Woodworking CRAFTS

HAND, POWER & GREEN WOODWORKING • TURNING • RESTORATION • DIY

Get the edge

Learn to sharpen

TECHNIQUE
Sort out your dust extraction!

PROJECTS
Key & card box
Carved harvest mouse
Plans 4 you – swing seat

FEATURE
Maintaining lock gates

CONTEMPORARY SETTEE • HIDDEN DOVETAILS • OUTDOOR CHESS SET • TURNED BOWLS




NEW STORE KIDDERMINSTER OPENS JUNE '18

Machine Mart

66 SUPERSTORES NATIONWIDE

WHERE QUALITY COSTS LESS

Clarke TABLE SAWS

LEG STAND KITS FOR CTS10D AND CTS11 ONLY £27.59 INC VAT

FROM ONLY £72.99 EXC.VAT £87.59 INC.VAT

BEST SELLER

CTS10D

INCLUDES LEFT & RIGHT TABLE EXTENSION

MODEL	MOTOR	BLADE	EXC.VAT	INC.VAT
CTS800B	600W	200mm	£72.99	£87.59
CTS11	1500W	254mm	£154.99	£185.99
CTS10D	1500W	254mm	£169.98	£203.98

Clarke 4" BELT/ 6" DISC SANDER

- Dust extraction facility
- 4" x 36" belt tilts & locks 0-90°
- 225mm x 160mm table, tilts 0-90°
- 370W, 230V motor

CS4-6E

£92.99 EXC.VAT £111.59 INC.VAT

Clarke 6" BELT/ 9" DISC SANDER

- Includes stand
- 1 HP/ 230V/ 1ph motor

CS6-9C

£239.00 EXC.VAT £286.80 INC.VAT

Clarke TABLE SAW WITH EXTENSION TABLES (250mm)

CTS14

- Ideal for cross cutting, ripping, angle and mitre cutting
- Easy release/locking mechanism for table extensions
- 0-45° tilting blade
- Cutting depth: 72mm at 90° / 65mm at 45°

£129.98 EXC.VAT £155.98 INC.VAT

SHOWN WITH OPTIONAL LEG KIT CLK5 £19.98 EXC.VAT £23.98 INC.VAT

evolution FURY5-S TABLE SAW

- 1500W motor
- 0-60° mitre gauge
- Cutting depth: Steel 3mm, Wood 85mm at 90° or 58mm at 45°

3 YEAR

FROM ONLY £159.98 EXC.VAT £191.98 INC.VAT

Clarke WOODWORKING VICES

STANLEY. Record

FROM ONLY £14.99 EXC.VAT £17.99 INC.VAT

WV7

MODEL	MOUNTING	JAW (WIDTH/OPENING /DEPTH)mm	EXC.VAT	INC.VAT
Clarke CHT152	Bolted	150/152/61	£14.99	£17.99
Stanley Multi Angle	Clamped	72/60/40	£18.99	£22.79
Record TV75B	Clamped	75/50/32	£21.99	£26.39
Clarke WV7	Bolted	180/205/78	£29.98	£35.98

Clarke QUALITY CAST IRON STOVES

8kW

OVER 22 QUALITY STYLES ON DISPLAY

£219.00 EXC.VAT £262.80 INC.VAT

ENERGY RATING A

FLUES, COWLS & ACCESSORIES IN STOCK

BARREL II

Clarke 1" BELT/ 5" DISC SANDER

- Includes 2 tables that tilt & lock
- Quality Induction 300W motor

£69.98 EXC.VAT £83.98 INC.VAT

CBS1-5

Clarke TURBO FAN GAS HEATERS

Offering low cost, efficient heating

10.3KW

PROPANE GAS FIRED

ONLY £79.98 EXC.VAT £95.98 INC.VAT

LITTLE DEVIL II

Clarke ELECTRIC HEATERS

FROM ONLY £44.99 EXC.VAT £53.99 INC.VAT

DEVIL 7030

DEVIL 6015

MODEL	VOLTAGE	HEAT OUTPUT KW	EXC.VAT	INC.VAT
DEVIL 2800	400V	1.2-2.8	£44.99	£53.99
DEVIL 7005	400V	5	£84.99	£101.99
DEVIL 6009#	400V	4.5-9	£109.00	£130.80
DEVIL 6015†	400V	5-10-15	£169.00	£202.80
DEVIL 7025	400V	22	£299.00	£358.80
DEVIL 7030	400V	30	£349.00	£418.80

#was £142.80 inc.VAT †was £214.80 inc.VAT

Clarke CORDLESS STAPLE/ NAIL GUN

- All models include nail/staple pack and tough moulded case
- 18V 2Ah Li-ion power pack
- 18 Staple/Nail Gauge

ONLY £109.98 EXC.VAT £131.98 INC.VAT

CONSN18LIC

SPARE NAILS / STAPLES IN STOCK

ELECTRIC AND CORDLESS MODELS IN STOCK

TURBO AIR COMPRESSORS

airmaster

- Superb range ideal for DIY, hobby & semi-professional use

FROM ONLY £89.98 EXC.VAT £107.98 INC.VAT

* 'V' Twin Pump

8/250

MODEL	MOTOR	CFM	TANK	EXC.VAT	INC.VAT
8/250	2HP	7.5	24ltr	£89.98	£107.98
7/250	2 HP	7	24ltr	£94.99	£113.99
11/250	2.5HP	9.5	24ltr	£109.98	£131.98
8/510	2HP	7.5	50ltr	£119.98	£143.98
11/510	2.5HP	9.5	50ltr	£139.98	£167.98
16/510*	3 HP	14.5	50ltr	£209.00	£250.80
16/1010*	3 HP	14.5	100ltr	£259.98	£311.98

Clarke 4" BELT/ 8" DISC SANDER

- Includes two tables
- 550W 230V motor

£159.98 EXC.VAT £191.98 INC.VAT

CS4-8

Clarke DUST EXTRACTOR/ CHIP COLLECTORS

CDE7B

CWVE1

FROM ONLY £109.98 EXC.VAT £131.98 INC.VAT

- Powerful 1100W motor
- 50 litre bag capacity
- Flow rate of 850M3/h

MODEL	MOTOR	FLOW RATE	BAG CAP.	EXC.VAT	INC.VAT
CWVE1	1100W	183 M3/h	50Ltrs	£109.98	£131.98
CDE35B	750W	450 M3/h	56Ltrs	£144.99	£173.99
CDE7B	750W	850 M3/h	114Ltrs	£159.98	£191.98

BLACK & DECKER POWER PLANERS

TE-PL850

- 82mm cutting width

FROM ONLY £54.99 EXC.VAT £65.99 INC.VAT

MODEL	MOTOR	DEPTH OF CUT	EXC.VAT	INC.VAT
Einhell TE-PL850	850W	3mm	£54.99	£65.99
B&D KW750K - GB	750W#	2mm	£57.99	£69.59

Clarke AIR TOOLS

CAT165

CAT111

FROM ONLY £21.99 EXC.VAT £26.39 INC.VAT

HUGE CHOICE IN-STORE/ONLINE

MODEL	DESCRIPTION	EXC. VAT	INC. VAT
CAT111	Orbital Sander	£21.99	£26.39
CAT160	6" Dual Action Random Orbital Palm Sander	£39.98	£47.98
CAT165*	10mm Air Belt Sander	£39.98	£47.98
CAT168	50mm Right Angle Orbital Sander	£34.99	£41.99

*was £59.98 inc. VAT

Clarke HARDWOOD WORKBENCH

- Includes bench dogs and guide holes for variable work positioning
- 2 Heavy Duty Vices
- Large storage drawer
- Sunken tool trough
- LxWxH 1520x620x855mm

CHB1500

£149.98 EXC.VAT £179.98 INC.VAT

Clarke DISC SANDER (305MM)

- Powerful, bench mounted
- 900W
- Dust extraction port

£129.98 EXC.VAT £155.98 INC.VAT

CDS300B

Clarke BELT SANDERS

- Ideal for surface removal, sanding and finishing

Makita

ABRASIVE SANDING BELTS IN STOCK

BS1

FROM ONLY £36.99 EXC.VAT £44.39 INC.VAT

MODEL	MOTOR	M/MIN	EXC.VAT	INC.VAT
Clarke BS1	900W	380	£36.99	£44.39
Clarke CBS2	1200W	480	£79.98	£95.98
Makita 9911	650W	75-270	£89.98	£107.98

Clarke CPF13 ELECTRIC POWER FILE

- Variable belt speed
- Tilting head

*Black & Decker

FROM ONLY £49.98 EXC.VAT £59.98 INC.VAT

MODEL	MOTOR	BELT SIZE (mm)	EXC.VAT	INC.VAT
CPF13	400W/230V	13x457	£49.98	£59.98
KA900E*	350W/230V	13x455	£59.98	£71.98

Clarke DETAIL SANDERS

- Perfect for smooth and fine finishing along with hard to reach areas or curved surfaces

CDS-1V

FROM ONLY £19.98 EXC.VAT £23.98 INC.VAT

MODEL	WATTS	EXC.VAT	INC.VAT
PS105	105W	£19.98	£23.98
CDS-1V	280W	£29.98	£35.98

ALL MODELS INC. SANDING SHEETS

Clarke SHEET SANDERS

- Ergonomic design for optimum comfort

*was £41.99 inc.VAT

CON300

FROM ONLY £16.99 EXC.VAT £20.39 INC.VAT

MODEL	SHEET SIZE	MOTOR	EXC.VAT	INC.VAT
COS200	190X90mm	150W	£16.99	£20.39
CON300*	230X115mm	330W	£32.99	£39.59

Clarke RANDOM ORBITAL SANDER

- Adjustable front handle improves control
- 7000-14000rpm

£32.99 EXC.VAT £39.59 INC.VAT

CROS3

INC DUST BAG AND SELECTION OF 125MM DIAMETER SANDING DISCS

Clarke CIRCULAR SAWS

- Great range of DIY and professional saws
- Ideal for bevel cutting (0-45°)

CON185

*Includes laser guide

FROM ONLY £41.99 EXC.VAT £50.39 INC.VAT

MODEL	MOTOR	MAX CUT 90/45 (mm)	EXC.VAT	INC.VAT
CCS185B	1200W	65/44	£41.99	£50.39
CCS2	1300W	60/45	£59.98	£71.98
CON185*	1600W	60/40	£62.99	£75.59

VAC KING WET & DRY VACUUM CLEANERS

- Compact, high performance wet & dry vacuum cleaners for use around the home, workshop, garage etc.

#was £119.98 inc.VAT

FROM ONLY £49.98 EXC.VAT £59.99 INC.VAT

* SS = Stainless Steel

MODEL	MOTOR	CAPACITY DRY/WET	EXC. VAT	INC. VAT
CVAC20P	1250W	16/12ltr	£49.98	£59.98
CVAC20SS*	1400W	16/12ltr	£59.98	£71.98
CVAC20PR2	1400W	16/12ltr	£64.99	£77.99
CVAC25SS*	1400W	19/17ltr	£67.99	£81.59
CVAC30SSR*#	1400W	24/21ltr	£89.98	£107.98

Clarke PORTABLE THICKNESSER

- Max thickness cap. 125mm and 250mm wide
- Planing depths adjustable from 0-2.5mm
- Powerful 1250W motor

£219.00 EXC.VAT £262.80 INC.VAT

CPT250

Clarke 18V CORDLESS DRILL/DRIVERS

Clarke CONTRACTOR

powered by Li-ion

CON18Li

FROM ONLY £69.98 EXC.VAT £83.98 INC.VAT

MODEL	VOLTS	BATTS	EXC. VAT	INC.VAT
CON18Ni	18V	2 x Ni-Cd	£69.98	£83.98
CON18Li	18V	2 x Li-Ion	£89.98	£107.98

Clarke CONTRACTOR 18V BRUSHLESS COMBI DRILLS

- 2 forward and reverse gears

NEW RANGE

powered by Li-ion

CON180LI

FROM ONLY £109.98 EXC.VAT £131.98 INC.VAT

MODEL	VOLTS	BATTS	EXC. VAT	INC.VAT
CON18LIC	18V	2x 2.0Ah Li-Ion	£109.98	£131.98
CON180LI	18V	2x 4.0Ah Li-Ion	£169.98	£203.98

Clarke OSCILLATING BOBBIN SANDER

- Dust collection port
- Inc. 6 sanding sleeves/bobbins

COBS1

£139.98 EXC.VAT £167.98 INC.VAT

Clarke BOLTLESS SHELVING/BENCHES

- Simple fast assembly in minutes using only a hammer

FROM ONLY £29.98 EXC.VAT £35.98 INC.VAT

SAVE 10%

WHEN YOU BUY ANY MIX OF 4 FROM THIS RANGE SAVE AT LEAST £23.99 INC.VAT

150 KG PER SHELF (evenly distributed) Strong 9mm fibreboard shelves

CHOICE OF 5 COLOURS

RED, BLUE, GREY, SILVER & GALVANISED STEEL

350 KG PER SHELF (evenly distributed) Strong 12 mm fibreboard shelves

MODEL	DIMS WxDxH(mm)	EXC.VAT	INC.VAT
150kg	800x300x1500	£29.98	£35.98
350kg	900x400x1800	£49.98	£59.98

Clarke WHETSTONE SHARPENER (200MM)

- Produces razor sharp cutting edges on chisels, planes, etc.
- Inc. 3 tool holding jigs, workpiece clamp & support frame, polishing paste & water trough

CWS200B

ONLY £119.98 EXC.VAT £143.98 INC.VAT

Clarke PLANERS & THICKNESSERS

CPT800

- Ideal for DIY & Hobby use
- Dual purpose, for both finishing & sizing of timber

FROM ONLY £184.99 EXC.VAT £221.99 INC.VAT

MODEL	PLANING WIDTH	MAX THICK. CAPACITY	EXC. VAT	INC. VAT
CPT600	6"	120mm	£184.99	£221.99
CPT800	8"	120mm	£219.98	£263.98
CPT1000	10"	120mm	£299.00	£358.80

Clarke OSCILLATING BELT & BOBBIN SANDER

- Sand concave, convex, straight or multi-curved pieces
- Dust collection port
- Inc. sleeves, drum & belt

£179.98 EXC.VAT £215.98 INC.VAT

COEBS1

FAST, EASY FINANCE ONLINE/INSTORE

BUY NOW SPREAD THE COST

- Over 12, 18 or 24 Months
- Purchases over £300
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Clarke SLIDING COMPOUND MITRE SAWS

BEST SELLER

- For fast, accurate cross, bevel & mitre cutting in most hard & soft woods
- 1800W motor
- Laser guide

FROM ONLY £89.98 EXC.VAT £107.98 INC.VAT

CMS10S2

MODEL	BLADE DIA/BORE (mm)	MAX CUT DEPTH/CROSS	EXC.VAT	INC.VAT
CMS210S NEW	210/30	60/120	£89.98	£107.98
CMS10S2	254/30	78/340	£139.98	£167.98

Clarke MITRE SAWS

CMS210

FROM ONLY £59.98 EXC.VAT £71.98 INC.VAT

Laser Guide
‡ Sliding Compound

- Quality Range of Mitre saws and blades in stock

MODEL	BLADE DIA/BORE (mm)	MAX CUT DEPTH/CROSS	EXC. VAT	INC. VAT
CMS210	210/30	60/120mm	£59.98	£71.98
Einhell TC-MS 2112	210/30	55/120mm	£59.98	£71.96
Einhell TC-SM 2131#	210/30	62/310mm	£129.98	£155.98
Einhell TC-SM 2534‡	250/30	75/340mm	£159.98	£191.98

Clarke WORK TABLE SUPPORTS (PAIR) CWTS1

ONLY £29.98 EX.VAT £35.98 INC.VAT

- Ideal if you have your own work top or want to build a steel or wood workbench • Inc. mounting holes for worktop, shelf and floor

SIMPLY ADD YOUR OWN TOP

BEST SELLER

Clarke DRILL PRESSES

- Range of precision bench & floor presses for enthusiast, engineering & industrial applications

FROM ONLY £66.99 EXC.VAT £80.39 INC.VAT

CDP152B

B = Bench mounted
F = Floor standing

MODEL	MOTOR (W) SPEEDS	EXC. VAT	INC. VAT
CDP5EB	350 / 5	£66.99	£80.39
CDP102B	350 / 5	£79.98	£95.98
CDP152B	450 / 12	£149.98	£179.98
CDP202B	450 / 16	£189.00	£226.80
CDP10B	370 / 12	£198.99	£238.79
CDP452B	550 / 16	£229.00	£274.80
CDP352F	550 / 16	£229.00	£274.80
CDP502F	1100 / 12	£499.00	£598.80

Clarke CONTRACTOR / Clarke BOSCH JIGSAWS

BEST SELLER

FROM ONLY £15.99 EXC.VAT £19.19 INC.VAT

CON750 *DIY #Professional

MODEL	POWER (W)	DEPTH OF CUT (WOOD/STEEL)	EXC. VAT	INC VAT
CJS380*	420W	55/6mm	£15.99	£19.19
CON750#	750W	80/10mm	£27.99	£33.59
Bosch PST700E*	500W	70/4mm	£49.98	£59.98

Clarke BISCUIT JOINTER

- 11000rpm Operating Speed • 860W motor • 14mm Cutting Depth • Inc. dust bag, storage case and face spanner for cutter change

NEW

2 YEAR GUARANTEE

FROM ONLY £52.99 EXC.VAT £63.59 INC.VAT

TC-BJ900

Clarke SCROLL SAWS

FROM ONLY £82.99 EXC.VAT £99.59 INC.VAT

CSS400C

BEST SELLER

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

MODEL	MOTOR	SPEED RPM	EXC. VAT	INC. VAT
CSS400B	85W	1450	£82.99	£99.59
CSS16VB	90W	550-1600	£94.99	£113.99
CSS400C	90W	550-1600	£114.99	£137.99

Clarke 13" MINI WOOD LATHE

£154.99 EX.VAT £185.99 INC.VAT

CWL325V

- Ideal for enthusiasts/ hobbyists with small workshops
- 325mm distance between centres • 200mm max. turning capacity (dia) • 0.2HP motor

Clarke MULTI FUNCTION TOOL WITH ACCESSORY KIT

- Great for sawing, cutting, sanding, polishing, chiselling & much more • 250W motor
- Variable speed

FROM ONLY £39.98 EXC.VAT £47.98 INC.VAT

CMFT250

Clarke BENCH BANDSAW

- Produces fast, precise mitre & longitudinal cuts
- 350W motor
- 7.5" throat size
- Cuts in all types of wood

£129.98 EXC.VAT £155.99 INC.VAT

CBS190B

Clarke MORTISING MACHINE

£174.99 EXC.VAT £209.99 INC.VAT

CBM1B

- Accurately creates deep square recesses • Table size 150 x 340mm • Max. chisel stroke 76mm
- Robust cast iron base & column ensures stability & accuracy
- 95mm depth of cut

CHISELS AVAILABLE FROM £8.39 INC VAT

"...fast and accurate with a good solid feel...Excellent value for money." See www.machinemart.co.uk

Clarke STATIC PHASE CONVERTERS

- Run big 3 phase woodworking machines from 1 phase supply
- Variable output power to match HP of motor to be run

ROTARY PHASE CONVERTERS ALSO IN STOCK

PC60

FROM ONLY £229.00 EXC.VAT £274.80 INC.VAT

CONVERT 230V 1PH TO 400V 3PH

MODEL	MAX. MOTOR HP	FUSE	EXC.VAT	INC.VAT
PC20	2HP	10Amps	£229.00	£274.80
PC40	3.5HP	20Amps	£269.00	£322.80
PC60	5.5HP	32Amps	£319.00	£382.80

Clarke 12" DOVETAIL JIG

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

£57.99 EXC.VAT £69.59 INC.VAT

CDTJ12

Clarke PROFESSIONAL BANDSAWS

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

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

MAGNIFIED MITRE GUIDE

QUICK RELEASE FENCE

DRIVE-BELT TENSIONING

SOLID GROUND CAST IRON TABLE

CBS300

FROM ONLY £199.00 EXC.VAT £238.80 INC.VAT

MODELS ALSO FEATURE:

MULTI-STEP DUST EXTRACTION OUTLET

FLEXIBLE LED WORKLIGHT

REMOVABLE DUST TRAY

BLADE TENSIONING CONTROL

MODEL	THROAT DEPTH	MAX CUT 90°	MAX CUT 45°	EXC. VAT	INC. VAT
CBS225	228mm/9"	90mm	50mm	£199.00	£238.80
CBS300	305mm/12"	165mm	115mm	£399.00	£478.80
CBS350	340mm/14"	225mm	160mm	£498.00	£597.60

Clarke CONTRACTOR / Clarke BOSCH ROUTERS

- Powerful heavy duty machines ideal for trade and DIY use

CR2 INCLUDES 15 PIECE KIT WORTH OVER £20

FROM ONLY £46.99 EXC.VAT £56.39 INC.VAT

CR1C

*DIY

MODEL	MOTOR (W)	PLUNGE (mm)	EXC.VAT	INC.VAT
CR1C*	1200	0-50	£46.99	£56.39
Bosch POF1400ACE	1400	0-55	£89.98	£107.98
CR2	2100	0-60	£119.98	£143.98

Clarke ROUTER TABLE

CRT-1

Router not included

BEST SELLER

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

£69.98 EX.VAT £83.98 INC.VAT

Clarke GRINDERS & STANDS

- Stands come complete with bolt mountings and feet anchor holes

6" & 8" AVAILABLE WITH LIGHT

FROM ONLY £32.99 EX.VAT £39.59 INC.VAT

STANDS FROM ONLY £47.98 INC.VAT

POLISHING KITS 4" TO 8" FROM ONLY £27.59 INC VAT

With sanding belt
*8" whetstone & 6" drystone

MODEL	DUTY	WHEEL DIA.	EXC.VAT	INC.VAT
CBG6RP	DIY	150mm	£32.99	£39.59
CBG6RZ	PRO	150mm	£42.99	£51.59
CBG6RSC	HD	150mm	£54.99	£65.99
CBG6SB#	PRO	150mm	£54.99	£65.99
CBG6RWC	HD	150mm	£59.98	£71.98
CBG8W* (wet)	HD	150/200mm	£56.99	£68.39

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In the June issue...

Hello everyone and welcome to the June issue of Woodworking Crafts

Privilege

One of the great things about my job as an editor is being able to go out and about, sometimes quite long-distance, and get to meet dedicated professionals doing their job, usually related to woodworking in some way.

Last month it was Hercules Propellers, prior to that it was swill basket making and now this month it was a day spent with the Canal & River Trust lock builders and installation team. It really is a privilege seeing and learning more about each particular craft skill or discipline. There are often overlaps – wood is the common factor but, for instance, a lock gate in its construction looks much like a ledged and braced door or a garden gate. The big difference is the sheer scale of construction in order to make really heavy-duty gates capable of holding back thousands of gallons of murky river water, both benign in its calmness yet threatening should anything go wrong. I am always in awe at the mastery of each of the skills I see being demonstrated in action and yet, because I am a woodworker, I can relate to what is going on and ask pertinent questions that fill in the gaps in my knowledge so I can then retell the story to you, our readers. It's part of the job I never get bored with and the challenge of photographing a subject, perhaps just inches away from deep water in this instance, does concentrate the mind, while assembling the text in a meaningful, readable way is another equally crucial challenge. So I hope you enjoy these features and see a glimpse of what I have had a chance to see and think more about these occupations and what they mean to the rest of us. As always there is a weblink at the end of each article so do follow those up.

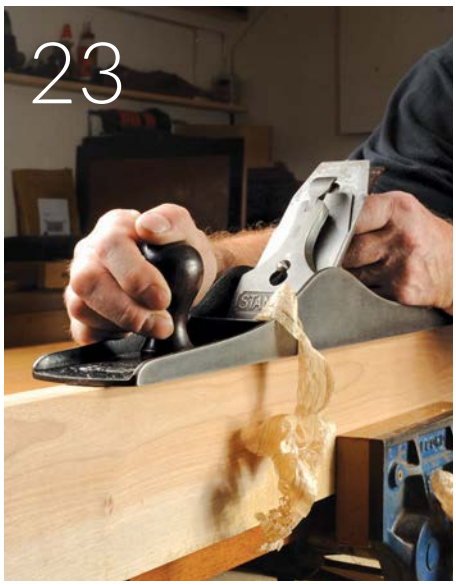
Incidentally, the Trust appoints a new Canal Laureate each year. In 2018 it is Nancy Campbell, however anyone can submit their own poems devoted to the waterways. Visit: **www.waterlines.org.uk**
Nancy's twitter **@CanalPoetry**

Anthony Bailey, Editor
Email: anthonyb@thegmcgroup.com

PROJECTS

TECHNIQUES

KIT & TOOLS



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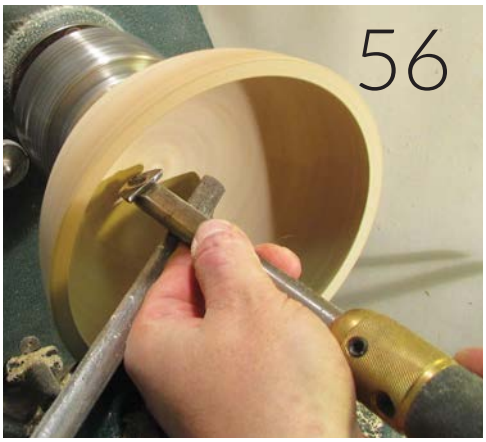

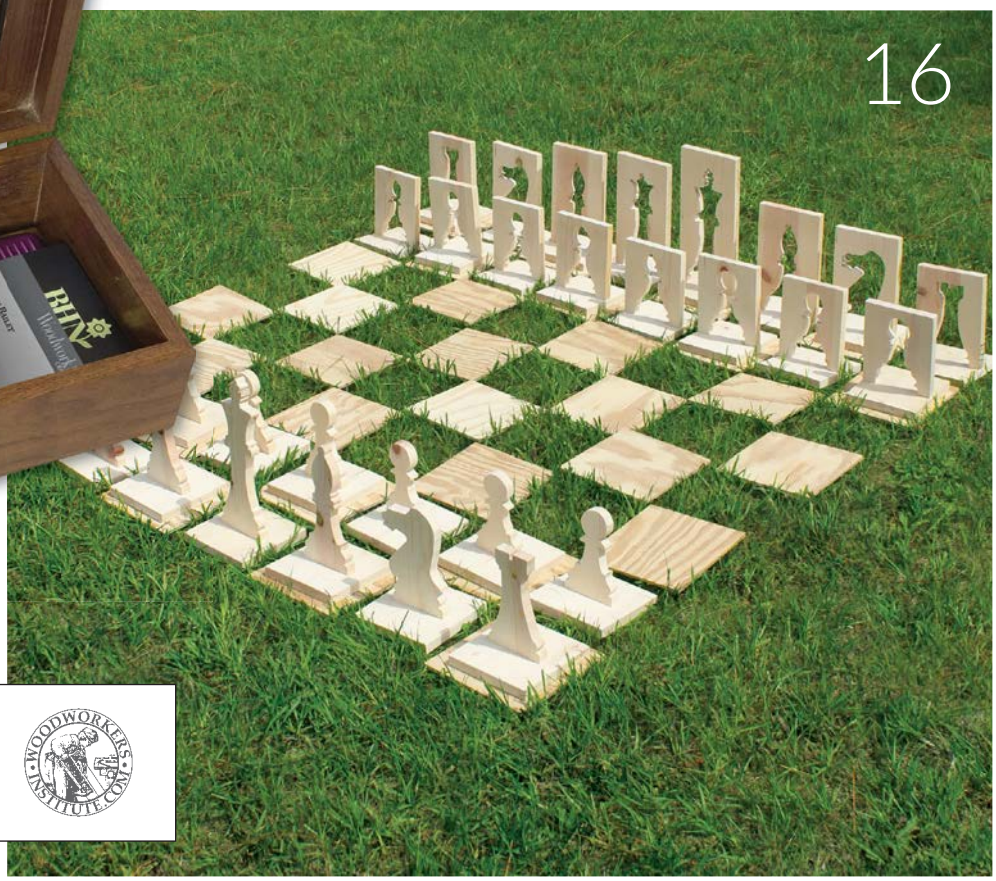

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Design INSPIRATION

The perfect way to relax is on a nice comfy sofa

Long enough to lie on

PHOTOGRAPHS BY STEPHEN HEPWORTH

A hint of Art Deco? Mike finally succumbs to family demands

Recline and fall

Mike Cowie makes a pair of settees for his home

'As from the old saying, the cobbler's children are the last to be shod.' So it's proven with the pair of settees featured here. This project's been under way for approximately two years – more off than on – and because they're for our own use, pressure of work has unfortunately cast them to one side on more than one occasion. My dear wife, stoic as ever, my daughter less so, preferring orange boxes to the indignity of bringing friends home, given the old suite these settees would replace.

