

Issue 316 • March 2017

# Good

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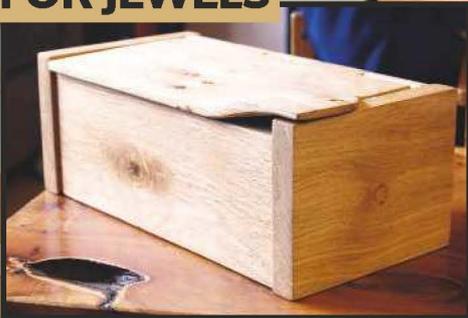
# Woodworking

The No.1 magazine for aspiring designer makers

## JOHN BULLAR GOES TO DOVETAIL EXTREMES

SINGLE & VERY FINE

A HOME  
FOR JEWELS



PETER HARRISON'S PIPPY OAK  
JEWELLERY BOX FEATURES  
A CLEVER INTEGRAL HINGE

PLUS...

- Les Thorne turns a cog-inspired box
- Peter Bishop's guide to mortisers for woodworkers
- Shaun Newman completes his mediaeval fiddle build



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# Welcome

To say this month has been an emotional roller coaster would be something of an understatement, but these things are sent to try us! For those of you who I didn't send a grovelling email to, explaining my pains and woes, then lucky you! Yes, unfortunately I suffered the misfortune of a broken hard drive and as I write this, I'm currently waiting to see what, if any, of the data can be restored and returned to me. To all of you who are reading this, please make sure you back up your data, especially if it is not replaceable, and make sure you do this regularly! Do not, as I did, store all your most treasured of information on your desk top, because when the unthinkable happens (and it will happen when you're least expecting it), everything will be lost. I must extend a heart-felt thanks to my authors, all of whom have been incredibly understanding and supportive, but the show must go on and I'll keep you updated as to the next episode in my data-retrieval debacle!

## March madness

Anyway, enough about me. We hope that you enjoy this, our third issue of 2017, and one that will hopefully appeal to all of you in various different ways. Our profiled woodworker this month is American furniture maker Erik Wolken, whose pieces you will either love or hate, or perhaps love to hate? If you're not a fan of colour then they're probably not for you, but if, like Erik, you love playful pieces that are beautiful yet still functional, then read on. Also, gracing the front cover of *GW* this month is John Bullar, who returns with the next helping in his beginners' guide to furniture making series. Moving on to



*Some of my favourite things from this issue*

the subject of dovetails, he takes you through the steps for producing both large and very fine variants - the true test of a furniture maker.

## Article requests

I was also pleased to receive quite a few emails from various readers this month requesting articles they would like to see in the magazine. While we can't promise to make all of your dreams come true, we will do our absolute best, so if there's something we haven't covered before, or could do with re-capping on, do let us know. I'm currently tracking down some shed builds, a xylophone and some rocking horse plans for both magazines - just remember we're only a small team, so do bear with us!

## Calling all young woodworkers

This also brings me nicely on to the subject of our makers' column, which gives talented youngsters the opportunity to share their story. If you know someone who would like to be featured, or if you'd like to be featured yourself, then do email in. At *GW* we're extremely passionate about championing young talent, but we don't always have our finger on the pulse in terms of who's out there, so that's where you come in. So whether you or the person you know is a furniture making student, an apprentice, or just someone who likes to make things out of wood, do get in touch and make your, or someone else's voice, heard. Who knows, you could make someone's day..

*Tegan*

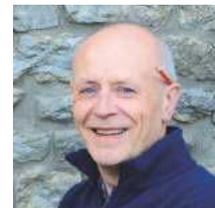
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*We endeavour to ensure all techniques shown in Good Woodworking are safe, but take no responsibility for readers' actions. Take care when woodworking and always use guards, goggles, masks, hold-down devices and ear protection, and above all, plenty of common sense. Do remember to enjoy yourself, though*



# 62

## Bringing wood to life

Through building functional sculpture, work that serves both a sculptural aesthetic and utilitarian function, Erik Wolken seeks to create rhythm and poetry in each of the pieces he makes

# Good Woodworking

March 316

• TOOLS • PROJECTS • TECHNIQUES • ADVICE

## PROJECTS



### 24 Making mediaeval music – part 2

Shaun Newman completes his mediaeval fiddle build and also shows you how to make a customised case to protect your wonderful hand-crafted creation

### 48 Jewellery box fit for a sister-in-law

Peter Harrison's jewellery box with integral hinge and removable trays features a curved lip on the lid, which helps to make it truly individual and really stand out

### 58 Home sweet home

Jumping to the aid of new home buying family members, Glenn Perry sets about replacing an old, worn out door with a custom-made framed ledge and braced version

### 72 Jobs in spring

With spring almost here, Phil Davy takes the opportunity to fit some simple shelving into alcoves with supporting battens

### 74 Trolley talk

Looking to mobilise his collection of plastic storage trunks, Phil Davy comes up with a clever solution that uses a sturdy piece of plywood or MDF cut to size, which can then be fitted with castors

### 80 Put those cogs in motion

Inspired by his love of the industrial revolution, its old cast-iron machinery and exposed gearing, Les Thorne decides to turn a box that mimics one of the cogs that would have been on show

## TECHNICAL

### 22 Top tips for buying woodworking machinery

Alex Dalton, managing director of Daltons Wadkin, takes a closer look at some of the top things to consider when making a woodworking machinery purchase

### 32 Dovetails great & small

Moving on to looking at dovetails, John Bullar goes from one extreme to another – starting with a single large dovetail to examine the basic principle, and then a row of very fine dovetails, which can test the skill of a furniture maker



### 38 Mortisers for woodworkers

In the next part of his beginners' guide, Peter Bishop discusses the topic of mortisers as well as offering his advice and tips on setting them up and getting the best from this handy machine

## PEOPLE & PLACES



### 46 Centrefold

Made using oak, resin, bronze and squid ink, Marc Fish's stunningly unique console table from his 'One Piece' series exudes a seemingly organic, unprecedented form

### 90 Another view of beauty

Join us as we ponder the notion of beauty and suggest a few key points to follow during your woodworking journey

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### Phil Davy tests...

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Devil 900	24.9	£139.98	£167.98
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CBS350	340mm/14"	225mm	160mm	£479.00	£574.80

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CDP102B	350 / 5		£79.99	£95.99
CDP152B	450 / 12		£134.99	£161.99
CDP202B	450 / 12		£179.98	£215.98
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CBG6RSC	HD	150mm	£54.99	£65.99
CBG6SB#	PRO	150mm	£54.99	£65.99
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CSS400C	90W	550-1600	£109.98	£131.98

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Bosch	1400	0-55	£79.98	£95.98
POF1400ACE				
CR2	2100	0-60	£119.98	£143.98

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# Makita extends popular 10.8V CXT power tool range

The Makita 10.8V CXT power tool range is growing in popularity, driven by the very compact size and low weight advantages combined with outstanding performance and durability. For example, the new Makita TD111D impact driver with Brushless motor delivers an outstanding 135Nm of tightening torque yet weighs just 1.1kg with an overall length of only 135mm from chuck to back of body. With performance like this the 10.8V CXT range is proving attractive to all property installation professionals as well as general woodworkers. More new products in the CXT range, which are detailed below, include a stapler, an additional vacuum cleaner and two battery heated cold-weather coats.

## TD111D impact driver

The new TD111D impact driver with Brushless motor and CXT slide battery will deliver up to 3,900 impacts per minute in high-mode with capacity to drive home an M14 bolt. This compact 1.1kg machine features the latest A-mode impact operation, which drives the fixture slowly to begin with until the thread tightening reacts when the full power is switched on to drive the fastening home. This mode eliminates screw cam-out and cross threading, which causes the fixing to fail. In addition, the TD111D has the variable-speed trigger, electric brake, soft grip handle and LED job light. The TD111D is available with charger and two 2.0Ah batteries in a Makpac connector case, or as a body-only machine for those operators with sufficient 10.8V batteries.

## ST113DZ CXT stapler

The new ST113DZ CXT stapler will carry 150 staples 10mm wide of either 7mm or 10mm length. This compact and lightweight stapler can be used in either sequential trigger mode or as a bump fire machine where the striker must hit the material for the staple to be ejected. The anti-dry-fire feature means that if no staples are in the machine it will not 'fire', which indicates to the operator that the stapling action has not taken place. The magazine is plastic to reduce weight and there is a window enabling a visual check on the number of staples remaining in the magazine as well as a trigger lock, LED job light and belt hook. It is only available as body-only.

## CL106FD 10.8V CXT vacuum cleaner

The new CL106FD 10.8V CXT vacuum cleaner has been added to the range, which has a maximum sealed suction of 3.1kPa and maximum airflow of 1.3m<sup>3</sup>/min. This vac has the capsule-type dust holder, overcoming the need for dust bags, and is emptied directly into the waste bin. Fitted with a 4.0Ah battery this vacuum will run constantly for 42 minutes, ample run time for clearing up after a domestic installation or repair job, and comes complete with trigger switch and LED job light.

## CJ102D heated jacket

The new Makita CJ102D heated jacket, with two-way zipper, is available in four sizes from medium to XXL, and has three heat zones across the chest and back, and three heat settings, which are indicated with three LEDs on the left chest pocket of the coat. The lightweight Li-ion battery is carried in a back pocket and the battery holder is removable allowing hand washing of the coat. A USB port on the battery holder enables charging of mobile devices, phones and MP3 players, and the sleeves can be unzipped on warmer days. The new CV101DZ is the vest version of the heated jacket with just two heat zones but identical performance. Both garments have three pockets and run times of 4, 7.5 and 14 hours on the high, medium or low temperature settings.

For more news and info relating to these and other Makita products, see [www.makita.com](http://www.makita.com).



## Midlands Woodworking Show 2017

This fantastic show, which is now in its fourth year, takes place at the Newark Showground on 24–25 March. With 50 companies exhibiting and over 20 demonstrators taking part, including April Wilkerson (pictured below), you can be sure of a great day out. For further info and to book tickets, see [www.nelton.co.uk](http://www.nelton.co.uk).



DIYer and woodworker April Wilkerson has a fantastic following on YouTube – see [www.youtube.com/user/AprilWilkersonDIY](https://www.youtube.com/user/AprilWilkersonDIY)



# YANDLES SPRING SHOW FRIDAY 7th & SATURDAY 8th APRIL 2017

One of Britain's longest running Woodworking Shows, now with a new look. A perfect day out for everyone from Professionals to the Hobbyists. Don't miss out on fantastic demonstrations, Master Classes and Show offers from our top Manufacturers. Visit our Timber Self-Selection and treat yourself to some outstanding timber, bowl blanks and planking all at a discounted rate. Learn some new skills and see what new products are on the market and pick up some great deals.

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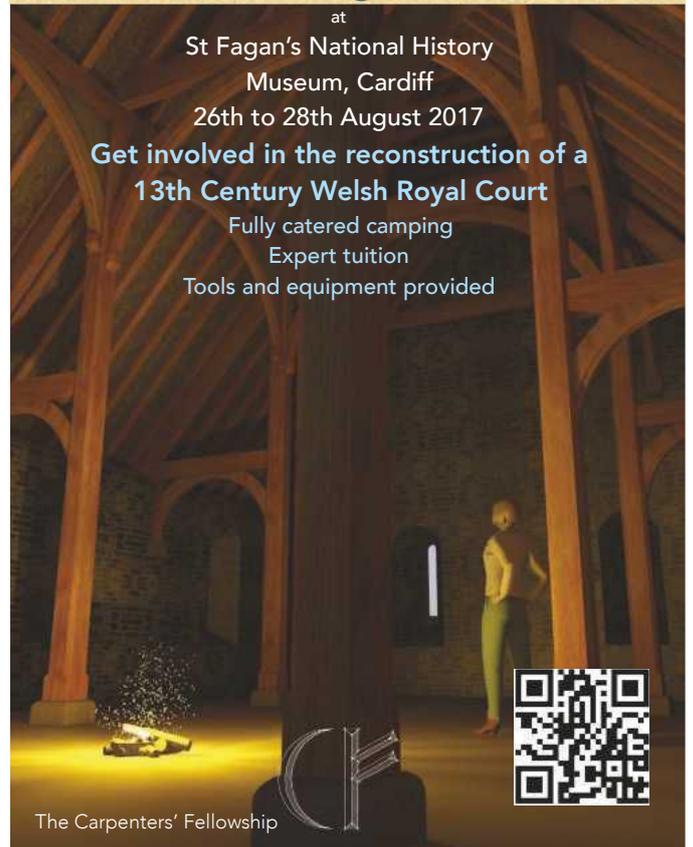
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**Guided Tours:** 3 April - 29 Sept 2017  
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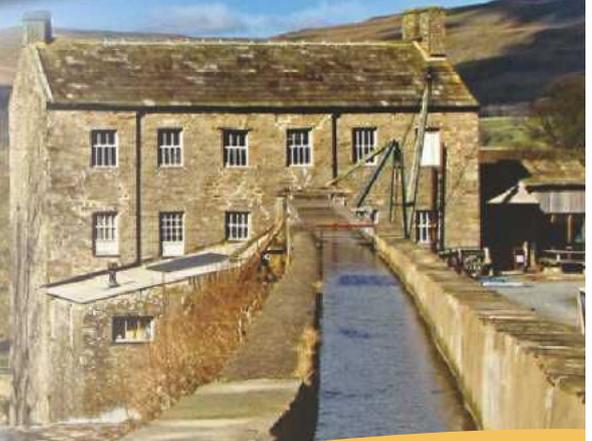
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Gayle Mill, Gayle, near Hawes DL8 3RZ



## Yandles Spring Show 2017 – expect something a little different



One of the UK's longest running and successful woodworking shows – the Yandles Spring Show – is due to have a major makeover this year. Manufacturers and demonstrators will now be mixed together throughout the show rather than being in two separate areas. There will also be several new demonstrators, including Richard Jefferies, Peter Thomas, Mark Anson and April Wilkerson, a well-known vlogger who has over 250,000 followers on YouTube and is flying in from the USA to entertain the crowds.

The Hobby Shop will have a number of different demonstrators attending, covering crafts from paper craft, quilling and card

making, to a demonstration from the Spinners, Weavers and Dye Guild.

New companies such as Yorkshire Grit will be attending for the first time and old favourites Record Power will be showing their next generation lathes. Alongside this will be masterclasses, one of the largest selections of timber to be found at a woodworking show – don't forget it's all discounted from the self selection area during the two days – plus various special show offers, not to mention free entry and parking. Taking place from 7–8 April at their premises in Martock, Somerset, see [www.yandles.co.uk](http://www.yandles.co.uk) for more info.

## Traditional craft courses with Derek Jones

If the only time you get to hang out in the workshop is at the weekend, then why not join Derek Jones on one of his short and sweet classes this year. Each class is project-based, which means you'll be taking more than just a head full of tips and tricks back home with you. Using just hand tools you'll be able to make an exquisite marking gauge, a cunning little Japanese-style tool box, a six-board chest, or brush up on your finishing skills with an introduction to French polishing. All below courses are being held at Robinson House Studio in Newhaven, East Sussex, except for the Moxon vise course, which will be held at the Dictum shop, in Munich, Germany. Contact [derek@lowfatroubo.co.uk](mailto:derek@lowfatroubo.co.uk) for more info or see the website: [www.lowfatroubo.co.uk](http://www.lowfatroubo.co.uk).



## Introducing the SENCO Systainer Mini Compressor

The new SENCO Systainer Mini Compressor allows users to improve the convenience of transport and storage in combination with multiple SENCO Systainer systems as well as other brands. The small but powerful compressor embedded in a Systainer is fully compatible with all Systainer systems storing power tools, accessories and consumables. Embedding the compressor in a Systainer ensures it is properly protected and easy to carry, thanks to the ergonomically shaped handle. Moreover, the mini compressor provides 1HP power, has a tank volume of 4l and a very low noise level. It has front panel access for hose connection and easy read dials. This product is another addition to the SENCO Systainer range, including the 3-in-1 tool set, all due to be tested by Andy King in a forthcoming issue. Priced at £599, see [www.senco.eu](http://www.senco.eu) for more info.



### 2017 dates for your diary:

- 1–2 April: Build a Japanese-style tool box
- 29–30 April: French polishing
- 15–18 May: Moxon vise
- 17–18 June: Build a six-board chest
- 1–2 July: Make a traditional pencil/ marking gauge
- 21–22 October: French polishing
- 25–26 November: Build a Japanese-style tool box
- 2–3 December: Build a six-board chest

## Need workshop space? Call North Corner Makers

North Corner Makers is a brand-new woodworking shop north of Bristol, situated in a quiet semi-rural site about 25 minutes from the city centre, which offers you a place to work with other highly skilled creatives, woodworkers, fine furniture makers, cabinetmakers, designer/makers and crafters. The company, Jim Sharples Furniture, a bespoke furniture making business, has been established for over 10 years and have just taken on a new 2,000sq. ft. workshop, which is equipped with brand-new Felder machines: table saw, planer/thicknesser, spindle moulder and bandsaw. All benefitting from top class extraction, the machines reside in a well organised, clean and tidy space for makers to work, and all workshop users will be asked to attend a site specific machine training induction course, to ensure all kit is used safely.

This workshop space is an ongoing development and the makers who currently rent space will be part of that progress. The future plan is to have a 'library' of woodworking, design and craft books that makers and visitors can use, a spray booth, as well as the ability to hold open studio-type events and run woodworking courses. North Corner Makers will also help to develop and advertise the makers within the space by holding regular exhibitions/open days and forming links with the local community.

There is a strong vision for the future and if you are interested and wish to be part of one of the best equipped workshops around, either email Jim Sharples – [jim@jimsharplesfurniture.co.uk](mailto:jim@jimsharplesfurniture.co.uk) – or call **07786 848 802** to find out more.



An example of the bench space offered



The well-equipped machine shop can be used by all

## Cabinet hardware installations just got a whole lot easier



Fitting handles on to cabinet doors and drawer fronts has never been easier thanks to the Cabinet Handle Jig. Suitable for handles up to 300mm centres, the handy adjustable template on the tool enables users to line up the correct hole positions on the door or drawer front so they can be drilled with precision to install the handle. This prevents errors or misjudged hole positions, and saves a lot of time and effort. Manufactured from aircraft quality aluminium, this jig is extremely durable, a must-have for any toolbox, and is priced at £178.80.

Also available in this range is the larger Cabinet Hardware Jig, which is suitable for fitting handles up to 800mm centres. It can perform the same job as the Cabinet Handle Jig but is also ideal for drilling multiple, evenly spaced holes into wardrobe and cabinet carcasses to install shelves. Priced at £298.80, see [www.ironmongerydirect.co.uk](http://www.ironmongerydirect.co.uk) for a video showing both jigs in action and for more info.

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## COURSE DIARY

Spring is so close we can almost taste it, so how about learning a new skill?

### MARCH

- 2–3 Bee hive making
- 8–9\* & 20–21 Beginners' woodturning
- 13–14 Turned boxes (advanced)
- 14 Fine-tuning hand tools\*
- 16 Taster session
- 17 Introduction to Leigh Jigs\*
- 17 Pen making
- 20 & 24\* Pyrography with Ben Beddows
- 20–21 Bowls & platters\*
- 20–21 Introduction to the small lathe
- 25 Sharpening with Tormek hand tools\*
- 28–29 Machining castings
- 30–31 Woodcarving with Paul Gardner

\* Course held in Sittingbourne, Kent  
Axminster Tools & Machinery  
Unit 10 Weycroft Avenue  
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24–27 Beginners' four-day course

Chris Tribe, The Cornmill, Railway Road  
Ilkley, West Yorkshire LS29 8HT  
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Web: [www.christribefurniturecourses.com](http://www.christribefurniturecourses.com)

4–5 Wood machining

John Lloyd Fine Furniture  
Bankside Farm, Ditchling Common  
Burgess Hill, East Sussex RH15 0SJ  
Tel: 01444 480 388  
Web: [www.johnlloydfinefurniture.co.uk](http://www.johnlloydfinefurniture.co.uk)

4 Spoon carving  
7 Basic drill skills  
25 Introduction to woodturning

The Goodlife Centre  
122 Webber Street, London SE1 0QL  
Tel: 0207 760 7613  
Web: [www.thegoodlifecentre.co.uk](http://www.thegoodlifecentre.co.uk)

25 & 1 Make a Windsor-style stool

Ben Willis Woodcraft  
Stoney Lane Studios, Stoney Lane  
Crystal Palace, London SE19 3BD  
Tel: 07976 287 797  
Web: [www.benwillis-woodcraft.co.uk](http://www.benwillis-woodcraft.co.uk)



## Windsor chair-making courses with Greenwood Days

Greenwood Days is offering five chair-making courses during 2017, each lasting seven days. On the course you will create a Windsor chair using mainly traditional hand tools. Starting with freshly felled timber, you'll shape most parts of your chair while the wood is green and soft using an axe, drawknife and spokeshave and turn parts on the traditional pole-lathe. You'll look at wood selection for steam-bending, cleaving smaller/longer pieces and bending the wood in two planes, using a selection of adze, scorp, travisher and scraper to shape the classic Windsor saddled seat. The courses are suitable for all, from complete beginners to experienced woodworkers and can be tailored to suit individual preferences, but all students will proudly take home an elegant hand-made chair at the end.

