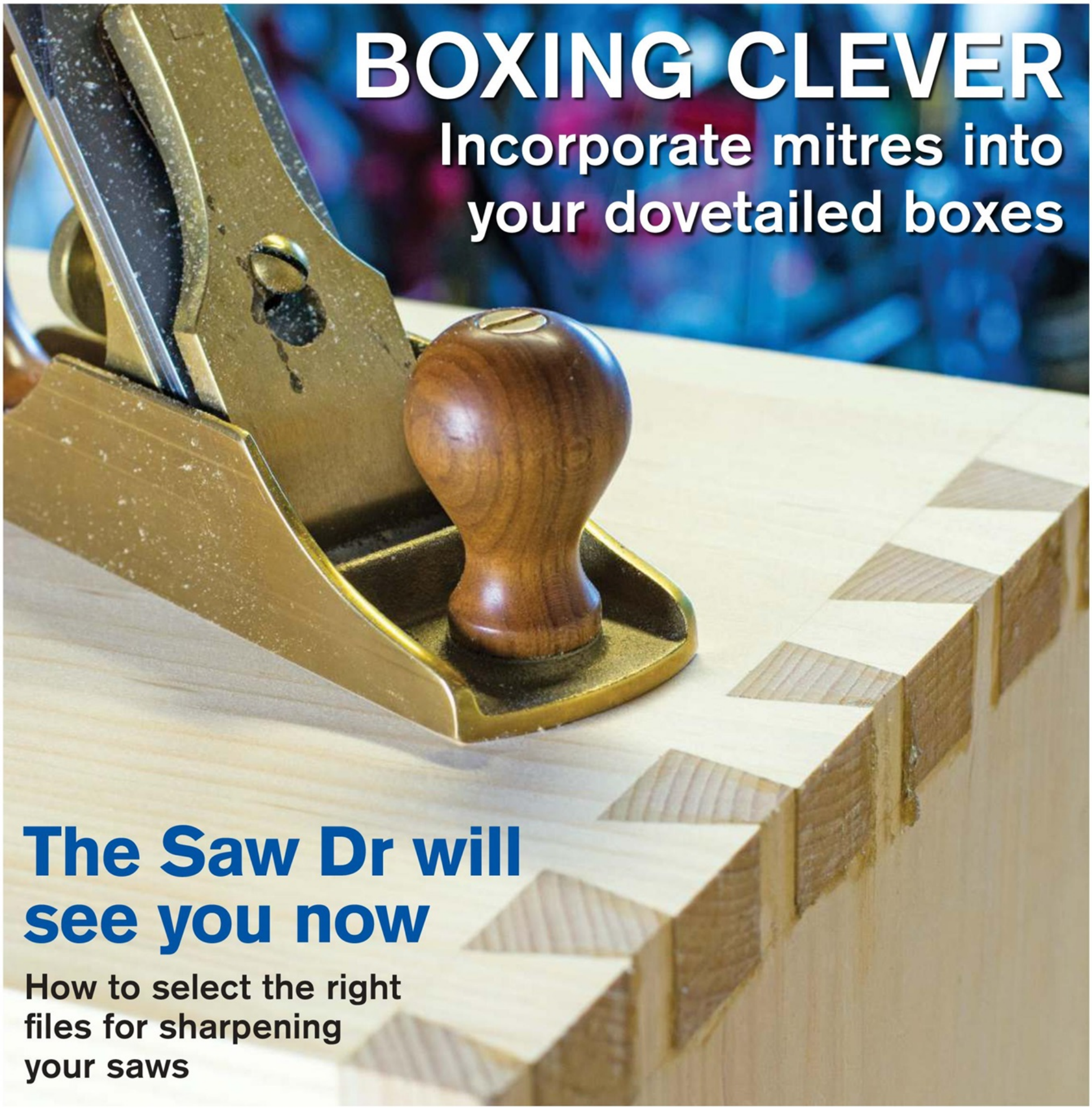
Furniture &cabinetmaking

DESIGN • INSPIRATION • PROJECTS • TECHNIQUES • TESTS • NEWS • EXCELLENCE



BOXING CLEVER

Incorporate mitres into your dovetailed boxes

The Saw Dr will see you now

How to select the right files for sharpening your saws

Thin edge of the wedge
Bench top tapering jigs, for chair legs and chopsticks

Design progression
Kieran Binnie explains how one design leads to another

The Jubilee Oak
The quest to build a table for the nation

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Roger Bisby,
Professional Builder Magazine

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Welcome to...

...progression

At the heart of every project lies a framework of design and development that's not always apparent to the casual observer. If that sounds a little elitist it's not meant to be because like most (or some) people I'm not an expert in everything and now and then take things for granted. Good design on its own is often hard to spot so it takes a few bad examples to pass our way before we see its benefits. This issue is interspersed with examples of good design and best practice, the latter being something we're mildly obsessive about here at *F&C*. Take our article by Mark Harrell on saw files on page 44 for example. Mark's explanation to me when we discussed the idea was 'This is some serious saw geekery.' Personally, I couldn't be happier, we're happy to be geeks and do geekery better than anyone else. Our other tech articles this month continue the theme with a review of the latest F-style clamps from BESSEY, again an example of creative design that will, most probably, set the style for F-clamps in the future.

Demonstrating that good design evolves incrementally is Kieran Binnie with his article about iterative design on page 30 based on a project he built more than a year ago. Who hasn't revisited a successful design from the past and made it better?

Our main project this month comes to you in two parts, the first of which appears on page 12. Dovetails with mitred corners represent the best of both worlds; a good mechanical joint without a potentially jarring or clumsy junction. As an habitual builder of boxes in all shapes and sizes I've accepted or done what I can to mitigate this problem over the years, but not entirely. You can see my latest attempt at resolving this conundrum here. Finally, the most important thing I want to draw your attention to this month is a story, not quite as old as time but definitely up there, about a material and one man's desire to make sure it takes its rightful place in history. The Fenland Black Oak Project on page 24 is your must-read feature this month. Take notes and a deep breath and tell me that's not the most incredible thing you've heard in a long while.

Derek Jones
derekj@thegmcgroup.com

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DESIGN & INSPIRATION

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INTRODUCING

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PROJECTS & TECHNIQUES

This month's project is a bespoke box for storing steak knives, we also have saw sharpening tips, jig-making techniques and a review of the latest kit from BESSEY

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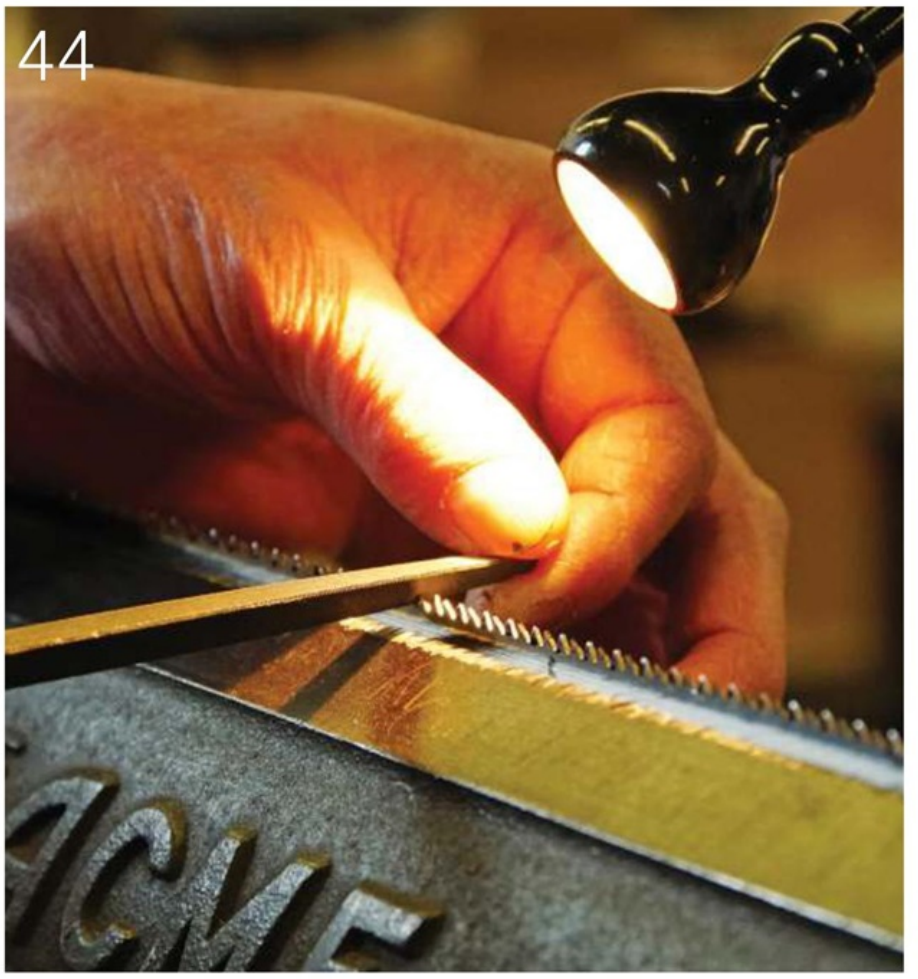

Don't forget there are plenty more articles and discussions to be found on the Woodworkers Institute & Forums
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Kieran's passion for woodwork started when, at the end of law school, he enrolled at the Totnes School of Guitar Making. His focus has since expanded to include furniture making as well as lutherie. Kieran has contributed research and interviews for *The Life & Work of John Brown* (Lost Art Press), and is currently researching and co-writing with Christopher Schwarz a book about the history of the bookcase. He writes a regular blog at www.overthewireless.com.
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PHOTOGRAPHS BY DEREK JONES/GMC PUBLICATIONS

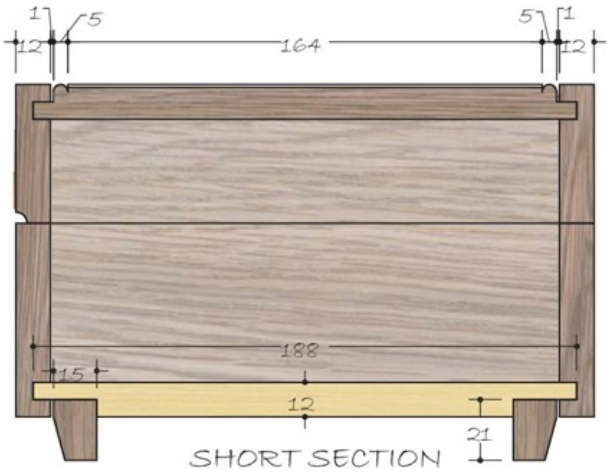
Derek Jones demonstrates some tried and tested techniques that ensure clean lines and accuracy with a minimum of fuss

Lifting the lid on box making

Even the simplest projects can be made easier just by having the right tool for the job. And although it may not be a fancy tool with an equally fancy price tag, you often wonder how you got along without it in the past. Well, the same goes for tips and techniques, all of which can shave hours or days off a build or better still save you from a lot of unnecessary soul searching and head scratching.

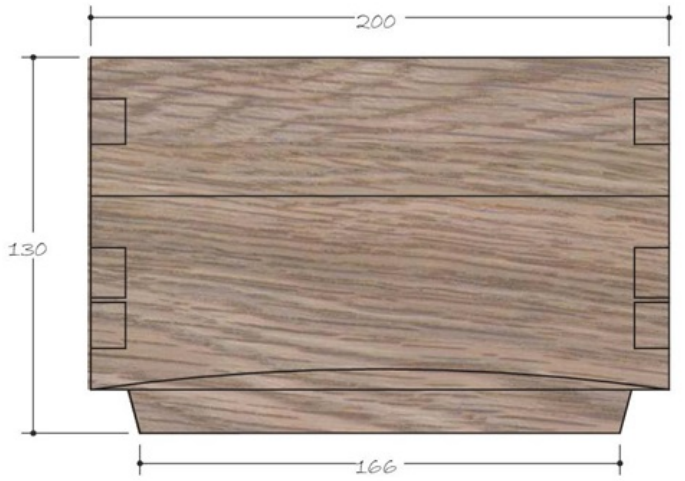
In the first of two articles, which are all about making a box, I'm going to highlight some of the key tools and techniques that form the basis of my box making method. I doubt there's anything you haven't seen or heard of before but without context it can be hard to see the benefits of these tools sometimes. Every project has a beginning and this started out as a simple commission to provide a box for a set of six bespoke steak knives. I've boxed and cased some extraordinary items in the past including miniature submarines for the Royal Australian Navy and a pair of royal slippers but steak knives are a first. The choice of material was, in part, suggested by my client, burr oak and bog oak. Eager to try something different and in an attempt to expand their portfolio of timbers, I decided to make two. One with a burr oak veneered panel and one with ziricote, and let them decide which one they prefer.

LONG SECTION

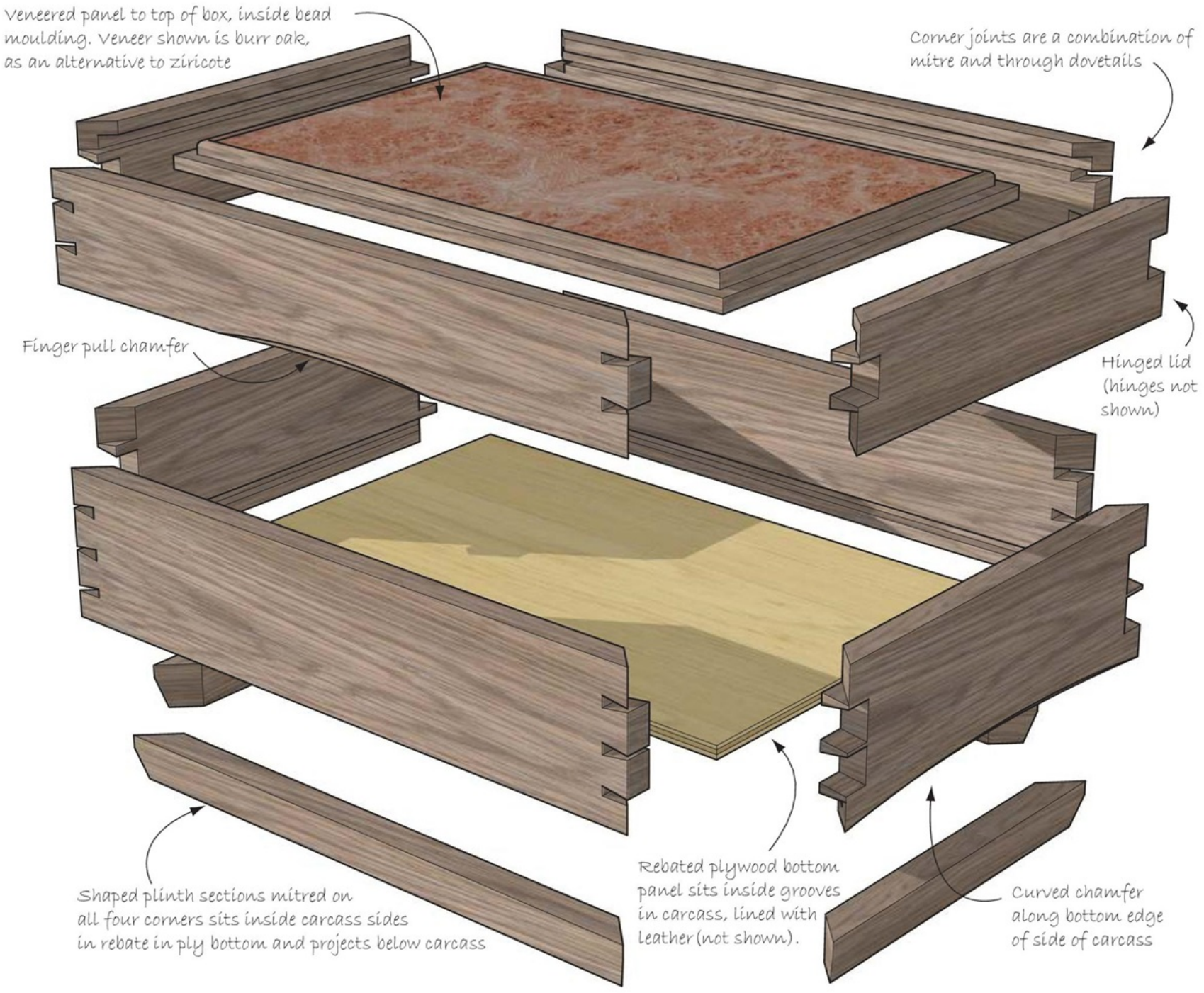


SHORT SECTION

FRONT ELEVATION



SIDE ELEVATION



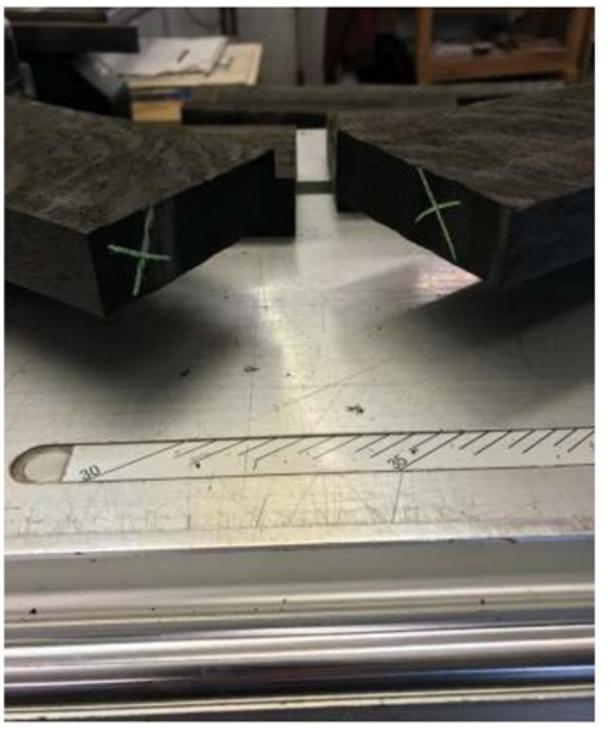
Solid where it counts

The sides, front and back of the boxes are made from bog oak and harvested from two separate boards for continuity. Bog oak can on occasion be a rather wasteful material when you need to extract long sections out of thinner boards. These boards were sawn wet at around 35mm thick and finish at around 28mm when dried. Although relatively flat from tip to tip along the 1m length there's quite a wave pattern within it. It's not a fault, more a characteristic of the material and drying process. To be sure of achieving my finished thickness of 12mm, I sectioned the boards into two parts containing a front/back and one side in each. Each piece was levelled on the planer before resawing to approximately 14mm and putting aside to settle. After a week they were run through the thicknesser again to bring them down to the finished dimension.

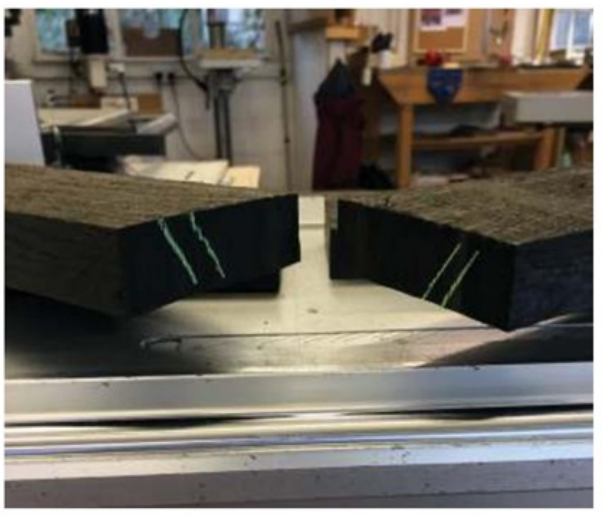
The lid panel is made from quartersawn English oak and veneered on both faces with the burr oak and ziricote veneer. With the same stresses applied to both faces, the panel should remain flat. The panel is prepared with a 5.8mm thick and 5mm deep tenon around its perimeter and is housed into the lid with 6mm x 6mm grooves around the inside. The rebate is made such that the panel is floating within the box frame so as not to hinder assembly when it comes to gluing up. The long grain sides are not glued in place but a small section in the middle of the end grain is. Secured in this way, the panel can shuffle back and forth across the grain at will without fear of splitting.

The base is a piece of 12mm ply prepared in much the same way as the lid panel but glued in place on all four sides. It's set up from the bottom of the box by 10mm to create a lip where the plinth can fit. The underneath is lined with suede to match that which is used inside the box.

Planks of bog oak sawn into short lengths to preserve the thickness



The ends of the boards are marked up in pairs with distinguishing marks

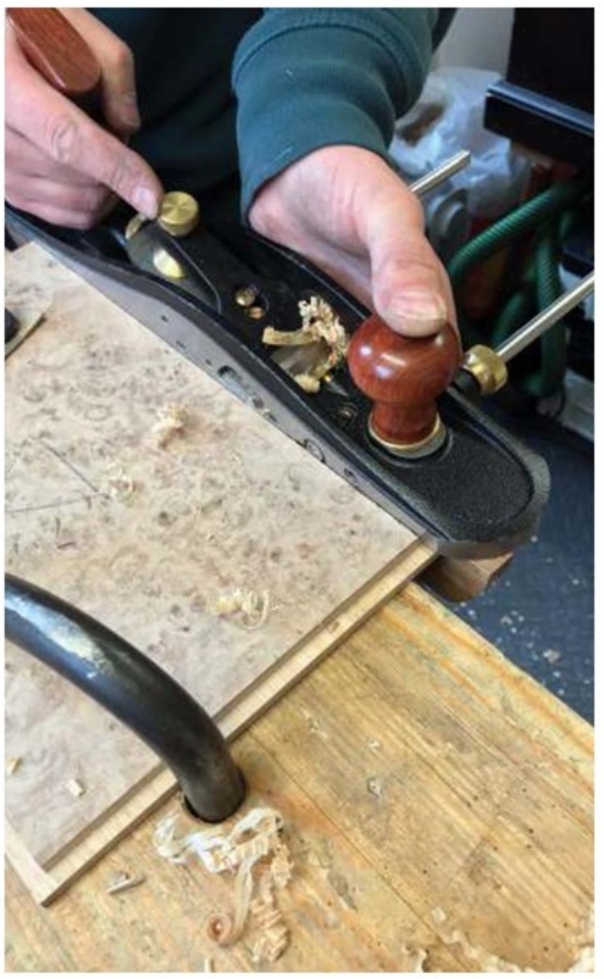


The marks signify the continuation of a board

After resawing the boards developed a slight spring so were placed in stick and kept under pressure from a couple of holdfasts for a few days. After a week they straightened out and remained that way

A wheel gauge was used to cut through the veneer before rebating to minimise the risk of splitting

The gauge line is used to locate the knicker and set the fence position



Rebating by hand is remarkably quick when you have a dedicated plane for the job

Tooling and timber

The tooling required for this project included a long series arbor and 6mm grooving cutters to cut the grooves for retaing the lid and base panels. A 2mm grooving cutter was used to separate the lid from the base. Two two-flute spiral downcut cutters were used, an 8mm to machine the recesses of the hinges and a 4mm to cut a chanel finto the lid around the edge of the panel to take a beed moulding.