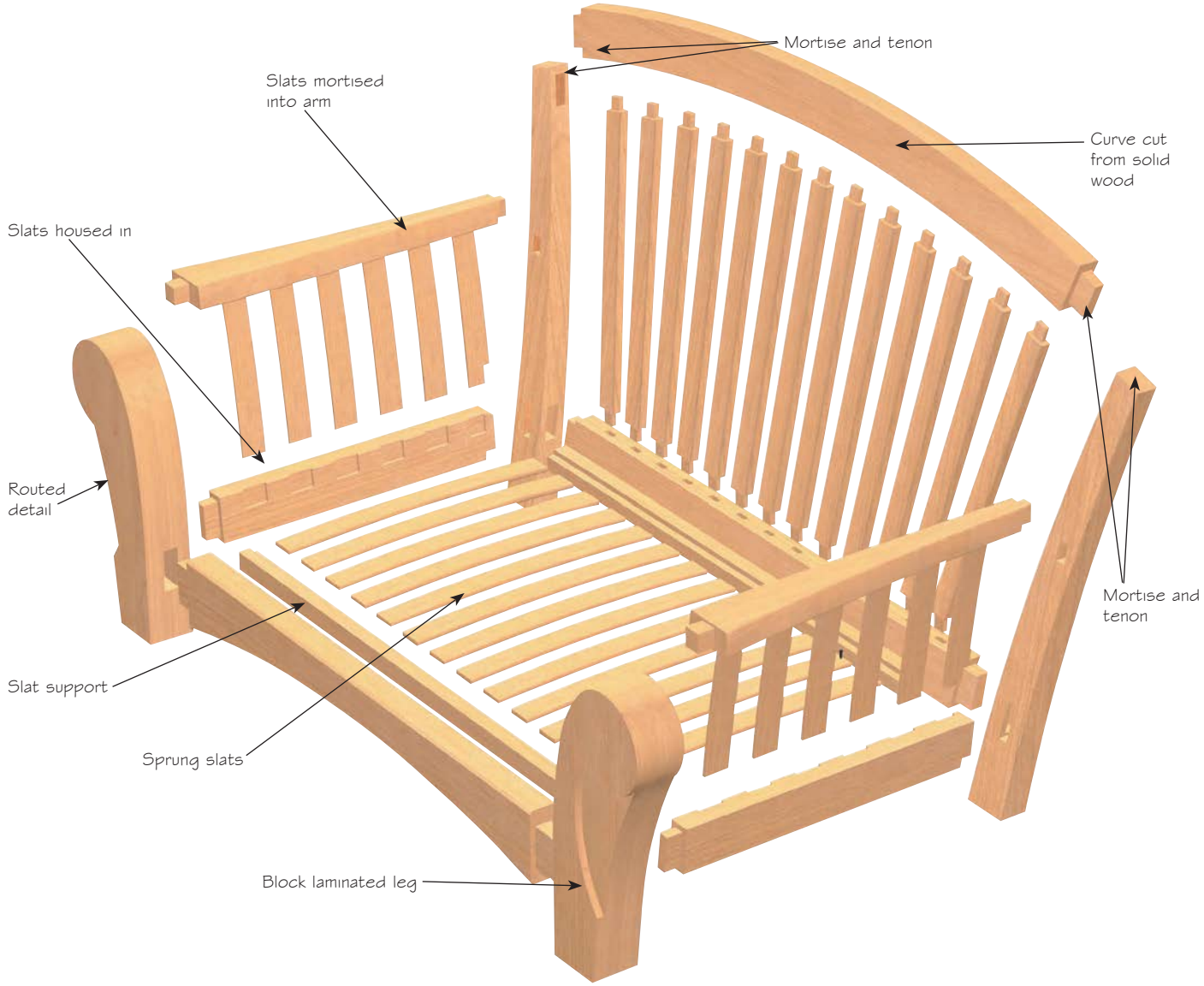
Having arrived at the conclusion we were in need of a replacement suite, viewing new ones was a salutary lesson. Those we saw were of poor quality with garish colours, and anything halfway decent was out of reach financially. Therefore, someone had the bright idea of making one.

Concept and preparation

Bearing in mind the least durable part is the material – hence the existence of so many reupholstery firms – how about making a solid wood frame with loose cushions that can be replaced as necessary? That was easy then – with instructions received, work could commence. Well, almost.

With no client to please it should have been a simple matter to design something suitable. However, this had been handed over by the family to me, a practiced procrastinator. Eventually, a satisfactory doodle established a starting point, this being essentially an outline of a flared-back model with solid rounded legs. Any details would only help to confuse trusting my intuition for the remainder of the piece.

American ash (*Fraxinus americana*) ➤



Side detail

Back slats and rail

was the chosen wood – light, clean-looking and reasonably priced. The arms were to be almost 100mm (4in) thick yet the thought of carrying and working 100mm (4in) timber provided sufficient incentive to purchase 50mm (2in) material and glue up to the desired thickness. One of my more enlightened decisions which worked wonderfully well – almost.

Having planed up the timber and used a template to mark out the outline cut out on the bandsaw, eight pieces with four fronts were carefully selected for grain match. It was only afterwards I discovered I'd glued up for four right-hand arms, hence the discrepancy with the grain left to right.

I'd recently been watching *Tate Modern* on television, initially out of a sense of duty to try to understand modern art, the artist and what motivates the purchaser. I failed. However, I realised if I continued to make these damn silly mistakes I'd eventually have the opportunity of displaying one of my pieces.

Construction

The arms, having been glued up, now required trimming back. This is where a steady hand on the bandsaw pays dividends. The template was pinned to the arm and a guide bush fitted to the router, a Ryobi 3hp with plenty of power. Progressive cuts were then made, providing a smooth finish. Mortises were cut with a 19mm (3/4in) chisel, first constructing a simple jig to hold the arms at the same angle. Now I could begin work on the front rail, cut from 50mm (2in) ash. As on the smaller settee the grain perfectly suited this piece – compressed in the centre, flowing out at either end. The arc was determined by the well-proven method of a thin slat bent between two points, scribed along and cut out on the bandsaw, the ripples removed with a spokeshave and finished with a belt sander. I now favour cutting out tenons roughly to size on the bandsaw, finishing off with the router.

Leaving the front at this stage and moving on to the back legs, as there might be insufficient American ash, I selected some ash (*Fraxinus excelsior*) for straight grain and then laminated to thickness.

The legs were tapered from top to bottom, starting at 50mm (2in) reducing to 38mm (1 1/2in) at the top. As for the front legs, I made a template so each remained equal and then cut out on the bandsaw, cleaning up afterwards with plane, spokeshave and belt sander. I know there are people who view this tool with horror, however, used with care I find it to be a real boon.

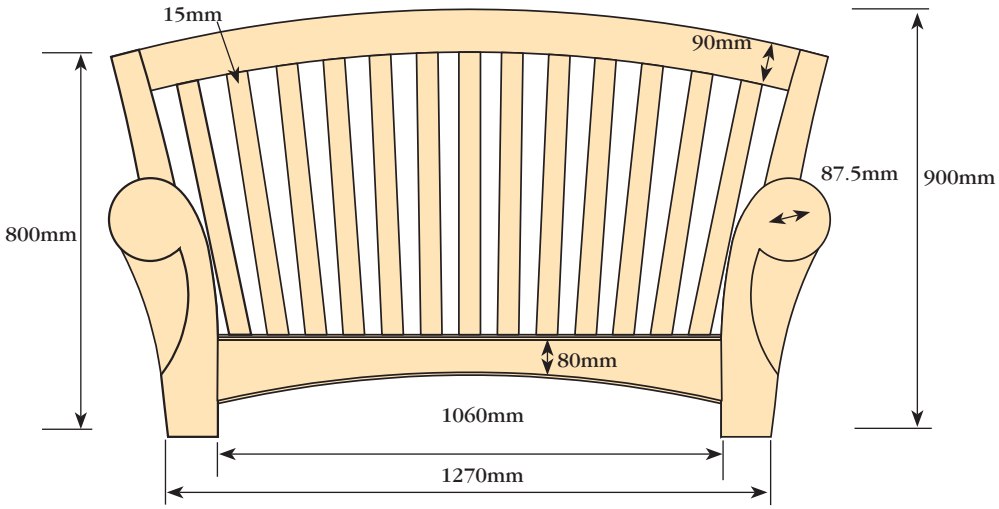
Trim and cut

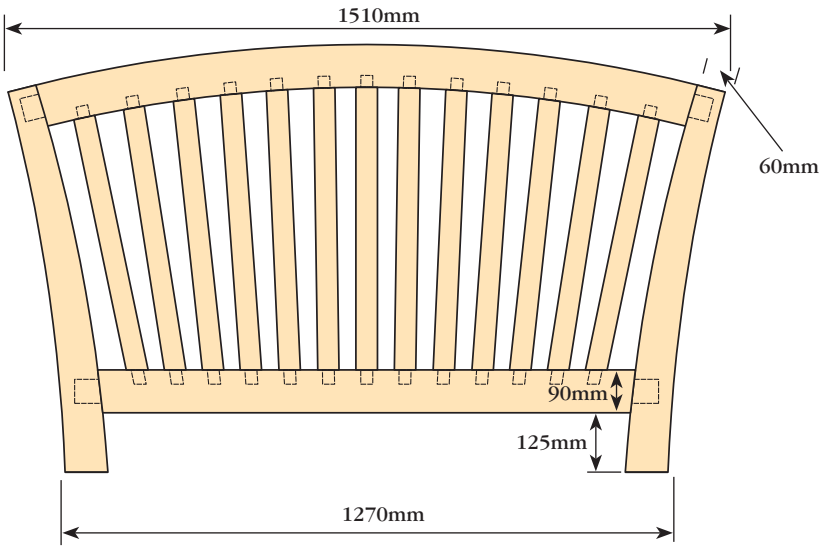
As with the front rail, the legs were mortised using a jig to keep the correct angle. Now to cutting out the back rail on the bandsaw, the inside curve first with a marking gauge to mark the cutting line of the outside curve. After cleaning up, the back legs were laid on the floor at the right angle – the top and bottom rail placed on top with the shoulders marked directly, allowing the rails to be tenoned.

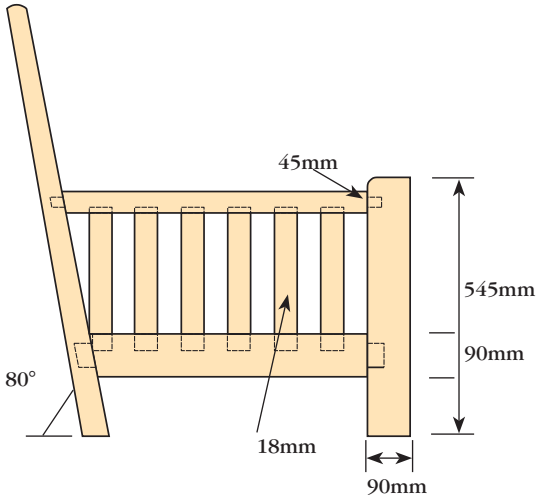
Trimming the tenons to size, a dry fit was achieved, then stood up with the front legs and checked for appearance – this looked about right. The back supports were mostly cut out from the waste resulting from the curved rails, planed to 22mm (7/8in) thick.

For the fitting, a centreline was scribed on the top and bottom rail. Using this as the first line, a rail was placed across, the position of the shoulders marked on the vertical support rail while the position of

Front on, showing arm detail







'With no client to please it should have been a simple matter to design something suitable'

this rail as marked upon the top and bottom rail for mortising. Each rail was spaced and marked individually with each one numbered. Mortises were cut with the router, the tenons cut and a dry fit attempted – this can be fun with so many different lengths. Make any alterations until a close fit is achieved. Tedious, I know, but necessary.

Chamfers

A small chamfer was taken off the rails ending with a full radius. Chamfers were then taken off the top and bottom rails – with the router – while the back legs were reduced to the desired taper. Then it was the bandsaw as usual to finish with chamfers off all edges to neaten up and give a uniform look all round. A passover with the orbital sander left the back ready for glue-up and, with experience being a good tutor, this was done in stages – the top, bottom and support rails first, with a check on the diagonals for square – or should that be symmetrical? When these had set, the legs were added, making a relatively trouble-free glue up, which was a nice change.

Assembly

Arriving at this stage was as far as my thinking had gone. I now had to consider how to link the front with the back. Various combinations were tried – rounded, flowing arms, both low and high. However, often the simple answer can prove the best, certainly the most expedient. In this case, a straight arm with a curve cut on the outside. The lower side rail was quite simple, just an educated guess as to the depth, front to back and the amount of angle necessary. Having decided this, a sliding bevel was used to mark the shoulders, with tenons cut out first due to the curves on the front and back legs. Using a square set to the bottom of the legs, a perpendicular line was scribed up the legs, setting a parallel line with the marking gauge. To intersect this, a base was formed with which to plant the tenon on, then scribed round and mortised with a mallet and chisel, having first removed the majority of waste with a Forstner bit. Handmade indeed. There's still a bit of travel in this debate as to what constitutes handmade, and I often find myself imagining looking over the shoulder of an 18th-century craftsman at work at the bench to observe the methods employed in the practice of his craft.

Back to work

The bottom side rails were fitted in place and a measure taken of the distance between front to back, at the desired height of the arm rest. Allowing 38mm (1½in) for the front tenon and 32mm (1¼in) for the rear tenon, the arm rests were cut to length and the tenons cut using the bevel for the rear shoulders. For mortising the bottom rail the same method was used. A trial fit ensured all are correct.

Side slips were required to keep ➤

Whole back view

the cushions in place and for these I planed some ash strips to 6mm (1/4in) thick, cutting mortises to suit on the underside of the armrest with the router and matched stopped grooves cut on the bottom rail to accommodate.

I pinned my faith on the strength of the tenons on the arm rest, my intention being to inset the slips into the mortises and cramp the bottom firmly in place in the stopped groove, creating a slightly rounded profile to match the front leg. These, however, were among the last pieces to be fitted, so it was wait and see.

Front legs

Back to the front legs for a final touch before glueing up. My intention had been to carve a volute scroll on the front face. With time in short supply an alternative method of decoration was adopted – namely, creating a shadow line by the removal of a section, highlighting the round face and, hopefully, making an otherwise bulky leg appear less so. Using the template made for cutting out the legs, first carrying the line around the curve and then using the side of the template, I drew a line arcing down the side. Using these guidelines, a bush was fitted to the router, the template clamped to the work and progressive cuts made to a depth of 12mm (1/2in) around the lines. Then, using the Ryobi fitted with a 12mm (1/2in) bottom cut bit and working from the outside edge in, the waste was nibbled away. Working inwards ensured there was always a firm base on which to work. This completed, a scraper was used to smooth the surface.

Front rail and finishing

The front rail received a stopped chamfer along the underside. The full one on top with the arm rest, while having started out square, was rounded off on the inside face, the outer receiving a curve, giving a more pleasing appearance.

With the majority of the work now completed a finish was applied prior to glueing up. I chose a water-based lacquer, mainly for its non-yellowing properties. Unfortunately, Danish oil applied to ash robs it of its nice clean looks.

Water-based lacquer has its disadvantages, though, as it raises the grain – being water based it would, wouldn't it? Also, being so quick drying, brush strokes show unless a good-quality lacquer brush is used – there's something to be said for spraying here.

I used a lacquer brush and applied three coats – rubbing down between each coat obtained a pleasant finish.

The reason for applying a finish before gluing up was so the rubbing down between each coat was more efficient, avoiding unsightly build-up of lacquer in the corners.

Mike's favourite router

Routing

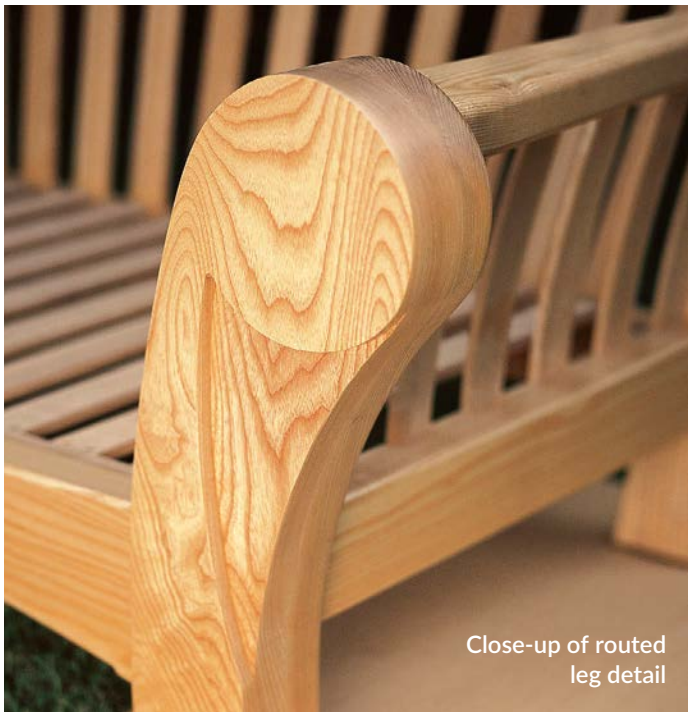
If I might add a brief word regarding routers...

While learning the craft I was greatly impressed watching Ramon Weston demonstrating the Leigh jig, though it wasn't the jig that received all the attention, rather the router used – the Festo OF900. The main characteristic of this tool is the single-hand pistol grip, the only router I'd seen at the time with this style of grip. I was intrigued by this. My router purchase to date had been the big 3hp Ryobi, a router almost – though not quite – impossible to use single-handedly.

Having purchased the Festo, complete with dust extractor, this has been the mainstay of my work for three years now. I mention this because I frequently hear about people who, having purchased a router, refrain from using it through apprehension, even fear. The Festo, although costly, is a safe, user-friendly router and so versatile I feel it deserves a wider audience.

'The addition of slightly-sprung slats on the base – cut slightly large to give a convex aspect – completed the construction of the smaller settee'

Back frame ready for fitting into leg mortises



Close-up of routed leg detail

Assembly

Now the frame could be assembled. Scraping off the lacquer around the mortises for good adhesion, it was glued and clamped together. The only difficulty was in trying to manoeuvre it through the house, having glued it up outside on a sunny Saturday afternoon – a point not to be neglected.

A big, solid, heavy settee carcass was now awaiting the side slips. These were cut to length, inserted into the mortises one at a time, glued in place and left to set with a nice curve to match the front arm the result.

The addition of slightly sprung slats on the base – cut slightly large to give a convex aspect – completed the construction of the smaller settee. The large one differed only in the curves of the front and back rails, a rather flatter curve resulting due to the extra length.

Upholstery?

All that remains to complete the pair of settees is the upholstery. This is the point where *we* – the family – come back into the equation as my choice is obviously not to be trusted. At the time of writing – having a well-deserved break in Ullswater with no phones or workshop – we're still looking. ■

This article was originally published in *Making Chairs & Tables Volume Two*, published by GMC Publications, which is now out of print.

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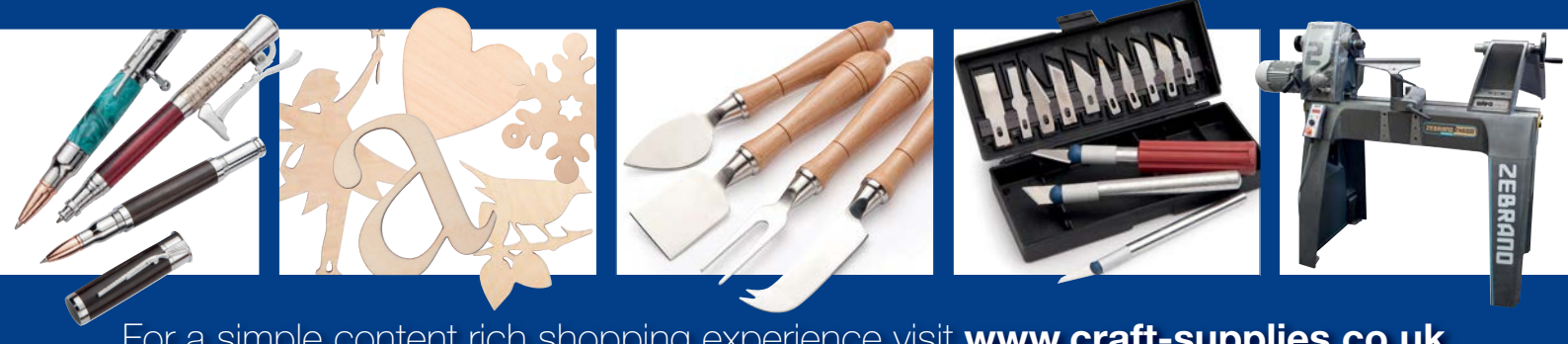

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A woodworking glossary

The letter P

PANEL A large wood surface, sometimes made out of several boards glued edge to edge.

PARTICLEBOARD Similar to Medium Density Fibreboard (MDF), this engineered product is made using waste wood and adhesive pressed under heat and pressure. The bits of wood used in particleboard are larger than the fine fibre in MDF, making the panel less consistent. Like MDF, particleboard is vulnerable to moisture.

PERMEABILITY The ease with which liquids such as preservatives or flame retardants can be impregnated into timber. Permeability varies with species, although the sapwood of all species is more permeable than the heartwood. Permeability ratings relate to the heartwood of the species.

PHENOLIC RESIN A resin or plastic used in coatings or adhesives that becomes permanently rigid when heated or cured.

PHILLIPS HEAD Type of screw head requiring a driver in the shape of a cross.

PHOTOGRAPH BY JOHN BULLAR

Phillips – left, pozidrive – right

PILOT BIT A router bit with a pin that rubs against the edge of the material or a template to guide the cut, it can heat up and cause burn marks. Now largely superseded by bearing-guided cutters.

PILOT HOLE Hole slightly smaller than the thread diameter of a screw drilled in a workpiece to prevent it from splitting.

PIN The part of a dovetail joint whose shape on the end of the board fits between the dovetails.

PIN KNOT A very small knot.

PIPE CLAMP One end of the clamp jaws is attached to the head of a standard metal pipe or bar stock while the movable jaw is cam-cleated or pin-locked in position.

PITH The soft core in the centre of a log which is regarded as weakness in the wood.

PHOTOGRAPH BY HENDRIK VARJU

A typical pipe clamp

PLAIN SAWN Boards sliced from the log tangentially to the growth rings – through and through cut.

PLANE (TO PLANE) The process of removing material in thin shavings in order to make it flat or, as a noun, the tool for planing boards.

PLANE IRON The steel blade in a hand plane.

PLANER A portable or static machine which flattens and smooths the surface of sawn boards.

PLANK Any board of reasonably large dimensions in terms of thickness and width.

PLUMB Term used to describe something that is perfectly perpendicular to the earth relative to gravity. A plumb bob on the end of a string will give a line that is plumb, or straight up and down.

PLUNGE ROUTER A router in which the motor housing can slide down towards the base when machining.

PLYWOOD The bark is removed from a log and the bare log is placed on a lathe-type machine that peels off thin layers of wood, usually after the wood has been steamed or soaked in hot water. The thin layers are glued and laid perpendicular to each other for strength and stability.

POCKET Any hole or socket of various shapes that fit mated joint parts.

POCKET HOLE A hole drilled on an angle with a step bit to make a butt joint. The larger hole is for the screw head to enter, and the smaller hole is for the shank.

POLYURETHANE Any of a variety of polymers used in rigid, foam or resin forms.

POLYVINYL ACETATE GLUE White glue abbreviated to PVA.

PRESERVATIVE TREATMENT The treatment of timber with chemicals to improve its resistance to attack by biological organisms, such as fungi, insects and marine borers.

PROUD Where a component protrudes above the rest of the surface.

PURLIN A horizontal beam that provides intermediate support for rafters or sheet roofing.

PUSHBLOCK A similar safety aid to a pushstick but shaped for a particular machining task.

PUSH FIT A description of two mating parts, as in a joint, where parts fit snugly without requiring force to mate.

PUSHSTICK A hand-held safety device used for pushing wood past a cutter while keeping the hands away from the blade.

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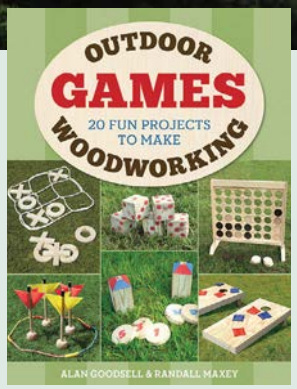

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PHOTOGRAPHS BY ALAN GOODSELL & RANDALL MAXEY

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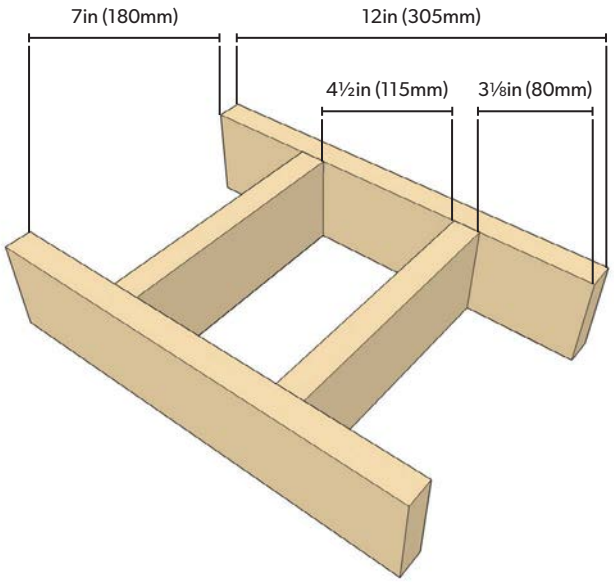
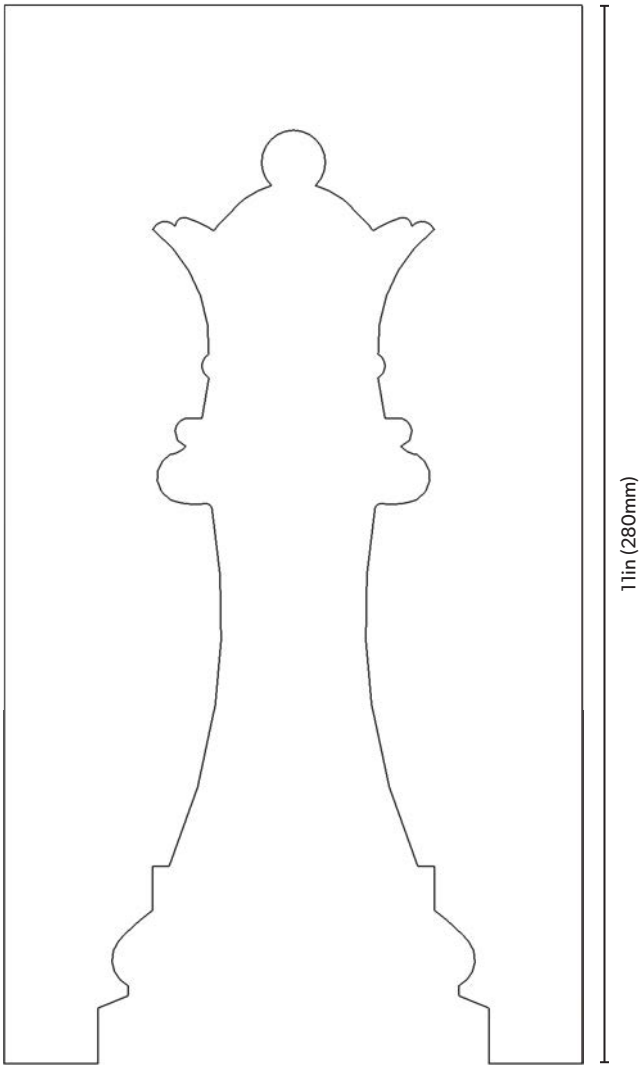
- Bishops: 8 @ 10 x 6 x ¾in (255 x 150 x 19mm)
- Queens: 1 @ 11 x 6 x ¾in (280 x 150 x 19mm)
- Kings: 1 @ 13 x 6 x ¾in (330 x 150 x 19mm)
- Pawns: 8 @ 7 x 6 x ¾in (180 x 150 x 19mm)
- Board squares: 32 @ 8 x 8 x ¼in (200 x 200 x 6mm) plywood
- Circular saw with straightedge guide, or tablesaw
- Mitre saw
- Scrollsaw or coping saw
- Clamps
- Spray adhesive
- Flathead woodscrews: 8 @ 1½in (38mm), no. 8
- Power sander or sanding block and 80-grit sandpaper

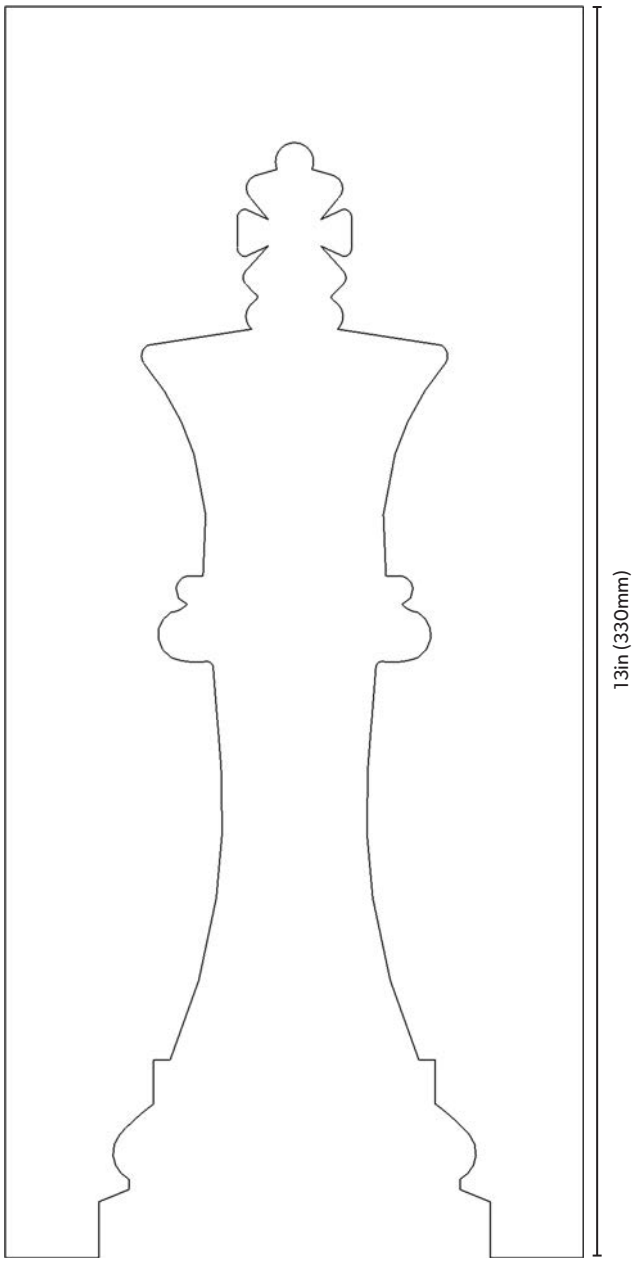
Alignment jig



Chesspiece patterns shown at 50% scale. Enlarge the patterns 200% using a photocopy machine, or use a pencilled grid to transfer them to paper.

