduce the thickness of the bumper on the disc sander so the number-plate surround projects

Hand-sand all the parts to give them a more rounded and finished look

13 Tape the main pattern pieces to the backing board and draw round the perimeter

14 Then trace round the inner sections by removing one piece at a time



15 Cut all round the perimeter of the backing board using a No 3 blade

16 Paint the board edges black, then go over all the pencil lines with a marker pen

17 Mix up your chosen paint colours and apply them to the pieces with an artist's brush

18 Apply different colours to different pieces, then leave them all to dry

19 Lift the smallest painted pieces from the tape with the tip of a craft knife blade

20 Stick them face down to more tape, glue them and position them on the number plate

Marking time

Apply black paint or stain all the way around the outer edge of the backing board. Then use a thick black marker pen to trace all around the top edge and over your pencil lines, **photo 16**. This will make any gaps between the sections of the pattern less noticeable and will help to give the piece a more finished look.

Colouring in

Our first choice when colouring wood is nearly always acrylic paint, thinned with acrylic slow-dry gel medium. This allows excess paint to be removed easily, so the grain of the wood remains visible. Acrylic paints come in a vast range of vibrant colours, don't have a painty smell and dry quickly, and you can wash your brushes out in soapy water.

Mix each chosen colour 50:50 with the slow-dry medium and use an artist's brush to paint the pieces, **photo 17**, removing the excess as you go. To paint the smaller pieces, tape a strip of masking tape down sticky-side up and place them on it. Have a dry brush handy for removing excess paint from edges and internal angles, and a few small pieces of cloth to wipe the larger pieces.

Allow all the pieces to dry completely, **photo 18**. Then lightly de-nib each piece, taking care not to remove any of the paint, and apply a coat of clear acrylic matt varnish or wax polish.

Putting it all together

Lay out all the pieces, and have to hand an old artist's brush and a slightly damp cloth for removing any excess glue that may ooze out. Apply glue to each piece in turn, position it firmly on the backing board and carefully wipe away any excess glue as you go. Work your way down from the top or up from the bottom, whichever is easier.

The trickiest job of all is positioning the tiny painted letters and numerals on the number plate. Use a craft knife to lift them one by one from the strip of masking tape, **photo 19**. Cut a new strip of tape to match the depth of the black inner section of the number plate, and stick the letters and numerals to it face-down in reverse order. Lift the tape so you can check that they're all correctly spaced and aligned, **photo 20**. Then apply a very small amount of glue to the back of each one and lower the tape onto the number plate to stick them in place. Peel off the tape carefully when the glue has dried.

Now all that remains is to fix a picture hanger to the backing board and hang your VW icon on the wall. Keep on trucking!

BY JOHN-HENRY BIGLEY

Stand & deliver

This was the final second-year project of my furniture-making course at Leeds College of Art. It was inspired by my earlier research into hallway furniture of the Victorian era

My hall stand is constructed from European oak (*quercus robur*), with mild steel tubing for the front rail and legs. The curves of the mirror frame and the octagonal legs cut through the grain of the oak at different angles, showing off the medullary rays. The curves in the mirror frame are replicated in the front legs, joining the piece together. The curve of the front metal rail is echoed in the bottom laminated rail, blending the bottom to the top.

First steps

Whatever the project, it's always important to create a technical drawing before any work commences. This allows you to prepare templates and create cutting lists of the materials needed. It also shows the construction details and gives you something to work off in the workshop. Since I'd created

1

I started by preparing all the components to size and cross-section

2

A dry fit of the top and centre rails allowed me to set out the mirror frame

my drawings in Auto CAD, I could program the details into the college's CNC router and cut the templates out of 6mm thick mdf.

Preparing the parts

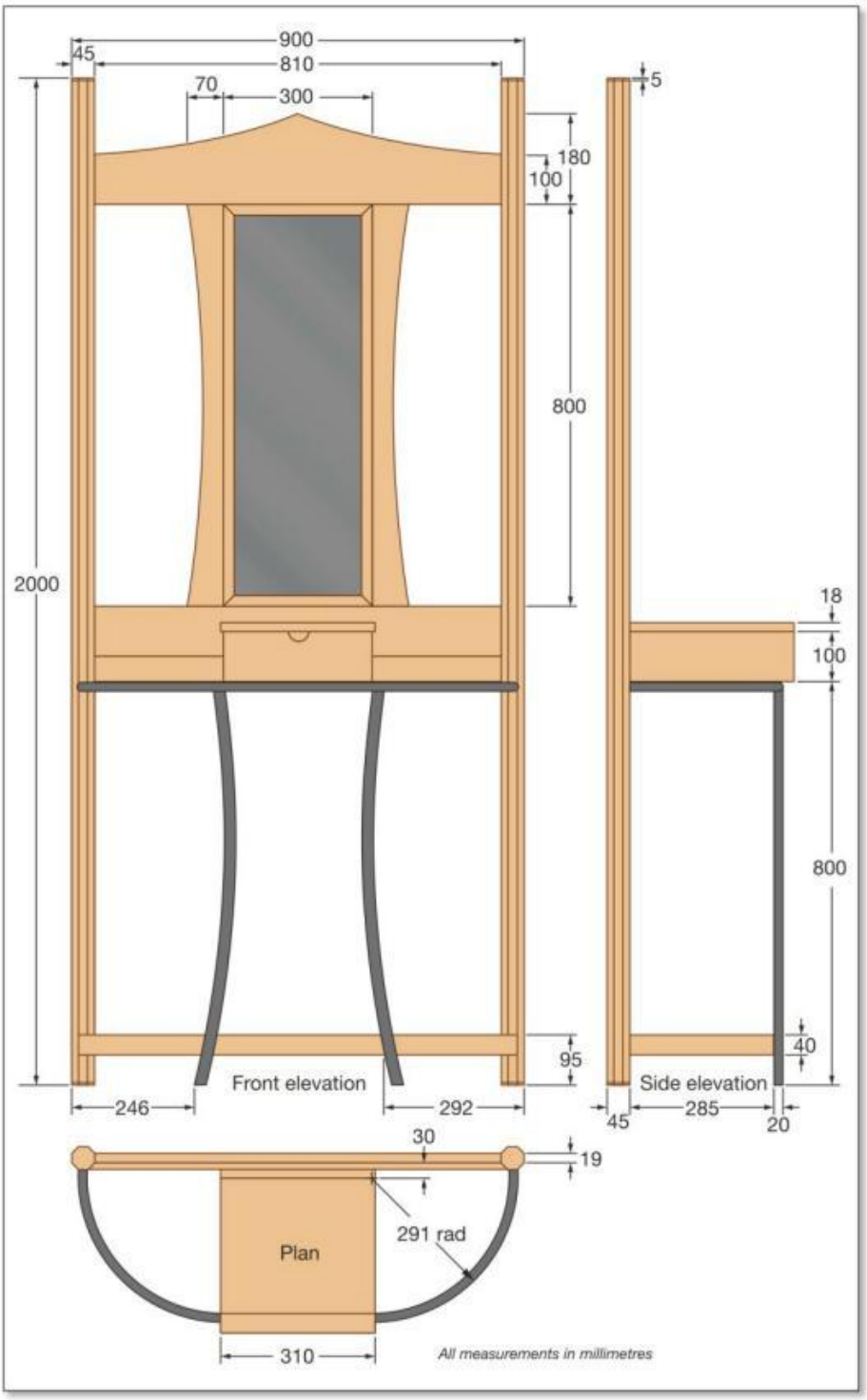
Using the templates and my cutting list, I rough-cut all the parts required oversize and sticked them up to allow them to acclimatise to the workshop. I then brought them down to their final thickness, width and length as needed, **photo 1**.

The back legs of the hall stand are octagonal in section. I created the profile using an adjustable chamfer block in the spindle moulder. You could use a chamfering bit in a router table, but this type of large-diameter block with its tungsten carbide knives gives an excellent finish. I used a scrap piece of the same thickness and width to set the height of cutter before tackling the workpiece. I worked the small chamfers on the tops and bottoms of the back legs with a small hand-held router.

Preparing the mirror frame

The bevel-edged mirror is framed between the top and middle rails, **photo 2**. The frame is assembled with mortise-and-tenon joints which I cut on the hollow-chisel mortiser and the tenoner respectively. With the frame dry-assembled, I then marked out and cut the mortise-and-tenon joints for the top, middle and bottom rail as before.

Once I'd cut all these joints, it was time to shape the mirror stiles. I did this with the help of one of the CNC-cut templates, which I placed on the work and drew round with a



heavy pencil. I removed the waste on the bandsaw, cutting within 1mm of the outside of the pencil line, and fixed the template to the stile with double-sided tape. Using a ½in router and a top-bearing cutter, I then shaped each stile to match the template.

Assembling the mirror frame

The bevel-edged mirror sits in a slim rebate. I could have cut this before assembling the frame, but cutting it afterwards with a bearing-guided rebate cutter worked just as well. I started with the largest bearing that fitted the rebate bit so I could make a light, almost scoring cut to prevent tear-out, and then worked up to the desired rebate size. The corners were left rounded by the router, and I squared them up with a sharp chisel.