Arbor: T3030-1/2
2mm groover: T5420
6mm groover: T5460
8mm spiral downcut: T8D8000C
4mm spiral downcut: T4D4000C

From: www.wealdentool.com

For small pieces of bog oak try Adamson & **Low's Etsy store:**
www.etsy.com

Ziricote and burr oak veneer:
capitalcrispin.com

Midway mitres

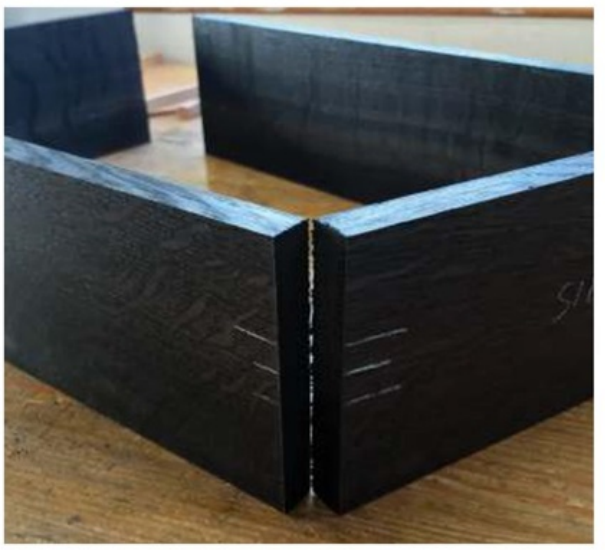
For clean corners on a dovetailed box or gallery it's worth considering mitring the first and last dovetails. It doesn't take that much longer, is not nearly as difficult to do as it looks and gives your piece a more tailored appearance. In fact corner joints that meet with a mitre are more harmonious in some ways as they imitate the corners of a picture frame. The method I use to make boxes of this size is to build the box as a complete rectangle and then cut the top half off to create a lid. If for some reason during the glue up your box goes together out of square it's not the end of the world as you will have created a perfectly matched set of lid and bottom. The important thing is to decide when you're laying out the joinery exactly where the separation cut is to be and allow for it in your dovetail spacing. I have five dovetail pins in total, three in the bottom and two in the lid with extra space between three and four for the separation cut. This section is mitred just like the ends so that when the box is separated a mitred corner is visible on the top edge of the box bottom and the bottom edge of the lid; a detail that's usually only possible by making separate tops and bottoms or veneering the edges. The marking out for this joint is pretty straight forward; pins, tails, base and shoulder lines. The sawing however is a little different as some of the cuts are angled towards the inside face of the board and do not carry through to the outside face. Having a full working sample to hand helps to prevent any mistakes.

One of the challenges of working with dark timbers and bog oak in particular is creating layout lines that can be seen. Not only do fine knife lines disappear but the course grain can also obscure them. The brittle nature of bog oak means that keeping nice crisp edges is something of a challenge. The introduction of masking tape goes some way to alleviating this. It supports the edges and keeps hold of any splinters that may need gluing back into place.

Sssh, don't tell anyone

I'm all for taking the stress out of building and not backing away from a new technique in case you make a mistake. Here's a tip that works best when you have contrasting timbers or in this case just dark timber. It's a technique sometimes used by marqueteers to close the gaps between pieces of inlay depending on how the pattern has been cut. It works well for tidying up less than perfect dovetails and mitres and should be one of your get out of jail cards in case of emergency. Save some of the fine dust created while sawing and mix it with hide glue (not PVA) to create a filler. Apply it as necessary and sand flush when dry. It's invaluable should you encounter a patch of reversing grain that would otherwise require you to remove a lot of material to correct it.

Shooting the ends of the box components by hand on a shooting board

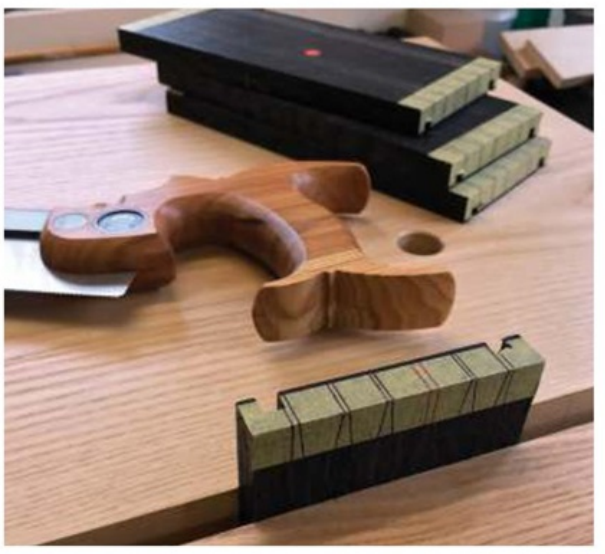


Mark the corresponding ends to keep the grain flowing around the box sides

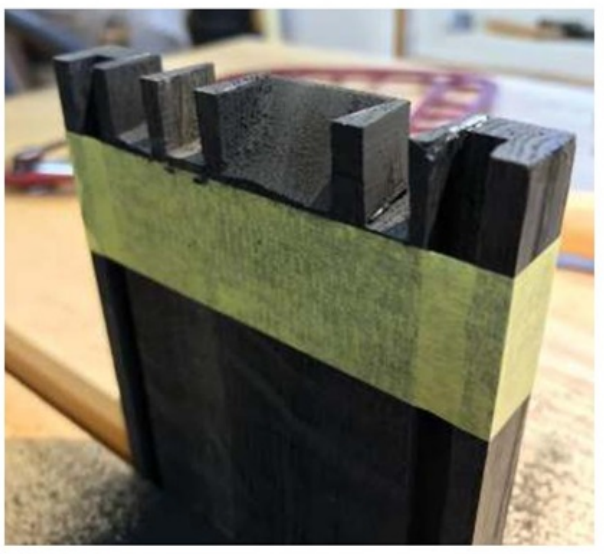
If you don't have access to a router try ploughing the groove for the lid panel and bottom by hand

A dummy joint to refer to while marking and sawing the real thing

A test piece doesn't have to be a perfect fit, they just need to work



Masking tape helps with visibility and also supports delicate edges



Use a fret saw to cut the mitres between the pins as if you were cutting regular base lines. Use a mitre block to trim them flat afterwards

Carry out your test fit with either the lid panel or bottom board in place but not both. You'll struggle to get the box apart again!

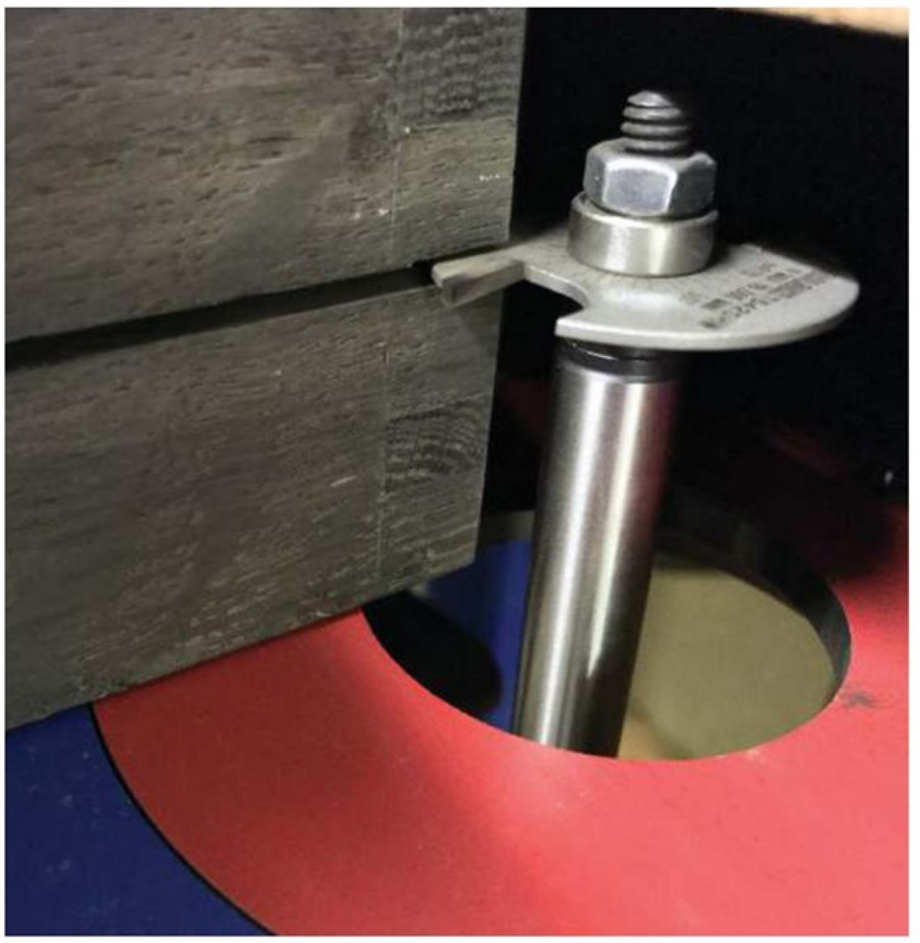
Tooled up

Before gluing the boxes up I finished the inside of the lids and top part of the sides with a coat of melamine lacquer. A thin coat of melanine resists glue better than shellac or oil so cleaning up the interior is much easier when you finally get round to it. It also means the internal corners are crisp and don't require any fiddly sanding or scraping. Before separating the lid from the bottom I used a 4mm down cut spiral cutter to rout a channel around the perimeter of the lid panel to take a small bead of the same width.

There are a number of ways you can cut a box in two to make a lid but the one I prefer is to use a grooving cutter on a table-mounted router to cut a groove all the way round the outside of the box just shy of the full depth of the material. In this case about 11mm deep into the 12mm-thick sides. Depending on your router and table and the depth of your lid you may have to source a long arbor to achieve the projection required. You can either use a bearing to control the depth of the groove or adjust the fence. I'm using a 2mm groover, so crept up to a full depth cut in three passes against the fence. Do all four sides at the same depth setting before adjusting for the next pass. When you're ready to pierce through completely do so on two opposing sides only leaving a slither of material holding the box together.

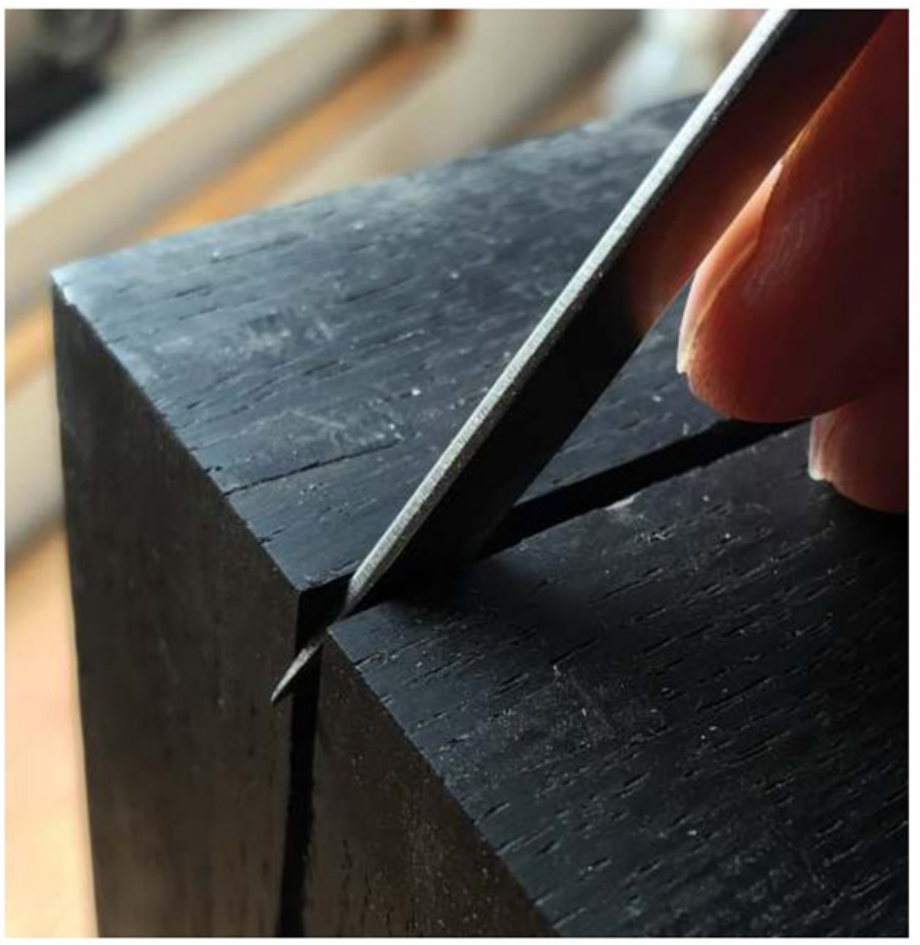
You can use a fine saw to complete the separation. You might get away with using a sharp knife on some materials. The size of the groove isn't important, just choose something close to the size of your saw or knife. Too fine and you may as well have used a saw in the first place. Too generous and you'll have a lot of fettling to do afterwards. Incidentally, if sawing by hand is your only option, then so be it. A carcass saw, Japanese saw or tenon saw will do the job as long as it's filed with a hybrid or rip tooth pattern. Don't consider using a bandsaw unless you are 100% satisfied it will cut straight and true at the height you require.

Rout the channel for the bead moulding before the box is separated



The 2mm groover is used to cut a slot around the perimeter of the box

Leave a small slither at two opposite ends to hold the box together...



...you can use a knife or fine saw to complete the separation

Flushing off

It's likely you'll have a small discrepancy between the two mating parts after you've separated them. My boxes ranged between 5 and 6 thou which isn't too hard to correct with a finely set block plane. Another method is to use a reliably flat surface at least twice the size of the box's footprint with some abrasive stuck to it. Two things are crucial here and as I'm not always certain about both it's my least used method. First you need to be sure the flat surface is flat. If you're happy sticking some abrasive paper (temporarily) to the bed of one of your machines you're halfway there. If not, then a board of MDF will suffice, as long as it's flat. Spray-mount adhesive is a good choice of glue but be careful to ensure a good even coat and use a roller to flatten it. Thin abrasive papers can teleport blobs of glue to the surface like the pea under the princess' mattress, so use a thicker paper where possible.

Up end the base or lid onto the abrasive and hold it with the widest grip you can manage. Make small controlled movements in a vaguely oval figure using the entire board and rotate the box every few passes. Doing this will counter your dominant hand and help to remove material evenly across the edges. Don't favour an edge unless you're absolutely sure it needs extra work. Repeat the process with the mating component and check for a flush fit. Devise a method for marking the high spots and work slowly. While this method may sound like a bit of a faff, it avoids that moment when you crash into the opposite side of the box with the nose of your block plane and it also deals with reversing or awkward grain. F&C

I had a discrepancy of 6 thou to clean up after separating the lid from the base

Next month

I'll be working on making the bead moulding for the lid from scratch and adding a plinth to the bottom. I'll also tackle hinge fitting and how to achieve a no-finish finish on timbers that look their best in the raw.

News&Events

Contribute to these pages by telling us about matters of interest to furniture makers.
Call Derek Jones on 01273 402 843 or email derekj@thegmcgroup.com
Please accompany information with relevant, hi-res images wherever it is possible

NEJ Stevenson and Royal Leamington College announce new student prize

Neil Stevenson with the staff and students at Royal Leamington College

Neil Stevenson is committed to nurturing future talent

PHOTOGRAPHS COURTESY OF NEJ STEVENSON

Warwickshire-based bespoke furniture company NEJ Stevenson, will be sponsoring a new prize for Year 1 Furniture Crafts students as part of its ongoing collaboration with Royal Leamington College. The prize will be awarded to the most promising student of the year in 2019 who has shown an exceptional approach to their work at college. This will be assessed based on their attention to detail and how they have pushed themselves to excel from a skills perspective.

The company has a closely established relationship with the college and managing director Neil Stevenson gave a talk to students on 5 March entitled 'How to Succeed in the Bespoke Furniture Business'. Students will also be visiting the NEJ Stevenson premises in early 2019 and will be learning from the highly skilled NEJ Stevenson team who will be offering assistance and support for their Year 2 projects.

Jamie Ward, Curriculum Leader for Furniture Crafts at the Royal Leamington College, which is part of the Warwickshire College Group said, 'Our relationship with NEJ Stevenson has continued to grow and we are thrilled that the company has committed to sponsoring this prestigious prize for our students.'

Several alumni from the college have already progressed to forge exciting careers at NEJ Stevenson, such as Matthew Brown, who completed a Level 3 Diploma in Furniture Design and Making and was recently awarded a prestigious City & Guilds Medal for Excellence. Matthew was nominated for being an outstanding student on the Furniture Crafts course throughout his time at college, achieving distinctions for all his assignments. This dedicated approach rewarded him with a full-time cabinetmaking position at NEJ Stevenson.

Neil Stevenson, Founder and Managing Director of NEJ Stevenson said, 'I'm delighted to further our collaboration with the Royal Leamington College, which now provides some of the best facilities and opportunities in the region. We fully believe in the college's ethos of "learning by doing" so inviting students into our workshops is a great way to refine their skills and inspire them to pursue a career in furniture making. NEJ Stevenson is committed to promoting the education and career opportunities in our sector and in nurturing future craft talent.'

Contact: NEJ Stevenson & Royal Leamington College
Web: nejstevenson.co.uk & wcg.ac.uk/page/93/royal-leamington-spa-college

Norwegian furniture company launches in the UK

The Krysset lounge chair was originally designed by Fredrik A. Kayser in 1955

The Veng chair was designed by Torbjørn Bekken in 1960

PHOTOGRAPHS COURTESY OF EIKUND

An installation at Domus in Clerkenwell officially launched furniture company Eikund to UK audiences and showcased never before seen furniture classics unearthed from Norwegian design archives.

Throughout 2015, Eikund founders Morten Hippe, Frode Tingbø and Jørgen Tengesdal went treasure hunting across the country, rummaging through attics and archives to discover Norway's hidden furniture gems. Their mission was to highlight Norway's forgotten design history.

Based on the island of Eigerøya off Norway's western coast, the company is now reproducing iconic pieces by modernist designers such as Torbjørn Afdal, Sven Ivar Dysthe, Arne Halvorsen, Fredrik A. Kayser, Bendt Winge, Sigurd Resell, Torbjørn Bekken and Arne Tjomsland. A selection of Eikund's furniture was displayed within the Casamood design installation at Domus.

Contact: Eikund
Web: www.eikund.com

Hungarian almond named European Tree of the Year

PHOTOGRAPH BY SVASTITS KRISZTIÁN

This 135-year-old almond tree in Pécs, Hungary was voted European Tree of the Year

The almond tree of the Snowy Hill in Pécs, Hungary was voted European Tree of the Year 2019, an annual contest supported by European Commissioner Karmenu Vella. The 135-year-old tree grows in front of the Church of Our Lady of the Snow in Pécs city. Its almond blossoming has been seen as a symbol of eternal renewal and education since Bishop Janus Pannonius wrote a poem about an almond tree in 1466.

The Russian Abramtsevo Oak came second in the vote and the Portuguese Secular Holm Oak came third. The UK's entrant, Nellie's Tree in Yorkshire, finished ninth.

The award ceremony was organised by the Environmental Partnership Association and the European Landowners' Organization, who are engaged in promoting a healthy environment in our cities and countryside, with additional support from the South Moravian Region, Mendel University in Brno and the S&D group from European Parliament.

Contact: European Tree of the Year Web: www.treeoftheyear.org

Get Father's Day sorted with Machine Mart

If you're stuck for gift ideas this Father's Day, or want to drop some hints to your family, then Machine Mart have the answer with their gift cards. Perfect for those dads with a craving for some tools and machinery! Machine Mart gift cards and E-Vouchers can hold any value from £20 to £500 and can be used in any of Machine Mart's superstores nationwide, over the phone or online.

Contact: Machine Mart Web: www.machinemart.co.uk

Information correct at time of publication, check websites before planning your visit

EVENT OF THE MONTH

Clerkenwell Design Week (CDW)

Celebrating its 10th year, CDW has established itself as the UK's leading independent design festival and annually attracts the international design community to this small area of London for three days of events. Clerkenwell is home to more creative businesses and architects per square mile than anywhere else on the planet, making it truly one of the most important design hubs in the world. To celebrate this rich and diverse community, Clerkenwell Design Week has created a showcase of leading UK and international brands and companies presented in a series of showroom events, exhibitions and special installations that take place across the area.

When: 21–23 May
Where: Venues across Clerkenwell, London
Web: www.clerkenwelldesignweek.com

PHOTOGRAPH COURTESY OF CDW

Deadgood furniture's exhibit at the British Collection

West Dean Arts and Crafts Festival

Get hands-on with drop-in workshops and classes, see live demos, buy unique crafted items, meet the makers and see the work of emerging artists at the annual West Dean Arts and Crafts Festival. There will be over 20 creative workshops per day covering skills such as painting, pottery, printmaking and many more. There will also be demonstrations by skilled craftspeople of techniques including blacksmithing and woodworking. Visitors to the festival can also take advantage of a rare opportunity to see inside West Dean House, where they will be able to see the historic state rooms and the Edward James Archive and Collection of Surrealist art.

When: 31 May–2 June
Where: West Dean College of Arts and Conservation, West Dean, near Chichester, West Sussex PO18 0QZ
Web: www.westdean.org.uk/events

Historic Life Weekend: Wood Crafts & Uses

The Weald and Downland Museum's Historic Life Weekends focus on different historical angles of the Museum's collection, giving visitors a chance to chat to experts, see demonstrations and displays as well as explore the Museum. This weekend focuses on the different forms and uses of wood, and will feature a traditional charcoal earth burn, with a team to explain the processes of each stage.

When: 15–16 June
Where: Weald and Downland Living Museum, Town Lane, Chichester PO18 0EU
Web: www.wealddown.co.uk

New Designers Parts 1 & 2

New Designers is a two-week exhibition celebrating and showcasing our creative future with over 3000 breakthrough design talents. The design disciplines featured in Part 1 are Textiles & Fashion, Costume Design, Jewellery & Precious Metalwork, Ceramics & Glass and Contemporary Design Crafts; Part 2 includes Furniture, Product & Industrial Design, Spatial Design & Interiors, Graphic Design, Illustration & Animation and Motion & Digital Arts. Both include One Year In, showcasing design entrepreneurs who have recently launched their creative businesses.

When: 26–29 June & 3–6 July
Where: Business Design Centre, 52 Upper Street, London N1 0QH
Web: www.newdesigners.com

Handmade Oxford – The International Contemporary Arts Festival

Join thousands of art lovers at Handmade Oxford – The International Contemporary Arts Festival for a celebration of craft, design, fine art, sculpture, slow living and artisan food. The festival is presented in collaboration with the Ashmolean Museum and Waterperry Gardens. Over 250 hand-picked exhibitors will be selling and demonstrating their work, alongside a packed programme of workshops and talks.

When: 27–30 June
Where: Waterperry Gardens, Waterperry, Oxford OX33 1LA
Web: www.handmadeinbritain.co.uk/events/handmade-oxford/

WoodFest Country Show

Now in its 19th year the WoodFest Country Show is a celebration of all things wood, located in the heart of the North Wales countryside. Spread over 30 acres, the festival showcases a variety of wood-related activities, crafts and forest industries. Timber professionals and competitors from around the world come together to compete in a range of skilled competitions and present their skills in demonstrations of pole climbing, woodturning, chainsaw carving, axe racing, wood chopping and logging skills. The show also includes the WoodFest Rocks music festival, woodcarving and furniture displays, new and antique tool sales, a craft fair and local food and drink.

When: 12–14 July
Where: Glascoed Road, Saint Asaph LL17 0LH
Web: www.woodfestcountryshow.co.uk

PHOTOGRAPH BY PHILL MAYNE

Rosewood jewellery box by Edward Wild, one of the exhibitors at Handmade Oxford

Three furniture makers awarded the Master Certificate

PHOTOGRAPH COURTESY OF THE FURNITURE MAKERS COMPANY

Left to right: Neil Austin, Master Hayden Davies and Richard Williams

Three furniture makers were praised for their contribution and achievements to the industry as part of the Master Certificate Scheme at a ceremony in the City of London in March.

The Master Certificate Scheme, run by City of London livery companies in partnership with City & Guilds, recognises excellence and promotes career progression from Apprentice to Journeyman and Master level.

