

Woodturning

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NEW SERIES

Let's talk

Chris Grace looks at tools & equipment required to complete a range of turning tasks

PROJECTS Sea urchin box • Pepper grinder • Clock • Honey swirl

TECHNICAL Cut out forms • Cutting and turning crotch wood

• Open segment bowl • Minimising catches

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Woodturning 317



"With large blanks mounted you can use the variable speed control to keep the machine stable and vibration free...Would I recommend this lathe? Yes without a doubt, it's well designed and built to a high standard."

Online Review



"The new Herald - Sets a new standard"

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Online Review



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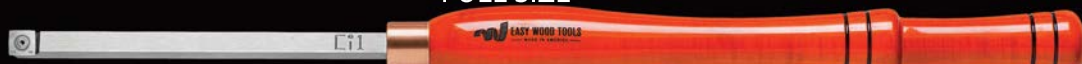
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The ripple effect



In real time, not the magazine issue cover dates, I have just come back from the AAW in Portland Oregon. I have to say that I am totally shattered but fired up from what I have seen and by the people I have met.

Whether it is a big symposia, a club meeting or some other event or gathering, I never fail to learn something, meet interesting people or see something that makes me stop and take a closer look. Sure, my brain can only absorb so much information. With symposia there are demonstrations to attend, galleries of work to see and so many people to catch up with it is impossible to remember everything. I do, however, take loads of images and they act as a good reminder/memory store to which I constantly refer back to see how people have developed their work, who is doing what and so on.

All gatherings, no matter the size, are useful to us as craftspeople and if we don't learn something from them, to be honest, we must be either asleep or thinking of other things and we have missed an opportunity. That might seem a bit harsh, but no matter why you go to clubs or other events, it is usually to meet people, share and learn. The primary reason will vary for each person. Major symposia are a hectic hive of activity and you have to carefully select how you spend the time. They are like a whole year's worth of trade shows, club meetings and social gatherings all in a condensed time frame.

Many will not attend the larger events – money, time, commitments, travel and relevance all play a part in whether people will go to such things. But whenever there is any interaction with others on an individual basis, so much is passed on and cascaded down as people go back to their home areas, travel further afield and interact further with others in the wider community. What is passed on may be in the types of work seen, a technique shown or learned, decorative effects encountered, methodology or working challenges to people's thinking, tool design and development.

No one should underestimate the ripple effect and its impact on our chosen crafts and hobbies – as well as the benefits of belonging to a wonderful world wide community of people.

Have fun, Mark

markb@thegmcgroup.com



COVER IMAGE: Colwin Way (see page 67)

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HEALTH AND SAFETY

Woodturning is an inherently dangerous pursuit. Readers should not attempt the procedures described herein without seeking training and information on the safe use of tools and machines. All readers should observe current safety legislation when turning and wear appropriate personal protective equipment (PPE) and respiratory protective equipment (RPE).

“We design and build woodturning lathes that become an extension of the turner’s creative spirit.”

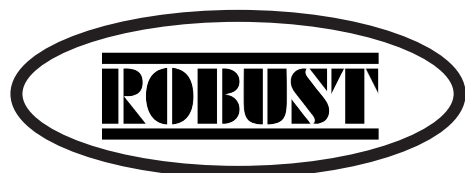
Brent English-Owner of Robust Tools



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Urchin box

Neil Turner turns a ring holder with a lid, creating a small, functional sculpture with a surprise when it's opened



PHOTOGRAPHS BY SUELEEN TURNER

I have found various forms of inspiration washed up on the beach from different types of corals, seashells, seaweed and sea urchins. I used the sea urchin as a source for the design, from almost round to quite flat, allowing for different shape opportunities. The box has some challenging elements, so you have to visualise the final shape in the early stages without being able to finish it.

The box has elements that you shouldn't sand, hence it requires good turning skills. It also involves using a scraper in a confined area, stressing the importance of tool orientation.

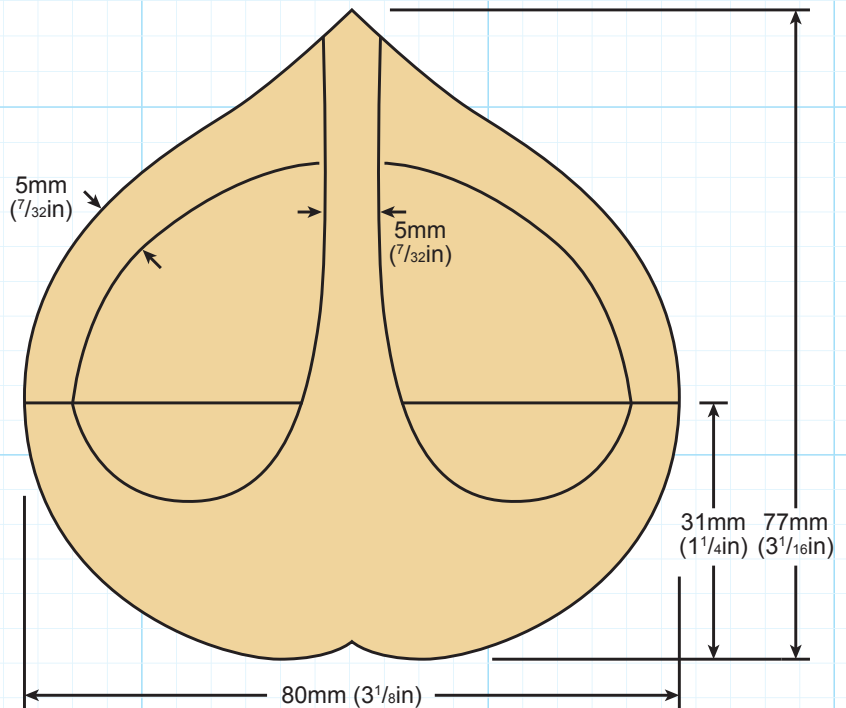
Finally there is the chance to embellish the surface to create the illusion of a sea urchin. This is just one idea and there are countless others you can use. Have some fun and explore.

TOOLS

- Personal and respiratory protection equipment
- Revolving tailstock centre
- Drive spur
- Vernier gauge
- Chuck
- 25mm spindle roughing gouge
- 13mm skew chisel
- 12mm bowl gouge
- Parting tool
- Round-nose carbide tool or scraper
- 5mm drill
- Drill chuck
- Micromotor, Dremel or similar
- 4mm knife/chisel edge cutter/burr
- 5mm round burr
- 5mm barrel burr
- 2mm cup burr
- 25mm sanding pad
- Painter's tape
- Thick rubber band
- Pencil
- Ink pen
- Saw

MATERIALS

- Sanding grits to 320
- Carnauba wax
- Buffing pad
- Sanding sealer
- She oak (*Allocasuarina fraseriana*)
- 200mm long x 110mm dia
- Finish of your choice



Power carving

- Good lighting and good extraction are a must, as well as wearing and using personal and respiratory protection.
- Wear hearing protection.
- Use magnifying screens or glasses to help you see clearly what you are doing.
- Use your fingers and hand to support the rotary hand piece – this will deliver a more accurate result.
- When using the burs pull against the rotation of the burr.
- Knife cutter burs are exactly that – a knife. Keep fingers at a safe distance.
- Do not stick fingers in the rotating work.
- If you feel uncomfortable holding the work with your bare hand while power carving, wear leather gloves. These will protect your hands without getting caught up in a rotary burr if you touch the glove with a burr.
- If you are going to stain or colour the wood make sure the surface is sanded correctly. Any errors in the surface will show through the colouring.



Turning the body

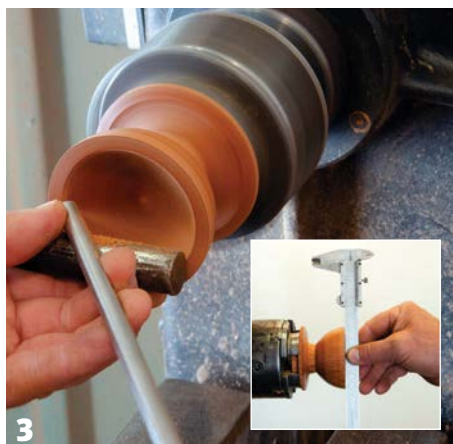
1 Place the blank between centres. Using a roughing gouge, turn it down to create a 90mm cylinder. Create a dovetail on each end to place in your chuck. Then, mark 80mm from one end and cut off with a parting tool.

Place the smaller section – this will be the lid

– in the chuck. Now, use a spindle gouge to turn off some initial material from the outside to create an approximate shape of what is required. Then remove some material in the centre area, leaving a wall thickness of 10mm.



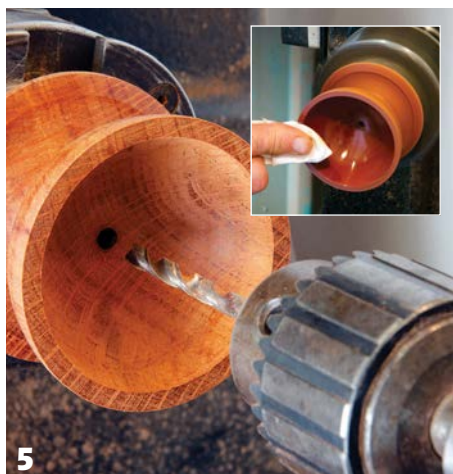
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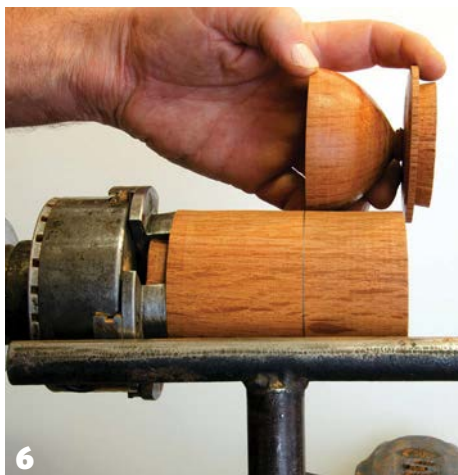
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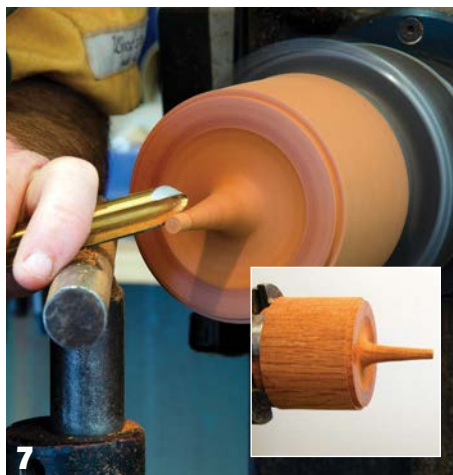
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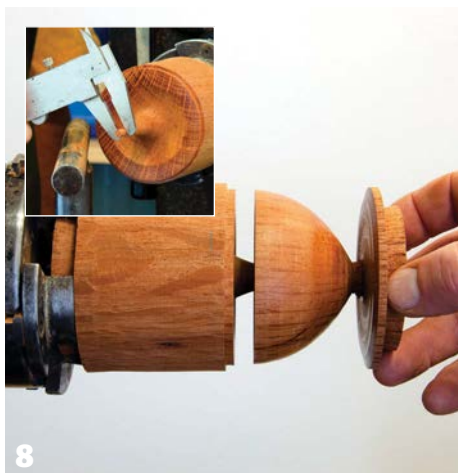
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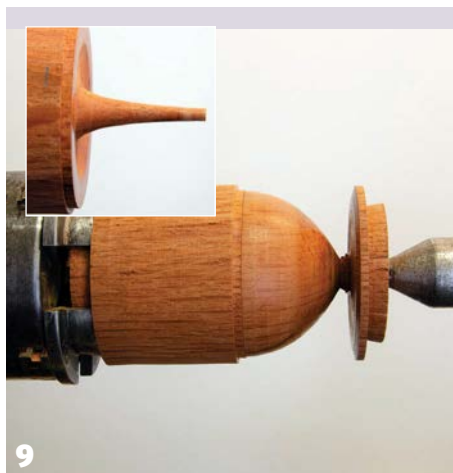
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2 Square off the join area with either a bowl or spindle gouge. Make sure you cut the timber as cleanly as possible to minimise tear-out. Do not sand this joining surface as you may round off the corners. You need as seamless a join as possible. Check the face to ensure it is flat.

3 Now turn the outside shape as close to the finished form as you can, but leave a spigot of about 30mm at the bottom end (this will be the top of the lid later) to support the removal of the timber from the inside of the lid. Make this section too small and you run the risk of inducing vibration or breaking the lid off.

Now it's time to refine the inside. Use a bowl or spindle gouge for this. Present the gouge so the flute points at about the 10 o'clock position and, starting at the bottom area, apply soft pressure so the tip touches the bottom of the internal area and then arc the blade round and upwards to take a gentle cut. Repeat this process until there is a wall thickness of 5mm at the join. Leave 2 or 3mm extra material at the top of the lid to allow for shaping if needed.

4 Using the long point of a skew chisel use in scraping mode, create a locating point for the drill.

5 With a 5mm drill in a drill chuck held in the tailstock, drill a hole 25mm deep, making sure it's located dead in the centre – this is very important. If not, when placing the two pieces together later one side will be thicker than the other when turning the final shape. Once drilled, sand to the required grit, apply your desired finish, remove from lathe and put it aside.

6 Place the long piece, created earlier, in the chuck. Place the lid as shown and mark, making sure you leave enough distance to have 5mm or so of what will be the inner point on which the ring sits protruding through the top.

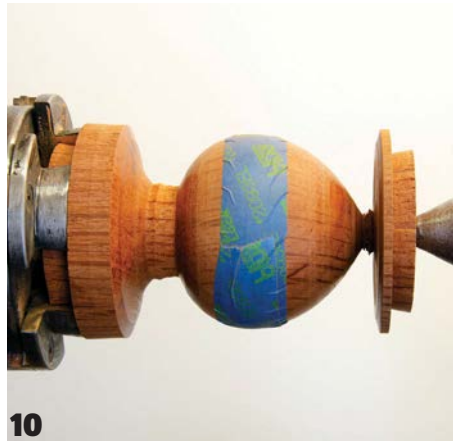
7 Start shaping the box's central column/pointed section. I use a bowl gouge with the swept back grind which allows me to use it like a skew chisel, leaving a smooth surface with little need for sanding. At this point, check the outside diameter of the lid, making sure the bottom piece is a little larger than the top by 1 or 2mm.

Square off the join surface and remove a small amount toward the centre, leaving an outside wall thickness of 8mm. This makes it easier to check with a straight edge. Do not remove any more material from the centre yet, this is done later.

8 Now, measure the drill diameter with a Vernier gauge then check the diameter of the tip of the central column. Turn the column as required and, with the lathe stationary, check the lid on the spigot for fit.

9 Do not force the lid on to the spigot – it must be a snug fit. By gently turning the lid on the spigot you will create a rub line, which tells where to turn to. Sand the turned areas smooth.