### Peter Wood

Peter Wood set up Greenwood Days nearly 20 years ago as a woodland centre for teaching traditional crafts, running courses in a host of different skills. The tutors are all highly skilled professional craftworkers and teachers who share a passion for preserving, promoting and passing on these crafts and techniques. They teach a wide range of students, running day, weekend and week-long courses for the general public, courses for Universities and schools and teambuilding/reward days for companies.

The centre nestles in the heart of Spring Wood (in the heart of the National Forest) in a mature 90 Acre birch woodland and has all the facilities you will need for a memorable time. There's plenty of cover in case of rain, all the tools and materials you'll need, the kettle is always bubbling on an open fire, with tea, coffee, biscuits and a hot, home-made lunch provided.

Peter has been creating traditional and contemporary chairs for 25 years using crafts that date back thousands of years. He shapes green (unseasoned) local hardwoods, working in his woodland workshop using an ancient foot-powered pole-lathe, shaving horse and hand tools to create beautiful furniture. He's taught around the country, including at West Dean College and Rycotewood Furniture Centre, and is also the current world champion pole-lathe turner!

### Course dates for 2017

Dates for this year are as follows: 15–21 May; 19–25 June; 10–16 July; 5–11 August and 2–8 October. Each course costs £525, which includes all materials, use of all the tools and a hot lunch each day. To find out more, see [www.greenwooddays.co.uk](http://www.greenwooddays.co.uk).



## Trend introduce new router table back fence

This new product is complete for incorporation into user-made router tables and features sliding cheeks to reduce cutter aperture size as well as an edge planing facility of 1.4mm and 2.4mm.

It is supplied with top featherboard pressure, a clear safety guard, dust spout aperture and table fixing bolts. The router table back fence will require two slots to accept fixing bolts and a user-made router table will require safety device accessories to be fitted. Now available from all Trend routing centres with an RRP of £77.94; see [www.trend-uk.com](http://www.trend-uk.com) for more info.



## NEWS IN BRIEF

The Royal Parks Foundation's craft workshops give you the chance to rejuvenate, connect with nature and learn some exciting new skills while in the heart of London. The basket making workshop takes place on 4 March or you can attend the flower pressing workshop on 18 March; see [www.supporttheroyalparks.org](http://www.supporttheroyalparks.org) to find out more

There are several Charnwood events coming up in March, starting with the in-store show at Joe McKenna's in Limerick, Ireland on 4 March followed by the road show on 18 March at Snainton Woodworking Supplies. A wide range of machinery will be on display, with a focus on woodturning tools. Finally, you can also see the Charnwood team at the Midlands Woodworking & Power Tool Show from 24–25 March. All events benefit from free parking and free entry, except for the show at Newark – advance tickets can be purchased online via [www.nelton.co.uk](http://www.nelton.co.uk) – or see [www.charnwood.net](http://www.charnwood.net) for more info

Gayle Mill in Hawes, North Yorkshire has a long history as a working mill and throughout its life has been the home for craftsmen and women skilled in working with textiles and wood. Today this tradition is carried on through their expert guides and craftsmen who share this knowledge and skills with the visitors. There are two demonstration tours on 5 March, where you can get to see original 1879 machinery working, and upcoming workshops include 'Hands-on Heritage Wheelwrighting', which takes place on Saturday 18 March. You can enjoy a real hands-on experience in making a traditional steel-hooped hot-bonded cartwheel from scratch, with all participants working as a team of six and together helping to make the hub, two spokes each, a felly, as well as learning to hot bond a steel hooped rim onto the wooden wheel. Priced at £80, which includes all tuition, lunch and refreshments, and if you wish, you even have the opportunity to buy the wheel you have helped to make! See [www.gaylemill.org.uk](http://www.gaylemill.org.uk)

## New Jet pillar drills

Two new pillar drills from Jet, especially designed for the woodworker, are now available as a bench-top model and floor-standing version.

The Jet JDP-15B bench-mounted pillar drill and Jet JDP-15F floor-standing pillar drill have many features in common. These include a generous 80mm of quill travel with one turn of the handle and an integrated depth stop for repeat accuracy of drilling depth. Efficient Poly-V drive belts give smooth, vibration-free running with maximum power transmission, a one-handed, tool-free belt tensioning system allows simple and easy speed changing, and the ABS top belt guard is held magnetically and has an interlocking switch for safety.

The precision ground table easily tilts to 90° left and right, and also has an adjustment to ensure squareness to the chuck centreline. It is extra large and surface ground cast-iron with ample clamping slots and a sacrificial insert. The table height is adjusted by a smooth rack and pinion system, with the control handle being canted away from the table for hand clearance.

The 0.55kW induction motor is firmly bolted to the headstock, which helps to avoid flexing and vibration. A bright, tiltable LED worklight is recessed into the headstock casting, plus there is a cross-hair laser system for centre finding and a comprehensive depth stop system allows precision blind hole drilling, which is accurate every time.

These machines have been designed to fully meet the demands of the woodworker, with ample work support, drilling depth and size capacities. Smooth running and with many unique features, these are hard working pillar drills, designed to perform. To find out more, see [www.brimarc.com](http://www.brimarc.com).



## Clarke petrol generators

Machine Mart is now stocking a new range of Clarke petrol powered generators, which offers exceptional value for money. The reliable PG2500 and PG3800 feature full protective steel frames, easy-start four-stroke engines with oil alert and are manufactured to meet the latest EU noise directives with noise levels as low as 65dBA.

Both feature 2 × 230V 13Amp sockets, which are ideal for powering multiple devices and have large 15l fuel tanks to keep you going for longer – in fact up to 10 hours at ¾ load.

These models are ideal for leisure and light trade use and prices start from £215.98; see [www.machinemart.co.uk](http://www.machinemart.co.uk).



## FREE READER ADS

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**Large quantity of sandpaper (available in various grits).** Also selling lengths of hardwood including ash, oak and mahogany – all in assorted sizes  
**01613 395 101 (Lancs)**

**For sale – various Woodworker magazines** from 1946–2013. All are in pristine condition. A wonderful collector's item – selling due to bereavement. Please call to make an offer; collection only.  
**07847 394 507 (Derbyshire)**

**Poolewood PW40 Superlathe** – 40in centres, 28in bowl turning capacity, 1HP motor with variable-speed change. Comes with purpose-built base for easy, increased stability if required. Full instruction and maintenance manual, plus lathe steady. Buyer collects; £250 ONO  
**01242 517 576 (Cheltenham)**

**Clarke Woodworker 900mm reversible head wood lathe** – in good condition; £135, or willing to part-exchange for a similar bench-top model  
**07979 903 802 (Surrey)**

**Leigh D1600 dovetail jig with metric scales** – also includes user manual and

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# Five-star cutting & shaping

If you regularly carve using an angle grinder fitted with a dedicated carving disc, then this new range from Rotarex could be just what you're looking for



The starting point for my carving disc endeavours

I'm always game to try something new, so why not have a go at using an angle grinder fitted with a carving disc? These ones from Rotarex certainly look like they could do some serious work!

With four different profiles available, the stainless steel RC 115mm disc will be familiar to those who are aware of the Arbortech discs, as this is basically a clone of that particular design. This is a tried and tested design and

features six resharpenable cutting teeth with chip limiters to help eliminate kickback while still cutting quickly, but it's the three black discs that are the eye-catchers of the range.

## 'Black Mamba' discs

The black coating, or 'Black Mamba' as it's called, is the non-stick Teflon of its type, which is designed to help keep the cutting teeth free of debris as they work. It's the cutting teeth that



The Universal disc also has a single row of teeth on the opposing face



It didn't take long to achieve the basic shape – The Turner Prize awaits!



The lopsided head now sports what looks like long hair at the neck...



... but it's actually the fins of my attempt at a shark – or maybe a mullet in this case!

I was a little apprehensive of when I first saw them – a stitched tooth rasp style that although aggressive and very sharp, when working at speed in a grinder, I was expecting to clog easily despite the coating. I was soon proved wrong when I was asked to demo them at a recent open day, using them in a 7,000rpm DeWalt battery grinder (see review on pages 19 & 20). The discs can operate at up to 13,000rpm so are suitable for mains machines as well, but 7,000rpm was certainly fast enough to assess just how efficient they really are.

The three Black Mamba discs all feature the rasp tooth stitched pattern with each having a different profile to allow for plenty of choice in terms of what cutting tasks you choose to use them for. The smallest diameter RX90 disc features a cylindrical profile with teeth on the outer rim, which makes this particular one especially suited to the cutting of deep recesses and rebate-type work.



The RC disc is a design familiar to anyone who's aware of the original Arbortech disc

## R2 115mm shaping disc & R4 115mm Universal disc

The R2 115mm shaping disc has a dished profile with four rows of teeth with the dishing a perfect shape for shallow recessing on Windsor chair seats, for example, as well as general shaping and profiling, but the most fearsome of all is the R4 115mm Universal disc. As with the other Black Mamba options, it's made from high carbon steel for durability. 4mm-thick and with an array of saw teeth around the perimeter, it looked like it could be a difficult beast to control...

Putting it to use, I found my original assumption couldn't be further from the truth, as whether shaping with the rasp teeth on the face or plunging in with the saw teeth, it cut superbly with no kickback in sight and was incredibly easy to control.

Pushing into and pulling across the work I was able to carve out chunks and shape very quickly and by controlling the drag, the finish that it left can be pretty smooth; certainly good enough to attack with coarse abrasives straight off the bat after you've achieved the shape you need.

The timber I used was unseasoned, so if the discs were likely to clog then a wetter, sappier waste would be more likely to do so, but during the entire time I used them, they stayed clog-free and sharp.

### In use

My efforts in demoing were, as per usual, all on the hoof, with no design thoughts whatsoever! The log I was given had a huge knotty projection that looked like it could be made to look like a nose, so I started by hacking out a head shape of sorts. It ended up looking slightly worse for wear after I'd

managed to get some of the features in place, so I spun it round and had a go at making a sort of shark – yes, I was winging it once again!

Even so, the ability to control the discs with such ease made it a very enjoyable experience and I think I've found yet another area of woodworking that I can play around with in my twilight years!

### Conclusion

The only downside with the Black Mamba is that the rasp design prevents sharpening, so they have a finite lifespan of use, but I found that they cut just as well after a few hours as they did right at the start.

If you hunt around they can be picked up for less than the typical price stated here. I'd definitely recommend giving them a go if you like to do a bit of rough and ready carving and shaping – just don't forget to keep the grinder guarding in place at all times and always wear the appropriate protective equipment. **GW**

### Specification:

▶ **Diameters:** 90 & 115mm

▶ **Typical price:** £24.99

▶ **Web:** [www.johnsonstools.co.uk](http://www.johnsonstools.co.uk)

### THE GW VERDICT

#### ▶ PROS:

Very fast cutting; easy to control; no kickback

#### ▶ CONS:

The black discs can't be resharpened

#### ▶ RATING: 5 out of 5



The RX90 disc will cut deep slots and trenches with ease



The R2 disc features a slight curvature, which will quickly shape profiles such as Windsor chair seats



This fearsome looking beast is the R4, with a sawtooth edge and rasp profile



A single rasp on the opposite side makes it easy to cut in any direction



After a long run of work it still cuts quickly and cleanly with just a light build-up of dust

# The pressure is on



Simple yet effective, these clever clamps are ideal toolbox additions when it comes to standard mitre frame-type work

of the components, as with standard clamps. The issue, of course, is the piercing of the surface by these points as they are indeed very sharp, but the sharpness works in their favour on solid timber and similar stock as they tend to pierce the grain without leaving big dents or blemishes so therefore require very little, if any, filling work. Foil wrapped or pre-finished mouldings would require a great deal more thought by placing the clamps on an unseen area if possible, or in the quirk line where a small puncture may not be easily spotted, but the clamps aren't ideal in this area due to the way they work.

site work on skirtings and architraves alongside standard mitre frame-type work. The downside will be felt by the kitchen and built-in furniture installers where the foil wrapped or other pre-finished mouldings are predominant and need to be kept pristine, but in general applications, where a finish is applied once fitted, these will prove to be a real boon. **GW**

**S**implicity is often the key to successful woodworking and when it comes to clamping, getting things secured quickly plays an important part.

Where sash clamps, speed clamps and variants of these are ideal for general assembly work, securing mitres involves systems all to themselves. With alignment, the key to a good mitre, getting the joint tight quickly is where these simple but effective spring clamps come in.

## Clamps

On a simple, flat mitre a single spring on the outer edge will be sufficient to hold the joint while still allowing it to be manipulated enough so it is fully aligned, but on a wider moulded piece, such as an ornate frame, a compound mitre or cornice, they can be doubled up to pull the moulding in accordingly.

What makes them all the more appealing is the fact they will work on any mitre of any angle as it is the pressure from the spring and the grip from the sharp points that do the work, spanning over the mitre itself without addressing the edges

## Pliers

Application of the clamps can be achieved by hand pressure, but they do require a fair bit of force to open them to their full extent, which makes them a tad difficult to control when applying them to a joint. The solution is to use the pliers, which work in a similar way to the circlip variety. By squeezing the plier handles together, the spring points can be fully extended, allowing you to apply them easily to the mitre.

The springing action also allows variable pressure to be applied to a joint, which is ideal if you're working with more delicate materials that only require light pressure to secure the joint while the adhesive sets – in which case, these will provide you with the perfect option.

## Conclusion

I love the simple and effective nature of these clamps, and they are handy toolbox additions for

### Specification:

- ▶ **Made in USA:** (hence being 'miter' and not 'mitre' clamps!)
- ▶ **Clamps:** Spring steel
- ▶ **Max clamping capacity:** 45mm
- ▶ **Max opening capacity (pliers):** 75mm
- ▶ **Typical price:** Pack of 4 × 75mm clamps & 75mm capacity pliers – £29.99
- ▶ **Web:** [www.toolovation.co.uk](http://www.toolovation.co.uk)

### THE GW VERDICT

- ▶ **PROS:**  
Present a fast and easy way to nip up mitres; works on all angles of mitre
- ▶ **CONS:**  
Not ideal for foil-wrapped stock or finished work; leaves small pin holes from use
- ▶ **RATING:** 4 out of 5



Applying a clamp to a mitre will bring it together tightly...



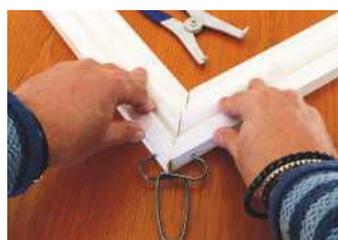
The clamps sit onto the pliers over the hooked ends



Squeezing the pliers opens the spring clamps very easily



Spanning the joint to apply pressure to this skirting mitre



... while still allowing you to slide it around in order to position it accurately



On ornate moulds you can add additional clamps to the profiles



The design of the Spring Clamps allows them to span any mitre angle



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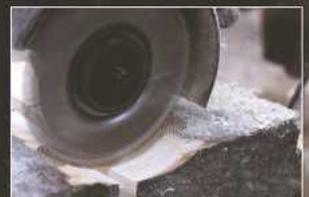


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# Bench appeal

This bench pillar drill from Axminster is ideal for hobby use and benefits from a smooth running 375W induction motor – a definite contender if you're on the lookout for a quality machine

A pillar drill is one of those tools that you may not see as a necessity, but once you have one in your workshop, they are so useful that you find yourself wondering how you ever managed without one.

Although this model from Axminster sits in their 'Hobby' range, it comes in at quite a high price when compared to other drills aimed at the hobbyist. If you need a drill with a bigger capacity and speed range than the entry level models out there, however, then Axminster have a machine that fits the bill in this model.



A 16mm keyless chuck makes bit swaps very easy

## Keyless chuck

Having used a few pillar drills over the years, the one thing that is always a pain is a keyed chuck, so discovering a keyless one on this model is a big bonus and with 16mm capacity, it will take a larger range of bits and allow you to gain better gripping power on higher torques.

To gain high torque for larger diameter holes normally requires you to work at a low speed and with the starting point at 210rpm, this allows you to also work larger diameters. That said, there is no indication within the manual or online as to the maximum diameter it will drill in timber, only that it will drill to 16mm diameter in steel.

I set the drill in a middle range speed of the 12 available and it ploughed on happily enough with a 35mm Forstner, but it did require a steady feed speed, otherwise I found it would stall, but swapping to the lower end of the range saw it chugging along happily without any stalling issues arising.

The speeds are altered via two belts that link across three stacks of pulley wheels: one connected to the motor spindle and another to the chuck column with a central jockey pulley stack that connects them via the belts. A line drawing within the micro switched hinged lid housing shows the speeds that each belt position combination is able to achieve.



There's a flip up sprung safety guard supplied with the drill



You can restrict the drilling depth with the knob and collar



## Pulley adjusting

To adjust the pulleys, the motor has to be shunted forwards to slacken the tension. Two locking knobs secure the motor on stud-type pins with the motor sliding on these pins to release and re-engage the tension.

Although there are two belts to contend with it doesn't seem to require too much exertion on the user's part to get the tension tight enough to drive without belt slippage, either, so if you do need to alter things, it's good to know that this is easy to do. Chances are, if you are anything like me, it will probably be left in a 'halfway house



There are knobs on either side of the drill that tighten to these short stud bars...



... which allow the motor to slide along the bars...



... this slackens the belts to allow them to alter position for speed control



Finger pressure is enough to slide the motor back to re-tension



The table adjustment runs well but is a little clunky when changing direction

position' that gives a reasonable speed to performance ratio across most work, and will only be altered if it struggles!

### Smooth-running ride

Axminster's 'Hobby' classification doesn't in any way mean you are getting a lower end of the market model, and the chuck is a good example of this. The 16mm capacity allows larger shanks to be used but the bigger bonus is the fact it is keyless and grips solidly with no mislaying of chuck keys, which is very welcome. Along with this the quill travel is fitted with quality NGK ball-bearings for smooth and durable operation, which does indeed guarantee a smooth-running ride.

A collar around the three-spoked quill advance handle can be used to set the depth by locking the setting with the small locking knob if you



There's decent power for drilling larger diameter holes on the lower speed settings

need to drill blind holes; the outer graduated ring rotates to the cursor point to set a zero position for accurate setup.

### Conclusion

I found the rack and pinion table adjustment to be a little clunky when moving between higher and lower settings, which is much the same for most pillar drills of a similar design, but it operates as it should once engaged, moving in the desired direction and also secures well with the locking lever.

The table can be moved away for deeper capacity work if needed and it also tilts to 45°, requiring a spanner to make this adjustment.

The 12 speeds, keyless chuck and smooth travel are all bonuses of this model when compared to some other budget equivalents, and Axminster's three-year warranty also helps

### Specification:

- ▶ Motor: 375W
- ▶ Speeds: 12
- ▶ Speed range: 210-2,580rpm
- ▶ Chuck capacity: 16mm
- ▶ Max depth to table: 315mm
- ▶ Max depth to base: 430mm
- ▶ Quill travel: 60mm
- ▶ Throat: 127mm
- ▶ Weight: 37kg

- ▶ Typical price: £266.46
- ▶ Web: [www.axminster.co.uk](http://www.axminster.co.uk)

### THE GW VERDICT

- ▶ **PROS:**  
Keyless chuck; 12 speeds; smooth quill travel
- ▶ **CONS:**  
Belt changes can be a pain if done regularly; slightly clunky table adjustment
- ▶ **RATING:** 4 out of 5

to add appeal if you're on the lookout for a bit more than the normal entry level offerings – you just have to get used to having more belt swaps than usual! **GW**

# Cable-free workhorse

This easy to control, quality made angle grinder from DeWalt benefits from a slim grip, takes 125mm discs and being cable-free ensures that you're in for a comfortable ride



It has to be said that a grinder isn't your normal run-of-the-mill woodworking tool, being more at home in metal and stone applications, but couple it up with wood shaping discs and it becomes a different beast altogether. I had the opportunity to do just that using the Rotarex cutting and shaping discs (see review on pages 14-15) while demoing at a recent woodworking event, and a battery grinder was a good option to ensure I was free of cable restrictions.

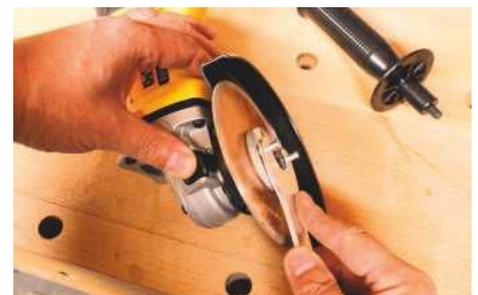
### Performance

The increase in amp hour and performance of the Li-ion battery platform has made such tools a viable proposition where the tool and battery are being used in high drain applications, so it seemed a good opportunity to see how the DeWalt stacked up in comparison to others. The traditional small grinder comes in either

115mm or 125mm diameter disc capacity and in many cases, manufacturers of a battery version sit in the 115mm camp for the maximum capacity, as this keeps the strain and torque levels lower to therefore ensure longer run times.