The three furniture makers who were awarded the Master Certificate were Neil Austin, fine furniture course leader at the Building Crafts College; Joseph Bray, design and make programme leader at Rycotewood Furniture Centre; and Richard Williams, bespoke furniture designer and maker.

To be awarded a Master Certificate, the three awardees had to evidence a relevant qualification at level 4; be a director, manager, supervisor, lecturer, sole proprietor or experienced craftsman and have a minimum of 10 years' appropriate employment in the furniture industry.

The ceremony took place at Carpenters' Hall, London on Monday 11 March and was attended by the Rt Hon the Lord Mayor of London, Alderman Peter Estlin.

Representatives from 10 livery companies were in attendance at the ceremony, with 28 people in total awarded an Apprentice, Journeyman or Master Certificate.

Master of The Furniture Makers' Company Hayden Davies said: 'It was an honour for the Furniture Makers to join the Lord Mayor, Alderman Peter Estlin, and present Master Certificates, recognising excellence in the field of furniture making, to three exemplary furniture makers who have dedicated their lives to our industry.'

Richard Williams, one of the awardees, said: 'I feel very honoured to have received my Master's Certificate from the Lord Mayor at Carpenters' Hall – it was a wonderful occasion. The award not only recognises my achievements in the furniture industry, it also reflects my strong interest in ensuring that furniture-making skills are successfully passed down the generations. It was great to watch the apprentices receive their awards too, and I will do all I can to support them in their early careers.'

For more information about the Master Certificate Scheme, go to: www.furnituremakers.org.uk/master-certificate-scheme

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Forsa 4.0 - P1	Workshop	Inc Professional STC + TWE + TLE + Scorer	6.5 / 1.1 / 415v	107 mm x 1.6 m	£3,895.00	£4,674.00
Forsa 4.1 - P1	Workshop	Inc Professional STC + TWE + TLE + Scorer	6.5 / 1.1 / 415v	107 mm x 2.1 m	£3,995.00	£4,794.00
Forsa 8.0 - P3	Professional	As Illustrated above	6.5 / 1.1 / 415v	107 mm x 2.6 m	£5,420.00	£6,504.00
Forsa 9.0 - P3	Professional	As Illustrated above	6.5 / 1.1 / 415v	107 mm x 3.2 m	£5,575.00	£6,690.00

STC = Sliding Table Carriage. TWE = Table Width Extension. TLE = Table Length Extension.

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The Fenland Black Oak Project – a table for the nation

***F&C* meets the team behind this extraordinary project who tell the story of the Jubilee Oak**

Five thousand years ago a rise in sea levels caused the rivers in the East Anglian Fenland basin to back up and flood the ancient high forests. These huge trees died standing in water and eventually fell into the silt of the forest floor where some have been preserved under anaerobic conditions until now.

Due to the cultivation of this productive land, the preserved trees began to emerge from the peat. These black oaks are extremely fragile when exposed to the elements unless wrapped, converted into planks, dried and stabilised. Fortunately, some Fenland land owners recognise the significance of these ancient trees and are very supportive of their constructive use.

There is clearly a finite supply of black oak buried beneath the peat and it is in decline. There is an urgent need to preserve as much as we can for future generations.

What is black oak?

The famous intensity of colour associated with black oak is a result of soluble irons in the mineral sub-soil reacting with tannins in the oak. Occasionally weighing over 1000kg per cubic metre, black oak is by far the densest native hardwood, meaning very fine, detailed and accurate work can be achieved. It is the only native hardwood that is black.

At 5000 years old, black oak is the nation's most ancient hardwood. It has intense and

PHOTOGRAPHS COURTESY OF THE FENLAND BLACK OAK PROJECT

The Jubilee Oak yielded 10 sequential planks, 5000 years old, 13.4m long and 550mm wide

unique colour fade characteristics, along with stunning medullary figure – this offers great creative opportunities for visual impact, particularly when used as a contrast and in combination with other native hardwoods.

It has recently been discovered that black oak is a tone wood with a unique sound and it is highly prized for use in handmade percussion, woodwind and stringed musical instruments.

The Jubilee Oak

In March 2012, an astonishing black oak specimen was unearthed from the peat. After being discovered by a Fenland farmer while ploughing, cabinetmaker and black oak specialist Hamish Low was immediately contacted to assess the viability of its preservation.

At 5000 years old and over 13m long, this Fenland giant was spectacular. The Jubilee Oak (as it became known) is a very rare and special example of black oak. The sheer scale of this tree is what led to its extraordinary degree of preservation. It was so vast that its apocalyptic descent would have smashed and crushed everything in its path, burying itself in the silt of the forest floor, which then formed an airless 'grave' around it, where it lay for thousands of years.

This rarest specimen provides us with the unique opportunity to give a fascinating insight into the majesty and grandeur of the ancient high forests that covered much of Britain thousands of years ago. We had to preserve the full length integrity of this tree. To cut it into more manageable lengths 'was unthinkable,' says Hamish.

Two telehandlers were required to raise the Jubilee Oak from the peat

Below: A model depicting a half section of the front elevation of the Jubilee Oak table

At over 13m long, the Jubilee Oak is a giant amongst giants

Preserving the tree

To preserve black oaks they must first be converted into planks in order to manage even rates of water extraction. Once dry, the planks are preserved in perpetuity.

It is impossible to predict what any tree will yield before it is opened up; this is particularly true of black oaks as the seen surfaces have been buried in the peat for thousands of years. The Jubilee Oak hinted at great potential but there was always the possibility of unseen defects preventing us from retaining the planks at full length. We were unprepared for what this extraordinary tree actually yielded: 10 magnificent, breathtakingly beautiful consecutive planks quite unlike anything seen before.

Black oak must be dried artificially as traditional air drying is too aggressive. The milled planks were transported to the Building Crafts College (BCC) in east London – the road outside the college had to be closed while the planks were carefully loaded into the dehumidifying kiln which was designed and built specifically to dry the Jubilee Oak planks.

In order to dry planks of this length, the 15m kiln had to contain three dehumidfiers and 11 additional fans. Complete control was essential over air flow, moisture extraction, temperature and relative humidity. All of these elements, together with daily measurements and monitoring, led to constant adjustments and balancing.

Eventually, after nine months the dehumidifiers were switched off for the last time. After nine months we had extracted 397 gallons of water. Staggeringly this equates to 4 gallons per cubic foot and reduced the weight of these planks by 1.6 tons. The planks had shrunk by over one-third of their sawn thickness, a quarter of their width and even 150mm in their length, and yet were flat and true for over 13m.

The Jubilee Oak gently lowered onto the saw mill

The bespoke drying kiln loaded with the 10 Jubilee Oak planks

A unique design opportunity

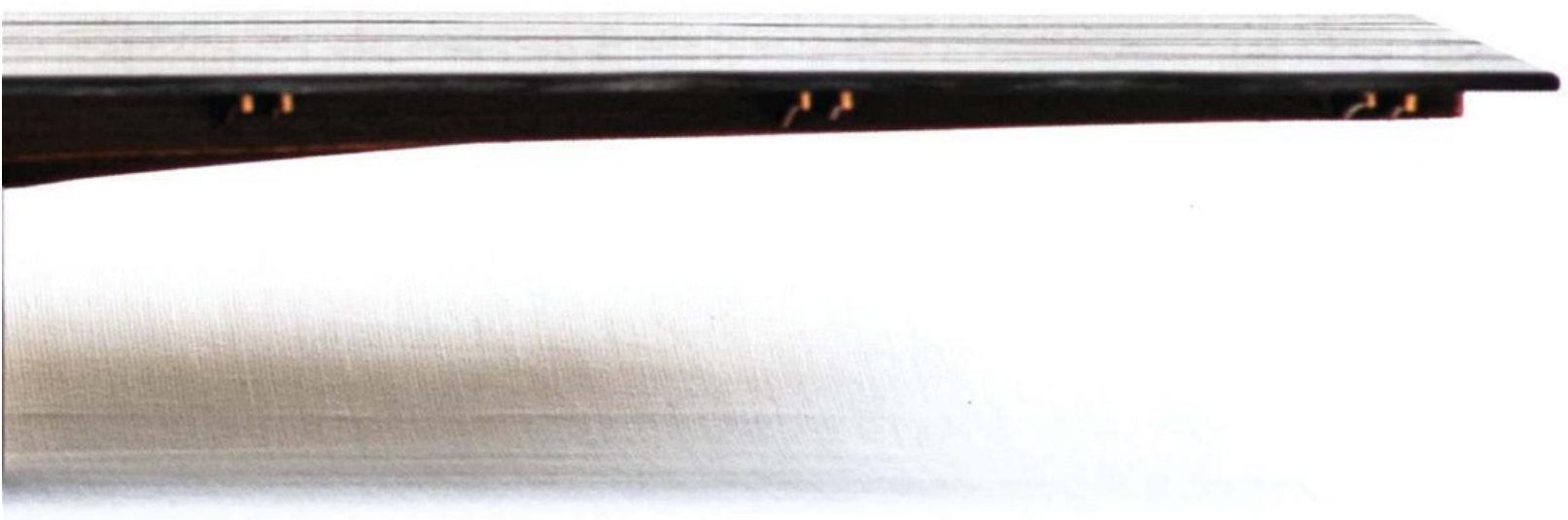
The Jubilee Oak planks are magnificent and without doubt a national treasure

Leaving aside their ancient provenance and unprecedented length, the fact is some of these quartersawn planks are figured over their entire length and are breathtakingly beautiful. The Jubilee Oak planks represent a unique creative opportunity; they have a surreal sculptural quality and visual impact quite unlike anything else.

Due to the unique creative opportunity these boards represent, a team of designers has been established rather than just one individual. The team was led by furniture maker and architect Mauro Dell'Orco with input from cabinetmakers Adamson and Low, Steve Cook and metalwork designer Tom Carter. The team started from the need to preserve a rare discovery and not the more conventional approach of satisfying the brief of an individual client.

Why a table?

- As a table top, the Jubilee Oak is at a perfect height to be seen and touched in its entirety.
- As a standalone object the visual impact of a table of this magnitude is not compromised by its proximity to anything else.
- A table has many practical functions; display, dining events, meetings, for serving refreshments etc., so as well as being a sculptural object the functionality of a table can create revenue.
- This table is likely to be housed in a variety of public spaces throughout its lifetime and these public spaces are used for a range of ever-changing activities, therefore the table must also have the flexibility to be multifunctional.
- The design challenge has been to find intelligent and creative solutions to all these issues without compromising the full length integrity of these planks.

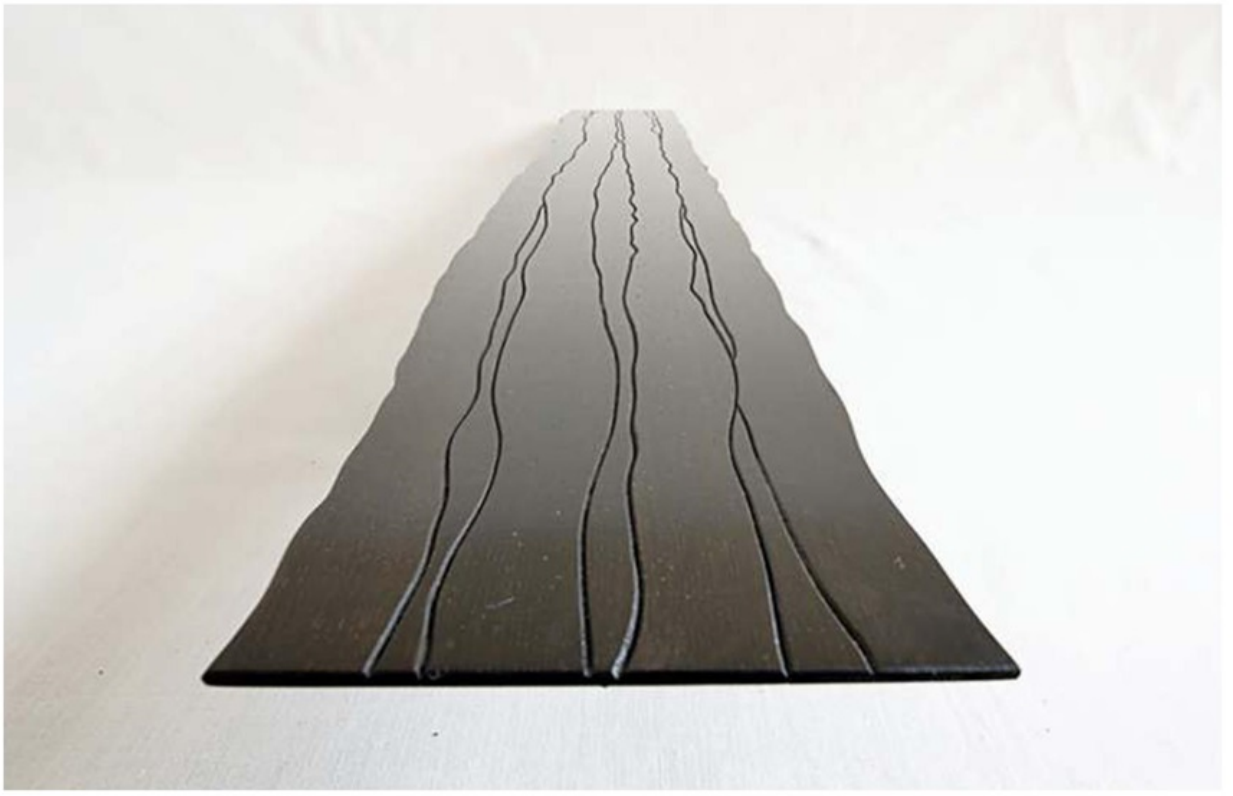


Design

The design team have come up with innovative, unexpected, creative and intelligent solutions to the many challenges within the design brief. They have done so in consultation with The Fabric Advisory Committee and Chapter at Ely Cathedral (which is to be the destination for the table in the first 18 months after completion), thereby resolving all the conservation concerns pertaining to such an important historical building. Our many sponsors engaged with the project on the understanding that a table is to be made from the Jubilee Oak and this table will be made available to the public as a gift to the nation.

Most importantly the design team have remained sympathetic to the integrity of the Jubilee Oak. The planks have been retained full length and techniques developed to enable their individual shapes and character to be used and highlighted. We are calling this technique the 'river joint', which, while reflecting this most prominent Fenland feature, also enables the true story of the ancient high forests to be told at a glance.

The table understructure will be made from patinated bronze enabling confident and multiple dismantling in stages to facilitate various functions. Bronze is also appropriate in this instance as the age of the Jubilee Oak corresponds to the early Bronze age. To mitigate the liability of size, the two outer planks can be folded down, reducing the width of the table to just 900mm. The entire table can be pushed to the edge of a space and used as a serving table or for display. As well as a practical function, in this form the table is also worthy of comment as the two river joints are spectacular when exposed in this way.



The specially developed 'river joint'

The Principal of the BCC generously offered the use of his joinery workshop – a space long enough for the fabrication of the black oak top. We hope to inspire the next generation of craftspeople by continuing to involve students from the BCC in the project.

Work on the Jubilee Oak top will be carried out during the summer at the BCC with students and staff. A minimum of five people will be required at all times so we are able to manhandle these boards. Updates of all this work will be posted on the blog of the fenland Black Oak project website. F&C

Photograph of a model. The two outer planks folded down reduce the table width to just 900mm and expose the river joints

Fundraising

All of the challenges of the Fenland Black Oak project to date have been spectacularly overcome. This is due to the skill and dedication of a host of individuals and companies, national and international who have so generously given funds, expertise, goods and services. We thank them all.

A registered charitable organisation, (the Fenland Black Oak Charitable incorporated organisation, CIO) are finalising a definitive fundraising strategy to help generate the funds and resources required to realise such an ambitious project, including an individual giving campaign to be launched soon, alongside other major funding sources.

Website: www.thefenlandblackoakproject.co.uk

PHOTOGRAPH BY GARETH PARTINGTON

PHOTOGRAPHS BY KIERAN BINNIE, UNLESS OTHERWISE STATED

The second version of this base design

RIGHT: The original boot bench design, in oak

Iterative design: a tale of two shoe cupboards

Kieran Binnie builds a variation on his Policeman's Boot Bench

In 2017 a client commissioned me to build an open cupboard for the hallway of a Victorian house in London, with the key design criterion that it was to be able to provide ample shoe storage. The result was the Policeman's Boot Bench (featured in *F&C* 265) – a dovetailed oak cabinet with four shelves suitable for even the most enthusiastic shoe collector. No sooner had I completed the commission and handed it over to the client, than my wife pointed to the overflowing shoe rack in our own hall and requested that I build a variation on the piece I had just delivered, to address our shoe storage needs.

PHOTOGRAPH BY GARETH PARTINGTON

Iterative design

The process of designing, and building, a second interpretation of an existing project provides an excellent opportunity to review your design process: both in terms of how small design changes can have significant impact on functionality, and how design choices affect the overall form of the piece. Subsequent approaches do not rewrite the base design, but adapt and mould it to new settings and uses that reflect the specific needs of the end user.

Despite my best efforts, I have been unable to find a design term that reflects the process of adapting a base design for different functionality or aesthetic criteria, and so for the purposes of this article I will refer to it as 'iterative design'. If any reader is aware of a design term that better reflects this methodology then please drop me a line through overthewireless.com!

Compare and contrast

While I will be using the two shoe cupboards to illustrate the benefits of iterative design, really the same process could be applied to any furniture form. In fact, on my workbench are two child-sized Welsh stick chairs. These chairs are both based on an 18th-century example, but thanks to changing some design elements (one has a round leg profile while the other uses octagonal legs) and material choices (one is oak, the other maple), they have radically different appearances. Returning to the shoe cupboards:

Version One (the original Policeman's Boot Bench) is all oak construction, with four full-width shelves housed in dados. The finish is blonde shellac and black wax.

Version Two (which resides in our hall) has the same overall proportions, save for being slightly narrower (11½in compared to 13in). Pine is used throughout, and the joinery (dovetails, dados, and tongue and groove for the backboards) is exactly the same as for Version One. However, there are three shelves in this iteration of which only the bottom shelf is full-width. The other two shelves terminate in a vertical divider 12in from the right-hand end, resulting in a tall compartment at that end. At the top of the compartment is a dovetailed drawer for keys, post and the inevitable clutter that seems to accumulate by the front door. The shelf spacing is also different compared to Version One. In terms of finish, the exterior of Version Two is painted with Bayberry Green milk paint by Old Fashioned Milk Paint, topped with Osmo Polyx, while the interior is also treated with Osmo. The dados are pinned with 'Roman' style nails from Rivierre Nail Factory, while a Mackintosh brass pull from Horton Brasses allows the drawer to be accessed.

So those are the differences, but what design choices led to them? This can be split into two elements – functionality and aesthetics.

Cutting the dovetails which secure the top to the sides

Chopping the dovetails

Laying out the foot detail with dividers

Functionality

Adjusting the functionality of the shoe cupboard was where negotiations started for Version Two. Our existing shoe rack (by a popular Swedish home furnishing company) struggled to accommodate anything larger than a standard work shoe, and was downright hopeless at holding our daughter's tiny shoes. So, from the very start we knew we needed shelf spacing that would work for my Dr Marten boots as well as a three-year-old's favourite sequinned wonders, and my wife's knee-high boots. The addition of the vertical partition provided the tall boot storage without creating too much unusable dead space, and left me free to have shelves in the main compartment. Having determined the space required for the Dr Marten's

Checking the assembled case is square

(8½in in case you were wondering), the shelf spacing for the main compartment was stepped off with dividers to achieve a gradually reducing space for each shelf up, without the need to deal with awkward fractions. A small drawer at the top of the full height compartment added an extra level of functionality as well as some visual balance to the design – before adding the drawer, the right-hand compartment looked cavernous and disrupted the proportions of the piece.

Aesthetics

The Policeman's Boot Bench was designed for a Victorian property with an original tiled hallway, and the emphasis on oak and a simple finish fitted that setting very nicely. Thanks to a large lime tree in the front garden our hallway has a tendency to be gloomy, and in an effort to mitigate this we have painted the walls a bright yellow. For this reason we wanted to avoid adding large pieces of furniture in dark wood, and so pine was chosen for the gentle tones it would add. The overall form of the shoe cupboard is understated, and relies on hand-cut joinery as well as an elegant foot detail to provide visual interest. Milk paint is the perfect finish for adding colour while keeping joinery visible, and the benefit of a mid-toned colour is that the natural wood of the interior illuminates the shelves, making the overall piece 'pop'.

These are all simple choices – asking what we want to use a piece for, and how it will sit in the intended setting. And yet, when added together, they result in substantially different pieces.

The benefits of iterative design

Having found the iterative design process to be beneficial and thought-provoking, I was interested to see if other makers used this process. Canadian furnituremaker, and *F&C* contributor, Richard Wile makes extensive use of this approach, particularly when deploying specific joinery solutions. Richard explained that while he developed a 'chair base design using bent laminated braces' for a dining chair, 'it has provided the design and build basis for many other projects including benches, stools and small tables. Each application requires small tweaks to the design, such as the size and angle of the brace, but the technique remains the same'. Carver Danielle Rose Byrd also makes use of iterative design, particularly with spoons and shrink pots which 'are limited to more nuanced changes in design that benefit from an iterative design process'.

I have found two main benefits to this process, although I am sure there are plenty of others I've not yet stumbled upon. Firstly, once the base design has been prepared, creating further iterations is a more time-efficient process, because the overall form (proportions and joinery, not to mention the construction process) have already been established. Instead, subsequent design time is focused on making adjustments to achieve a different functionality aesthetic, or to accommodate different materials. Those efficiencies are not confined to the time spent on design either. As Richard explains: 'I tend to over-engineer a piece with extra structure or support the first time around. But the experience of each subsequent iteration allows for refinement or efficiencies to develop in the build to either save material or time, or to increase the flexibility of the design'.

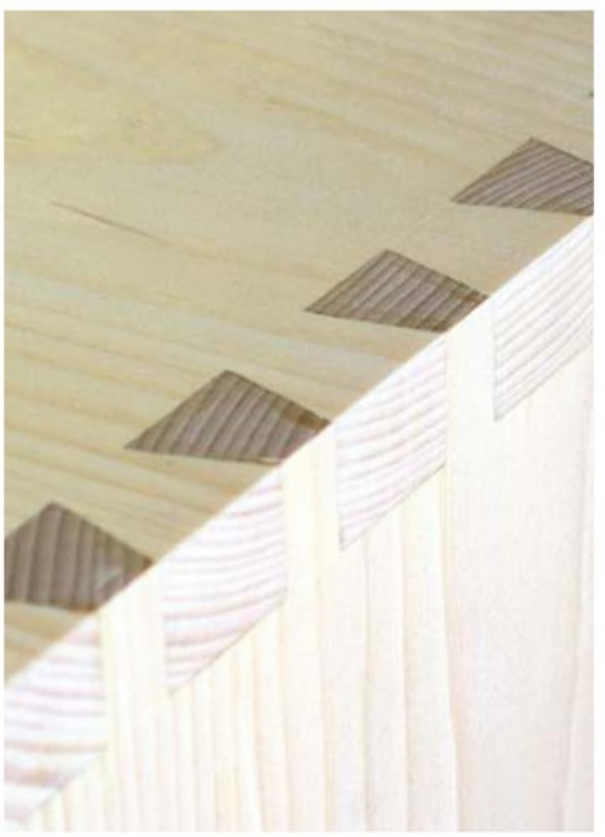
Secondly, having an established base design already built (iteration one – in my case the Policeman's Boot Bench) enables the impact of each design change to be readily compared and contrasted. Again, that might be in terms of functionality, or appearance. By expanding the uses of a base design, you develop an understanding of what functionality can be achieved within a given footprint or internal fitout. This reflects Danielle's experience, as 'it's one thing to see a new pattern carved onto a flat board, but being able to use an actual shrink pot so I can see how the pattern relates to the shape of it allows me to make better informed decisions about what ultimately gets used on the final piece', and for this reason she keeps all of her 'practice boards and failed past projects'.