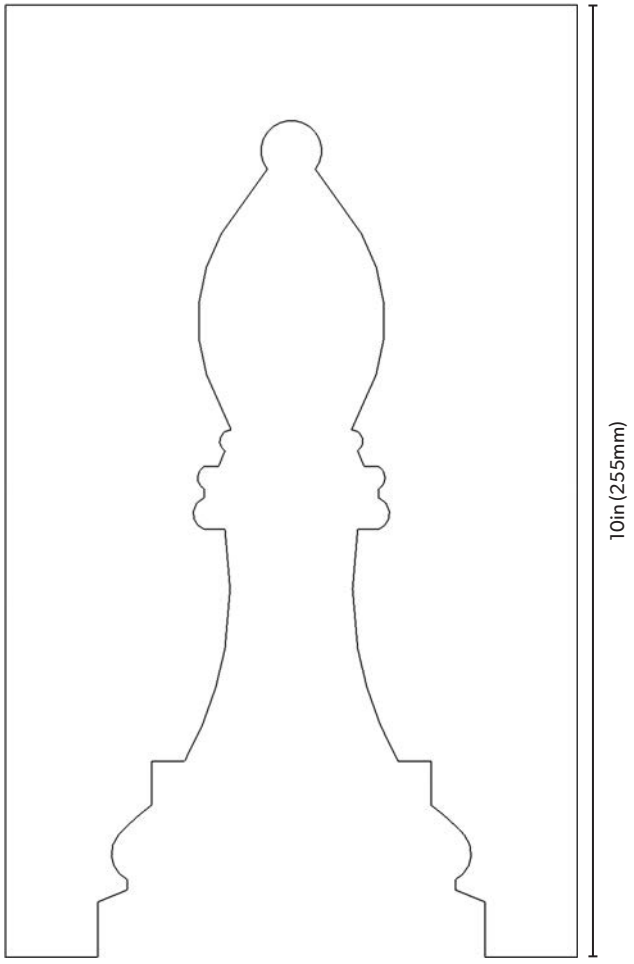


Queen

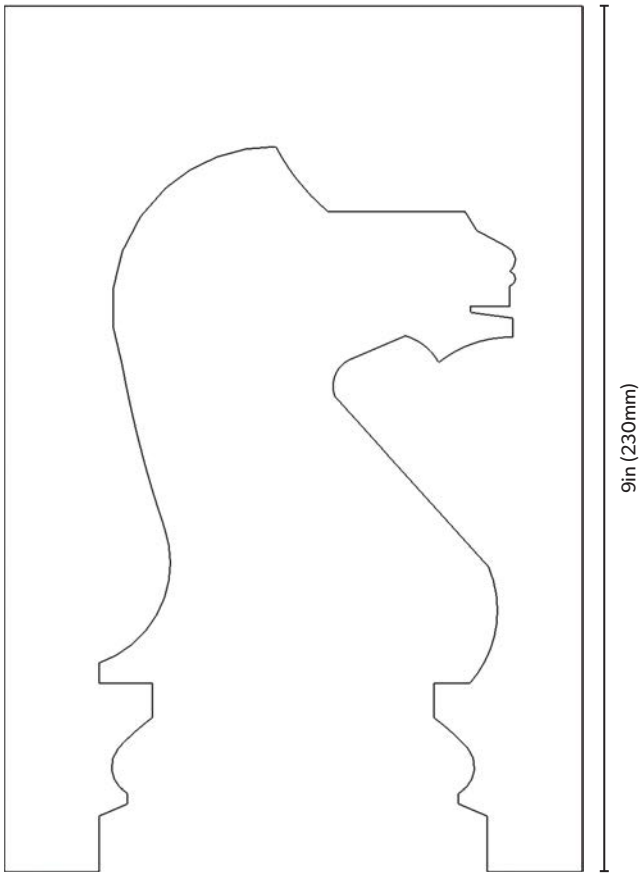


King

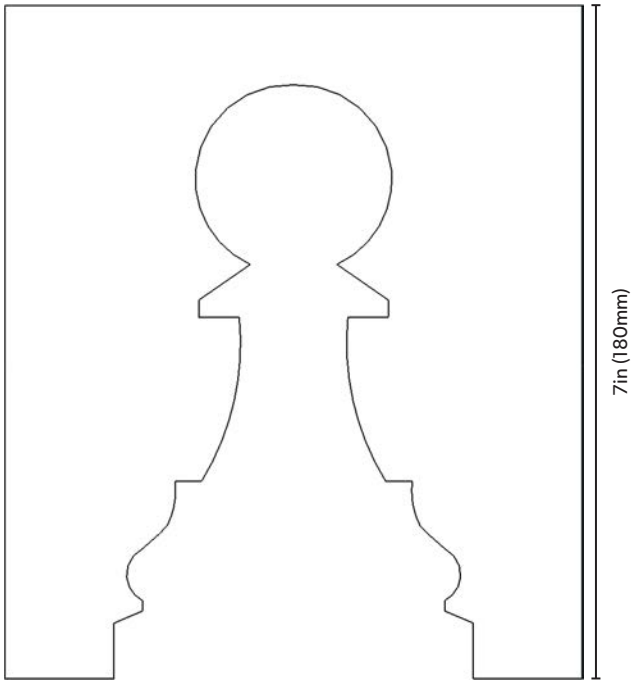
Photocopy at 200%



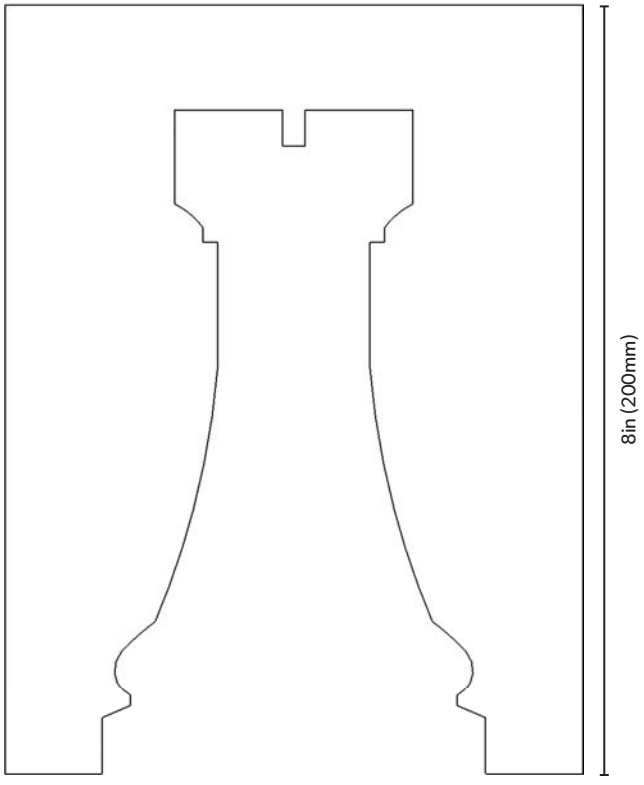
Bishop



Knight



Pawn



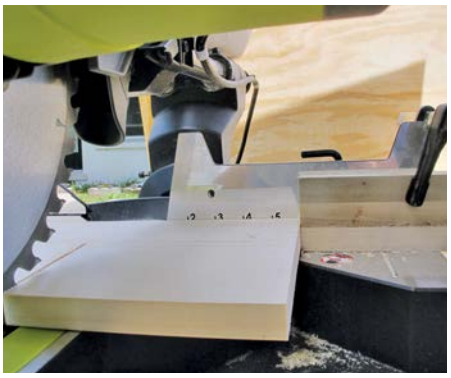
Rook

Making the chessboard

All the chess pieces and their bases are made from 8 x 1in (200 x 25mm) boards from the hardware shop. You can also make them from 3D4in (19mm) plywood, if you choose. The board squares are made from 1D4in (6mm) plywood. Start out by cutting 32 plywood squares on the tablesaw to create the white chessboard squares. To enable the most economic use of the ¼in (6mm) plywood, cut the squares 8in (200mm) square or slightly less. This will account for the waste removed by the saw blade. Cut strips on the tablesaw, then stack the strips by the mitre saw to cut multiple squares at once. All you need to do after that is sand them smooth.

1 Rip strips 8in (200mm) wide from ¼in (6mm) plywood to create the board squares

2 Stack the plywood strips against a stop clamped on the mitre saw so you can cut multiple squares at once



3 Move the stop block to cut the 6in (150mm) squares for the bases of the game pieces

4 Attach the pattern to the blank with a light coat of spray adhesive applied to the wood

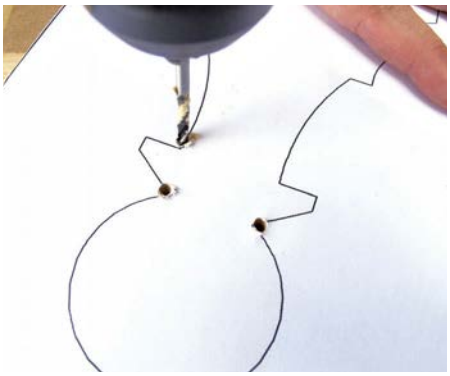
Making the chess pieces

While your mitre saw is set up for cutting squares, you can cut the 6 x 6in (150 x 150mm) bases for all the chess pieces from 8 x 1in (200 x 25mm) boards. You will need 32 of these bases. The blanks for the chess pieces are also 6in (150mm) wide. Start by ripping the boards into strips of this width, then cut the bases and blanks to final length at the mitre saw. See the 'What you need' box (page 17) for the lengths of the chess piece blanks.

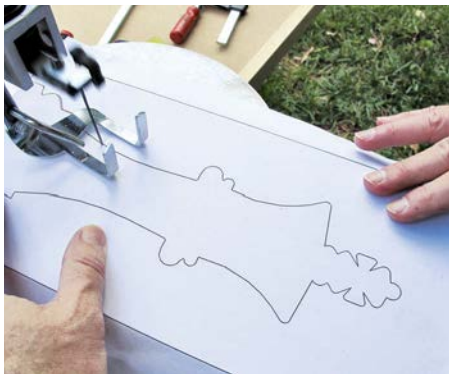
The next step requires some time at the scrollsaw to cut out the chess piece shapes. If you don't have a scrollsaw you can use a coping saw. Use the patterns provided as a guide. The solid shapes will become the 'white' pieces while the outside shapes are the 'black' pieces. You'll need to follow the lines on the patterns closely. Use a light dusting of spray adhesive to attach the patterns to the blanks, making sure the bottom edges align. You can fold or cut the excess paper to remove it.

Since there are a lot of twists and turns when cutting out the shapes, it's a good idea to drill small holes in the tight corners of the pattern. This makes it easier to navigate the turns as you're cutting and decreases the likelihood that the blade will break. It's easier to follow the pattern lines if you use a narrow blade in your saw.

Once the shapes are cut out, remove the patterns and sand all the pieces. Sanding will also remove any remnants of the pattern adhering to the blank. ➤



5 Drill small holes at the sharp corners of the pattern to make it easier to cut out the shapes



6 Follow the lines closely to create the two nested shapes

7 The two parts should separate easily once cut. You can see how one cut makes two game pieces

8 Sand the pieces to remove all traces of the pattern

To attach the pieces to their bases, draw a light centreline as a guide for locating the screws, then attach each piece to its base with a pair of 1½in (38mm) No.8 screws. To help hold the two pieces square and centred while driving the screws, we built a simple jig, of which details are given on page 17.

10 Place the chest piece on the alignment jig

9 Use a simple jig to help hold the base and game piece square while fastening them together

11 Use a pair of screws to attach the base to each chess piece ■

Playing the game

The chess board consists of 64 squares: 32 dark and 32 light. Each player has 16 pieces on the board and they are:

Two rooks (castles) which are placed on the left and right corners and can move in a line forwards, backwards or sideways.

Two knights which are placed inside the rooks and make an L-shaped move: two squares forwards or back and one square right or left, or vice versa.

Two bishops which are placed inside the knights and can move diagonally forwards or back.

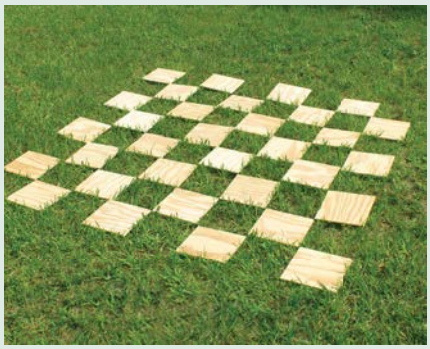
One queen which is placed on the central square of its own colour and can move in any direction, forwards, back or diagonally.

One king which takes the place next to the queen and can move one square in any direction.

Eight pawns which are placed in the next row of squares in front of all the other pieces. They can move one square forwards or (when taking another piece) one square diagonally. They cannot move backwards.

The basics of the game are that white (that is, the player with the white queen) moves first, then players take alternate moves. Each player chooses which piece to move, remembering that pieces cannot jump over an opponent's piece. If you land one of your own pieces on a square which is already occupied by an opponent's piece, the opponent's piece is 'taken' and permanently removed from the game. The king may not be taken, but is said to be 'in check' if it is in a position where it could be taken on the next move. The game is won when one player's king is put into 'checkmate'. This means that the king cannot be moved out of check.

The game is far more complex than can be explained here, and many people make it a lifelong study. There are many books available, or you can join a club and learn from the experts.



1 Set up the chessboard with 8 x 8 squares. There should be a light-coloured (plywood) square in the near right-hand corner.

2 Position the pieces on the board for the start of the game. The solid pieces are 'white' and the cutout ones are 'black'.

3 Move and take pieces according to the usual rules of the game.

Meet the contributors...

We put all of this month's professional and reader contributors here, so you know exactly who they are and what they do

Louise Biggs

Having completed her City & Guilds, Louise trained for a further four years at the London College of Furniture. She joined a London firm working for top antique dealers and interior designers before starting her own business designing and making bespoke furniture and restoring furniture.
Web: **www.anthemion-furniture.co.uk**

Paul Adamson

Paul Adamson runs green woodworking courses in his native Derbyshire and likes to hand carve and use woodenware from the green wood he gathers during local woodland management works. Bushcraft, spooncarving and kuksa vessels are among the many things he enjoys teaching out in the local woodland.
Web: **www.pauladamsoncraft.co.uk**

Michael T Collins

British-born Michael has been working with wood off and on for 40 years. He moved to New York in 1996 and, over the years, has made bespoke furniture, including clocks, inlay work, Adam fireplaces, bookcases and reproduction furniture.
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Mark Sanger

Mark is a professional turner living and working in Dorset. He specialises in creative turning that incorporates texturing, colour and mixed media. Mark has written numerous woodturning articles, demonstrates the craft, runs courses and has produced DVDs on the subject.
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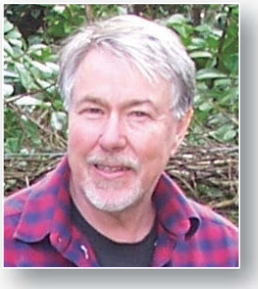
Simon Rodway

Simon Rodway has been an illustrator for our magazine since 'the dawn of time' itself, drawing on his experience in the field of architecture. He also runs LineMine, a website with articles and online courses on drawing software. A new course, SketchUp for Woodworkers, is proving really popular.
Web: **www.linemine.com/courses**

Gary Marshall



Gary has had a life-long interest in woodlands and the countryside. He trained in countryside management and subsequently ran a company working with the local County Councils and Unitary Authority and their Countryside and Rights of Way Teams, as well as a wide range of conservation organisations.

Your face and details could appear here in our 'rogues' gallery' if you write an article for the magazine, and you could be rewarded for your efforts too.

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Edge tool sharpening Part II

In Part II we look at the practical application of sharpening of chisel and plane blades

Aeons ago sharpening seemed quite a simple activity but, like so many aspects of modern life, it seems to have become more complicated. In fact, if you decide on a specific sharpening regime for a particular woodworking activity, it isn't complicated at all, it is just that the choices available have proliferated. In addition, there are no longer the sort of strict time-served divisions between trades or skills, so anyone can, in theory, have a go at more than one type of woodworking and therefore needs the appropriate sharpening methods for each activity. So let's get those cutting edges ready for work. ➤

PHOTOGRAPHS BY GMC/ANTHONY BAILEY

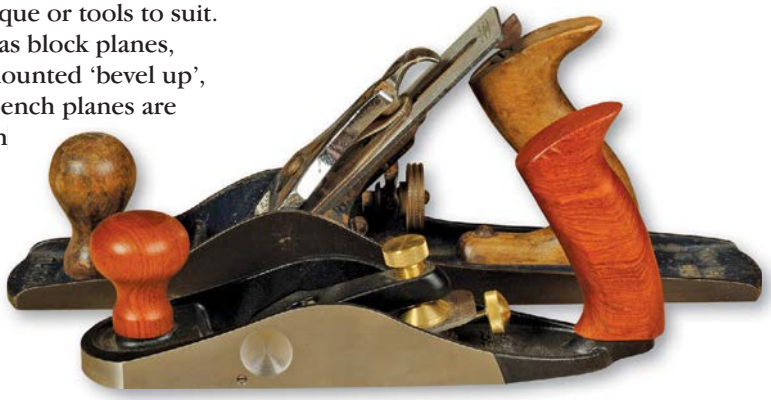
Chisels old and new come in different types to suit cabinetry, bench or site work and are of varying quality and price

Carpentry, joinery and cabinetmaking

In general each of these disciplines uses a similar range of tools, but the level of sophistication with modern cabinetmaking means more attention to detail in making and finishing and, consequently, the expense and choice of tools and materials. At the top end there has been a renaissance in hand tool production while at the DIY end of the market, cheap and cheerful rules.

Plane and chisel blades

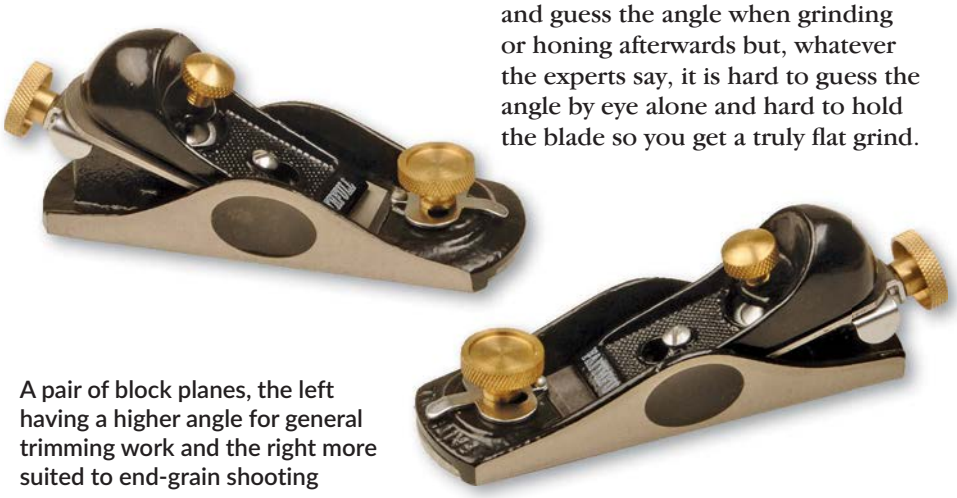
There are certain conventions regarding grinding and honing angles. These hold good for many jobs but a low angle blade is better for trimming end grain, while a steeper plane 'frog' or blade honing angle is better for 'difficult' grain. So if you encounter these tasks you may wish to learn how to alter your technique or tools to suit. Some planes, such as block planes, have their blades mounted 'bevel up', whereas standard bench planes are 'bevel down', which complicates things. Chisels used for paring softwood may benefit from a slightly shallower blade angle but otherwise are best kept as standard.



Below: A standard jack plane rear, and a Veritas low angle plane in front

Grinding angle

A standard jack or smoothing plane blade has a grinding angle of 25°. This is done using a dry or wet grinder. However you can recondition a blade using a very coarse diamond plate in most situations before moving to a less aggressive sharpening medium. You can hold a blade by hand alone and guess the angle when grinding or honing afterwards but, whatever the experts say, it is hard to guess the angle by eye alone and hard to hold the blade so you get a truly flat grind.



A pair of block planes, the left having a higher angle for general trimming work and the right more suited to end-grain shooting

Chisels are mostly sharpened at standard grinding and honing angles, except where enhanced paring cuts are needed

Some form of jig is sensible, but on a dry grinder not only can the blade overheat quickly, you will also get a concave grind which thins the bevel down somewhat. The larger wheel on the safer wet grinder gives a less concave or hollow grind which is much more acceptable. A coarse diamond plate such as 180 mesh (grit) will give a flat bevel so long as you use a honing guide for a predictable result.

It is possible to freehand grind on a belt sander, although the blade will heat up. Note the coarse burr on the edge and the scratch lines

You can rest the blade on the toolrest, but trying to obtain an even ground bevel without overheating is tricky. Keep water nearby for quenching

A wet grinder is slower to grind but much safer and more predictable, and the hollow grind is less pronounced than a dry grinder

Honing angle

The honing angle as standard is 30° but, just like the initial grinding angle, is subject to change depending on the work being done. It is a 'micro-bevel', meaning it is just the last little section of the blade edge that needs to be honed, giving a fine finish good enough to slice through wood easily.

Honing technique

Assuming you have a correctly ground edge, i.e. both the angle and straight and perpendicular, you can now have some fun getting the right sort of cutting edge. Choose the sharpening medium you want to use. In Part I of this article my choice veered towards using a good-quality combination diamond plate, so that is what I will use here. That is not to dismiss artificial waterstones or ceramic plates but diamond is very easy to use. A much cheaper material still is wet and dry paper stuck to a piece of thick, flat glass or a granite plate (tip – these are sometimes on sale in discount supermarkets). In the case of paper the blade must be drawn backwards to avoid digging into the abrasive paper.

There are various honing guides, the standard cheapy will do, but if you are aiming for a refined technique then ➤

The micro bevel at 30° following the initial grinding. As the edge wears it will increase in size after each honing until regrinding becomes necessary

A diamond plate, lapping fluid and honing guide

Standard emery paper can be spray-mounted to a truly flat surface as an alternative sharpening medium

it is worth spending more money on a better model. But first, the back of the blade needs as much attention as the bevel itself. The reason is that the flat back of a plane or chisel blade is seldom truly flat. You need the back and the bevel to meet sharply all along the edge, so flatting on a stone or plate at the end will create a good meeting surface. On a 300/1000 mesh diamond plate, use the coarse 300 side first then repeat with 1000. Use lapping fluid, which both lubricates the action and helps prevent the steel particles sticking to the plate and also prevents rusting. Now turn the blade over and fit it into the honing jig so the correct amount projects. This is usually indicated on the side of the jig as a guide. A simple trick is to knife-mark this amount on the bench-top edge so you can easily set it each time without resorting to measuring the projection.

Now repeat the sharpening process, first 300 then 1000, moving the blade back and forth enough times so you create a fine burr on the edge which you can feel by rubbing 'off the blade', not on to it or you will cut yourself.

A mark on the bench top makes it easy to set blades in the guide each time. The projection is slightly different for plane blades and chisels

This shows just how 'unflat' even good-quality chisel blades can be, the edge still not having been touched yet

The standard type of honing guide at the rear and a more expensive and precise model in front

Keep moving the blade and checking until you can detect a small burr right across the blade width

Stropping

This is the action of removing the fine edge burr and polishing the very edge so it will cut properly. You can omit this stage but it means the blade won't cut as well and relies on the burr getting knocked off as you start to cut. For a relatively small action you will achieve a much better cutting edge. Traditionally, this would be leather stuck to a board with a metal polishing paste applied to it. The blade is drawn backwards, again to avoid digging into the leather. However, the method I much prefer is using a block made up from strips of MDF glued together standing on edge. The level top surface is very firm but slightly furry. With the addition of some metal polishing paste, such as Autosol, it can withstand the abuse of a blade drawn across it at any angle, including vertically with the edge sliding across, yet it will remove the burr and polish the edge perfectly ready to cut.

A leather strop rear, and an end-grain MDF block in use with metal polishing compound on a straight gouge

The MDF is quite indestructible, even running a blade vertically to keen the edge

Special edges

You can improve on standard technique for specific reasons. Plane blades in particular can be shaped to suit specific tasks. A jack plane for general work can benefit from a slight camber across the blade to make board-flatting work quicker and easier. A smoothing plane then comes after a jack plane, so it needs to be perfectly level across but with the ends of the blade curved upwards to avoid dig-in. If you intend smoothing the ends of components accurately on a shooting board, then the blade needs to be dead straight. So, you can see that modifying a blade in different ways will allow the hand plane to perform differently. If you find a blade doesn't seem to hold its edge you can buy a replacement carbon steel blade, which is thicker and better quality. The old spare blade can be kept for less critical tasks.

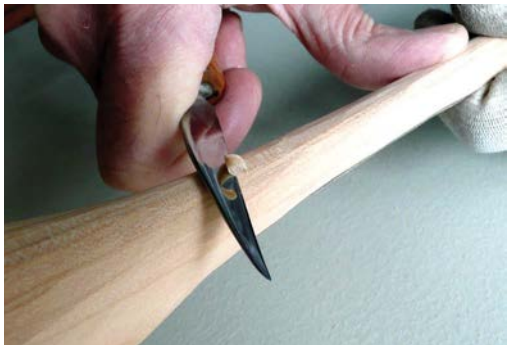
Above: Sharpened plane blades (from left) – cambered, ends rounded, straight

Right: A new thicker, better-quality plane top and the thinner original blade (lower)

Rubbing an Arkansas stone on a drawknife to achieve a finer edge

Specialised edge tools

Knives, drawknives and sundry other edge tools can be sharpened in a similar way, but by omitting the honing guide and developing your holding technique so you achieve the correct honing angle. For knives you may want to try some of the more refined types of stone, such as Arkansas or ceramic, as they seem well suited to the demands of knife sharpening, giving a superior finish. The curved shape of a typical knife and the honing angle you are seeking mean it is better with smaller tools to bring the abrasive stone to the blade – not the other way around. This means a smaller, more manageable stone, but you need to take care to avoid accidentally cutting yourself as you arc around the curvature of the blade. The stone is drawn along the blade edge instead of backwards and forwards with a plane iron or chisel blade. This leaves the edge in a smoother state without developing a burr. You can, however, finesse the edge sharpness by using a very fine grade of stone.



A carving blade needs a slightly different means of sharpening

Whetstone honing

The beauty of grinding and honing on a whetstone is that, apart from the cost and being a static powered machine, it can do the whole process from start to finish. Provided you have the correct jigs, it will tackle everything from large planer blades to knives – and anything in between – without overheating the metal. The Tormek machines are the best example of this versatility. The stone can be redressed if it goes out of shape and applying a special stone block to the wheel changes its characteristics from grinding to honing. A secondary leather-covered wheel plus polishing compound takes care of the stropping operation.

A special two-sided block prepares the same wheel for either grinding or honing, depending which side of the block is applied

Initial grinding of a chisel on a Tormek machine, moving the blade from side to side for an even edge and to even out stone wear

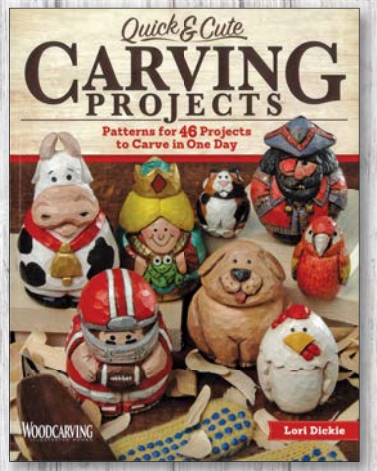
In the third part of this series we will look at sharpening hand saws. ■

BOOK REVIEWS

The Editor has carved out a career in woodworking but now he doesn't know which way to turn, maybe this book selection will help – bless...

Quick & Cute Carving Projects – Patterns for 46 projects to carve in one day

by Lorie Dickie

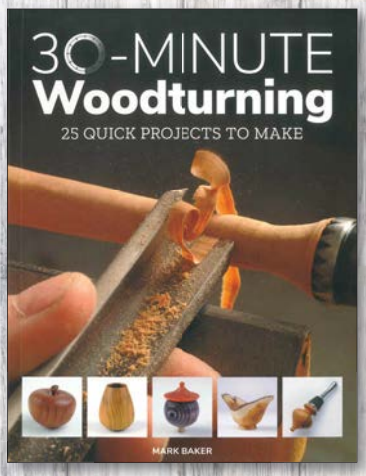


Quick, easy and fun carving projects are definitely the way to go for me. I tend to want a quick and pleasing result and the great variety of charming and fun characters mean there is something here to suit everyone. The book takes as its premise using pre-turned basswood blanks which give the basic shape and are easy to carve. In the UK it is certainly possible to find egg blanks in pine, birch or beech and in several different sizes. The *Getting Started* section will equip you to understand correct, safe working methods and which tools and finishes to use. There follow carving tutorials for a dog and a snowman. Then there is a whole series of patterns and finished characters, each with tools and materials and a painting guide. Categories are – *Funny Farm Animals*, *Fairy Tales*, *Happy Holidays*, *Halloween Haunts*, *Be Thankful* and *Christmas Critters*. A charming book and lots of fun aimed at beginners but suitable for any keen carver.

PRICE: £11.99
ISBN: 978-1-56523-907-4
Published by
Fox Chapel Publishing

30 Minute Woodturning – 25 quick projects to make

by Mark Baker



I must confess an interest, I took some of the photographs in this book and, as ever, it was interesting watching Mark Baker at work. Very methodical, very efficient and some impressive turning skills on show. However, writing and photographing quick projects takes a lot longer than the actual making process. Mark starts by covering some essential topics – tools and materials, health and safety, turning end grain and friction drives and jam chucks. These last two sections are extremely helpful, not just regarding projects in this book but knowledge you can apply to many other turning projects. There are no fewer than 25 projects – honey dipper, natural-edge bud vase, tool handles, a cylindrical box, a goblet and a square-edge plate, to mention just a few. Step-by step-photos and clear dimensioned drawings make each process easy to follow and create some very pleasing and useful projects.