DeWalt are kicking in with a 125mm capacity for this model, for that extra bit of cutting scope if needed, and with a range of batteries up to 5Ah available in the standard XR 18V range, you can eke out maximum performance.

Even so, don't expect the runtime of a battery drill, where it is quite feasible to expect a whole day's worth of use from one battery. In my demoing, I had three batteries available and a couple of chargers going to keep up with the speed at which they deplete under big loads.



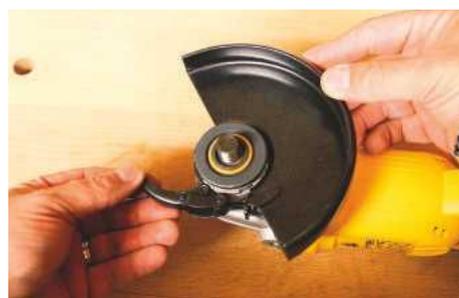
A built-in spindle lock is used with the pin spanner for disc changes



The supplied side handle can be fitted...



... to both sides of the body



There's a quick-release cam lever on the metal guard...

### In use

The Rotarex discs I used are both thick and aggressive in design and I was working a big lump of hardwood for cutting and grinding tasks, which puts more demand on the batteries than general grinding or cutting on stone or steel where the discs used are finer and less aggressive in comparison. This didn't stop the grinder from being up to the job in hand, however: I was able to cut, carve and shape with amazing speed without any feeling of the tool struggling under load – only when the battery power was waning was there any sign of performance drop off.

But by working the tool hard a battery lasted for around 20-30 minutes, so such work does put the machine under a great deal more load but I still prefer the freedom offered by the battery over its mains equivalent – you just need to consider how hard you intend to work the tool and whether or not you have sufficient battery power available.

### Ease of control

Control of the grinder is excellent as the design allows for the grip to be of a skinnier profile than the usual bulky body grip that can be seen in similar brushed motor models. This is at the



... which allows the guard to rotate to the best position for the work in hand



The rubber over-moulded grip is slim and allows for great control

expense of a longer overall length, however, but I'd go for ease of control every time in this instance. The switch also allows you to alter your hand grip to pull with either finger or palm operation in order to achieve the best position for addressing the work, and with the screw-in side handle position swappable to either side of the tool, it works well from this point of view as well as catering for the left- as well as right-hander.

### Nifty features

Blade swapping is standard: push in the spindle lock button and use the provided pin spanner to release the locking nut. A neat feature in this area is the quick-release locking lever for the guard, which allows the guard to be quickly swivelled and reset in order to achieve the best cutting position possible.

### Conclusion

Aside from this there's no real bells and whistles to write home about: a grinder is one of those tools that is a workhorse first and foremost – it's all about comfort and performance and it certainly hits the mark on both of these counts. I was very impressed with its performance during my demo. **GW**

### Specification:

- ▶ **Battery:** 18V XR Li-ion
- ▶ **Speed:** 7,000rpm
- ▶ **Max diameter disc:** 125mm
- ▶ **Length:** 400mm
- ▶ **Weight:** 2.2kg
- ▶ **Typical price:** £139.99 (body only)
- ▶ **Web:** [www.dewalt.co.uk](http://www.dewalt.co.uk)

### THE GW VERDICT

- ▶ **PROS:**  
Slim grip; easy adjust guard; powerful; takes 125mm discs
- ▶ **CONS:**  
High battery drain on heavier applications
- ▶ **RATING:** 4.5 out of 5



There's enough room to switch to a palm operation for the trigger



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# Top tips for buying woodworking machinery

Alex Dalton, managing director of Daltons Wadkin, takes a closer look at some of the top things to consider when making a woodworking machinery purchase

Whether hobbyist or industrial, woodworking machinery offers time and labour saving advantages over manual techniques, and guarantees a level of accuracy. Buying woodworking machinery for your own personal use, or for use in a commercial workshop, can be a significant investment. With woodworking machinery there is a huge variety, consisting of both portable hand-held power tools, and stationary machines. This wide range of machinery is easily and readily available in the market, so, it is not unusual for customers to find it difficult to source the right machine for their woodworking needs. Here are some important things to consider when trying to find the perfect piece of woodworking machinery.

## Safety

Before we get stuck into the attributes of new versus used equipment, we must mention safety. According to the Health and Safety Executive, the woodworking industry has one of the highest accident rates in manufacturing, not to mention accidents from hobbyist use. Before buying or operating any equipment, you should ensure it has been checked by a competent person with all the necessary guards, extraction and safety features in place, and that it is functioning correctly. You also need to make sure you are suitably trained in the safe setting and use of the equipment.

The Provision and Use of Work Equipment Regulations 1998 (PUWER) details the responsibilities of people and companies who own, operate, or have control over work equipment. Increasingly we are asked to carry out PUWER assessments and all too often come across illegal machinery. We also provide in-house and site-based certificated operator training for all woodworking machinery to ensure every area is covered.



ABOVE: High volume cross-cutting at Forest Garden Products



Bespoke bed manufacturing at Pluss Organisation

### New or used

If purchased brand-new, woodworking machinery can be expensive, therefore many businesses or individuals look to buy used machinery as a way to save as much money as possible while obtaining quality machines. Indeed, some of the older-style machines are built far more substantially than anything available new. With new machines you need not compromise; you will get the exact specification you need coupled with a manufacturer's warranty.

If you've decided that you wish to buy used machinery, then there are a few things that you should be aware of, such as condition, age, and brand of the machine in relation to price. Difficulty in obtaining the information is often a stumbling block for buyers, mainly due to where the machine is being purchased from. Anyone supplying second-hand woodworking machinery for use at work must ensure that it is safe and without risks to health. Ask the seller for any information on what servicing has been carried out.

It's also important to verify the condition of the machine, especially taking age into consideration as well as the manufacturer and comparing it against the price. Sellers often use ambiguous terms such as 'checked and tested' and 'refurbished'.

I must stress that buyers should find out as much as possible when looking to purchase second-hand machines. Also, it might seem like an obvious point, but do check the guarantee! New machines normally carry at least a 12-month warranty, but what does that cover? Parts only, or is labour included? Even used machines should have some form of warranty, so make sure you know what you are getting.

### Get the right specification

Consider what the intended use is for the machine you are buying, and how your requirements may change in the short to medium term. Also ensure to factor in a certain amount of future proofing. Quality is key. While on paper the specifications for equipment may seem identical, in practice the longevity and

overall performance will depend on the build quality of the machine. What specification are you looking for? No different from buying a new TV or car, there are many optional extras, so make sure you're not paying for things you don't need.

And don't forget tooling. The machine will only ever be as good as the tool and can be a significant part of the overall machine investment, especially with moulding machines or CNC routers. Check to see what tooling, if any, is included. If you have existing tooling, will it fit the new machine?

Many consumers select a product purely because they prefer the brand, or specific features, even if it's not the best machine for their needs. Buying a well-known brand gives you reassurance, but an important consideration is that some of the older UK woodworking machines are no longer made, so check availability of spare parts.

### Personal budget

If you buy the right woodworking machine it will prove a valuable investment, but your budget is another significant factor to consider. Woodworking machines are not cheap; in fact, many superior quality machines are very expensive but if you buy right, you need only buy once.

### Workshop space

"We never have enough space" is a comment I hear daily from our customers large and small. Check the size of the woodworking machine and especially the overall working footprint. Some machines will allow you to fold parts away when not in use. Combination machines can offer up to five or six different functions in the same unit and while it limits use to one operator at a time, can save significant space.

If you take all of these factors into consideration before parting with your cash, then you should find that the machine you choose will do the job you need it to very well, last for many years to come, and most importantly, be safe to use. **GW**

RIGHT: British-built Stenner band re-saw

BELOW: Automatic angle cutting on a Salvador S600



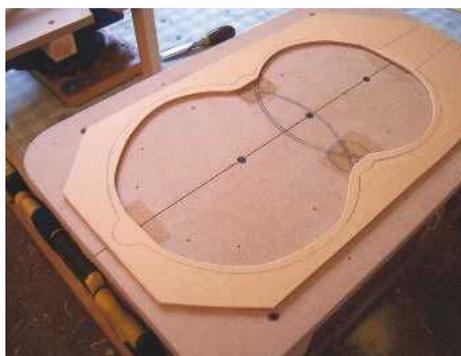
### FURTHER INFO

To find out more about Daltons Wadkin and the range of new and used woodworking machinery they offer, visit [www.daltonswadkin.com](http://www.daltonswadkin.com)

# Making mediaeval music PART 2



**Shaun Newman** completes his mediaeval fiddle build and also shows you how to make a customised case to protect your wonderful hand-crafted creation



**STEP 51.** A spacer made from hardboard protects the curvature of the soundboard

In part 1 of this series we looked briefly at the history of the mediaeval fiddle and how it may have been made. We saw the construction of a workboard and most of the component parts, including the head and neck, the ribs, the back and the soundboard.

In part 2 we will see how the instrument is finally put together, how it is strung, how a bow is made, and how a custom case is built.

## Fitting the soundboard with 'tentellones'

While fitting the soundboard there is a danger that the curve made by the harmonic bar will be damaged. To avoid this a shallow well made from hardboard is put into place that supports the edges of the soundboard while leaving sufficient room for the curve to be protected and not crushed (Pic.51).

Before the soundboard can be fitted, both ends of the harmonic bar must be cut to length so that it sits inside the ribs. The exact place where the bar ends must be cut is marked in pencil (Pic.52), cut with a veneer saw and trimmed off using a paring chisel (Pic.53). The next step is to mark the position of the blocks, which by now have been reduced on the inside to cut down weight. Once established, those points of contact can be painted with Titebond and the ribs brought down into place and cramped (Pic.54).

'Tentellones' are often used in the making of stringed instruments, particularly classical guitars. They are tiny triangular shaped pieces

of spruce around 7mm high and 5mm square at the widest point. Around 100 are needed to fit the soundboard with just two extra-long ones made to help prevent the harmonic bar from springing off when the pressure from the strings over the bridge is applied (Pic.55).

The tentellones are put into place using tweezers (Pic.56). The underside and back edge of each one is coated in glue and once pressed into place, no clamping is required. After around 20 or so have been inserted, I usually push them home with the end of a pencil that has a rubber attached, just to make sure they are sitting tightly.

The soundboard is now ready to have the edges trimmed, which can be done using a small hand-held router with a bearing-guided flush cutter fitted. The edges are then finished with a sanding stick and rounded over.

## Preparing the back with centre strip, cross-banding & label

The back is made from two pieces of book-matched padauk joined at the centre with a decorative strip inserted to add to the



appearance. The boards are planed true (Pic.57) and the edges are squared in the same way as those of the front. The two parts of the back and the decoration are then held firmly in the wedge and lace jig (Pic.58).

Once the glue has dried the back can be removed from the jig and thickened to around 2mm. Once again, the Record No.080 scraper plane does an excellent job (Pic.59).

Before the back can be fitted it needs to be strengthened on the inside along the glue lines. Here it is necessary to fit some cross-banding so that the grain runs across the join rather than along it. The banding is made from spruce taken from waste left over from making the top. It is around 15mm wide and 2mm thick. The strip can be held in place with heavy weights while the Titebond cures (Pic.60). Glue squeeze out is removed with the paring chisel (Pic.61), the outline of the back is transferred from the cardboard template onto the timber, which is then cut slightly oversize on the bandsaw. Finally the label is fitted (Pic.62) and the back is now ready for the next step.



STEP 52. Marking the position of the ends of the harmonic bar



STEP 53. The harmonic bar is trimmed to length with a paring chisel



STEP 54. The rib blocks being glued into place



STEP 55. 'Tentellones'

### Fitting the back with kerfed linings

Before the back can go on, it is necessary to make sure the ribs are level with the tops of the blocks and the underside of the heel. I usually use a thumb plane to do most of the work (Pic.63), and finish with a flat sanding stick. If the sides have been made to almost the exact height, then all that will be needed will be the stick.

Once level, kerfed linings should be put into place. They are a continuous strip of wood (I made mine from light mahogany) with the same profile as a tentellone. The saw kerfs are around 5-6mm apart and go almost right through, but not quite (Pic.64). This way the strip can be bent around the curve and held in place with a number of mini clamps or clothes pegs (Pic.65). When the glue has dried the tops of the linings may protrude a little so it will be necessary to level them to the exact height of the ribs.

I like to use cam clamps when fitting instrument backs (Pic.66) but they are expensive and not absolutely necessary. As this instrument has a flat back and the front curve is not in danger, weights may be used, or even elastic bands that wrap around the entire workboard and pin the back in place.



STEP 56. Putting the tentellones into place using tweezers

As the back is made slightly oversize, the edges should be trimmed off in similar fashion to the front, which is with a router and flush cutter. The edges are then rounded off with a sanding stick.

### Preparing & fitting the fingerboard & top nut

We have no way of knowing what the fingerboard was made from in the original instrument, but as it is the part of the instrument most likely to wear apart from the pegs, a hard wood is preferred and I used a small billet of rosewood measuring 150 x 45 x 10mm. The fingerboard is tapered slightly from the nut towards the body of the instrument. At the nut the width is 42mm and at the point where it lies over the shoulders of the upper bout it measures 46mm. It is also tapered in its depth from around 5mm at the nut to 9mm at the end (Pic.67). To help playability it is also curved slightly (Pic.68). The profile of that curve will later be reflected in the bridge. The end of the fingerboard sits just above the soundboard without being attached so a ledge is chiselled out on the underside to allow this (Pic.69).

To prevent the fingerboard from sliding out of line when the clamps are put on it is a good idea >



STEP 57. Truing the centre edges of the back



STEP 58. The back and decorative centre strip in the wedge and lace jig



STEP 59. Thickening the back to 2mm with a scraper plane



STEP 60. The back centre strengthening strip under weights



STEP 61. Removing glue squeeze-out with the aid of a paring chisel



STEP 62. The label in place

to drill a couple of 1.5mm holes so that hardboard pins can be used to hold it in place as the glue dries under pressure (Pic.70). When the glue has dried, the pins are removed and the tiny holes are filled with CA adhesive and rosewood dust making it virtually impossible to see where they had been. Once sanded clean the fingerboard is ready, as, in keeping with the modern violin, no frets are fitted. It is important to remember to fit the fingerboard with a sufficiently wide gap between it and the headstock veneer to allow the nut to sit tightly in place (Pic.71).

The nut is made from a small piece of bone or hardwood measuring 42mm by 9.5mm and 3mm-thick. It should be curved along the top edge to match the profile of the fingerboard. Three grooves are then filed into the top edge to receive the strings. The grooves should have a half-round bottom, and be cut to a depth equivalent to half the string thickness. One groove is in the centre and the other two are 5mm from either end of the nut (Pic.72).

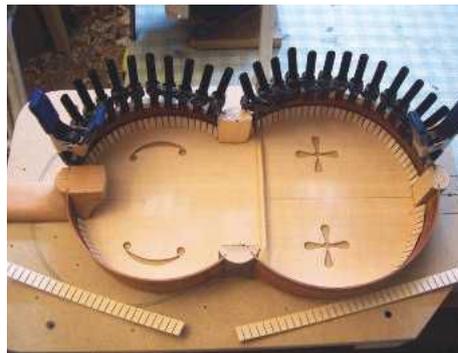
### Making the bridge & tailpiece

These two small items are really important as without them the instrument would be unplayable. They are both made from rosewood, the tailpiece measuring 80 × 40 × 3mm-thick while the bridge is cut from a small billet 60mm long × 17mm high × 10mm-thick.

The tailpiece can be fretted to a number of designs but must not be made too weak to endure the pull from the strings. I attached white self-adhesive labels to the rosewood, drew the design out (Pic.73) and fretted through the label and rosewood (Pic.74). The fine detail is finished with needle files. I glued a small strip of 1mm-thick model maker's ply under the two ends where the string holes are to offer a little more strength. The bridge is made in a similar way, giving two feet 10mm square to sit on the soundboard (Pic.75). To ensure a close fit to the slight curve in the soundboard the feet are dressed by abrasives temporarily taped to the front (Pic.76). The top edge of the bridge is gabled and curved and, once again, grooves are needed to ensure the strings do not slip off.



STEP 63. A thumb plane helps to level the ribs



STEP 64. Half of the kerfed linings held in place



STEP 65. The completed linings in place ready to support the back



STEP 66. The back clamped into place



STEP 67. Preparing the rosewood fingerboard



STEP 68. Curving the fingerboard

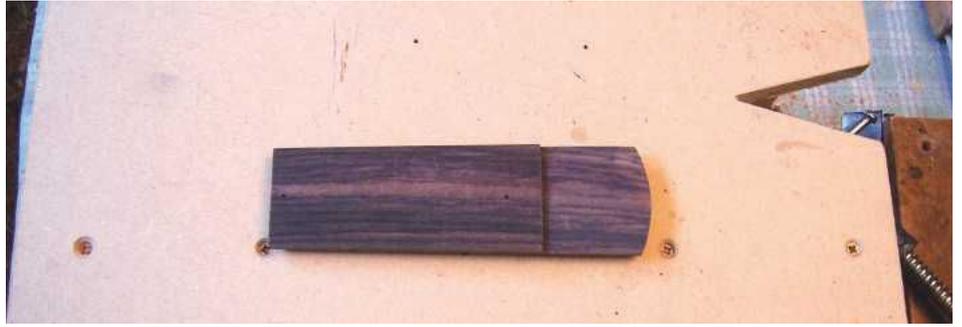
One groove is cut in the centre and the other two 6mm from either end. Remember that the depth of the grooves will be half the thickness of the string.

### Final shaping of the neck & fitting the heel cap

Overall the final shaping is done with 120, 240, 320 and 400 aluminium oxide abrasives. The depth of the neck and fingerboard combined should be at around 22mm at the central point. This is fairly near to the neck thickness of a modern violin. As the back of the instrument is trimmed level with the shoulders, a small cap can be fitted. This is made from a piece of rosewood 2mm-thick to match the thickness of the back. It is held in place with cam clamps and can very easily slide out of line when your back is turned, so beware (Pic.77).

### Applying the finish

There are many types of finish that can be used on an instrument like this from acrylic resins, oils, polyurethanes, nitrocellulose lacquer and so on. At the time these fiddles were made, a favourite seems to have been egg tempera or similar as a base followed by some sort of vegetable oil or varnish. I chose Liberon finishing oil as it is very easy to apply and once oxidised can be cut back with 400 grit abrasive and refinished to give a soft satin sheen. I usually go through the whole process around five times to allow a sufficiently robust thickness of finish to develop, thus offering good protection. A further advantage of Liberon oil is that if the instrument gets scratched then that area can be cut back and oil applied, leaving little or no trace of the original damage. The final task in applying the finish is to buff with a cotton cloth, before standing back and admiring your work! >



STEP 69. The ledge that allows the fingerboard to overhang the soundboard



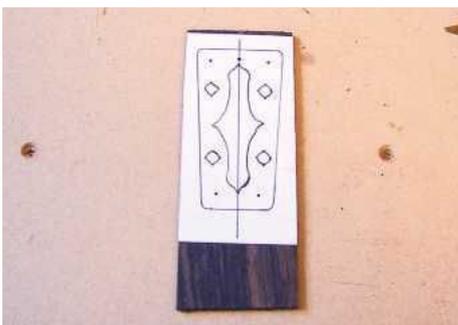
STEP 70. Pins are used to prevent the fingerboard from moving while the glue dries



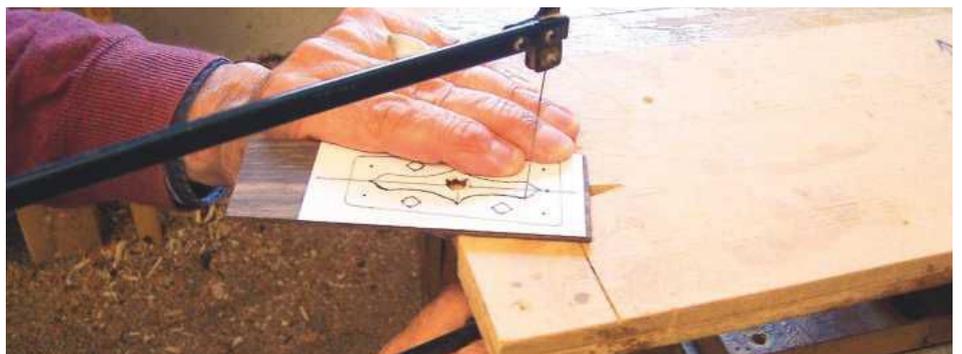
STEP 71. The fingerboard in place



STEP 72. Preparing the bone



STEP 73. The tailpiece design marked onto self-adhesive labels



STEP 74. Fretting out the tailpiece design



STEP 75. The rosewood tailpiece and bridge

### Making the bow

Images of these early instruments show a bow, which is more akin to that of an archer than a modern violinist. This type of bow should be made from a springy wood such as ash around 500mm long, 10mm wide and 5mm-thick. Alternatively, it is possible to hunt for an old violin or cello bow (or even a child's play bow) and use the wood from that. I was lucky to find a cello bow in a charity shop for £2, which had a pernambuco shaft – this being the preferred choice of bow makers.