The backboards are joined with tongue and grooves

Nailing the back boards in place with 'Roman' style nails

You can see several design elements here – dados securing the shelves, and the scalloped underside of the shelves from the scrub plane

Smoothing the exterior



Cleaned up dovetails, ready for finish

The drawbacks of iterative design

No design process is perfect, so are there drawbacks to iterative design? The obvious one, to my mind, is that any process based on repetition or making adjustments to a base design, has the potential to limit design language and result in a narrower breadth of work. Danielle's experience would support this, and suggests that 'iterative design holds me back – I tend to think smaller, be more conservative and limit myself'. Richard adds that 'I think you can become too comfortable with your "hammer" and perhaps have a blind spot for other approaches', although staying interested in other makers' designs and approaches can counterbalance that risk.

Conclusion

Within the context of a broader approach to design, I've found that iterative design can be a useful tool, and one which has some very beneficial attributes. What I find really interesting about using the Policeman's Boot Bench as a base design is that making changes to the internal layout requires only moving the location of the dados, which really emphasises the flexibility of both the joinery and the design. As Richard observed about his own experience with iterative design 'when the project I am building can [make use of an established design feature], I know I can rely on solid experience and approach, and focus on details and aesthetics and not on behind the scenes building techniques'.

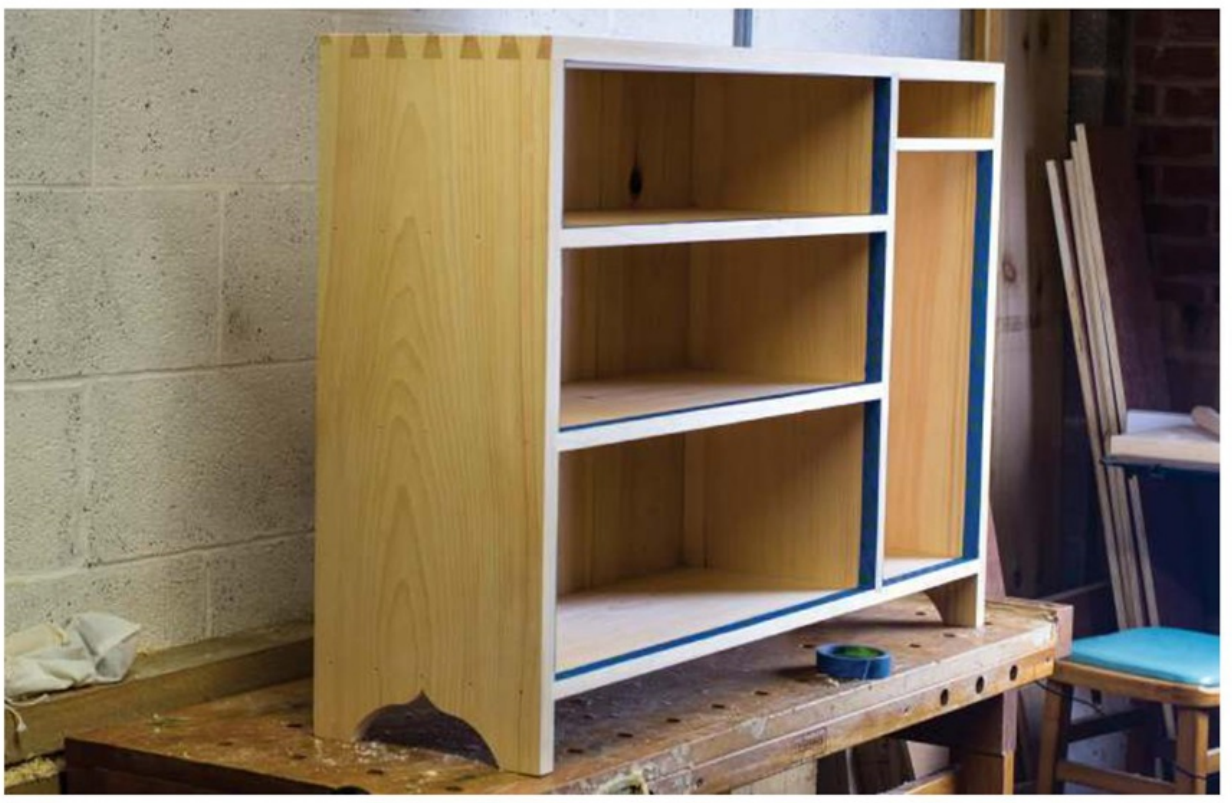
At its root, this iterative design process is about developing a design language and experimenting. In fact, the more I dig into this as a process the more I find that I am engaging in a design conversation with myself and the overall brief of the project. Building that design language presents the opportunity to explore ideas, and draw upon previous experience to trial new approaches.

As Danielle explains, 'when I first got into bowl carving, I set aside 10 or so maple bowl blanks and let myself go wild on them, entertaining any and every idea I had so I could find the extremes of what was possible, including texture. I also have bowl failures that I keep around. This comes in handy during the iterative design process because it allows me to easily expand on previous ideas that I've hashed out on these testers, seemingly picking up where I've left off'.

This represents my first forays into iterative design, and the experiences of some other makers. And so, I shall finish with a challenge – next time you come to design a piece, ask yourself if you need to start from scratch, or whether you have already built a base design that could be adapted. This approach may save you time and provide some unexpected results. *F&C*

Raising the drawer bottom to fit the groove in the drawer sides

A muntin helps test fit the edge of the drawer bottom

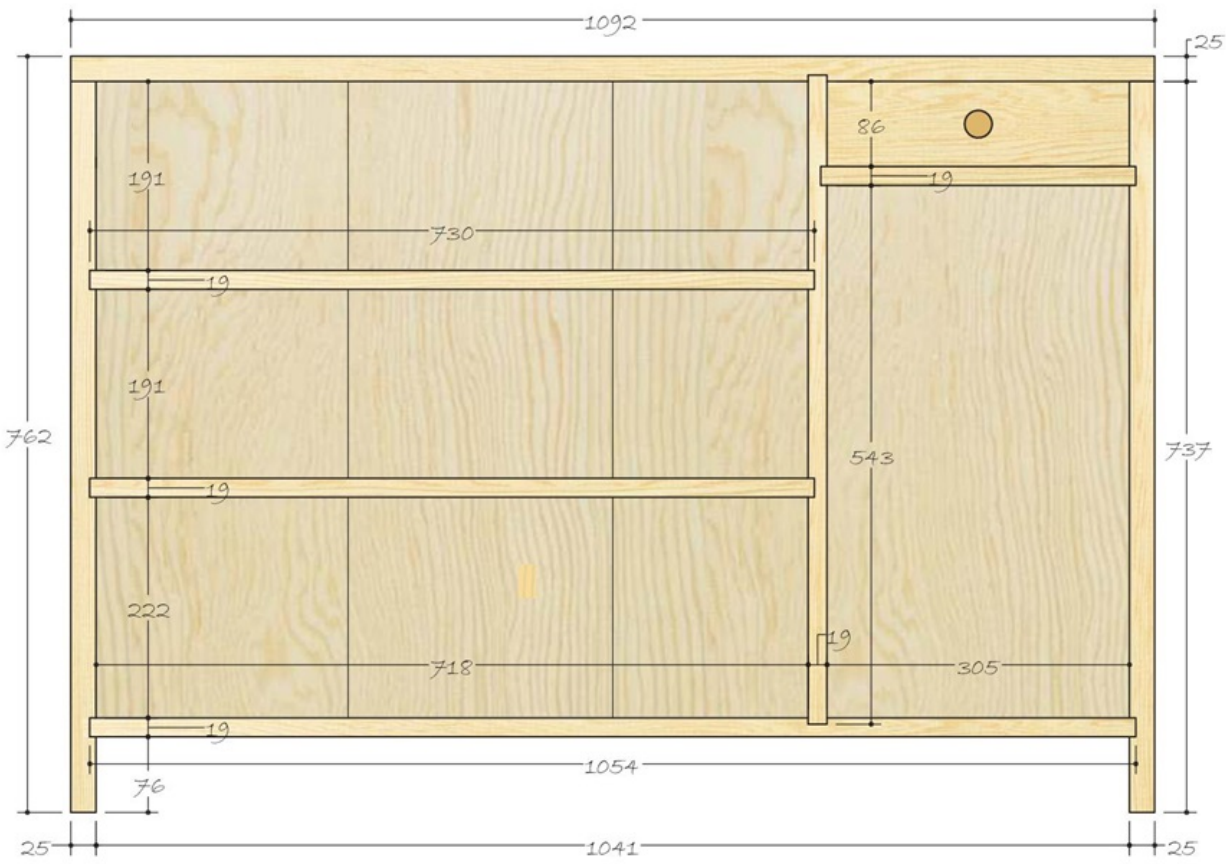


Taping up the casework before painting the exterior

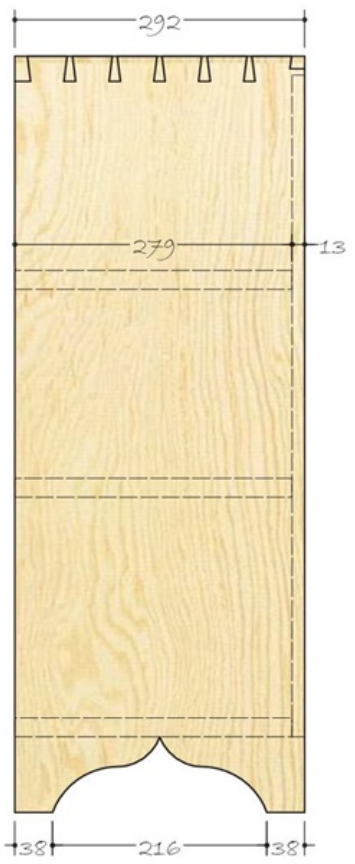
Drilling pilot holes for the Roman nails

The drawer is a major change to the base design, and adds a different functionality

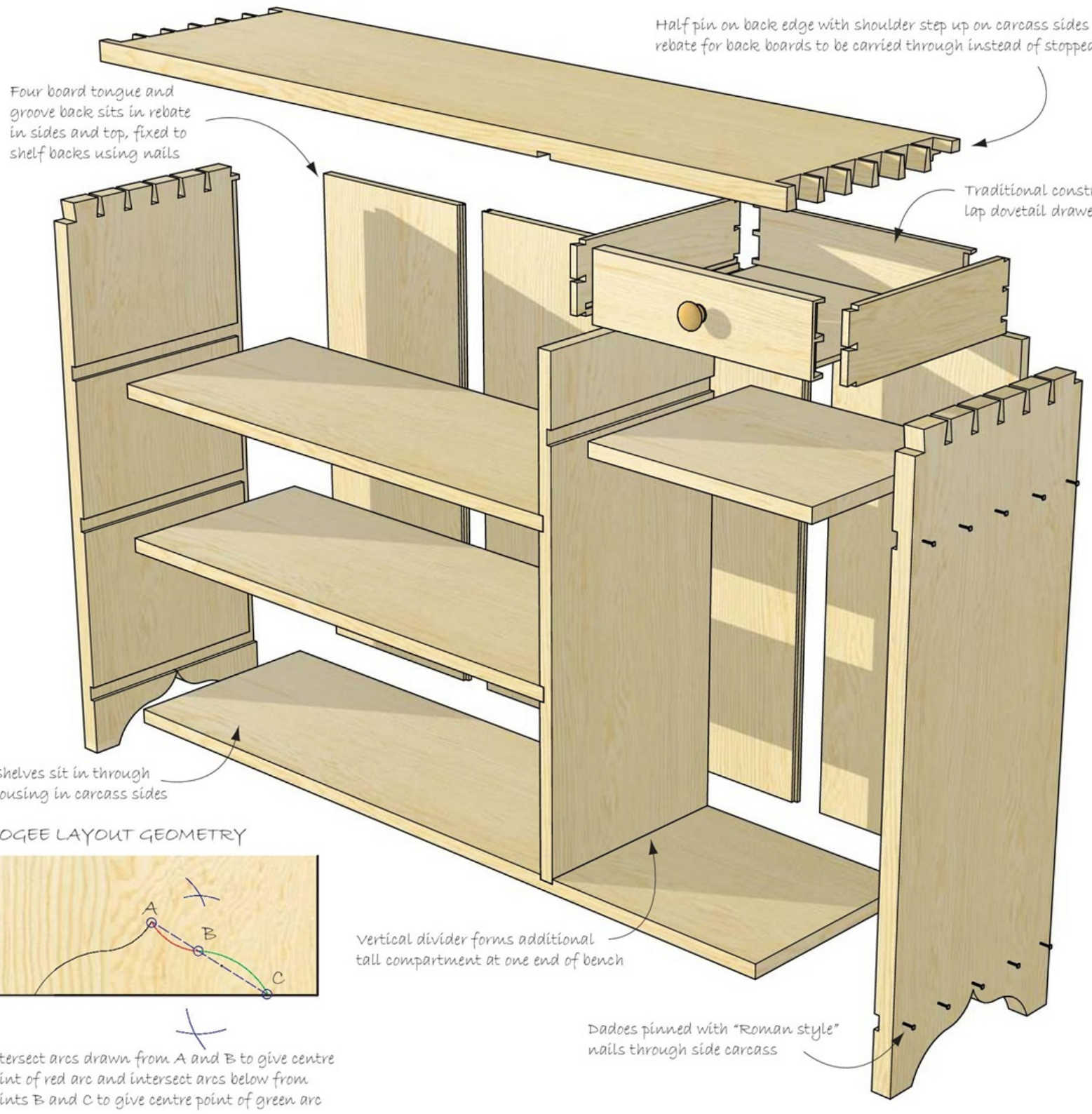
PHOTOGRAPH BY GARETH PARTINGTON



FRONT ELEVATION



SIDE ELEVATION



OGEE LAYOUT GEOMETRY

Intersect arcs drawn from A and B to give centre point of red arc and intersect arcs below from points B and C to give centre point of green arc

UNDER THE HAMMER:

The Private Collection & Gallery of Alain Morvan Antiquitäten

We look at some of the furniture sold at the Bonhams auction

PHOTOGRAPHS COURTESY OF BONHAMS

In March Bonhams held an auction of the private collection and gallery contents of Alain Morvan Antiquitäten. Alain Morvan is a German antiques dealer who has owned a gallery in Munich for the last 40 years. His gallery, Alain Morvan Antiquitäten, was renowned for its collection of antique chandeliers, southern German and north Italian furniture and paintings, carved and gilded mirrors, and jewellery. Morvan recently decided to retire and so sold the contents of his gallery as well as items from his private collection through the Bonhams auction in London.

£5312

A Biedermeier walnut, pollard elm and fruitwood marquetry 'globe' work table, made in the 19th century in Austria. The hinged top encloses a fitted interior on splayed ebonised legs and cloven hoof feet.

£6937

A north Italian painted and gilt carved and gesso console table, made in the late 18th century. The rectangular marble top has a moulded edge above a fluted, acanthus-leaf decorated frieze with olive leaf and berry swags.

£3187

A pair of German 18th-century carved giltwood and gesso console tables. They have serpentine marble tops (one has been replaced) above a lattice cut and scrolled acanthus leaf-carved frieze with central cartouche (one later monogrammed AM) on fish-scale cut cabriole legs and cloven hoof feet.

£3187

A Biedermeier satin birch, ebonised and parcel gilt commode. It has four drawers and is flanked by Classical-style warrior terms.

£2295

A large Biedermeier cherrywood and ebonised partner's desk. The kneehole is enclosed by nine opposing drawers on a plinth base.

£2040

A tulipwood, palm wood and marquetry Table a' ecrire. The oval top sits above a side frieze drawer and writing surface on slender cabriole legs and gilt-bronze sabots.

£1912

A north Italian carved painted and parcel gilt fauteuil. It was made in the late 19th/early 20th century, in the Rococo style.

£1530

A south German walnut, rosewood, boxwood strung and parquetry commode, made in the 18th century or later. Of arc-en-arbalète form, the commode has three drawers, the sides are inlaid with stars and it has bun feet.

£1275

A miniature French 19th-century kingwood and rosewood commode, in the Louis XV style. Of bombe form, the commode has two drawers. It measures 33cm wide, 18cm deep and 29cm high.

Glossary of catalogue terms

Arc-en-arbalète – French for 'crossbow'. In furniture terms, this refers to the shape of a piece.

Biedermeier – Relating to the period in Central Europe (particularly Germany, Austria and northern Italy) between 1815 and 1848 when arts were designed to appeal to the growing middle classes.

Bombe – A curved piece of furniture that bulges outwards in the front and on the sides, and curves in at the base. This was a popular shape in 17th-century French furniture.

Bun feet – Simple, turned spherical or disc-like feet. This style was popular on furniture and accessories from the early 1600s to the 1800s.

Cabriole leg – A type of furniture leg, popular in the first half of the 18th century, in which an upper convex curve descends, tapering to a concave curve.

Cartouche – A carved or cast ornamental tablet or panel in the form of a scroll, sometimes having an inscription.

Commode – A type of furniture, similar to a chest of drawers, that was popular in France in the 17th century. They usually had marble tops, curved sides, cabriole legs and were sometimes fitted with pairs of doors.

Console table – A table with one or more curved legs of bracket-like construction, designed to stand against a wall.

Fauteuil – A type of open armchair with an exposed wooden frame, frequently decorated with carved reliefs and paint or gilding. The style originated in 17th-century France.

Gesso – Plaster of Paris or chalk mixed with glue and applied to flat or carved surfaces and then painted or gilded. On furniture, it is applied in multiple coats for a matte effect.

Parcel gilt – Also known as 'partial gilt', where an object is only gilded over parts of its surface.

Partner's desk – Two pedestal desks constructed as one large desk joined at the front, so that two users can work while facing each other. The style originated in Britain in the 19th century for bank officials.

Rococo – A decorative style that was popular in Europe in the 18th century. It was highly ornamental and theatrical, characterised by the use of scrolling curves, gilding and pastel colours.

Sabot – A wooden shoe made from a single block of wood, traditionally worn by peasants in France.

Serpentine – A curved shape or design, similar to the shape of a snake. Serpentine shapes were commonly used in Rococo-style furniture.

Table a' écrire – French for a writing desk or bureau.

Term – In Classical architecture, a human head and bust that continues as a square tapering pillar-like form.

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Apprentice diaries part two: considered design

Simon Frost continues his design education at Robinson House Studio

PHOTOGRAPHS BY SIMON FROST

Design inspiration: detail of a piece exhibited at Collect by glass artist Maarten Vrolijk

Aluminium dovetail in the curved drawer bank of Marc Fish's L'orchidée desk

'Considered. If you only remember one word from our lesson today, that word should be considered.' That was how Marc Fish concluded his talk with the students on the design and making process for his L'orchidée desk, a tremendously

ambitious piece featuring a first-of-its-kind seamless tambour, aluminium dovetails and a curved drawer bank, earning him his first Bespoke Guild Mark in 2010.

Considered is the word I've tried to keep in the front of my mind over the past few weeks in everything I do at the bench and, increasingly, on paper. Leading up to my 12-week fine furniture making course at Robinson House, I imagined all the new hand skills and techniques I would learn and all the stuff I would make, but I didn't give nearly as much thought to the way I would start to think about design or how much I would enjoy a couple of hours drawing.

'Considered' is the mantra, but if I had to use one word to describe the course, it might well be holistic. It's a course where education is just as important as training, thinking as important as doing, and design as important as making – perhaps even more so.

As you might expect, at Robinson House you're trained to cut pin-sharp dovetails, to tune and master your tools for ultimate precision and strive for the highest levels of craftsmanship with engineering accuracy. But equal importance is given to the way you approach design; how you take an idea and develop it, resisting the urge to rush to the bench and make the first thing you've dreamt up, or even drawn a few sketches of.

First design project

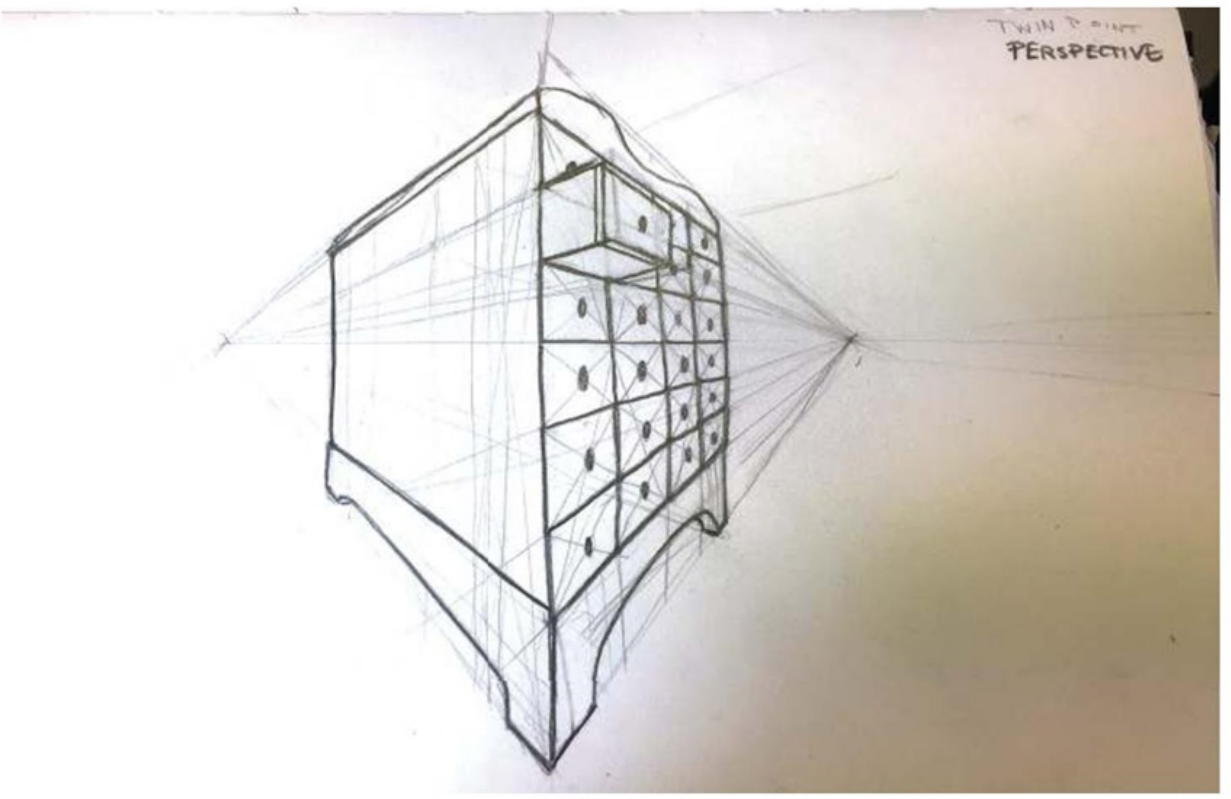
Being a 12-week, rather than full-year, student, I started work on a project very quickly. It meant that, as well as the technical skill building and practical tuition in everything from Verometal application and electroplating to French polishing with *F&C*'s own Derek Jones, I could come away from the course having gone through the entire design and making process on a piece.

My first one-on-one design meeting with Marc was less than two weeks in, up to which point most of the tuition had been focused on getting our tools tuned up, learning and practising how to use them properly, including a challenge to make a pair of winding sticks to a 0.01mm tolerance using only a plane. In the midst of all this, I brought Marc a few sketches of ideas for a bedside table, and considered, it's fair to say, was not the word that came to his mind.

I had settled on a drawer box featuring exposed dovetails and wedged tenons, a pair of traditional, tapered legs at the back, and wild, veneer-laminated legs at the front, contorted into some sort of complex Z-shape that slithered behind and wrapped itself around the back legs. Another variation included a little shelf on the side with a charging phone and a glass of water drawn in just to make clear its utility.