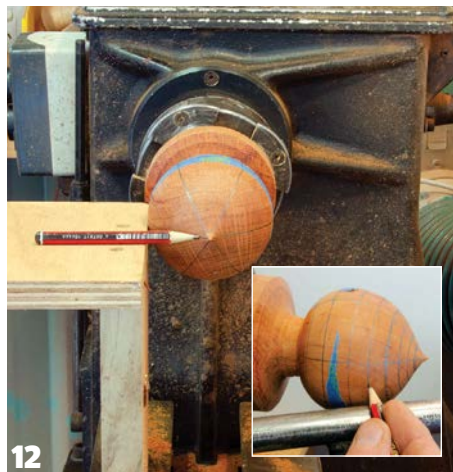
◀ **10** With the tailstock holding the top in position, turn the final shape to of the box using a bowl gouge or spindle gouge. Leave a 30mm-diameter spigot on the base area to provide support for the hollowing process later. Care must be taken when turning the lid to shape to avoid the top spinning and creating a burn mark on the mating surface between it and the base section. Use a gouge to shape it and, once the joining area is aligned and the right shape, sand it to a fine finish. Orientate the grain and apply masking tape to the join area, making sure to wrap in the same direction as rotation.



11 Remove the tailstock support, check everything is secure and turn away the waste remaining at the top area to create the final shape. Make sure to blend the curve of the box to a point. Once satisfied with the shape, sand the top section.

Marking out and finish shaping

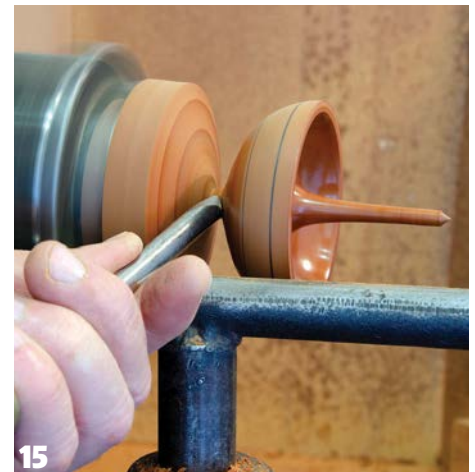
12 It is now time to mark the latitude and longitude lines on the top and bottom sections. Using an indexing facility on the headstock or separate unit, if available, and a flat-topped rest, accurately mark six or eight longitude lines with a pencil. Make sure you straddle the join with latitude lines, as the detail cannot be in the join area. The other latitude lines can be measured but they need to be closer together as the diameter reduces toward the top. Trust your eye.



13 Remove the top from the base. Options are a bit limited to turn this section – a small, round-nose scraper is the best choice. This one has a contour-grind tip and the carbide tip is presented at a negative rake angle to the work, cutting on or just above centre, and the cutter is rotated to cut as a shear angle. Arc from centre out and upwards and create a nice, flowing curve. Working from the centre out and upwards ensures you are cutting with the grain.



14 Once you have the internal shape you need, sand to finish but don't sand the top of the central column or the lid will be a loose fit. Once sanded, apply a finish of your choice.



15 You now have to refine the base section. A spindle gouge will be ideal for this. Once shaped as far as you can safely reach, stop the lathe, saw through the waste section and remove the waste from the chuck.



16 Now, for protection, place a thick rubber band on the lip of the base section and remount it in the chuck as shown. Grip in your chuck jaws to hold the base securely but don't over-tighten or you will crack the wall. Use a spindle or a bowl gouge to create the undercut bottom of the box and sand it.



17 Now mark the rest of the longitude and latitude lines, orienting them with previously marked lines.



18



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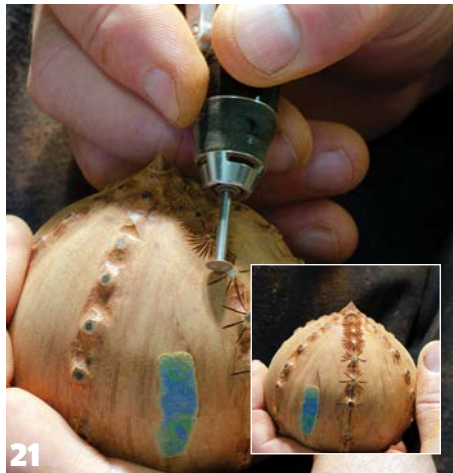
Carved detail

18 It's best to mark where the lines intersect with an ink pen. Place three small pieces of tape between the lines on the join of the lid and base to stop it moving during the carving process. Then, using a 6mm barrel-shaped burr fitted in a micro motor or similar rotary carving tool, gently remove the waste wood to a depth of 2-3mm either side of the longitude lines, leaving a strip about 4mm wide.

19 You now need to create the raised dotted areas. To do this, use a 5mm round burr and remove the waste from the strip, leaving the ink pen marks. The shapes left need to be like a series of little mountains/volcanoes.



20



21

20 Fit a small sanding disc into your rotary hand piece and, using a low speed, sand the areas on either side of the volcanoes, blending the shape until a subtle curve is achieved. Move on to hand sanding for blending and refining.

21 The next stage is to cut micro grooves with a 4mm knife/chisel-edge rotary burr held in your rotary hand piece. Set speed to about 15-25,000RPM and then make grooved cuts, halving the 360° circle, then halve 180°, then halve 90° and so on until you have filled the gaps with lines 1mm deep radiating outwards from the central black dot. They do not have to be exactly the same length, but make sure the cuts run from the point down as shown.

22 Using a 2mm cup burr push the burr down on the black dot left on the top of the mountain/volcano until it burns a small cup detail. Notice the fingers supporting the hand piece.

23 Add some more detail with the knife cutter burr to the top and bottom

24 Finish with a spray lacquer. •



22



23



24

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Let's Talk – tools & equipment

In the first of a new series called Let's Talk, Chris Grace considers the tools & equipment required to complete a range of different turning tasks



PHOTOGRAPHS BY CHRIS GRACE

Compact but well-equipped workshop

This new series will take a look at the key equipment, tools and techniques that enable us to make a range of different turned items.

Whenever you need tools, it's a good idea to do some research. But who do you ask? Manufacturers always say their kit is the best, and often employ professional turners to show you that it is. It's only when you get home and into your workshop that you find that at least some of the magic was in the demonstrator rather than the tool. You might forget details about using the tool later, and perhaps discover it's not quite the right tool for what you want to do after all.

Let's be clear. I'm not saying don't ask suppliers – many have a wealth of information, and tool suppliers don't want unhappy customers. But ask probing questions, try to be specific about what you want to do, or the problem you want to solve. Ask them to show you how to use the item. I simply advocate getting information from a variety of sources,

and woodturning clubs, forums and so on are also great resources.

Many clubs welcome proficient turners and beginners alike, and are happy to provide advice on initial purchases. Again, you need to consider the nature of likely responses. The person you're asking may have specific needs or preferences, and hence talk about what works for them. They may not consider your circumstances or level of experience – you need to know what will work for you. So, ask follow-up questions, such as: 'Why is that the best? What alternatives are there? Is that tool versatile enough to do other things as well? What type of turning do they do and what do they use the tool for?'

At the end of the day, you don't need to follow the crowd and can do as you see fit, but at least you will be armed with some information on which to make a judgement about purchases. In addition, you will need to consider the space you have available and essential safety precautions.



Tools racked for easy access



Essential equipment – a grinder

◀ What do you need from a lathe?

The lathe needs to spin the wood controllably and without wobbling – what more do you need? Well... nothing really. So what else do you want? These are the essentials, and most lathes provide them, or can be coaxed into doing so. There are, however, some desirable features that either increase versatility or add convenience.

TO SWIVEL OR NOT

A swivelling headstock is a lathe-expanding feature. You are no longer limited to the diameter you can turn over the bed, as the headstock can be rotated for greater clearance. This can also be used to enable a more comfortable turning position for some operations. A potentially useful option.

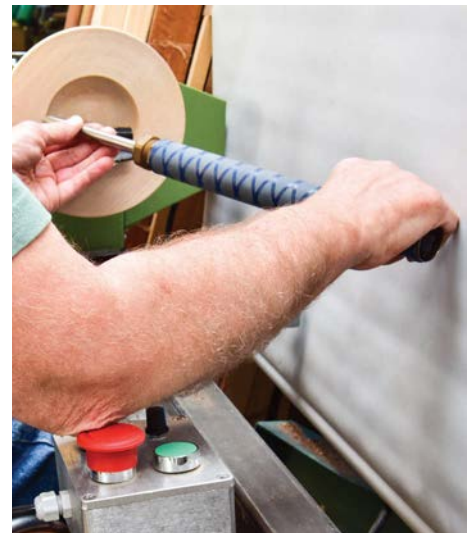
SPEED DEMON

Using the best speed for a particular item is helpful, but changing belts between pulley grooves can be limiting. Another option is variable pulleys, controlled by a lever on the front of the headstock. This has a downside – you cannot change speeds when the lathe is stationary. Why's that an issue? Well, say you last used the lathe on high speed, and you've just mounted a large or out-of-balance blank – turning it on at full speed would be potentially dangerous.

Other options vary the speed electronically, the most flexible uses an inverter. A benefit these bring is that they often also allow the lathe to turn in reverse, and some provide the facility for remote-control stop/start. Remote pendants can be very convenient as you can position them wherever they can be easily reached. I often put mine under my elbow when hollowing, so if I need to stop the lathe quickly I can – without letting go of the tool. Companies sell conversion kits to upgrade lathes to inverter-based operation, but they aren't cheap, and you typically have to fit them, including replacing the motor.



Swivel headstocks allow more comfortable working and larger diameter workpieces

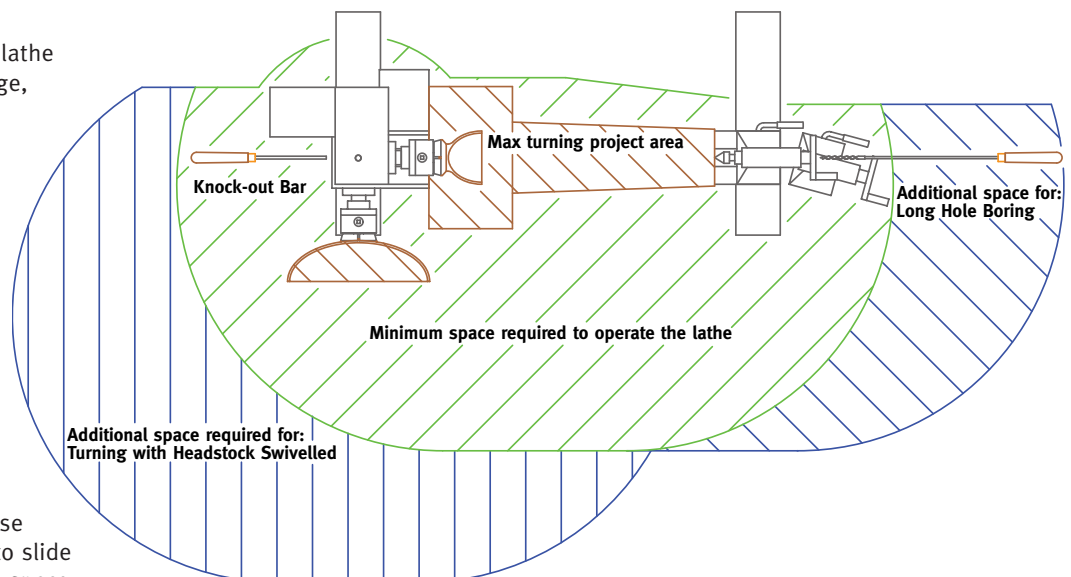


Inverters control speed & reversing – remote pendants can be positioned for safe operation

HOW BIG?

A key consideration is what size lathe you need for the use you envisage, but that presumes you know what you will end up turning. This really depends on your ambitions and the space available. You can turn a lot of very nice projects on a mid-sized lathe, however, features such as a swivelling headstock and a bed extension can significantly increase the projects you can make.

Remember that, in addition to space for the lathe itself, you will need to get to both the headstock, for knocking out morse taper centres, and the tailstock to slide it off the bed. You will also need space to move around in front of the lathe.



Space is needed, not just for the lathe but for safe working in front and both ends

As a result larger lathes don't necessarily require that much more space than smaller ones. It really depends on whether you can leave it set up permanently, or if it needs to be portable so you can lift it on to a bench when required. Larger lathes are typically much heavier.

Myth buster

- **I need a big lathe:** You can make larger projects on a smaller lathe if it has a swivelling headstock and you joint longer pieces matching the grain.

NEW vs USED LATHES

It may be worth considering a used lathe rather than new. As others upgrade or give up turning, you might be able to get a good deal. Also there are some older lathes with features that are difficult to find on new ones. However, when buying used you need to ensure that the lathe hasn't been abused, and that it isn't simply obsolete and difficult to maintain.

Good, free-running bearings are a must, though these can be replaced on some machines. Having a commonly used spindle thread is very helpful if you might want additional chucks etc. M33 x 3.5mm is the most common modern standard in Europe.

1in x 8tpi is an older standard and still much used, and the other common thread size used in the US is 1¼in x 8tpi. Consider also the size of the toolrest stem – 1in is most common. MT2 is the most common morse taper for both the headstock and tailstock. The banjo and tailstock should slide and lock easily – these cause great annoyance if they don't work smoothly.

Old lathes are often very heavy and rigid, which is great as long as you can move them, while some newer, cheaper machines can be a bit less substantial. If you buy used, make sure you aren't buying someone else's problems.

Most lathes sold by the major manufacturers today offer a very good combination of facilities for the money. While, as usual, you get what you pay for, the law of diminishing returns also applies. Cheap lathes are built down to a price, so your expectations should be tempered. However, they still make the wood go round, and you may be able to produce interesting projects on a budget. Whatever lathe you get, it will need to be mounted to a stand or bench for maximum rigidity – how rigid depends on the lathe and what you turn, but any vibration will make finishing pieces to a good standard difficult.

Workshop tip

Bolt your lathe to a sturdy bench or the floor or put weights on the stand to improve rigidity.



Lathes come in many sizes, but it's amazing what you can make on a relatively small lathe



Don't disregard older or second-hand lathes. Many are very well made

Workshop machines

Other equipment can be useful, make life easier, or extend the scope of your projects, but is optional. A bandsaw is useful for cutting or trimming blanks, but you can buy pre-prepared blanks, and lots of cuts can be performed with hand saws. A drill press can be handy, but it doesn't need to be big, and you can drill effectively on a lathe. Sanding machines also have their place, but with ingenuity you can often achieve the same result by using your lathe – it really is a universal machine.



A variety of blanks stored ready to use



A bandsaw is the most versatile saw for woodturners. A drill press is very useful, as seen in the background, but a hand drill in a stand will perform most tasks required



Sanders are useful for ancillary operations – disc, belt and bobbin illustrated

◀ Turning Tools

Most turners build their collection up over years. I teach and demonstrate, so I need more than normal so that I can show people the benefit or not of different tools – well that's my excuse,

and even my wife seems to believe it.

HOW MANY TOOLS DO YOU NEED

Don't be influenced by the plethora of tools in catalogues and what you

often see in experienced woodturner's workshops. You don't actually need that many tools. Ask a professional how many they use regularly, or look at what they bring to a club demonstration.