The technique involves cutting a notch at either end of the shaft, selecting no more than 25 or so hairs from the hank (Pic.78) and tying a knot in one end. The hair is then soaked in warm water for a few minutes and then pulled tight and kept flat. A further knot is tied at the



STEP 77. The rosewood heel cap in place



STEP 76. Ensuring a close fit for the bridge feet

other end of the horsehair and both knots are pushed just behind the two notches with the shaft slightly bent. The bend should be gradually increased by re-tying one of the knots and increasing the tension over a few days. When it feels ready to fire a small arrow it is probably about right (Pic.79).

### Fitting the pegs, stringing up & tuning

Some of the oil may have entered the peg holes so it is as well to clean the insides with the reamer. Once the pegs are firmly in place attention is given to fitting the tail piece. A 2mm hole must be drilled through the end block just shy of the bottom of the lower bout and parallel with the plane of the soundboard (Pic.80). The tailpiece is then tied to the bottom block with

gut or nylon. The three playing strings must be made of gut to ensure an authentic sound (see list of suppliers at the end of the article). The ends of each of the three strings are attached using a knot that will not slip, i.e. a 'stop' knot. The strings are then threaded through the holes in the pegs with the string ends trapped by the first twist. Rather than bring all of the strings up to pitch together it is best to ease them one after the other in rotation, gradually evening out the tension.

Deciding on exactly how to tune this fiddle is an interesting challenge. For starters, mediaeval tuning was generally at a different pitch to the modern convention of A440. Indeed until tuning was standardised as late as the middle of the 20th century, tuning varied from country to country making mixed concerts very difficult.



STEP 78. Mongolian horsehair bought in 'hanks'



STEP 80. Drilling the tailblock to enable the tailpiece to be secured



STEP 79. The bow ready to use

### USEFUL READING

- *Making Early Stringed Instruments*, Ronald Zachary Taylor, Stobart Davies Ltd. ISBN: 0-85442-051-7 – has a chapter specifically devoted to the mediaeval fiddle
- *The Guitar Maker's Workshop*, Rik Middleton, The Crowood Press. ISBN: 186126-0407 – has useful tips on making a bending iron
- *The Galpin Society Journal* – April 2016, The Dorset Press – has an article by Daniel Rose-Jones on the construction of an early fiddle. Also April 2000, an article by Mary Anne Alburger 'The Fidill in Fist' on the subject of bowed instruments from the *Mary Rose*



STEP 81. The exterior of the wooden case

The second issue to consider is of the three strings: which was used for what purpose. Very probably there were two drone strings and one melody, all made from gut. The range would have been no more than one octave, and the pitch would favour the singing voice.

With all of this in mind I chose to tune the first string, which is the melody string, to A above middle C and the second and third to G below middle C and D above middle C. This method is known as 're-entry' tuning. It takes a few days before the fiddle is ready to play properly as the strings take time to stretch. Before playing the fiddle the bow hair should be treated with rosin to ensure a good sound.

### Making a customised case

Unless you go to a custom case maker such as Kingham MTM where naturally prices are high, it is as well to make your own. Effectively the

case is a box (Pic.81) with a neck rest (Pic.82). The sides and ends are made from 19mm pine boards and the top and bottom are of 4mm ply. The interior is lined with thin foam rubber and covered with crushed velvet. The interior padding is then held in place with double-sided carpet fitter's tape. The occasional discreet pin along the edges of the padding helps to keep it secure, but the tape holds quite well. The neck rest is 19mm pine and the crushed velvet is stretched over the rest at double thickness and held in place with gimp pins. The rest itself is held firmly on the inside of the case with 63mm panel pins, which pass through the sides into the neck rest. Before fitting the hinges, the handle and the clasp, I painted the whole exterior with Ronseal cupboard paint, which is very durable. You now have a robust case to keep your beautiful mediaeval fiddle safe from damage. **GW**



STEP 82. The interior showing the neck rest

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- [www.hairworks.com](http://www.hairworks.com) – for Mongolian horsehair in small hanks
- [www.earlymusicshop.com](http://www.earlymusicshop.com) – for gut strings, pegs and early instrument supplies
- [www.smallwonder-music.co.uk](http://www.smallwonder-music.co.uk) – for decorative back strips and inlay materials



STEP 83. The completed fiddle from the front...



STEP 84. ... and back



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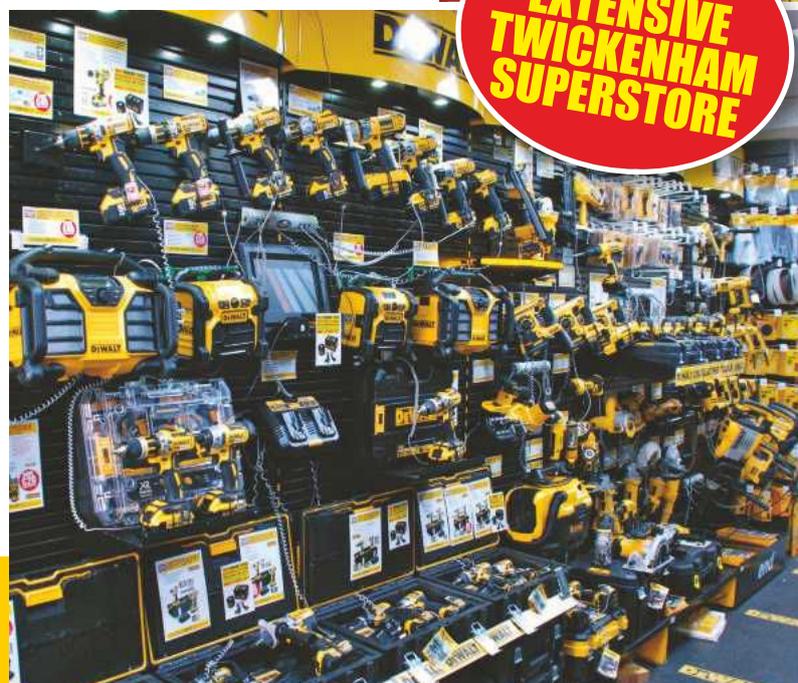
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# Dovetails great & small

Moving on to looking at dovetails, **John Bullar** goes from one extreme to another – starting with a single large dovetail to examine the basic principle, and then a row of very fine dovetails, which can test the skill of a furniture maker

**D**ovetail joints come in many shapes and sizes: large single dovetails can be used to hold the corners of a rigid framework together, such as a workbench, while rows of small dovetails are commonly used for the corners of boxes and drawers.

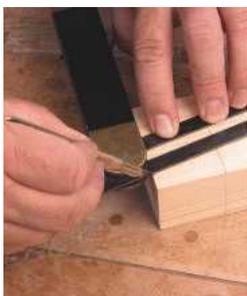
In this article we will go from one extreme to another – starting with a single large dovetail to examine the basic principle, and then a row of very fine dovetails, which can test the skill of a furniture maker.



**PIC 2.** The position of the square used to mark the shoulder line is set from the thickness of wood on the other side



**PIC 3.** The shoulder lines run around the joint. By placing the knife blade in the previous line and sliding the square up against it, all four lines will join up accurately around the wood



**PIC 4.** Using a bevel gauge to mark both sides of each tail so they have the same angle

## Wedges in sockets

Consider the dovetail as a wedge attached to the end of a board, fitted in a matching socket on the end of another board. While variations in the size and shape of a wedge will not stop it working, the socket it fits into must match the wedge exactly. The load is then spread evenly across the joint. As a matter of routine the maker keeps checking one part against another throughout the process to ensure they will line up when finished (**Pic.1**). The joint mustn't wobble so there can't be any air-gaps around the wedge or on the shoulder line beneath it.

## Marking a big tail

I recommend starting the joint by marking out and then cutting the dovetail itself, followed by the socket that it will fit in. I find that clear markings on the wood are essential to getting my head around a planned joint.

The wedge shape of a dovetail is marked on the face of the wood by a shoulder line across its base and a diagonal line at each side marked either against a sliding bevel gauge or a specialised 'dovetail square'



**PIC 5.** Shading pencil lines across the waste area helps keep track of which side of the line to saw against

(**Pic.3**). This joint is made with softwood so the ideal angle is around 1:6, but this doesn't need to be accurate (**Pic.4**).

The shoulder line has to be continued around the edges and the opposite face of the wood. It is important that all four shoulder lines join up so I use a technique of positioning the knife blade in the previous mark and sliding the square up against it.

## Cutting a big tail

Before cutting the wood, it's surprisingly easy to get confused about which part is which and how and where it will fit in the joint (**Pic.5**). As a result of this, it is not at all uncommon for learners to accidentally cut off tails! A less obvious mistake but one that will still spoil the finished joint is to saw down the wrong side of a marking line. The saw cut is not much more than a millimetre thick but that extra millimetre gap will produce a big wobble in the finished joint. Clamp the wood firmly and as low as possible for sawing and make sure the saw cut follows tightly against the mark and just to the waste side of it (**Pic.6**). >



**PIC 6.** With waste cut off each side the single large dovetail is left



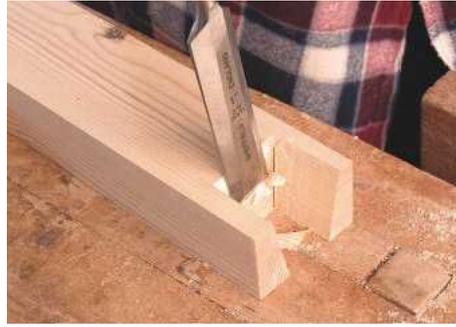
**PIC 7.** The dovetail is used as a template while the socket is marked around it



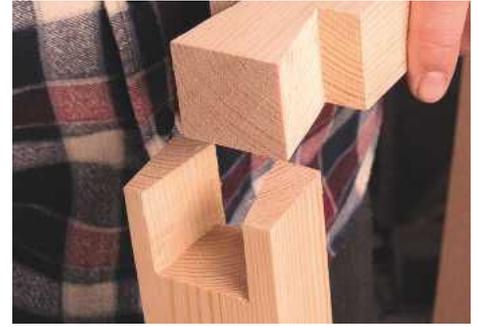
PIC 1. To produce a well-fitted dovetail, I check components against one another at every stage



PIC 8. The sides or 'cheeks' of the socket are marked from the end down to the shoulder line, then waste is cut with a tenon saw and along the base using a coping saw



PIC 9. Having removed the waste from the socket its base is pared flat with a wide chisel



PIC 10. The dovetail is aligned with its matching socket before the two slide firmly together

### Marking a big socket

Having carefully sawn a large dovetail, this is used as a template to mark out the socket it will fit into (Pic.7). The dovetail is positioned on the end-grain of the socket wood with its shoulders aligned accurately against one edge. Marking is then done using a fine-bladed knife, such as a model-maker's scalpel.

The shoulder line for the socket is marked in the same way as before, at a distance from the end corresponding to the thickness of the tail. A marking gauge is used to plan out the parallel sides of the socket.

### Cutting a big socket

A fine tenon saw or dovetail saw cuts clean, straight lines that should enable the tail to fit into its socket first time, or at least that's what we're aiming for!

The bottom of the socket needs to be removed with a coping saw (Pic.8), which, even with great care, will not cut a good straight line. For this reason we need to cut just above the line, then pare the socket-base flat with a chisel (Pic.9).



PIC 11. Dovetails marked across the width of a board are made so fine that the gaps between them will be no more than the width of a saw-cut or 'kerf'

### Fitting a big dovetail joint

The tail should now slide into its socket with firm hand pressure or a few light taps from a mallet (Pic.10). Most people find that in the first few attempts at fitting dovetails they are either too tight and need shaving down or so loose they will not stay together and must be re-made. While this may seem frustrating, it is actually an important stage - analysing where the problems are and working out how to adjust your technique so they fit next time.

### Fine dovetail joints

Once you are happy you have control of the process for making a single large dovetail, it's time to start developing your technique for making a row of fine dovetails.

Most commonly in furniture making dovetails are used for joining the ends of boards edgewise on to form the corners



PIC 12. A marking gauge is set to the thickness of the wood that will carry the dovetail pins and sockets



PIC 13. Keeping the marking gauge at the same setting, it is used to mark the shoulder line between the tails

of a box, tray or drawer. These joints consist of a line of small tails that engage with matching sockets on the next board. Between each socket is a 'pin'.

Typically, each joint might have four tails across its width so to make a square box would require 16 tails and 16 sockets. Alternatively, a set of four drawers to fit in a chest would need a total of 64 tails and 64 sockets. With numbers like these we clearly need to develop an efficient technique of cutting joints that fit first time. However, anyone learning must expect their first few joints not to fit first time and give themselves time to develop the skill.

### Marking fine dovetails

As with a single dovetail, the angle of each tail side is marked with a bevel gauge or a dovetail square (Pic.12). In this example using hardwood, the ideal angle is around 1:8 but as explained earlier this is by no means critical.

The positions of the tails are evenly spaced across the width of the board with a little extra allowed for the pins either side. Fine pins are traditionally used in good quality furniture and to demonstrate this I have made the sockets for the pins as fine as possible, which is just one saw-cut width.



PIC 14. The ends of the tails are marked across the board at right angles

## Cutting fine dovetails

Having marked out the board with a set of angle lines for the sides of the tails and a shoulder line for their base, the board is clamped as low as possible in a vice. The shoulder line is just above the vice jaws to minimise vibration of the wood while it is sawn.

I recommend cutting all the left-hand sides of the tails one after another and then all the right-hand sides. This keeps the sawing arm and wrist at a consistent angle, improving accuracy and efficiency. Once again, I used a coping saw to remove the bulk of the socket waste. For very fine sockets like these you may not need to use a saw as the waste can be chopped out directly with a narrow chisel (**Pic.18**).

## Marking fine dovetail sockets

A traditional way to mark the sockets is to support the tail wood on the side of a plane body while the socket wood is clamped below the tails in a vice (**Pic.19**). The idea is to support the tails as securely as possible while they are used as a template (**Pic.20**). There must be no chance of them moving during the marking operation. You need to use a very fine knife such as a scalpel to reach in between the tails and mark accurately.

## Cutting fine dovetail sockets

The dovetail sockets are relatively wide while the pins are very narrow (**Pic.21**). Sawing them out requires careful work so as to not damage the pins. After removing the waste with a coping saw as before, the bases of the dovetail sockets are pared flat with a chisel (**Pic.22**). I find that clamping a square section block on the shoulder line ensures the position and angle of the chisel is correct. >



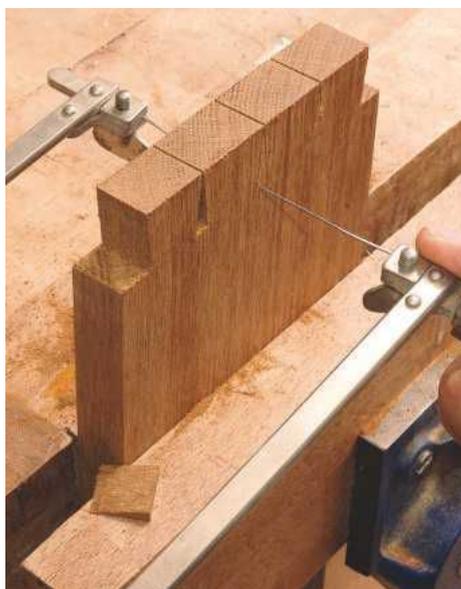
PIC 15. When starting a saw cut across the board the finger and thumb of the other hand are used to guide the position of the blade on the knife line



PIC 16. Using a small tenon saw or dovetail saw, the sockets between the tails are cut down as far as the shoulder line



PIC 17. Sawing the end sockets with the blade cutting just inside the waste side of the shoulder line



PIC 18. The waste is removed from intermediate sockets using a coping saw just above the shoulder line, then pared down to the line with a narrow chisel



PIC 19. Ready for marking the dovetail sockets the wood is clamped in a vice with a plane used as a parallel-sided support alongside



PIC 20. The dovetails are used as a template for marking out the sockets with a fine knife

### Fitting a fine dovetail joint

Ideally the row of fine dovetails should fit in their sockets with firm hand-pressure followed by a light tap with a mallet. If that doesn't work, which is very likely the first time you try, you will need to examine the joint and possibly shave it in places with a fine chisel.

As well as each dovetail fitting its sockets, the row of dovetails and the row of sockets must be precisely aligned for an accurate fit. Any misalignment from one end to the other is likely to have come from the marking out process where accidental movement is a common problem. One trick to help fit tight joints is to pare away the corners of inside edges of the tails (**Pic.23**). Don't pare them right to the end, however, as this would make visible gaps on the finished joint.

### Where accuracy matters

Three things that matter most are that one side of the joint fits the other without gaps,

the boards are joined at a right angle and the result looks good from all sides. The precise sizes and angles of dovetails are relatively unimportant even though these are things that learners often worry most about.

Traditionally, dovetail joints have been made symmetrical as any accidental differences might come across as untidiness. However, some contemporary top-end furniture has dovetails with emphasised variations in spacing, odd angles and so forth. Beauty, after all, is in the eye of the beholder.

### Conclusions

Dovetails have been a key feature of quality furniture making for many centuries. We know this because of the quantity of very old furniture constructed with dovetails that is still highly prized today. The sequence of operations and some details differ between makers but the basic technique of cutting dovetails has been refined as a standard

of good furniture making. If you want to see videos of my dovetailing techniques, then search online for 'John Bullar dovetails'.

While there are mechanised systems for cutting dovetails (and we will look at one of these next time) there is nothing to beat a hand-cut dovetail joint for pure beauty and strength. **GW**



PIC 21. The pins are extremely narrow with the near side, little more than a saw-cut width



PIC 22. Socket bases are pared flat with a wide chisel using a block to guide the flat chisel back



PIC 23. The inside corners of the tails are pared away to help the joint fit without jamming



PIC 24. The fine dovetail joint is slid together



PIC 25. As the shoulder lines have been carefully aligned there are no gaps visible inside the joint

### NEXT TIME

Most power tools don't feature so much in the furniture maker's workshop as they do in other branches of woodworking. One notable exception is that most versatile of tools, the router, which John will discuss in GW318



PIC 26. The outside of the finished joint shows the fine pins emphasised by the contrasting wood colours

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# Mortisers for woodworkers

The black art of the mortise has been greatly helped along by the availability and profusion of mortising machines. There's really nothing new about this - they have been around for years. However, they are more affordable these days, probably because most are made overseas. Cheaper they may be but they should still be engineered to give you a well cut joint.

## Mortise cutting heads

Generally speaking, there are four main types of mortise cutting heads.

- For industrial, mass-production of mortise joints machines with single or multiple oscillating heads are available. Having set the predetermined location of the mortise or mortises the central cutting tool oscillates from one side to the other, cutting as it advances while two straight cutters trim the ends of the holes. The cut is usually made in a horizontal direction, but not always. Very expensive, very efficient, but probably not one for us!
- Similarly, the chain cutting mortise head is more of a production machine. A bar is mounted with a chain upon which are located some cutting teeth, operating in a similar way to a chainsaw. Usually a single-head, the machine can cut vertical mortise joints quickly and efficiently but is a bit brutal for fine work.
- The hollow chisel cut is the most popular for flexibility and ease of change over. A simple, square chisel with a central auger to remove the waste, these machines are predominantly vertical cutting. This is the one we'll concentrate on in this article.
- The slot mortise cutting head is often found on combination machines and a simple cutter is mounted in a chuck. The work is presented to it and a hole bored to a predetermined depth and, if the cutter is capable, the component is then passed by the cutter, which slices out the mortise slot. For deep cuts a number of passes must be made to avoid breakage. As an attachment these tend to cut horizontally.

In the next part of his beginners' guide, **Peter Bishop** discusses the topic of mortisers as well as offering his advice and tips on setting them up and getting the best from this handy machine



An industrial multi-head machine





A chain mortiser machine

### Mortisers for woodworkers

Interestingly, the only manufacturer I'm aware of who has been able to downscale and combine an oscillating/slot cutting motion is Festool. Their Domino hand-held slot mortiser is an exceptional tool - more on that in the next article on jointers, etc.

Of course, there are many variations on the theme. Using routers and attachments on pillar drills, for example, will speed up the hand mortise joint cutting process. Lots of manufacturers produce portable, single-head chain mortisers that can be clamped directly onto the work, such as a door or beam, to cut a mortise. These chaps are probably ideal for site work or more heavy-duty, oak frame work. But, in my opinion, the only one that can produce a near finished joint, with little further work, is the square, hollow chisel mortise machine. This is the one we'll predominantly look at here, as it's best suited to the general woodworker. In most cases there are two types of

hollow chisel mortiser available: bench-mounted and free-standing. Your choice will depend upon the number of joints you expect to cut, the type of work undertaken, the space you have in the workshop and, no doubt, your budget. If versatility or space is an issue, then some of the bench-mounted models can be easily converted into pillar drills.