It was all over the place. It was noisy and nonsensical. And aesthetics aside, it would have been impossible for me to make something involving so many different techniques, most of which I would be doing for the first time, over a few weeks.

The ill-considered table was a non-starter, and Marc let me know. I'll focus on my project – which I'm happy to say is nothing like the first, fifth, tenth or twentieth drawing I made – in the third and final part of this series next month.



My first attempt at twin-point perspective

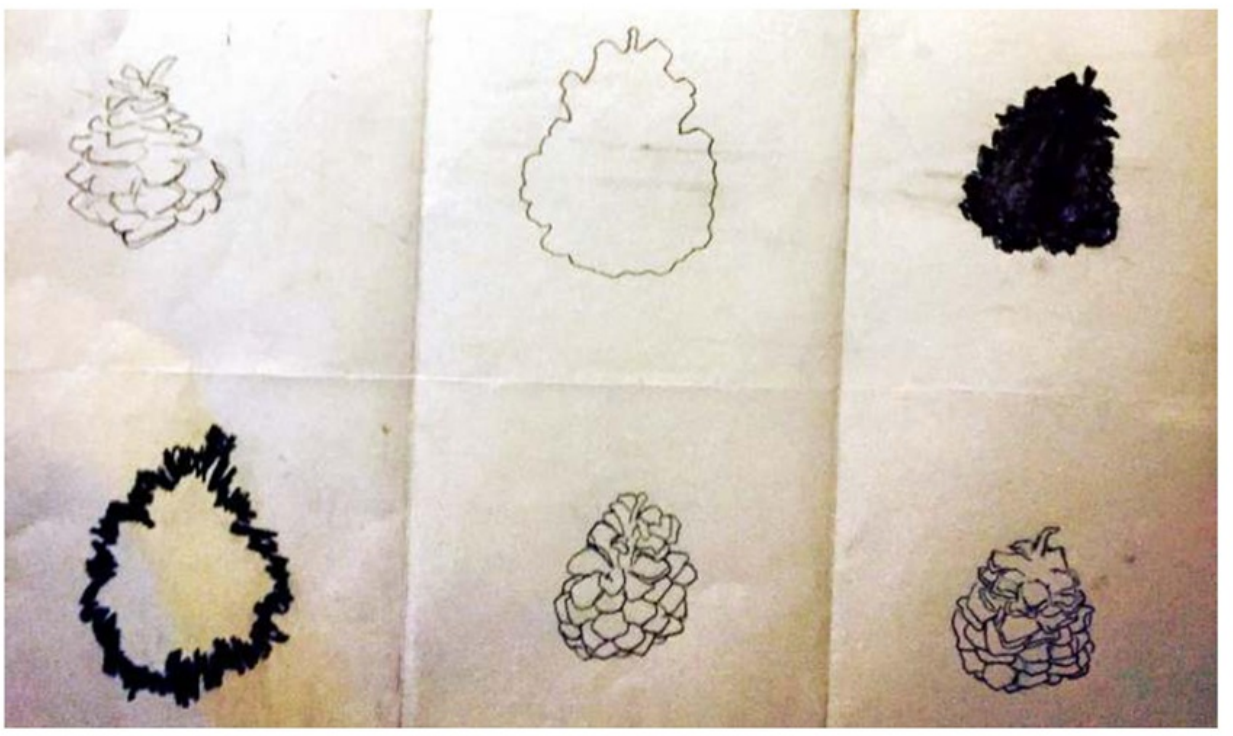
Learning about design

In the following days and weeks, as we became gradually more adept with our tools, the course increasingly covered design aspects, be that our weekly lessons in drawing from visiting artist Mark Anstee, or homework assignments studying notable furniture makers and the threads that run through the form's history from each designer and movement to the next.

We visited the Collect exhibition at the Saatchi Gallery in London, which hosts works by the best regarded designers from around the world. Vessels, jewellery, sculpture, textiles; there was, in fact, relatively little furniture, and it served as a reminder that great design is something that designer-makers working in any medium can learn and take inspiration from, regardless of the form it takes.

One of my favourite sessions at the studio so far was on creating drawings for a meeting with clients. As well as looking at the different drawing materials and techniques that can help to turn technical sketches into pieces that will win you the commission, we were presented with several very different styles of drawing and annotation, from Marc's own work to the late David Savage's distinctive watercolours and Silverlining Furniture's exquisitely stylised, architectural-style sketches.

All of this is daunting and exhilarating in equal measure – daunting, because this is the standard we budding designer-makers will be going up against as we try to make our way into this industry; exhilarating because our drawings are just another element of the design identity we are all eager to create. Making is what I had expected before I came here, but the thrill of design was not something I had really considered. F&C



Experimenting with drawing techniques in six 30-second drawings of a pine cone

In part three... Simon continues working on his first project.

Selecting and using saw files – part 1

Mark Harrell explains how to select the right file for your saw

PHOTOGRAPHS BY MARK HARRELL

Ever sneaked an eBay package into your workshop late at night containing a box of saw sharpening taper files, glad you were able to snap them up new? You unwrap them fresh out of the vapour corrosion inhibitor paper where they have been carefully interleave-wrapped one by one, and lay them out on your workbench, marvelling at their crisp teeth and uniform taper. You then gird your loins, resolved to sharpen your own saw for the first time, attach a handle to one of them, and, thus armed, joint a row of flats on your 26in Disston No. 12 Handsaw with a fresh mill file. Aligning your light and donning safety goggles, you carefully take your first stroke into the row of gullets you intend to bring back into perfect symmetry.

And another stroke, followed by another. You squint through your goggles impatiently, wondering if you're actually abrading metal or just going through the motions. It seems you're having to really make that file bite into your toothline to get it going. And then halfway down the toothline you realise the bitter truth: the name on the box may denote a time-honoured company, but the reality is you've worn out the file before you could even finish the first pass. Holding your file up to the light, you see that the corner edge looks shiny and slick, and now you're mad. Really mad! Spent $80 for a box of files that are only good for the recycling bin. Disgusted, you resolve to ship your saw to one of the saw docs servicing the hand tool industry for a restoration job you really wanted to do on your own.

Old stock files

Welcome to my world. It didn't take long to figure out that the only truly decent files around made by Simonds, Johnson, Nicholson and Oberg are the ones you see on eBay with the raggedy, tattered boxes on the outside. In other words – you want the files made before companies began farming the work out to China in recent years. Those beat-up old boxes may look ugly on the outside, but there's actually gold on the inside, because those new old stock files made in the US before NAFTA are hardened and tempered significantly better than the trash manufactured offshore today.

We've been sharpening saws at Bad Axe for 10 years now, and new old stock files were our lifeblood for virtually our entire existence. The rule of thumb is, 'the rattier the box, the better the file'. So for the past decade we snapped up every new old stock file we encountered, and grimaced as supplies dwindled on eBay and flea markets, and prices escalated.

But availability is always finite when something is no longer made or manufactured to the quality desired. First to go were the 4in xx-slim files, the default dovetail saw file of choice. You just don't see new old stock for this category anymore on eBay, period. Then the 5in xx-slim file, great for carcase saw work, dried up. You can still find 6in xx-slim for your tenon and mitre saws, but even that size is noticeably dwindling.

There are reputable European file makers still around from whom one may source files: Friederich Dick from Germany (distributed in the US by Bad Axe and in Europe by Dictum), Vallorbe from Switzerland (distributed in North America by Lee Valley Tools) and Bahco – a Swedish firm making files in Portugal also distributed in North America by Lee Valley Tools.

Look for the old boxes when buying saw files online – chances are, they are new old stock files made before companies began outsourcing them to other countries

Needle files

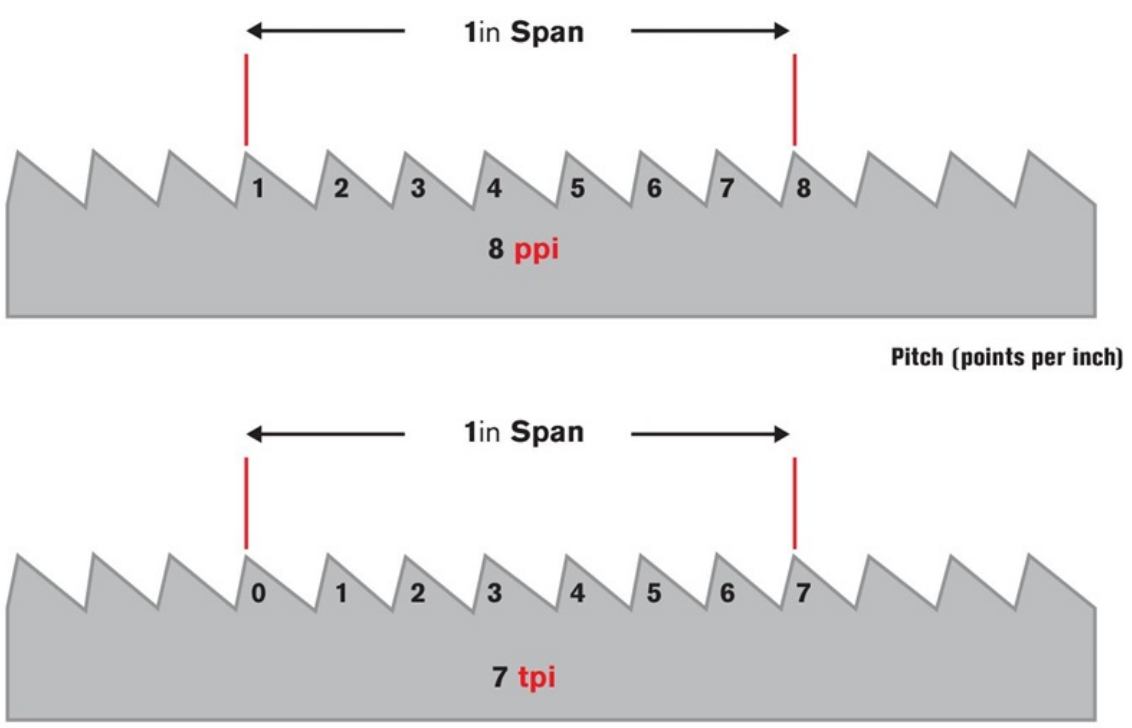
What many people may not realise is the impact having a needle file in your arsenal can have on your finer-toothed saws in the 14-pitch and finer ppi counts. Both Friederich Dick and Vallorbe make them in three-square format. Needle files are nearly three times as expensive as a regular saw file, but they'll give you a deeper gullet and longer cutting edge, and last twice as long for dovetail and carcase saw work. At Bad Axe, we can use a needle file for six separate sharpenings before the file wears out.

Which brings us now to the file size chart below, which identifies a file type and size per ppi. Traditional saw filers have long held to the convention that 4 xx-slim is ideal for filing 14 ppi and finer, due to its diminutive cross section for a diminutive tooth size. And it still applies today.

What follows is how Bad Axe integrates needle files and slims down certain standard saw taper file sizes to get the kind of result that works best for how Bad Axe sharpens all saws, including the saws we make and vintage saws our customers still send in to us for restoration.

FILE SIZE CHART

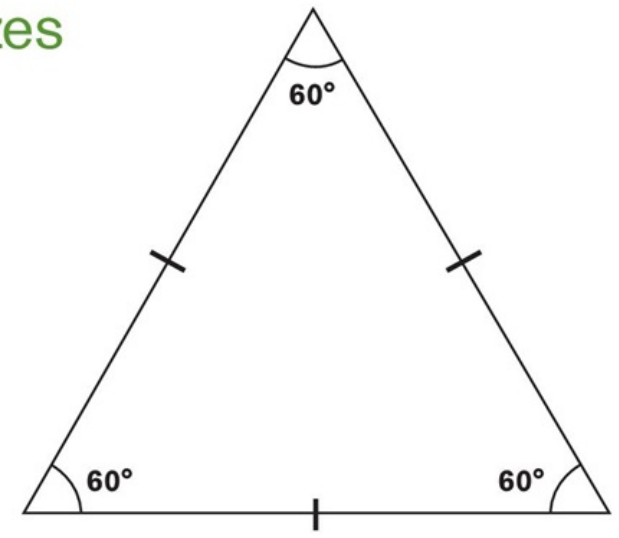
PPI	Size File
16–17	140mm needle
15	160mm needle
14	200mm needle
13	4in xx-slim
12	5in xx-slim
10–11	6in xx-slim
9	6in x-slim
7–8	8in x-slim
5½–6	8in slim
4–5	8in reg
Jointing	10in Mill File
Deburring	Chainsaw File



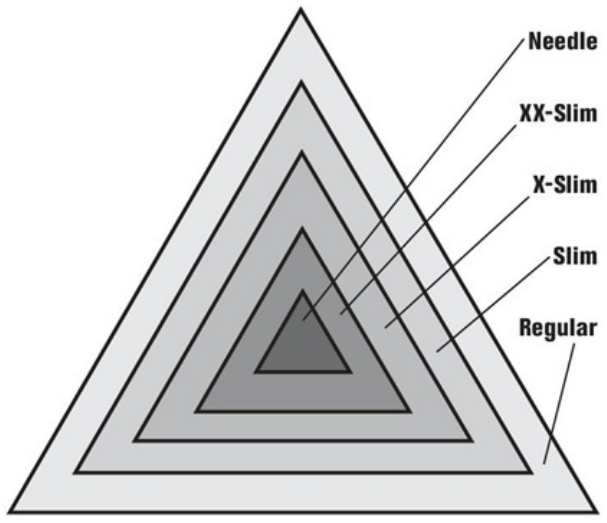
Sawtooth terms and sizes

A word first about sawtooth terminology and saw sharpening taper file sizing conventions: generally speaking, you want to present a little more than twice the face of a file in comparison to the size of a given tooth. This lets you use the file a minimum of three times for three saw filings without wearing the file out by overlapping a given sharpening into an area along the face already used.

That said, there exists nonetheless a degree of flexibility as long as you don't reduce a tooth into little nubbins by using too large of a file's cross section.



The cross section of both needle and saw sharpening files consists of a 60° equilateral triangle



Cross section sizes

Terminology

- PPI vs. TPI: Points per inch (ppi) is measured by how many points are bracketed by inch-long increments of a ruler, beginning with the first point at the increment, and concluding with the last point of the next increment. Teeth per inch (tpi), is counted one less point, with the count beginning at the second point as 'one', then moving forward till the last point hits the next increment. For instance, an 8 ppi handsaw is considered 7 tpi. Sawmakers prefer to use the ppi method when denoting pitch.
- Pitch: Points per inch, or ppi.
- Cross section: The cross section of a file is a 60° equilateral triangle, just like a saw tooth.
- Taper: A saw sharpening file is referred to as a taper file; that is, it tapers from the tip to the tang, broadening in cross section along the way. This enables the sharpener to hit two adjacent tooth edges per gullet.

Sizing conventions

- All saw taper files are designated by length and cross-section. Length is generally graduated in inch-long increments, starting at 4in files, then graduating to 5in, 6in, 7in and 8in. Cross section sizing begins at double-extra slim – xx-slim for short – then goes to x-slim (broader in cross-section), slim (broader still) and regular for the coarsest teeth.
- For example, one of the smallest files you can use for dovetail and carcase work is a 4in double-extra slim, or 4in xx-slim for short. This means it's a diminutive file for 13–15 ppi toothline (although we prefer to use needle files for that purpose), and has a small cross section.
- Personal preference: Though we could use a 4in x-slim with a correspondingly broader cross-section for 12 ppi, we prefer to use 5in xx-slim, since the extra length gives us the broader cross-section we seek. We prefer still using the xx-slim cross-section for a 6in file, which hits the 10–11 ppi range quite effectively, followed by a 6in x-slim for 9 ppi and so on.

Clamping two adjustable spanners onto the back of a misshapen saw to correct any twist

Tapping out kinks in the saw plate with a hammer

Recommended file sizes by type and utility

With that in mind, we use needle files for all – ALL – of our dovetail and carcase saw work, ranging from 14 ppi (think Bayonet up to the 17 ppi configuration we use on our Half-Blind DT saw and Luthier saw). Three different sizes of needle file apply: 140mm for our 17 ppi saws, 160mm for our 15-16 ppi saws (10in and 12in Stiletto DT saws) and 200mm for our 14 ppi Hybrid DT/Small Tenon Saw and Bayonet Precision Carcase Saws. Alternatively, we could use a 4in xx-slim file for all of these saws, and it will work, but we find that the needle file simply gives us a longer cutting edge where the thin plates of these saws truly excel for furniture-grade cuts in quality hardwoods.

We then move into the more conventional saw taper files for our coarser-toothed carcase saws and tenon saws, such as what you see with our 14in, 16in and 18in tenon saws and our 20in mitre saw. The 4in xx-slim is not too fine to handle 13 ppi – again giving one a deeper gullet with longer cutting edge. A 5in xx-slim works great for 12 ppi, where we file the majority of our tenon saws, our 14in sash, 16in tenon and 20in mitre saws. A 6in xx-slim works fine for larger 18in tenon saws and vintage mitre saws and panel saws frequently filed at 10–11 ppi.

As we progress into the world of panel saws, a 6in x-slim or 7in xx-slim works out perfectly for pitches at 9 ppi. Graduating to 8in x-slim finds a good fit for handsaws filed 8 ppi, and 8in slim for 7 ppi kerfing planes and rip filings at that pitch. 8in slim completes the hand and panel saw realm for 5½ ppi and 6 ppi. Our largest file at 8in regular addresses 4 and 5 ppi, pitches best reserved for coarse ripping handsaws and frame saws.

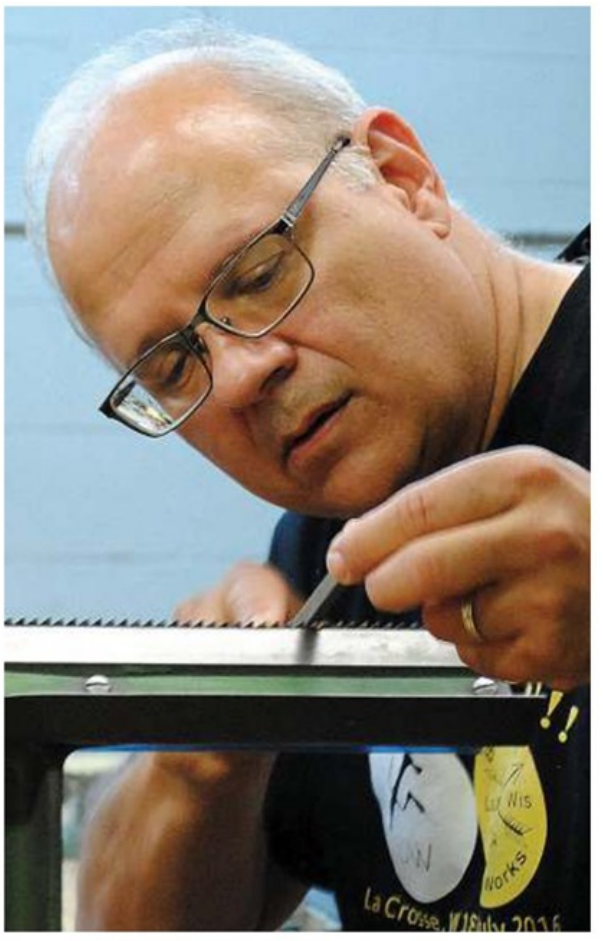
Exceptions to the 'rules'

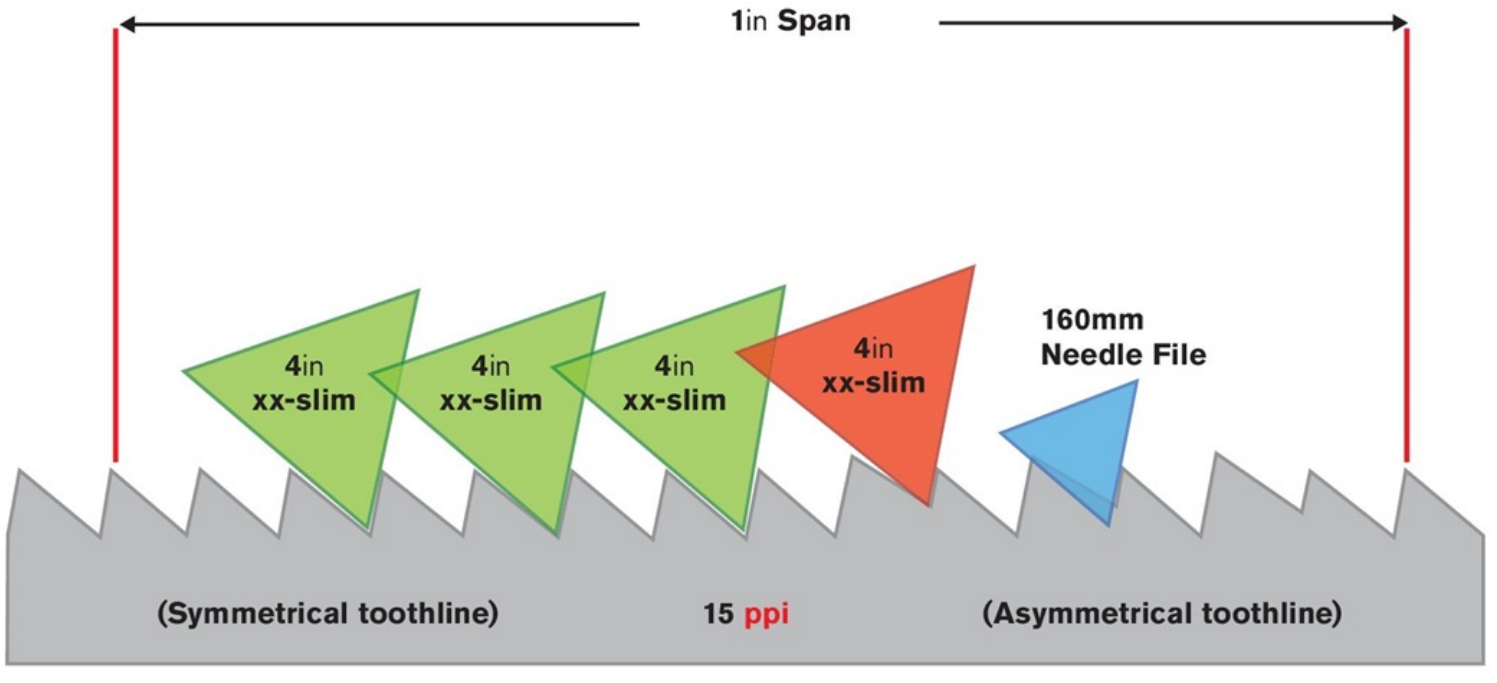
Notice again that we at Bad Axe prefer to use a 200mm needle file for 14 ppi filings, a 160mm file for 15 ppi filings, and 140mm for 17 ppi and finer filings. That is our preference. One can just as easily use a 5in xx-slim file for 14 ppi and 4in xx-slim for 15 ppi and finer. Your teeth will be a little nubbier, but perfectly serviceable. We simply prefer using the needle file approach for our finer pitches, because it gives us a deeper gullet and longer cutting edge for our dovetail and carcase saws with correspondingly thinner plates. That said, needle files are significantly more expensive than traditional saw taper files, and so that is why 4in xx-slim and 5in xx-slim remain a viable and less expensive solution for dovetail and carcase saws.

Likewise, one can 'size-up' or 'size-down' for reasonable results. For instance, let's say you have a 10 ppi tenon saw. While a 6in xx-slim is a tad small in cross-section for this pitch, you may find yourself (living in a shotgun shack) wanting to size down to deepen the gullets of a vintage saw where the last sawfiler has clumsily filed a big-tooth/little-tooth pattern, and the gullets are very asymmetrical; you now seek to deepen the gullets as much as possible. Even though the 'correct' file size for this pitch is 6in x-slim, the 6in xx-slim is a better file to use given your asymmetrical gullets dilemma. The tradeoff is you'll wear it out faster than the 6in x-slim.