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NEWS & EVENTS

All the latest events and news from the world of woodworking

PHOTOGRAPH BY GARY MARSHALL

The rise and rise of new wood-based buildings?

By Gary Marshall

I listened to an article about green construction and building in the UK recently. Believe it or not, had a previous government dictat been followed, all new homes would have had a nil carbon footprint as early as 2016. Such aspirations have long-since been scrapped. But there is an even greater need to reach such targets – now the suggested date is 2030. Traditional (and not so traditional) building materials such as bricks and mortar, concrete and the masses of plastics used in many construction projects use huge non-renewable resources in their manufacture. But maybe there are sensible, renewable alternatives to planetary-damaging building practices.

Q. What building material?

- uses wood that would otherwise be pulped for paper or left to rot on the forest floor after felling?
- is becoming more common – particularly across Europe?
- is designed to be fire-resistant?
- remains more structurally stable that steel when exposed to high temperatures?
- can replace anything currently made from oil?

A. Engineered timber, including cross laminated timber (CLT) and glued laminated timber (glulam).

A few facts

- The biggest manufacturer of CLT in Europe, at 600,000cu. m. per annum is also a sustainable packaging company.
- In Sweden the commercial development of CLT started in earnest in the 1990s, when a ban on high-rise wooden buildings was rescinded.
- In Oregon in the US there is now a company that manufactures vast veneer-based laminates in sheets of nearly 15m long. Thicknesses can be over 0.6m.
- Glulam building dates back to at least 1866. It can be seen in use in Southampton Register Office's Marriage Room.

Into the modern world

Now modern finger jointing, CNC technology and computer design and printing have made strong, standardised and bespoke material for the construction industry a much more viable option.

Engineered timber is considered by forward-thinking architects to be 'the new concrete'. Wooden skyscrapers are coming – in Norway an 18-storey build is due for completion in March 2019. Hastings Pier won last year's Architectural Award and was partly constructed from CLT. The impetus is growing – so are the trees. One tonne of cement releases a similar amount of carbon in its manufacture. A tonne of wood-based product has already removed up to two tonnes of carbon from the air – and that's before constructing any eco-friendly building!

It really is a no-brainer. Let's have more R&D in new British building techniques and more engineered timber products please.

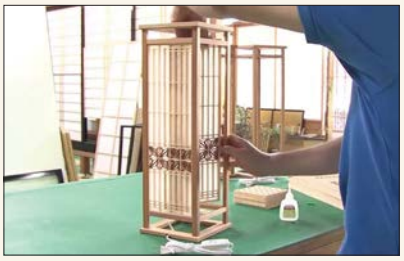
To find out more visit:
www.trada.co.uk/start-here/structural-timber

Web links for you

YouTube

Amazing Techniques of Carpenter Extremely Satisfied For Woodworking – Building The Andon Lanterns

A wordy mistranslated title, but this is a fascinating video showing the making of Japanese lanterns, including joint work and the paper covering.



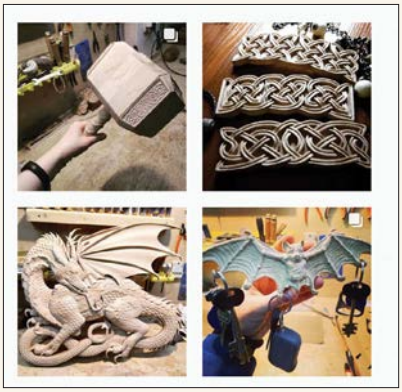
Pinterest

Key in: **pinterest.co.uk/pin/224335625169309160/** and you will find the most amazing, mindboggling selection of spiral staircase and library images.

Instagram

@ornamentumwood

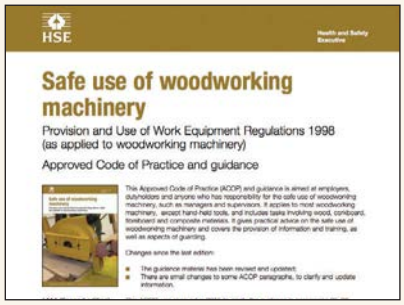
If you like the fantastical mixed with the traditional, then Maria Bazarova creates some amazing carvings to wow you.



Website

Health & Safety Executive – www.hse.gov.uk/pubns/woodindx.htm

A timely reminder to brush up on the latest official safety advice, much of which is applicable to smaller workshops, not just industry. There is a whole list of downloadable PDFs to choose from.



Vimeo

Alex Jerrim – Green Woodworker

Based in Tasmania and working outside underneath a large shelter, he turns trees round about into furniture. An interesting method for cutting a tree down by hand and reliance on hand methods, no power tools in sight.

EVENTS

Axe Vale Festival, 23-24 June 2018, The Showground, Trafalgar Way, Axminster, Devon
www.axevaleshow.com

The Toolpost Open House 2-3 June 2018, Unit 7, Hawksworth, Southmead Industrial Park, Didcot, Oxfordshire, OX11 7HR
www.toolpost.co.uk

Living History Festival 2-3 June 2018, Weald and Downland Museum, Singleton, West Sussex, PO18 0EU
www.wealddown.co.uk/

Peter Sefton Furniture School Open Day, 14 July 2018, The Threshing Barn, Welland Road, Upton Upon Severn, Worcestershire, WR8 0SN
www.peterseftonfurnitureschool.com

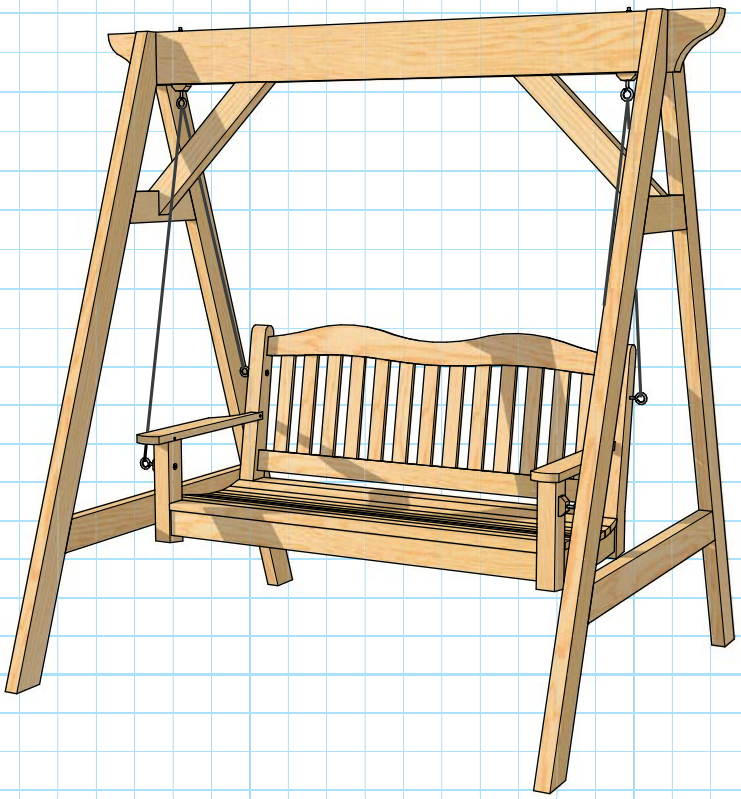
Lammas Festival, 29-30 July 2018, Western Lawns, Eastbourne, East Sussex. **www.lammasfest.org**

Woodfest Country Show, 28-29 July 2018, Pen-y-cefn, Caerwys, North Wales, CH7 5BP
www.woodfestcountryshow.co.uk

PLANS 4 YOU

Swing seat

Simon Rodway takes it easy with his latest project

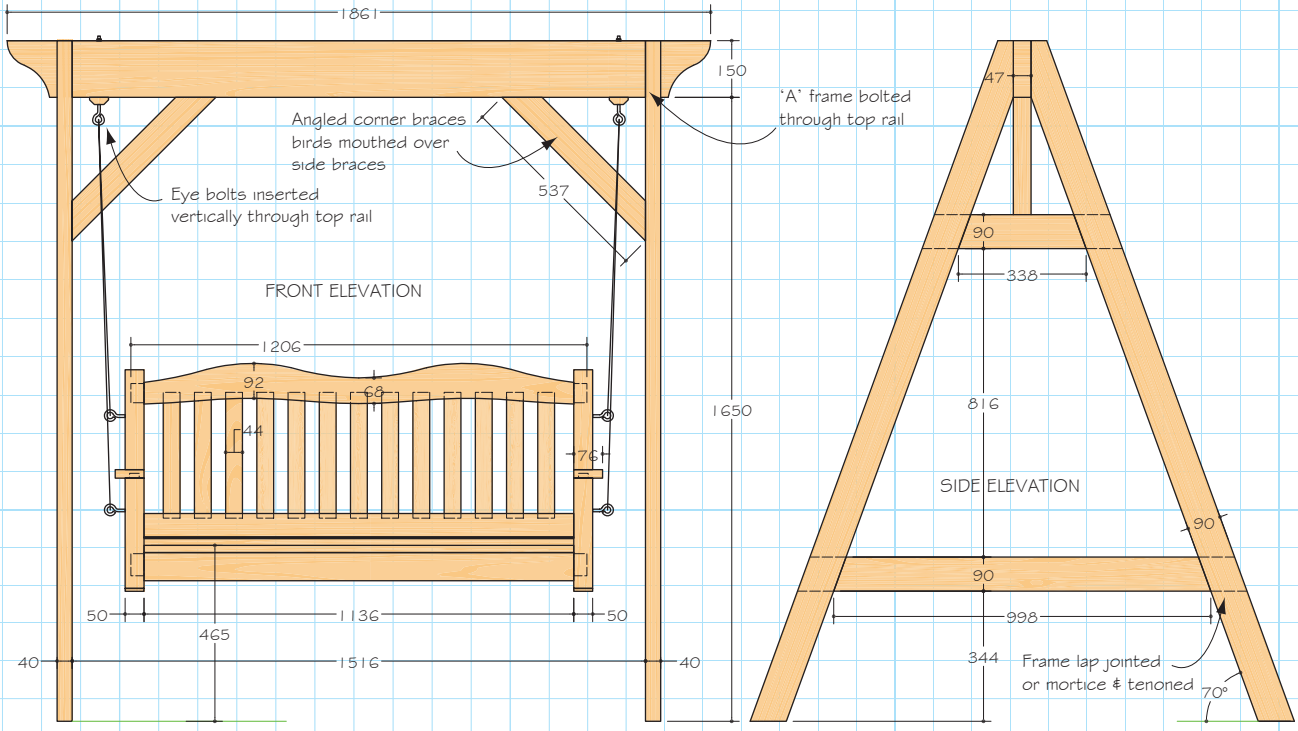


Perhaps it is down to memories of time spent on swings in childhood, but there is something about mobile seating that is both relaxing and compelling. Rocking chairs seem to have an ability to hypnotise in a few minutes, and if you combine the slightly gentler movement of a swing seat with a garden location you potentially have an ideal antidote to the stresses and strains of 21st century life.

The construction of the seat itself is both robust and traditional, combining mortice and tenon joints throughout with shaping to the crest rail, arms and side rails. The latter have a curved bottom edge to echo the swing movement, and this is suggested as well along the bottom edges of the legs (or uprights if you prefer). The side rails are also shaped along their top edges to form a more comfortable seat profile, and reinforcing shaped braces are screwed to the inner faces of the rails to give greater support at the ends of the seat slats, which are also supported by mid rails. These are tenoned into the front and back long seat rails, which are increased in thickness slightly to help stiffen the structure of the seat. Additional support battens are screwed to the front and back seat rails to help carry the wider slats which sit between the legs.

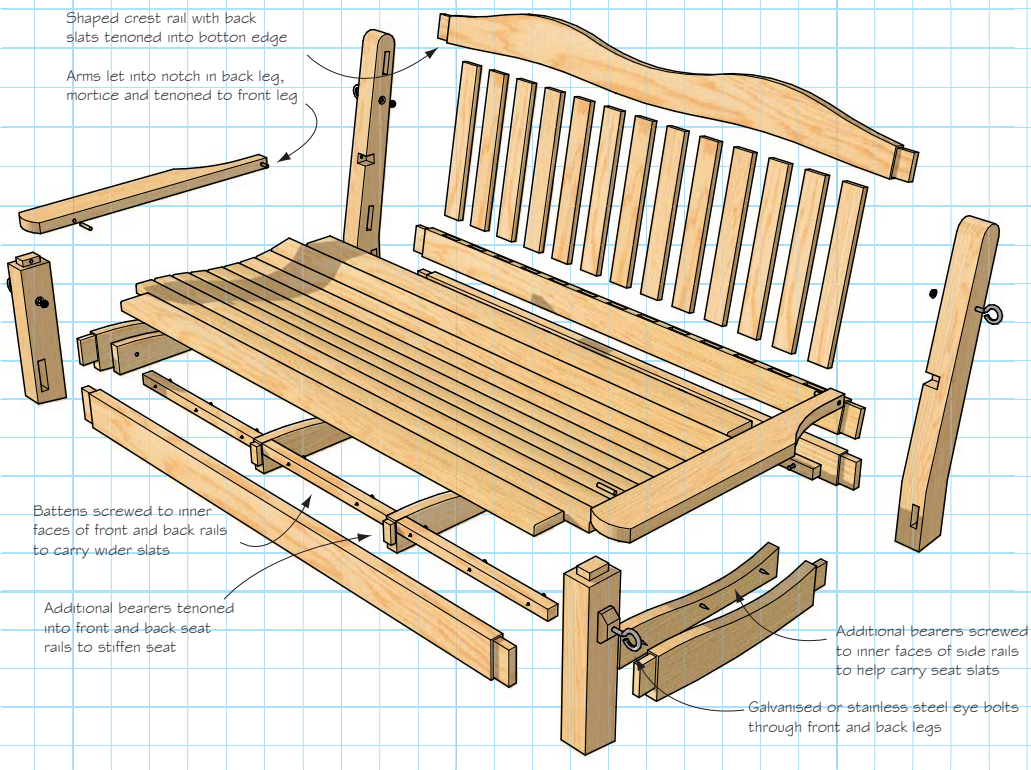
The back rails, like the seat rails, are tenoned into the legs or uprights, with the crest rail at the top having gentle curves added to the top and bottom edges. The back slats are also tenoned into these rails, but in this case there is no shoulder with mortices the full width and thickness of the slats. The arms of the seat have stub tenons into them at the front and are notched into the back uprights, with dowels added front and back to strengthen the joints. The longer seat slats which span from side rail to side rail are added at regular spacings, and fixed to mid and side rails.

The frame which carries the swing seat is much simpler in construction, formed by a pair of 'A' frames on each side of the seat, and joined at the top by a substantial rail which projects beyond the frames and is shaped at the ends. The feet should be fixed to the ground, preferably avoiding a

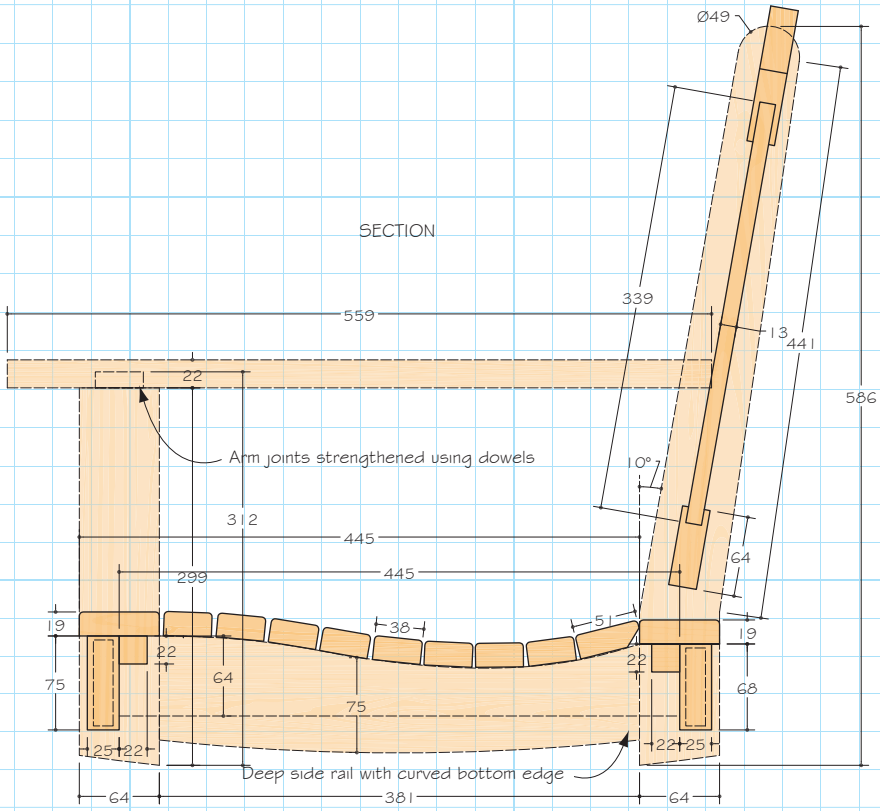


common method which involves just concreting in the ends of the timber, as this can really increase the likelihood of rotting. The angle makes things a bit tricky, but it is possible to use steel braces and bolts as an alternative.

The 'A' frames are braced horizontally in two places, and the upper braces pick up additional corner braces which are angled upwards into the bottom face of the top rail, and birdsmouthed at the bottom joint. The frame can be constructed using either mortice and tenon or alternatively half lap joints. The latter are easier to form but provide a bit less protection to end grain which is more of a consideration for external joinery. The overall height of the frame shown in the drawings is for guidance and can obviously be varied to suit, simply by increasing the length of the 'A' frame sides.



To join the seat to its frame, you need some substantial galvanised or stainless steel eye bolts. One pair is required for the front uprights, and another for the back, the latter located about half way up the angled part of the upright. Larger diameter blind holes should be drilled on the inner faces of the uprights to allow nuts and washers to be hidden, and an additional timber fillet can be added to the front uprights to make sure the centre of the eye bolt is further out and clears the sides of the arms. Two more bolts are inserted vertically into the top rail, and the seat can then be joined to the frame using chain or cable of sufficient strength to allow you to float away safely and unhindered. ■



Cutting list

SEAT			
Front upright (leg)	2	@	312 x 64 x 50
Back upright (leg)	2	@	590 x Ex 90 x 50
Arms	2	@	560 x 76 x 22
Crest rail	1	@	1206 x Ex 100 x 22
Back rail	1	@	1206 x 64 x 22
Front seat rail	1	@	1206 x 75 x 25
Back seat rail	1	@	1206 x 68 x 25
Seat rail battens	2	@	1136 x 22 x 22
Side rails	2	@	445 x Ex 95 x 22
Side rails braces	2	@	381 x 64 x 22
Mid seat rails	2	@	465 x 64 x 22
Seat slats	8	@	1236 x 38 x 19
Seat slat	1	@	1236 x 50 x 19
Seat slats	2	@	1136 x 64 x 19
Back slats	13	@	340 x 44 x 13
FRAME			
'A' frame sides	4	@	1930 x 90 x 40
'A' frame braces	2	@	340 x 90 x 40
'A' frame braces	2	@	1000 x 90 x 40
Corner braces	2	@	540 x 75 x 47
Top rail	1	@	1860 x 150 x 47

The front and back seat rail battens are given as a continuous length but are in 3 sections divided by the mid rails. The crest rail, back leg and side shaped rail are given oversize to allow for shaping and fitting.

Ex = from square dimensioned stock

Creating Secret mitred dovetails

Sorry for the obvious pun, but... **Michael T Collins** shows us how to box clever

PHOTOGRAPHS BY MICHAEL T COLLINS

Whenever I make boxes – and I make a lot of boxes – I like to keep the grain flowing around the joints and generally employ a spline joint, since a standard butt joint is not particularly strong (see issue 7 page 20). When creating a dovetail, either a through or half-blind/lapped dovetail, this visually aesthetic flow of the grain around the corners is interrupted by end grain.

Typically, in the 18th century it was too provincial to have dovetails showing and the old masters would cover the through or half-blind dovetail with moulding or a cornice at the top of the piece. But this is not practical when making boxes. So how to employ the strength of the dovetail joint yet allow the grain to flow around the corners?

Enter hidden dovetails

Hidden dovetails, often called mitred dovetails, appear to be quite complex and therefore difficult to master but, given a methodical approach and careful layout, this type of joint is no harder than the half-blind dovetail.

In fact, unlike the half-blind dovetail, there are only three faces that need to be 'perfect' – the top and bottom edges and the mitre. The hidden section can be as rough as you like so long as the dovetails hold and the mitres fit snugly.

Basic mitre and tongue layout

Unlike the through and half-blind dovetails, hidden dovetails work best if the boards are of equal thickness. They don't have to be, although working with boards of differing thicknesses adds complexity.

1 So, let's start. Select a piece of straight-grained wood. I have chosen to work with poplar, cut and plane to final thickness and square the ends. To do this I just use a jack plane and my bench hook.

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2 Mark the face and edge sides. These will be the outside surfaces of the final piece. Then set the marking knife to the exact thickness of the board.


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3 Scribe a line on the inside face of both pieces, referencing off the end grain.

4 Set the cutting gauge to approximately 6mm and, from the face side, mark a line on the end grain, referencing off the face side of the wood.

5 With a ruler, connect the outside corner of the board with the scribed line on the inside edge. This produces a 45° angle.

6 Repeat this process on the ends of all four pieces. Now, mark the same 6mm line from the end grain to the point where this line intersects with the 45° diagonal line. Also mark a line on the inside face, referencing off the end grain. In fig. 6 I have emphasised the lines for clarity.

7 Cut the rebate using a chisel, remove a V-notch on the waste side of the scribed line.

8 Saw down to where the scribed line meets the diagonal line and chisel off the waste.

9 Pare down to the scribe line and check for squareness.

Laying out the pins

In my previous dovetail articles, and as a matter of habit, I have cut tails first. However, in this example it would be very difficult to lay out the tails first.

10 On the end grain and within the rebate area mark in approximately 6mm from both edges and then come in an additional 6mm. Then divide the remaining space for three pins (the number of pins is determined by the width of the ➤


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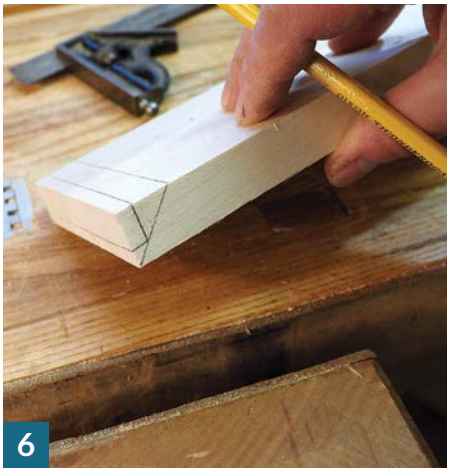
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boards). Here I am using a 1:6 shop-made dovetail template. Mark the waste – it is so easy to get carried away with excitement and cut the wrong part. Trust me, I know.

11 When cutting half-blind dovetails, it is quite acceptable to over-saw the pins, but in this case, I want to retain the secret nature of the joint and over-sawing would, to some extent, give the game away.

So, instead saw on the waste side leaving the pencil line, making sure you do not over-saw the 'tongue' of the rebate or go beyond the scribe line on the inside face.

12 Once all the sawing is done, chop out the waste. To do this, start by using the largest chisel that will fit within the waste area, bevel out and about 1mm from the scribe line. Chop into the waste.

13 Then, from the end grain, remove the waste. Repeat this process until you have excavated most of the waste.

You will need to chisel down along the side of the tails where the saw hasn't been able to reach. Depending on the wood you're using, you might want to go easy as chopping too hard on the half pins can cause the wood to split. To reach into the corners, use a smaller chisel or a skew chisel.

Finally, place the chisel in the knife line and chop down, adding a slight undercut. Clean up the pins. It's a good idea to add a small chamfer to the inside edge of each tail. This makes for a cleaner joint and a place for excess glue to go. Repeat this process for all the waste. For a detailed description see issue 27 page 70.

Lay out the tails

14 The tails are laid out using the pin board. This process is very straightforward and uses the rebate tongue to position the pin board on the tail board. Using a sharp pencil to lay out the tails, carry your lines square across the end grain.

***Note:** The way to remember: tails are angles on the face grain and pins are angles on the end grain.*

15 Again, mark the waste clearly.


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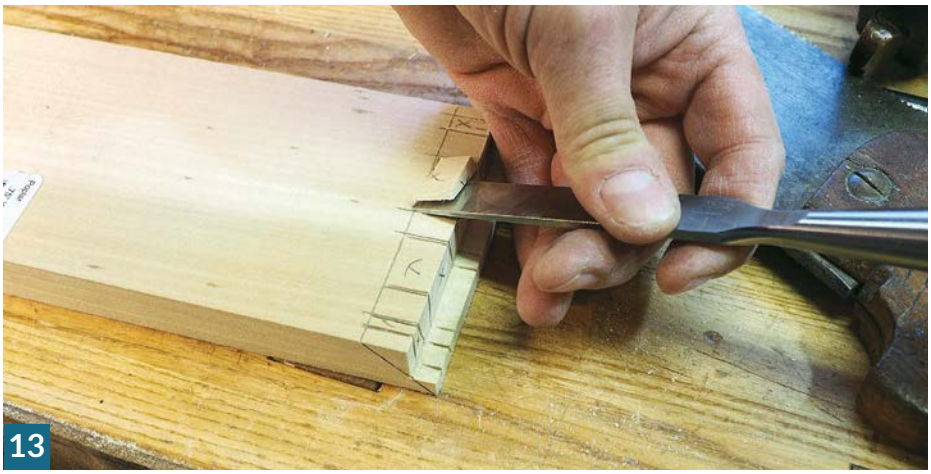
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16 Saw on the waste side of the line and chop out the waste using the method described above. When cutting tails, it's sometimes easier to angle the wood so that the saw is cutting vertically.

Finally cutting the mitres

17 Carefully saw the mitres on the edges on the waste side of the diagonal scribe lines.

18 Pare away the waste – take care not to cut beyond the face edge of the tongue.

19 Tweak the long-mitred edge, taking small amounts at a time and test-fit as you go. Make sure that the leading edge of the mitre remains sharp – you are looking for crisp lines between the mating surfaces of the joint.

20 Now all you have to do is repeat this whole process three more times… Since these are custom-fit dovetails make sure that you label mating joints.

21 Once all the mitres are cut a groove can be planed or sawn about 6mm up from the bottom of each piece. Apply glue to the mating surfaces and clamp together. And there you have it, the secret dovetail joint.

It may take a little more time than a normal dovetail, but it is worth the extra time when you are working on a particularly nice piece where strength is needed, and the appearance of end grain will ruin the piece or where you can't simply cover it up with moulding. It is also another joint that will develop your woodworking skills. ■


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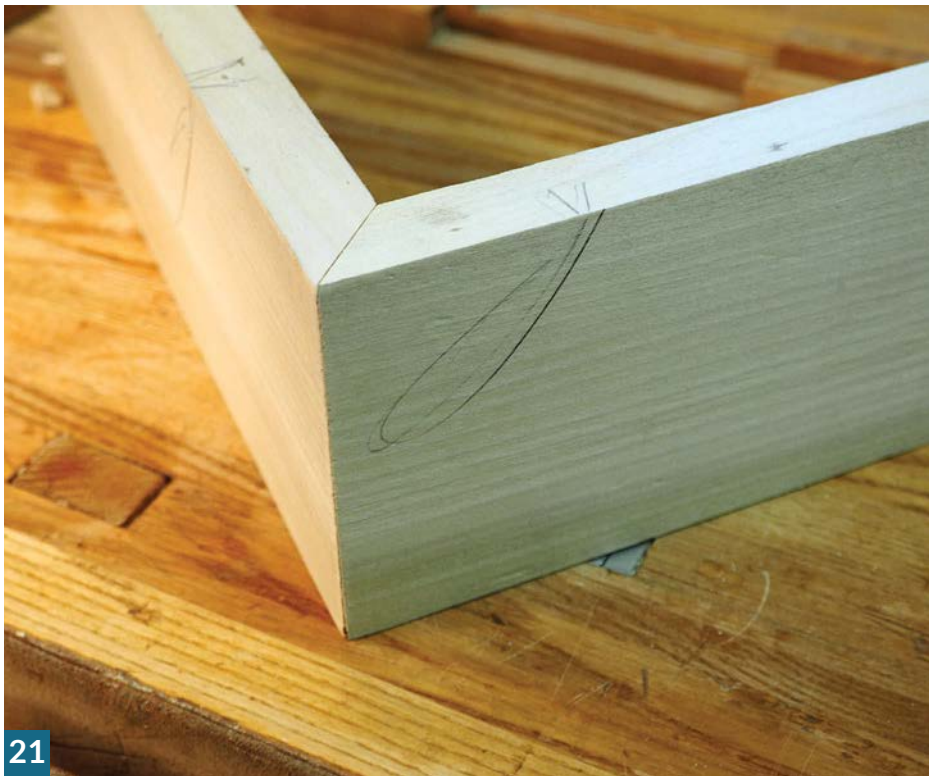
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Carved eating spoons

Working with form, grain types and orientation, as shown by expert green woodworker **Paul Adamson**

PHOTOGRAPHS BY PAUL ADAMSON

Eating spoons come in a range of styles dependent on the function, regional culture or the mood of the maker at the time. This article will guide you through the type I like to make and also describe using different types of wood in various ways. This can make use of interesting sections of heartwood and the extra colours they provide.

Creating good form

I will always advise a student to create a spoon with good form first so that it feels right in the hand, mouth, and bowl. This is important and is soon learned. After this there is scope to add decoration work through chip carving and kolrosing (fine line surface detailing), but often a great piece of wood already has lots of character to start with.

1 Small branches of about wrist thickness are an easy material to get hold of, and most spoons can be carved from them.

2 After splitting the wood in half you have the option of drawing the top profile of the spoon shape on to the conveniently flat split face. Or you can flatten off the bark side of the half-log and draw on to this tangential side. This is often the preferred way as it's argued that the spoon bowl is stronger, but there are also nice circular patterns in the inner bowl once finished as a result of cutting through the annual growth rings.