You can make a broad range of turnings with just six core tools and suggested sizes:



ANATOMY OF A GOUGE

A spindle roughing gouge is forged from a wide, flat piece of steel and end on has a roughly semi-circular form of even thickness. They are typically 19 to 32mm wide. Modern spindle and bowl gouges are made from round bar with the former having a relatively shallow groove ground part way down its length, and the latter having a deeper groove.

I recommend a rectangular section parting tool for ease of use rather than diamond-shaped or fluted.

Some recommend using a skew on its side as a negative rake scraper to create dovetails, instead of using a dedicated dovetail scraper. If you use a skew this way the edge will become dull very quickly, making it difficult to use for its intended purpose without re-sharpening.

I have selected these tools because they are versatile, and with them it's possible to turn a surprising array of projects. We will cover how to put them to use in subsequent articles.

HOW BIG IS BIG ENOUGH

When buying gouges, bigger is not necessarily better – they take a larger bite out of the wood, and take more skill to control. Variations on the six core tools and alternative/specialised tools can be of benefit. However, learning how to get the most out of the key tools will pay dividends and prepare you to help understand what else you might need and how to get the best from them as well.

Myth busters

- **Tool sets are good value:** This is often not the case, particularly if there are tools included you will seldom need/use.
- **You need lots of specialist tools:** Special tools are sometimes beneficial. However, most tasks can be performed with standard tools if you learn to use them to full advantage.

Many professional turners use a limited range of tools as they can become more proficient with each. It's often quicker to use the tool you have in your hand rather than picking up another one, provided it's fundamentally capable of performing the task, and you are able to control it appropriately to achieve the desired result.

WHAT ABOUT USED TOOLS?

Used tools can be good value. I have bought many tools used. With modern M2 high speed steel (HSS) tools what you see is what you get. Don't worry if the handle isn't to your liking – you're a woodturner. Similarly, if it's ground badly, you can re-grind it.

Older carbon steel tools shouldn't be overlooked either. While you have

to be more careful when sharpening them to avoid 'blueing' the steel and affecting its hardness, they take a keener edge, and I much prefer them for my big scrapers.

There are newer, special steels, and they have their benefits such as holding an edge for longer and so on, but for beginners and improvers M2 high speed steel tools will be ideal to use. These will serve you well with regards to learning to turn, sharpen and exploring different timbers as you develop your skills.

Myth buster

- **Carbon steel tools aren't any good:** They take a keener edge, but are easier to 'blue' when sharpening – I prefer them for my traditional scrapers.

Workshop tip: The more sharpening you do, the better you will get at it

Turning accessories

The most basic accessories, and means of driving the wood, are centres. These are divided into 'dead' or 'drive' centres and 'live' or 'rotating' centres, the former being used in the headstock to transmit drive from the lathe spindle to the wood, and the latter, which has bearings, in the tailstock for support.

Four-prong drives, also called drive spurs, are standard for most uses, though two-prong drives are good for driving uneven surfaces. Ring centres are much underused – as drive centres they allow the wood to stop easily if you have a catch without doing too much damage. As a revolving centre they don't tend to push into the fibres of end grain, splitting them like a standard live centre can.

There are newer, serrated ring centres with a sprung centre point that are very good, combining the attributes of some other centres. However, all you need to start with is a four-prong drive centre and a standard revolving centre.

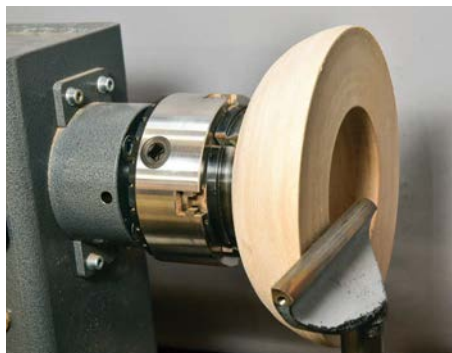
CHUCKING

While a chuck is not essential, scroll chucks are quick and convenient to use, and very versatile. Many turners managed for years without them, using jam chucks instead. I often make work-holding solutions out of wood etc. If you can afford a chuck, it's a good idea to have one as it simplifies many work-holding tasks.

There are lots of chuck manufacturers offering a bewildering array of chucks and jaws. Initially one set of jaws is adequate, about 50mm is typical, and most experienced turners only use three or four different sets of jaws on a regular basis.



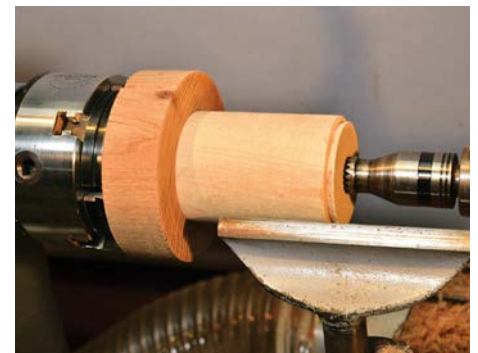
Centres from left to right: live, revolving, crown, ring, four-prong & two-prong drives/drive spurs



A scroll chuck is a convenient and secure way to hold a variety of work

However, if you regularly do something that would benefit from specialist jaws, they may make life safer, easier or quicker.

Before buying new jaws for a project, consider making your own inserts, or use a glue-on chucking block.



A jam chuck is flexible, secure and you can make whatever size you need

Workshop tip

Make your own jam chucks – they can be made to fit perfectly and are very effective

FACEPLATES

While often underrated, these are a great way of holding medium to larger blanks securely – just add more screws in an area you will later turn away. In addition, I often use a faceplate, with a scrap of wood added, as the basis for a difficult work-holding problem. For example, you can screw a disc of MDF to the faceplate, then hot-melt glue your project to that. It can be used many times over before you finally wear out the MDF. You can even make hardwood faceplates to be held directly in your chuck.



Faceplates are a very secure holding device and can be made to size in wood

DRILL CHUCK

Eventually you will need to drill a hole accurately in wood mounted on your lathe, so a drill chuck that can be held in the tailstock is a good idea, together with a selection of drill bits. I use jobber and Forstner bits. Cheaper sets are OK for occasional use, but for sizes you use regularly, it's worth having good-quality bits.



Drill chucks are available keyed or keyless and many bit types are available

MEASURING AND MARKING EQUIPMENT

You will need a selection of callipers, dividers, squares, depth gauges and centre finders for measuring accurately. Modern digital callipers are magical things, enabling instant conversion between mm and inches, and can be zero'd at any point. So, for example, you can tell how much wood you still have to remove.

Other basic tools can be put to good use, such as a rule, awl, saw, pencil and marker pen etc.



Callipers and other measuring devices used when making turnings to size or duplicating items

Staying safe

Safety equipment to protect yourself is an absolute must to enjoy your hobby for any length of time. Some risks are immediate and apparent, such as flying pieces of wood and shavings. Others are less obvious until they bite you, e.g. catching loose clothing in a machine that rotates. More insidious are lung and hearing problems, which don't manifest themselves as debilitating until years after you started the damage. So, it's well worth addressing safety at the outset, and making it a good habit.

STAY SAFE – INTEGRATE SAFETY FROM THE OUTSET

It's difficult to eliminate truly unforeseen accidents, however, many can be avoided with a bit of forethought, and the impact of others can be lessened by using relevant Personal Protective Equipment (PPE) as appropriate to mitigate risks. What you do might not warrant a full-blown risk assessment, but look around you, think what might go wrong, and take a moment to do something to prevent it. At least have a phone handy.

Eye protection is an absolute minimum. Safety glasses are readily available with reading magnification if required, however full face protection is recommended, using a face shield or powered respirator.

Respiratory protective equipment (RPE) is often overlooked until the dust causes a problem.

Dust masks or respirators can be worn



I have ear defenders if required & I'm also wearing safety boots

with face shields and safety glasses, and should be worn while dust is present – even sweeping up generates hazardous dust. Make sure the protection you use is rated for the hazard, e.g. dust or vapour. Powered respirators are more expensive, but worthwhile if you do lots of turning. Battery versions are convenient for mobility.

Consider also ear defenders, safety footwear, gloves to protect against heat or chemicals, and eliminate loose clothing or long hair as potential hazards.

Chip extraction at source is a good idea, however, not all capture the harmful fine



Good extraction helps remove chips, but dust protection is also necessary

dust, so lung protection is still necessary. If you have an extractor, ensure it's convenient and easy to use as close as possible to where the waste is produced.

Don't forget about workshop hazards such as tripping, and take care when moving or lifting machinery and large wood blanks.

If you have questions on tools and equipment, ask on forums or drop me a line. Next time we will take a look at sharpening. ●



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TOOLS & MACHINERY

Community news

We bring you the latest news from the world of woodturning and important dates for your diary

We try to give accurate details on forthcoming events. Please check with organisers for up-to-date information if you are planning to attend any of the events mentioned.

Push & Pull exhibition

Push & Pull features work by artist Will Cruickshank and comprises large sculptural works in wood, plaster and thread, alongside a series of woven hangings.

Cruickshank's work experiments with form and materials, and processes of invention and making. Push & Pull alludes to the relationship between material, machine and maker. This reflects a process grounded in discovering by doing, by making, and in ideas of thinking through making.

The artist's studio, located in Essex, is in three converted grain silos, where he develops his own machinery, materials and production procedures. He has made improvised lathes, makeshift weaving machines and printing presses. He has also developed water-carving processes to make artwork from timber, concrete, plaster, wool, thread and paint.

The exhibition venue is: Aspex Gallery The Vulcan Building, Gunwharf Quays, Portsmouth, PO1 3BF.

Take part

Throughout the summer there will be an opportunity for members of the public to explore Cruickshank's work



©SYLVAIN-DELEU 2/COURTESY OF ASPEX GALLERY

at an intimate Coffee & Conversation event (£5 per person). Aspex has also launched The Inventors, a programme of free workshops for people of all ages and abilities, exploring Push & Pull's central themes of invention and innovation. See the Gallery's website for further details:

Web: www.aspex.org.uk

£1 million push for the Faughan Valley landscape gets underway

The Heritage Lottery Fund (HLF) has announced funding of more than £50,000 for the first phase of a Woodland Trust project which is set to revitalise the Faughan Valley landscape, on the outskirts of Derry/Londonderry.

The funding boost will enable the conservation charity to make plans, over the next 18 months, for a massive £1 million project. It's an undertaking that will benefit the valley's communities, landowners, landscape and wildlife.

The Faughan Valley runs from the foothills of the Sperrin Mountains along the beautiful River Faughan to the outskirts of the city. Covering some 80sq m, it has been identified as an area of strategic importance thanks to some precious natural features.

The Woodland Trust will work with landowners and communities to create a 'resilient wooded landscape', with numerous benefits in the offing.

The fundamental aim is to restore, bolster and connect the vulnerable fragments of ancient woodland. New hedgerows, for example, will provide a continuous corridor for the valley's wildlife, which includes the endangered red squirrel.

It's good news for people, too. New and improved access, including quaint bridges, will open up miles of stunning woodland and riverside walks. And an imaginative education and activity programme will provide the chance for students and members of the public to get to grips with the natural



PHOTOGRAPH BY OAKS WOOD MICHAEL COOPER / COURTESY OF WOODLAND TRUST

heritage on their doorstep. There will be opportunities for volunteers, from surveying sites to checking out invasive species. Volunteers will develop confidence and skills, some of which will be rewarded through formal accreditation.

Established in 1972, the Woodland Trust now has more than 1,000 sites in its care, covering over 22,500ha. Access to its woods is free. Further news can be found at: www.woodlandtrust.org.uk

SHOWS AND EVENTS

Turn Up open day

Surrey Association of Woodturners holds its open day, called Turn Up, on Sunday 28 October. The venue is The Mytchett Community Centre, 140 Mytchett Road, Camberley, Surrey, GU16 6AA

The guest turner at this year's event is Mick Hanbury. In addition to Mick, there will be other turners demonstrating, equipment and timber for sale and the interclub competition. Admission is £4

For further information visit: www.sawoodturners.org



Southwest Association of Turners Symposium

When: 24-26 August 2018
Where: Waco Convention centre, 100 Washington Ave, Waco, TX 76701, USA
Web: www.swaturners.org

Norwegian Woodturning Cruise

When: 20 August-1 September 2018
Where: Starting at Stavanger, Norway
Web: www.woodturningcruise.com

Yandles & Sons Woodworking Show

When: 7-8 September 2018
Where: Hurst Works, Hurst, Martock, Somerset, TA12 6JU
Web: www.yandles.co.uk

Rocky Mountain Woodturning Symposium

When: 14-16 September 2018
Where: The Ranch/Larimer County Fairgrounds, 5280 Arena Cir, Loveland, CO 80538, US
Web: www.rmwoodturningsymposium.com

Bentley Woodfair

When: 28-30 September 2018
Where: Bentley, Halland, East Sussex, BN8 5AF
Web: www.bentley.org.uk

Mid-Atlantic Woodturning Symposium

When: 29-30 September 2018
Where: 5 S Queen St, Lancaster, PA 17603
Web: <http://www.mawts.com>

Handmade at kew

When: 4-7 October 2018
Where: Royal Botanic Gardens, Kew, Richmond, TW9 3AB
Web: www.handmadeinbritain.co.uk

AWGB Seminar

When: 5-7 October 2018
Where: Yarnfield Park Training & Conference Centre, Stone, Staffordshire
Web: www.awgbwoodturningseminar.co.uk

Irish Woodturners Guild National Seminar

When: 13-14 October 2018
Where: Radisson Blu Hotel, Ennis Road, Burtonhill, Limerick, Ireland
Web: www.iwg.ie/drupal/Seminar2018

Woodworking and Powertool show

When: 26-27 October 2018
Where: Westpoint Centre, Clyst St Mary, Exeter, EX5 1DJ
Web: www.wptwest.co.uk

The Toolpost Open House

When: 3-4 November 2018
Where: Unit 7, Hawksworth, Southmead Industrial Park, Didcot, Oxfordshire, OX11 7HR
Web: www.toolpost.co.uk

North of England Woodworking show

When: 16-18 November
Where: The Great Yorkshire showground, Harrogate, HG2 8QZ
Web: www.skpromotions.co.uk

2019 events

Florida Woodturning Symposium

When: 8-10 February 2019
Where: Lake Yale Baptist Conference Centre, 39034 County Rd 452, Leesburg, FL 34788, US
Web: floridawoodturningsymposium.com

Midlands Woodworking & Power Tool Show

When: 22-23 March 2019
Where: Newark Showground, Lincoln Rd, Winthorpe, Coddington, Newark, NG24 2NY
Web: www.nelton.co.uk

Turnfest

When: 29-31 March 2019
Where: Seaworld Resort, Seaworld Dr, Main Beach, Queensland, Australia
Web: www.turnfest.com.au

Totally Turning

When: 30-31 March 2019
Where: Saratoga Springs City Centre, 522 Broadway, Saratoga Springs, New York 12866, US
Web: www.totallyturning.com

Crafts Supplies/Turners Retreat Open Day

When: 6 April 2019
Where: Unit 2, Faraday Close, Harworth, Nottinghamshire, DN11 8RU
Web: www.craft-supplies.co.uk

Woodworks@Daventry

When: 10-11 May 2019
Where: Daventry Leisure Centre, Lodge Road, Daventry, NN11 4FP
Web: www.woodturner.org

Utah Woodturning Symposium

When: 16-18 May 2019
Where: UCCU Events Centre, 800 W University Parkway, Orem, UT 84058, US
Web: utahwoodturning.com

AAW Symposium

When: 11-14 July 2019
Where: Raleigh Convention Centre, Raleigh, North Carolina, US
Web: www.woodturner.org

Rocky Mountain Woodturning Symposium

When: 14-16 September 2019
Where: The Ranch, Larimer County Fairgrounds, 5280 Arena Cir, Loveland, CO 80538, US
Web: www.rmwoodturningsymposium.com

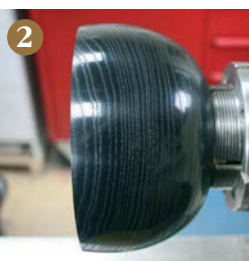
Irish Woodturners Guild Seminar

When: 19-20 October 2019
Where: Radisson Blu Hotel, Limerick, Ireland
Web: www.iwg.ie/drupal



CHESTNUT P R O D U C T S FINISHING SCHOOL

Using Gilt Cream over Ebonising Lacquer (2)



1 Gilt Cream is a firm wax blended with metallic pigments and is available in Gold, Silver and Copper. It can be used to colour an entire piece or to highlight grain.