The final step was to fit a piece of 1.5mm thick aero plywood behind the mirror and retain it in the rebate with slim oak beading, pinned in place with copper nails.

Veneering the shelf

I used 10mm thick birch plywood veneered with oak for the bottom shelf. I cut the plywood pieces oversize, then butt-joined consecutive trimmed leaves of oak veneer together to make up the width required. I glued the veneer onto the plywood with PVA adhesive and placed it in a heated platen press, which meant the glue set within a few minutes. I removed the veneer tape as soon as possible and then worked the surface to a fine finish with a sharp scraper plane.

Preparing the bottom curve

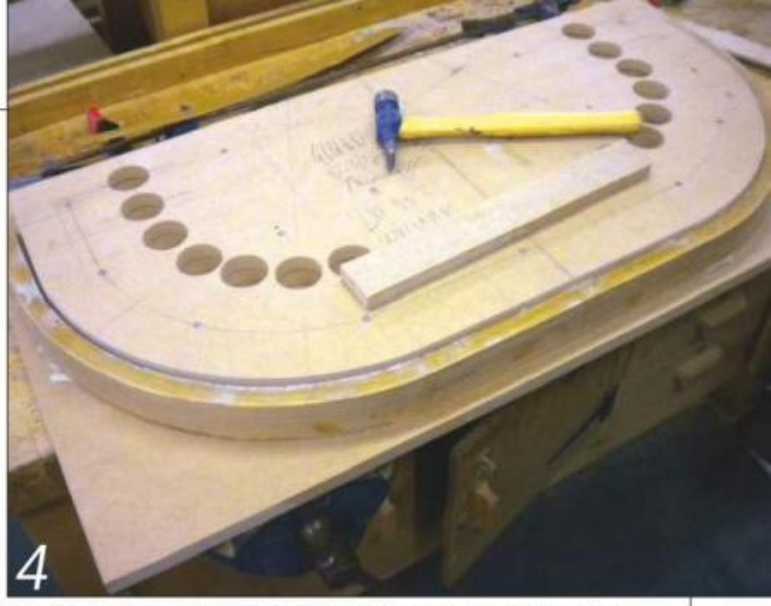
I constructed the former for the bottom curve from three layers of 18mm mdf, screwed together and cut to the same shape as the template. An additional larger piece was mounted below to act as a support for the laminations. This would allow me to push them down tight to the base and ensure that the assembly would turn out straight and free from twist.

From trials I found that I could bend 3mm thick oak to the radius I needed. As I required a rail with a finished width of 40mm, I cut the laminations out of 50mm wide stock, being careful to keep them in order. I then drilled a series of holes in the template to accommodate the inner ends of the cramps, and got them all ready.

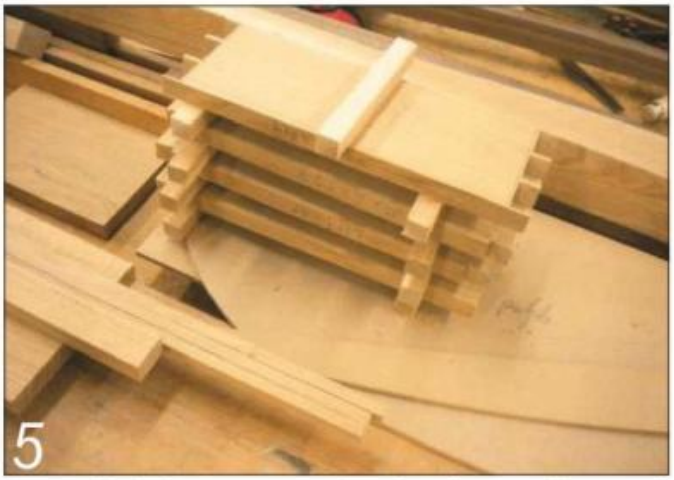
Laminating the curve

I chose Cascamite to glue up the curved laminations, as it doesn't creep once set as PVA wood adhesive tends to do. I applied it with a roller, which gave an even layer with no excess for the cramps to squeeze out. I assembled the laminations in the same order in which I'd cut them, cramped them round the former one by one, **photo 3**, and fitted a thin plywood protective strip to the outside before tightening the cramps.

I cramped the laminate strips that form the curved bottom rail round a former made up from three layers of 18mm thick mdf



The curved rail needed planing and sanding down to its finished width. I trued up one edge with a plane before machining the other one parallel



I prepared the key box components using a dovetail saw, a coping saw and a chisel, plus a small router to remove most of the dovetail waste

Once the glue was dry I removed the cramps, **photo 4**, and trued up one edge of the lamination using a hand plane until this edge was square to the face and totally flat (which I tested on the planer table). With this edge true, I got the opposite edge parallel using a thicknessing sander. I then sanded the opposing edges until I achieved the final 40mm width I wanted.

Fitting the bottom shelf

The curved and straight bottom rails were both connected to the hall stand legs using mortise-and-tenon joints. I cut these by hand, tested their fit, and then routed a groove along each rail to hold the shelf. I cut this on the overhead router using a bearing-guided slot cutter.

I was now able to trim the bottom shelf to fit and cut the holes in it for the two metal drip pans. After sanding everything to 240 grit and pre-finishing the bottom shelf, I glued the assembly to the legs using a ratchet strap cramp.

Making the key box

With the parts dimensioned for the key box, I marked out the dovetails and cut them by hand using a dovetail saw, a coping saw and a chisel, **photo 5**. To speed up the process, I used a small router with a side fence and a long 6mm cutter to remove the waste between the pins almost up to the scribed lines.

Next, I machined a groove to receive the oak-veneered mdf base, being careful to stop before the ends so they wouldn't show on the outside. I sanded the interior surfaces to 240 grit, and prefinished the box so I could glue it up using small sash cramps. Then I cleaned up the exterior surfaces using a smoothing plane, and cut the handle hole using a template and a top-bearing router cutter.

Fitting the lid

I made the lid by edge-jointing two narrower pieces of quarter-sawn oak, cut from the same board. This meant it should have less of a tendency to warp, but I still screwed two battens on underneath to make doubly sure. The rear edge of the lid is hinged to a matching oak strip ripped off its back edge and attached to the rear edge of the box using a few biscuits. Needless to say, I cut the hinge recesses in the lid and the strip before attaching it.

After a final sanding, I applied no fewer than eight coats of Danish oil to all the surfaces.

Basic metalwork

With all the woodwork done, my attention now turned to the metalwork. I bent the 20mm diameter mild steel tube to the desired shape for the top rail using the former around which I'd laminated the bottom rail. I then bent the two front legs round a lump of softwood cut to echo the curve of the mirror stiles. Where the legs met the top rail, I made a half-round cut-out using a 20mm diameter holesaw. This produced a perfect fit, ready for the joints to be made by gas welding.

After cleaning it up and drilling the assembly holes, the metalwork was given a coat of grey primer followed by two top coats of quick-drying black enamel.

Bringing it all together

I drilled the holes in the octagonal back legs to take the ends of the tubular top rail using the drill press and a 20mm Forstner bit, and glued them in place with epoxy resin adhesive. Two holes in the underside of the top rail allowed me to drive screws up into the underside of the key box, which was also screwed to the middle oak rail. Finally, the curved bottom rail was attached to the steel legs using Allen-head set screws driven into drilled and tapped holes.

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BY COLIN SIMPSON

Routing on the lathe 1

I like adding carving and texture to some of my work, as can be seen in the Summer issue of *The Woodworker* where I carved the rim of a platter using a hand-held angle grinder. Now here's a different way of working

Freehand carving enables you to create a more random texture, **photo 1**, but there are times when I want a regimented, exact pattern or texture – for example, when flutes or reeds are required on spindle work, **photo 2**.

Jig design

Some years ago I bought a Trend router lathe. It's not made any more, but it was useful for routing flutes and reeds in spindle work. It also allowed barley twists to be routed on spindles. However, I found it somewhat inflexible and time-consuming to set up and work with. I also wanted to be able to use my router on faceplate work as well as on spindles, and I needed the set-up to be quicker and more flexible. So with some thought and a little research

1
Where an abstract texture is desired, freehand carving is the preferred method

It will also enable you to create other more regimented effects such as these flutes

It's easy to cramp a suitable baseplate to a lathe that has twin bed bars

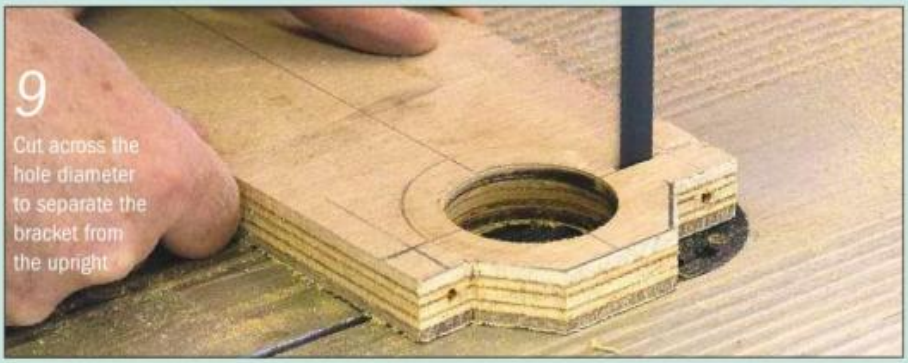
A floor-standing platform such as this is a better bet for non-standard lathes

Use a revolving centre in the headstock to mark the cradle upright

A hole saw is the best tool for cutting the hole for the router collar

Draw the shape of the top bracket on the front upright and cut it out

Drill pilot holes in the bracket, deep enough to run on into the upright



Cut across the hole diameter to separate the bracket from the upright

into the subject, I came up with this simple and inexpensive home-made jig.