Looking through a recent power tool catalogue, I noticed that prices can vary from £100 or so, for a bench mortiser, through to well over £1,000 for a free-standing machine. The choice is yours, but let's think through some of the key features you should look for.

Your mortise machine, ideally, will need to traverse in three directions: up and down, to cut into the work, left and right, to extend the cut, and forwards and backwards, to position the cut. Check out the sliding gear and the clamping mechanisms: they should be both smooth and easy to operate. If not, move on to the next machine.

The auger is driven directly from the motor via a chuck. Therefore, consider the wattage of the motor when purchasing. A motor of around 300-400W is OK for lightweight work but you'll need something up to around 750-1,000W for more intense work. The motor size will influence the size of chisel you can use. If it's lightweight, then you might be best served by making multiple cuts with smaller chisels.

### Machines on offer

Like most woodworking machines a heavy, cast construction will be much better than a pre-formed metal one. Working from a solid base will enable you to cut joints more cleanly. Take a look at the machines on offer. Even if they are of a heavy construction they still need to be well engineered. A dovetail slide arrangement for the cutting head is an advantage, which

### MORTISER TIPS

- You don't need to have a full set of chisels for every eventuality. Pick a small size, a medium size and a larger size. All can be used to cut multiple holes. It might take a bit longer but it will certainly be easier on the pocket
- Consider the size of components you might like to cut mortise holes in, then look at the available capacity of the machine to ensure it can cope with what you want. The depth of stroke, how deep you can go, is also important unless you are going to work from both sides
- Always maintain a sharp cutting edge on both chisels and augers. This is especially important when cutting into hardwoods. If you don't, then the cutting edges might overheat and, in the worst cases, potentially split the chisel

should provide a smooth action along with accuracy. The actuating arm needs to be spring-mounted so that it returns and stays in a safe position after the cut is made. Some manufacturers offer gas struts as an alternative. If you're left-handed, then look for those that can be mounted on both sides of the machine.

Useful, added features include a flexible light that can be focused on the joint area, waste extraction ports, and a pair of depth stops for simple and haunch mortise joints. I notice that one manufacturer provides a spring-loaded chuck key so that it can't be left in the chuck accidentally! Other variations will include canting and swivel heads to allow angled and horizontal cuts.

Finally, there will be a choice of chisel and auger sets to think about. There are a number of options available but the key thing to remember is to buy the best you can afford; they'll last longer if you don't abuse them.



The Makita 240V 7104L chain mortiser



The Sedgwick 571 mortiser - an example of a vertical cutting machine



A single-head horizontal cutting machine



The Festool DF 500 Q Domino mortise & tenon joiner set

### Setting up your machine

There are four primary elements for setting up a hollow chisel mortise machine: the central, keyed chuck into which the cutting auger fits, and housing, with a locking mechanism, into which the hollow chisel fits. The auger cuts the bulk of the waste away and the chisel squares the corners.

The auger and chisels are usually bought as a pair. If one breaks or splits, then they can be replaced individually. The auger shaft size will probably vary and should easily be accommodated in the chuck. The shaft of the auger should slide up the inside of the chisel with clearance; the cutting head of the auger should not. The diameter of this cutting head should be no more than the overall size of the chisel. If it's bigger, you won't get a square cut!

For mounting this lot in the machine, first select the set that will suit or be able to cut the mortise hole size you require. The chisel should be slotted into its housing first. Push it up tight until its shoulder touches the housing, then drop it back down by a millimetre or two and lock it in place. Now pop the auger up the chisel and into the chuck. You may have to slide the auger inside the chisel if there's not enough depth to fit it independently.

Once the auger is set tight in the chuck, slacken off the chisel, push it back up to the shoulder contact point and lock it off; this creates the clearance required between the end of the chisel and the auger. Too close and the auger will make contact and take the edge off the chisel, thus damaging it; too close and the waste

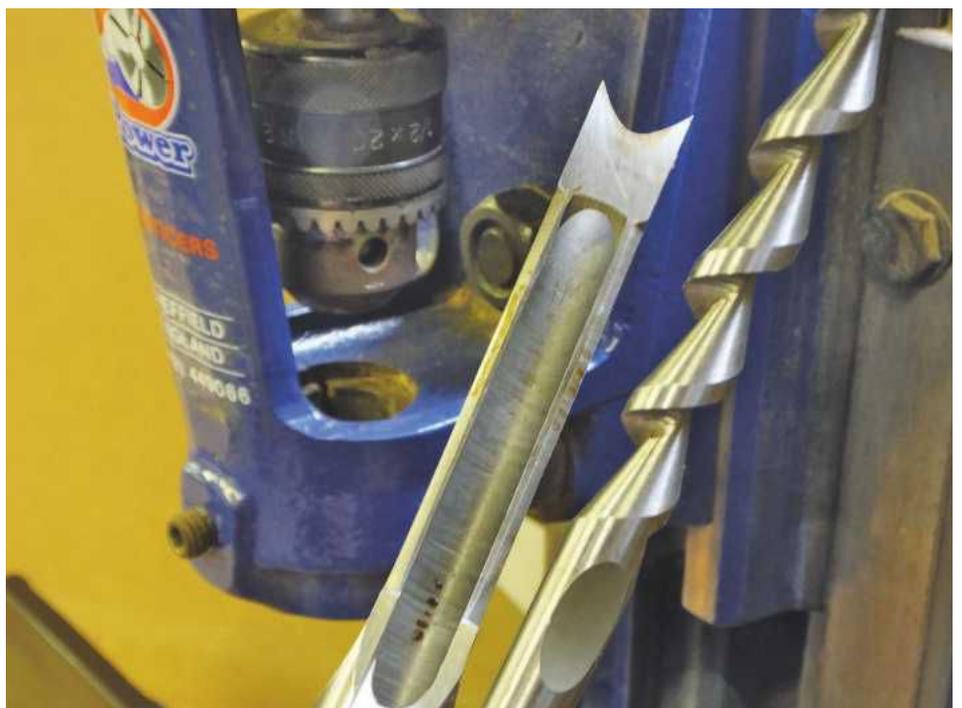
may not be able to escape, thus causing the tools to overheat.

You probably now need to pull the mortise machine head down so that the chisel is opposite the back fence. With a square, working off the back fence, check that the chisel is square on. If not, slacken the retaining mechanism and adjust accordingly. You do this, when setting the chisel in the machine, to make sure that it is at right angles to the fence/component; this will ensure you have square ends to the joints.

I mentioned that the augers can sometimes be too long and might need cutting. The other thing to watch out for, when buying new sets of augers and chisels, is that the chisel shaft is the right size to fit your machine. If, for some reason, you can't get the right size, then all is not lost. >



Axminster Hobby Series AW16BMST2 bench mortiser



Chisel, chuck, auger and chisel shaft housing



The gap to allow for clearance



The gap closed up to create clearance

Smaller shafts can be 'shimmed' out with slip over sleeves. Not ideal, but a solution that does work. However, if it's a bigger shaft, you'll be in trouble! Do always check before you buy.

Once the cutting kit is in place, just turn the machine on and off and listen for any metal on metal sounds. If there are then check your settings, and if possible, the straightness of the auger. You should now be ready to rock and roll!

Don't try to cut too much out in one go. Nibble away at the joint by slicing part way down and part way along each time. A cut about half the width of the chisel is considered ideal; this will ensure your tools last longer and cut more efficiently. To cut a central mortise, with a smaller chisel, work from both sides. Cut one length of mortise hole first then turn the component round and cut the other side. This way the joint will be smack bang in the middle. **GW**

#### TIPS FOR SETTING UP YOUR MORTISER

- The cutting head of the auger should be set tight up to the end of the chisel. Sometimes the auger shafts are made long so that they will fit a variety of machines. To get the fit right, you might need to cut a bit off the end
- Usually there are long slots on one side or two opposite sides of the chisel, this is to allow the waste cut by the auger to vacate the core. These slots should be to the left- or right-hand sides; this enables the waste to drop out more efficiently
- Always support the exit cut of a through mortise with a piece of gash stock. This will help avoid 'break out'. However, it's better still to mark out the mortise position all round the component and work from both sides

#### MORTISE MACHINE TERMS

- **Hollow chisel and auger:** the outer, square chisel that forms the size of the joint. It should be sharp and cut like a guillotine. The inner auger removes the bulk of the waste
- **Chisel stroke:** this is, effectively, the depth of cut of the chisel when mounted in the machine. It will alter according to the size of chisel used and the component being worked on
- **Capacity:** this relates to the maximum cross-sectional size of wood that can be worked in the machine. Cutting joints in very wide and tall pieces will be influenced by both the capacity and chisel size
- **Actuating/pull down arm:** this is the lever that enables the head of the mortise machine to plunge down into the work. It needs to be at least spring-mounted so that it returns to the vertical

#### NEXT MONTH

Nearing the end of his series, Peter moves on to looking at jointers



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Using a roller to apply glues



Vacuum bag, former and clamps required to hold the shape



**M**arc has now designed three pieces in a series called 'One Piece', which explores the positive and negative spaces a single length of timber can occupy. The console table was the first, soon followed by a chair and low table. Marc's studio has gained an international reputation for lamination work, with his pieces being sold in galleries around the world, and the furniture making school Marc runs attracts students from all corners of the globe, all of whom want to learn furniture design and making to exceptional levels.

### Making process

"In terms of the making process for this piece, the table was laminated from 100 layers of oak veneer, using a combination of vacuum bags, formers and clamps," says Marc. "My team and I then only have 40 minutes to get all the veneers glued up and in place before the setting starts, so it's a busy process."

After the glue has set the long and arduous shaping and sanding starts. Marc starts with an angle grinder and his team then take over for the final sanding, usually to around 180 grit. The area that will be bronzed is first primed and sanded until all the grain is filled up, and Marc then uses a cold sprayable metal technique to apply the bronze. This in turn is sanded to a very fine finish (over 1,000 grit) and then polished using a metal worker's polishing mop and compounds.

"The black finish is completely unique to the studio," he says, "a mixture that includes squid ink is applied to the work and allowed to dry, before it is then brushed and buffed. The resulting effect is a very dead flat black."

The table is part of a limited edition of 25, with each one being unique. They have been exhibited in London, New York, and San Francisco, through New York gallery owner Todd Merrill - see [www.toddmerrillstudio.com](http://www.toddmerrillstudio.com). **GW**

*"... the table was laminated from 100 layers of oak veneer, using a combination of vacuum bags, formers and clamps"* **Marc Fish - furniture maker**



### MARC FISH

Marc started making contemporary furniture over 15 years ago after a burning desire to create six dining chairs. With a background in metal fabrication the obvious choice was steel, and so it began. The chairs received mixed reviews but the seed was firmly sowed; furniture making was the path Marc felt he must take.

Some years later after studying with some of the best fine furniture makers in the UK and receiving two distinctions in City & Guilds Furniture Making (Marc also has City & Guilds in Computer Aided Design), his flair and natural ability clearly sets him apart as an esteemed designer/maker. He has been awarded four Guild Marks by The Worshipful Company of Furniture Makers, and also the Claxton Stevens award in 2011 for the best Guild Mark issued in 2010.

Marc's passion is for one-off pieces drawing on exquisite craftsmanship, a good design ethos and exceptional customer service. He takes his inspiration from natural forms, art, sculpture and architecture.

Marc's use of the finest timbers and veneers, his understanding of metal fabrication and his attention to detail, set him apart from a standard cabinetmaker. Commissions are undertaken in various styles and construction techniques, producing the finest heirloom quality fine furniture and accessories

### FURNITURE MAKING COURSES

Marc's studio is renowned for innovation and experimentation in the field of furniture design. His students are encouraged to mix media and push boundaries; this is not a course for those wishing to learn antique reproduction or restoration. Prior experience is not required for either course but a genuine passion and willingness to learn is a prerequisite. An informal meeting is advised to discuss suitability before booking any long course.

The length of the furniture making course is flexible. For most, a 12- or 50-week course is ideal. The 12-week cabinetmaking course concentrates on furniture making accuracy and hand skills. A couple of small projects and samples are undertaken in this time, and if time allows, a piece of furniture may be completed but accuracy and skill is the main achievement to reach for; speed and productivity come with experience.

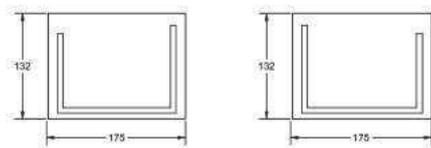
On the longer 50-week furniture making course, students cover all aspects to the same standard as the 12-week course, but also construct pieces of fine furniture to their own design and cover more advanced techniques. Running a furniture making business, marketing, and other subjects can also be covered, and external visits to timber yards are included on both furniture making courses to gain invaluable experience.

At the first meeting, the syllabus is discussed along with the student's options, then a bespoke course is designed, which caters for the students needs; this way Marc is able to teach students of all abilities. To find out more about the courses on offer, see [www.marcfish.co.uk](http://www.marcfish.co.uk)

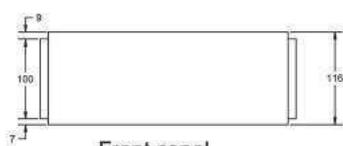


# Jewellery box fit for a sister-in-law

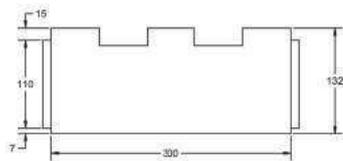
Peter Harrison's jewellery box with integral hinge and removable trays features a curved lip on the lid, which helps to make it truly individual and really stand out



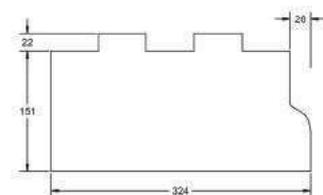
Side panels



Front panel



Rear panel



Lid

FIG 1. Dimensions of jewellery box components

I have made a few jewellery boxes before so my sister-in-law asked if I could make one for her birthday. The style of this project is going to be a fairly large oak box with an integral wooden hinge made from the lid and back panel. I also wanted to add some kind of feature to make the box individual and stand out. Having thought about it for a while I decided to make the lid curve over one corner of the box. I had done a similar thing before but not something this confusing; I found it quite difficult to visualise exactly how I was going to achieve it.

In the end the dimensions of the box were determined by the amount of oak I had available. I didn't know the sizes of the panels until I had passed the wood through the planer/thicknesser (I knew I'd have snipe at both ends so I didn't

quite know how much usable timber I'd have to work with).

## Plan, plane & plan again

I had two pieces of pippy oak: one was 1,000 × 400mm and the other was around 500 × 140mm (Pic.1). By scribbling on the timber I knew I had to make a side panel from the smaller piece, so the maximum height of the box was going to be around 140mm and just looking at nice ratios for the side panels, I decided that the width of the box would be 175mm. I therefore ripped the large piece of oak to around 200mm wide to allow for a bit of trimming space (Pic.2). As both edges of >

## MATERIALS & TOOLS REQUIRED

### Materials

- Oak plank(s)
- 3 × 300mm brass rod
- Leather to line the bottom of the jewellery box and trays
- 5mm plywood
- Veneer
- Oil for finishing

### Tools

- Table saw with sled
- Router table
- Chisel(s)
- Sander



STEP 1. Measuring the initial components



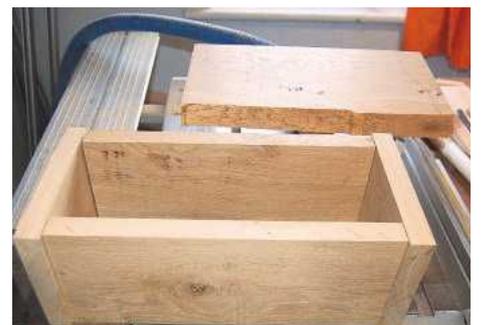
STEP 2. The board, once cut to size...



STEP 3. ... and once thickened



STEP 4. The parts of the jewellery box marked up, from top left to bottom right: lid, side panel, front, side panel and rear panel



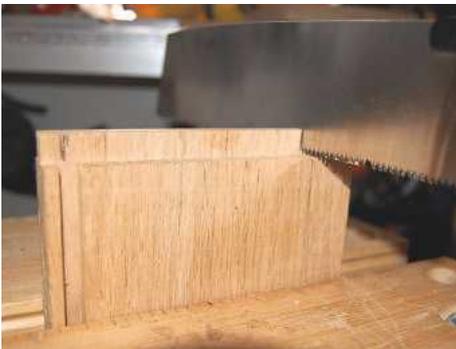
STEP 5. The components cut to size, and trying to visualise the end result



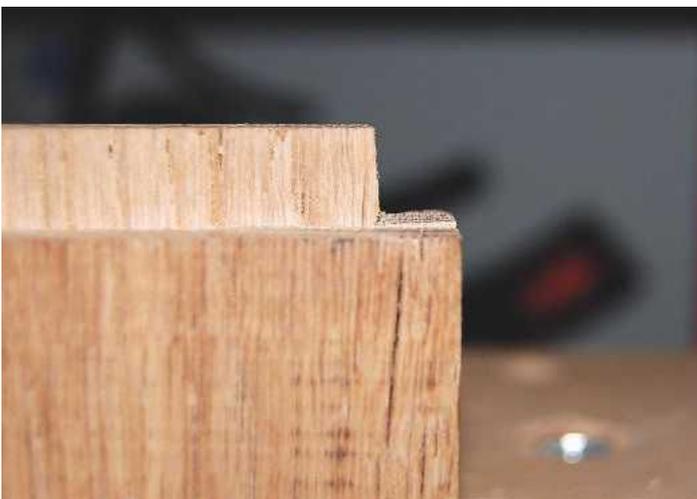
STEP 6. Here you can see the dado for the bottom of the box and the start and finish marks on the long piece of oak



STEP 7. Pencil marks on the right-hand side of the wood showed me where to start and end my routing



STEP 11. Trimming the tenons – I'm sure a proper workbench and vice would be much better! As shown, do not cut all the way down



STEP 12. The remaining tenon can be trimmed off using a chisel

the oak were waney, I needed to create a straight edge so I could rip it safely – I simply did this by nailing an offcut of laminate flooring to the underside of the timber and removing once I had cut the wood.

Once ripped, I passed the pieces through a thicknesser until they were uniform; they ended up being 22mm-thick (Pic.3). I then sketched the parts of the box on the wood to determine my rough dimensions. Although I could have determined all of the dimensions here I didn't feel the need to, as I could still easily adjust any dimensions to suit, say, the depth of my mortises, etc. I also wasn't sure how the lid was going to end up at this stage, so the front panel was therefore cut to the same height as the sides and back.



STEP 8. The piece on the left shows the full length of the front and rear panels



STEP 10. As you can see here, the tenons have now been cut

### Router dados & mortises

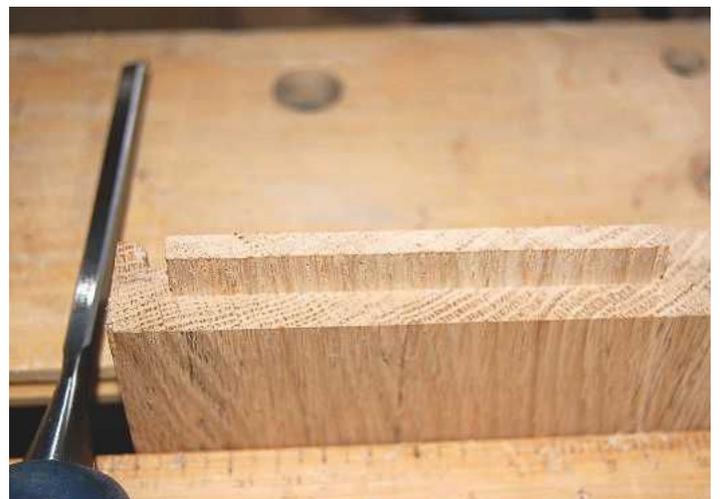
Now I had my sides, front and rear panel cut I started by cutting the dados for the bottom of the box (Pic.6). I used a 7mm straight router bit, which would give me enough space for 5mm ply covered in leather and veneer. I used a straight piece of wood as a fence on my router table and drew on pencil marks to show me the start and end points of the rebates (Pic.7). I then cut them bit by bit, raising the cutter a couple of millimetres with each pass; this will offer you more control and you'll be less likely to badly injure yourself. You will have to plunge the wood down on to the revolving router bit to cut the side panels, but with light passes you can do this safely enough.

I then cut the mortises in the side panels for the front and rear panel tenons to fit in to. As the rear panel is full height and the front panel around 10mm shorter, the mortises are different lengths on each edge of the side panels – just take your time, measure, think, and measure again before you cut them!