2 A bowl has been prepared by having the grain opened using a Liming Brush and then having a coat of Ebonising Lacquer applied and allowed to dry.

3 Using it as sparingly as possible wipe a coat of Gilt Cream over the surface, making sure that all the grain is covered.

4 Using an oil such as Finishing Oil, Hard Wax Oil or even Food Safe Finish, on a cloth, clean the excess Gilt Cream off the surface. As the lacquer has followed the contours of the grain it will remain there, while the close grain areas will be cleaned. This can be done most easily with the lathe running.

5 To finish another coat of oil or WoodWax 22 can be applied to seal the Gilt Cream in and protect the finish from handling. It is not advisable to apply lacquer over a surface which has had Gilt Cream applied to it.

See our YouTube channel for more tips!
More information available from your local stockists or contact us at:

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Turning crotch wood

Andy Coates explores the fundamentals of cutting and working with crotch timber



PHOTOGRAPHS BY ANDY COATES

Most of the wood that most of us turn is straight-grained hardwood, and most of this wood is sourced from specialist suppliers, maybe even a specialist woodturning blank supplier.

There is nothing whatsoever wrong with this approach to sourcing turning material. In fact, it makes sense particularly for the novice to intermediate turner because the blanks have usually been pre-cut into discs and you have the surety of buying from a company that knows wood and what you need. What you probably will not find direct from the blank supplier is good-quality crotch wood. Millers tend to take the straight sections of trunks to mill into boards and the resulting boards and blanks cut from them are relatively straight grained.

However, there is another approach to sourcing wood for turning, and that is to obtain freshly-felled logs and branchwood from friends, relatives, friendly tree surgeons or wherever else you come across it. Many woodturners develop a third ear for the sound of a chainsaw and will think nothing of diverting from a route to find the source of the noise and enquire as to the availability of the resulting waste wood.

I say 'waste wood' because it does not pay to be too excited at the sight of it. This has the potential to turn the logs into bars of gold in the eyes of the person doing the felling and cutting. I prefer to project the persona of somebody doing them a favour by removing the problematic mess.

CONVERTING TIMBER FOR USE

Obtaining turning material in this way can be as cheap as free or as unseasoned firewood. Either way it is cheaper than buying kiln-dried pre-cut discs, but it does have a number of downsides.

First, collection and removal can often be a problem. Wet wood is heavy and tree surgeons rarely cut wood in the most efficient manner for future use or removal, commonly cutting into lengths for small to medium-sized trees, and into discs anywhere between 150mm and 510mm deep for larger trees.

Logs of small or medium trees, 75-150mm long, are not too difficult to move and store, and the length means that, even with end checking and splits, there is likely to be lots of wood remaining for future use. Larger trunk sections are often cut

in slim discs and may require immediate processing to prevent the almost inevitable loss due to cracking. Parts of the tree are often discarded as unusable, too problematic, too heavy, or too ugly to be considered of use to anybody – the top of the trunk where the first boughs form, areas where large boughs come from the side of the trunk and the base of the tree where the trunk flares out. Each of these areas may provide wood blanks that have far more interest than those from the straight, clean sections of trunk or bough.

Second, processing and storing wood sourced in this way can be space and time consuming, and you may decide that this is not a suitable solution for you, but if you are able to take this route it can pay dividends by providing blanks with areas that have exciting figure and features.

The crotch is probably the most well-known of these. This is the area between the trunk and the first large bough, or boughs. There may even be two or more crotches at the top of a trunk. The base of the trunk may also contain some wood with interesting features, such as ripple, which is a result of the tree responding to stresses such as wind or steep terrain.

◀ Where do we look for crotch or ripple figuring?

When harvesting and processing wood for crotch features such as 'feather' and, to a lesser extent, 'ripple', generally large sections of hardwoods offer the best chance of finding features. However, other species can sometimes produce these desirable features. The ideal is to find a trunk that branches into two large boughs, but there may be large lower branches that could also offer figure. If you have the opportunity to examine the tree prior to felling you may be able to advise on the most appropriate cuts to make the best use from the wood.

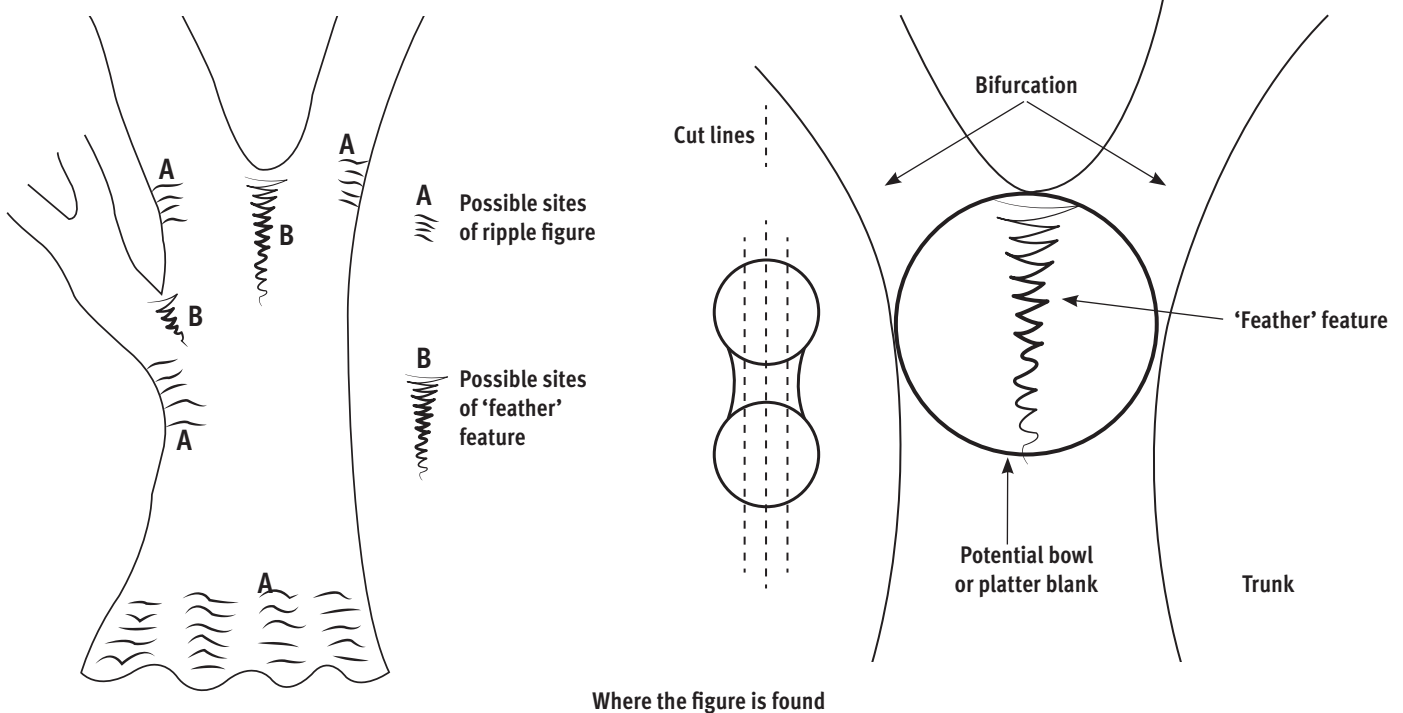
The form of the bifurcation, placement of large lower limbs and markings in the

bark can all give hints as to what might be found under the surface. A mistake at this stage can result in the destruction of the best features.

The shown diagrams are a basic guide to where you might find interesting features and figure in crotch sections. Down near the base of the trunk there might be good areas of ripple feature. You can think of ripple as wood muscle, the tree laying it down across the grain to strengthen the tree in order that it can protect itself from the stresses caused by wind, or growing on an incline, by flexing rather than snapping. Wood grown on a incline, or in a tree that has grown at

an angle due to movement of the trunk early in its development, may also contain reaction wood, often called 'compression' or 'tension' wood, and while this can be interesting it can be problematic to work and dry. Not that this should put you off experimenting with it. In such wood you will find the pith is thrown off centre.

Feather feature and ripple may be at their most dramatic in the wood closer to the bark than the pith, so you will often need to give some thought as to how best to cut the workpiece from the wood. If the crotch is of a suitable size you might reasonably expect to produce platter, bowl, hollowform or box blanks from wood.



Cutting the crotch



Cedar (*Cedrus* spp.) crotch log



Cut lines to reveal figure



Resulting crotch feature

I used a piece of cedar to illustrate the best cutting method as it was the closest to the ideal form that I had to hand. In picture 1 you can clearly see the bifurcation from trunk into two equally-sized boughs. The section was cut below the bifurcation and across each bough above it. The larger the tree the longer the 'legs' should be cut. A large sycamore (*Acer pseudoplatanus*) or ash (*Fraxinus excelsior*) tree can produce feather feature up to 2ft long, so it is better to cut the trunk section longer to ensure you catch all of it.

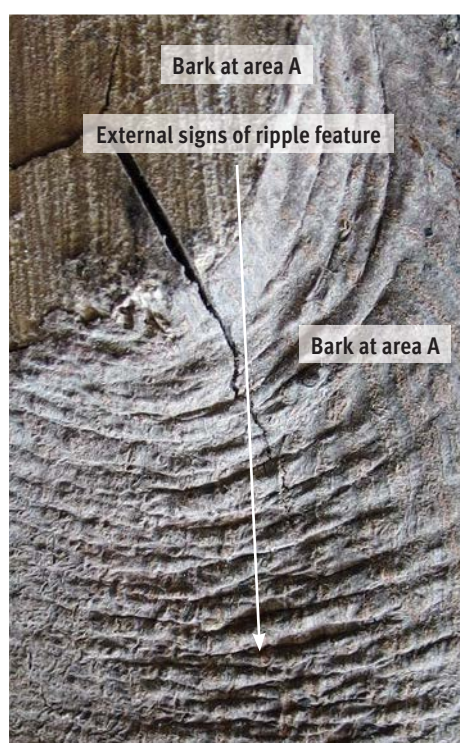
Wedging the cut section on a cutting stump cut directly through the centreline of the two boughs to the trunk. If the feather feature is there and the section is large enough, you may produce two potential feather blanks. If the section is smaller you might consider just taking the two outer cuts illustrated on page 24, lower middle image, and leaving the

section thicker to make best use of the feature. Sadly, these decisions are largely guess work tempered by experience and observation.

In the cedar (*Cedrus* spp.) section I used the boughs came off the trunk at about 60°. This often results in bark inclusions along the bifurcation line down through the trunk. This proved to be the case with this section. If the boughs come off at a less steep angle the probability of bark inclusion is dramatically reduced.

This does not necessarily make the section unusable but may require care and remedial work to ensure the blank is safe for turning. A bark inclusion generally means that any feather feature is either absent or destroyed by the bark inclusion. The grain, however, may still be interesting. There may also be spalting or staining due to water ingress.

Locating ripple feature



Signs of ripple on the bark

Unlike feather feature, ripple feature often reveals itself on the outer bark of the tree. The bark may appear to be folded, almost like an elephant's skin. Ripple feature is particularly sought by instrument makers for the back of string instruments, hence its other common name, 'fiddleback'. Ripple is attractive when simply worked, sealed and oiled, but is particularly suitable for staining. Feather and ripple feature runs across the grain and is usually denser than the surrounding wood, so when stain is used the feature takes it up differently to the surrounding wood and can result in a stunning contrast. Unfortunately this can also mean that turning it is difficult, with tear-out and chipping sometimes a problem. Sharp tools and light cuts are the key to a good finish.

On smaller-section branchwood there may



Ripple revealed upon cutting

be neither feature present, but you may find the figure and grain interesting enough to use despite this. On this small cherry (*Prunus* spp.) branch section there was neither feather nor ripple, but the resulting blanks are interesting and will make attractive small bowls.

One of the main problems with turning crotch blanks in their entirety is the presence of three separate areas of end grain. There is also an area between the bifurcation, which we could call intermediate grain, where the grain can be very odd. This is where a feather feature would begin and the troublesome area can extend down as far as the tip of the feather. The grain here can be very hard relative to the wood around it, and it almost cuts like twisted end grain and can be prone to pulling, chipping, and difficulty abrading. As ever,



Feather feature and ripple on a stained ash (*Fraxinus excelsior*) platter



Ripple feature on a stained maple (*Acer* spp.) box

sharp tools and fine cuts are the best solutions to the problem.

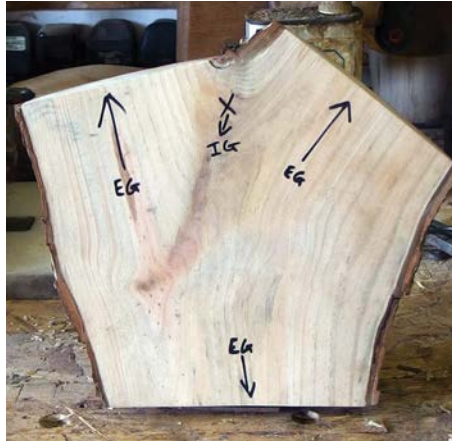
Although a bandsawn face, the areas where the grain is either end or intermediate can clearly be seen on page 26 top right image. ►



Cherry section



Resulting figure after slicing through the branch



Where is the grain?



The clues to how it will turn

Preparing the blanks for turning

If using the crotch in its entirety, it can improve the overall appearance of the finished piece to have the three cut ends flat and level. Trimming the ends on the bandsaw provides a flat surface for trimming the back of the blank to provide a flat surface for the tailstock centre to mount on. Marking the dead centre and using it to mount the blank will help with balance. The more you can reduce the possibility of vibration the easier the turning will be.

While the upper surface will require truing on the lathe, it can still be used to ensure the blank is mounted true on the lathe. This helps to ensure that the blank is balanced and that the flat

ends remain flat after turning. If the thought of all those corners and troublesome areas is simply too much for you, then the crotch can be cut from the three-legged crotch section. I tend not to cut circular discs, preferring instead to simply facet the blank around a scribed circle. This saves knocking the set off your bandsaw blade and will help it to last longer. We do, after all, have a machine specifically designed for making wooden objects round...