Starting from scratch

This jig is designed for use with smaller routers, such as my Trend T4EK, that have a 43mm collar. Ideally the jig should be made from metal (such as aluminium) for strength, but I've found my wooden one to be quite satisfactory.

The first thing to do is to make the baseplate, which will be cramped securely to the lathe's bed bars. If your lathe has twin bars, as is most common, this is quite a simple matter, **photo 3**. You can just see the cut-out area at the rear right-hand corner, which can be removed if the tailstock needs to be moved closer to the headstock.

However, I wanted to use my jig in conjunction with my big old VB36 lathe, which has completely non-standard bed bars (they were an optional extra when I bought it). I therefore decided to construct a floor-standing platform from chipboard and to cramp that to the lathe's base. I used an offcut from a kitchen worktop to form the baseplate, **photo 4**, but 18mm mdf or ply would do just as well.

Accurate centres

Constructing the cradle – the box that holds the router – is a simple process. The actual size (or more specifically the height) of the jig will depend on the lathe and the router you're using. The router needs to work along centre height of the lathe, so measure this carefully.

To avoid errors in this measurement, fit a revolving centre in the headstock spindle. Then position the front upright of the cradle on its baseplate and offer it up to the revolving centre, **photo 5**. Make an indentation in the upright by pushing it against the centre point. You can then use this as the location point for the 43mm diameter hole that needs to be drilled to hold the collar of the router.

Cutting a hole

I used a hole saw in my pillar drill to make the 43mm hole, **photo 6**. However, a saw-toothed or Forstner bit would do the job just as well if you have the right size.

Next, draw the shape of the top bracket and cut this out on the bandsaw, **photo 7**. Alternatively, you could use a coping saw. Before separating the bracket from the front

upright of the cradle, drill two pilot holes in the bracket and check that they're deep enough to run on into the upright part, **photo 8**. These pilot holes will ensure the alignment of the bracket and upright when they're cut apart and reassembled. Now it's back to the bandsaw to cut across the diameter of the hole and separate the bracket from the front upright, **photo 9**.

Bolting through

Enlarge the pilot holes in the bracket to accept two bolts – I'm using the M6 size – and drill a larger hole in each top end section of the front upright to accept a matching captive nut. I used epoxy resin adhesive to stick these nuts in place. A good tip here is to use a piece of clingfilm to keep the glue from contaminating the thread inside, **photo 10**. The rest of the cradle is made from 18mm plywood, cut to appropriate sizes to suit your router and then glued and screwed together, **photo 11**.

Depth-of-cut control 1

With the cradle made I needed a way to control the depth of cut, and I've come up with three ideas. The first is to drive two screws to the bottom edge of the cradle base, **photo 12**. When the cradle is in use, these screws will run up against a template cramped to the baseplate, **photo 13**. The screws can be turned in or out of the cradle base to act as a fine depth control.

By the way, the template doesn't have to be the same shape as the turned work. In fact I think it's better if it isn't, because this means that the routed grooves taper, **photo 14**.

Depth-of-cut control 2

The second method of controlling the depth of cut is similar to the first, but this time the turning itself acts as the template. Cut and fix two small strips of plywood to the front face of the cradle as shown in **photo 15**. The bottom bolts fix the strips to the cradle and the top bolts act as the followers, running against the turned piece.

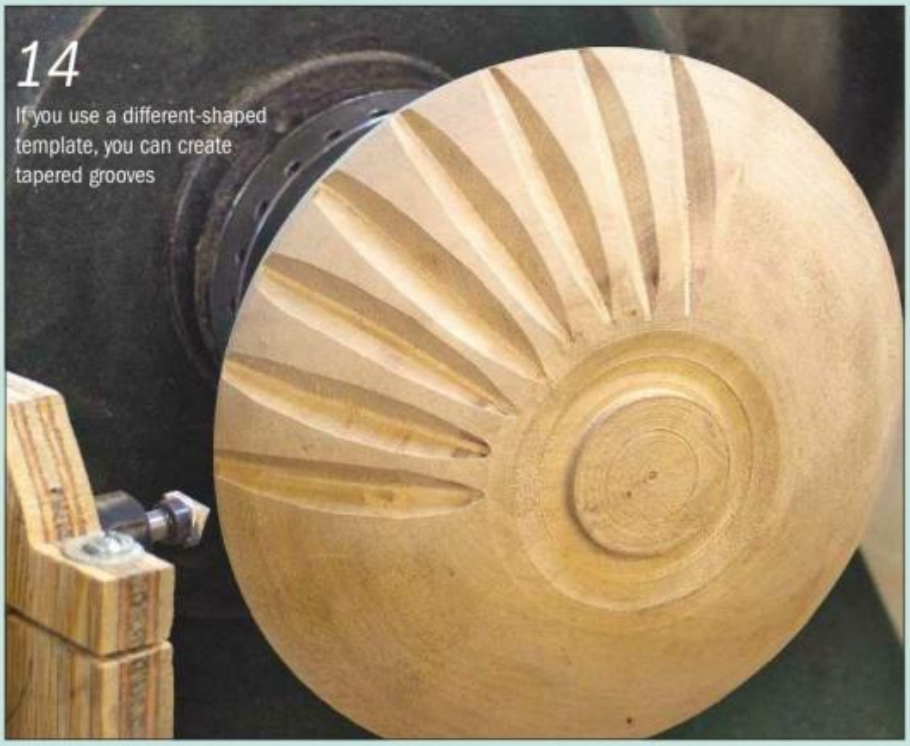
I used a bolt to fix each strip to the cradle because I wanted them to be removable. These bolts screw into T-nuts set into holes drilled in the front of the cradle, **photo 16**. The top 'follower' bolts also screw into T-nuts, this time set into holes in the plywood strips. A hex nut locks each bolt in place (see **photo 15** again), allowing it to operate as a fine depth stop. The complete

Use clingfilm to keep the glue from contaminating the nut's thread

Make up the rest of the cradle from 18mm plywood, glued and screwed together

Drive two roundhead screws part-way into the bottom edge of the cradle base

Cramp a template to the baseplate and run the two screw heads against it



Mount plywood strips containing follower bolts to the front face of the cradle

Use T-nuts to accept all the bolts you want to be able to remove

The completed cradle runs along the centre of the workpiece...

...to create a series of parallel flutes as the blank is rotated on the lathe

This outrigger allows the cradle to pivot and cut a range of arcs

Use T-nuts driven into holes in the sides of the cradle to bolt the outrigger on

Drill a hole for a T-nut in the baseplate to secure the pivot point

The router cuts elegant grooves in the work as the cradle rotates

The finished work is ready to be turned into a decorative box lid

cradle works as shown in **photo 17**, to produce a series of parallel flutes as the blank is rotated from index point to index point, **photo 18**.

Depth-of-cut control 3

The third method of control is to attach an outrigger to the cradle, as you can see in **photo 19**. This is used to pivot the cradle. The series of small holes drilled into the outrigger's side pieces are used to set the radius of the arc, and the hole in the centre of the cross member is the pivot point. Again I used T-nuts in the side of the cradle to bolt on the outrigger, **photo 20**. With the outrigger attached to the front of the cradle you're able to cut convex curves; it can also be attached behind the cradle so the cuts will be concave.

The pivot point needs to be secured to the baseplate, and I used T-nuts again for this, **photo 21**. **Photo 22** shows the outrigger in use, this time cutting end grain for a lid of a box, and **photo 23** shows the completed item.

Coming in part 2

So that's my router jig. In the course of making it I've shown you a few samples of what it can do. Next month I'll make some proper projects with it, as shown below.

BUCKINGHAM WOODSTATION

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The Buckingham Woodstation offers a fast, convenient and very safe way of cutting logs with a chainsaw. Portable and versatile, it saves time and money while making cutting logs and firewood a much simpler job than in the past.

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Another customer said that using a Woodstation halved his logging time compared to using a Fergie logging bench.

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The Buckingham Woodstation allows you to cut stakes and fence posts with the use of a simple attachment that turns the Woodstation into a 'horse' holding the log at the perfect height for splitting and sharpening.

You can also cut smaller diameter wood easily and effectively, which is especially useful for charcoal burning. Even cutting slabwood becomes a pleasure.