3 If you are lucky you might have access to larger diameter logs, often as waste from tree surgery work. Larger trees have had more time to establish an inner distinctive heartwood, which contrasts nicely with the sapwood closer to the bark.


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4 This can be played with if the log is split radially, just like a cake. This creates two flat sides on a wedge shape, and by drawing the top profile of the spoon on one of these sides, you can incorporate the straight lines of the growth rings and two or more colours.

5 Once you have a tangential or radial-split piece of wood, it's easier to plan the spoon if this is trimmed into a rectangular billet around 200 x 50 x 30mm. The radial piece just needs the corner of one side splitting off and a quick trim of the edge to square up. These radial billets of wood are quick to create and there is minimal waste, so perfect for production spoon carving.

Handle crank

As we are making eating spoons, the most important part to get right is the crank. We are using straight sections of timber here, which saves time in gathering and processing, but a great eater has a handle higher than the bowl, or a bowl which 'kicks up', depending on the way you look at it. The first process to allow this to happen is to weaken the fibres at the lowest part of the bowl section of the eventual spoon. The easiest way to do this is by using a saw to make a stop cut around 7mm deep and the full width of the billet, two to three finger widths up from one end.

6 Then start to axe down from near the top of the handle to meet the stop cut.

7 Slicing from the side of the billet with the axe, trim off the remaining end to create the start of the cranked section of wood. This does take practice and there are the obvious dangers associated with fine, close axe work. If in doubt, get some training in the correct use of carving axes. Those who have access to a bandsaw could obviously use it to complete this wood removal easily.

8-11 Now we can reduce the width of the spoon by axing off material from the side profiles. This again can be helped by the use of sawn stop cuts to allow entry to the union of the bowl.

Once this is completed the top corners of the bowl can be taken off, followed by the bottom corners. ➤


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12 The next thing I like to do is thin the piece slightly by removing some of the wood from the underneath of the spoon handle and bowl. Leave around 15mm of thickness though, so that we can create the depth of the bowl and adjust the spoon form as necessary.

Woodcarving knives

The spoon is now roughed out with the axe and it's over to the knife to tidy up that top profile so we know the crank is properly set and that the bowl will enter the food and mouth at the right angle. I use woodcarving knives with a fixed handle and flat ground bevel or slightly hollowed. Avoid convex grinds or blades with a secondary bevel.

13 The top of the bowl is hard to trim with the straight knife so a curved spoon knife is great for starting off a depression, which the straight knife can then tidy up around the top edges that remain. You could complete all the bowl hollowing at this point.

Knife grips

Now that the top is complete, we can tidy up the sides of the spoon with the knife and get down to a finished width. There is a range of five knife grips or holds that can be used to make each carved section as safely and easy as possible to complete.

14 The handle sides can be done by bracing the spoon against the body and working towards yourself. This grip is best described and practised in the company of others who are proficient. When done safely it is a very useful grip indeed for long sections of wood.


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15 The thumb push is great for the top corners of the bowl. Simply hold the knife in your dominant hand, place against the wood, but only push on the back of the blade with the thumb of the opposite hand. You can use this thumb as a pivot too. It's a great way to remove small pieces of wood carefully.

16 The potato peeler is as it sounds, and is the best grip for the sides and end of the bowl. Cut towards yourself carefully with the squeezing action of the dominant hand. Just don't cut directly towards your thumb which is braced against the work. Again, take your time and if knife work is new to you, consider joining a club or a course where you can get help.

If you haven't finished off hollowing the bowl with the bent spoon knife, now is the time. Go deeper at the back near the handle and almost flat and shallow at the front, so as to allow the food to be stored but also to be removed by the lips.


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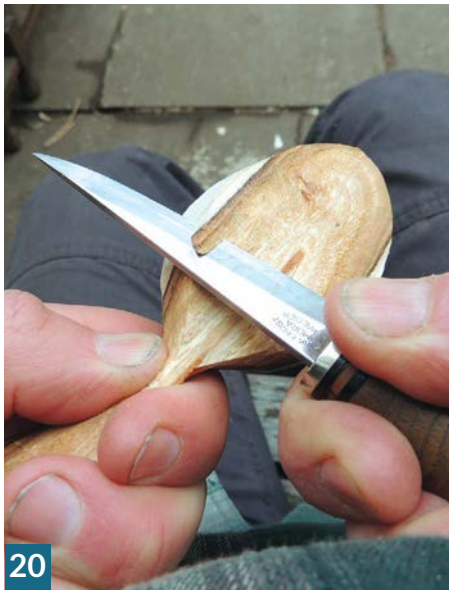
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17-18 Top profile and sides complete.

The last section to complete is the underneath of the spoon or the bottom profile. This just needs to be lifted to suit the top profile. Leave thickness where the handle and bowl meet to retain strength. This can be described as the same shape as the keel of a boat. The remaining areas should be thin, down to 2mm.

19 One of the knife grips you can use here is the forehand grip. Hold the knife in the dominant hand and form a fist, edge facing away from you. Imaging forming the point of a tent peg, cutting away from you into fresh air and leaving the end of the workpiece. It's a powerful grip and with less control, so be mindful of where the edge will end up. Check for other people close by.

20 A safer grip is the chest lever grip. Just as powerful but with more ability to control the amount the knife moves. Hold the knife as in the forehand grip, straight out in front of you, but rotate the knife 90° so that the edge is facing to your dominant side.

Place the edge on the wood and bring both towards your body so that the backs of the fingers are in contact with your stomach or chest. The wood and the knife should form a cross. Move both knife and wood at the same time when cutting and it should work like a pair of scissors. As long as the backs of the fingers are placed on the body and rotated through the cut, the upper body can be used to good effect.

21 Give all the edges a bevel to remove the sharp edges left by the carving and to help further thin the piece.

22-23 All done, and finished with a rub of cold-pressed linseed oil, then burnished with a smooth, hard surface. Leave to cure for a few weeks and they are ready to use for many years.

I hope this will help people to not only make great eating spoons, but to carve other items well too. ■


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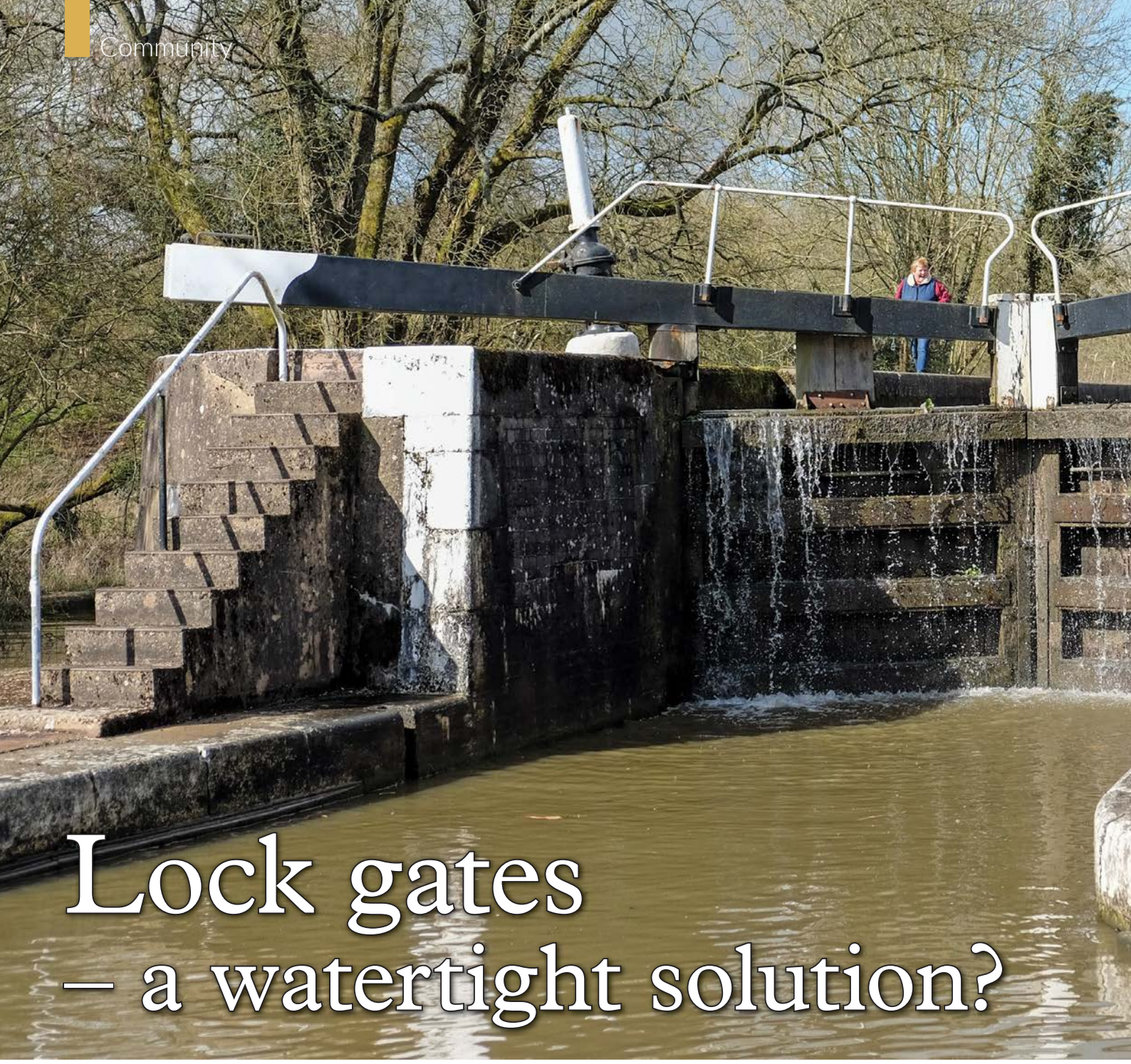


Lock gates – a watertight solution?

Narrow boaters bump and smile, take in the fresh air and enjoy the watery solitude – but spare a thought for the men who fix the locks in the dead of winter... By Anthony Bailey

Narrow boating is very much a summer-autumn kind of thing, book a boat, learn how to use it with care, canal etiquette, visit waterside pubs, make friends, explore and more and discover the ways of navigating locks, the correct way to operate them, no mess-ups –it's rather public if you do. But by who and how are these wonders of wet engineering created and maintained?

Long fascinated by the majesty of lock gates I felt I really should find out for myself. So at the kind invitation of the Canal and River Trust I took myself off to the slightly obscure destination of Bilston in the West Midlands, home to their central workshop.

Canal and River Trust

The Canal and River Trust is the charitable trust charged with the responsibility for maintaining the extensive, currently navigable canal network in the United Kingdom for leisure use. It took over from the British Waterways Board, its own existence the result of trying to make better use of the canals after decades of decline following the introduction of much faster railways. Its funding comes from the government and other sources and substantial though that is, the network is vast and in constant need of repair and attention often with the help of willing and essential volunteers. The most serious work, typically lock gate repairs and renewals, takes place out of season i.e. in the winter months when canals are largely not in use. Unfortunately the

PHOTOGRAPH COURTESY OF WIKIPEDIA COMMONS

PHOTOGRAPHS BY GMC/ANTHONY BAILEY UNLESS OTHERWISE STATED

Mel Smith at troublesome lock 27

Jeff Dugmore and Mark Ashlee

weather is seldom kind at that time of year making a difficult job all the harder.

Bradley workshop

Rather like railways, canals often have strange spurs off, unnoticed to the casual eye and Bradley Lane Workshop located next to one of these and tucked amongst residential housing could easily be missed. A vast Victorian building once used for building narrowboats that at first glance appears largely empty, but is in fact home to the production of huge lock gates mainly constructed from FSC British oak or greenheart and douglas fir for planking. Overhead gantry cranes and heavy duty time-served pieces of woodworking machinery are used by the small highly skilled workforce to create all the necessary wooden components. Mark Ashlee the workshop supervisor, showed me around the building. It was January and none too warm, despite the boiler heating. The huge but straight 'green' oak trunks were squared off on all sides he explained. This ensured stability as the timber dried out. A two-sider machine was used twice, turning the log between passes, arriving at four square sides ready for trimming to the required length. Crosscutting is then done on a suitably large crosscut saw with a roller bed to manoeuvre each baulk of timber. Depending on which component is being worked on, it will be either mortised or tenoned after careful marking out to the chosen working drawing.

Design and specification

In order to negotiate natural topography canals tend to meander around natural features but where they cannot then locks are essential. Mark showed me on his computer the lists and lists of different lock gate specifications, the Trust is in the continual process of adding every single set of lock gates anywhere on the network. This is a vastly more complex process than you might imagine. Each set of lock gates has a lifespan of twenty five years, each lock has two pairs unless they happen to ➤

The vast workshop with components sitting on bearers

Two hinge posts with borings for steel rods

be narrow with single gates. As the network developed from its original narrowboat size to accommodate broader more commercially viable boats and barges, so wider locks were installed. Unfortunately there isn't a set design standard for locks, hence the need to build up a vast database record. A complicating factor is that canals change shape over time due to subsidence and lock chambers can be affected. The surveyor – usually Mark, has to try and work out the correct height for the gates with the lock still filled. This is done with a pole searching for the bottom of the lock chamber to arrive at a meaningful figure. In Mark's words "I have to be really careful, there could be supermarket trolleys or allsorts, you just have to use your intuition sometimes." This sounds unsatisfactory for something that is supposed to be pretty much watertight but there is clearly an art as well as science involved in getting the specification right.

Lock gate construction

Lock gates are generally of two types, narrow gates which can be either framed and braced or parallel boarded, alternatively broad gates which must be framed and braced due to their width and weight. They have a balance beam across the top which balances the weight of the gate in its socket and facilitates opening and closing, which with a handrail in place also allows you to walk across the closed gates. Each gate has both a steel sag bar and a timber brace to resist sagging and a paddle – a door which is opened and closed to allow water in or out in a controlled manner using a detachable

Haunched mortise and tenons

A rather large nail... and an equally large coach type screw

windlass. The gates have a mitred meeting, facing upstream against the pressure of water which seals the lock gates. There are bumpers which prevent narrowboats damaging the gates. An access ladder on the lock side wall gives access to the gates. Filling or emptying a lock is known as 'turning'. There are other types of lock construction and operation but this sort is typical on the Grand Union Canal.

While most of the vast Victorian hall is covered with lock gates and components in various stages of construction, there is also a very large side section comprising the blacksmith and engineering workshops and a vast and rather alarmingly comprehensive store of cast and wrought iron gate fixtures and fittings. Since there are such a variety of lock gate sizes and types, so there has to be a wide range of ironwork to suit them all. The thing I noticed most was the lower hinge point of each gate is actually a round cast iron pin that sits in a cast iron cup in the base of the lock. That pin must sit firmly in the cup or disaster would ensue with thousands of gallons of water blowing out the lock gate with potential for damage and destruction as a result. More on this later…

At the far end of the workshop I noticed a strange cast iron wheel at a level similar to the outside canal basin, I didn't have time to ask more but it looked like it was originally built for turning narrowboats over for hull maintenance.

Once each pair of lock gates is completed with all the strapwork and fittings in place, it is moved outside to sit raised up off the ground outside the building. Mark remarked, "If it's hot weather in summer we have to use a sprinkler on the gates to keep them from drying and splitting before they go in the water." It was a remarkable building and working methodology and fascinating to see, but despite the rather grim weather I was also promised I could watch lock gates actually being installed!

'Stairway to Heaven'

I was given lock gate number 27 on the Grand Union Canal and the Trust postcode for the car park site nearby. I found it with a little difficulty tucked away opposite Warwick Parkway railway station. I was met by Mel Smith the site manager and escorted across the top of the last set of gates in the 'Hatton Flight' to the office in the lock keeper's cottage opposite. For anyone not au fait with the terminology, a 'flight' is a succession of locks allowing the canal to negotiate rises and falls in the terrain. The two-mile Hatton Flight is composed of twenty-one locks and known as the 'stairway to heaven' by boaters. It was mid afternoon in failing January light and the team of professional canal engineers were all crowded into a small office feeling thoroughly dejected as an installation which should have taken a day or less was now into two and a half days. The reason? One gate fitted perfectly, but the other one was sitting just ten millimetres higher for no apparent reason, that was dangerously too high with the hinge pin not sitting firmly in the cup. The gates were being installed 'wet' because the blocking out boards at the eastern end which should slide nicely down into special slots in the brickwork to seal the lock completely, wouldn't go right down into the base of the lock. ➤

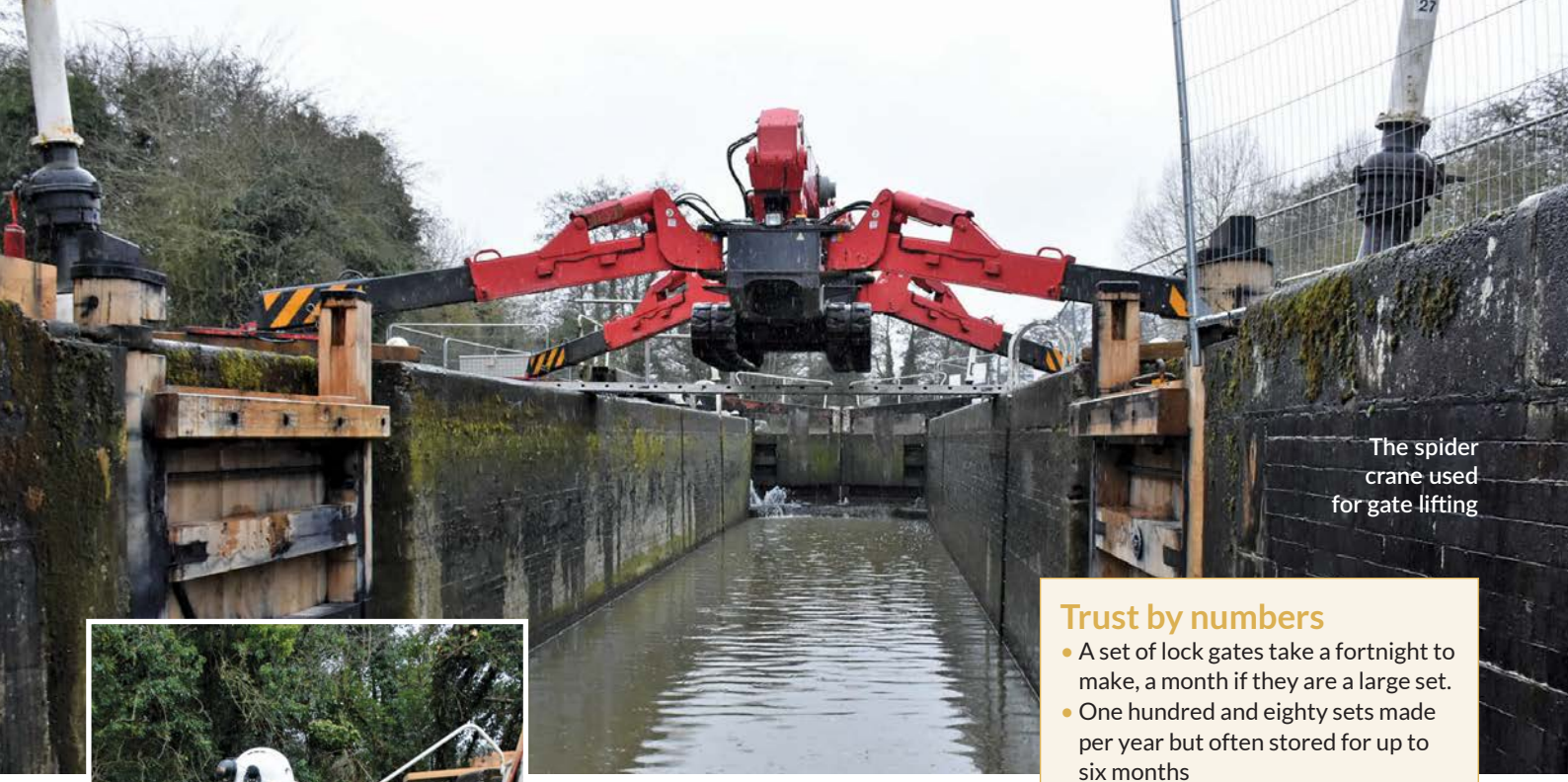
Bottom end of a hinge post with the hinge pin fitted

Heavy duty chisels for chopping mortises

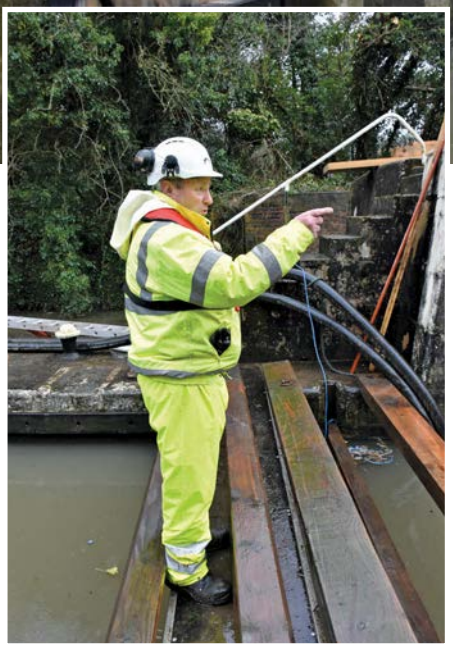
The boat turning mechanism

The gate at lock 27 that won't quite fit

The canal blocked off for gate renewal



The spider crane used for gate lifting



Mel on a narrow walkway across the lock entrance

The top strap hinge

The originally narrow lock – now a weir

The suspicion was that the base of the chamber had been deliberately reshaped by rounding it at some point and square boards don't fit round shapes. At this point the driver of the hired-in 'spider crane' which I could see sitting over the lock chamber, dashed in clearly having had enough of sitting in his frozen eyrie over the top of the lock.

Site visit

Mel Smith took me along the towpath after outfitting me with a borrowed hardhat and life jacket, to see for myself what the issue was. The 1930's broad lock had the original narrow lock alongside it, now used as a bypass weir to control the flow of water just like the other locks in the flight. Some boards were already in place in the slot but until the awaited arrival of an engineer to approve reshaping one of the boards to fit the rounded bed profile, there was nothing more they could do that day. If the board 'wall' failed the array of pipework and pumps would be overwhelmed in the ensuing deluge and there could be casualties if the installation team were standing in the empty chamber. Each board, thicker than the original boards would have been, needed six men to lift and four to jump up and down on to make them all sit tightly in place so it had to be right. I realised that just bringing the barge and equipment up the flight to the lock must be a task in itself. Mel said, "oh yes, that's six or seven men hauling the maintenance barge by rope up the whole flight, it took about four and a half hours to get here."

Trust by numbers

- A set of lock gates take a fortnight to make, a month if they are a large set.
- One hundred and eighty sets made per year but often stored for up to six months
- Fifteen hundred sets of lock gates on the Trust network of canals
- Broad gates typically weigh between three and five tons
- The Trust spends £38 million pounds each year on repairs and maintenance
- 2,000 miles of canals and the third biggest UK landowner

Facing the icy cold spicules of sleet, the rain and wind, this seemed beyond misery, but for these men it became a matter of every day fact in the winter months. Safety was paramount, Mel trod gingerly across the muddy ground clearly very aware of the risk of a slip into the deep lock and yet the water upstream looked so calm compared to this civil engineering challenge.

I had been made to feel most welcome and I had all the time I needed to ask questions and learn about lock construction and installation but it seemed like the time to go and leave these weary men to a well earned rest, ready to fight another day. As I was about to leave the car park another Trust van pulled up and Paul Edwards and his team got out. They were going to be the ones to get the problem with the stop boards resolved so the job could be completed. It seemed a good time to leave, full of admiration for the men who keep our canals and waterways functioning and safe for all of us. ■

Further Information
If you are interested in the work of the Canal and River Trust visit:
https://canalrivertrust.org.uk

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Left: A natural form of camouflage

A zebrano box with sliding lid

Trees for life
Zebrano

Zebrano dish by Derek Hayes

A zebrano humidor by Martin Maine

Zebrano desk tidy

PHOTOGRAPH COURTESY OF SHUTTERSTOCK

It seems any tree with such obvious streaks in the grain can definitely earn its stripes as zebrano or – should it be zebrawood?

In Europe such timber is known as zebrano but in the US as zebrawood. To compound this it is attached to trees of various species that have been sourced at different times and on different continents, but all share visual characteristics that liken them to the zebra with its striking body patterns. The term was originally applied to the wood of jobillo (*Astronium graveolens*), a large tree native to Central America, but in the 20th century the most important source of zebrano or zebrawood has been *Microberlinia brazzavillensis*, a tree native to Central Africa found in Gabon, Cameroon and the Congo. Other species include the Brazilian *Astronium fraxinifolium*, African *Brachystegia spiciformis*, Pacific *Guettarda speciosa* and Asian *Pistacia integerrima*. Basically, any tropical hardwood with a very streaky, dark brown grain against a coffee-coloured heartwood has qualified for the title, but typically nowadays *Microberlinia brazzavillensis* is the tree used.

History

Zebrawood was first recorded in the British Customs returns for 1773, when 180 pieces of zebrawood were imported from the Mosquito Coast, which was a British colony but now the Republics of Honduras and Nicaragua. In his *History of Jamaica*, 1774, Edward Long relates: 'The species of zebrawood at present in esteem among the cabinetmakers is brought to Jamaica from the Mosquito shore; it is of a most lovely tint, and richly veined.' As a consequence zebrawood was regularly exported until the Convention of London in 1786 and the subsequent expulsion of British settlers from this part of the Viceroyalty

Fitting contrast 'keys'

It does make your eyes go funny

PHOTOGRAPHS BY GMC/ANTHONY BAILEY UNLESS OTHERWISE STATED

Modern kitchen with zebrano surfaces

PHOTOGRAPH COURTESY OF SHUTTERSTOCK

Zebrano pendant

of New Spain which had existed since 1535 following the Spanish conquests.

In the 18th century British sources termed the timber palmaletto or palmalatta, from palo mulatto, which was the local name for it. At the beginning of the 19th century, another source of zebrawood was found in Brazil. This species, *Astronium fraxinifolium* is native to northern South America, mostly in north eastern Brazil, and is now traded as Gonçalo alves, a Portuguese name used in Brazil, but is sometimes currently known as tigerwood. In European and American markets, it was still being called zebrawood and commonly used in English furnituremaking between about 1810 and 1860.

For most of the 19th century the botanical identity of zebrawood was unknown. For many years, it was thought to be a *Connarus guianensis* species but, although there are similarities between the timbers of *Connarus* and *Astronium* the former has yet to be identified on any surviving furniture. So it has been assumed that this attribution as a furniture wood is incorrect.

The *Astronium* species went out of use in the 20th century so the word usually now refers to wood of the very different African tree *Microberlinia brazzavillensis*, but may be applied to other woods mostly belonging to the same *Fabaceae* family. You can see how confusing it is to identify a particular species, especially as cabinetmakers seldom attempt to identify standing trees, only the appearance of the cut timber.

The timber

The heartwood is a pale golden yellow, distinct from the very pale colour of the sapwood and features narrow streaks of dark brown to black. Zebrano can also be a pale brown with regular or irregular marks of dark brown in varying widths. It is almost always quarter sawn to get the exciting alternating colour pattern, which doesn't display in the same way with through-and-through milling.

Uses

It is a decorative exotic wood, used in a limited way for veneer, wall panelling, custom furniture, furniture trim, inlay bandings, marquetry, speciality items and turnery. It is also sometimes seen as stocks of shotguns and rifles or in exotic guitars. In the past, it was used for the interiors of Cadillac and Mercedes-Benz cars. Because of its hardness, it can also be used for skis and tool handles.

Working characteristics

It is a heavy hardwood with a somewhat coarse texture, often with an interlocked or wavy grain. It saws easily enough but the interlocked grain of this wood, like that of many tropical woods, can make it difficult to work with the grain 'picking up' when planing – belt sanding may be a better option. It shapes well and will glue well with care. Veneers have a tendency to buckle so they need to be weighted down in storage. A good level of finish is possible after careful sanding.

Sustainability

Like a lot of timbers, zebrano is listed as vulnerable by the International Union for Conservation of Nature. It is, however, obtainable from reputable suppliers, but is best used wisely in veneer form. ■

Sideboard with hidden catches by Peter Rolfe

PHOTOGRAPH BY ANDREA HARGREAVES

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Woodland ways

Not all fine oak-shaped trees are oaks. This is the much maligned sycamore (*Acer psuedoplatanus*)

PHOTOGRAPHS BY GARY MARSHALL

Tree ID part IV Myth busting

How much do we think we really know about trees? **Gary Marshall** dispels those myths!

Willow weep for me

Not all willows weep. There have been many articles in this magazine covering the uses of willows such as osiers (*Salix viminalis*) and other willows useful for weaving such as *S.triandra*. But these are fairly small trees that if left uncut end up looking rather scruffy – although still valuable for wildlife. They don't weep though.

What of the larger willows? One that will immediately spring to many minds is *S.babylonica* the familiar weeping willow – a tree that was not introduced into the UK until 1730.

Let's take two others. Crack willows, tall, slender, with straight twigs and branches, liable to snap easily – these, along with white willows (*S. alba*) can be among our largest willows reaching around 40m high, so they are often pollarded. Goat willows (*S. caprea)* are almost as tall as they will grow here to around 30m tall. Crack willows and goat willows are very different trees – not liable to weep, unlike the white willow that does have a pendulous tendency when beside water. Good luck getting to know your willows though – there are at least 350 in the

Not only willows weep – weeping beech (*Fagus sylvatica v. pendula*)

Six crack willows (left) and three goat willows (right)

A pollarded crack willow

Conifers can be characters too

A group of Scots pine

A lone Corsican pine

genus, although most found in the wild in Britain are contained in around six or seven species – even then there are many hybrids and varieties to further confuse the issue!

Not all trees that weep are willows. Since horticulturalists and arboriculturalists are always looking out for something a bit different, any tree that has a tendency to weep will not have escaped their attentions. So there are weeping beeches, ashes, cherries, larches, spruces – the list goes on. All splendid trees in the right setting.