In the picture I have also scribed a much smaller disc. While this might appear wasteful it would put the feature more centrally in the finished bowl, which is a more aesthetically pleasing outcome.



Trimming ends flat



Trimming to create a flat base



Checking ends are flat and true



Marking dead centre for balance



Mounting the work centrally between centres



Alternative blank showing feature centrally

Turning crotch



Roughing down with a pull cut



Tear-out on the trailing edges



Shear cutting to reduce tear-out



Finishing cuts



Cutting the upper face flat



Turning the inside of the bowl

Essentially the turning is no different from any other kind of faceplate turning – only the corners and the extra area of end grain are wildly different. (The article on square-edged turning in issue 318 will be of help here.) You have six corners to contend with on an entire crotch blank, which makes a pull cut more appropriate than a push cut. With the flute slightly closed towards the blank, draw the tool back from close to the tailstock centre and out towards the edge of the blank. There will be a temptation to end the cut too soon, which you need to train yourself to resist. Allow the cut to pull beyond the last of the wood before withdrawing the tool. Stopping the lathe you will notice areas where there is tear-out on the trailing edges. This can be reduced with a sharper tool, lighter cut, steeper shear angle, and if it is safe to do so, a faster lathe speed. Finishing cuts should be

taken at the sheerest possible angle with the lathe running as fast as it is safe to. Abrading is best achieved with the lathe stationary using a rotary arbor in a drill.

When the crotch is reversed there are a number of options: you can turn a flat rim section or curve the rim inwards to the bowl. The latter option will alter the outer shape of the rim dramatically. A flat upper surface can be more dramatic. A pull cut can be used to true the top surface but you may find a push cut possible with due care. Mark the outermost extent of the rotation on the toolrest and take careful light cuts, keeping the bevel perpendicular to the lathe bed to ensure the surface is flat. The bowl section can be turned as you would usually turn a bowl, but you may find torn grain a problem on the three areas previously mentioned. A strong, super-sharp scraper can help here. If you have the facility to lock the chuck to the

mandrel and turn in reverse, this can also help remove torn grain. If the bowl wall is unbroken it can be abraded with the lathe rotating, but real care is required to ensure you do not stray on to the uneven edge of the outer bowl. The wings are best abraded with the lathe stationary.

Conclusions

Crotch wood can be troublesome on many counts – finding, cutting, dimensioning, turning, drying – but the figure is well worth the effort when it is good. Both feather and ripple feature make superb material for staining with spirit or aniline dyes and some wonderful results can be had. Turning through the feature can prove difficult but, if nothing else, it will hone your cutting techniques and improve your general turning. If you have the opportunity to try some, do take it. I think you will enjoy it. ●

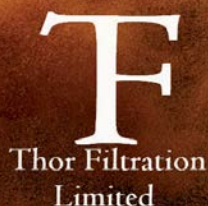
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Open-segmented bowl

Continuing his Editor's Challenge series, Richard Findley is tasked with making an open-segmented bowl



After the past few months of challenges from the editor, there is clearly a pattern emerging – Mark wants to see what my segmenting skills are like. This month's challenge is no different and once again will push me and test my skills. My task for this issue is to make an open-segmented bowl. Open segmenting is when there are gaps between each segment, which gives additional impact to the work and, when combined with a pattern in the selected timbers, can be very impressive. As usual with these challenges, my first job is some research.

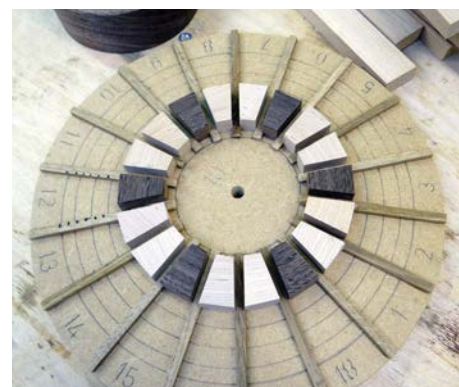
Research – jig

I have now made several items which involve either totally segmenting or partially segmenting, which by no means makes me an expert, but does give me a good foundation and a growing confidence. Making a segmented piece full of gaps does seem to be quite a challenge though. The first question I need to find an answer to is exactly how do I form

the regular spacing involved in open segmenting? It seems I need a jig of some sort. There are several versions available to buy in the US and plans to make my own but, as usual, I'm on a tight deadline, so I'd rather buy a tried and tested jig than have to work out a way of making one myself. Experience has already shown me how accurate everything needs to be in segmenting and I don't have several days to make, perfect and re-make jigs. I find online that UK-based segmented turner Sue Harker makes several versions of these jigs – known as segmenting wheels – and sells them through her website (<http://www.sueharker.com/open-segmented-woodturning-jigs>) at a price that means it really isn't worth my time building my own. There are also many other jigs and template guides for people to choose from.

Sue's jigs come in 6, 12, 18 and 24-segment variations, depending on the size of the item being made. The advice

on the website leads me to order the 18-segment wheel. The wheel itself is a fairly straightforward disc of MDF with securely fixed hardwood strips radiating out from the centre and is supplied with an instruction sheet which tells me that I need to cut my segments with a 10° angle, along with a few other helpful pointers.



Segmenting wheel jig with the first ring of segments in place

PHOTOGRAPHS BY RICHARD FINDLEY

◀ Research – design

My next step is to work out exactly what design of bowl I want to make.

As I realised last month, the scope of my design is only limited by my imagination, skill level and lathe size. The segmenting wheel allows a bowl of up to about 240mm to be made. For inspiration I do several internet searches for bowls of various sorts, as well as segmented and open-segmented bowls. Once again I am presented with a huge variety, ranging from poor in both design and execution to some really outstanding work with mind-bending patterns laid out in the segment positioning.

A couple catch my eye and make me think of my attempt last month to achieve a pattern in the feature ring. While it didn't entirely work, it did plant the seed of an idea that continuing that stepped pattern around the piece would give an interesting spiral pattern. Several pictures come up in my search based on the same idea so my mind is made up. I will make a simple open bowl and try to achieve a spiralling pattern running up the sides.

I loved the maple/walnut combination from the vase, so I'm going to stick to this again here. As with the vase, I'm going to top and bottom it with walnut and use maple as the primary wood, using the walnut to form the spiral pattern.

PLANNING

Woodturners aren't generally known as planners, but there is no way I would be able to pull this off without some sort of plan, so I draw out the bowl in full.

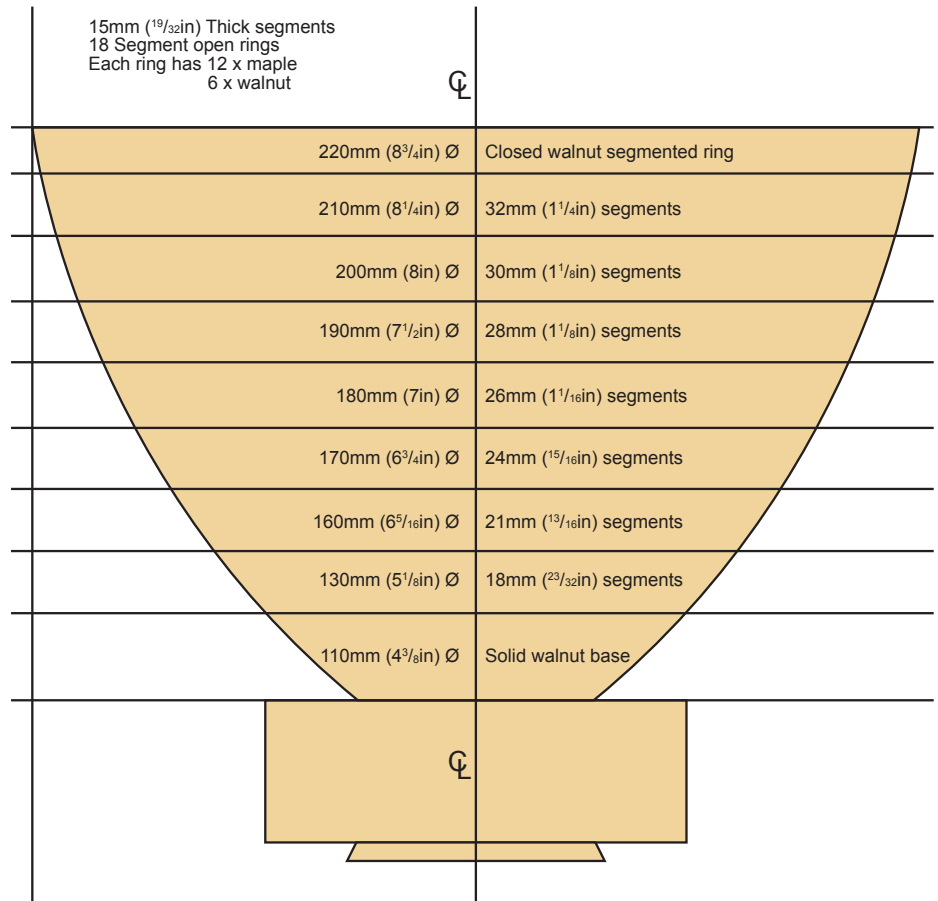
I decide that I'm going to use slightly thinner blocks than I did for the vase, so settle on 15mm thick. My feeling is that an odd number of layers should look best, so I go for seven rings, with a solid walnut base and a walnut segmented ring for the top.

A couple of simple calculations tell me that 18 segments in the ring divides into three, six times, so if every third block I add to the wheel is walnut, I will begin to achieve my intended pattern. This means that on each ring of 18 segments, I need six walnut and 12 maple.

TIMBER PREP

I prepared way too much timber for last month's vase, so I am able to feed the remaining strips of maple and walnut through my thicknesser and take them down to the 15mm I need.

Unlike a closed segmented job, I can't simply work out the circumference and divide it by the number of segments to find out the size of each – this time I need to bring the segmenting wheel into play. From my full-sized drawing I take the



My plan for the open-segmented bowl



Measuring and marking the diameters of each ring on the wheel

diameters of each ring and mark them on the wheel.

From these marks I am able to measure the width of each segment and add this information to my drawing. I can then

set about cutting the blocks in the same way as I had for the vase. I set the mitre fence on the sawbench to 10° using my digital protractor, so I can safely cross cut and begin cutting blocks.



Measuring the size of each segment



Setting the mitre fence to 10°



Cutting the segments

Beginning the glue-up

I cut a disc of 50mm-thick walnut, turn it to 110mm diameter and cut a tenon into the underside, which will make mounting my glue-up in the chuck easy when the time comes.

Before I do any gluing I need to decide how I'm going to clamp the layers of segments together. The method I used last month worked well but was difficult with only two hands, so I don't fancy trying to successfully repeat this eight times for this bowl. I look around the workshop for something heavy. I pick up the cast-iron centre steady that came with my Wadkin lathe and a couple of pieces of hardwood. Putting them on my postal scales they total nearly 25kg, so I figure that will probably be enough. I don't know the suggested clamping pressure of the glue I use, and generally the more pressure the better, but I think/hope this will be enough.

The segments in the first ring are all 18mm long and slot into the wheel as planned. I add a small blob of glue to the centre of each segment and place the walnut disc centrally on top. I then add my weights and leave to dry.

After about an hour I gently remove the weights and jig. A light tap with a mallet on the jig easily releases the jig from the glue-up. The first ring seems to be holding well. I add the next ring of segments, which are 21mm long, to the wheel. This time I carefully add two lines of glue to the segments, avoiding the centre which will line up with the gap in the previous layer. In my research only one article that I read mentioned cleaning excess glue with pipe cleaners. I feel this is quite a labour-intensive job, so better to avoid getting glue there in the first place. Importantly, the glue I use dries clear, so hopefully any tiny amounts of squeeze-out should be invisible once fully cured.

I carefully place the base of the bowl on to the next ring of segments in the wheel,

lining up the gaps with the centre of the segment above it, hold in place for a few moments while the glue grabs and add the weights.

TO FLATTEN OR NOT?

I read several articles on the subject before I began and one process mentioned is to flatten each row of segments before moving on to the next. I decide against it for two reasons. First, the authors of the articles in question were using the lathe to glue up the segments, making it very easy to sand each row flat before moving on to the next.

Second, I am very aware of my limited time frame and flattening each ring would entail leaving the glue to fully cure before moving on to the next, meaning only one, perhaps two, rings a day at most. Proceeding without flattening each ring should not be a problem as long as the wood is properly prepared and there is good, even pressure applied while the glue grabs. With this method I can carefully add a ring about every hour.

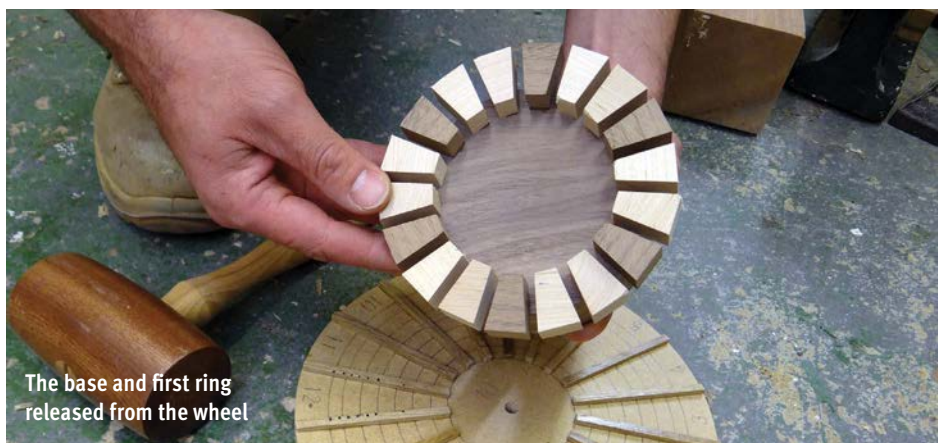
I decide to proceed without flattening between each ring and see how it goes. Using this method I get all of the open segments glued together in a day.



Gluing the walnut base to the first ring of segments



Heavy weights used to clamp the glue-up together



The base and first ring released from the wheel



Careful glue placement for the next open ring



Briefly holding the bowl in place while the glue grabs before adding weights

PATTERN

The pattern I am forming is a slight spiral of walnut running up (or down, depending on your point of view) the side of the bowl. There will be six spirals, which means it should be visible no matter what angle you view the bowl from. To achieve this I place a block of walnut in every third space on the segmenting wheel. When I place the bowl on top of the blocks in the wheel, I just need to make sure I rotate the pattern by one place each time, so the walnut blocks are diagonal to each other.

The spiral pattern on the inside of the bowl before turning



Walnut segmented ring

While the open segments dry I can work on the closed-segmented ring of walnut for the top. Previously the most segments I have put into a ring has been 12, but the same principle applies to an 18-segment ring, just the angle on each segment is now 10° . I choose 18 as it allows me to place the joints over the centre of each of the 18 segments in the top ring of the bowl, continuing the brickwork pattern of gluing up, which should provide the very strongest end result.

As I have before, I work out the circumference of the ring I need to make and divide it into 18. Rounding up to the nearest full number, I cut the segments to 39mm long. I then rub-joint semi-circles of nine segments each together and leave them to one side to dry while I continue to work on the rest of the bowl.