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Whether logging is your business, or you cut logs for an open fire or wood stove, the Buckingham Woodstation will make cutting firewood faster and easier than before, and there are a range of model sizes to suit your particular need.

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BY IAN WILKIE

A tiny turn...

If you enjoy making furniture and fixtures for your doll's house, you'll know how many of them are turned. I described recently how to make simple knobs and feet without a lathe, but that method is limited and you will soon want to expand your skills. Here are some ideas...

I'm assuming you have a lathe. Any size will do as long as the headstock and tailstock line up accurately. I'll show you how to hold very small pieces of wood, explain what tools and equipment you'll need and describe one collet system in detail. This is a relatively inexpensive option when compared to a scroll chuck and jaws, and does the job most efficiently.

Collet holders

For starters, you'll need to buy an ER20 Morse-tapered shanked collet holder (£27 or a bit more, depending on size), which preferably will have a drawbar facility, **photo 1**. The collet holder (also known as a collet chuck) has a 1 or 2MT shank which goes directly into the headstock, and the end of the shank is drilled and tapped M10 to take a drawbar. This you make yourself from M10 threaded studding. The drawbar is inserted through a hollow headstock and screwed into the end of the holder to ensure that it can't work loose. The other end of the holder takes the ER20 collets.

Precision collets

ER20 steel collets will hold square or round stock. They're slotted alternately at both ends, **photo 2**, and compress onto the wood when the nose-cone nut is tightened. The tapered body matches the taper in the holder. ER20 collets come in a range of sizes, and are usually listed to show their maximum and minimum holding capacity (in the form 4-3mm, for example). There are some 15 collet sizes commonly available, ranging from 1mm to 13mm, and Arc Euro sell them at £4.99 each. I've found the 6-5mm, 8-7mm and 10-9mm sizes to be the most useful.

A cunning flange

If you look inside the nose-cone nut, **photo 3**, you'll see an internal flange which has been machined off-centre to the main axis of the nut. This is NOT a machining error, as I first thought. Its purpose is to lock into the groove of the collet to aid its release from the chuck holder. Mount the collet into the nut at an angle and turn it slightly until the nut clicks into place on the eccentric flange. The nose-cone nut is only 35mm in diameter, so it doesn't get in the way when turning and has no sharp edges.

1 You'll need to buy an ER20 Morse-tapered shanked collet holder

2 This will hold an ER20 steel collet, which accepts square or round stock

3 The nose cone nut is only 35mm in diameter, so doesn't get in the way when turning

4 Finger-tightening the nose-cone nut is sufficient to secure the blank

5 Fit a plastic cap on the revolving centre's point to protect your hands

6 Start off with two skew chisels, a gouge, a scraper and a parting tool

7 I prefer a skew chisel with a rectangular cross-section as it's more rigid

8 Keep your miniature tools sharp using a diamond or ceramic stone

Mounting a blank

It's most important that the wood blank, whether square or round, is prepared accurately to fit into the collet selected. It should slide in and no force should be used; finger pressure should be sufficient to tighten the nose-cone nut, **photo 4**. Aim to use the whole 30mm length of the collet to get the best grip. Here's the correct sequence of operations.

1. Insert the collet holder into the headstock and lock it with a draw-bar.
2. Remove the nose-cone nut.
3. Select the collet.
4. Mount the collet into the nut.
5. Fit the wood blank into the collet.
6. Screw the collet and blank on to the holder and tighten it.
7. Fit a mini revolving centre in the tailstock for support.

When you've finished turning, unscrew the nose-cone nut and slide out the work from the collet. Tip the empty collet to one side and it should disengage smoothly.

Now here's a word of advice from an old pro! At this point in the operation, fit a plastic cap to cover the revolving centre's sharp point and protect the back of your hand from damage, **photo 5**.

Why not just use a drill chuck? Jacobs-style drill chucks have only three jaws and so don't hold square wood effectively. They also tend to crush the work and can run off-centre. Nor are all drill chucks drilled and tapped to take a drawbar, so they can easily work loose. Stick to your collets for all your miniature turning…

Miniature tools

You'll also need some small-scale HSS turning tools, which all the major tool manufacturers supply. I suggest you start with the following five tools, as shown in **photo 6**, and then build up your collection over time as you need others:

- a 6mm spindle gouge;
- an 8mm wide skew chisel;
- a 10mm wide skew chisel;
- a 1.5mm wide parting tool;
- a 6mm round-nosed scraper.

There is a choice of skew shapes – a rectangular section or an oval section. I prefer the rectangular option, **photo 7**, because it's more rigid and less likely to flex. I like only 50mm of the blade to extend from the tool handle, and if it's longer I drill the tang hole a little deeper. I also prefer a handle which sits comfortably into the palm of the hand.

I know that many people find using the skew chisel difficult, but it's probably because they've been led to believe that it's a tricky tool to use. However, with practice and good control the tool is a pleasure to work with. Do persevere: it's well worth the effort!

9 For really small-scale turning work you can buy sets of micro tools

10 Don't be afraid to cut down and file a tool rest to the profile you want

11 If you need several components of the same shape, use a template

12 Some doll's house pieces require turned legs and stretcher bars

Technical aside

Keeping miniature tools sharp is done using a diamond or ceramic stone, **photo 8**. Remove the burred edge or hone it on a leather strop to get a really sharp tool.

By the way, for really detailed work, Crown and Hamlet both offer sets of micro tools, **photo 9**. These take double-ended blades secured into the handle by a grub screw. They're not essential, but may well be of interest at a later stage in your miniature turning career.

Now here's a final thought before we start turning. I recommend a smooth tool rest which is short and fairly narrow so you can support the work with a finger underneath. I often cut, file and grind an existing tool rest to the profile I want, **photo 10**.

Before you start

Always plan how you're going to make your item first. If you need two or more of the same shape and size, make a template to help you repeat the operation, **photo 11**. Then work out the sequence of cutting and the positions where shapes change.

I can't over-emphasize the importance of preparing the wood accurately. If you take time to do this, you're half way on the road to success. Use fine-grain timbers such as boxwood, lemonwood, pear, holly, sycamore and lime so the grain won't be out of scale with the furniture. Make a few spare blanks to allow for errors; small blanks can disintegrate unexpectedly as you work!

Lovely legs

Many pieces of furniture require legs and stretchers, such as the hall table shown in **photo 12**. Start with 5mm square or round stock in your collet and turn down each spindle to the diameter required.

When I'm turning spindles smaller than about 8mm between centres, I do most of the turning with a skew chisel, **photo 13**. This means that I get a good, clean finish and very little, if any, sanding is necessary.

Some table legs like the ones on this Victorian kitchen table, **photo 14**, have a square section at the top. To create these, simply part off the turned leg, leaving a short stub of waste wood in the collet as shown in **photo 13**.

Turning techniques

Remember that you're working much closer to the work than in full-sized turning. The fingers of your toolholding hand (the control hand) and those of the other hand which steady the blade are very often linked together. Try

13 On small spindles I use the skew chisel for most of the turning work

14 For legs like these, leave the square section in the collet unturned

15 Instead of trying to turn a small spigot, drill a hole in the end of the piece...

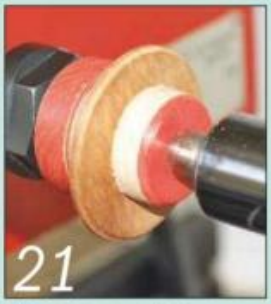
...and glue in a length of bamboo dowel to make a stronger joint

Form knobs and finials on a short length of wood held in the collet

Make small dowelled glue chucks for turning bowls, platters and vases

Fix the blank to the chuck with hot-melt glue and turn it to shape

When you've finished turning, use a parting tool to release the work and remove any glue residue



Use pressure pads to sandwich items such as tabletops for turning

not to be too nervous; if the spindle breaks you'll just have to make another one!

It's useful if your lathe has variable speed, but not essential. I tend to set the speed at 1500 to 2000rpm. Remember to take five small, gentle cuts rather than one aggressive and potentially disastrous one!

Over-sanding reduces the crispness on turned work at this scale. If sanding is needed I drop the lathe speed to 500rpm and use Micromesh in grits 600 and below.

Spigots or dowels?

I've learnt from experience that turning a fixing spigot on the end of pieces such as table legs can result in a weak and badly fitting joint. Instead I use bamboo barbecue skewers which I push through a DIY dowel plate to produce dowels 1.8mm in diameter. I then drill a hole in the end of the spindle, **photo 15**, and glue the dowel in to make a really strong joint, **photo 16**. Bamboo is flexible but very strong.

Knobs, feet and finials can be shaped on the end of a short length of wood held directly in the collet without tailstock support, **photo 17**, and are then joined to their host item with bamboo dowels in the same way.

Turning tableware

There's plenty of scope for turning tiny platters, bowls and vases, and if you pick a timber such as sycamore or lime the items can then be painted to resemble china.

When it comes to turning items like these, I make small glue chucks from hardwood about 20mm thick and 30mm in diameter, **photo 18**, and fit a dowel shaft that can then be held in the collet.