Why conifer identification isn't boring

Not all conifers are evergreen – larches (*larix* spp) the dawn cypress (*metasequoia glyptostroboides*) and the swamp cypress (*Taxodium distichum*) are all deciduous.

Conifers can be great characters just look at the enormous and bulbous base of this *Sequoiadendron giganteum* or *Wellingtonia* (above).

Conifers can be magnificent – as 'Capability' Brown knew. Just take a look at these two cedars in one of his settings (below) – on the left *Cedrus atlantica* – Atlas Mountain Cedar – on the right (one of his signature trees) *Cedrus libani* or Cedar of Lebanon. He was unlikely to have seen many grow to their current size during his lifetime – although there were a few seedlings raised in the UK as early as the mid 1600s.

Not all pines are the same – Compare Scots pine (*Pinus sylvestris*) (above) with the lone dead straight 'telegraph pole' type Corsican pine (*Pinus nigra*) (right). These two common species are easy to distinguish even at a distance. Again, trying to sort out other types of pine may cause headaches – there being 111 different species in the genus.

Those examples were just a few from the 700 species of conifer in the world and all are different. Mind you – not all large evergreens in the UK are conifers take the magnificent *Quercus ilex* – holm oak beside Fittleworth Place in West Sussex. This leads on to...

Trees in the field

As most people may know, an old oak, grown in the open will have a large spreading crown and epitomises our ideal of this tree. Many other large trees – native and non-native will take on similar statures, given space and the right conditions. Even the much maligned sycamore (*Acer psuedoplatynus*) can make noble specimens. I've seen similar profiles from wych elms (*Ulmus glabra*) limes, ashes and many other species.

Bloomin' lovely

I thought I'd end this article with a bit of cheer – so how about this below to illustrate that trees in bloom deserve a closer look and an attempt at identification? ■

Cedrus libani (Left), *Cedrus atlantica* (right)

Not all oaks break bud at once

Crab apple in bloom

PHOTOGRAPHS BY MARK SANGER

What you need to know about...

Designing & making basic bowls

Mark Sanger looks at the basic considerations behind the most popular turned forms, beginning with bowls

In this and consecutive articles I will be looking at points to consider when producing various forms, starting with the bowl. Every form – be it a bowl, box, vase, platter or hollow form – can be studied in great depth on its own. As turners, particularly as we veer towards the projects we most enjoy making, we can investigate still further – there is always more to learn and always scope for development.

Over time our own tastes change, as do those of fashion. A look back through turning trends reveals the changes the humble bowl has been through. While in the main it has been a vessel of utility, the bowl has also been highly decorated as a sign of the owner's wealth. Today, brightly coloured bowls can be purchased purely as items for display in the home, to add a splash of colour to fit with the latest interiors. Needless to say, there is only so much that can be covered in these pages, but I believe that, with a foundation of design principles and a bit of pre-planning, we can produce a bowl to be proud of.

There are a number of points you should consider before even initially loading a blank on the lathe, the first being what the bowl is to be used for. This may seem obvious to point out, but we have a greater chance of success if we plan, especially if we want to sell our work.

DESIGN CONSIDERATIONS

Use and display

I believe the following points should all be considered prior to turning a bowl, but this list is not exhaustive, so have a think about what you consider will impact the design in your own work.

- Is the bowl for practical use, to hold foodstuffs or other items? If so, what?

- What depth, diameter and form are best suited, taking into account stability during use?
- Which woods are suitable for this use? Issues such as toxicity need to be taken into account if it is intended to hold foodstuffs.
- If detail and decoration are to be added – beads, coves or V-cuts – will these collect grime? Will they hamper cleaning or polishing?
- Where will the bowl be displayed and what size will best suit this location?
- If the bowl is purely for ornament, again, consider where it will be displayed. A low shelf is better suited to a wide-rimmed bowl as it will show off the grain, a shelf at eye level or higher could better suit a fuller form as the profile will be on view.

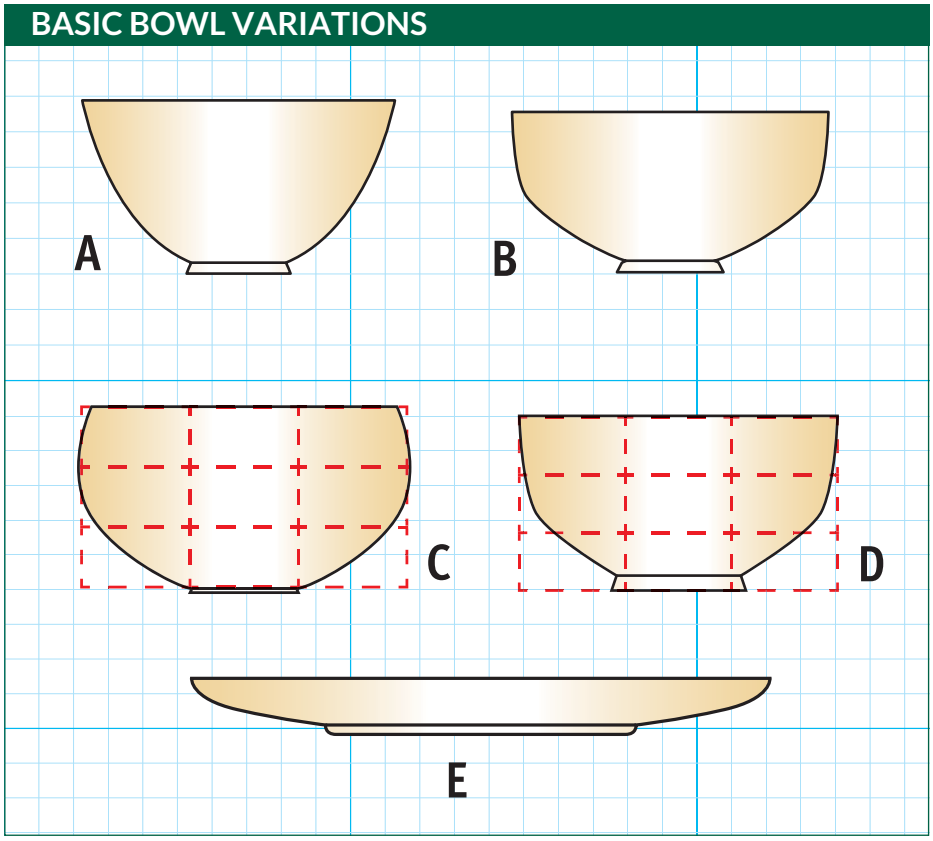
Form

Form is discussed here as the solid shape of an item made up of its individual parts. It is to some degree subjective as we all have our likes and preferences, but understanding a few principles of form, proportion and composition will help us get the best from our projects.

The aesthetic impact of a bowl is the first thing that grabs the viewer's attention, so it is worth considering how a form will work best for the project being made prior to going to the lathe. In the case of a utility bowl, this should first and foremost be functional and fit for purpose.

In this instance the intended use will dictate certain aspects of the design, such as a base that is stable during use with the form, allowing good access for storing or removing items. Utility bowls should and can be just as appealing as a purely aesthetic bowl, the stability of which is generally only restricted to the need for display while all other considerations are for visual impact.

Over time, most woods will darken through exposure to UV light from the sun. At which time the profile and form will become dominant with any faults once hidden by the busy grain becoming obvious. As such, my mantra is 'form and finish'. I believe a beautiful, well-made and finished form will enhance a bland piece of wood, but a beautiful piece of wood will not hide a poor form or finish. As an example, **Fig.A** shows a profile in which the line flows continuously, leading the eye from the foot to the rim without interruption, producing a balanced and pleasing form. **Fig.B**, on the other hand, shows a profile where the flow of line changes direction slightly halfway up the form. This change, while subtle, interrupts the line, drawing the eye and detracting from the form as a whole. This does not mean that the line within a form should be a constant. **Fig.C** shows a profile where the line flows back in towards the rim two-thirds of the way up from the base. In comparison to **Fig.B**, the line is smooth and continuous as it accelerates around the shoulder and back towards the rim without an obvious break, thus detracting from the form. The line or shapes within a form are directly connected to composition and proportion and, while this is a huge subject, by applying some basic principles we can add a balance to our forms.

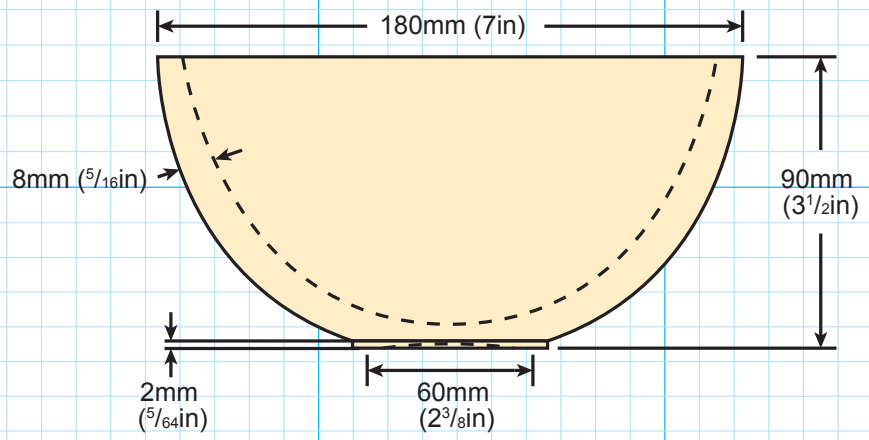


Proportion and composition

Proportion is the relationship in size between the separate parts of an object, with composition being how these main parts relate to make up the whole form. In the case of a bowl, it could include, but is not limited to, the diameter of the foot in relation to the overall diameter, or the position in which we include a certain design aspect, such as a change in line or the addition of detail. Proportion and composition again are huge subjects so here I am going to strip it right down and look at a simple method I use within the workshop to apply these to my forms, this being the 'rule of thirds'. This is the method of applying proportion that only requires simple maths, a ruler and a pencil. The 'rule of thirds' is the dividing of the main proportions of a form into equal thirds through the vertical and horizontal to add a harmonious balance. This method for applying proportion is known to have its history dating back to the 1800s for composition within paintings and is still used today in disciplines such as graphic design and architecture.

As an example, **Figs.C** and **D** show two profiles of a bowl over which a grid overlay of thirds has been drawn. If we take **Fig.C** we can note that the foot has been designed to be one-third of the overall diameter of the form, while the change in line occurs so that the central point is positioned two-thirds up from the base, this also being the same position where the decoration, such as beads, coves or other detail, could be added. **Fig.D**, on the other hand, has a base slightly larger than one-third of the diameter and a change in direction of line halfway up the bowl, both of which ➤

LATHE WORK



TIME TAKEN & COST
Time taken: 60 mins
Cost: £8

TOOLS REQUIRED
- 10mm bowl gouge
- 12mm skew chisel
- 10mm spindle gouge
- 25mm square-end scraper
- 25mm round-nose scraper

ADDITIONAL TOOLS
- 120-400 grit abrasive
- Depth gauge
- Finishing oil
- PPE: facemask, respirator/dust mask and extraction

TIMBER REQUIREMENTS
- 180mm dia. x 100mm spalted ash blank

can detract from the form. For forms that require a high degree of stability, a foot of two-thirds the diameter can be adopted. However, at times this can produce a heavy, overpowering base, especially on low platter-type forms and, while stability may dictate, a good compromise is for the base to be half the overall diameter, as shown in **Fig.E**. So while the 'rule of thirds' is a good foundation to work with at times, we may need to break the rule in order to satisfy both utility and aesthetics and should look at any rule as an aid to our work and not a restriction.

Within the few pages I have only been able to scratch the surface of form, proportion and composition, how these relate to each other and how they can be applied to a bowl. These subjects will be discussed in future articles, but I do believe that a balanced, pleasing form is easily achieved if we have a basic understanding of these subjects and this understanding does not need to be overly complex.

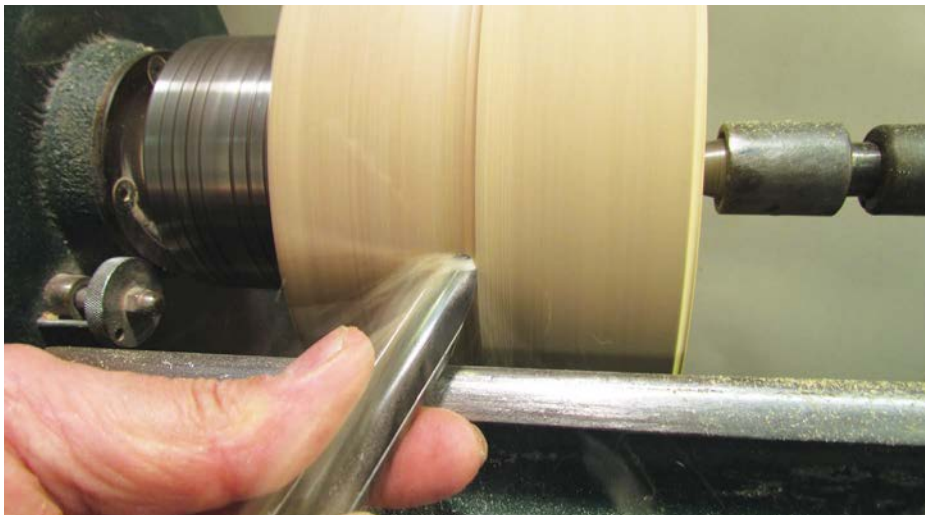
So have a think about form and proportion before going to the lathe. Study the form of bowls, vases and items around your home to see how they have been designed. See how the separate parts may or may not relate to each other. By studying and taking note in this way, we start to understand more about design and how this affects our own work and projects, and this ultimately helps us to become better turners.

Wall thickness

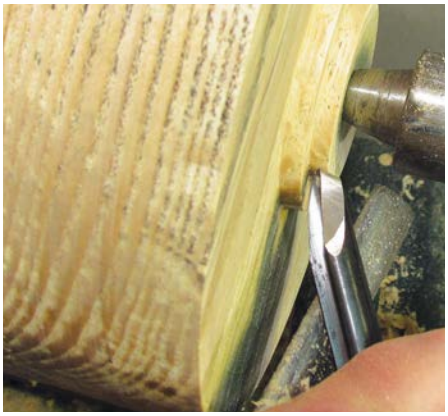
I believe that the optimum wall thickness is dependent upon the context of the bowl. It would be no use making a salad bowl with a thin wall as it would quickly break during use. On the other hand, a thin wall is appropriate for adding decoration through piercing. My preference is for the wall to balance the weight and use of the form.

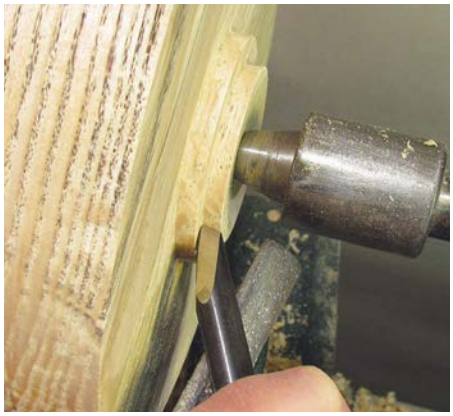
If I produce a large bowl, I like it to have some weight, while a smaller project may benefit from a thin wall to produce a delicate piece. There are constraints on wall thickness when turning unseasoned wood and these will be covered in future articles. These aside, if you wish to sell your work, it is worth considering any preconceived ideas a potential buyer may have. Be aware that these may differ from those of other woodturners.

People generally expect a large bowl to have some weight to it and a small, delicate-looking bowl to be light. This is my way and preference for turning bowls and I hope it gets you thinking about your own work the next time you turn.

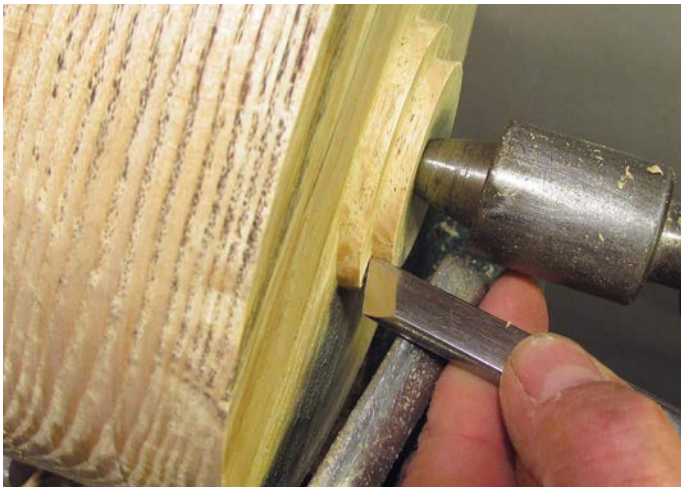


1 Mount the blank on a screw chuck, bringing up the tailcentre for support. You will use the indent left by the centre later, when finishing the bowl base. Clean up the outside of the blank using a 10mm bowl gouge. You want the wood fibres to slice on the tool edge, so make sure the handle is low enough to engage the bevel directly behind the cut. Note how the edge is slicing at approximately 45˚, giving an efficient cut and finish





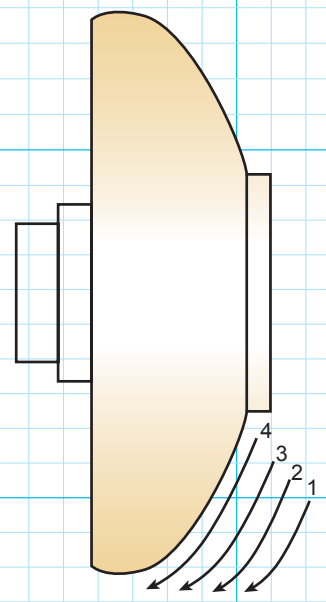
2-4 Produce a spigot and shoulder to suit the jaws of your chuck – taking into account the design of the foot if you are including one – using a 10mm bowl gouge with a long grind. Set the tool edge up to cut at centre height. Produce a cut by lifting the handle, rotating the shaft anti-clockwise as you plunge gently in an arc, slicing with the tip into the base until the lower flute is horizontal and pulling out with each cut. Use a standard pull cut to clean up the base and remove the waste wood as shown



5 If required, clean up the profile of the spigot using a 12mm skew horizontal on the toolrest

6 Using a 10mm bowl gouge, remove the corner, shaping the form outwards from the base to the rim

THE EXTERIOR CUTS



Direction of exterior cuts
The long grind allows for pull cuts, which removes the need to clear the tailstock to give clearance for the handle. With a traditional grind, the handle of the gouge has to be swung further over the lathe bed to achieve bevel support for a push cut. With the long grind, the flutes are positioned at 45˚ with the wood slicing at 10 o'clock from the tip. To achieve bevel support, the handle is kept low as the tool is swept around, producing the form of the bowl. It is important to cut the wood with supported end grain and to slice through the two areas of end grain in each revolution. To do this we cut from inside out, from base to rim.

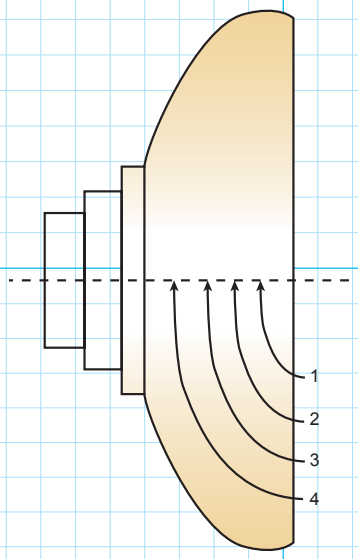
7 Using a push cut on the exterior. Having a waste section for a foot can make it difficult to achieve the desired profile close to the shoulder when using a pull cut, so change to a push cut in this instance, and finish in towards the shoulder. This may go against the grain but it is the simplest and safest method ➤

8 Now refine the surface using the gouge in shear-scraping mode. To do this, drop the handle so that the flute is presented at 45˚ and rotate the flutes anti-clockwise so that the cutting edge is perpendicular to the surface. Take the most gentle of sweeps across the surface. You should be producing fine shavings akin to cotton wool, depending upon the wood you are turning

8a Alternatively, use a 25mm square-end scraper. This is my preferred option as you can use a diamond hone to raise a burr on a scraper, unlike a gouge, and use this as a micro-blade for refining to produce a very fine finish with the most delicate of cuts

9 Reverse the bowl into the chuck jaws. Remove the internal material using a 10mm bowl gouge and working from the outside in – the opposite of the exterior profile

The interior cuts

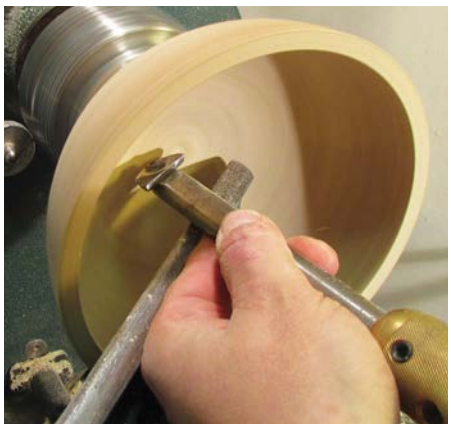


Order of interior cuts
Working this way results in the gouge cutting the fibres with supported grain as the tool slices at an angle through the end grain with each revolution instead of into it, which happens if you turn from the inside out to the rim.

10 Short shavings such as these are a sign that the flutes have rolled over. As you proceed it is important that you don't roll the tool clockwise but keep the flutes angled up to slice the fibres. If the tool shaft is allowed to roll clockwise, the edge no longer slices the fibres but scrapes, the result being that the end grain tears as it is pulled. In this case, tear-out will appear on both sections of end grain, which are opposite each other within the bowl. The wood will always tell you if it is being cut correctly – if the flutes are rolled over, the shavings will become short and the cut will require greater force to progress through the wood

11-13 Notice how the flute is pointing up, enabling the wood to be sliced. If you are not used to cutting straight into the face with the flutes presented at 45˚, you may find that the gouge skids out. One way to prevent this is to set the flutes up to be horizontal and with the bevel pointing in the direction you wish to cut. Gently plunge into the face for the first few millimetres – the lower flute will act as a scraper and the downward force will prevent the gouge from skidding outward. Rotate the tool gently anticlockwise and lower the handle as you proceed so the flutes are at 45˚ and you are cutting uphill. Continue, and as you approach the centre of the bowl, slowly lift the handle so that you finish the cut on-centre

14 Check the depth with a depth gauge and remove more from the interior if required



15 Refine the inside using a 25mm round-nose scraper that has a burr at the cutting edge. As for the outside, take gentle cuts and look for the fine shavings – it is far better to take several fine passes than one heavy one. Once complete, finish the interior and exterior with abrasive from 120-400 grit

16 Reverse and mount between a friction drive and the tailcentre using the indent in the foot left by the centre in step 1. You could leave a substantial foot by utilising the waste section, cutting in at an angle using a 10mm bowl gouge, or reduce the height of the foot by removing the waste section

17 Once the foot is formed, use a 10mm spindle gouge to concave the base by cutting in, leaving around 10mm waste. Finish by hand with abrasive from 120-400 grit

18 Stop the lathe and cut through the remaining waste with a fine saw blade. Finally, finish the base by blending with abrasive from 180-400

19 Apply several coats of food-safe oil, wiping away the excess with kitchen towel. The bowl is now finished ■

Ask the experts

ANTHONY BAILEY
Editor,
Woodworking Crafts magazine

Another selection of awkward questions for our experts to answer

BEAM ME UP

I've been offered some hefty sawn oak beams from a barn clearance on a farm. Do I need to buy a planer thicknesser to flatten them off? It would have to be a massive bit of kit. Do I need to take them somewhere to have them planed? They are big and heavy and several different sizes. I'm thinking I could make a frame for a small outbuilding using them and some other reclaimed timbers that I already have.

Gerry Mansell

Anthony replies: You are very lucky by the sound of it. Large-section timber for a small building amounts to quite a lot for basic framing, even if it is only providing the uprights. Assuming the finish really is too rough to be considered 'rustic' then you have a problem. Yes, you may be able to find a joinery works or timberyard that would plane them flat and square for you, but transportation and machining will cost. There is an alternative – buy an electric beam planer which sits on the timber and can be pushed along just like a much smaller hand planer. It is easier than you might think as the weight is on the beam, you just have to push it. Triton makes a reasonably priced machine, Mafell makes a range of structural carpentry power tools but they are more expensive. While you are at it, remember joint work. For that you need a chain mortiser, as the most basic structural joint for oak framing is the mortise and tenon. You may be able to hire one. It's a challenge but if you have a proper design to work from and the resolution, along with some willing helpers, it is doable.

PHOTOGRAPH BY GMC/ANTHONY BAILEY

Take the tool to the job, not the other way around – it is a lot easier

YEARN TO LEARN

I am a relative newbie to woodworking but I love watching any craft programmes on TV. They are fascinating and a bit of escapist viewing instead of the heavy crime dramas which seems to dominate TV at the moment. My only criticism is that such programmes keep doing clever cuts and camera work so you don't get to see all the process, which is what I want to learn from. Are they protecting their special knowledge? Does anyone else find the clever-clever presentation irritatingly at the expense of the actual craft technique? What is the best way to learn craft proper skills?

Gavin Pelew

Anthony replies: I think I know the programmes you are referring to and I would agree that the best, most intricate or technical parts of many processes do get left out. I'm not sure this is deliberate, more a case of the programme makers wanting to make good visual television rather than being – as they might see it – overly technical, which is a great shame. Those vital segments have almost certainly hit the 'virtual cutting room floor' of digital production, sad to say.
You have asked about learning craft skills. There are various places around the UK offering private or adult education teaching. We looked at those options back in issue 33, I will send you a copy of the article which may be some help. There is no substitute for proper hands-on teaching – television and the internet will never be able to match workshop learning.

PHOTOGRAPH BY GMC/ANTHONY BAILEY

Learning shooting board technique at Chichester College

PHOTOGRAPH BY GMC/ANTHONY BAILEY

Using an adjustable spanner just above the screw head does work

ON THE TURN

I decided to try to repair a Victorian balloon-back chair. To re-glue the frame I need to remove the corner blocks and various repair screws buried in the circular frame. I have a screwdriver that is large enough, but the head slots are quite narrow and also I can't get the screws to turn – they seem to be stuck fast. Someone suggested heating a steel rod to red heat and pressing it on a screw so that it would get hot and loosen. Is that a good idea to try?

Sophie Warnham

Anthony replies: The heated rod trick is unlikely to work. It needs to be very hot indeed and it needs perfect mating contact before it has a chance of transferring enough heat, almost certainly on an old, possibly misshapen screw head with a burr along the top edges of the slot. It would also be very easy to drop it and cause a burn wherever it fell. A more realistic answer is first to thin the driver tip down on a dry grinder until it fits the slot, making sure the shape is parallel and even. Then get a decent-sized pair of grips and hold tight on the screwdriver blade while pressing down firmly and then turn. With any luck the screw will start moving. Turning slightly clockwise after the initial anti-clockwise turn may help to break up any glue and rust build-up.

PHOTOGRAPH BY RICHARD JOHNSTON-BRYDEN

Restoring a Norfolk wherry boat ready to go back on the water

SPLASHING ABOUT

I'm a boating enthusiast and a keen woodworker, so I like refitting and doing up our family dinghies when I'm not on the water and it's out of season. Any chance of some articles on the subject?

Malcolm Jessop

Anthony replies: There are magazines devoted to boating in various forms – it is obviously a specialised subject area. It is something I try to feature from time to time, so next month we will have a feature on Norfolk wherries, a form of transport unique to the Norfolk Broads, so do look out for that as it should be quite an interesting article.

EDITOR'S CHOICE

You must spend a lot of time editing the magazine and not much time making things? If you had the chance is there a favourite piece of furniture you would really like to make?

Marie Davies

Anthony replies: A slightly unusual question but worth an answer and thank you for asking it. I've designed quite a few modern pieces – lounge furniture, tables and chairs and even a modern interpretation of a sheet film view camera. Some have got made, others are just a germ of an idea. One piece of furniture I have always wanted to make and never had the time – as you say I'm usually busy as editor – is a 'bonheur de jour'. This was a Victorian lady's writing desk much more elegant than the Davenport writing desk with its writing slope. If it got made it would be a slim, elegant, modern design with compartments for letters etc, – a bit of an anachronism in the digital age I know. The chosen wood has to be lacewood plane, on the quartersawn. Plane is highly figured and a quite pinky wood, perfect for a feminine luxury piece of furniture. Ah well, one day…

PHOTOGRAPH BY GMC/ANTHONY BAILEY

Richly figured 'lacewood' plane for a statement piece of furniture

STAR QUESTION PRIZE

The Tool Marketing Company, or TOMACO, as it is known, which sells a variety of tool brands, including COLT, Sharp Edge and Narex Tools, is pleased to be sponsoring the Ask the Experts section in collaboration with GMC Publications. Each issue's Star Question prize-winner will receive a Narex six-piece chisel set worth £79.95 and all other published questions will receive a 20mm half-round fine cut Narex rasp worth £20.95. For more information see www.tomaco.co.uk

TOMACO THE TOOL MARKETING COMPANY

N.B. If you do need help or advice you can email me: anthonyb@thegmcgroup.com or visit: www.woodworkersinstitute.com where there are lots of useful articles, either way the service is free!

Planing and thicknessing *with your router*

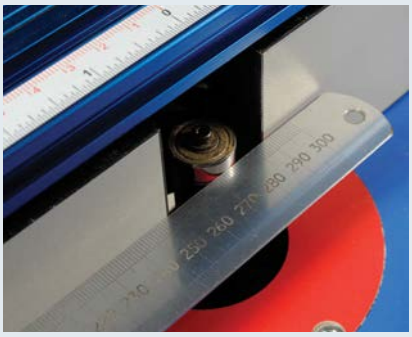
Is there no end to the router's talents? Apparently not, says Derek Jones

The router has got to be the most versatile machine in the workshop. Whether mounted in a table, attached to a trammel bar or used free-hand, there seems to be no end to its talents. Of course we're all used to using the router for moulded work, templating and producing joints, but how about some of the other tasks that we associate with larger machines?