Once the mortises are cut you can measure the final depth of them – the tenons want to be cut just shy of this depth, which will give room for any expansion. I changed the router bit for a wider one so the cutting width was right for the tenons. Light passes are recommended here too



STEP 9. The dados on the two side pieces are longer towards the rear. More start and finish marks are added to the long piece on the right



STEP 13. Shoulders levelled



STEP 14. A trial fit



STEP 15. The hinge joints marked up



STEP 16. Doing a test cut on an offcut



STEP 17. Slot cut to accept brass rod for the hinge



STEP 18. Cutting the hinges on my table saw using a cross-cut sled



STEP 19. Holding the wood against the sled



STEP 20. Using the joints on the back to mark the joint for the top



STEP 21. The joint, straight off the table saw, was already fairly level

and when you get close to the correct width, you need to raise the router bit by minute amounts and keep testing the fit. It's better to do 10 tiny raises and get a good fit than go a little too far and end up with a really loose joint. The tenons now needed cutting to length (Pic.10). I marked the tenons and then trimmed them with a saw just shy of the bottom (Pic.11), before cleaning up the shoulders with a chisel (Pic.12).

### The hinge

This is where this build starts getting a little more tricky and precise. On this box the hinge is going to be full length and made integral from the back and top panels; it is essentially finger joints with rounded edges with a hole through the centre where a pin/rod is inserted. The trouble with this kind of hinge is how to create a dead central hole through the centre of the hinge joints (Pic.15). I have seen professional jigs (with professional price tags to match), which help with cutting the joints and drilling the holes, but this is way out of my league. I didn't have a long drill bit and even if

I did I don't think I'd be able to drill it in the right place all the way through the hinge. A couple of years ago, I did see a few techniques that could be used to achieve this fairly easily. All you do is cut a slot with your table saw blade to the depth of the extreme edge of the hinge pin, insert the pin/rod into the slot and glue in some filler pieces to cover the rod.

I decided that my hinge would be made up of five part threes on the back and two on the front, and as my width was 300mm, each recess/hinge part would be 60mm. I first cut the slot in the two panels to house the central rod – on my first pass the slot wasn't quite wide enough so I turned the panels through 180° and cut again, which increased the slot by fractions of millimetres but was enough to fit my rod in.

I then marked up the rear panel. As these cuts were going to be 22 x 60mm I decided to cut the hinges on my table saw using a cross-cut sled (Pic.18). This would enable me to see exactly where the blade was going to cut and would give me enough precision for this joint. I started by >



STEP 22. Testing the fit of the finger joints



STEP 23. Here you can see the insertion of the brass rod

cutting the slots to each side of the hinge recesses followed by the waste in between (**Pic.17**). I then used the finished rear panel joints to mark up the lid joints and cut these the same way. Once they were both done, I had to do a little bit of tweaking to get them to fit snugly.

I then put one side of both panels through the router table with a round-over bit as this would only allow the hinge to open 90°. As I wanted it to open a little more than 90°, I cut a small round-over part to the other sides. I then tested the joint (**Pic.22**) before I fixed the central rod into the back panel with some oak fillers I had cut (**Pic.23**). The central filler part has to be cut to the correct width but the outer filler pieces can be cut over-sized and trimmed later.

### The lid

Now that I had the hinges cut on the lid I needed to shape the top to create a lip that went over one of the side panels. I started by cutting the lid to create the rough shape of the lip (**Pic.27**).

What I needed to achieve was a taper along the length of the box up to where the lip started to rise up; I then needed to turn the lid upside down and cut the underside of the lip. I first started by using a hand saw to cut the taper but after a while I decided that this wasn't going to be the easiest or most precise method, so I had to rethink. I came up with a method whereby I fixed a piece of timber along the hinge side (with double-sided tape), which was the same height as the rise of the blade – around half the total

thickness of the lid. I then put the lid in my cross-cut sled and took multiple passes from the end up to the point at which I wanted the lip to start rising up. I then removed the bits that were sticking up by smashing them with a hammer (**Pic.31**), before levelling it all up with a chisel. Next, I started to lower the saw blade and took a few more passes to start the rise of the lip. I then flipped the lid over and used the same technique to remove the waste from the underside of the lip. I did, however, manage to cut a small chunk out of the edge of the box lid, which I needed to remove later. After a lot of sanding and a bit of chisel work, I was happy with the shape of the lid so it was time to fix the lid to the rear panel. Just make sure that you are happy



STEP 24. Using the round-over bit on the side of both panels



STEP 25. Inserting pieces cut to size ready to glue in the brass rod



STEP 26. Inserting glued in pieces, ready to trim



STEP 27. Here you can see the rough shape of the lid



STEP 28. A piece of scrap wood was taped on to the lid



STEP 29. Checking to see if the cut angle looks as good as it should



STEP 30. I made lots of passes!



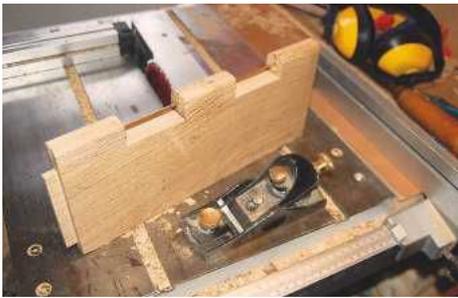
STEP 31. A hammer being used for fine woodworking!



STEP 32. The underside of the lid



STEP 33. Final shaping of the lid overhang



STEP 34. Ready for trimming the infill pieces using a plane



STEP 35. Checking the fit of the lid



STEP 37. Lid fitted to the back and the final insert pieces added to complete the hinge mechanism



STEP 36. As you can see, a lot of sanding was required on the top right-hand corner and the body of the lid



STEP 39. Leather on the inside and veneer for the bottom, which will cover the board



STEP 40. The box, all clamped up

with the shape of the lid as it will be harder to adjust once the hinge is put together. Finally, I put the hinge together and glued in the infill pieces.

### Bottom, glue-up & trays

For the bottom I would usually use 5mm plywood, but at the time I didn't have any. I had taken an old bookcase apart not long ago so I used some of the hardwood (Pic.38) from the back of the bookcase; it was quite thin so I doubled it up. To one side of the bottom I glued some recycled leather and then some veneer to the other side (Pic.39). Before I proceeded to glue together I sanded all the surfaces that would be difficult to sand once it was all assembled, which was almost everything apart from the outside of the side panels.

Now I had all parts of the box, it was just a case of gluing up. The only glue that's required went on to the mortise & tenon joints to the front and rear panels. Once glued, I clamped it all together and left it overnight (Pic.40).

The next day I released the clamps and made sure the lid still functioned as it should, which it >



STEP 38. Board from the back of an old, cheap bookcase formed the base



STEP 41. All the mitres for the trays are cut



STEP 42. The pieces of leather, beech and mitres for the box's trays

did apart from a bit of creaking. I then measured the inside dimension of the box so I could make the trays. It's good to make the trays slightly over-sized and then sand to size once they are put together. I made the trays out of some thin pieces of beech offcuts. I found a couple of bits that had some nice markings and cut the sides to size using mitre joints. These are good joints for figured wood as you can make the markings run around the box. They are not too strong but I don't think they need to be for trays. If you are worried you can always add spines to reinforce the corners. Once cut, I added some dados from the bottom of the tray, cut some plywood to size, added some leather and glued up the trays using masking tape instead of clamps (Pic.43). Next, I cut a length of wood to make some thin strips (around 3mm) to act as supports for the trays.



STEP 43. The trays, once constructed

Once cut and sanded, I glued these to the bottom of the box, and the trays were then sanded to size. I then sanded the rest of the box and finished it all off with a couple of layers of hard wax oil.

### Box appraisal

Overall I am very pleased with the results. The lip on the lid works pretty well, the hinge works and the lid stops opening in the right place. Hopefully my sister-in-law will like it too. **GW**

#### FURTHER INFO

You can see this project on Peter's Instructables page, as well as other wooden creations he has made – see [www.instructables.com/id/Jewelry-Box-With-Integral-Hinge](http://www.instructables.com/id/Jewelry-Box-With-Integral-Hinge)



STEP 44. The box, with the trays in place, clamped up



STEP 45. The completed box as seen from the front...



STEP 47. The box open, showing the individual trays...



STEP 46. ... and back



STEP 48. ... and with the trays removed

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# ✉ Letters & Makers

## Letter of the month

### Dad's biggest fan



Colin's hand-made sideboard also features a few turned bowls

Hi, I'm writing on behalf of my Dad (he doesn't know) as I, and everyone who knows him, thinks he is an absolutely wonderful woodworker! He has made, well... a large proportion of the furniture in the house, including pretty much my entire bedroom (thanks, Dad) and we are now the proud owners of a vast collection of beautiful bowls, each one completely unique. I have some fantastic childhood memories of being down at his shed (sweeping up the sawdust was one of my favourite jobs, believe it or not!) and will always treasure the many things he has made for me. He reads every issue of *Good Woodworking* and I've learnt to enjoy a few of the features, too. Thanks!

Alexandra Derbyshire, on behalf of Colin

*Hi Alexandra, thanks so much for getting in touch on your Dad's behalf – what a wonderful picture you've painted! It's clear to see he is a very accomplished woodworker and woodturner – thank you for sending in some examples of the many marvellous things he's made. Your enthusiasm for your Dad's love of woodworking is infectious and I'd love to share this with our other readers. Best wishes, Tegan*



A wonderful selection of turned bowls, platters, fruit and a honey dipper

### Budget workbench

Hello Tegan,

I wonder if you recall some 2-3 years ago one of your authors writing an article complete with photos on a similarly designed workbench? If I remember correctly, it cost some £300-£400 to make, using completely new materials. The frame was made of beech with the door fronts and drawers of similar materials.

Following my retirement some 20 years ago, I have completed a number of woodworking projects, including two single beds in ash, bedroom furniture in oak, as well as other pieces in oak, beech and pine. Also on the list is a large number of Victorian panel doors in pine, plus a number of table lamps. I made all of these projects using my old workbench, which was made from three planks nailed to a rough-sawn 3 x 4 timber frame, following which I decided it was time to build a respectable bench, so I considered two requirements:



Brian's budget workbench is a real triumph

1. Having spent a lot of retirement cash on projects, the bench would have to be of a minimum cost.

2. Any photos would have to show the bench being put to good use.

The bench top was made from 200 x 50mm beams left over from a friend's conservatory project that contractors had put in the skip. I put these through my planer/thicknesser and gave them a coat of varnish. The inner well was made using two pieces of leftover flooring, the frame was made using 40mm x 50mm CLS timber and the door and drawer fronts were made from solid oak flooring sections, which were again surplus to a friend's requirements. The most expensive item was the bench vice – a Record quick-release large vice costing £15. All in all, the total spend was around £40.

So the message to my fellow woodworking mates is that you don't have to spend a fortune to build a very sound and good workbench.

Best regards, **Brian Titmuss**

*Hi Brian, many thanks for your email – you certainly sound like an experienced woodworker who knows his stuff! Your workbench is testament to the fact that repurposed materials can be used to make something worthwhile and the end result certainly sounds and looks like it will serve you well for many years to come. You raise a valid point about using second-hand materials and how not buying new can often save you a princely sum – I'm sure this will inspire other readers to try the same and be more creative with their future builds.*

Best wishes, **Tegan**

### Constructing wooden stores

Dear Tegan,

As a woodworker with limited skills and ambition, I would like to ask you to feature an article on constructing wooden stores/greenhouses for locating in a 0.9m space against a fence. The options would be based on a pent roof with a fully opening double door, as well as one capable of holding bikes, one above the other, or a lawnmower and garden tools, which would need to be about 2.1m long x 2.1m high. An alternative with clear plastic walls could house plants as a front access greenhouse. Your contributors could, I hope, design and illustrate the construction of such a basic unit for persons like myself and this could be made using flexible dimensions, which would help to make it attractive to the huge numbers of us who enjoy, hopefully, advanced wood butchery and the joy of having a useful product at the end. Can you help?

The most successful of your plans for me has been the sit-on tractor with turned wheels

– so far I've made four to date and they are very popular.

Please keep up the good work, but do remember those of us with limited skills looking for handy, simple projects around the home and garden.

Best wishes, **J A Wilson**

*Hi James, thank you for your email and for taking the time to get in touch. I really appreciate your thoughts on providing articles that are aimed at a more amateur audience, and this is something I've been trying to implement over the past year or so.*

*Your request is quite specific but I will certainly email my authors to see if this is something that any of them would either like to attempt or have attempted before. Also, are there any readers out there who would be able to help and who fancy trying their hand at documenting such a build? I will do my best to bring this to fruition for you, and hopefully someone out there would like to share their story with us, too.*

Best wishes, **Tegan**

## READERS' GALLERY sponsored by Johnson Tools

Send in photos of your recently made woodworking projects and you could be in with a chance of winning an **Alcolin wood adhesives bundle**, consisting of one each of **Alcolin Cold Glue**, **Alcolin Fast Set Glue**, **Alcolin Professional Glue** and **Alcolin Ultra Glue**. Good luck!

### Jim Hardy

GW reader Jim tells us that clock mounting is a hobby of his and we love this unusual design, which was taken from *The Complete Guide to Making Wooden Clocks* by John A. Nelson. Jim explains that he bought the 125mm diameter skeleton clock to mount in a turning blank measuring 305mm diameter x 50mm thick. Next, the whole shape was cut out using a scrollsaw, then the bulk was drilled out using a pillar drill. This had to be removed before the clock could be inserted – it was then finished using a scrollsaw. Lots of sanding then followed and the final step was to add several coats of wax.



Jim's clock is made using maple and mahogany and measures 230mm high x 125mm in diameter

### Dennis Wake

This lovely pyrographed bowl was turned and finished down to 400 grit, then marked with 48 indexing lines before adding the ring design and making the segments. Derek then started burning the outline to the shape required before shading in all the segments to reveal the basket shape. He then decided that adding decoration to the bowl interior just wasn't enough, so he chose to repeat the design on the underside. The whole project took 18 hours to complete and the pyrography detail was added using the Peter Child pyrography kit – what a fantastic end result!



Dennis' basket weave pyrographed bowl took 18 hours to complete



The pyrography detail was added using the Peter Child pyrography kit

### Peter Wood

80-year-old Peter lives in Western Australia and has enjoyed woodworking since his teens. Having four daughters and 13 grandchildren, he thought it would be a good idea to start making them jewellery/keepsake boxes. Not having an artistic bone in his body (in Peter's words), he looked to YouTube and Pinterest for inspiration. The box shown here was recently made for Peter's wife and represents 30 that he's made to date, and with nieces on both sides of the family, this hobby will happily keep him busy for some time to come.



This jewellery box was recently made as a gift for Peter's wife and represents 30 that he's made to date

## One to watch: Marc Timmons

Marc is an 11-year-old woodworker who lives in Nova Scotia, Canada. His fascination with woodworking ignited around a year ago, during a trip to British Columbia: "There was a carving competition out there for five days," he says, "I watched it for pretty much the whole time, came back, and wanted to try it."

This young woodworker uses a chainsaw to carve out his unique creations, spending countless hours after school and on weekends in his work area behind the backyard shed. His mum, Daunette Timmons, says that he loves to be outside, commenting that he's definitely an "outside kid."

Marc spent last year's school break apprenticing under noted woodcarver Joel Palmer, who taught him techniques to improve his work. Recent creations include an impressive carving of a bear, entitled 'Bartlett the Bear', which was auctioned off to raise money to support a two-year-old girl from his local area who is suffering with leukaemia. His mother says that after he heard about the little girl, he told her how he wanted to do something to help, and that's where it all started. A Facebook page was set up to raise awareness of the cause – see 'Saw Marcs' – and to try to encourage people to bid towards this incredibly worthwhile cause.

It's great to hear that Marc's hobby is helping to build his self-confidence as well as bringing out his creative side. We have endless admiration for this young talent and his desire to help those in need really does make his story even more heartwarming. We hope that he goes on to hone his skills, carve even more impressive projects, and that this hobby really blossoms into a life-long pursuit.



Another chainsaw-carved creation



Marc doing what he loves: chainsaw carving



Marc and Bartlett the Bear, which was auctioned off to help raise money for a little girl in need

## WRITE & WIN!

We always love hearing about your projects, ideas, hints and tips, and/or like to receive feedback about GW's features, so do drop us a line – you never know, you might win our great 'Letter of the Month' prize, currently a Trend Easyscribe scribing tool. Simply email [tegan.foley@mytimemedia.com](mailto:tegan.foley@mytimemedia.com)

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# Home sweet home

Jumping to the aid of new home buying family members, **Glenn Perry** sets about replacing an old, worn out door with a custom-made framed ledge and braced version



PIC 1. The original cottage door

**M**y niece and her fiancée recently purchased an early 19th-century terraced cottage in Epping Forest. The front door, a traditional design, had suffered from exposure to our damp weather (Pic.1). Without a front porch or canopy to protect it, years of rain had run down the outside causing serious rot to the bottom (Pic.2). The door, made of European redwood, a softwood,

was not original. With a framed ledge and braced construction, it is a standard joinery item, but at around 1.9m high and 711mm wide, it is not a standard size, being a lot smaller than a modern, off the peg one. I have seen quite a few standard doors trimmed to within an inch of their life to fit a much smaller frame. One I saw recently had a 75mm wide bottom rail, which probably started off at 150mm.



PIC 2. Bottom of door showing extensive rot

### Weighing up the job

I agreed to make a new door. I inspected the existing door frame and it appeared sound. The door only had a Yale-type lock/latch, so a five-lever mortise lock would have to be fitted for security and insurance reasons. I would keep the existing lock in the same position. Using metric sizes, the exterior door would be made 44mm-thick. The matchboarding or TGV is 88mm wide when fitted together and is 14mm-thick. As the matchboarding would run the whole length vertically from the 44mm-thick top rail to the bottom, it would mean the bottom rail and the middle ledge would be 30mm-thick (I actually made this a fraction under).

Like its predecessor, I would make the door from European redwood. At the timber yard, good quality softwood is referred to as unsorted and is sold sawn, not planed, in various widths and thicknesses. Unsorted softwood is sold by the cubic metre – as a lot of hardwoods originate in North America, these are sold by the cubic foot. I tried to imagine a cubic metre of timber as a plank 1m wide, 25mm-thick and 40m long! I purchased a long plank 50mm-thick and 225mm wide choosing one where the growth rings ran radially to the centre (or thereabouts) and free from twist and bow along its length.

Using a combination of circular saw and planer/thicknesser, I ended up with timber for the stiles measuring 105 × 44mm. The timber for the bottom rail and middle rail or ledge was 150 × 29.5mm. >



PIC 3. My old planer/thicknesser easily coped with 225 × 50mm softwood



PIC 4. Planing door stiles with a No.8 plane



PIC 5. Nice wide shavings with a thick Ray Iles plane iron fitted

### Making the new door

When I started making the door I marked out the positions of the rails on the stiles (**Pic.4**). I positioned the middle rail so its top edge was in the middle. Traditionally, this is located so the visible sections of the TGV at the rear of the door are equal, making the wooden braces at the same length and angle. My door would have a larger top section. I have made these before using through wedged mortise & tenon joints for the rails, but as this door was relatively small and not too heavy, I cut shallower mortises using my chisel mortiser, which didn't extend all the way through – these were 15mm wide.

Using a 10mm mortise chisel (**Pic.6**), this meant cutting from both sides. The single tenons were cut using a tenon saw and router with a haunched top and bottom. A 7mm wide groove was routed 10mm deep and 14.5mm from the front inner edge of the door in the stiles and top rail. This would touch the edge of the mortises, extending the full length of the door, stopping 10mm in from the top rail, to receive the matchboarding.

With the stiles and rails assembled dry and cramped, I checked the diagonals for square, cut the matchboarding and made the tongues using a router. These were positioned centrally so the outside boards were the same width. I made sure not to make these too tight across the width so as to allow for movement. The two braces,

the thickness of the middle and bottom rail, were cut approximately 38mm in on the rails, extending upwards from the hinge side (**Pic.7**). They can be taken into the corners without cutting the rails. In days gone by, this was not always done as it was thought to push open the joints.

The whole assembly, dry and cramped up, was then checked for squareness. I also checked for any wind in the door by placing two straight timbers at each end and eyeing them for alignment (**Pic.8**). Once happy, it was glued up and left for 24 hours. When un-cramped, I secured the matchboarding to the middle and bottom rails, centrally with a single 40mm galvanised nail in each. The braces were attached with small gauge screws. After trimming the horns from the stiles and cutting the overlength matchboarding (**Pic.9**), I carefully drilled 6mm holes, 12mm in from the edge and installed dowels (**Pic.10**) through the tenons on the back (internal side of the door).

### Fitting locks

The fitting of an external door with mortise and Yale-type lock is not a five-minute job. Extra time was spent removing the slotted iron screws from the old hinges and a copper draught strip around the door frame, which was secured with many pins. After trimming the door, installing new brass hinges in the existing locations



PIC 6. Cutting 15mm mortises with a 10mm chisel

(plugging the old screw holes), I fitted the Yale and mortise lock above and below the middle rail. The inward opening door closed against the stone step, so to avoid rain running in I fitted a weatherboard. This was made from a piece of timber approximately 65 x 45mm, which was shaped with a bench plane and abrasives, then secured to the door with silicone and concealed screws (**Pic.11**).