Conversely, you may have a scenario where your toothline is completely overset, a common scenario when picking up saws off eBay. Say you have a 6in ppi handsaw where a 8in slim file will optimise the toothline, but because the teeth are overset, you want to hog off more metal so you can reduce that set. In this scenario, I'd use an 8in regular file to knock the teeth down, then re-file it with an 8in slim file, re-set the teeth appropriately, then brush it up once more with the 8in slim file. See how that works?

These deliberate file choice considerations stepping up or stepping down have a direct correlation to how much set you want to keep or reduce given the scenario with the saw you have purchased or inherited. *F&C*





A needle file will carve a deeper gullet without overwhelming the adjacent tooth when encountering 'big tooth/little tooth' patterns. One can use the same principle by switching file size for coarser tooth patterns as well

NEXT MONTH In Part 2, Mark looks at jointing and deburring, plus safety considerations.

The Midlands Woodworking Show 2019

Richard Wile reports from the annual woodworking and power tool exhibition

The Midlands Woodworking Show started promptly at 10am on Friday March 22 on a cool spring morning in Newark. The show has been a regular stop for a few years and as such has grown into a nice event that brings out all types of folks interested in all types of woodworking. This two-day event in March is an important opportunity for the local woodworking community to renew contacts and get updated on the latest in the craft.

Power and hand tools

On the show floor there were many displays by power tool vendors selling all sorts of equipment to outfit any type of shop and attendees could see and touch various options for all types of stationary tools. This type of access provides a much better experience than trying to make 'shop buying decisions from a print or online catalogue. Of note to furniture makers, the latest in off-the-shelf CNC kits were demonstrated, and following the recent trend in 3D printing, a 300mm square-bed CNC turn-key setup can now be had for £2500, a fraction of the price they sold for only a few years ago. This makes it affordable for the small 'shop or home woodworker to be able to add engraved panels or carved details to their work.

Also a number of vendors supplied all sorts of small home workshop supplies, with boxes and boxes of bits and pieces, from fasteners to small power tools to fill every need. A large woodturning emphasis had many of the local guilds providing demonstrations as well as vendors of all flavours selling all types of supplies and tools for the avid turner.

One major upgrade to this year's show over previous incarnations was the addition of a hand tool section facilitated by Mike Hancock of Classic Hand Tools (CHT). The Ipswich-based company is known for supplying the finest in hand tools and accessories to UK woodworkers from around the world. In addition to the knowledgeable and helpful staff from CHT, Mike also invited a variety of special guests and demonstrators to improve the hand tool experience for attendees.

Long-time CHT partners Veritas and Lie-Nielsen's displays profiled the product lines of these well respected North American manufacturers. Curtis Turner from Lie-Nielsen was present to help attendees understand the product line and demonstrate key skills such as sharpening and plane techniques. Many people took advantage of the opportunity and added some of these fine tools to their arsenal.

IMAGE COURTESY OF NELTON EXHIBITIONS

UK tool makers Skelton Saws and Ollie Sparks Planes were demonstrating their high-quality handmade tools. In addition to his acclaimed line of fine handsaws Shane Skelton was profiling his new Thomas Chippendale dovetail saw with many new innovative features that make this saw not only a wonderful tool to use, but also breaks new ground in saw construction, ensuring the buyer's grandchildren will get the same performance as the original owner. Ollie Sparks was featuring his new forged hand plane, inspired by an early 20th-century William G. Scott mitre plane. He has cast his interpretation in beautiful phosphor bronze featuring a unique open throat with lugs to secure the ebony wedge during use. The svelte clean lines of this plane are typical of Ollie's fine work and show his continued evolution as one of the finest plane makers out there today. With young makers like Shane and Ollie, the future remains bright for UK toolmaking.

PHOTOGRAPHS BY RICHARD WILE

Ollie Sparks' stunning new lugged plane in phosphor bronze and ebony is inspired by the William G. Scott mitre plane of the last century

Shane and Jacqueline Skelton ready to answer questions on saw-making as well as the full line of Peacock Oils now being made by Skelton Saws

Plane-making legend Bill Carter looking over the latest Lie-Nielsen planes with Mike Hancock and Curtis Turner

Curtis Turner from Lie-Nielsen tools explaining the nuances of the LN Scraper plane to *F&C* contributor Kieran Binnie

Displays and demonstrations

The International Boatbuilding Training College from Suffolk had a large display showing some of the complexities of joinery in boatbuilding, much of which translates well to furniture making. They also had an excellent selection of veneers for sale, many of them vintage burls that have become very hard to find.

Other well-known personalities appearing under the Classic Hand Tools umbrella included green woodworker Lee Stoffer from Covert Craft demonstrating spoon carving, Brian Walsh showing his wizardry with Japanese joinery and the Rocking Horse Shop from Fangfoss.

Well-known to *F&C* readers, furniture maker and luthier Kieran Binnie was in attendance talking all things hand tool and progress on his current book project with Lost Art Press. MAC Timbers rounded out the CHT corral and a steady stream of some of the finest timbers procured from MAC were seen marching out the door.

To assist in the development of the next generation of furniture makers, the friendly folks from Newark College's Schools of Furniture Making and Joinery were present to answer any questions attendees had about their programmes. Ensuring that we have an ongoing supply of fresh talent from the East Midlands entering the craft is an important part of their mission.

Attendance at the show was brisk until mid-afternoon both days and seemed to represent a good cross-section of ages, however, more younger people attending on their own would bring greater promise for the preservation of the craft for future generations. Our mission as veterans of the craft needs to be the promotion of woodworking to the younger generations at every opportunity possible. Shows such as the Midlands Woodworking Show are important in helping to achieve this mission. *F&C*

The International Boatbuilding Training College from Suffolk showed off some of the creative joinery used by boat builders to execute their craft

Richard Preece and Mick Dews from Newark College Furniture School looking to recruit the future generation of makers for the Midlands

Peter Tree, long-time chair maker from Lincolnshire talks all things Windsor chairs

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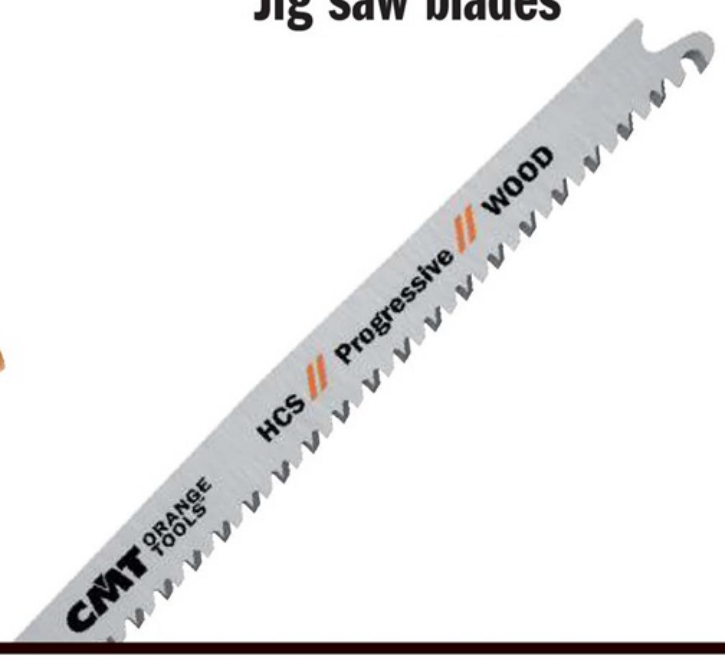
Hole saws

Jig saw blades



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Bench top jigs for consistent tapering

Brad Holley demonstrates how to make and use a set of bench top tapering jigs suitable for small scale components

PHOTOGRAPHS BY BRAD HOLLEY

If you've worked in wood for any length of time no doubt you've had the occasion, necessity or desire to reduce a stick of wood in thickness towards one end. A taper can provide a fresh injection of design flair into a workpiece such as a table leg. It can shore up the strength of a joint such as the tapered tenons in chairmaking. A taper can also help to cover all manner of sins in fitting parts together. The legs on my dining room table, sitting bench and queen-sized bed each have tapered legs. I've used different techniques for producing a taper spanning manual to power assisted, and the lawless realm in between. In this article I'll describe how I made a few simple wood jigs that will allow you to easily and consistently produce tapered wooden chopsticks using hand planes that you already own and materials that are likely lying on your workshop floor.

Many years ago, before I took up the hobby of woodworking, a friend had given me several pairs of chopsticks as a birthday gift. They were not made by the gifter, but were obviously handmade, each adorned with unique features and embellishments. I adored them and as my woodworking hobby grew I kept in the back of my mind the desire to make chopsticks of my own one day. While scrolling through the web a few years ago, I came across a three-sided wooden jig that the designer secured in a vice to make perfectly tapered chopsticks.

The design was beyond my skill level to re-create so I set off to produce my own, simplified version. The two challenges I came across in making chopstick-making jigs were 1: how to secure the work, and 2: knowing when to stop removing wood. The steps below illustrate how I addressed these challenges both in designing the jigs, and also in making a temporary modification to my trusty bench plane.

The jigs

To make chopsticks using the method I describe requires four jigs. The first two jigs are used to taper rectangular sticks evenly on four sides; the third is a 'v-shaped' jig which allows you to form an octagonal tip, and the final jig is for troubleshooting difficult grain.

Before you begin a journey, it's important to know where you want to go. I want to be able to produce chopsticks that are approximately 9¾in long, ¼in square at the butt end and ⅛in square at the tip. For that, the jigs need to be somewhat longer than 9¾in and the groove that holds the stick somewhat wider than ¼in. The jig itself should be wider than the bench plane that you are going to use so that it is well supported while working. I suggest using construction timber, such as a 2x4, cut to 12in lengths, jointed and flattened on each face.

Not one to follow my own advice however, I found a clear, quartersawn 2x6 in my timber rack; left over from bunk-beds that I built for my sons a couple of years ago. It had twisted some, so I cut it into 2ft lengths before jointing and thicknessing it to just over 1¼in. I ripped a 1⅜in piece from each side, and a ⅜in piece from the leftover which will become the recessed shoot-channel.

The recessed shoot-channel combined with a planing stop will help to secure the work, addressing the first challenge I mentioned above. The second challenge, knowing when to stop planing, relies on temporarily adhering thin strips of wood on the underside of my No. 4 bench plane – much like how Japanese master woodworker Toshio Odate modified his kanna plane to thickness kumiko strips. The wood strips act as a depth-stop in that the plane will stop cutting once the thickness of the work above the jig is equal to that of the wood strip thickness. They are made as thin as you can and are secured with two-sided tape on either side of the plane's blade. Mine are just proud of 1/16in. In a pinch, you could reduce a too-thick strip by securing your plane sole-up in a vice, retract the blade and use another plane to shave the strip to the desired thickness. After you've carefully measured the thickness of the wood strips it's time for a bit of maths before we re-assemble the jigs.

Prepare a couple of wide boards to the same thickness

Harvest the separate components from the outside of the boards to avoid the pith

When reglued the jigs need to be wider than your bench plane, in this case a regular #4

Calculations and measurements

Let's presume that your wood strips are like mine, 1/16in thick, and that you want to make chopsticks that are 1/4in square at the butt, and 1/8in square at the tip. Start with what will become the second tapering jig. The shoot channel will be recessed to that depth, less the thickness of the wooden strips affixed to your plane (plus the slight amount that the blade extends beyond the sole of the plane – in a pinch, err on making the jig too deep). This means that the shoot channel on the second jig will be 3/16in deep at the start, and 1/16in deep at the tip. These measurements should be taken approximately 1in away from each end. The jig that precedes this one, the primary tapering jig, ought to be just slightly deeper at each end – 1/16in more is sufficient. Record these measurements using a pair of small combination squares.

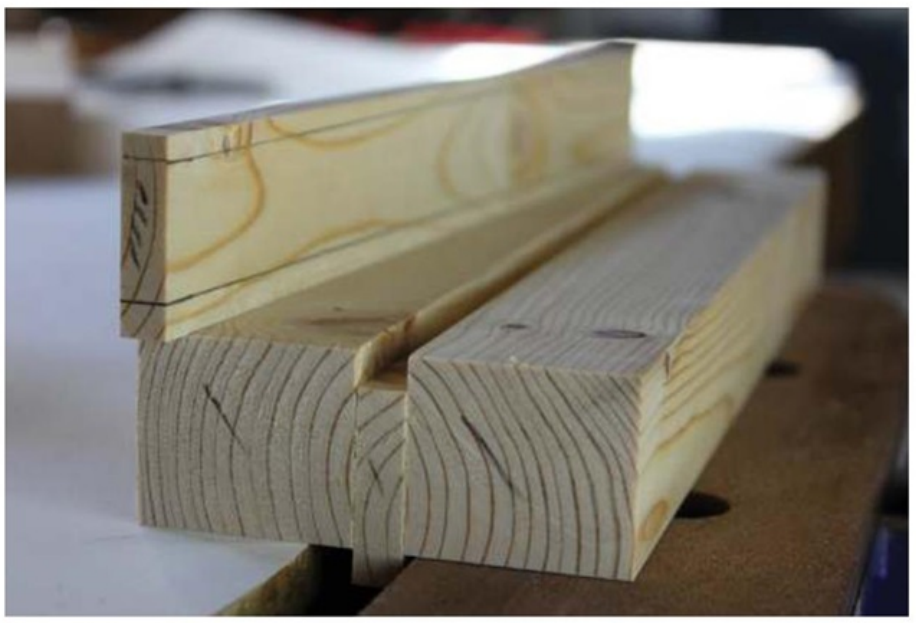
Use a multi square to measure the thickness of the strips

Assembling the jigs

The quickest route I've found to accurately and reliably transfer these measurements to the jigs involves making another jig. Because the v-shaped jig is made of only two parts, we can repurpose the 3/8in wide scrap. Transfer the above measurements to each end of the stick and connect a line between them to use for reference when reassembling the jigs. I carefully mark each end with either a '1' or '2' so I know which jig I'm making. With glue spread on the inside faces I reassemble the three-piece jig over a narrow gap in my bench vice with the middle part unsupported so that I may use the depth jig and a mallet to precisely recess each end to match the desired taper. After double-checking that nothing has shifted and that the two halves are level with one another I carefully secure the jig in a pair of clamps overnight. The same process is repeated for the other tapering jig. The 'difficult-grain' jig is done the same as the secondary. The v-shaped groove is just two parts and its namesake is easily achieved by chamfering the inside faces by approximately 1/8in with a block plane.

When the jigs are out of the clamps you'll first want to plane the underside of the jigs flush. Next, make a shallow, perpendicular groove about 1/4in wide for the plane stop (1in from the shallow end of the jig) and bench hook (on the underside 1in from the start). The difficult-grain jig is reversed such that the plane stop is at the deeper end and the bench hook cut on the underside at the opposite end. This jig comes in handy when you have grain that is disagreeable to your desired planing direction and can be used for the final two-or-so passes. A card scraper or small block plane can be equally useful here.

Mark out the tapers on a spare piece of timber to use as a depth guide later



Assemble two jigs over a gap in your vice...

... and use the depth guide to set the shoot strip to the right depth

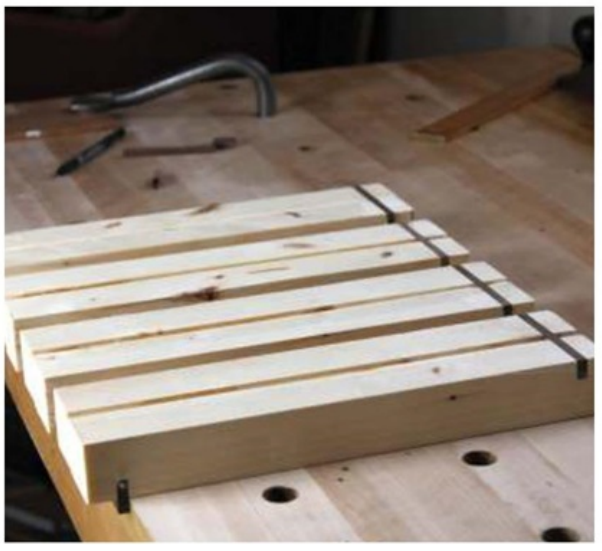
The v-groove jig has a chamfer applied to two corners

With the shoot strips set, tighten the clamps and leave to set

The underneath of the jigs will have the excess material from the shoot strip protruding

Plane the bottom of the jigs flat

Cut grooves in the jigs for a bench hook and the stop



Plane the stops flush with the top surface of the jig

Troubleshooting

Finished sticks are too thick

- Reduce the thickness of the wooden strips on the sole of your plane OR
- Reduce the thickness of your secondary jig – a few passes with a fore plane should suffice

Finished sticks are too thin

- Use thicker strips on the sole of your plane

Not enough taper

- Wrap a narrow strip of wood in medium-grade sandpaper and carefully remove waste in the shoot channel at the deeper end
- Remove waste from the tip end of the jig with a larger bench plane

Difficult grain

- Difficult grain jig – plane the stick in the reverse direction – from tip to start. Or use a card scraper to focus on one small area
- Skew the plane slightly or re-hone your blade

Making the chopsticks

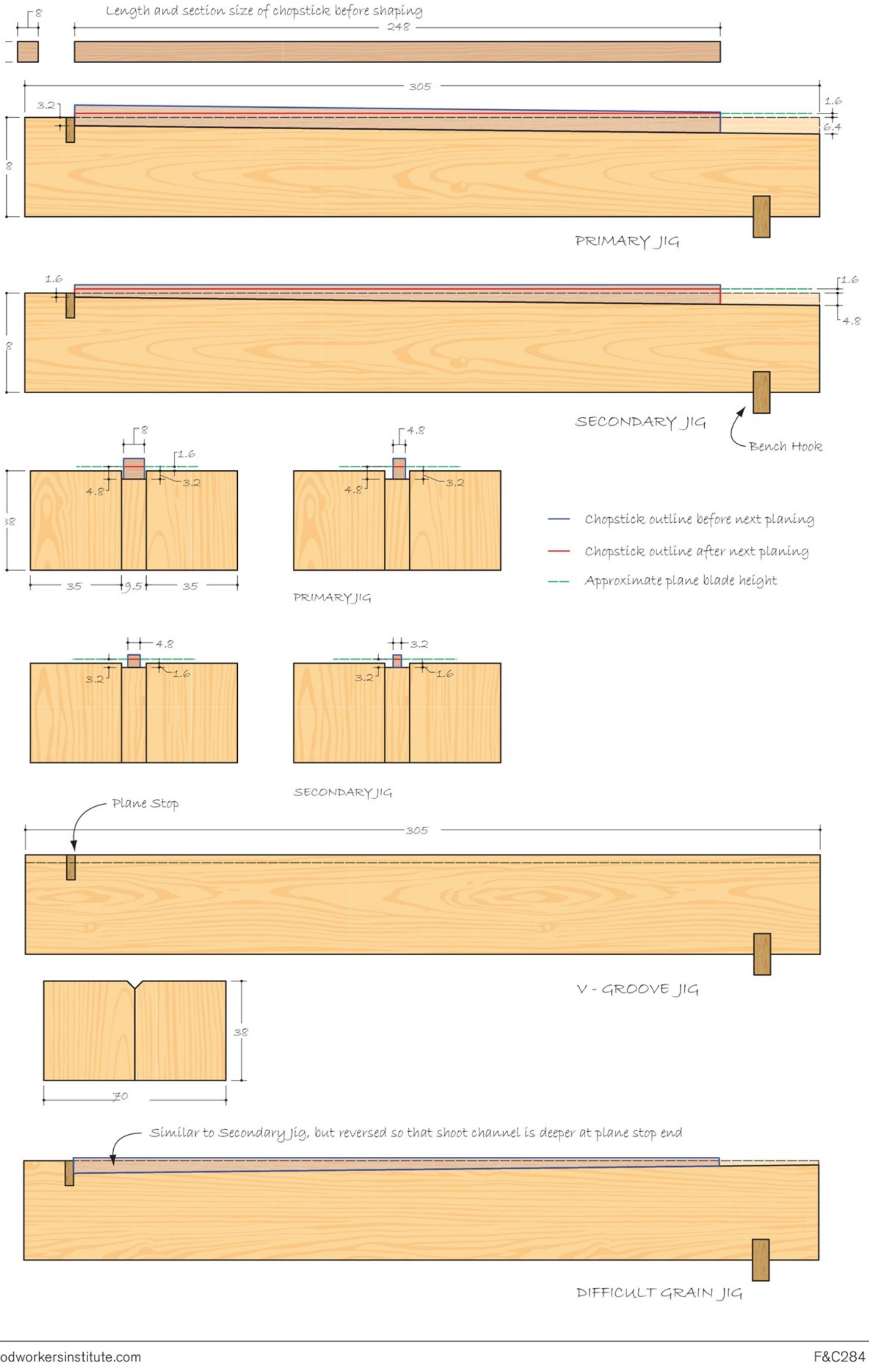
Now, you are ready to make your very own chopsticks! I suggest starting with stock that is 5/16in square and 9¾in long. Any hard, straight-grained wood should suffice. In the primary jig you'll plane two adjacent sides. When the plane no longer produces shavings that's your cue to rotate the stick by 90°. Sides three and four are tapered in the secondary jig in the exact same fashion – be careful to rotate in a consistent direction; e.g. clockwise). If you incur difficult grain then use the appropriate jig to rectify it. The v-shaped jig requires a small block plane. I take three or four full-length passes to break the hard angle and then four or five short passes starting about 3in from the tip. That is usually enough to chamfer the arris. Watch your progress carefully. Applied to each of the four edges you ought to be left with an octagonal tip that is both pleasing to the eye, and more adept at gripping food.

You may wish to experiment with different woods, scarf joints or even splines to add decoration. For a simple embellishment I like to chamfer the butt end using a simple mitre-jig to form a pyramid.

Other approaches

Like most tasks in woodworking, there are several ways to go about making chopstick jigs. A digital friend of mine makes all three channels in a single, wider piece of wood, which seems much tidier. My earliest attempt at making these jigs involved the router table, a fence and a perpendicular cleat that inclined the jig at one end. A fully manual approach might be to hand saw shoulders for the channel, rout or plough the trough to an even depth and then strike the taper at one end with a marking gauge and plane to the line. Further, a simple plane stop and progressively longer plane strokes along with a careful eye may be all that's needed.

I've made chopsticks as gifts for friends, for sale online and at local markets, facilitated group activities at the community woodworking shop, and have even been known to invite (read: force) guests for dinner to come out to the workshop and fashion their own eating utensils. For those unfamiliar with hand planes or indeed woodwork, the process of transferring square wooden stock into delicately tapered chopsticks is simply magic. And when it's done without the drone of machines you can enjoy the opportunity to connect with one another and share in the richness of making things. F&C


Length and section size of chopstick before shaping
8
248
305
3.2
1.6
6.4
8
PRIMARY JIG
1.6
1.6
4.8
8
SECONDARY JIG
Bench Hook
8
1.6
4.8
3.2
38
35
9.5
35
PRIMARY JIG
4.8
4.8
3.2
Chopstick outline before next planing
Chopstick outline after next planing
Approximate plane blade height
4.8
3.2
1.6
3.2
1.6
SECONDARY JIG
Plane Stop
305
V - GROOVE JIG
38
70
Similar to Secondary Jig, but reversed so that shoot channel is deeper at plane stop end
DIFFICULT GRAIN JIG

The BESSEY GearKlamp

Hendrik Varju tests the new design that reinvents the F-clamp

It isn't often that one finds any startling innovations in clamps/cramps. However, at the 2018 International Woodworking Fair (IWF) in Atlanta, USA, I came across the most unique version of an F-clamp I've ever seen. This is a new patented design put out by BESSEY Tools.