After a couple of hours I very carefully flatten them enough to place on my jig to level the unglued faces so they meet up perfectly. I then rub-joint the semi-circles into a full ring and leave overnight to fully dry.

Once fully cured I am comfortable fully flattening both faces of the walnut ring in preparation to add it to the bowl. I



The beginnings of the walnut ring



Truing up the joining faces of the two semi-circles



The ring set aside to dry



Flattening before final glue-up

rub it repeatedly over a piece of 180 grit abrasive wrapped tightly around a board of MDF, regularly turning it to ensure it

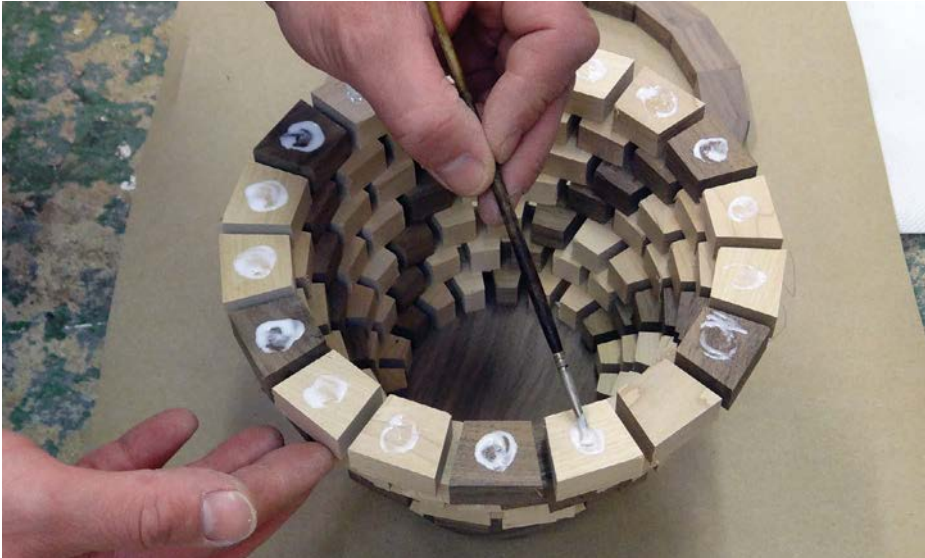
remains flat. Once I'm satisfied that it is totally flat I clean off all of the dust and get ready for the last stage of the glue-up.

Final glue-up

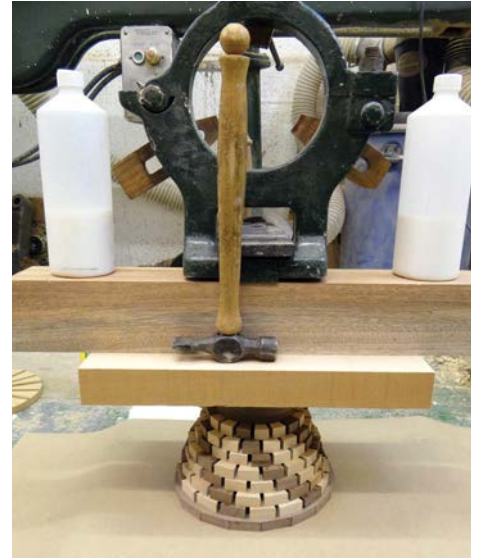
After gluing the seven layers of open segmenting I am well practised at it, only this time I add the glue to the centre of each of the top rings of open segments, avoiding the glue spreading into the openings.

I place a piece of flat hardwood on the floor to give a solid base on which to sit the bowl and load the weights. I add

the glued bowl, carefully lining up the joints with the centre of each of the top segments, hold for a moment to allow the glue to lightly grab, and then add the hardwood blocks and centre steady, along with a few other heavy things I can easily get my hands on, and leave overnight to fully dry before I begin turning.



Careful glue placement ready for the walnut ring



Final glue-up under weights

Turning

Looking at the bowl blank, it's hard to know if the glue up has been entirely successful, but it looks promising and the spiral pattern has gone to plan. I place the bowl in the chuck, using the chucking spigot I turned at the beginning, and make a start turning the outside. I use a 13mm bowl gouge (16mm bar) to turn the outer shape. I'm pleased to find it cuts cleanly and I quickly form a flowing curve. One concern I had was that the segments would chip out into the openings, with them being unsupported by the next block, but as none of the articles I had read mentioned this as a potential issue I carried on as normal, checking regularly and pleased to find there is no break out.

Once the shape is cut without any steps still showing, I switch to a shear cut, using the wing of the gouge, and produce

a beautifully smooth and clean surface which I carefully hand sand from 180 to 400 grit.

Examining the outside I am pleased with the quality of the joins. There don't appear to be any significant gaps (apart from those that are supposed to be there), so I decide to continue with the inside of the bowl. If I was nervous in any way I could have wrapped the outside in clingfilm, which is a technique often employed by hollow-form turners working with wood with natural faults, such as knots and cracks.

I begin turning the inside with the same bowl gouge but find the tool bounces too much on the uneven surface. I try a carbide probe tool, which works much better. With this tool I completely smooth out the walls of the bowl but struggle to

to achieve a perfect curve, so go back to the bowl gouge and take a couple of bevel rubbing push cuts down the walls, which achieve the desired result.

As I turn, I often touch the work to feel the progress of a curve, but in this instance I am careful to stop the lathe when I feel for the curve. The surface isn't sharp but, because of the gaps, it doesn't feel smooth and is hard to judge in the normal way.

The bowl is reasonably deep so my usual 60° bowl gouge cuts all down the side wall. But I swap to an 80° gouge which allows better access around the bottom corner and across the base. As I had on the outside, I carefully hand sand from 180 to 400 grit. I take great care to keep the abrasive trailing as it can be snatched from my hand if it catches in the openings between the segments.



All glued up and ready to turn



Initial cutting with bowl gouge



Happy to see no breakout



Shear cutting the outside of the bowl



Contour-ground carbide-tip tool in use



Bowl gouge in use

FINISHING THE BASE

The walnut block that forms the base is thicker than needs be, which allows good access while turning, but now needs finishing to suit the rest of the bowl. I have a disc of MDF permanently attached to a faceplate which I use for re-mounting bowls. I bring up the tailstock and sandwich it between the disc and the live centre, which gives good access to turn the base down to a small nub, which I saw off with a handsaw. I power sand the base to 400 grit.

FINISHING

I was a little concerned about finishing the bowl. Most of the articles I read suggested spray finishing, as this gets between the openings best without having to individually paint each one with a tiny brush. I use satin acrylic lacquer, which works perfectly. Before the last coat I lightly rub the bowl back with a fine abrasive pad to give a totally smooth finish.



Reverse turning the base



Spraying acrylic lacquer finish

Conclusion

I have enjoyed these segmented projects far more than I thought I would. The prospect of gluing little blocks together to make bigger projects had never really appealed to me before, but once I passed a couple of hurdles regarding accuracy and realised the scope of design possibilities I feel like I may even do more in the future. The projects I have made have been far from perfect, but have given me a really good understanding of the processes involved and I feel I can only improve from here. This open-segmented bowl has been probably the most successful of the projects as far as design and execution, although I think the base could have been smaller, which would have improved the curve further. But overall I am pleased with the outcome. ●



The finished open-segmented bowl

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Pepper

Mike Darlow explores how pepper came to Europe

Pepper has long been the most important spice, and is still commonly dispensed from turned, wooden pepper grinders. I prefer the term pepper grinder for hand-operated examples. 'Pepper mill' implies that the grinding is powered by a means other than manpower. The battery-powered versions used in decadent households should, therefore, be called mills.

Much has been published on making pepper grinders, including the book *Turning Salt & Pepper Shakers and Mills*, by Chris West. This hasn't discouraged me from adding this article.

It has three parts: an introduction to pepper; my rationale and the resulting design for a pepper grinder; and how to make that design of grinder.

Herbs are derived from the aromatic, herbaceous, leafy green parts of plants. Spices are from other plant parts, including the bark, roots, flower buds, stigma, gums, resins, fruits or, in the case of pepper, its berries (seeds).

Pepper is prepared from the berries of *Piper nigrum*, a tropical perennial climbing vine of the *Piperaceae* family, probably originally native to the Malabar region along the south west coast of India. Pepper is now grown in many tropical countries in large plantations on artificial towers about 5m high. Vietnam is currently the major pepper producer. In 2013 it produced 163,000 tonnes of the total world pepper production of 473,000 tonnes.

The pepper berries turn from green to red as they ripen. Three processes are typically applied to the berries:

1. If the berries are picked before maturity and dried in the sun, they wrinkle and turn dark brown to produce black pepper.
2. If the berries are picked once mature, soaked, their outer skins rubbed away, and the pale seeds then dried, the product is white pepper.
3. Fresh pepper berries are also soaked in brine, vinegar, or in their own juice, and sold in jars or cans.

Green peppercorns are merely unripe pepper berries. Pink peppercorns are from the tree *Schinus molle*, which is native to the Peruvian Andes, drought resistant, and therefore widely grown in arid regions.



The vine *Piper nigrum*

Ground, dried pepper berries go stale quickly, hence the practice of grinding the berries immediately before use.

Pepper spray isn't prepared from pepper, and is more accurately called capsaicin spray because its active ingredient is

the chemical compound capsaicin. This is derived from the fruits of some species of the capsicum genus (which include chillies), and is a lachrymatory agent which causes tears, eye pain, and temporary blindness.

Pepper trading before the 16th century

In Asia pepper has been used as a food flavouring from at least 2000 BC. Black peppercorns were found stuffed in the nostrils of Ramesses II, who was mummified in Egypt in 1213BC. Pepper has been used in Europe from Roman times.

Prior to the European takeover of the spice trade in the 16th century, pepper destined for Europe, the Middle East and Africa was bought in south west India by Arab traders, then shipped westwards across the Arabian Sea. The then main Indian export port for pepper is called Kozhikode by Indians, but was also known by its Arab name Qaliquat or Calicut.

The ease of sailing to and fro across the Arabian Sea (the northern part of the Indian ocean to the west of India) depends on the time of year. The trade winds blow from south west to north east throughout the year. However, in the northern hemisphere spring and summer the Indian subcontinent heats faster than the sea, creating the north east monsoon winds favourable to sailing from Africa and Arabia to India. In the autumn and winter the reverse occurs. The winds associated with the resulting south west monsoon are stronger than the trade winds, and allow spice-laden ships to sail west. The pepper-carrying ships therefore usually sailed from India in October. After crossing the Arabian sea, pepper bound for Europe was shipped up the Red Sea rather than the Persian gulf, carried by camel train to Alexandria and other ports on the eastern Mediterranean coast, and thence by ship to European ports including Venice and Genoa.

The freight costs and the number of middle men involved in transporting pepper and other Asian spices such as nutmeg, cloves and cinnamon ensured that spices were hugely expensive in Europe. The potential profits from the spice trade



Prince Henry the Navigator (1394–1460)



View of Calicut from Georg Braun's and Franz Hogenberg's 1572 atlas *Civitates Orbis Terrarum*

were a major incentive for European kingdoms on the Atlantic coast to take that trade over. In the van was Portugal.

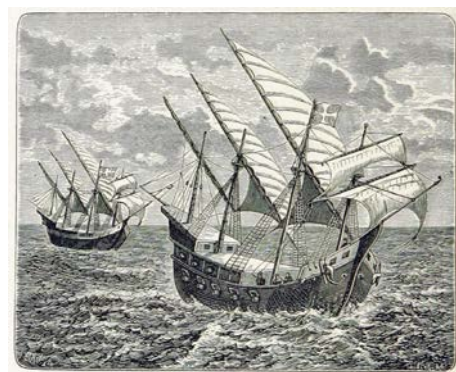
Portugal became a separate kingdom during the 12th century. It commenced its efforts to acquire a trading empire in 1415 when it invaded the Barbary pirate base of Ceuta, opposite Gibraltar, in what is now Morocco.

The third son of Portugal's King John I, known subsequently as Henry the Navigator, took part in the invasion of Ceuta. Its success spurred Henry's promotion of exploration in the Atlantic ocean and down the west coast of Africa. Henry also promoted the development of a new type of sailing ship better suited for exploration, the caravel.

Henry died in 1460, but Portuguese exploration continued. In 1486 King John II of Portugal appointed Bartolomeu Dias to lead an expedition to discover a trade route to India. In early 1488 Dias passed what he called the Cape of Storms – John II later renamed that cape the Cape of Good Hope. Dias's mission was, however, frustrated shortly after rounding the southern tip of Africa when his crew demanded a return to Portugal.

Through the 1494 Treaty of Tordesillas, signed in the north central Spanish town of that name, Spain and Portugal agreed to divide newly discovered lands between themselves. With some exceptions, Spain had exclusive rights to lands to the west of a line of longitude running through the centre of the north Atlantic, and Portugal had exclusive rights to lands to the east of that line. The treaty didn't attempt to clarify where their respective exclusive zones met on the opposite side of the earth. (Europeans didn't know in 1494 that there was a Pacific ocean. It was first sighted in 1513, and not reached by Ferdinand Magellan until 1521. He named it the Mar Pacifico). Although the treaty was confirmed by Pope Alexander VI, it was ignored by other maritime powers.

In 1496 John II selected Vasco da Gama



A depiction of Dias on his voyage to the Cape



Vasco da Gama (c1469–1524). Portrait painted in 1838, now in National Maritime Museum, Greenwich Hospital

to lead a four-ship expedition to complete Dias's task. Da Gama left Lisbon in July 1497, and reached Calicut on 20 May 1498. Laden with spices, Da Gama left Calicut on 29 August 1498 and reached Lisbon a year later. The spices acquired ensured that the expedition was immensely profitable, and spurred further spice-related trade and conquest by Portugal and later by other European kingdoms with Atlantic coastlines.

Making a pepper grinder

Mike Darlow shows how to make a pepper grinder



PHOTOGRAPHS BY MIKE DARLOW

The pepper grinder, which displaced the pestle and mortar for grinding the spice, was a French invention. In 1810 the brothers Jean-Frédéric and Jean-Pierre II Peugeot began making steel and forging it into blades and springs at Valentigney, near to the Swiss border. In 1842 the firm split. The three sons of Jean-Pierre II, together with nephew Armand Peugeot, concentrated on making spring steel crinoline cages, and during the 1850s were producing up to 25,000 per month. In the 1860s their business, Peugeot Frères, started making kitchen-related products, but didn't begin to manufacture pepper grinders until 1874. The pepper-grinding mechanism was derived from that used in the coffee grinders which they were already manufacturing. Peugeot still manufactures pepper grinders, but its grinding mechanism is no longer available

separately. Because its patent is long expired, similar mechanisms are available from other manufacturers.

Peugeot Frères didn't stop at pepper grinders. In 1887 it started to manufacture safety bicycles, and in 1889 launched a steam-powered tricycle. In 1892 Peugeot Frères started to manufacture motor cars. Then, in 1886, Armand broke away and concentrated on manufacturing motor cars. Armand having no heir, the two Peugeot companies merged back together in 1910.