Drill a hole 8mm in diameter and 12mm deep hole dead centre on one face of the chuck and glue in a dowel 8mm in diameter and 40mm long. This produces a strong and reliable glue chuck which costs just a few pence to make. The small blank to be turned is then hot-melt-glued to the chuck face and turned to the desired shape, **photo 19**.

When you've finished turning the item, use a thin parting tool to free the wood from the glue chuck, **photo 20**, and clean off any residual adhesive so it can be used again.

One last trick

You can turn larger items such as the outer edge of a circular tabletop by holding the wood between two pressure pads. Make a glue chuck for the headstock, and fit a tailstock disc with a centre pop to locate the point of the revolving centre. Cover the inner surfaces with thin rubber to give a good grip. With one pad held in the collet and the other in the tailstock, **photo 21**, the thicknessed table top can be securely sandwiched ready for turning. Simples!

LITTLE WHEEL SPIN AND SPIN

This 1:12 scale spinning wheel was made in boxwood and consists of 30 separate pieces, most of which were turned. I hope this article will inspire you to have a go at making at something similar yourself!

FURTHER INFORMATION

Collet holders and collets

- Arc Euro Trade
- 0116 269 5693
- www.arceurotrade.co.uk
- Axminster Tool Centre
- 03332 406406
- www.axminster.co.uk

Micro turning tools

- Crown Tools
- 0114 261 2300
- www.crownhandtools.ltd.uk
- Hamlet Craft Tools
- 0114 232 1338
- www.hamletcrafttools.co.uk

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The editor embarks on a long-term assessment of some quality machinery

Hammer
A3 26 planer thicknesser

I don't recall exactly where it was, but one thing I do remember about using a planer thicknesser for the first time was a feeling of absolute wonderment. Take a ropey-looking piece of timber, feed it into the machine and lo and behold: there's a brand new piece of wood. It's no surprise that such equipment always seemed to be kept in sealed back rooms, out of sight of the aspiring novice.

I've recently taken delivery of a brand new Hammer A3 26, and I'm reliving those early feelings of joy and wonder. The thrill of pulling off layers of wrapping to reveal the dull shine of newly-machined surfaces and the smell of grease and oil never really goes away.

Free engineer included

The new kit was accompanied by – in fact, actually wheeled in by – engineer Richard Radbourne, the official representative of Hammer's parent company, Felder. Apparently this is a standard service for new Felder kit, and ensures that the machine is correctly and safely connected to a suitable power supply, accurately set up and fully tested for functionality. The customer also gets a good sense of the professionalism of the company and a demonstration of its commitment to quality, right from the start.

Plane and simple

Despite being a complex machine, a planer thicknesser is pretty straightforward to use. You set the fence, guard and hood for planing, check the depth of cut and then just pass your board over the cutter block.

The Hammer machine is easily reconfigured to thicknessing mode by twisting two lever locks and simply lifting the planer tables into a vertical position. Although made of heavy cast iron, these are spring-assisted and lock easily into place. The hood is flipped over, activating the safety cutout switch, and then it's just a simple case of hooking up the extraction and setting the rise-and-fall table to the required thickness.

Absolute accuracy

Unlike my previous machine, the Hammer seemed to radiate accuracy, and it was with complete confidence that I undertook my first machining task, thicknessing some 18mm birch ply door components to width on edge. I'd sawn these to just over 80mm, passed them over the planer to square one edge, and was now able to put them through the thicknesser to produce a consistent 80mm width, with no variations and no snipe either! This was a far cry from recent experiences with my old machine, and I came close to jumping for joy at how easy it was to produce accurate work, while kicking myself for not taking steps to achieve it sooner.

If this is the shape of things to come, it's a shape I plan to stick with. This ongoing review will continue in future issues of the magazine, and we'll see how it measures up to some heavier and more demanding work. In the meantime, I'll be cleaning off the A3 26 after every use, and making sure it's tucked up safely before I head for bed!

The tables can be raised for access to the three-cutter block...

...which is safely covered in use by the extractor hood and guard

The thicknesser table has a simple raise mechanism which locks into place

Richard the engineer checks the machine's accuracy once he's installed it; it's spot on!

FURTHER INFORMATION
- Felder UK Ltd
- 01908 635000
- www.ukhammer.co.uk

Although still classified by Axminster as a 'trade' model, the SBW 3501B looks like a very credible saw. If you want a saw that has good build throughout without having to buy into a bigger machine than you need, this trade-rated model certainly has some excellent features

Axminster SBW3501B bandsaw

£798.50

There's often a tendency for lower-priced machines to have more bells and whistles than a higher-priced model, but this bandsaw from Axminster has a bit of both. This could be down to it sitting within their 'trade' classification and being specced up at the manufacturing stage to meet their own ratings. As a result you get a saw that's quite pricy, but that's counterbalanced by the overall build quality and some very user-friendly attributes.

Speed and capacity

This is a single-speed machine, so if you're an experimental woodworker looking to utilise other materials within your work, the 800m/minute speed may be limiting, especially when working with plastic where heat and friction can fuse and melt the material.

It has decent capacities for stock, although the 340mm throat clearance drops to 300mm with the fence in place. However, wide ripping is normally the domain of a table saw, so it's only on larger intricate curved work where you need a big throat capacity. The wheels are cast aluminium and are well balanced, which makes for a smooth-running and quiet machine.

Perfect tension

A look inside shows a decent-sized tensioning spring, adjusted from the top with a knob and backed up by the inclusion of the now almost standard tensioning lever at the rear for fast slackening off and re-tensioning if required for blade changes.

There is a tension indicator, but it's located at the back of the machine so any setting you make needs has to be done from there. It's better to be able to do this from the front of the machine, so you can rotate the wheel as you check it's tracking correctly, but this is a minor quibble.

Good guides

Setting up the blade guides is well implemented with easy adjustment both above and below the table. Thumbscrews nip up any settings, although you need a pretty strong grip to get a decent purchase on them as they're quite small. A nip-up with a pair of pliers might prove beneficial here to ensure nothing slackens off during cutting.

The fine adjusters for the upper guides allow the side and thrust

The guide post adjusts on a smooth rack-and-pinion mechanism

The upper guides are tightened off with small thumbscrews

The lower guides also have thumbscrews; there's good access to them

A standard mitre slot allows aftermarket accessories to be fitted

bearings to be adjusted for maximum support after blade changes.

Height adjustment of the guide post is very fluid as well, using a solidly constructed rack-and-pinion mechanism with a side winder knob, along with a useful cursor and rule readout for positioning it to suit your stock.

Blade swapping is through the side of the table, so there's no need to remove anything to get the blade out, although it can be a bit tricky to twist the blade out of the guides if you don't back them off first.

Making cuts

The minimum blade width of 3mm is ideal for intricate curves, and while the 19mm maximum width won't break any records, it still managed to make veneer cuts in deep stock close to its capacity. However, around 150mm is its comfortable limit if you're looking for a deep rip on a regular basis.

The fence locks very firmly with a cam lock at the front and back of the table, and at 508 x 90 x 40mm it gives good support and makes consistent rips without drift.

Top table

The table tilt assembly is very solid, with a plate sitting on the fabricated casing and a pair of cast trunnions set wide apart to give great support. It lacks a rack-and-pinion mechanism, but it moves freely and holds firmly as the locking knob offers good purchase. The tilt range will prove useful for anyone looking to speed up jobs such as dovetail pin cuts.

The finish on the table is excellent, and with a standard 19 x 10mm mitre slot you can use aftermarket accessories such as featherboards or upgraded mitre fences; however, the supplied fence is of excellent standard.

SPECIFICATION

MOTOR	550W
TABLE SIZE	500 x 356mm
TABLE TILT	-5° to 45°
BLADE LENGTH	2552mm
BLADE WIDTHS	3 to 19mm
CUTTING SPEED	800m/min
THROAT WIDTH	340mm
MAX DEPTH OF CUT	200mm
EXTRACT OUTLET	100mm
WEIGHT	84kg

ACCESSORIES mobile base (£89.95)

VERDICT

This trade-rated model is very well built and has some excellent features.

PROS
- Good cutting capacities
- Easy guide adjustments
- Quick and easy blade changes

CONS
- Single speed reduces versatility
- Rear tension indicator

VALUE FOR MONEY ■■■■■□

PERFORMANCE ■■■■■□

FURTHER INFORMATION

- Axminster Tool Centre
- 03332 406406
- www.axminster.co.uk

Rip cuts were consistent, with no drop in power under a steady load

Wide-set cast double trunnions provide a very solid work surface

A solid locking fence 508mm long offers great support to the work

Blades are changed easily through the slit in the side of the table

Getting hold of one of these nail guns for review has been a long process. It was launched in December of last year, and it's taken us six months of cajoling to obtain it. So is it worth its weight in gold?

DeWalt DCN690M2 18V framing nailer

£559

The first thing most users will comment on is the weight of this tool – 4.1kg with the battery fitted. It will undoubtedly be compared to the best-selling gas nailer, the Paslode IM350, which is some 750g lighter than the DeWalt and about £90 cheaper.