Working alongside Anthony Bailey, a man with a reputation for routing, I'm never that far away from a little extra router know-how when it comes to the virtues of this invaluable piece of kit, and it is with his guidance that I have put a couple of techniques together to prove once again that the router is undoubtedly man's best friend.

PHOTOGRAPHS BY GMC/ANTHONY BAILEY

Tech 1 – edge trimming



Offset the outfeed fence in line with the bearing

One of the benefits of working with machines is the ability to produce multiple repeat components from a single setting. The router table is the perfect tool for the job with a straight bearing-guided cutter. The bearing's only function is to act as a point of reference for a straight edge to gauge the amount of offset for the outfeed fence, this distance being the amount of material removed in a single pass. A router table that allows adjusting the outfeed fence separately is the best option, but perfectly good results can be had by attaching a piece of veneer with double-sided tape to the face of the fence. In exactly the same way as a planer will level bowed stock, this technique will produce the same results. For a final pass to remove less than the thickness of the offset, place a strip of glossy paper – a magazine front cover for example – on the infeed fence.

Your router has just become a very convincing planer

Tech 2 – surface skimming

Frequent students of woodworking journals will be familiar with this technique, but in most cases it appears to be far more complicated than is necessary. Using the router to make a series of consecutive passes across the surface of a wide board, at a controlled depth, will achieve results only possible on, say, a speed sander or CNC. Key to success is the right choice of cutter – a three-winged bottom cutting bit with either rounded or chamfered corners is best.

Mount the workpiece in a cradle with blocks at strategic points to prevent it from moving and support it similarly from beneath. Using the router fence bars, mount a pair of skis that are long enough to traverse the width of the cradle either side of the cutter. The lower the router is set in the skis the more depth of travel you will have. Put stops at each end to prevent you from coming into contact with the cradle sides as you go back and forth. The skis need to be thick enough to remain stable under the weight of the machine and may need some minor adjustments where handles protrude.

At the end of the cradle attach stops to the side rails to prevent you from de-railing and you're set to go. To make the going easy I applied some sanding sealer and then waxed the skis and rails. I found I could easily remove up to 2mm in a single pass as long as they weren't the full width of the cutter.

With one side flat you can flip the board over and adjust any packing so that its level and thickness match the board from the other face. A similar jig can also be constructed to work components that are too small to feed through a planer thicknesser. ■

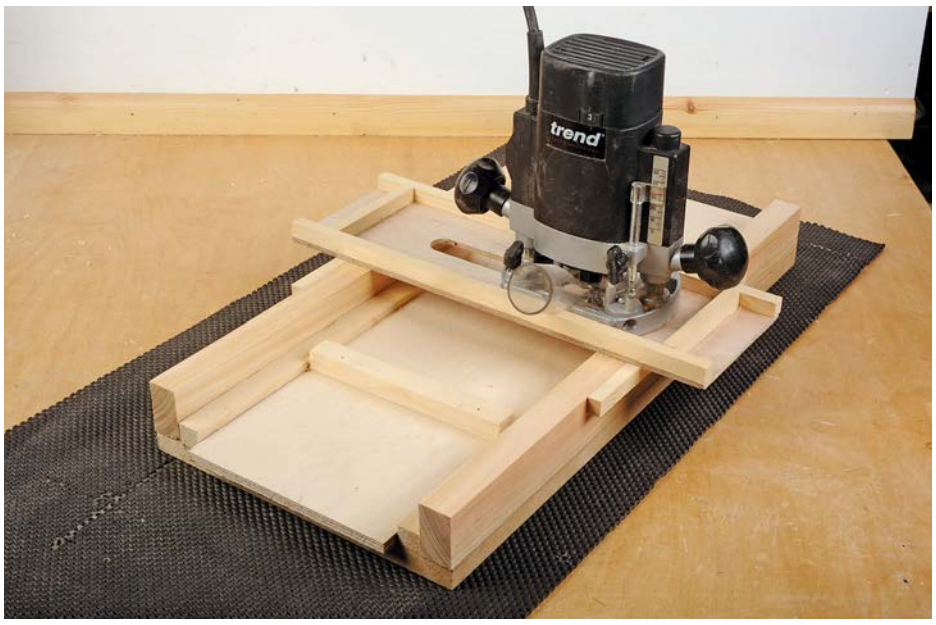
The three-winged cutter extends below the level of the skis

Blocks and packing are used to support the workpiece in the cradle

The bars need to be a tight fit so no other fixings are required

Attach stops to the end of the skis

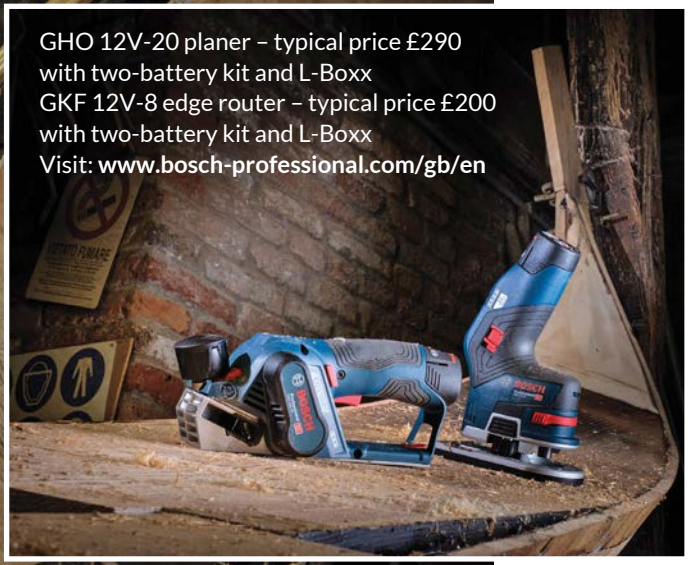
The cutter is set to skim the surface of the workpiece held in place in the jig below



The router moves within a jig that runs up and down a fixed cradle

KITTED OUT

Take a look at the tools, gadgets and gizmos that we think you will enjoy using in your workshop



GHO 12V-20 planer – typical price £290 with two-battery kit and L-Boxx
GKF 12V-8 edge router – typical price £200 with two-battery kit and L-Boxx
Visit: **www.bosch-professional.com/gb/en**

Left: Roberto Tramontin planing the edge of a gondola

Bosch 12-volt cordless tools 'master' gondola craftsmanship

'It is a challenge to yourself. You put your body and soul into every boat. You put your all into it to make it perfect.' Roberto Tramontin has a passion for his demanding craft running through his veins. He is a gondola-builder in Venice, the fourth generation of craftsmen in his family. His yard is in the district of Dorsoduro, where the canals are often completely still and calm water reflects the facades of the old buildings. His great-grandfather, Domenico Tramontin, opened the workshop in 1884 and had a hand in shaping the tradition of gondola-building in Venice.

'A planer needs to be lightweight because it is mainly used with just one hand and for long periods of time,' Roberto explains. The Bosch GHO 12V-20 Professional is comparable to a traditional hand-held plane in terms of weight and size. This helps colleague Paolo Favaro to work comfortably, flexibly and with control in any position.

The tool is well-balanced, ergonomic and especially compact, which is made possible by the 12-volt system as well as the use of brushless EC motor technology. As a connoisseur of silence, Roberto particularly appreciates the fact that the planer is quiet.

'Gondola construction is painstaking. This is why the quality of the tools we use for working the wood is very important to us,' he says.

This is a good reason for the gondola-builder to test out the Bosch GKF 12V-8 12-volt cordless edge router. Its handle is especially narrow and ergonomically shaped, so the tool is, again, comfortable to operate with one hand, for routing convex or concave profiles and chamfers.

Roberto adds: 'You see the wood lying there and you make something from it which the whole world envies. It is a symbol of Italy. I love building them. It comes from my heart.'

The Tramontin gondola yard

PHOTOGRAPH BY GMC/ANTHONY BAILEY

MINI TEST By Mark Baker

Axminster LED Flexi-head Stayput lamp

Having effective lighting in a workshop is a must, and since we require workshops to be multi-functional, how to effectively light specific work areas is an issue we all face from time to time. The rise of light-emitting diode (LED) lighting has resulted in an increase in the availability and options for workshops. LEDs do not radiate much heat and are available as spotlights, with fixed or adjustable beams, and striplights with various mounting and locating options. One type is the Flexi-head Stayput lamp from Axminster.

As the name suggests, once you bend it to the position you want, it is meant to keep the light is in that position. The base has four holes so you can screw it to a surface. Axminster does offer optional extra fixing methods, including a bracket, magnet or a screw clamp.

In use

The first thing of note was that the Stayput arm did stay put exactly where it was positioned with no drooping. The flexi-head unit throws out a powerful diffuse light source that very clearly showed what has happening during the turning. The fluorescent striplights I have in the workshop provided the top lighting required, but the flexi-head unit enabled me to see the areas the overhead workshop lights could not.

Conclusion

The lack of heat is a real plus when the lights are placed close to work or you are working under the lights. They are well made and sturdy. While not inexpensive, the lamp does the job very well with no fuss and is certainly worth looking at. Three 2W LEDs give a bright pool of light to any dark corner. There are four mounting holes at 60mm spacing for mounting to a bench or machine.

Price £87.01
www.axminster.co.uk

Makita twin 18v (36v) Brushless Slide compound mitre saw

The new Makita twin 18v (36v) Brushless Slide compound mitre saw is a flexible, manoeuvrable machine that is ideal for all operations on construction sites. Weighing just 27.3kg, transport and movement are simple and convenient. The DLS110Z 36v slide compound mitre saw runs the 260mm blade up to 4400rpm and has a maximum mitre range of 60° L-60° R, with a bevel range of 48° L-48° R, and a max 91mm depth of cut. The Automatic Torque Drive Technology (ADT) changes the cutting speed depending on load conditions to achieve optimum operation. This body-only model features an electric brake, soft start, large turn base and dust extractor connection. It weighs just 6.6g and, with its well-placed top carrying handle, is ideal for rapid deployment to any job site. The 165mm-diameter blade can be run up to 5000rpm by the Brushless motor with a cutting performance that benefits from ADT, which adjusts the blade speed according to the load conditions to achieve optimum cutting performance. The soft start facility protects both the machine and the operator.

Option prices from £597.00
www.makitauk.com

New Flexcut sloyd knives

Made in the US, Flexcut sloyd knives come razor-sharp and ready for use. These knives are tough, well-constructed tools, similar to the sloyd tools of traditional Swedish design. They are perfect for whittling, chip carving, spoon carving, general woodworking and handicrafts.

The blades are forged from high-carbon steel, giving them superior edge quality and retention. For added strength, the tang of each knife extends completely through the handle. The handle is beautifully made of conditioned cherry hardwood and comfortable to hold.

The Flexcut standard sloyd knife comes with a custom, 100% leather sheath featuring a built-in belt clip. The sheath's rugged stitching gives it a distinctive look and ensures long-lasting blade protection.

The double bevel hook sloyd knife is a must for any spoon carver. The double edge gives the option of working to the left or right, push or pull, whichever way cuts the timber most effectively.

The single bevel hook sloyd knife allows you to carve deeper hollows in spoons, bowls and ladles, plus it is useful for smoothing and cleaning up after initial carving with other tools.

For more information and current pricing, please visit
www.brimarc.com

PHOTOGRAPHS BY LOUISE BIGGS

Tool List

- Tablesaw
- Planer/thicknesser
- Mitre saw – electric or hand
- Block plane
- Flush-cut saw
- Chisels – various sizes
- Router and Table
- Straight router bit
- Screwdriver
- F and G-cramps
- Square
- Fret or piercing saw
- Needle file
- Compass

American black walnut gentleman's box with black line detail

Gentleman's box

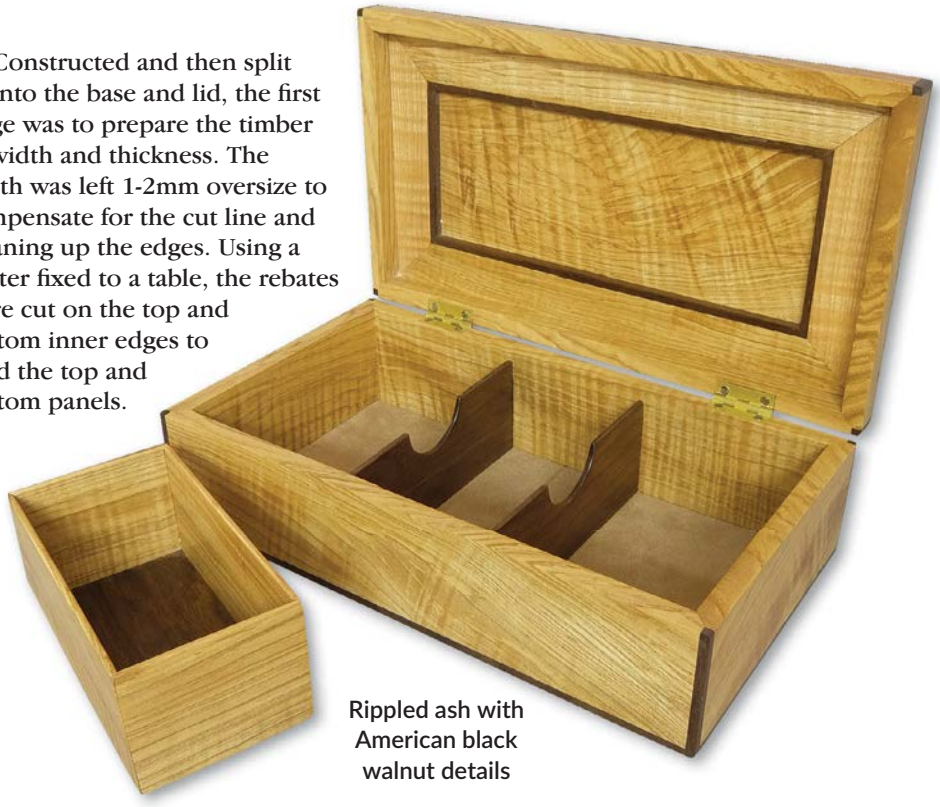
Do you need to keep all your personal effects together? **Louise Biggs** has the perfect answer

The original idea came about as a way of keeping keys, loose change and cards tidy in one place. While more befitting men, who tend to keep these things in their jacket pockets, whereas women have their bags, the box can be useful for everyone.

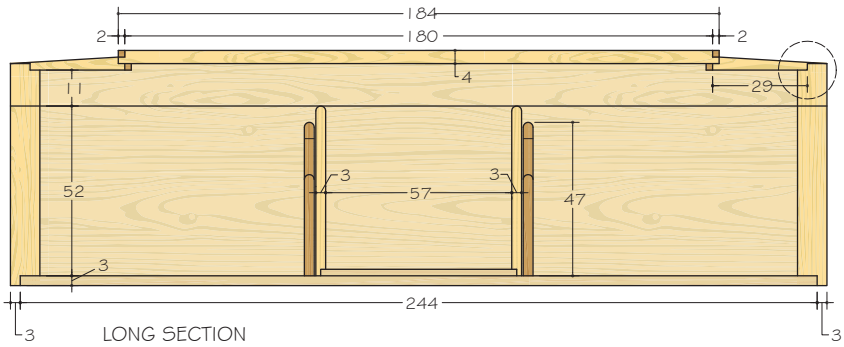
A lift-out compartment where loose change can be tipped straight into the hand seemed more sensible than dropping it into a fixed compartment. Compartment sizes were based on the average size of a card wallet/case.

The process will follow the making of the American walnut (*Juglans nigra*) box. I had a small amount of highly-figured rippled ash (*Fraxinus excelsior*) left over from a board. So, while setting up the machines to make one box it seemed a good idea to make an extra one.

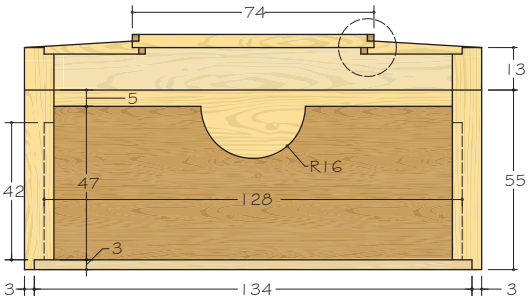
1 Constructed and then split into the base and lid, the first stage was to prepare the timber to width and thickness. The width was left 1-2mm oversize to compensate for the cut line and cleaning up the edges. Using a router fixed to a table, the rebates were cut on the top and bottom inner edges to hold the top and bottom panels.



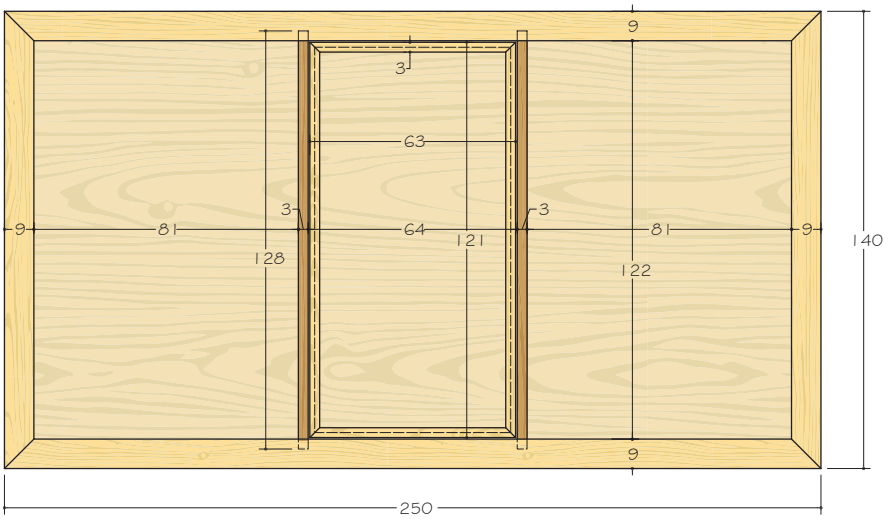
Rippled ash with American black walnut details



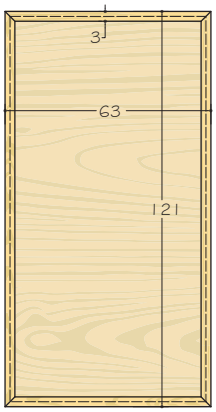
LONG SECTION



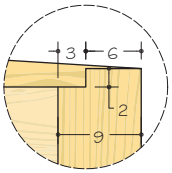
SHORT SECTION



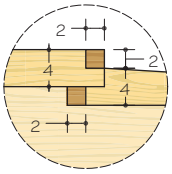
PLAN SECTION



LIFT OUT TRAY



DETAILS



GENTLEMAN'S BOX

2 The lengths of wood were mitred to the correct length. Using the sliding fence on the tablesaw, a block was clamped to the fence to act as a length stop. A traditional hand mitre saw or electric mitre saw can also be used. When cutting the lengths, make sure the top edges are marked and the rebates are on the inside edge of the mitres.

3 As the boxes were too small for strap clamps, the mitres were glued and held in place with some stout rubber bands. Once the bands were in place the mitres were checked to ensure everything lined up and the boxes were square.

4 The top was formed from a mitred frame with a veneered or solid panel inset in the middle. Before cutting to length, two rebates were cut using a router on alternate sides. The smaller rebate fits around the rebate on the sides (*refer to drawing*), the second, wider rebate allows for the top panels. The mitres were cut and the four sections fitted to the box carcass. ➤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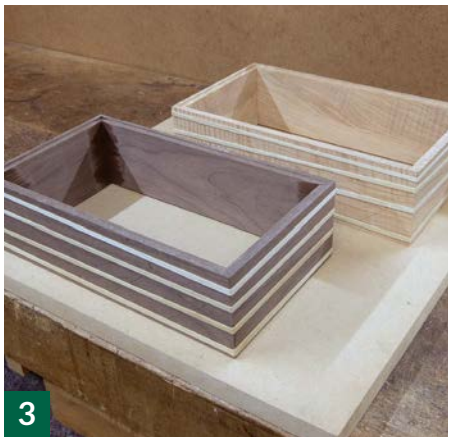
3


4

5 The mitred frames were glued and held with rubber bands before being glued into the top of the box where the box was clamped between two pieces of board. This enabled the mitred top frame to be held in both directions to ensure a flat tight fit. You can, if you wish, break this stage into two parts by clamping the frame until dry and then fitting it to the box.

6 While waiting for this to dry a 4mm piece of ply was veneered on both sides with burr walnut veneer and pressed until dry. The veneer was from two consecutive sheets so, when glued in place, the inside will be the same as the outside. The ash box was made from a piece of solid timber.

7 When both pieces were dry the edges of the veneered panel were planed flush using a block plane set for a very fine cut. The sides of the boxes were planed to true up the sides and edges of the top.

8 The mitred frames needed to be planed to an angle. A black timber line would go around the edge of the veneer panel. With the panel cut to fit, a piece of black line was held in place around the four edges and marked with a utility knife.

9 A block place was used to angle off the mitred top frame. Care was taken at the corners so that the angle followed the mitred line and finished just above the joint line where the box side and top met. The process was repeated on the ash box with black walnut lines.

10 A gauge line was marked around the box where the cut would occur to separate the top and bottom. Using a flush-cut saw and working at an angle across each corner, the box was cut. Once each corner was cut the remaining timber in the middle of the sides can be could be cut as the saw could pick up on the two corner cuts. This stage is best not rushed – the cleaner the cut, the less the edges need cleaning up with abrasives and the more the grain pattern will stay in line on the sides.

11 The top panels were glued in place and, when dry, the black or walnut lines were fitted around the panels on the outside and around the panel recess on the inside. The lines


5


6


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can be mitred freehand on a bench hook with a fine saw or, if supported, they can be cut on a mitre saw.

12 With the box now firmly glued together, the grooves to take the two dividers were marked on one side and, using a square, the marks transferred to the other side. The divisions were kept 5mm lower than the box edge. They then had a 5mm haunch at the top of each division. A flush-cut saw was used to cut the sides of the grooves before a 3mm bevel-edge chisel was used to clear the waste out of the grooves.


12


13

13 Divisions were made for each box, 3mm thick and with the 5mm haunches cut on the top corners. A semi-circle was marked in the centre of the top edge and cut out using a fret or piercing saw. This allows the loose-change compartment to be gripped between thumb and finger and lifted out.


14


15

14 Before abrading the divisions and gluing in place the top edges, the edges of the semi-circles were rounded over using a block plane, needle files and abrasives.

15 The removable coin compartment was made using 3mm thick timber, and a small rebate was cut on the bottom edges to allow for the bottom panel. The corners were mitred and the top edges rounded over. The compartments were then glued up and held with rubber bands until dry. The bottom panel could then be glued in place and held in the same way. Small strips of timber placed under the rubber bands can add additional pressure on the bottom panel to ensure it is pressed well into place.


16


17

16 The compartments were then abraded so they fitted snugly in place in the middle of the box between the divisions. The black lines on both sides of the lid can be chiselled and/or scraped flush to the surface and all the surfaces abraded through the grits. Solid drawn brass butt hinges were centred to the outer compartments and fitted in the usual way. Both boxes were finished with Danish oil.

The pair of finished boxes

17 For the ash box there was not quite enough timber to complete the box but, by using a contrasting timber for the divisions and base of the coin compartment and by keeping the lines 3mm square, the corresponding timber tied in nicely. The walnut lines were also cut into the bottom and top edges of the box and down the corners. The bottom of the ash box was lined with faux suede inside and out where the walnut box had the faux suede only on the bottom. By changing just a few details the design of the basic box advanced. ■

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PHOTOGRAPH BY KEITH FENTON

DUST EXTRACTION

You can draw on our workshop experience of extraction instead of just working in a vacuum

It seems almost unbelievable in this day and age where health and safety is touted everywhere, that we still aren't properly protecting our lungs and, indeed, our eyes from flying dust in the workshop. Even if you only do a bit of weekend woodworking in your garage or shed, dust matters. Particles that are one micron or smaller (one tenth of a millimetre) can penetrate lung and skin tissue and anyone with breathing problems, including asthma, is particularly vulnerable. It isn't the normally visible wood dust which does the harm but the near-invisible particles which are only really seen by shining a bright light source from behind, illuminating them floating in the air.

Extremes of protection in terms of cost, comfort and efficiency, but it is important to get the extraction right

PPE (Personal Protective Equipment) is essential in the form of good-quality rated dustmasks, ear defenders, eyewear, gloves and steel-capped boots, but good dust protection starts 'at source'. That is the key – if a machine or power tool is emitting dust rather than chippings, that is particularly essential.

CHIPS OR DUST?

Chippings

Let's define the difference – chippings or shavings are typically produced by items such as a power planer or planing machine, router or spindle moulder. They are quite large, highly visible pieces of wood that tend to have volume to them but aren't a health risk in themselves. However, they need suitable means of collecting and disposal. Larger extractors can cope with the quantity but you end up emptying more frequently than with dust alone. With a hand power planer it is best to place a large board so the chippings from the exhaust hit it and drop to the floor for sweeping up using a 'big mouth' dustpan. Such chippings generally are not safe for pet bedding unless extremely clean and without any other inclusions like nails, staples etc. often found on a workshop floor.

PHOTOGRAPHS BY GMC/ANTHONY BAILEY UNLESS OTHERWISE STATED

A medium-sized, wheeled HVLP extractor that can be moved from one machine to another but does take up space

Dust

Unfortunately all the above machines can also emit dust, particularly routers. It depends on the material being ➤

machined – MDF will produce a lot of unpleasant dust but any wood does so in any case. Planing with blunt cutters will create dust and, in the case of router cutters, causing burning of the workpiece as well as the additional dust.

Machines and power tools that always create dust as opposed to chippings are the likes of circular saws and sanders. The last category will make the finest dust particle but all are hazardous to health. The quantities of waste produced are smaller but more suction is needed to draw the dust away safely to an extractor. For this reason there are two basic extraction types – HVLP (high volume, low pressure) for planers and industrial setups and LVHP (low volume, high pressure) portable extractors for dust-producing power tools.

A specially made extraction device for an edge trimmer to deal with dust spraying outwards

An HPLV extractor is designed for power tools rather than machines although it can give additional extraction

WHAT DO I NEED?

It very much depends what you are doing. A woodturning lathe creates a high volume of shavings, but the finishing sanding of a turned piece will then create a lot of fine dust. So there are two different requirements with one machine. The chippings can be swept up and an extraction spout roughly facing the operator and quite close to the turning can safely remove most, if not all, of the dust. A long, narrow spout seems logical for spindle turning but may not have as strong a 'draw' as a smaller round spout, so experimentation is needed.

Another dual example is a tablesaw. Most of the dust will fall down below the table surface, along with any slim offcuts that can get jammed around the extraction chute and outlet pipe, so regular checks are needed. Above the table the crown guard, which is a legal requirement, with its riving knife for operator safety, usually has a small extraction outlet but the extraction level is generally ineffective, so a lot of fine dust is produced and not removed safely.

A standard extraction hose can draw off dust from turning very efficiently

Tablesaws can be prone to blockages which impede extraction efficiency greatly

A large extractor unit can deal with under-table dust but the crown guard will work much better connected to a portable vacuum extractor unit as it will be a high-pressure unit. It will need separate switching, which is a nuisance unless you can find a suitable heavy-duty slave-switching device.

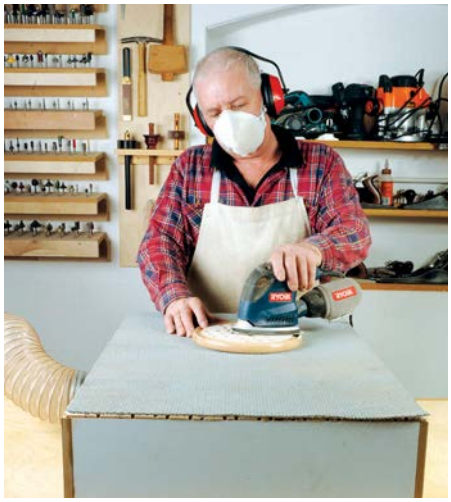
Sanding creates the worst dust hazard as the particles are so small. There are some power tool sanders which have a high level of filtration provided the filter is kept clean. They may also have an anti-vibration feature making them safer to use, but they are more expensive models. Any sander, whether it has a dustbag or a cumbersome extraction pipe attached, will work pretty well until it sands overhanging the edges of a workpiece, then suction efficiency drops.

A professional vibration damped sander with an extremely efficient extraction filter and dust canister

The crown guard ideally needs an HPLV power tool extractor to remove above-table dust efficiently

A good answer is to buy or make a downdraught sanding table which connects to an extractor. Any sideways or downwards-ejected dust, in the case of pierced work for example, is drawn into the table and out through the pipe. An added advantage can be an increase in working height if you need it.

A more recent development is small CAD/CAM 'desktop' routing units. These are sometimes enclosed, which allows the dust to settle safely, but non-enclosed units may need a nearby suction spout, although the tooling seems not to eject dust in quite the uncontrolled way that conventional routing does.



A downdraught table removes any dust not being collected by the sander itself

Small CAD/CAM units tend not to create lots of dust but an enclosure is sensible

Drum-type extractors draw at a higher pressure than fan-type bag extractors

It is quite easy to install a small extraction system of pipes and branches that reach all machines

Which extractor?

Fan and bag extractors can be either wall or mobile-mounted. They are low-pressure machines so they suit volume output of waste. A small auto-switching portable extractor has much higher pressure. A good in-between solution is a single or twin-turbine drum extractor, which has a high pressure level but medium waste capacity and can be fitted under a bench or machine table.

Safe handling

Assuming you have found a good way to extract your machines then you need to ensure they are operated safely. You don't just need the extractor but pipework to each machine needing extraction. The standard 63mm dia. pipework comes with various branches, bends, flexible hoses and, crucially, blast gates. These control the flow to maximise suction at the machine currently in use. They can get blocked in the sheath the gate slides in so they won't close properly.