CRUSHGRIND MECHANISM

The CrushGrind mechanism used in the grinder design featured was invented by Ken Muff Lassen, a Dane. Launched in 1994, it offers a distinct alternative to the Peugeot mechanism (which it resembles), and is readily available for installation by woodturners.

The Danish CrushGrind mechanism works in much the same way as the Peugeot type, but the CrushGrind's grinding parts are ceramic. The CrushGrind has three components: a grinding drum, an aluminium pentagonal (five-sided) shaft with a chamfered top, and a collar which can slide along the shaft and is fixed into a grinder's cap. The mechanism is bulkier than the Peugeot type, but seems to give better control over how finely the pepper is ground.

CrushGrind mechanisms with shafts are available in two nominal lengths: 260mm and 470mm. This article's grinder uses the shorter mechanism.

Care needs to be taken when installing a CrushGrind mechanism into a grinder's wooden cap and body because of the tight fits. I've opted to glue the drum and collar in with epoxy rather than use dry fitting.

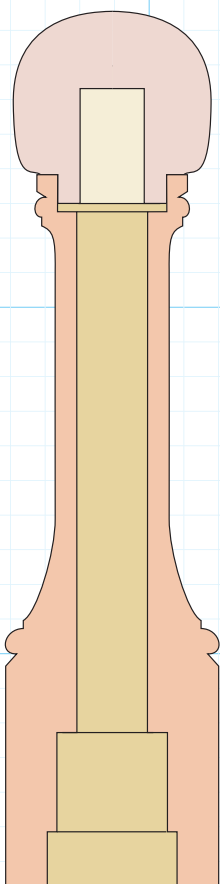
TOOLS AND MATERIALS

- Personal & respiratory protection equipment
- Spindle roughing gouge
- Spindle gouge
- Skew chisel
- Square-end scraper
- Narrow parting tool
- Drill chuck
- 19mm drill bit
- 38mm drill bit
- Chuck
- PVA
- Epoxy resin
- Abrasives
- Finish of your choice
- CrushGrind mechanism
- Design and pencil gauge

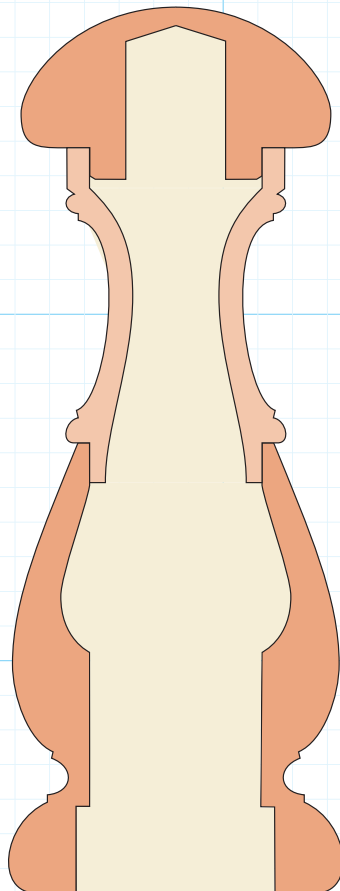
A pepper grinder should:

1. Be easy to fill
2. Have sufficient pepper capacity
3. Have a body and cap which can be readily and separately gripped
4. Not easily be knocked over.

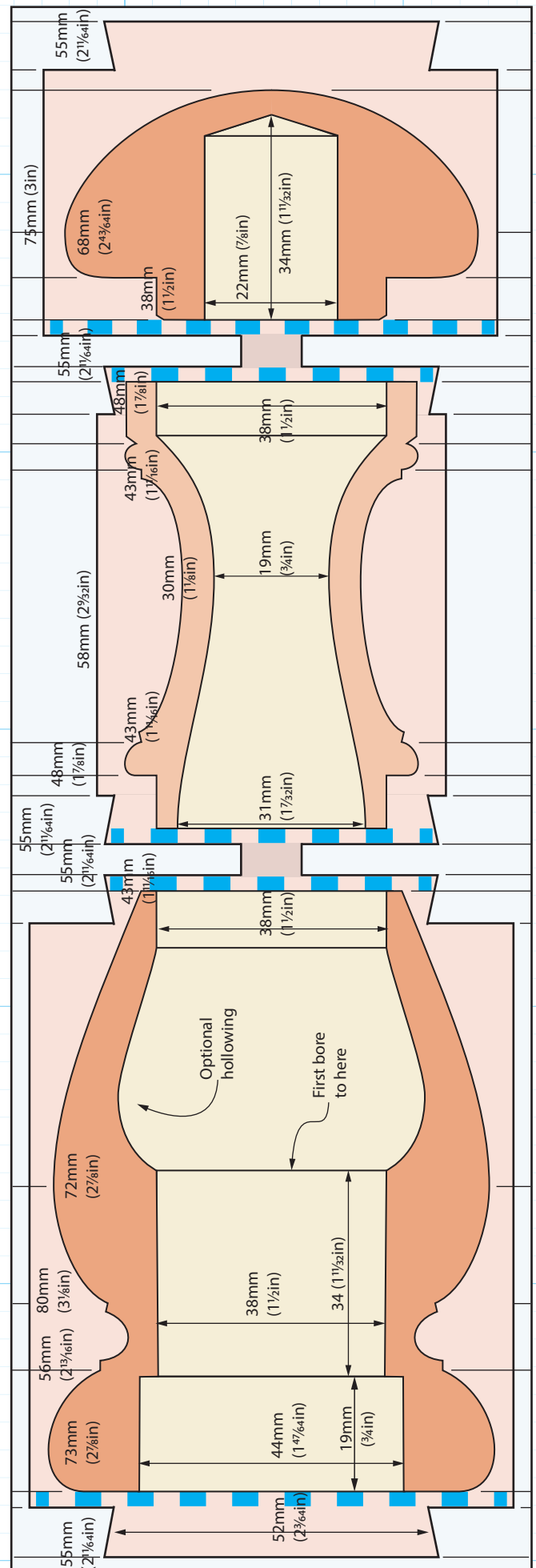
Most pepper grinders have two wooden parts, a body and a cap. These parts are bored with holes of several diameters, and are turned in low relief. Larger-capacity, commercially-made pepper grinders are usually excessively tall relative to their base diameters, which ensures that they fail to satisfy requirements 1 and 4 above. The right-hand drawing shows a design which better satisfies the above four requirements.



Cross-section through the two wooden parts of a typical commercial pepper grinder



My design of pepper grinder has three wooden parts: a base and a middle (which when glued together form the body), and a cap



The 100% template for my design of pepper grinder

1 Copy the 100% template, and glue the copy onto card or thin plywood. The blue-dashed lines represent wood which is cut away using the long point of a skew to leave flat, finished surfaces. Turn your timber slightly oversize as shown. (I'm using Manchurian pear (*Pyrus ussuriensis*).) I cut the two narrow sections to about 10mm diameter with a narrow parting tool.

Once turned, stop the lathe and saw through the two small-diameter sections, creating a base, a middle and a cap. For the subsequent turning processes assume you need a chuck with jaws that grip spigots with a minimum diameter of 52mm. Cut the pencil gauge into three through the two narrow sections.

Boring and hollowing

2 If you can, bore the three workpieces while holding them by their spigots with undersized drills, then leave them to season before turning.

Hold the base piece in a chuck by its bottom, flatten its right-hand end. Flatten the right-hand (top) end chucking spigot with the long point of the skew. The surface must be truly flat or a gap may be visible at the later-glued junction between the base and middle parts. That spigot must also be left long enough to be used to re-chuck the bottom workpiece for the next turning operation. Now bore a 38mm diameter hole to the level shown.

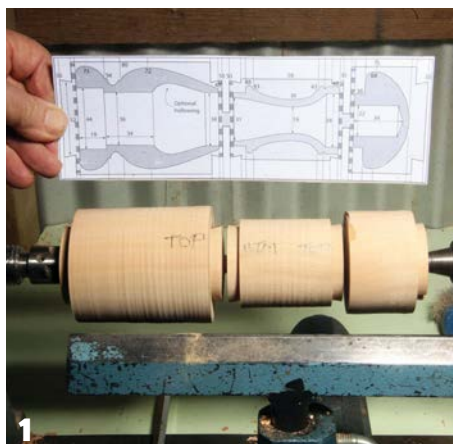
3 Remove the optional internal waste with either a spindle gouge or a narrow, round-nosed scraper.

4 The base piece now needs to be de-chucked, transposed and re-chucked by its slightly-shortened top spigot. The right-hand end of the base piece needs to be flattened with the long point of a skew and the remainder of the 38mm diameter hole now needs to be bored. Now the right-hand end of that hole needs to be widened out to 44mm diameter with a square-ended scraper.

5 & 6 Hold the middle piece by its bottom spigot. The right-hand chucking spigot needs to be slightly shortened to a flat surface using a skew's long point. As before, when flattening the end of the right-hand spigot, the spigot must be left long enough to hold later. Then bore with a 19mm hole. The white tape depth marker is to remind me not to bore too far and hit the chuck jaws. With the middle piece still chucked by its bottom spigot, bore the shallow 38mm diameter hole to a depth of 9mm.

7 With the middle part still chucked by its bottom spigot, flare the hole between where the hole is left at 19mm diameter and the 38mm diameter hole section using a spindle gouge.

8 Hold the middle piece by the shortened top spigot, flatten its right-hand spigot's end and bore the remainder of the 19mm diameter hole. Finish-turn the spigot, which will be glued into the 38mm diameter hole in the top of the base and the adjacent shoulder, and flare the right-hand end of the through hole as shown previously.





9



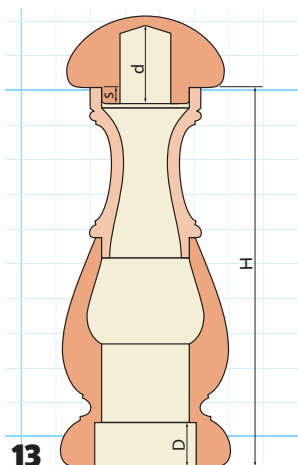
10



11



12



13



14



15



16

Shaping

9 Glue the base and middle pieces together with PVA adhesive, taking care to align the grain in the two pieces. Create a plug with a 44mm diameter spigot that fits in the right-hand end of the base, and use the tailstock to force and hold the two parts together until the adhesive has set.

10 Mount the two-part body piece between a plug with a 38mm diameter spigot held in the chuck and the plug which locates in the body's right-hand (bottom) end and the tailstock. The body can now be finish-turned and sanded. It will be polished when the cap has been bored and finish-turned.

11 & 12 Hold the cap by its spigot, finish-turn its right-hand (bottom) end, checking that the 7mm-long spigot is neither a tight nor loose fit into the 38mm hole in the top of the body. Now bore a 22mm diameter hole and sand the finish-turned surfaces. Then mount the cap on a 22mm-diameter wooden pin chuck and, using a spindle gouge, shape the top and then sand it.

13 It's better to polish the body and the cap on the lathe before gluing in the CrushGrind's drum and collar. I used a water-based polyurethane but Danish oil, a lacquer or varnish will work well.

The CrushGrind's shaft is supplied too long for this project. To ensure everything works well, shorten the shaft as calculated in the following equation: Shortening = $L - \{(H - D) + (d - s)\}$.

Where L is the length from the top of the CrushGrind shaft down to the top of the rim at the bottom of the 38mm diameter part of the mechanism. L equals 250mm for a new mechanism. If you turned and bored the grinder exactly to the dimensions shown in the diagram, you'd have to shorten the mechanism's stem by $250 - \{(164 - 19) + (34 - 7)\} = 78$ mm.

If you shorten the shaft too much, the sliding collar, which is glued into the cap, won't grip the shaft properly, and you cannot lift the grinder by its cap alone. To prevent this, don't bore the cap to less than 34mm, and accurately measure the length by which the shaft has to be shortened.

14 Make the tool shown on the right using the offcut from the CrushGrind's pentagonal shaft. Mount the collar on the tool's shaft, smear epoxy onto the mating surfaces of the collar and the hole, and force the collar into the hole.

15 For ease of fitting, saw off both of the projecting lugs on the CrushGrind's grinding drum before epoxying it into the grinder's body.

16 To enable in-line lathe cramping when gluing the grinding drum with shortened shaft into the body, drill a 7mm wide hole through the plug held in the chuck shown in step 10. An additional plug with a shallow recess in its left-hand end to house the serrated grinder knob at the end of the drum allows the tailstock to push the drum into its hole. ●

The American Association of Woodturners Symposium 2018

Mark Baker reports on the AAW's 32nd symposium



Celestial Fantasy by Jim Piper

The American Association of Woodturners (AAW) is the largest woodturning association in the world, with 16,000 members and growing. Having said that, it should come as no surprise that its annual symposium is the largest of its kind in the world.

This year's was held in Portland, Oregon, on 14-17 June and attracted more than 1400 registered attendees and

more than 1000 visitors to the trade area and galleries.

The symposiums comprised 132 demonstrations, discussion panels and lectures, welcoming more than 30 demonstrators from around the world as well as critiques, special interest groups, exhibitions of work and a trade show with some 60 companies and manufacturers to see.



Winged Vessel Duo, by Alex Olson

Sharing and encouragement.

The AAW not only wants people to have fun at the symposium – and encourages them to learn, share and make new friends too – it also wants to contribute to and share with the area in which the symposium is held. One aspect that is always a focus for the AAW is encouraging and training youngsters to turn.

This year, the youth training programme was open to people aged 10-18 and free for them to learn as long as they are accompanied by a paying adult. Twenty-five lathes, donated by Jet/Powermatic, and turning tools and chucks donated by

other manufacturers, were available to use at the event to teach and try to get young people to turn. Each person could attend three classes.

The instructors were: Paul Carter, Kip Christensen, Kailee Bosch, Bonnie Klein, Nick Cook and others who helped with teaching how to make a variety of fun and easy-to-make projects. At the end of the event there was a free prize draw for the youngsters who attended, where half of the lathes, tools and chuck set-up would be won by some lucky attendees.

To say the winners of the equipment were overjoyed is an understatement.

The other half of the equipment used is to be given away as part of the AAW, AAW Educational Grants Scheme, again, to help people develop and learn turning.

On the subject of the AAW wanting to help in the local community and encourage younger people to see what turning is all about, there was a teacher who lived close to the event who wanted to bring along some students. This was readily encouraged and they were given a special tour of the event where they attended a turning demonstration rotation and a walk-through and talk in the instant gallery.

Al Stirt demonstrating to a packed room



Raising funds

The AAW is committed to supporting various organisations and the following is a list of just some of the things that the AAW encouraged people to support, donate to and be part of to help others. more than \$83947 was raised in three auctions.

SILENT AUCTION OF WORKS

People were encouraged to create, bring along, and donate a turned work to be sold in AAW's silent benefit auction. Funds raised will be used by the AAW to continue to develop and deliver woodturning education and service programmes for our woodturning community.

reTURN TO THE COMMUNITY: EMPTY BOWLS

With the call to turn and donate a bowl of any size to the AAW's Empty Bowls initiative, the eventual amount raised was \$7000 to benefit Meals on Wheels People of Portland. More money is yet to be raised from extra sales of bowls donated and still unsold.