We decided to put the new nailer though its paces by assembling the initial stud framing for an extension to a summerhouse. The stock was bone-hard CLS timber with dense knots and hard grain.

First impressions

On first firing, the recoil seems a little more pronounced than with a gas-powered gun, but this is only to be expected as gas guns rely on an explosion to generate the power, compared with the DeWalt's purely mechanical operation.

The gun needed to be held firmly against the work to ensure consistency, as any weakness in the force applied occasionally left a nail or two sticking up by a couple of millimetres. That said, it seemed to be operator error, as when the gun was held more firmly against the work it drove the nails fully home… and well below the surface if the adjuster for depth setting was fully cranked up.

Blowing hot and cold

The DeWalt's mechanical operation is an important factor when dealing with the weather. Gas guns can be temperamental in cold weather, especially below zero when the gas doesn't expand enough to fire correctly. There's no such problem with the DeWalt; it works fine down to temperatures as low as -15°C and up to a sweltering 50°C.

Two operating modes

The sequential operating mode allows for precision nail placement, while the bump operating mode provides greater production speed. To maintain the bump feed the recommendation is to limit it to shorter nails; we did a run with 63mm ring-shank nails into softwood, and were able to fire at above the stated rate of two fixings per second – an amazing achievement!

Coping with jams

There is of course, some maintenance required on any nailer, nail jams being commonplace. DeWalt have some clever diagnostics on this gun, with indicator lights to show when it needs attention.

A top-mounted lever is used to reset the gun if it jams and the firing pin locks before completing a cycle. Should a nail get stuck, the magazine comes away for easy access to the nose to remove the fixing.

While framing up the entire studwork for the summerhouse extension, we didn't experience a single jam or a misfire where the nose is depressed but the gun doesn't actuate; it really is that consistent. We fired about 200 90mm nails as part of the construction, and the battery still had three of the four lights on. This really is a remarkable gun!

The nailer is supplied with two 4.0Ah 18V batteries and a fast charger

This lever swaps easily between bump and sequential firing modes

If the firing pin jams because of a misfire, this lever resets it

The nailer coped easily firing 90mm fixings into hard CLS studding

Summing up

There are a couple of other important things to note. Firstly, the brushless motor makes this a compact machine and plays its part in enabling it to fire so impressively while still being smaller than the Paslode gas gun. However, it's the size from the nose tip to the back of the tool that really hits the spot; it's just small enough to slip between studs at 400mm centres, so any nogging work can be direct fixed through the studs rather than being toe-nailed.

Secondly, any gas gun has to have the cost of gas factored in, and the inevitable maintenance and weather issues have to be considered too. The DeWalt has no other costs involved, needs minimal maintenance, works in hot and cold weather, and is also quieter in operation.

The seven-year wait for this tool to arrive has been undoubtedly been worth it. Although it's expensive, the price often ceases to matter when you need a tool to pull its weight. This one certainly does…

SPECIFICATION

BATTERY	18V 4.0Ah Li-ion
NAIL DIAMETER	2.8-3.3mm
NAIL LENGTH	50-90mm
MAGAZINE CAPACITY	up to 55 nails
MAGAZINE ANGLE	30-34°
WEIGHT	4.1kg

ACCESSORIES 2 batteries, charger, non-mar tip, belt/rafter hook, carry case

VERDICT

It's an amazing feat of technology to have created a cordless tool capable of firing 200 90mm nails fully home without missing a beat!

PROS
- Stunning performance
- Simple to use
- No additional costs

CONS
- Rather heavy
- Rather pricey

VALUE FOR MONEY

PERFORMANCE

FURTHER INFORMATION

- DeWalt
- 0700 339258
- www.dewalt.co.uk

Being able to nail in between studs 400mm apart is a major advantage

The depth of drive is adjusted easily with this rotating wheel

A soft non-mar tip covers the nailer's nose for finer finish nailing

This onboard hex wrench is used to remove the nail clip if a nail jams

Dremel's multi-tools are incredibly useful machines capable of tackling lots of small (and not so small) tasks. This model combines powerful cordless performance with rapid charging and comes with a good range of accessories

Dremel 8100 7.2V cordless multi-tool

£79.99

A Dremel multi-tool is a remarkably useful machine. It may appear to be primarily aimed at modelmakers (and of course it's ideal for the purpose), but it can also do so much more. Engraving, sanding, cutting, polishing, routing and even chainsaw sharpening can all be achieved with a Dremel, and its compact size means that it can be used in tricky situations where no other tool can go.

A neat design

This is not the first cordless tool that Dremel have produced. However, earlier versions tended to be rather large and cumbersome. In contrast the 8100 could not be neater. It's a little larger than its mains-powered counterpart, but it's well balanced and comfortable to grip thanks to the soft rubber inserts. On the top is the sliding power switch and in front of it is the spindle lock button. Tool changing is easy, as the new EZ Twist nose cap means you don't have to hunt around for the little spanner.

Using the tool

Some cordless tools can seem a bit gutless compared to the mains-powered versions, but that's not the case here; the 8100 is eager and capable. The sliding power switch is particularly good, making it very easy to control the motor speed in use. The detailer's grip included is also a useful accessory, making it much easier to hold the tool like a pen for delicate work.

Summing up

There really isn't much to criticise here. The Dremel 8100 does exactly what you would expect. It's well designed, performs faultlessly, charges quickly and is supplied with a good selection of accessories. The soft case provides more than ample space for the tool and charger, and there's a large external pocket for accessories. Overall it's a great little tool.

The EZ Twist nose cap makes changing accessories quick and easy

The 8100 kit includes accessories for tackling a wide range of jobs

The detailer's grip handle fits neatly between the chuck and the body...

...and makes it easier to control the tool precisely for fiddly jobs

SPECIFICATION

BATTERY	7.2V 1.3Ah Li-Ion
OSCILLATION RATE	5000-30,000/min
WEIGHT	400g

ACCESSORIES cutting, grinding and polishing attachments, detailer's grip, fast charger, soft case

VERDICT

This is an excellent addition to the Dremel multi-tool range. It's powerful, convenient and lightweight: what more could you want?

PROS
- Precise speed control
- Quick-change accessories
- Fast charging

CONS
- None

VALUE FOR MONEY ■■■■■□

PERFORMANCE ■■■■■□

FURTHER INFORMATION

- Dremel
- 0844 736 0107
- www.dremeleurope.com

If you're involved in making small detailed profiles for use in doll's houses, architectural models and similar precision work, take a look at this cross between a small router table and a miniature spindle moulder

Proxxon micro shaper

Proxxon continues to cut a unique swathe through the micro tool market, this time with a miniature shaper for table-top routing or spindle type work. It has the same attention to detail of other Proxxon kit, so the quality of components used is high. No low-end adjusters are used, nor is any cutting of corners evident.

Cutters and collets

This machine is designed for miniature work only, and won't take standard small router cutters with ¼in shanks. You have to use 2.4mm, 3mm or 3.2mm shank cutters, so there will be an extra outlay required if you don't already own any of these. A set of cutters won't break the bank, however. You can pick up a set of ten, including a decent range of straight and profiled cutters, from BriMarc for a bargain price of £29.95.

All three collet sizes are supplied with the shaper. These are of great quality – steel rather than the aluminium found with some other makes – and therefore very durable.

Performance limits

You won't be removing masses of stock in a single pass with this machine. The manual recommends taking cuts only 1mm deep, and with a 100W motor this is probably wise as it's not going to be man enough for any heavier work.

A note in the user manual under *Technical data: Power* says 10mins, but nothing else. This may refer to a ten-minute maximum running period before you have to let the machine cool down. This doesn't sound long, but at miniature levels you can do a fair bit of work in ten minutes if you have all your stock ready in advance.

Getting started

Setting up the shaper is pretty simple, requiring the two spanners provided to fit the cutters selected.

The fence has a fixed position at the far end of the cut, with a pivoting end on the infeed side. This allows you to set a cut for a rebate or suitable moulding and take the first cut, then to nudge the

The fence is fixed at one end and can be pivoted on the infeed side

A series of holes allows the fence to be repositioned for cutting grooves

Two small spanners (supplied) are needed to fit and swap the cutters

The table is big enough to cope with wide, flat components

The mitre fence supplied with the table is plastic but works well

fence back on the pivot point to cut a deeper profile.

A set of tapped holes across the aluminium table allows the fence to be repositioned for any grooving work, or to introduce small detail work with veining bits such as when making matchboard panelling for a doll's house.

The supplied mitre fence has a plastic body with an aluminium slider. It isn't the best quality, but it fits well and runs smoothly, and is easy to control for crosscut moulding work.

Guards and adjustments

There's a neat dual-function guard over the cutter that keeps the cutter area safe and also has a fine height adjuster to alter the height of the cutter spindle. A simple hex shaft drops into the opening in the shaper and can be lifted up complete with the guard to allow work up to 40mm deep to pass under it.

Winding the adjuster gives you very fine control of the depth of cut, essential for anyone working to miniature levels. A full turn alters the height by 1mm, and with the lower adjustable collar for zeroing, fractional adjustments down to 0.05mm can be made.