Let me first just get a quick point of terminology out of the way. I realise that in the UK the term 'cramp' is considered the proper term instead of 'clamp'. I've always found it rather curious, being a Canadian woodworker myself. In any event, in this article I will use the term 'clamp' only because it is the popular term used in North America and BESSEY Tools has chosen to use the North American word for this product. Just to muddy the waters, though, they've decided to use 'Klamp' in the name 'GearKlamp'!

In any event, back to the subject matter. As a professional woodworker for the past 23 years, I've seen many types of clamps, from one-handed 'Quick-Grip' clamps (by Irwin tools) to C-clamps, F-clamps, G-clamps, pipe clamps, parallel jaw clamps and even wooden handscrews. And this list is by no means exhaustive. However, at the recent IWF, I almost suffered whiplash when BESSEY's new GearKlamp design turned my head so quickly. I've never seen anything like it.

You'll recall that a standard F-clamp has a handle directly beneath the clamp screw. That sounds reasonable until you realise that if you need to clamp near a wall, a cabinet front, a table leg or any other surface that runs parallel with the handle, you can barely get your fingers around the clamp handle to exert the required pressure. As woodworkers, we've all been there at some point. You try to use just your fingertips to turn the handle if you don't have the room to get your hand right around it. Not only is it awkward, but you also can't exert full pressure like you can with a proper grip. This is the situation where the GearKlamp truly excels.

The new GearKlamp compared to a traditional F clamp

PHOTOGRAPHS BY HENDRIK VARJU

The unique design

As you can see from the pictures, the GearKlamp handle is not under the clamp screw at all. It is located where the steel stem of the clamp is. That sounds impossible, but the handle is hollow so the stem rides right through it. Genius.

So how does the handle at the stem transmit pressure to the clamp screw several inches away? The secret is in the patented gear system tucked away inside of a plastic enclosure. I opened up the cover by removing three screws so that you can see the inner workings. When you turn the handle, a gear at the top of the handle engages with three other gears, the last of which rotates the clamp screw up or down.

I know what you're thinking. The gears are made of plastic. Clearly, metal gears would be stronger but would be presumably both heavier and more expensive to produce. As I conclude below after testing, this clamp definitely does not exert as much pressure as a traditional F-clamp. However, it will deliver suitable pressure for all kinds of tasks nevertheless. Not every clamping situation requires enough pressure to force atoms together and create a nuclear reaction, surely!

Just as with any clamp, the screw has a limited amount of travel. This one is less than most F-clamps, with about ¾in of total travel of the clamp pad up and down. But you can open the screw nearly the entire way and then use the quick release lever to position the clamp on the two parts being clamped together. Then the ¾in of travel will be more than enough to exert pressure before the screw gets to its maximum reach.

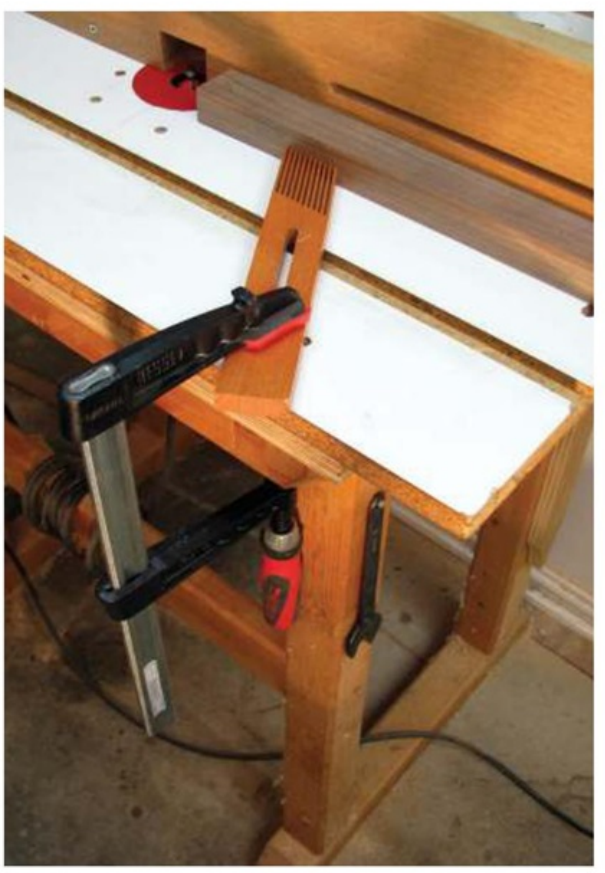
Some of the photos show the difference between using a standard F-clamp versus the GearKlamp. In one scenario, you see the clamps being used near the leg of my workbench. The GearKlamp easily handles the situation without my hands having to reach between the clamp handle and the leg. The same goes for my router table where I might be clamping a featherboard or other object near the router table leg or base. I also show a situation where I am clamping a narrow trim piece underneath a vanity top. Because the overhang is small, a traditional F-clamp has the handle way too close to the front of the cabinet. Sometimes you can get past this by opening a door or a drawer to reach inside, but not always. Notice that the GearKlamp handles the situation with ease.

A close-up view of the gears inside

Another view of the gears

F-clamp handle too close to workbench leg to get a grip on it

GearKlamp handle is far from the workbench leg



A similar problem when clamping the featherboard to the router table

GearKlamp to the rescue!

F-clamp handle too close to the cabinet front

GearKlamp can clamp in close with no interference from the handle

Strength limitations

While I didn't test the strength of a GearKlamp in any scientific way, I simply clamped a board to my workbench top, turning the handle as tightly as I could muster. I first tried this with a traditional F-clamp, also made by BESSEY. After exerting maximum pressure (based on my hand strength), I then tried to rotate the piece of wood to see how the clamp prevented this. The board was, indeed, very tight and I had difficulty turning it unless I could exert more leverage by holding the board farther away from the clamp. When I tried the same experiment with the GearKlamp, the board was noticeably easier to turn.

Next, I tried the same test with an Irwin Quick-Grip clamp. After tightening the handle as much as I could, the total pressure seemed about the same as the GearKlamp. In other words, the GearKlamp definitely did not reach pressure equivalent to a BESSEY F-clamp, but it did seem to exert similar pressure to a one handed clamp like a Quick-Grip by Irwin.

I also have a BESSEY EZS clamp (a one-handed clamp) and it also faired about the same. On BESSEY's website, it rates the EZS clamp as having a 'clamping force up to 445lb'. BESSEY lists the maximum clamping force for the GearKlamp as 450lb, which is almost identical. The BESSEY medium-duty F-clamp I used (with 'TK handle', which is a rubberised non-slip handle) is listed at about 1000lb of clamping force, so I'd say my non-scientific tests came to the right conclusions. Irwin rates the Quick-Grip clamp I tried at about 300lb of force.

Conclusion

In conclusion, I'm thrilled to have used some of these GearKlamps in my workshop and I can see them coming in handy in so many applications. I wouldn't consider these heavy-duty clamps by any means, so I'll stick to my traditional F-clamps, C-clamps, parallel jaw clamps and pipe clamps where I really need a good amount of pressure. However, I can see these GearKlamps being super handy around the shop as an extra pair of hands, holding a workpiece to a jig and so on. And when it comes to any sort of cabinet installation on-site, there will be many situations where the unique design of the GearKlamp outperforms any other clamp, even if the clamping strength is more limited. I did feel that the quick-release lever on the GearKlamp could have been easier to use (it's quite small and stubby). But overall I am happy to have the GearKlamp within my arsenal of clamping options. F&C

More information

GearKlamps are available with 6in opening capacity, as well as 12in, 18in and 24in. Here in Canada they sell for about CAD $23.99 to $30.99 across the ranges of sizes. I've seen them on websites in the UK for about £25 to £33 across the various lengths.

www.besseytools.co.uk

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KIT & TOOLS

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PHOTOGRAPHS BY DEREK JONES/GMC PUBLICATIONS

Stairs aren't a problem for the MW 1000, even when fully laden

90° T-bar corner brackets screw into the aluminium frame making it rock solid

Adjustable feet eliminate rocking

MINI TEST: Festool MW 1000 Mobile Workshop

For a lot of makers site work is an occupational hazard performed through gritted teeth. Come to think of it, I don't think I've ever slept well the night before an installation however many times I've walked it through in my head. Good preparation is one way of calming the nerves and knowing you have all the tools on board to do the job is an essential part of the ritual. Part of your strategic planning will be figuring out the logistics of navigating stairs perhaps, or ensuring you have somewhere to work efficiently. Workmates and trestles cover a lot of bases but aren't nearly as portable and versatile as some of the alternatives produced by the power tool brands like Bosch, Triton and Festool. This month I've been hoofing my kit around in one of Festool's new workstation systems, the MW 1000. The Basic kit comprises a trolley, not unlike the SYS-Roll introduced a few years ago, which accommodates an assortment of Systainers by stacking them into a portable tower. It requires building but nothing too challenging and as long as you have a long hex tool set, you should be on the road in around 20 minutes.

It comes with a slide-out tray with a load capacity of 20kg mounted on full extension runners that will be familiar to kitchen installers. As well as making access to the tray more convenient, it adjusts to sit above the stack and when fitted with a lock accessory prevents the Systainers from being opened or removed. The MW 1000 Basic has an MDF worktop fixed to the frame with fastening holes for clamps and other hold-down equipment and there's space behind the stack to store an additional work table (TSB/1-MW 1000). The base has adjustable feet so you can eliminate any wobble in your new workbench. The bar handle is also adjustable to make loading and unloading a little easier. The large rubber-clad wheels make it possible to climb stairs and navigate rough terrain outside even when loaded to its 100kg capacity without rattling everything on the trolley in the process. For those jobs in the city or any similar hostile environments, I think you'll find it a very useful upgrade.

Expect to pay around £507 for the Basic system and £735 for the complete MW1000. Additional trays can be purchased separately for around £72.

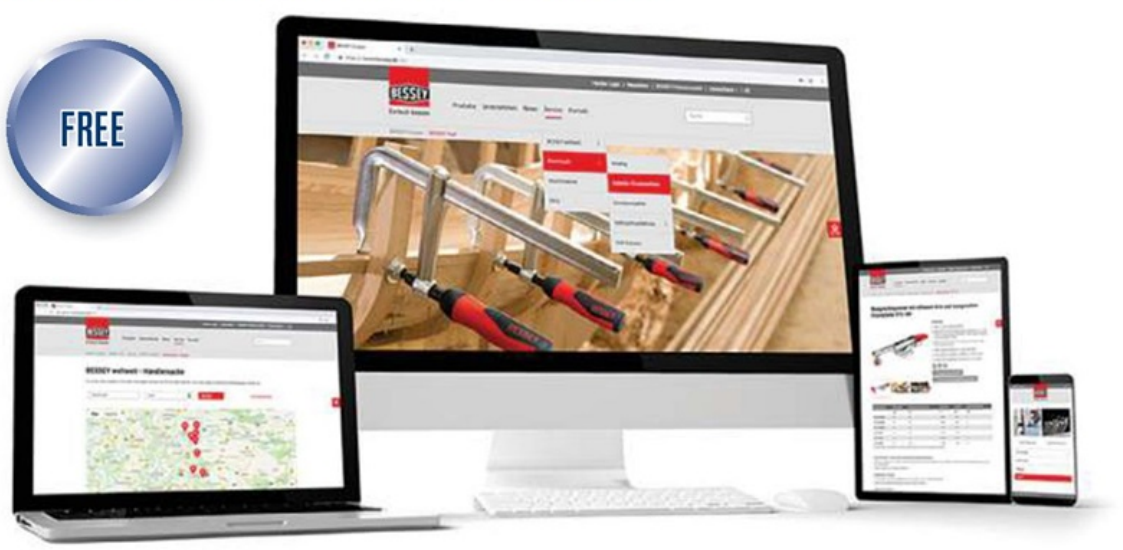
From: www.festool.co.uk

Makita's First 'Futureproof' Job Site Radio With Bluetooth & Dab+

Makita's first DAB Job Site Radio with Bluetooth, the DMR112 can be powered either by AC adaptor or by Makita's CXT or LXT Lithium-Ion batteries, which can be found in Makita's range of cordless power tools. The radio is capable of receiving DAB, DAB+ and many national and local radio stations. It has a two-way speaker system of twin 89mm diameter speakers that provide high quality sound and a maximum output, when using an 18V LXT Li-Ion battery, of 4.9 watts from each. This rugged IP64 protection-rated dust and showerproof site radio has an elastomer bump-protecting casing, foldable antenna for added protection, an AC adaptor jack and digital amplifier and LCD display. It has a Band III frequency range of 87.5–108 Mhz and is equipped with Bluetooth Class 2 to wirelessly play music from a mobile phone, MP3 player or tablet with a range of up to 10m. A neat, flat top surface provides stability for mobile devices and features a USB output port that allows mobile devices to be charged from the radio. An AUX-IN jack allows connection to personal audio players.

From: www.makitauk.com

BESSEY Group's New Website



The BESSEY Group website has been redesigned to give an enhanced user experience. The site has now been optimised for use on mobile devices as it can adjust to the respective screen size in terms of size, orientation and structure. The content available is designed to meet the needs of a range of customer groups. Thanks to this design approach and a clear, intuitive structure, BESSEY customers can now find their way on-line with just a few clicks. The new website provides information in a clearly structured way. This includes detailed product data, PDFs for download and valuable tips on the correct handling of BESSEY tools in the FAQ section.

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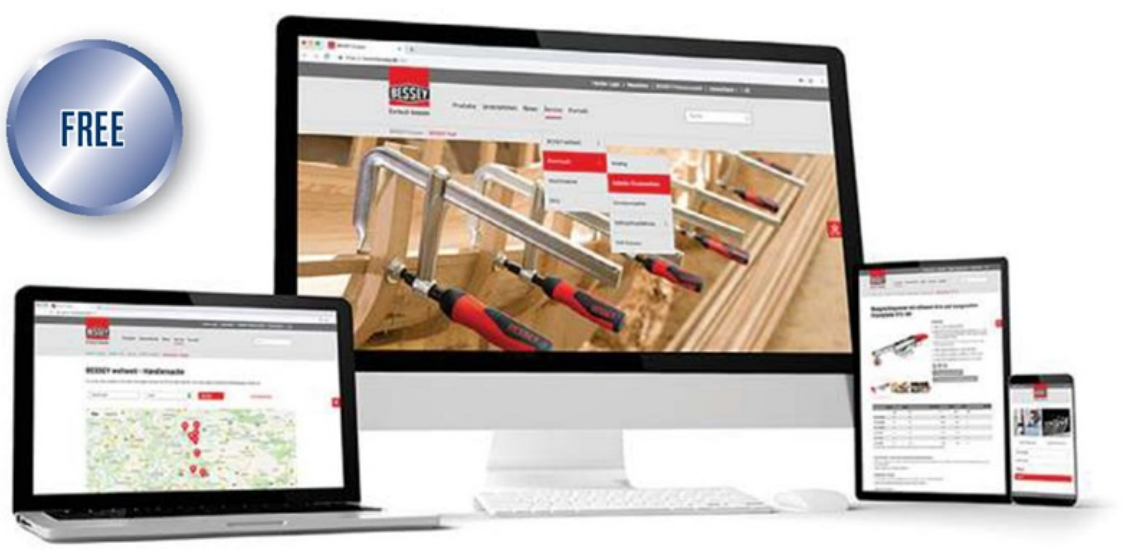

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From: www.bessey.de

PHOTOGRAPH BY JOHN BULLAR

Marking knives

These are age-restricted products. You must be aged 18 or over to purchase one of these knives.

A good marking knife is essential for producing accurate layout lines, whether it's the transfer of tail or pin geometry or shoulder lines. For the most part a single knife will do the job but as your repertoire of joints and techniques grow, so will your need to find a knife that suits every occasion. This month we've gathered together a small selection of good all-rounders and one or two that you will want to own but may not necessarily want to use all the time.

Blue Spruce Marking Knife Kit

Different projects can demand different marking solutions. Many times a single-bevel spear point blade is best, sometimes you may need a larger, more rigid blade and other times may call for a scratch awl to trace around curves. With the Blue Spruce Marking Knife Kit, you can choose the blade style that fits your specific marking need and easily install it into your marking handle. A custom wallet keeps everything protected and in order, with room for additional blades in the future. All blades are made from high carbon steel alloy and are easy to hone and maintain a fine cutting edge. The handle features a classic design in finely turned wood with a stainless steel insert, knurled ferrule and blade support. The wallet is hand crafted in the USA from a premium waxed canvas with a foam-backed suede interior for maximum protection of your blades.

This is a starter package consisting of five of the most useful blades, three collets to hold and support the blades, a handle turned from curly maple and a ferrule coated with a black ceramic coating. Included are a classic .032in thick spear point blade, a .020in thick ultra thin spear point blade, a .062in thick larger, heavy-duty spear point blade, a .062in thick joiner's-style blade and a ⅛in diameter scratch awl point.

From: www.classichandtools.com

Czeck Edge Super Kadet II

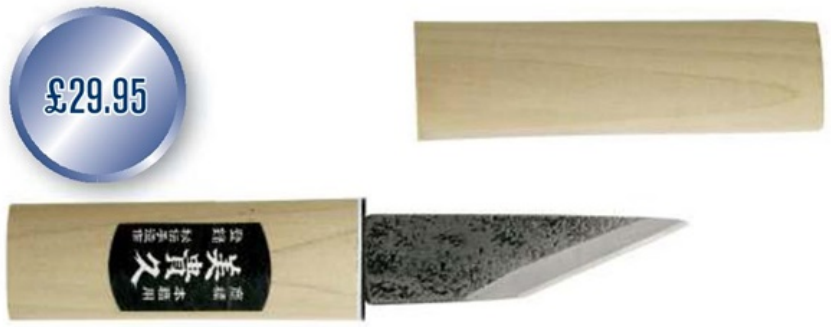
The Super Kadet II features a solid tungsten carbide blade, which will make cleaner cuts and do so almost indefinitely without the need to be re-sharpened in normal use. Besides the fantastic edge-holding qualities of carbide, this material also imparts rigidity to the blade so that it flexes only slightly in use. The Super Kadet II excels at marking out the detail that fine joinery demands. The dual-edge bevels permit right- and left-hand use and the back of the blade is flat permitting the point to register snugly against a straightedge from either side. The contour of the exotic wood handle makes a flowing, uninterrupted transition to the ferrule. The machined bronze ferrule has three grooves that permit a comfortable perch for the index finger and second finger. The forward groove is very pronounced, being almost 3⁄16in wide and rounded on the bottom. Comfort and grip are enhanced significantly. The Super Kadet II has a ½ x 5½in exotic cocobolo handle, .029 x 5⁄16 x 1 7⁄16in sword point blade, 7⁄16in diameter x 11⁄16in satin finished bronze ferrule. The overall length is 7¾in. This knife is designed for moderate to heavy-duty layout use.

From: www.czeckedge.com

Hamilton Joinery Knife

The Hamilton Joinery Knife is designed to complement the Hamilton Toolworks marking gauge. It is an essential part of the tool kit for laying out joinery in fine woodworking and is designed to be a high quality layout tool that will last for generations. The knife is approximately 6¾in long, 11⁄16in wide, 5⁄16in thick and weighs on average 2oz. The blade is O-1 tool steel with a Rockwell hardness of 60-62 HRC. The exposed blade is 2in long, ½in wide, 1⁄16in thick and features a 50° spear point with the primary grind of 25° and has a 30° micro bevel. The fitted sheath has a rare earth magnet embedded inside to keep it in place. All Hamilton Toolworks knives are made in small batches, finished by hand and are buffed and waxed to help protect the knives. The example shown here is made with a bloodwood handle, a very dense hardwood that has a beautiful deep rosewood colour. The knife is also available with handles in different timbers.

From: www.hamiltontools.com



Japanese Marking Knife with Sheath

This Japanese marking knife features a laminated bi-metal blade instead of a solid single steel one. Featuring a single right-hand bevel for right-hand use, this marking knife has an extremely hard carbon steel layer that forms the back and cutting edge with a softer steel hammer forged over the top. This makes the cutting edge much harder than that of a single steel blade but the softer steel means that it does not take as long to sharpen. For ease of use and storage, the knife is mounted in a traditional magnolia wood handle and features a matching wooden sheath that protects the blade when not in use.

From: www.rutlands.co.uk

Quangsheng T10 Marking Knife

The Quangsheng T10 is an ambidextrous spear point marking knife made from the same T10 water-hardened carbon steel used in Quangsheng plane irons. Honing a small 5° secondary bevel before use is recommended. The handle is turned from the same Chinese hardwood used for Quangsheng's plane handles.

From: www.workshopheaven.com

Ashley Iles O1 Marking Knife Right Bevel

These marking knives from Ashley Iles are hand forged from carbon steel, so they take a sensational edge. There is a slight curvature to the blade, rather like a surgeon's scalpel, so the knife will always cut smoothly throughout the incision, whatever your choice of grip. The non-slip rubberised handle feels comfortable and positive in the hand, and the thin section gives it a very precise feel. As you would expect from Ashley Iles the quality is excellent. Each knife is supplied with instructions for sharpening.

From: www.workshopheaven.com

Kasaya Brass Bound Japanese Marking Knife

Popular with students in Japan, this thin-bladed Kasaya marking knife is tightly wrapped in a thin, folded brass sheet. The blade is covered with a cleverly designed sheath with one side sprung so that it stays in place securely. The blade is made from Japanese high carbon spring steel strip, it takes a very acceptable edge and is easy to sharpen. Cheap, practical, well designed and effective.

From: www.workshopheaven.com

Pfeil Violin Maker's Knives

These knives are made of high-alloy carbon steel and are razor sharp, ready to use. The blades are bevelled on both faces and are easily resharpened because they are tempered all the way through. The knives are available in five different widths, ranging from 3.5mm to 19mm.

From: www.classichandtools.com

Axminster Workshop Right-handed Marking Knife

As with all quality marking knives, this blade has the bevel on one side only. This design allows the flat side close contact with your straight edge or square. A cut line is far more accurate than a pencil line. The great benefit, particularly when working across the grain, is the ability to register your saw or chisel in the cut. The 19mm wide by 150mm long blade has hardwood scales, through pinned with three brass rivets to form an easily gripped handle. The high carbon steel blade holds a good edge.

From: www.axminster.co.uk

Out & about: Chatsworth House

This month we visit the Peak District to view one of Britain's grandest stately homes

Chatsworth House is the seat of the Duke of Devonshire and has been home to the Cavendish family since 1549. Located by the River Derwent in Derbyshire, the house is surrounded by 1000 acres of garden and parkland. Chatsworth is one of the 'Treasure Houses' of England, 10 of the most magnificent palaces, houses and castles in the country. It contains an important collection of art, Old Master drawings, sculptures and books, with works ranging from ancient Roman statues to paintings by contemporary artists. It also houses a selection of Palladian-style furniture designed by William Kent.

PHOTOGRAPHS COURTESY OF THE CHATSWORTH HOUSE TRUST

History

Sir William Cavendish purchased the Chatsworth estate in 1549 to please his wife, Elizabeth Talbot (better known as Bess of Hardwick), who was a native of Derbyshire. The house she built was completed in the 1560s, after William's death in 1557. In 1569 Mary, Queen of Scots was sent to Chatsworth as a prisoner and she stayed there at various times over the next 15 years; the rooms she lodged in there have been remodelled over the years but are still known as the Queen of Scots Apartment.

The 3rd Earl of Devonshire, a staunch Royalist, left England after the Civil War but returned after the restoration of the monarchy and made some changes to the principal rooms to make them more comfortable. The 4th Earl was made the 1st Duke of Devonshire in 1694 in recognition of his services to William and Mary. He made more extensive changes to the Elizabethan house, which had become unsafe, and major rebuilding work began in 1687. The original courtyard plan was retained but the south, north and east fronts were rebuilt in the English Baroque style. The park and gardens were redesigned by Capability Brown in the 18th century, opening up the landscape and moving the approach to the house to the west front. The house underwent further dramatic changes in the 19th century with the addition of the north wing. This was the project of the 6th Duke, who hired the architect Sir Jeffry Wyatville to design the wing, which included a custom-built Sculpture Gallery for the Duke's extensive collection.