A bent piece of wire can be used to clear out the compacted dust. You must close blast gates when machines are not in use or there won't be enough suction where you need it. Domestic scale systems should ideally be earthed just like industrial systems to reduce the chance of a spark or fire caused by static discharge, although the chance of such an event is small.

No extractor should be allowed to fill completely as it may overheat – the filters will be clogged and harder to empty. Emptying can be messy and dangerous. If possible, a heavy duty rubbish bag placed over the dust container means the mess can be transferred without lots of spillage. You must wear a suitable dust mask and workshop clothes. Disposable dust bags are favourite as they can be sealed and binned without much risk to the user.

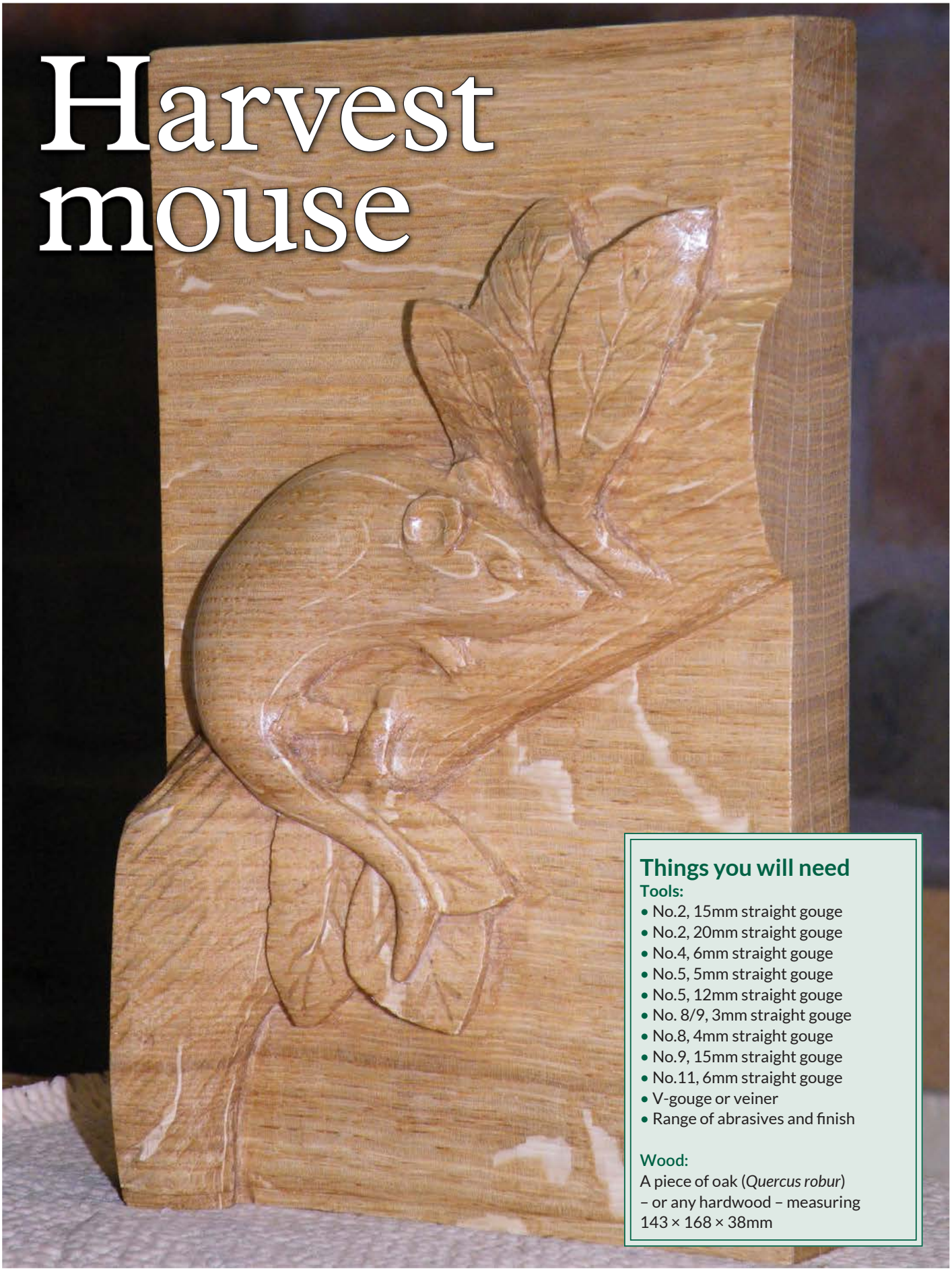
Cleaning of filters, dust bags and canisters must be done wearing a dust mask and enclosing the item in a black sack to shake it free of dust

Sometimes the blast gate sheath gets blocked with dust and needs to be cleaned out

So you need to take a hard look at what you have now and what you might need in the future and make sure you have the right extraction facilities in place. ■

Beginners' carving

Harvest mouse



PHOTOGRAPHS BY JOHN VARDON

Things you will need

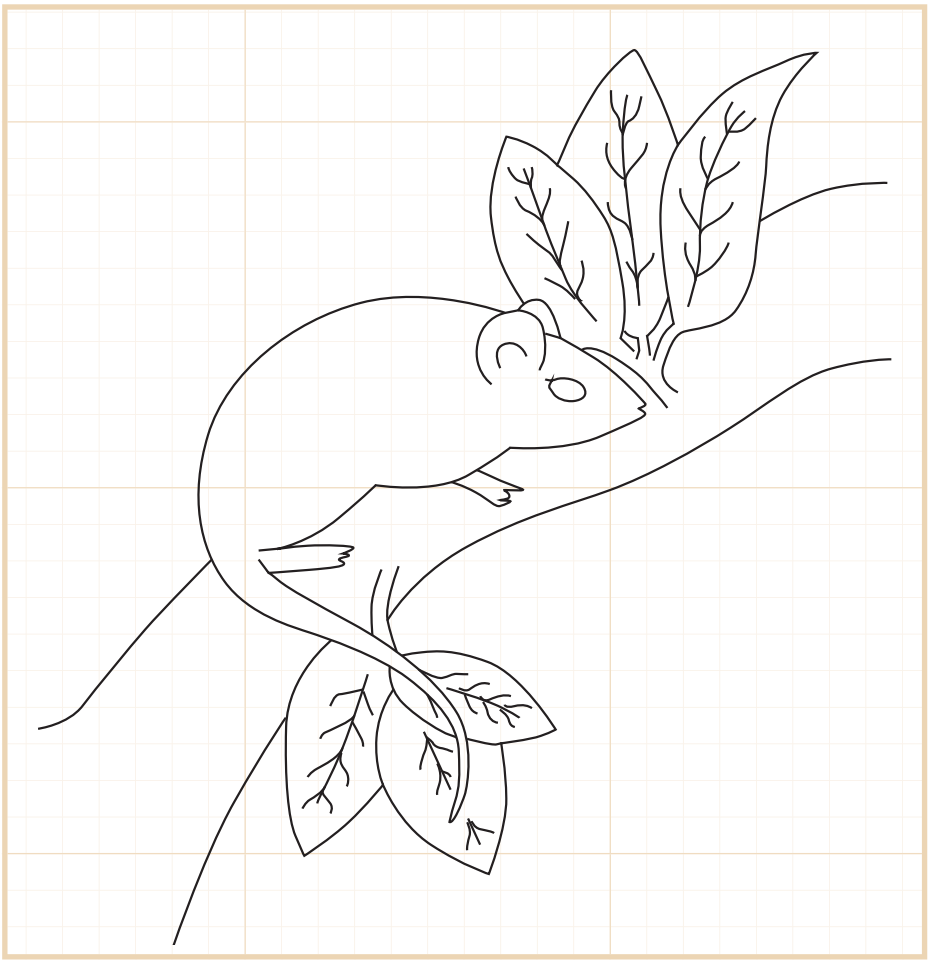
Tools:

- No.2, 15mm straight gouge
- No.2, 20mm straight gouge
- No.4, 6mm straight gouge
- No.5, 5mm straight gouge
- No.5, 12mm straight gouge
- No. 8/9, 3mm straight gouge
- No.8, 4mm straight gouge
- No.9, 15mm straight gouge
- No.11, 6mm straight gouge
- V-gouge or veiner
- Range of abrasives and finish

Wood:

A piece of oak (*Quercus robur*) – or any hardwood – measuring 143 × 168 × 38mm

John Vardon shows you how to carve a harvest mouse



This is a simple relief carving designed for the novice woodcarver. The idea is to introduce a carver to using a few basic gouges, thinking in three dimensions and holding the carving securely. Use as big a gouge as is practical and make sure your tools are very sharp throughout the carving. Careful selection of a gouge will make carving easier. For example, a No.9, 15mm gouge is suggested for the grounding of the area around the mouse. However, a No.2, 15mm could be used, although it would be much more difficult. The carver should try different sizes and assess the effect. There are times when turning the gouge 'upside down', i.e. with the non-bevelled edge against the wood, is beneficial to give a better finish. However, you must be careful where the shape changes from convex to concave as the gouge will start to dig in.

The mouse in this design has been simplified, e.g. muscle lines have been left out. Before starting a carving it is beneficial, if not essential in some cases, to consult books, the internet, etc. for further details.

'...it is important to ensure that the carving is safely secured'

1 Oak was used but any hardwood – e.g. lime (*Tilia vulgaris*) – could be used instead. In this example, the stock piece of oak was about 143 × 168 × 38mm with the grain running across. With the exception of the tail, this was the direction of the main components of the carving. Scale the design as required, although the size should not be smaller as it would become more difficult to carve.

1

2

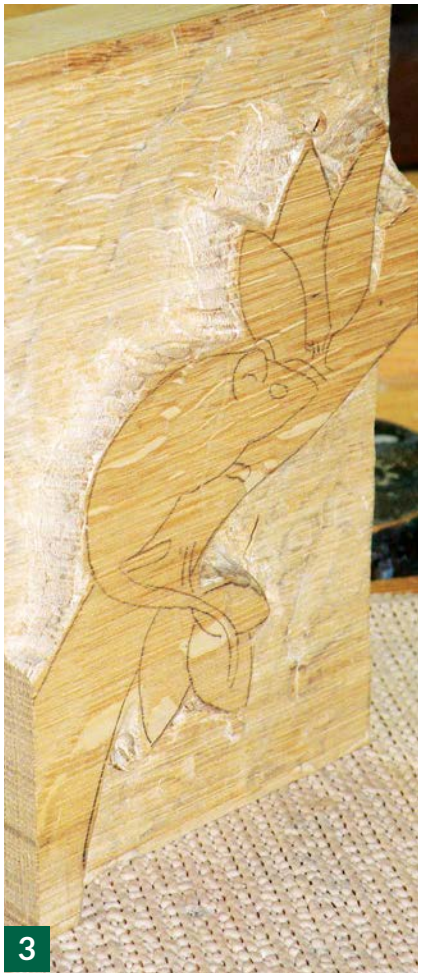
2 Before you begin, it is important to ensure that the carving is safely secured by holding it in a vice with a block underneath to support it and to ensure the level of the carving is above the vice or bench top. Using a No.11, 6mm straight gouge, carve a groove around the outside of the mouse, branch, etc., about 1-2mm from the line. Keeping the outside of the gouge on the line will leave the groove about 2mm from the line. ➤

3 Draw a line about 12mm from the top surface around the outside of the carving – this will be the initial depth of the background. Using a No.9, 15mm straight gouge with a mallet, remove the wood around the mouse, branch and leaves to a depth of about 11mm. Be careful around the points of the leaves as they could easily break off. If they do then reshape the leaf. Finish off using a No.2, 20mm straight gouge to the 12mm line.

4 Using the No.11, 6mm straight gouge, make a groove around the mouse, including its tail and leaves on the branch. Be careful which side of the lines of the leaves the groove is made as some leaves are above others – the groove will be on the lower leaves. Using a No.5, 12mm gouge or similar, lower the branch to leave the mouse proud by about 6mm. The branch should be rounded at the edges but do not undercut. You can vary the branch level as required. Decide on the shape and level of the leaves and lower as necessary.

5 Using a No.2, 15mm gouge, start to shape the mouse. Towards the end use the gouge 'upside down'. Remember to leave the two ears – the left one is slightly forward of the right one, which gives a little movement to the mouse. Be careful with the tail – leave it fat at the end at this stage then slim it down later. It may be at this stage that the background and/or branch need to be reduced to give the mouse more depth. Any muscle lines around the ear and legs of the mouse can also be added.

6 The ears should now be shaped and the eye carved in. The inner part of the ear is carved using a small No.8 or No.9 gouge. Gently stab the shape of the eye with appropriate gouges but not too deep. Should you go too deep there is the danger of 'pulling out' the centre of the eye when removing the gouge. Remove the wood around the eye so that it is slightly proud. Then, using a small gouge, round over the eye using the reverse side of the gouge. Repeat the process until the eye is at the required size. The tail can also be shaped and thinned towards the end. Take care where the grain runs across the tail so it does not break off. Note that the leaf veins have been marked in – this is for carving later. The main carving is now complete.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4


5


6

7 All that needs to be done now is any undercutting, adding detail to the leaves and branch and deciding on the background finish. Note that the undercutting should be left until the final stages because if any part of the carving needs to be modified – e.g. lowered – then any undercutting will limit the amount of modification that can be made. Undercutting will provide shadows in appropriate light and help to bring the carving 'alive'. Use a small gouge to undercut around the mouse and round over. The branch, especially at the larger end at the lower left-hand corner, should also be undercut.


7

8 Currently the leaves appear to be very thick. To achieve a more realistic thinness the leaves have to be significantly undercut. To minimise the danger of the tips falling off you could shape the leaves so that the tips are attached to the background or other parts of the carving.


8

9 The veins also need to be added to the leaves. Use a small V-gouge or veiner to carve the veins in.

'The veins also need to be added to the leaves'


9

10 Next, texture can be added to the branch using a No.8, 4mm gouge and carving short and random strokes along the length of the branch.


10

11 A decision must be made on the background. This can be made flat although this is quite difficult as any unevenness would clearly be seen once the carving is polished. Therefore, it is suggested that a tooled finish is left. In this example, the background has been improved by making some short and random strokes using a No.5, 12mm gouge.


11

12 You should now go around the whole carving again and tidy up where necessary. A useful tip is to take some digital photographs of the carving as they often show up discrepancies. Finally, the carving should be sanded, going through the various grits, then finished with a sealer and wax, acrylic varnish or other appropriate finish. The final carving should look something like this. ■


12

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PHOTOGRAPH BY JAMES HATTER

Tricks *of the* trade...

Cutting worktop from the underside to avoid breakout

Dealing with breakout

There is nothing more depressing than cutting veneered or laminated wood and getting ragged edges, but we have the answer

The key thing to understand about breakout, or 'spelch' as it is known, is the reason for it happening in the first place. Whether you are using a jigsaw or a circular, the top visible surface when you are cutting is the one that suffers. The action of either blade type pulling upwards through the workpiece will cause the thin veneer, laminate or even the wood itself to pluck upwards and separate from the main body of the wood or chipboard in the case of faced board.

You can buy down-cutting jigsaw blades but they don't work well on thicker stock as the teeth are striking the wood rather than upcutting, making use of the orbital action to help speed the cut. It is much better to accurately mark then cut from the underside of the board so any damage isn't going to be visible. You need care in setting out to avoid mistakes but, as an example, if you are making a sink cut-out, drill some holes in key places on top, turn it over and use those holes for marking out the cut lines on the underside.

For circular sawing, change to a fine-tooth blade and set the cut depth so the teeth are halfway through the board surface and then cut from the underside. By setting the blade low it will reduce spelch on both faces and more. Smaller teeth will tear less.

Another trick is to use masking tape on the cut area, which is easier to draw on in any case. The rubbed-down masking tape will help hold the vulnerable surface together while cutting, thus reducing the breakout. ■

Fine teeth on this plunge saw are designed to leave a very clean-cut finish

Masking tape is easy to mark cut lines on and it reduces spelching

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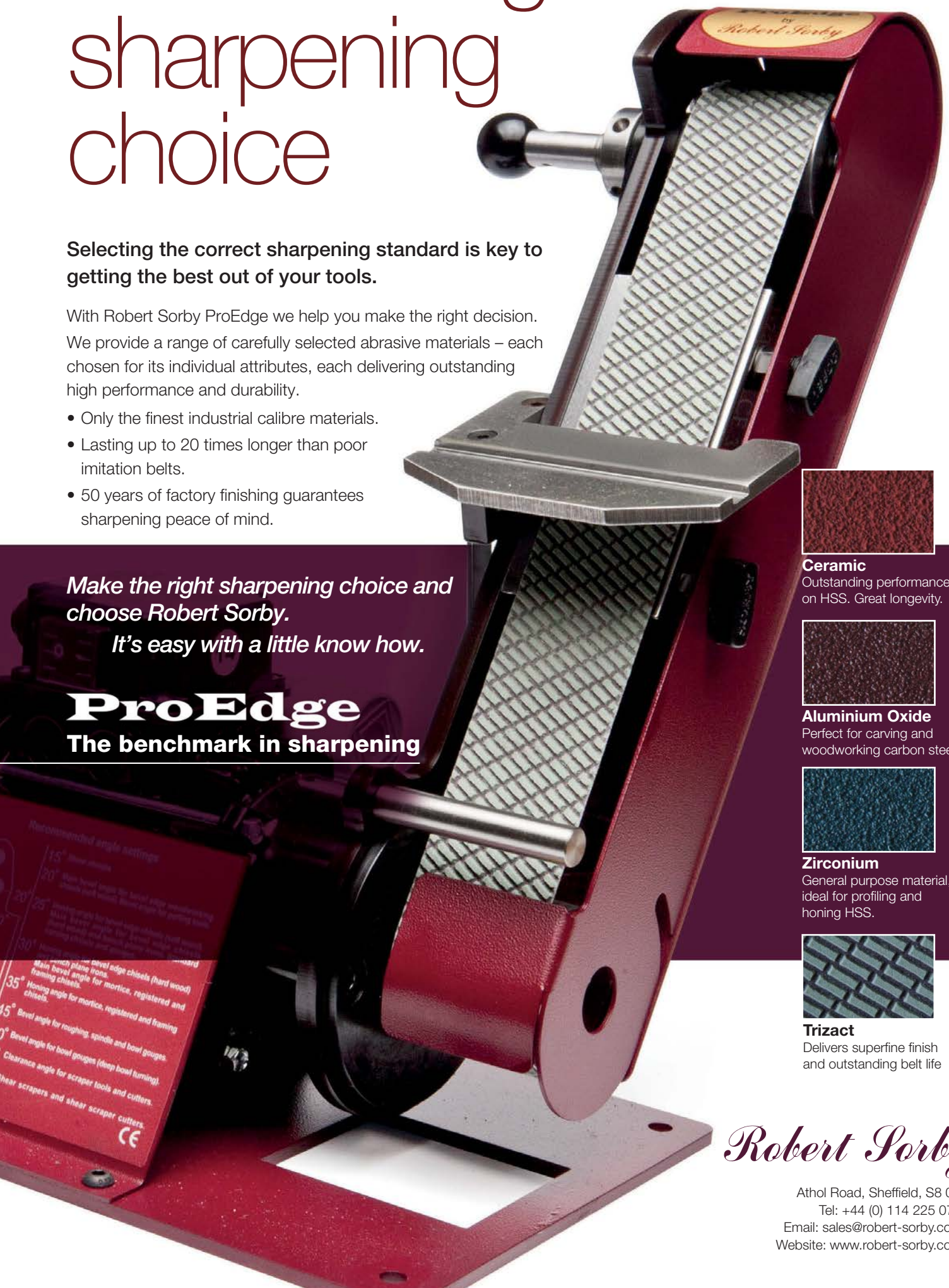

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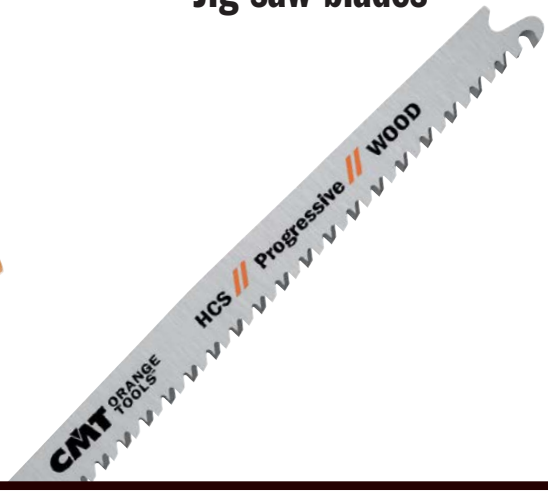

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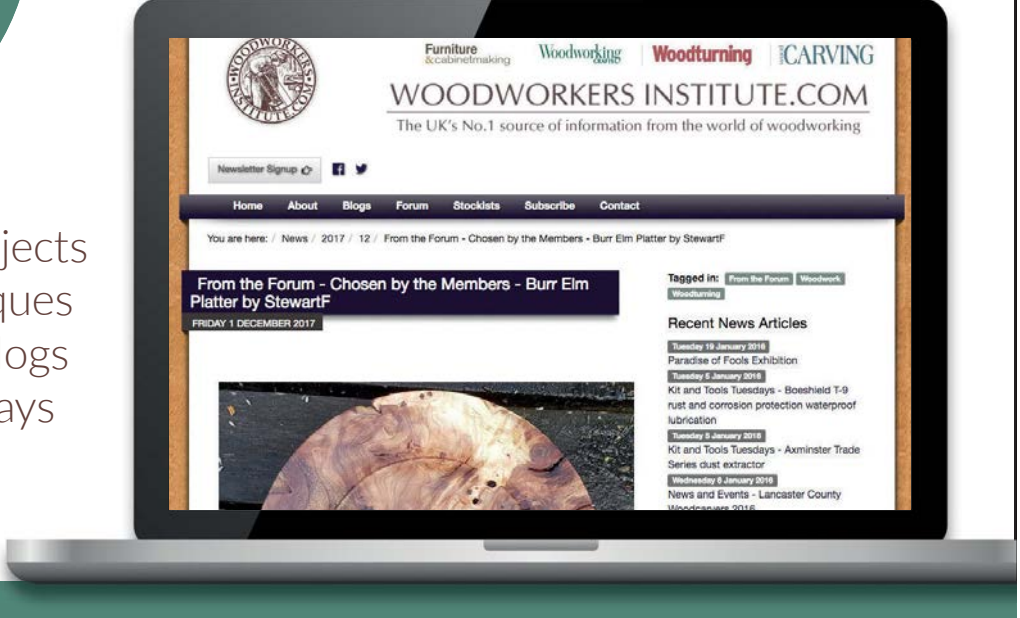

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Focus on…

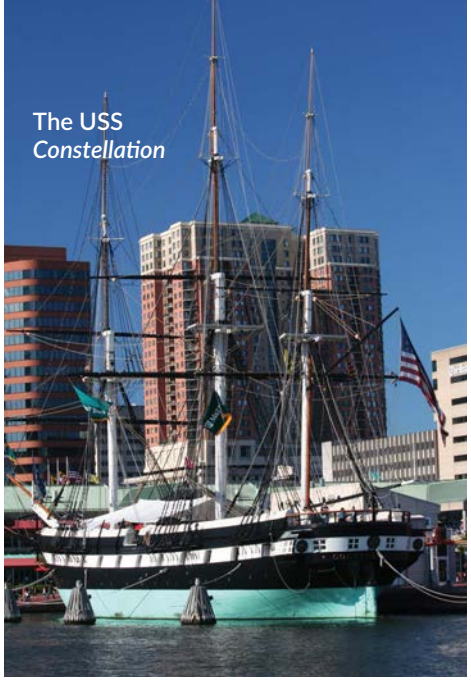
Hogging & sagging

It's easy to think that structures stay straight, rigid and stable but that simply isn't true – and nowhere more so than in maritime vessels

A ship of any size, whether it is made of wood or steel, can suffer from the effects of hogging or sagging. Hogging is a semi-permanent upward bend in the middle of a ship's hull due to increased buoyancy at the point. Sagging is the opposite, where the cargo can bend the hull down and, especially if there is a Plimsoll line, can result in the vessel being underloaded as the mark is lower in the water at midpoint than it should be.

Wooden-hulled vessels are particularly prone to these problems. Notably, the world's oldest commissioned naval vessel still afloat, the USS *Constitution* – built in 1797, residing in Charlestown Navy Yard and assigned to the Naval History & Heritage Command – had more than 13in of hog at the beginning of her 1992 refit. While in dry dock, centre keel blocks of varying heights were used to support the uneven shape of the hull. Gradually these were changed and reduced as the hull settled back to its correct shape and previously removed diagonal risers intended to correct hogging, were reinstated. When sister ship USS *Constellation* was refitted in 1994 it was suffering from no less than 36in of hog.

Sagging occurs when the bow and stern are supported by wave crests in heavy seas, while the mid-section drops. This can become a permanent feature and also lead to disaster. Incorrect loading can exacerbate this problem, so it may be necessary for a ship to alter course in relation to the waves to help save the hull from failure. ■



The USS *Constellation*

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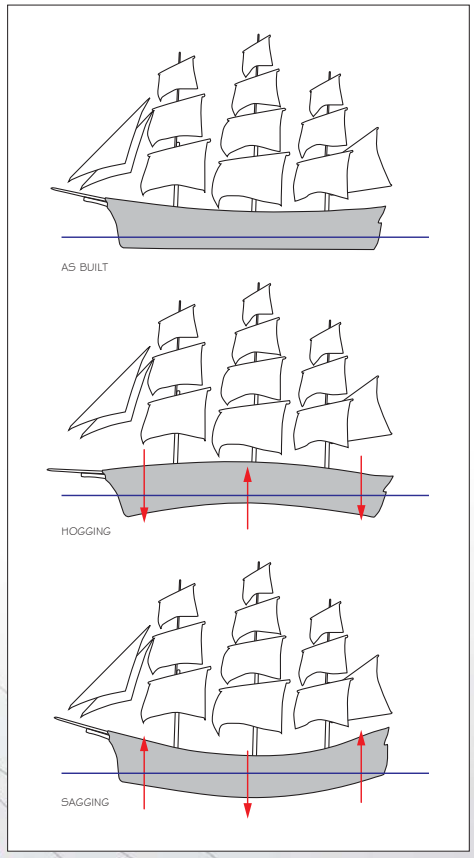

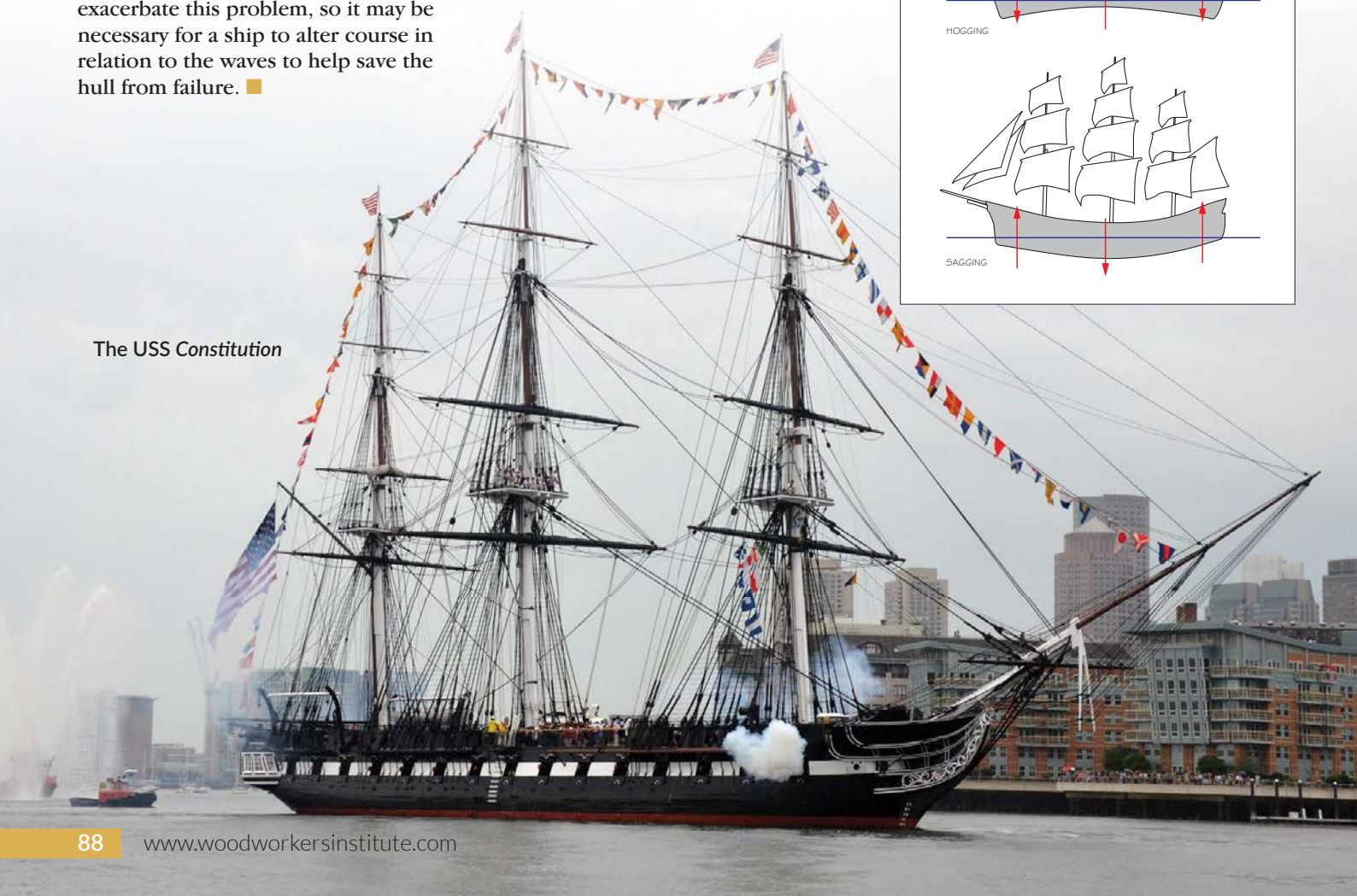

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