Using the shaper

This little machine does a fine job if you keep within its limits. Cutting a deep profile may take a few more passes than you would normally expect, but the resulting finish and the adjustments available allow the fine degree of control that's essential in miniature work.

SPECIFICATION

MOTOR	100W
NO-LOAD SPEED	25,000rpm
TABLE SIZE	300 x 150mm
COLLET SIZES	2.4, 3 & 3.2mm
MAX WORKPIECE HEIGHT	40mm
EXTRACT OUTLET	37mm
WEIGHT	2kg

ACCESSORIES 3 collets, spanners, extract adaptor, angle stop; set of 10 router bits with 3.2mm shanks (**£29.95**)

VERDICT

This is a stable and well built machine that's ideal for small-scale work, and compliments the rest of the Proxxon tool range very well.

PROS
- Fine control for miniature work
- Good quality collets supplied

CONS
- Needs 3.2mm shank cutters
- Limited cutting depth per pass

VALUE FOR MONEY

PERFORMANCE

FURTHER INFORMATION

- Brimarc
- 03332 406967
- www.brimarc.com

The cutters you use have to match one of the three collets supplied

The fine height adjustment for the collet is responsive and very accurate

The extended shaft allows the guard height to alter while you're cutting

Every woodworker has a favourite plane, but sometimes the original blade no longer works as well as it did. A new blade and cap iron could be the solution, and a replacement set from Veritas should fit the bill

Veritas plane blades and cap irons

$53
(see text)

SPECIFICATION

BLADE/IRON WIDTHS	1⅝, 1¾, 2, 2⅜in & 2⅝in
IRON THICKNESS	⅛in
BLADE THICKNESS	0.1in
BLADE LENGTH	7in
BLADE BEVEL	30°
BLADE STEEL	A2, O1 or PM-V11™

VERDICT

Your old Stanley or Record bench plane can now be upgraded to Veritas quality... at a price.

PROS
- Range of five widths
- Ultra-flat easy-to-prep blade
- No fettling needed to fit them to an old plane

CONS
- No one in the UK imports them... yet!

VALUE FOR MONEY ■■■■■
PERFORMANCE ■■■■■

FURTHER INFORMATION

- www.leevalley.com

Veritas have already established themselves as manufacturers of quality irons for their premium-model planes, and now that quality is available for retrofits to old Stanley and Record planes. You can buy just the cap iron, or add a Veritas blade in three steel specifications and five blade widths.

We fitted a replacement set in O1 steel to a Stanley No 8 jointer plane to see how it fared. The original double iron had a tendency to chatter on dense timber with interlocking grain, even with the mass of the plane behind it.

Steel structure

The O1 steel used for the Veritas blade is close to the standard high-carbon steel of old. The current crop of ultra-hard steels offer increased edge durability, and A2 versions are available at the same price as O1 steel. If you want to try out the latest type, there's also a Veritas PM-V11 version for an extra $9.

Lapped and ready

As with other Veritas blades, this one has shiny milled upper surface and a dull grey back which has been factory-finished on a lapping machine so it's incredibly flat. That allows you to prepare it in seconds; simply raise a wire edge and back it off. A shiny milled lip on the cap iron ensures a perfect fit between it and the blade.

The new blade and cap iron slipped into our old Stanley No 8 jointer without any modification to the mouth or the need to replace the yoke. That's an important factor; you don't want to start filing mouths excessively or replace parts, especially if all you want to do is upgrade your plane to a higher performance level.

Cutting edge

We tested the new set-up on some lacewood (one of the more demanding of timbers as it can be pretty abrasive, and can easily tear and chip) and on some iroko – another abrasive wood. The edge continued to cut cleanly well beyond the point where the original plane iron would have needed resharpening.

Summing up

This particular combination of blade and cap iron is one that fares exceptionally well. It's a pity that they aren't available in the UK as standard stock. You have to order them from Canada, which adds shipping to the bill, but that's the only drawback. It'll still cost a lot less than buying a new Veritas plane!

The fit between cap and blade is perfect, ensuring excellent performance

The back is so flat that this shine takes only seconds of work to achieve on a fine stone

Edge retention was exceptionally good, as was the finish achievable

Shooting an edge on this ash board proved equally impressive

Cable, pipe and stud detectors often throw up rogue or inaccurate readings. So a new detector that claims to pick up these common buried treasures at some impressive depths has to be a good thing

Bosch GMS 120 Professional multi-detector

The GMS 120 is a multi-material detector with three buttons that select 'drywall', 'metal' or 'live cable' modes depending on your requirements. The 'metal' and 'drywall' settings are overridden when any live cables are detected.

In 'drywall' mode the detector will pick up objects across the whole range of materials, detecting not only timber and metal studs, but also any non-ferrous metal and even water-filled plastic pipes, as they are still effectively live conductors.

Sound and vision

A series of icons on the display illuminates as soon as a specific material is detected, with indicator bars coming in from either side as you get closer to the object below so you can pinpoint its position accurately.

The centre ring is green when it's first switched on, changes to amber when it begins to detect anything and then goes a solid red once a definite object is identified, flashing if it's a live cable.

In addition there's an audible tone that sounds as soon as something is picked up, and in the case of studs, a centre-line indicator reveals the centre of any stud or nogging for help in making fixings. The audible tone can be used to find the edges of the stud as well.

Using the detector

In our tests the tool successfully and precisely located timber studs, gas and water pipes and live cables in a variety of hidden locations in a typical house.

At around the £85 mark, it's rather expensive for the home user who would probably need it only occasionally, but for anyone working regularly in domestic situations where they may well be making fixings to walls containing buried pipes and cables, it could save a lot of heartache and cost.

With drywall mode selected, the stud's centre line is clearly shown

The icon changes when it detects a non-ferrous gas supply pipe

If you move over a live cable, the ring flashes and the unit beeps

Each mode has its own button, but they all pick up live cables

SPECIFICATION

BATTERY		9V
MAX DETECTION DEPTH	steel	120mm
	copper	80mm
	live cables	50mm
	timber	38mm
WEIGHT		270g

VERDICT

This detector does exactly what it promises accurately and consistently.

PROS ■ Accurate across a range of different materials
■ Visual and audio indicators

CONS ■ A bit pricey for the home user

VALUE FOR MONEY ■■■■■□
PERFORMANCE ■■■■■

FURTHER INFORMATION

■ Bosch Power Tools
■ 01895 838743
■ www.bosch-professional.com

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Stanley No.5 'before & after' photo courtesy Peter Hemsley – The ToolPost

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17. **SIPS18 VOLT Circular Saw** boxed with charger and two Batteries **£75**
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07811 504365 (Wiltshire)

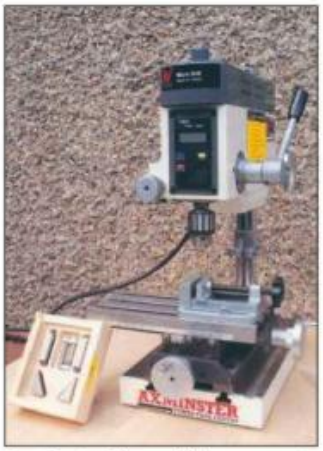
Scheppach hms 2600ci planer thicknesser with uni-drive, needs a little tlc; £460. Buyer collects (it weighs 155kg!).
01295 402902 (Oxfordshire)

Makita circular saw, model 5703K, 1300W, 190mm blade, with rip fence, spanner and plastic carry case, brand new; £100.
Buyer collects.
079511 30694 (North London)

Scheppach TS4000 sawbench, single-phase, 300mm blade, tilt arbor and rise-and-fall system; £499.
0208 337 3534 (London)

Record BS12 bandsaw, little used, in very good condition; £265. Buyer collects.
01744 732217 (Merseyside)

Axminster M330 lathe, spec as for Jet 1014 with indexing, 3 years old but little used as not main lathe; £150.
01787 229017 (Essex/Suffolk)



Axminster Micro drill,compound table and clamp set, one year old, cost £400, will accept £200. Buyer collects or pays postage.
01542 840326 (Moray)

Woodturning sale: Record RPML 300 compact lathe, chuck set, turning chisels, respirator helmet and lots more, all yours for £150.
01253 864443 (Lancashire)

Record combination machine, model Maxi 26, in good working order, will email photos if required; £300. Buyer collects.
07779 483023 (South-west London)

Axminster dust extractor, bag-over-bag model, plus blast gates and all fittings, would suit small workshop; £100 ono.
01376 326022 (Essex)

Eumenia radial arm saw, free-standing model, 8in blade, 3ft 6in arm, 2ft 6in x 2ft 1in table, very accurate, smooth and quiet in use, little used; £400.
01454 311832 (Gloucestershire)

Scheppach TS4000 saw bench, single-phase, tilt arbor, rise and fall, 300mm blade; £499.
020 8337 3534 (London)

Chip and dust extractor, 4in inlet, 60 litre container, low noise level, in excellent condition; £75.
01777 870309 (Nottinghamshire)

Startrite 351s bandsaw, 14in throat, excellent condition; £300. Scheppach TS2000 sawbench, 10in blade, good condition; £250. Scheppach HMS260 10 x 6in planer thicknesser, good condition; £250.
01443 205469 (Mid-Glamorgan)

Delta 16in scrollsaw, two-speed model no 40-560C type II, in good working order; offers please. Buyer collects.
01247 861645 (West Yorkshire)

Dremel drill press; £15. Dewalt DW753 150mm grinder/linisher plus spare belts; £95. Buyer collects.
01434 682419 (Northumberland)

Record Power lathe, model No 3, plus case of tools; £400 ono.
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WANTED

Large bandsaw wheel for an old Simplex bandsaw (see above), made by Hopton & Co, 126 Euston Road, London NW.
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The sawmill diaries

BY GAVIN HYATT

Phew! Three of the oak logs I bought from a local royal estate seven months ago finally arrived in my yard today. I actually bought four, but the lorry wasn't able to pick the last one up, so it'll have to wait until next week. I don't normally worry so much about collecting logs, as an artic will usually carry 15 or more mature trunks. This one had just three, weighing 25 tons in total!