The house was opened to the public in the 20th century by the 11th Duke and Duchess of Devonshire. In 1981, the running of Chatsworth was taken over by the Chatsworth House Trust, a charitable foundation established by the 11th Duke to help ensure the preservation of the house, its essential contents, the garden and the park. Chatsworth is currently home to the 12th Duke and Duchess, the 16th generation of the Cavendish family to live there.

Much of the house was rebuilt in the late 17th century in the English Baroque style

The Painted Hall

The State Music Room

The Great Dining Room

The Great Chamber

The State Drawing Room

What to see

Thirty rooms are open to the public, including the State Rooms, the Painted Hall (decorated with scenes from the life of Julius Caesar) and Sculpture Gallery. The State Rooms are appointed in a rich Baroque style. Chatsworth contains a fine collection of art including paintings, Old Master drawings and prints, ancient coins and carved Greek and Roman gems.

On 16 October 1733, Devonshire House, the London residence of the Dukes of Devonshire, was destroyed by fire. The 3rd Duke commissioned William Kent to rebuild and furnish the house in the Palladian style. Much of the furniture designed by Kent is now at Chatsworth, following the sale and demolition of Devonshire House in 1924.

In addition to the house, visitors can also explore the 105-acre garden with its Victorian rock garden and maze, and modern and historic sculptures. The grounds also include a working farmyard and a woodland-themed children's playground. *F&C*

PHOTOGRAPH BY DAVID VINTINER

The State Bedchamber

The Queen of Scots' Dressing Room

Sculpture at Chatsworth

One of the highlights of a trip to Chatsworth is a tour of the Sculpture Gallery in the north wing. The 6th Duke amassed a vast collection of sculpture and books, highlights of which include works from ancient Egypt, Greece and Rome, and pieces by Grinling Gibbons, John Michael Rysbrack and Antonio Canova. The collection continues to expand today with works added by modern artists such as Damien Hirst.

PHOTOGRAPH BY DAVID VINTINER

The Sculpture Gallery

The Wellington Bedroom

Information for visiting

Address: Chatsworth, Bakewell, Derbyshire DE45 1PP
Website: www.chatsworth.org
Opening times: Open March–May and September–November, check website for details
Charges: Access to House, Garden, Farmyard & Playground: £24 Adult; £14.50 Child; £66 Family. Tickets for House & Garden only and Garden only are also available, check website for details

Information correct at time of publication, check the house's website before making your visit

Where else to see … The Treasure Houses of England

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Hampshire
www.beaulieu.co.uk

Bleinheim Palace
Oxfordshire
www.blenheimpalace.com

Burghley House
Lincolnshire
www.burghley.co.uk

Castle Howard
Yorkshire
www.castlehoward.co.uk

Harewood House
Yorkshire
harewood.org

Hatfield House
Hertfordshire
www.hatfield-house.co.uk

Holkham Hall
Norfolk
www.holkham.co.uk

Leeds Castle
Kent
www.leeds-castle.com

Woburn Abbey
Bedfordshire
www.woburnabbey.co.uk

Social media dashboard

Bringing you a round-up of the best from the online world, plus a selection of the latest projects that have caught our eye

In this section of the magazine we bring together the best furniture and woodworking related content from social media. Here we'll recommend who to follow, where to comment and which online communities to join. We also feature projects we love, readers' letters, comments from the Woodworkers Institute forum and pictures of readers' work. If you'd like to see your furniture on these pages, email derekj@thegmcgroup.com

Website: BeChangeMaker

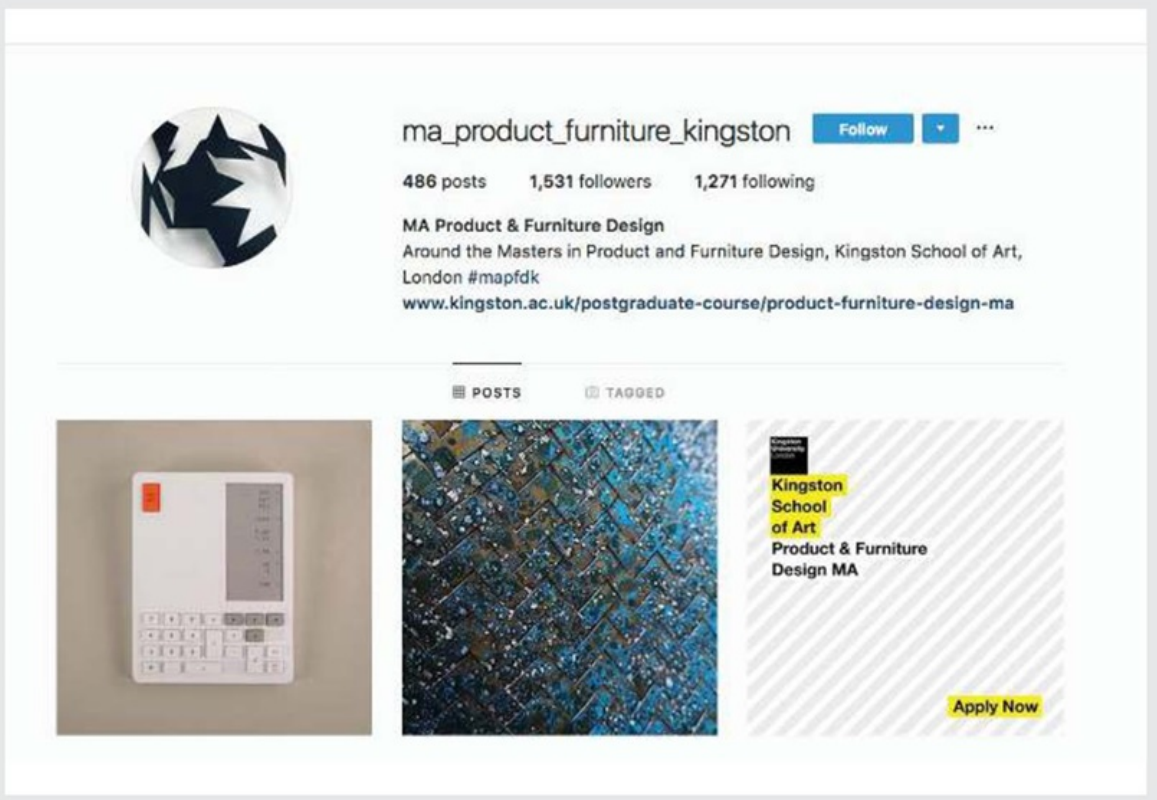
BeChangeMaker is World Skills' online training programme, which inspires action on global challenges through social entrepreneurship and the power of skills. It gives young entrepreneurs access to high quality learning content on HP LIFE, tools and technology for startup acceleration, dedicated coaching, mentoring and support, as well as the opportunity to tap into a diverse global network of potential supporters and investors.

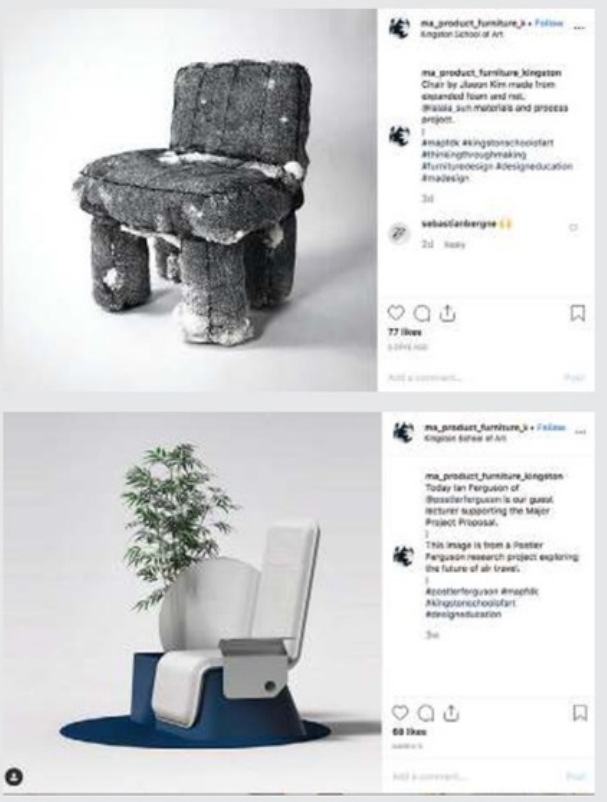
Address: bechangemaker.worldskills.org

Instagram: Furniture Design at Kingston School of Art

Be inspired by the work of students on the MA Product and Furniture Design course at the Kingston School of Art. You can keep up to date with the students' eclectic range of projects and all the latest news and events via the school's Instagram account.

Address: @ma_product_furniture_kingston





Projects we love

Here we highlight the latest furniture and woodworking projects from around the world that we think deserve to be shared with our readers. If you're a member of a collective or a student group and would like to see your work here, then submit a story to: **derekj@thegmcgroup.com**

Sonobe seating by Factory Furniture

The Sonobe bench is a modular seating system that enables fluid, informal arrangements of public seating to encourage social interaction and engagement. Sonobe empowers the designer to create their social space with a simple but ultimately adaptable palette that can also be re-arranged at any time to suit the users' requirements.

The recessed front allows a convenient place for bag storage while sitting. It is produced in a variety of materials included powder coated and galvanised steels with FSC wooden elements. Sonobe can be surface fixed or weighted and placed without fixing, suiting public areas where a minimum of interruption is required.

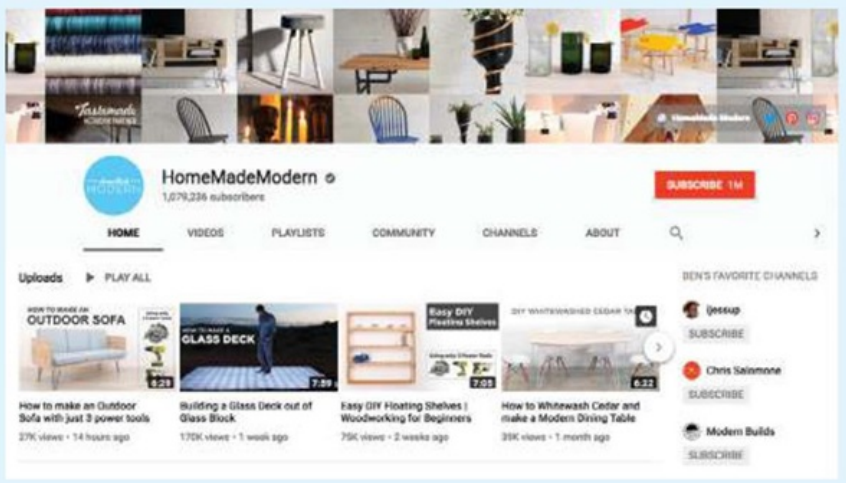
Factory Furniture are Oxfordshire-based furniture designers and makers specialising in the design and production of contemporary landscape furniture. All products are designed and manufactured in-house by the company's own design and manufacturing team.

www.factoryfurniture.co.uk/sonobe-bench

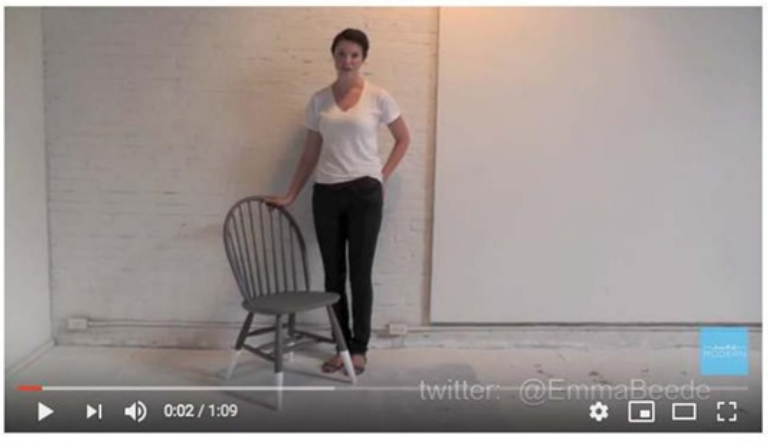
YouTube: HomeMadeModern

HomeMadeModern is an online design resource that shares design ideas with the hopes of inspiring people to make more of the things they already own. Playlists on the YouTube channel include metalworking for beginners, 3D printing, tips for working with concrete, how to make DIY fitness equipment, and quick and easy DIY projects.

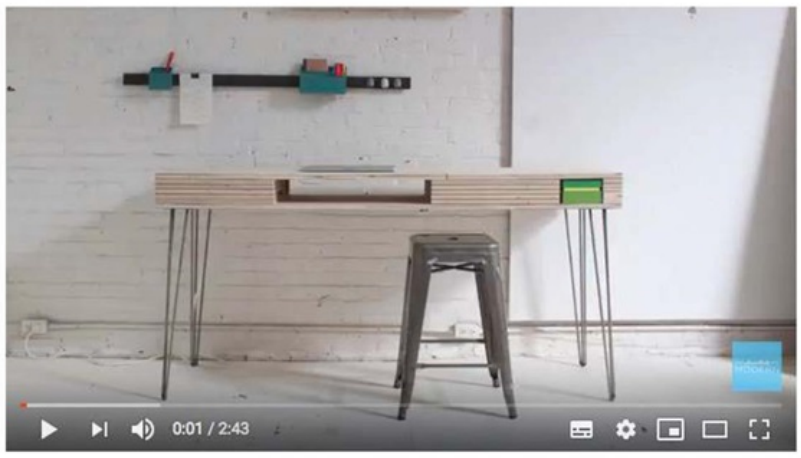
Address: www.youtube.com/user/HomeMadeModern



how to make an Outdoor Sofa



HomeMade Modern, Episode 5 – DIY Dip Dye Chair



The Flip Desk

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An airbrush with the past

This month we're going back to February 2002 and issue 61 for another look at Jane Cleal's Shell Chair

In her original article about the making of this chair Jane Cleal starts her commentary with some harsh words about chairmaking in general: 'To some a challenge, to others a nightmare!' A quick glance at this example and it's really not hard to work out which side of the fence this one sits. However, with the fascination in recent years of all things Windsor and staked, I'm wondering if the same level of scepticism persists among woodworkers today. To the uninitiated even the most basic construction is a mystery until one by one the secrets that hold it together are revealed by careful and thorough explanation. Far from diminishing the appeal the general rule is that we're usually far more impressed when we know how things are made.

For the most part what holds this chair together is robust traditional joinery; mitred and haunched mortise and tenons with substantial corner blocks. And while on paper that's not too difficult to achieve it's the thought of working with angles other than 90° that tends to put people off. I put it down to conditioning and too much emphasis being placed on getting things straight and true, not to mention the number of gizmos out there to make obtaining that standard child's play. My tip, for what it's worth, is to treat 90° as just a number and not the Holy Grail of woodworking.

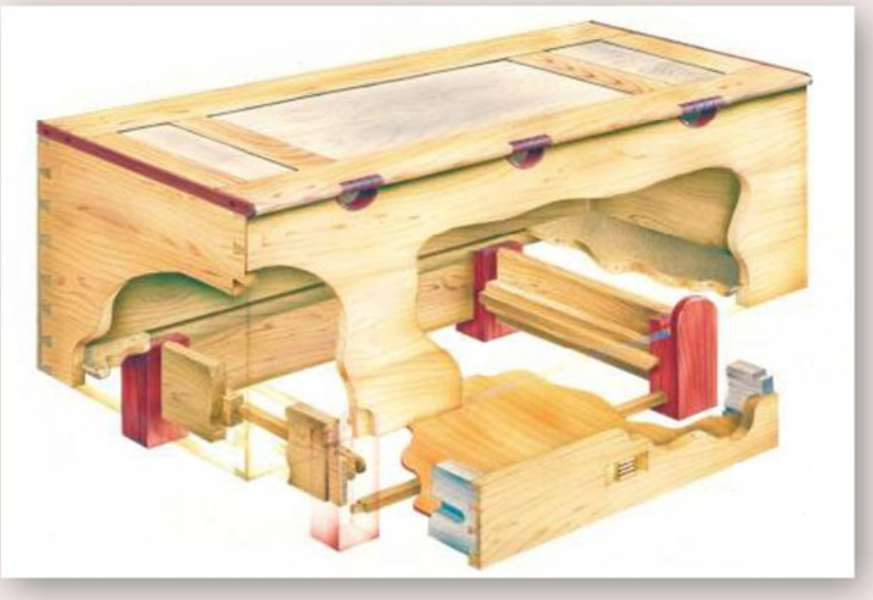
Getting to grips with the construction of the back of Jane's chair requires you to do precisely that as there isn't a single component with two square edges to be found. Making things even more of a challenge or nightmare are the scalloped slats that form the back which are tapered along two edges, concave on the front and convex on the back. For batch work there's really only one way to tackle a design like this and that's to begin with a full-scale working prototype. As Jane explains it was at this stage that issues such as 'proportion, comfort, strength, section of components and production methods' can be resolved.

The back is made up of five pieces of steamed pear, coopered together. Each part starts out as a rectangle before being tapered in length on the bandsaw. The edges then have their angles machined on the spindle moulder. While the slats still have flat surfaces (front and back) the biscuit slots were cut. The next operation required two sets of specially ground cutters for the spindle moulder, concave for the back surface and convex for the front. Each slat was dropped into a cradle and passed by the cutter using a ring fence to guide the progression. The last step in the process involved yet another purpose-ground cutter to produce a second scallop to the back of the slats (not visible in this drawing). After gluing the pieces together a further three machining processes were required, to curve and round the top edge of the back, to produce the joint where the back would attach to the back rail and to inlay the tapered ebony strips between the slats.

At the end of the article Jane reflected on the project suggesting that it wasn't quite the commercial success she expected but the experience gained, well, how can you put a price on that? F&C

Next month

Next month we're heading back to April 1997 and issue 5 for a look at Rod Wales' blanket chest



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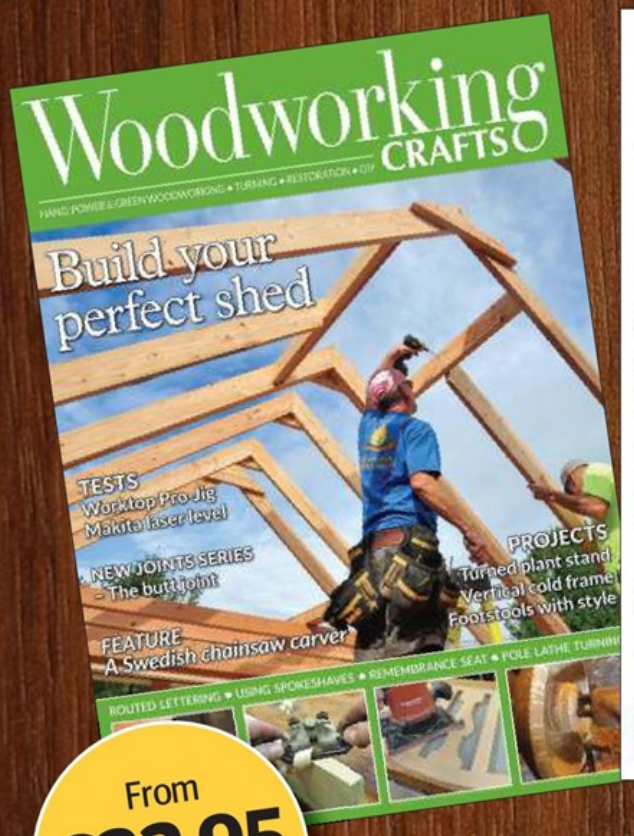

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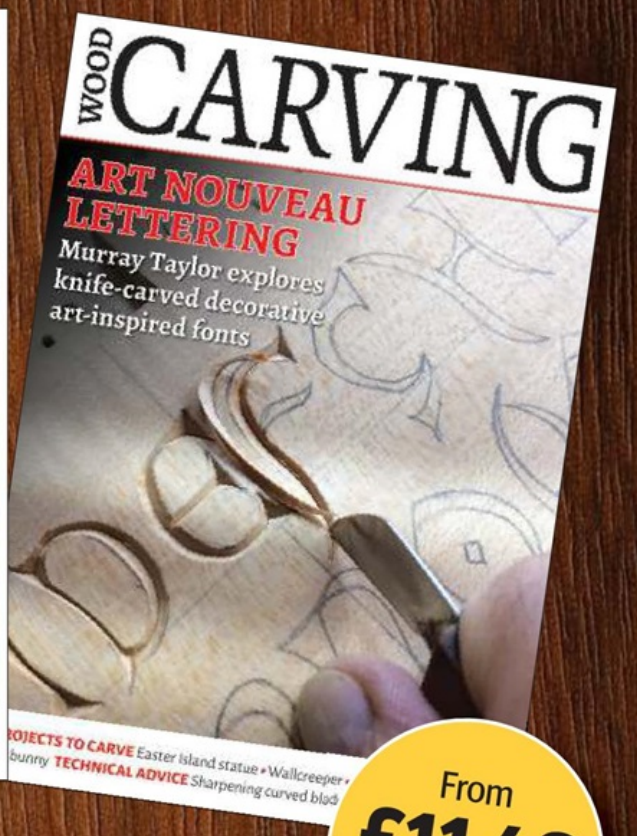

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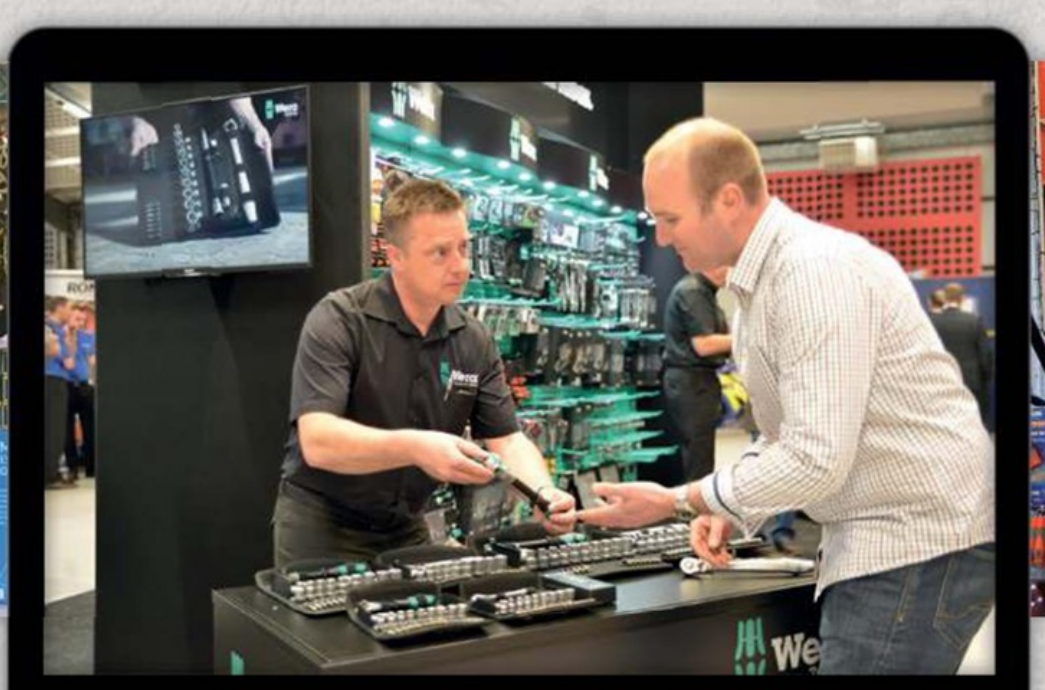

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