### Final touches

The last job was applying primer and painting (the bottom of the door having previously been treated with clear wood preserver). The final touch was to fit the door furniture. **GW**



PIC 7. Diagonal brace before marking and cutting into the rail



PIC 8. Checking for wind before clamping up



PIC 9. Cutting the horns after gluing up



PIC 10. Drilling 6mm holes for the dowels



PIC 11. Weatherboard fitted and sealed to the door with silicone



PIC 12. Rear of door showing proportions



PIC 13. New door looking smart after painting

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# Bringing WOOD to life

Through building functional sculpture, work that serves both a sculptural aesthetic and utilitarian function, **Erik Wolken** seeks to create rhythm and poetry in each of the pieces he makes

'You and Me' chairs: 940mm high × 635mm wide × 610mm dia. Sculptural chairs constructed from carved poplar, finished in milk paint and a hand-carved natural cherry seat finished with water-based lacquer. Available in either red or black



CAD drawing for 'You and Me' chairs

**W**hen asked about his journey to becoming a furniture maker, Erik Wolken tells me that he never intended to become a woodworker; in fact, this was something of a chance discovery. While roaming the stacks of books at his University library one day, he came across Wendell Castle's publication on stacked laminated furniture construction and was intrigued by the notion of building useful pieces from wood. This sparked a desire to proceed to find more books of the same ilk and the rest, as they say, is history.

It all began in 1961 in Pittsburgh, Pennsylvania, where Erik was born and grew up. Some 22 years later he received his BA in Geography and spent the spring of 1988 studying Furniture Design at the Indiana University of Pennsylvania before going on to spend the autumn and winter of 1988/89 in the Programme of Fine Woodworking at Haywood Community College in Clyde, North Carolina. From 1989 to 1995 he worked as a cabinetmaker for Woodpecker Enterprises in Apex, North Carolina, before going on to open his own studio, where he has been working on private commissions and showing his work nationally ever since.

So that's Erik's journey in short, but if, like me, you're eager to discover how an interest in geography led to a successful career as a professional furniture maker, then do read on! Erik tells me that it wasn't long after discovering the work of Wendell Castle that he found himself needing a drafting table for a class he was taking in cartography: "I was a geography major as an undergrad, and too poor to buy one, so I decided to make one." Rudimentary at best and built from rough construction timber, screws and a carriage bolt to make it tilt, Erik had constructed his first piece of furniture and soon a fellow classmate saw his table and a commission ensued. Over the next few years, he went on to build a small workbench and played around at building very simple pieces of furniture using a set of Sears Craftsmen chisels, a wooden mallet constructed from firewood, and a hand-held circular saw screwed to a piece of plywood, which acted as a table saw.

Coming from a family of incredibly talented artists, scientists and writers, all of whom found a way to make their own unique path in life, set quite an example for Erik to follow. Luckily, he found his voice, as he explains: "I have a variety of images, ideas and objects in my head, and they must get out, so I make them." >



ABOVE: 'Human Shield #1' – 1,829mm high × 610mm wide × 356mm dia. Free-standing wood sculpture featuring two intertwined figures

### Functional sculpture

Describing his pieces as 'functional sculpture', this maker's work serves as a sculptural aesthetic yet does not exist solely to be viewed from afar, but to be interacted with and used everyday. So what made Erik take this contemporary route as opposed to a more traditional one? He states again the power of influence that discovering Wendell Castle's work, the father of the art furniture movement, had on him – an influence that has remained to this day. Glimpses of similarities can certainly be seen between the two makers, such as in their use of bold colours and the interplay of simple geometric shapes. But as Erik explains, his journey to developing his signature style was not as straightforward as it may at first appear: "At the time I entered a formal programme in furniture design and construction, and my biggest interest then was in the furniture of the Shakers. This was the kind of work I wanted to make, and I clashed mightily with my fellow classmates who came from a more fine arts background and were building funky odd-shaped and painted pieces that I just did not understand." That, however, was the beginning of a dialogue Erik began having with himself in which he really began to loosen up his conservative notions of furniture and started an evolution in his work whereby his designs were no longer technique-driven, but were now more concerned with expressing an idea – "a pretty artsy-fartsy notion!" As Erik explains: "More often than not, I am taking a conceptual and purely sculptural idea, like in many of my figurative pieces, and making it conform to a function such as a table, cabinet or a chair, which is not always a comfortable marriage." That being

said, he has always liked the idea of building functional objects as opposed to pure sculpture, as he is very much drawn to the interaction that takes place between a functional object and its user, as well as the vital role the user plays in fully realising his work.

### Process of discovery

As Erik says: "Creativity is a strange and unpredictable muse that I can never call upon when I need to. When that moment of inspiration happens, I try my best to capture it in either my sketch book or in the studio. More often than not, though, inspiration is a process of little pencil sketches that get developed over time into a finished idea." Having a very active imagination since he was a small child and still daydreaming of things to build to this day, he is also a big fan of taking long daily walks, which can also be a source of ideas, "just never when I need them!"

Suffering a hand accident when using a jointer in his early 30s meant that Erik was unable to work for a period of time and knowing that he needed a larger set of skills, he started to learn CAD: "Those skills have proved to be very valuable and long before the days of SketchUp, I was able to do fairly advanced 3D computer modelling and was able to make up for my lack of drawing skills by being better equipped to visualise my ideas."

In short, however, Erik says that his process of discovery is to always have his eyes open to what is happening in the visual world, whether it be nature, or the art and furniture world in magazines, museums, galleries or websites. He is constantly on the prowl,

RIGHT: 'Dancing Couple' mirror – 749mm high × 838mm wide × 140mm dia.



ABOVE: 'Archetype Bench' – 914mm high × 1,422mm wide × 432mm dia. A celebration of arcs and angles, with a curly maple seat, turned and painted maple legs, and an asymmetrical back of laminated and painted Baltic birch plywood

BELOW: 'Mz. Muffetts Tuffetts' – 1,320mm long × 406mm wide × 432mm tall. Bench/coffee table made from cherry, maple, Baltic birch plywood, paint and coloured pencil

BELOW: 'Back in the Saddle Again' – 1,270mm long × 406mm tall × 305mm deep. Bench/coffee table in solid ash with painted details



looking at anything and everything, which might kick off even an inkling of an idea. "Inspiration and discovery exist everywhere; you just need your eyes open to be able to recognise it." One of Erik's favourite reference books is on Japanese architecture and he also points to *Steal Like an Artist*, a book by Austin Kleon that includes amusing anecdotes and helpful tips on unlocking your creativity. Erik also explains that as he has started actively making furniture of his own, he has also been greatly influenced and inspired by the Memphis Group and Italian architect, Ettore Sottsass.

## Design process

When asked how his design process begins, Erik tells me that most of his ideas start in his sketchbook, before being created into simple 2D drawings in CAD, where he can begin to work out issues of scale and proportion: "If I think the idea has merit, then I do a 3D rendering in CAD and start further defining the individual elements that make up a particular piece." Since his work often involves carved and textured surfaces along with colour, which are hard to reproduce on the computer, Erik often builds a scale model, which brings all those aspects together. In the case of more complicated pieces such as chairs, he will build a full-scale mock-up out of cheap construction grade materials. "Though the process seems linear for me, it rarely is. I rarely have an idea completely worked out before I start construction and I will often have design issues to resolve, which require going back to my sketchbook and repeating the whole process until I have worked out the problem at hand." Thinking of his designs as 'perfect storms' in which

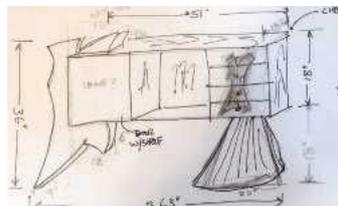
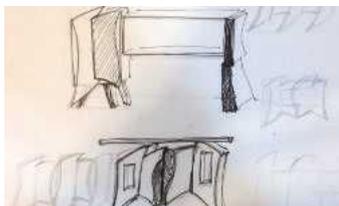
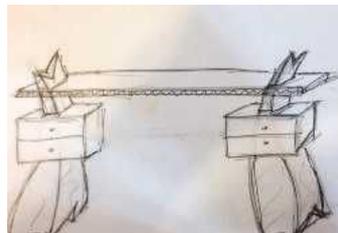
the individual elements of shape, colour, texture and imagery come together to make the whole piece work, in many ways the design for Erik starts with an idea or a concept and then quickly moves on to really being just creative problem solving. "For example, on the 'You and Me' chairs, I couldn't figure out the design of the back rest pieces and over the course of a couple of weeks I sketched many designs, modelled some more on the computer, cut them out full-scale in cardboard, and carved some out of cheap timber, all the while waiting for that moment when I sensed I had a good solution." In terms of the ethos behind his designs, Erik says that the fundamental character or spirit of his work is to tell a story: "I have always been interested in storytelling and documentary film and audio documentary, and creating a narrative for my pieces is a large part of how my thought process begins, and in many cases, such as my pieces with digital image transfer, the narrative I have created is from my own life."

From looking at his pieces, it is obvious that Erik is certainly influenced by the world around him, be that natural or man-made, and his skill in terms of taking a piece of timber and turning it into an object that is imbued with historical images, or which gives a nod to a specific structure or architectural form, is clear to see, and above all, immensely enjoyable for the viewer.

Although much of his work features painted and mixed media elements and often no natural wood, when he does incorporate this into his pieces, he tends to be guided by the appropriateness of the colour of a particular piece of wood for the idea at hand and its working characteristics. Since much of the natural



'Torso #1' and detail



'Dancing Cabinet' and design sketches – 1,067mm high × 1,524mm long × 457mm wide. Cherry wood carved and painted, with gel medium image transfer



LEFT: 'I Have No Mouth But Must Scream' – 457mm high × 991mm long × 150mm dia. Made using carved poplar and paint



LEFT: 'Up A Creek' table and 'Shield' mirror – 864mm high × 1,473mm wide × 305mm dia. Richly grained cherry legs and a sweep of brushed aluminium support a subtly tapered wedge of warm cherry with red milk paint accent



LEFT: 'Wave Bench' – 457mm high × 1,422mm wide × 356mm dia. Carved cherry top, paint and Baltic birch plywood



'Torso #4' and detail



'Human Shield #3'

wood he uses is carved, he also tends to use only local hardwoods, such as cherry, maple, walnut and ash. "I am also drawn to the story behind obtaining a piece of wood, such as receiving an ash tree from a local tree service, which I had milled into slabs and air-dried in my workshop." Erik says he has never really used exotics in his work for two reasons: 1) he doesn't approve of how many are unsustainably removed; and 2), he has never really bought into the notion that a 'wow' piece of wood in itself gives value to a piece; to him the value of his work is in the thought process he brings and the careful choice of materials.

### Working space

Working from a small studio he created for himself four years ago, Erik tells me that he used to rent large commercial spaces for many years, where he had access to many high-end commercial tools, so this new working space is very simple in comparison: "I just have the basic necessary tooling: a 3hp Delta unisaw, Hammer/Felder combination jointer/planer, Grizzly bandsaw and drill press, as well as a basic dust collector, all of which meets my needs as well or better than the many expensive tools I had previously." Erik's workshop also features tall ceilings and great lighting, all of which contribute to making it a wonderful space to work in. Sharing previous workshops with between 2-10 other people meant that Erik struggled to be creative in what could often be a loud and chaotic environment, as he says: "That ability to cope in larger, crowded spaces gave way as I turned 50, which is why I ended up building my own little 'shop behind my house in Chapel Hill, North Carolina." Now he finds that a quiet environment, odd for a woodworker, with little interruption, is what he needs most in order to successfully create.

When asked about his favourite tools, Erik admits

that, if we are talking about big stationary tools, he doesn't really like any of them as "they are loud and dusty and though they provide a necessary service, I am happiest when I am not using them." He also has no romanticism about using hand tools and will use whatever tool gets the job done in the quickest, most efficient manner regardless of its noise and dust factor. This maker is most content when he is in the stage of a project where he can shape something with a pattern maker's rasp or carving chisels: "I just like the quiet of hand tools; I will put a hand dovetailed drawer in a piece once in a blue moon just to prove to myself that I can still do it, but for the most part, my joinery involves Dominos, biscuits and screws, with an occasional machine-cut mortise & tenon."

### Future plans

At the time of writing this, Erik is currently working on a large bamboo kitchen project for a client with the hopes that at the end and with his bank account restored, he can spend a couple of months working on some ideas he has for a large outdoor sculpture, but in terms of a broader future plan, Erik says that a big question in his mind has always been "can I do work that is better than what I have already done? The fear that I have already done my best work is a quandary I will carry with me for the next 10 years, for at this point in my career and life, and having now crossed the 50 threshold, all I know how to do is to keep plugging away in the studio and challenging myself to do new work." Continuing to develop new series of work and continuing to be intrigued by that which surrounds him highlights the fact that Erik Wolken has no desire to give up doing what he loves any time soon, which is great news for the many fans of his work, his clients, and for everyone else who's life is enriched by his magnificent pieces. **GW**



### FURTHER INFO

As well as having his own website – [www.erikwolken.com](http://www.erikwolken.com) – Erik's work can also be viewed here: [www.artfulhome.com](http://www.artfulhome.com)

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ABOVE RIGHT & FAR RIGHT: Views inside Erik's studio

RIGHT: Outside Erik's studio

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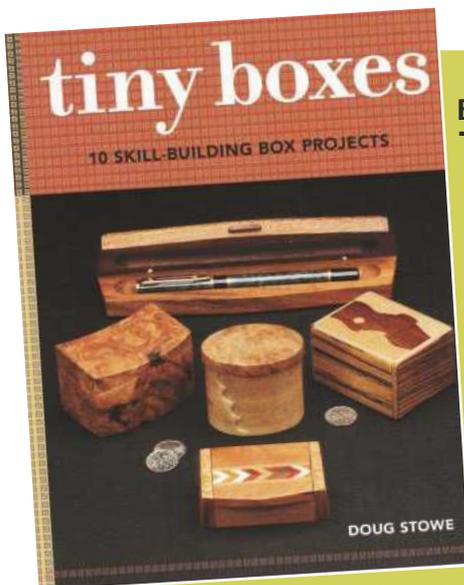
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## AROUND THE HOUSE with Phil Davy



I wonder how many of us wear safety gear when we're working? Of course, PPE (Personal Protective Equipment) in the construction industry is mandatory, but I'm talking about working at home. Not just a face mask when sanding or eye protection when sawing or routing, but what about a hard hat? I mention it after receiving a sharp blow on the back of my head a while ago. Nailing some cladding to the front of a shed, I'd temporarily left a lengthy piece of 75 x 75mm timber on the sloping roof above. You've guessed it – my hammering caused the wood to slide off and hit me. Thankfully I was OK, but I won't do that again in a hurry!



### BOOK REVIEW: Tiny Boxes

The great thing about box making is that anyone can give it a go, no matter whether you're a highly-skilled woodworker or complete novice. The sky's virtually the limit when it comes to design and

construction techniques, which may be simple or highly complex. You don't need much space, material costs are generally low if using offcuts, and often you don't really need machinery. Boxes are a good way to develop woodworking skills, too, whether it's cutting dovetails by hand or routing grooves precisely for inlay.

#### Skill level rating

This new book is a collection of 10 projects from well-known American box-maker Doug Stowe, though I'd hesitate to say it's beginners' stuff. Most of them do actually require a machine of some sort, whether it's a scrollsaw, bandsaw, table saw, planer or lathe. There's no skill level rating as such (which would have been helpful), the author assuming a certain level of competency due to the machinery used. A list of tools and kit necessary for each box would have been handy, too. Yes, there are scary unguarded table saw photos and techniques displayed, so it's maybe best to skip those pages...

#### Boxes on show

First up is a rather pleasing burr myrtle bandsawn box, a tempting technique to try as you can make use of random-shaped offcuts. An ideal project if you're a newcomer to the bandsaw and want to find out just what this machine is capable of.

If you're a fan of Shaker boxes there's an interesting interpretation of an oval box, which looks intriguing. Stowe suggests you can steam-bend with a humble saucepan, so once you've thickened your wood the rest is pretty straightforward. Not every project will appeal, with an heirloom lift-lid box rather clunky due to its routed profile. More attractive projects are a pair of salt and pepper shakers, which are essentially hollowed-out boxes. Wavy cuts on the bandsaw and contrasting veneers combine to make these items enjoyable to make.

#### Room for improvement

A handful of jigs (mostly routing) are included to help with specific processes, their construction explained adequately with clear illustrations. Cutting lists are provided for some of the boxes where specific dimensions are required, though these are imperial only. A metric/imperial conversion chart is included at the back of the book. 'Work Smart' tips here and there are quite useful, though it would have been good to see a few more, plus the addition of safety warnings.

Unfortunately, photography is not always up to Taunton's usual high standards, with some photos slightly murky. That said, there's plenty of detailed information here if you're keen to explore the world of box making. Projects consist of a real variety of designs, with one or two being quite delightful.

#### THE GW VERDICT

- ▶ **RATING:** 3.5 out of 5
- ▶ Doug Stowe, published by **Taunton**
- ▶ **PRICE:** £17.99
- ▶ **WEB:** [www.thegmcgroup.com](http://www.thegmcgroup.com)

## SPRING PROJECT – ALCOVE SHELVING: FIXING BATTENS

**TAKES:** Half a day

**TOOLS NEEDED:** Saw, square, sliding bevel, tape, spirit level, block plane, drill and bits, plug cutter

# Jobs in spring

With spring almost here, **Phil Davy** takes the opportunity to fit some simple shelving into alcoves with the aid of supporting battens

If you're fitting simple shelving into alcoves with supporting battens, it is both convenient and economical to use standard 50 × 25mm PAR softwood.

When buying, always sight along each length of timber. You can often overcome slight bowing when cutting this to length, besides forcing the batten up or down when screwing it to the wall, but more severe bowing may need a few strokes with a plane to get the top edge flat.

To match a veneered MDF shelving and worktop I made recently, I used solid maple battens instead. Hardwood battens obviously require a lot more work than softwood, as you'll first need to plane the timber to size. My rough-sawn maple was about 26mm-thick, allowing me ample material to end up with a finished size of 45 × 20mm after thicknessing.

### Detecting pipes & cables

It's a good idea to run a current detector over walls that are to be drilled, especially if you're uncertain of the location of power cables and pipes. Although cables should always run vertically, in old properties this is not always the case. Even a basic detector should pinpoint live cables as well as anything from metal, showing exactly where it's safe to drill. Of course, the fixing you use depends on the wall construction when installing the battens.



**STEP 3.** Unless you have a planer/thicknesser, use a bench plane for prep; battens from PAR softwood will make this a much easier task!



### Counterboring

For shelving around the home, it's always neater to counterbore the screws then plug the holes; these are trimmed flush after gluing in place. If you're careful to match the grain it's difficult to see any evidence of fixing, creating a very clean finish. You can either use a plug cutter fitted in a drill or a plunge router with suitable bit. Router plug cutters tend to be of a larger diameter than drill bits, so may be better for larger screw sizes.



**STEP 1.** Select each hardwood board width for minimal waste. When marking out, allow about 5mm extra width on each piece for planing up



**STEP 2.** Although a table saw is faster and cuts straighter, its kerf is quite wide. A jigsaw, with a sharp blade, does the job almost as well with less waste



**STEP 4.** Counterbore the screw holes, using masking tape on the flatbit to drill to correct depth. Once the battens are fitted, these holes will be plugged



**STEP 5.** Use a plug cutter to make plugs from the same timber as the battens. To help match the grain, draw a pencil line along each row prior to removal



**STEP 6.** A detector for cables in the wall will prevent a potential accident when drilling. Sophisticated models detect timber studs, wires and metal pipes



**STEP 7.** A simple laser device will enable you to transfer levels precisely around the room. Use a pencil to mark the lines



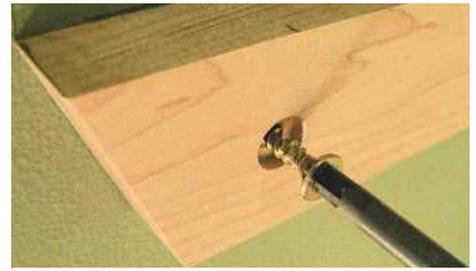
**STEP 8.** Select the correct size drill bit to suit your wall fixing. For holes in brick or concrete a drill with hammer action, plus TCT masonry bit, are essential



**STEP 9.** It's important to drill holes at 90° to the wall, otherwise you'll struggle to get battens level



**STEP 10.** Insert a plug in the hole and tap it home. With plastered walls tap slightly beneath the surface, using a large nailpunch or piece of steel rod



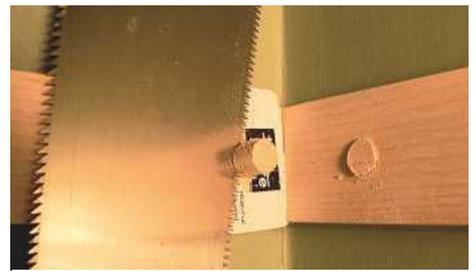
**STEP 11.** As the ends of alcove side battens are exposed, make them as neat as possible; these were sawn at 60° – clean up end-grain with a block plane



**STEP 12.** When you have several shelves to install above each other, check the side battens line up vertically. Draw a pencil line, then saw battens to fit



**STEP 13.** Brush PVA on the end of the plug and tap it into the hole, with grain in line with the batten. When dry, saw off the excess



**STEP 14.** For sawing off the plugs, I use a Japanese saw blade with an old credit card as a spacer. Finally, trim with a block plane



**STEP 15.** When fitting shelves to odd-shaped alcoves, it's easiest to make a template from cardboard. Trim until you get a snug fit



**STEP 16.** Once the template fits nicely, cramp it to the board and draw around the edge. The shelf will be notched out at each end to fit around the beams



**STEP 17.** The most efficient way to saw pine, MDF or plywood shelves, is with a jigsaw. With a sharp blade fitted you can nibble edges to fit



**STEP 18.** For an aged effect, first stain softwood with Chestnut Antique Pine, and finish with a coat of Golden Brown wax, applied with fine steel wool



**STEP 19.** You'll probably need to trim the shelf ends with a plane to get it to fit the alcove neatly. Don't force it, as this could split veneer or damage plaster



**STEP 20.** When the shelves are finally varnished and in position, you'll hardly notice the battens

## WORKSHOP PROJECT – MOBILE STORAGE

**TAKES:** A day

**TOOLS NEEDED:** Cordless drill/driver, sanding drum, hand tools

# Trolley talk

Looking to mobilise his collection of plastic tool storage trunks, **Phil Davy** comes up with a clever solution that uses a sturdy piece of plywood or MDF cut to size, which can then be fitted with castors



Reorganising my workshop over the past few weeks has meant having a major clear-out and rethinking how best to store the contents. This has meant reshuffling everything on a temporary basis as my house move has been delayed, though the workshop still needs to be operational. After getting most of the timber sorted into various species and stacked neatly on adjustable shelving, I'd accumulated more offcuts than I could cope with. A woodburner is definitely handy...