One hundred and eighty!

I don't usually get so low on my stock of quality oak logs, so it's good to see some here again. I had a look at the growth rings just after they arrived, and toyed with the idea of counting them. Let's just say the little one is around 180 years old and the other two are even older. That's actually quite young for such large trees, but in the area where they grew they get big quite fast, so the estate has a lot of monster oaks. They don't like to fell them when they're this big, but one of these had blown down and the others were considered unsafe. However, they always replace the trees they lose, so I don't feel too guilty about buying from them!

Planning the conversion

Back on the estate, the logs were too large to move to the side of a road so the lorry had to go into the field, which had been far too wet until the recent drier weather kindly intervened. So thank you Mother Nature for growing such beauties, which will yield many thousands of feet of beautiful and durable oak, and thank you too Mr Timber Haulier for your skill in manoeuvring these monsters onto your lorry after cutting each trunk in half – no mean feat in itself!

So have I got a use lined up for them? Yes, of course. I have several orders to fulfil over the next month or two for structural green oak for buildings. However, I'll save much of the cleanest timber to air-dry for joinery and the like. These large logs will yield a good number of quarter-sawn boards, showing off their beautiful rays (or stretch marks, as one of my customers calls them). And one or two of the branch stubs will produce some amazing curves, which will probably go to boatbuilders.

In the meantime...

I was itching to start cutting these special logs that afternoon, but the mill needed a bit of a service. I also had to produce a few ultra-clean European larch planks for a community boat restoration project, and these were to be picked up by their courier the following day. Little orders like this don't pay the rent, but it's very satisfying to know that I've supplied something few other yards could offer. And I get just as excited about top-quality softwoods as by hardwoods. Clean slow-grown larch can have a beauty and variety worthy of any top-quality woodwork.

Now, how shall I move these colossal oaks onto my mill?

Have car, will travel

After last month's home-made touring caravan extravaganza, *The Woodworker* is still on the road, albeit pedalling furiously to catch up...

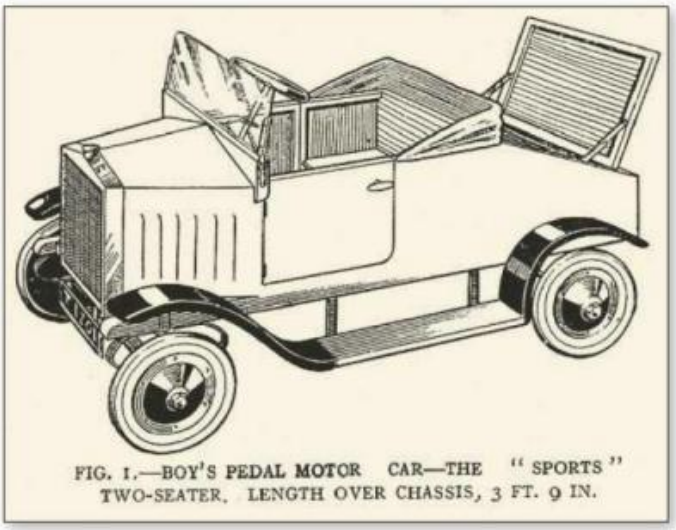

FIG. 1.—BOY'S PEDAL MOTOR CAR—THE "SPORTS" TWO-SEATER. LENGTH OVER CHASSIS, 3 FT. 9 IN.

TWO-SEATER PEDAL CAR
A LUXURIOUS TOY

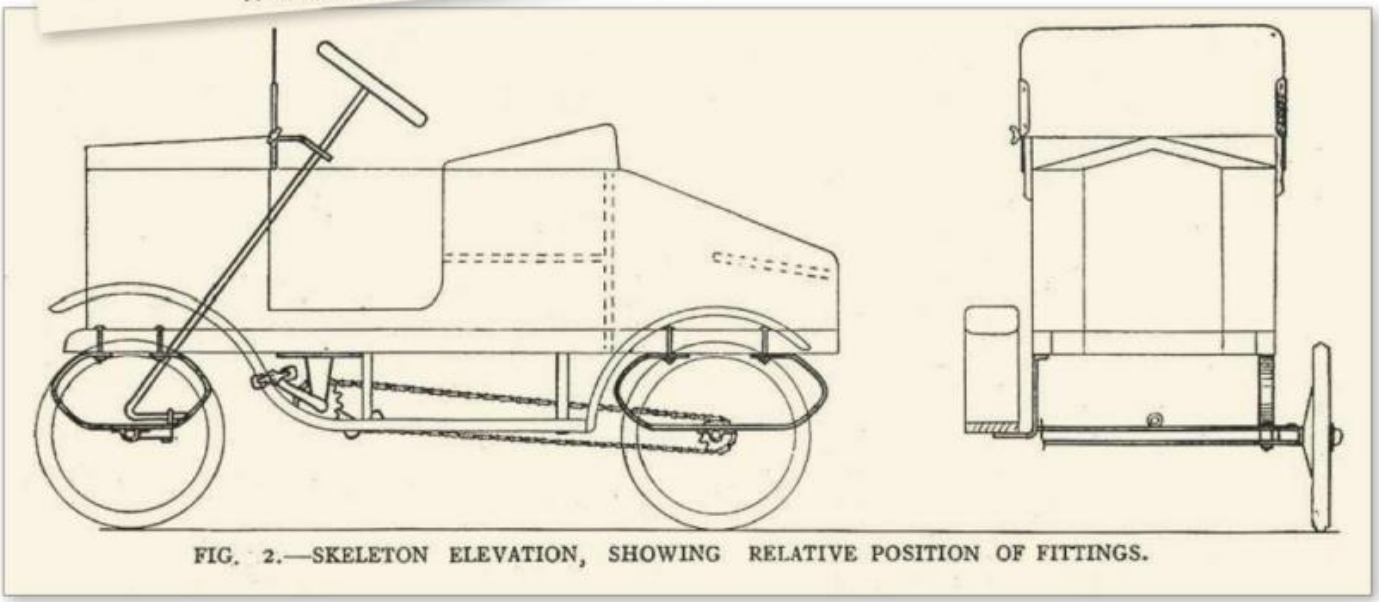

FIG. 2.—SKELETON ELEVATION, SHOWING RELATIVE POSITION OF FITTINGS.

I bet I wasn't the only boy who dreamed of – and spent hours designing – the perfect go-kart / soapbox racer that would whizz around the smooth tarmac paths of the local park or even, conditions permitting, fly down the steepest hill before pulling to a smooth and safe stop outside the sweet shop for a refreshing ice lolly (Zoom if hot, Fab if not).

The model illustrated here from the pages of *The Woodworker*'s May 1930 issue is, despite the lack of a gold-plated Spirit of Ecstasy adorning the bonnet, pretty much the Rolls-Royce of pedal cars available to the ordinary family of the day.

A man of many talents

Although the resurgence of interest – and actual participation – in making things and handicrafts generally is well under way, I don't think we're quite yet at the stage our forebears achieved when it comes to being handy with tools. Back in the day, the average householder was assumed to be – and in all probability was – competent in all of the major constructional disciplines, metalwork and engineering included. This goes some way to explaining the inclusion in this project of front axle steering, rear-wheel chain drive (what, no gears?!) and full sprung suspension.

The accompanying text states that all the metal fittings and accessories 'may be obtained from The South London Wheel and Rubber Tyre Works Ltd of London SE1', but this is still a job today's handymen and women probably wouldn't undertake lightly.

Rough and tumble

I particularly like the inclusion of the rumble or dickey seat behind the driver, and just retrospectively hope that no harm came to the cars' youthful occupants through a combination of natural exuberance, the benign road conditions of the day and especially the absence of any braking mechanism beyond the fixed-wheel chain drive system.

For me this will always be a 'desert island' project, but if any reader has any experience of such a vehicle, whether it be making, driving or just remembering it, please drop me a line on the email, and we'll see what we can do by way of reward.

Mark

More from The Woodworker archive next month...

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