With limited floor space for machinery, I've never exceeded my self-imposed limits of bandsaw, sliding mitre saw, planer/thicknesser and pillar drill. In a small workshop you soon

discover where the best locations tend to be for machines. Then it was just a question of sorting hand and power tools. Ideally, hand tools should be stored in cupboards or on shadow boards for easy access, though currently most of mine are in plastic toolboxes, with expensive planes and similar kit in two joiner's tool cases (see GW272). Of course, the advantage of cupboards is that they keep contents free from dust, but that luxury will have to wait until the next workshop...

### Mobilising storage

Although cramps are more accessible if placed in racks or hung on walls, my collection is housed in a couple of plastic storage trunks. Not so

convenient, but with very little wall space left it was an easy option. A handful of cramps can be surprisingly heavy, so to make life easier I decided to make these stackable trunks more mobile. A suitable piece of sturdy plywood or MDF cut to size can be fitted with castors and you have an instant trolley. That way the cramps, or whatever, can be stored underneath one of the low timber shelves, then swung out easily when needed.

I used 50mm castors from IKEA, which seems to be fairly sturdy. At £8 for a set of four these were the cheapest I could find and it's not the end of the world if they need replacing in future. Depending on the size of trolley and the expected load you could fit bigger (75mm) castors. Both of my trolleys measure about 700 x 400mm, though make them to suit your trunk or toolbox.

To reduce the chances of a plastic trunk sliding off a trolley, I brushed on a couple of coats of Rustins' Textured Decking Oil. You could also add softwood battens around the top edge to retain the storage box in place.

### Mobile extractor

Previously, my hefty steel drum dust extractor was not particularly mobile and sat in a corner of the workshop, so I decided to make a wheeled base for this at the same time. I had an offcut of 25mm ply, which was just big enough, so I marked out a diameter of 550mm using string and pencil. This was straightforward to rough out with a jigsaw, cutting about 2mm on the waste side of the line. To get a really clean edge I made a simple radius guide from pine for my DeWalt router. After cutting a clearance hole for the long router bit, I next bolted the guide to the baseplate. A screw through the centre point into the plywood enabled it to rotate smoothly. When using a router bit like this it's important to switch on the router before plunging it down into the workpiece, even if there's a minimal amount of material to remove. If not, you'll get kickback and the edge will probably get damaged.



**STEP 1.** Measure the storage trunk or toolbox and mark out plywood or MDF for each trolley. Cut this to size with a circular saw



**STEP 2.** Clean up the edges and draw a suitable radius at each corner. Using a large coin is a quick way to do this



**STEP 3.** Cut each corner carefully with a jigsaw fitted with a narrow blade. Clean up these curves with a sanding drum or similar



**STEP 4.** If necessary, sand the surfaces of each trolley with a random orbit sander, using 120 grit abrasive paper



**STEP 5.** Rout a small chamfer around both upper and lower edges; this reduces the plywood splintering and improves handling



**STEP 6.** To restrict a plastic container from sliding, brush on a couple of coats of a suitable textured decking oil or paint



**STEP 7.** Mark the position of each castor on the underside of the trolley. Drill and screw the mounting plates to the plywood



**STEP 8.** For a circular trolley, first draw the required radius using string and pencil. Cut the ply on the waste side of the line with a jigsaw



**STEP 9.** Make a routing guide from thin softwood or MDF. Bolt this to the router baseplate, then measure back the correct radius to find the centre of the circle



**STEP 10.** Screw the guide to the ply, then fit a sturdy straight cutter in the router and check the cut. Carefully rotate the router to clean up the edge



**STEP 11.** Fit at least four castors to the underside of the ply. Depending on loading, you may want to add another in the centre



**STEP 12.** Check all trolleys move freely. Load up as needed, slide into place and enjoy extra space >

USEFUL KIT/PRODUCT

# ALCOLIN WOOD ADHESIVES



I'd guess that when most woodworkers stumble across a glue that's easy to use, economical, reliable and has a reasonable shelf life they tend to stick with it (sorry about that). So when a new brand appears on the shelves, how simple is it to switch, I wonder? Although Alcolin is a relatively new name here in Blighty, the South African company has been producing adhesives for more than 50 years. Now four of their sticky products are available here.

Most woodworkers will be familiar with Titebond glues, manufactured by Franklin International in the USA. Two of these new Alcolin glues – Professional and Ultra – appear identical to Titebond and are actually made by Franklin. The other two (Cold Glue and Fast Set) are manufactured by Alcolin themselves. Confusing maybe, though it's what's inside the containers that counts. All contain low VOCs (Volatile Organic Compounds) and are PVA-based adhesives. I've been trying all four glues recently to see how they differ.

## Cold Glue

Similar to regular white PVA, this is the cheapest of the bunch. Rather than just a specific woodworking glue, it's suitable for craft materials such as leather, textiles, paper and so on, hence it's more of an all rounder. Alcolin recommend one hour minimum cramping time, though ideally two hours for softwood, eight hours for hardwood. It leaves a beige glue line on drying.

## Professional

If you're a Titebond Original user, you'll love Alcolin Professional glue. A yellow aliphatic resin glue, it has less creep than conventional PVAs, meaning components are less likely to slide when cramping. Also heat and solvent-resistant, Alcolin recommend this product for woodturning. Minimum cramp time is 30 minutes, though one hour (softwood) and four hours (hardwood) are recommended. The glue line is pale cream.



Using some freshly-planed softwood, I assembled several pieces as L-shaped corner joints, plus pairs of softwood blocks glued face to face

## Ultra

Designed for exterior and interior work, this beige adhesive appears to be the same as Titebond III Ultimate. Alcolin claims Ultra is waterproof and I had no hesitation in using it when building some casement windows recently. It's claimed to have similar properties to polyurethane, but with no foaming or nasty mess it's much more pleasant to use. Cramping times are similar to Professional and a beige glue line is created. Ultra glue is the most expensive product here, at twice the price of Alcolin Cold Glue.

## Fast Set

Another white PVA adhesive, Fast Set seems to slide less than Cold Glue and has a shorter open time of just five minutes. Alcolin states it's particularly suitable for hard, oily timbers. Once dry, Fast Set gives the clearest glue line, which could be important on some projects.

## Neater nozzles

The smallest glue bottles (250ml) are a decent size and perfect if you want to dip your toes in the Alcolin waters. Each is colour-coded, so you're less likely to pick up the wrong glue if you buy more than one type. Every bottle comes with an angled nozzle, so applying glue in a tight corner is a cinch. Unlike some glue nozzles these have simple screw caps, so are unlikely to become clogged up. As all are water-based glues, they clean up easily with a damp cloth.

I did a couple of (admittedly) unscientific tests with each glue. Using some freshly-planed softwood, I assembled several pieces as L-shaped corner joints, plus pairs of softwood blocks glued face to face. Each pair was cramped overnight with a heavy-duty F cramp, fully tightened.

After three days each corner joint was secured in a bench vice while I tried to break the glue joint. No clever stress-measuring devices here, I'm afraid, but this did give some idea of gluing



Each pair was cramped overnight with a heavy-duty F cramp, fully tightened

properties. In each case the wood fibres tore before the actual joint failed, though the Ultra and Fast Set seemed particularly difficult to break out of the four.

The face blocks were fully immersed in a bucket of water (weighted on top) for several days, just to see how the cheaper glues compared with the exterior waterproof Ultra. Surprisingly, all pairs were really hard to prise apart with a wide chisel and mallet.

## Choosing a glue

So, with four Alcolin glues to choose from, how do you decide which is best for your work? I'd probably bypass the Cold Glue and suggest Professional for furniture and quality woodwork use, especially as there's little difference in cost. For exterior work I'd recommend Ultra, which is claimed to be waterproof. If you're in a hurry, then Fast Set is a good choice. Open time is 10 minutes on all glues apart from Fast Set, which is five minutes. **GW**



Every bottle comes with an angled nozzle, so applying glue in a tight corner is a cinch

## THE GW VERDICT

▶ **RATING:** 4.5 out of 5

▶ **PRICES:** £2.68-£7.15 (250ml); £4.04-£10.03 (500ml)

▶ **WEB:** [www.johnsonstools.co.uk](http://www.johnsonstools.co.uk)

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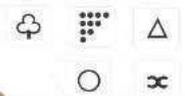


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# Put those cogs in motion

Inspired by his love of the industrial revolution, its old cast-iron machinery and exposed gearing, **Les Thorne** turns a box that mimics one of the cogs that would have been on show

I have always loved the history of the industrial revolution with its old cast-iron machinery. The Victorians liked to make their machinery beautiful as well as functional, with the use of bright colours and the addition of brass trimmings. I like the blackness and the smell of the old gearing and that's where the inspiration for this month's project has come from. At the family sawmill I can remember a horizontal saw that was originally driven by steam but when I was a child it had been converted to electricity – as you can imagine, this was fascinating to a youngster.

The gearing was all on show in those days: there were no guards hiding the intricacies of the workings. This saw was in full production until the late '70s, when it was replaced with a modern band mill.

I struggled a little with the design of this piece as I wanted the outer surface to feature really deep cuts, but the downside of this is that you then have less diameter to make it into a box. In hindsight, the second one I make will be turned from a larger diameter blank, which will help to give the box a little more volume. **GW**



**STEP 1.** As we're going to stain the piece black, I recommend using European oak, which you need to make sure is free of splits and knots. Take the corners off to make roughing out quicker



**STEP 2.** Mark the centres so it can be accurately mounted on the lathe. One of these plastic gauges is perfectly good for this. If the wood isn't entirely square, you will need to mark four times and take the average in the middle



**STEP 3.** Make the work round with the spindle roughing gouge and use the 10mm skew chisel to cut the spigot. It's well worth practising to use this tool one-handed, so you can make this cut more easily



**STEP 4.** Next, a spigot needs to be cut on both ends. Making boxes does require a certain amount of accuracy and this spigot is perfectly cut, is the right diameter, with a small amount of dovetail to match the chuck jaws, and it's cut down cleanly so the top of the jaws will locate onto the blank



**STEP 5.** It's not only the tool you use that's important, it's also the way it's been sharpened. The 13mm signature gouge has been ground to a fingernail profile – as you'll see during the project, this will allow the use of push and pull cuts



**STEP 6.** 'Push cut and bevel rubbing' is my preferred method for shaping effectively. The tool is cutting the fibres of the wood cleanly rather than scraping or breaking the wood away



**STEP 7.** Take the diameter of the middle down by around 5mm to create a waisted shape that will add a little interest to the final box. The lid end should be held in the chuck



**STEP 8.** This is the Paul Howard router jig. I used to use one I had made myself but this one is fantastically engineered. The router is a Trend T3, which is not too heavy



**STEP 9.** The cutting depth is determined by the wooden insert on the adjustable depth stop. This particular cutter has a flat end, which will create a cog effect more than one which goes to a point



**STEP 10.** It's really important that the spindle is locked really tightly when routing as any sideways movement will give you wobbly lines. The box is going to be cut 16 times, so the indexing is 1, 4, 7, 10, etc. as it's a 48-point indexing wheel



**STEP 11.** I found that working from right to left cuts cleaner than going the other way. The cutter has to be set on the centreline and ensure to watch out for the shavings building up in the depth stop



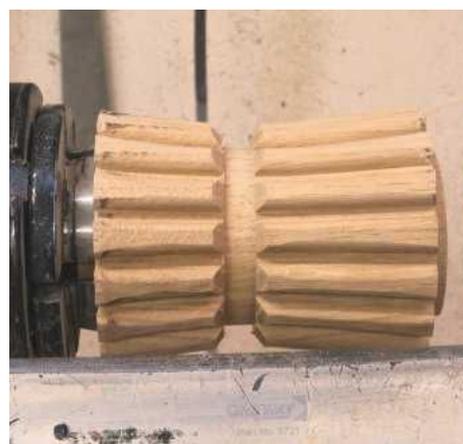
**STEP 12.** This nylon wheel just happens to be the correct width to fit in the grooves. Only do a rough sand at this stage as some more tooling will need to be added to the outside



**STEP 13.** You can now begin to form the box by cutting the spigot for the base. Use a 10mm skew chisel to cut in 3mm below the bottom of the routed grooves; this will form the part which the lid fits over



**STEP 14.** To chamfer or not to chamfer – that is the question! In the end I decided that it would look better if I cut an angle between the two mating parts of the box



**STEP 15.** The spigot has to be parallel, so step back and have a good look at it. If the spigot slants either way, you may experience some problems later on



**STEP 16.** Part the base off using a 2mm parting tool – using such a thin tool ensures you don't waste too much timber. Be sure to check that the tool goes in square



**STEP 17.** I would normally part all the way through and grab the bit as it comes off, but as it isn't too easy to hold due to its uneven surface, I decided to stop the lathe and cut the last bit through with a fine-tooth saw



**STEP 18.** When you part it off ensure to leave a tiny amount of the spigot on the lid; this will be your guide for hollowing it out. The spigot should fit perfectly if you hollow to this line



**STEP 19.** The 13mm signature gouge is now used in pull cutting mode. Make sure the flute is not pointing upwards: have it facing towards you, present the tool to the centre and then pivot it towards you, thus creating a dish



**STEP 20.** Once you have cut the majority of the wood out with the gouge, use the 10mm skew to true up the sides. Line the tool up with the bed of the lathe and push the tool straight into the end-grain



**STEP 21.** The same tool is used for creating a flat on the inside of the lid. Placing your finger on the toolrest will guide the depth of the tool as it's worked along the toolrest. Make sure the tool is presented on the centreline



**STEP 22.** You should now have almost cut out to the correct diameter – here you can just see the remnants of the pencil mark. Remember to take small cuts: the lid does need to be tight so you can turn the top



**STEP 23.** The easiest way to sand the flat inside of the lid is to use a 30mm sanding pad mounted in a drill. Be careful not to generate too much heat as the end-grain can crack



**STEP 24.** The base should fit perfectly onto the lid with a really tight fit and the diameters of the two sections should come together really well. At this stage, sand the box to a finish



**STEP 25.** The base is mounted into the chuck and the lid is fitted on so the top can be turned. The masking tape is added for security; you could use the tailstock but I find it can get in the way



**STEP 26.** The position of the bevel is important when removing the spigot. The angle of the tool has to match the direction of the cut: if you present the tip of the tool to the surface, it will skate back



**STEP 27.** Chamfer the top of the box to match the join. Make sure you cut a slight concave into the base, which will allow the box to sit on its outer diameter, so it won't wobble



**STEP 28.** It's now time to hollow out the base, using the spindle gouge as before. I don't find there's a need to drill a depth hole and there should be no need to switch to a specialist hollowing tool until the overhang becomes over 75mm



**STEP 29.** Due to the angle on the base, it's advisable to undercut the inside. My rolled edge skew has a 15° angle on the end and that matches the shape perfectly. I also sand the spigot so the lid will fit snugly and isn't over-tight



**STEP 30.** Start by sanding the inside of the box at 180 and work through to 400 grit. When sanding through a small hole like this, only place one finger inside, so nothing gets trapped



**STEP 31.** For this step you will need to turn yourself a jam chuck. Mount up a piece of softwood and turn a taper on the end; the box can then be offered up to give you an indication as to the correct diameter required between it and the wood



**STEP 32.** Use the 10mm skew to cut the timber down; this needs to be a tight fit into the base and the top of the box needs to come up against the shoulder



**STEP 33.** Whoops! I cut the jam chuck a little small so I had to use a piece of kitchen roll as a filler. Before you start turning, test the strength of the grip on the base



**STEP 34.** I got a bit carried away with some detailing on the bottom; this probably should have appeared on the top of the box where it could be seen



**STEP 35.** Black stain on oak always works really well; you can see how the stain hasn't penetrated into the medullary rays of the oak and gives a contrast that shows off the grain



**STEP 36.** The completed cog box should look something like this

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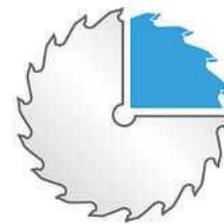
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# Next month

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## ➤ A VISIT FROM VERITAS:

Vic Tesolin recently paid a visit to Warwickshire College, where he inspired students with his passion for hand tools and his extensive knowledge of the woodworking industry in general. Andy King reports and gets a little nostalgic, as he finds himself transported back to his apprenticeship days...



### ⬆️ EGG BOX FOR EASTER

Annemarie Adams turns a lovely egg-shaped box using a variety of laminated timbers



### ⬆️ DOLLS' HOUSE TECH

Brian Barber shares the techniques behind the making of his wonderful 1:12 scale Georgian dolls' house



### ⬆️ CLEVER LADDER SHELIVING

Dustin Van den Abeele makes use of some leftover pieces of timber to produce this handy, contemporary storage solution

PLUS: ANDY KING'S KIT & TOOLS ➤ BEGINNERS' GUIDE TO USING JOINTERS ➤ EDWARD HOPKINS' HOME TRUTHS



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# Another view of beauty

Join us as we ponder the notion of beauty and suggest a few key points to follow during your woodworking journey

**F**ew people would find custard served with a dollop of brown sauce appetising. Most people see the Taj Mahal as more attractive than a concrete garage. There is, therefore, some sort of consensus as to what is beautiful and what is not. Beauty is in the eye of the beholder in that, unless it is there, it is unseen and unknown; but beauty resides primarily in the object itself. Not everyone finds the same thing beautiful because we come with various programming and pre-sets, but there is general agreement. If there weren't, there would be no exhibitions, concerts, restaurants, gigs or real ale festivals.

## Practice

Beauty cannot be arrived at by a formula alone because in order to know that the formula has worked, you'd need to be able to assess the result, and for that you'd want, um, a sense of beauty. There are no rules. Rules work for mechanics and electricians, but are mute when it comes to beauty, love and God (which are closely related). For these things, thinking is no good: we have to feel. This takes practice.

## Listen

Human operations are processed by the brain but, just as the pain of a stubbed toe exists in your foot, feelings are apprehended by the heart. Only, that is, if the incessant chatter of the mind shuts up. The initial response to an object or a design should be silent. What feelings does it evoke? Is it balanced? Coherent? Does it have life, or is it inert and dull? Is it one thing or a collection of disparate

elements? Is it happy or disconsolate? Seeing it, am I happy or disconsolate?

## Imagine

I can't see how a flower or a falling leaf is anything other than beautiful. Some creatures from the deep sea, and from behind the fridge might unsettle us, but that's a different matter. All man-made things are questionable and, for the woodworker, me-made things are most questionable. Is anything out of place? Should that handle be a tad higher? Should the pediment be wider? Would three hinges be better than two? For this, you need sensitivity and imagination. And more practice.

## Err on the side of restraint

Be as bold as you like, then rein yourself in. Nothing should stand out (unless it's meant to). If you introduce a chamfer on one axis, consider a 45° cut on another: this is one motif. If you have big lines sweeping out, consider little lines flowing in: this is another. Use no more than three motifs or, like a picture painted with the whole palette, the piece will lose its punch.

Take care. The difference between pleasing and not pleasing is negligible. Aim high, and admit it when you've missed. Do better next time. And, once in a while when a warm wind blows through your workshop and you get it exactly right, revel in it. You've made something beautiful. This shows, necessarily, there's something in you that is beautiful, too. **GW**



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