BEADS OF COURAGE

There were 160 handmade lidded boxes donated to Beads of Courage to hold the beads of a child coping with serious illness. Also, string bags were made in the DIY section which will be sent to the children to hold their beads while they undergo treatment.

TOOL BANK

Turners were encouraged to donate lightly-used woodturning tools to the AAW Tool Bank, where the tools will be sent to help woodturners in need around the world.

Inclusion

There were panel discussions on turning with physical limitations. Andi Sullivan, Alan Zenreich, Brent English and many others held an interactive session which included a panel discussion about teaching with physical and mental limitations, descriptions of lathe modifications to assist physical challenges, use of tools and adaptations, and how the newest technologies such as remote demos, enlarged screens, closed captions for the hearing-impaired and such like can help with instruction and personal development.

There was also a session for sight-impaired turners, where turners brought in pieces of their work to hand around to everyone and share how they created it. Following this, there were turning sessions for the



Finialed vessel by Avelino Samuel



Elder urn by Keith Welsh



Waves of Ambrosia, by Andy DiPietro

sight-impaired turners on turning pens.

This was a very interesting and inspiring part of the symposium. The chance for sight-impaired people to touch, ask questions, make discerning comments about things that sighted turners

sometime miss, attend demonstrations and learn to turn shows that there are no limits when it comes to helping people explore the craft. I found it a humbling and wonderfully encouraging aspect of the event.



Woodpecker, by Derek Weidman

Displays of work

INSTANT GALLERY

The instant gallery is always a highlight of the event. Attendees can bring along up to three pieces of their work and place it on display. To say that this creates a brilliantly eclectic display is an understatement. There were hundreds of items for people to see of every type of turning one can imagine.

OUT OF THE WOODS

Traditional Form Revisited works of established and emerging artists will be auctioned to benefit the Professional Outreach Program (POP), which fosters and promotes high standards of professionalism in the field of woodturning through a broad range of initiatives.

DIA•LOG: JURIED MEMBER EXHIBITION

The theme, Dia•log, was chosen because it reflects the city of Portland's strong community spirit and the state's long logging history but, perhaps even more importantly, it speaks to the way in which our woodturning community provides common ground.

Working with wood is often described as a dialogue between the maker and the material, and art as a dialogue between object and viewer. There is also, of course, the simple truth that if an object is made of wood, it was probably once part of a log.

ARTISTS' SHOWCASE – EVOLUTION OF AN ARTIST

This year there were two artists whose work was featured – Sally Burnett and Vivian Grandouiller.

The work on display in the exhibitions was a visual feast. Wonderment, surprise, the desire to explore further, encouragement, challenging, humour and much more was said about what I felt when I viewed all of the pieces on display.

The fact that I could have spent many hours just viewing the work and learning so much from it and about the makers of the pieces says much about the displays.

To be faced with so much diversity certainly shows what a wonderful creative community of people we belong to. On talking to others, it was obvious they felt the same and all acknowledged that many a happy hour can be spent just viewing the work, let alone attending demonstrations and other panel group meetings.

Professional outreach program

There were various discussion groups and meetings covering a diverse range of subject that are designed to help people develop their skills. They were aimed at those who wish to develop their work, start selling and marketing work as well as exploring how others work.

THE PANEL DISCUSSIONS INCLUDED:

- **Creativity:** What inspires people, how to develop ideas, and how to apply and incorporate them into their work.
- **Packing:** Tips on packing fragile work for shipping.
- **Photography:** How to best present work for juried applications.
- **Craft Shows:** Tips for a good booth setup, and creative ways to display your work.
- **Collectors of Wood Art (CWA):** What are collectors and museums looking for?
- **Marketing:** How to market and sell work to more than collectors. How to make use of advances in social media.
- **Collaboration:** Who says you have to work alone? Experiences with collaborative events.
- **The Ego and the Soul:** Why makers make.

An experience

You can imagine that putting on this event is an organisational nightmare for the AAW, but truthfully, I heard of no problems or glitches and that is all down to the team at the AAW and the hard work of more than 200 volunteers who helped with the event. Yes, there were that many involved. I think it was an excellent job well done by all involved and all deserve a load of credit for their hard work and professionalism.

I can use many superlatives to describe how I felt about what I saw, what I learned, what was shared, on meeting up with friends and making new ones, but the truth is, I have no words that adequately describe the world's largest event of its kind. I came away mentally and physically tired, exhilarated, fired up to do things, learn more and keep in touch with people, share more and just do better.

If you ever have the chance to go, please do – I honestly do not think you will be disappointed.

For information the AAW has posted some wonderful pictures of the symposium on Facebook by Andi Wolfe. [facebook.com/AAWoodturners](https://www.facebook.com/AAWoodturners) ●



ABOVE: Lignum Vitae bowl, by Hal Usher

BELOW: The 6th Attempt, by Hans Weissflog



The trade area was busy

American Association of Woodturners

Next year's symposium is to be held on 11-14 July 2019 in Raleigh, North Carolina

For further information about the AAW visit: www.woodturner.org

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Use the slip

Mark Baker explores two under-used techniques for minimising the results of catches

PHOTOGRAPHS BY MARK BAKER



Most people when learning to turn worry about doing something wrong, trying a new cutting technique, or venturing into new areas. Whether using a skew chisel, a gouge, scraper, parting tool or some other tool we use to shape and refine wood, there is always a risk of doing something wrong or not presenting the tool correctly. I have yet to meet a turner who has not had a tool grab or catch at some time or other. The result can be minor or more serious and, depending on the severity of such an occurrence, it can frighten people and put them off.

Apart from refining your turning techniques, which take time and practice to master, there are two often overlooked

and very simple methods to put you back in control and calm things down if something does happen, and that helps you manage the risks involved when cutting on the lathe.

OPTION 1:

Use a revolving ring centre in tailstock and ring drive in the headstock for spindle work and also for initial roughing down and shaping of bowls, platters etc. In the event of a serious catch, this allows the drive/hold to slip or even stop, which reduces the effect of the catch.

OPTION 2:

Set the lathe drive belt slightly looser than usual to allow it to slip in the event

of a catch. Setting the tension so the belt slips is like slipping a clutch on a car – you lose motive power and torque on the drive chain and, as such, your work stops. You can use the belt-slip option in conjunction with using a ring-type drive for between-centre work or when holding work in a chuck.

Note: The above-mentioned elements are not cure-alls to stop errors from happening. These methods will help to minimise the severity and, depending on how you set belt tension and use drives and chucks, stop the work from revolving, thus reducing the severity of a dig in or catch for preventing a heavy cut being undertaken by stopping the work.

◀ OPTION 1: Between-centre work

There are various ring-type drives available to fit in the headstock or in a chuck. Depending on the make, they may feature a solid ring with a centring point, they may have a ring of teeth and a spring-loaded centring point. They come in a variety of sizes.

These are used in conjunction with a revolving centre of some sort in the tailstock. I prefer a revolving ring rather than a pointed revolving centre, so it spreads the load and pressure and has the advantage of minimising penetration into the wood and giving a perfect centration area later for removing a spigot or recentring work.

The key to securing the work between the ring drive and revolving centre is in using enough pressure. That is important because the work must be secure enough not to come loose from the lathe, but not so tight as to prevent the it from stopping spinning/slipping if you make a wrong cut or get a catch.

Depending on the drive used, size of

work and your skill level with the tools and techniques you are trying, you will need to experiment with the pressure used to either cause the work to stop with light pressure, or at a heavier pressure.

How tight is tight enough for the ring

centre option? If the convention when driving the tailstock quill is to wind in until resistance is felt and then back off a quarter turn, then in order to facilitate the slippage, perhaps a half turn back.



A selection of ring-type drives



Here is a bowl mounted between centres. There is a ring drive on the headstock end and a revolving ring centre on the tailstock end



OPTION 2: Drive belt to slip

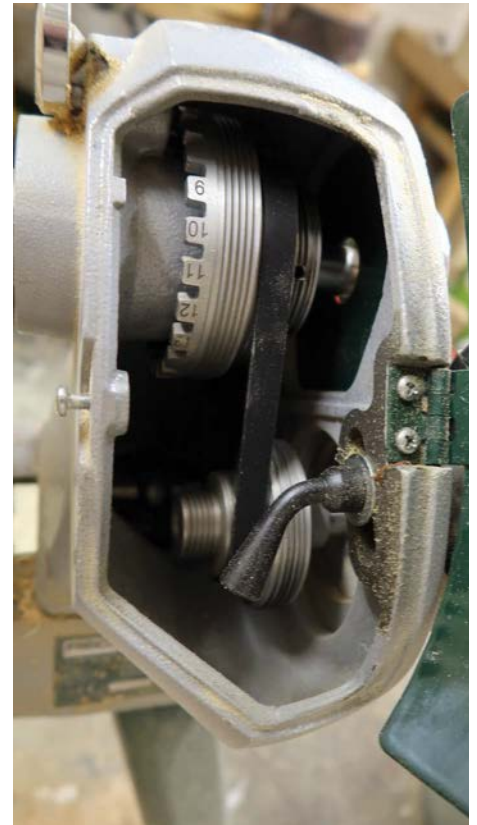
Whether you mount work between centres or hold it in a chuck, this method requires the belt to slip if you make too heavy a cut or encounter a dig in/catch. Most lathes have a drive belt that fits on pulleys to transfer the motive force from the motor shaft to the lathe mandrel and thus rotate the work held on the lathe spindle or between the lathe spindle and tailstock.

How slack you set the belt is up to you, but remember that larger work requires more power delivery and if the

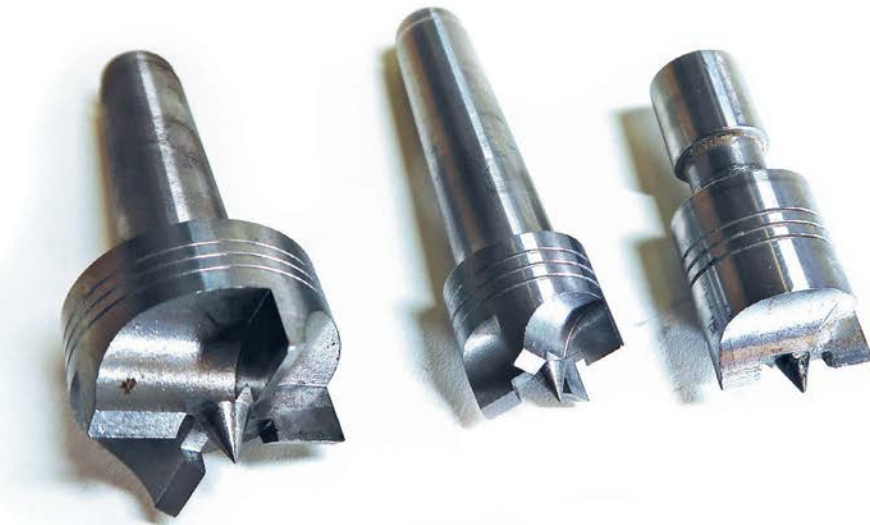
belt is too slack the lathe may not be able to deliver enough to effectively drive a large workpiece.

Adjust the belt to achieve the level of drive and ability to slip that you require. You can adjust this as many times as required for a range of reasons, such as turning delicate work, skill level, or when trying out new techniques, tools or cuts.

If this is used for spindle-mode work the quill can be located and tightened as normal as the slip doesn't rely on the between-centres pressure.



ABOVE: The inside of the headstock showing the belt that can be set to slip



LEFT: A selection of standard drive spurs/pronged drives



Turning a bowl between a ring centre and a tailstock centre with belt tension adjusted too

CONCLUSION

I like things to be as simple and safe as possible and also easy to replicate. These are techniques that tick all three of those comments. By causing work to stop via a ring drive slipping or the belt slipping, they are incredibly easy methods to use that give you control over what is happening. This, in turn,

helps you build confidence as you develop your skills and the whole process is more enjoyable and less frustrating.

Of course you will, as do we all, continue to make mistakes from time to time, but the results and fear are minimised or even negated. ●

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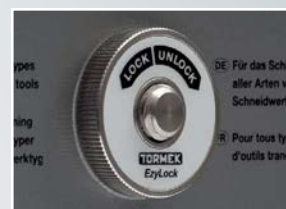
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Between Centres: 560 mm

Pulley 1 and 2: 50 - 1230 / 150 - 3700 rpm

Spindle and tailstock taper M33x3,5 with 2MT

Weight: approx. 144 kg

Turn and movable headstock

Forms with cut-outs

Mark Sanger shares ideas for creating forms with cut-out sections



PHOTOGRAPHS BY MARK SANGER UNLESS OTHERWISE STATED

In my previous article in issue 321, I showed how a form can be turned to a specific profile and cut into segments for further shaping to produce a contemporary sculpture. More and more over the years I have experimented with how I can alter the forms with which I work, with the aim of producing purely aesthetic sculptural pieces. Exploring this route is fun and opens endless possibilities, directions, techniques and ideas to pursue and I am asked by students and onlookers when I demonstrate woodturning how I come up with the designs that I do. This is a complex question and one I often ponder. I can say that 'experimentation' is a key factor in my work – thinking 'what will happen if I do this or that' will reveal many new ideas to explore. Sometimes it is just serendipity and I will stumble

across something totally unexpected. A great way to start experimenting with your own work is to augment what has already been produced with new techniques. For example, cutting sections out of or cutting up the forms we make to alter their composition. To this we can add further interest through texture and colour and finally think about how we present the pieces as standalone items or in a more dramatic way by altering how they are positioned and presented as an example on a plinth, ultimately giving a totally different perspective of the original piece.

In this article I am going to explore this route and show, through using familiar forms, how these can be altered by cutting out sections or by cutting up the form to be used as a separate sculptural

piece. Hopefully it will give you some ideas to experiment with. The main thing is to enjoy the process and don't be fearful of cutting up what is a perfectly good vessel as stepping outside of our comfort zone helps us to develop.

Wood selection and orientation

As with all projects, we first need to select a suitable wood to work with. If producing a piece with a thin wall to later include cut-out sections or piercing, I would select a close, straight-grained timber such as sycamore (*Acer pseudoplatanus*), maple (*Acer campestre*), beech (*Fagus sylvatica*) or similar woods devoid of knots or other inclusions as these create weak sections that can fracture and break during working of after the project has been finished. ►



Tribal mask

Design possibilities

The design possibilities available to us when manipulating and decorating a form are in the hundreds, if not thousands, with many having crossed over from other disciplines such as pottery, woodcarving and gourd art to name a few. For millennia man has decorated utility vessels with texture, colour and other adornments, often as a way of expressing a tribal identity or for use in rituals. The tribal mask which could have been formed from a round-bottomed bowl into which sections have been cut with additional colouring showing that a simple bowl has many possibilities.

Safety

The cutting up of any form must only be carried out in the safest way possible. The bandsaw should only be used for cutting up if the vessel has a large, flat surface that can be supported face-down on the saw table, such as a platter, bowl or similar. Never try to cut up a hollow form or other unstable form on the bandsaw unsupported as shown in the picture as it will be grabbed violently into the blade along with your fingers, it is a massive NO NO, so do not ever attempt this. Instead use a vice or similar with a hand saw, electric jigsaw or one of the methods shown later using a micromotor and piercing burr. No matter the method you choose, safety is always the priority.



What not to do when cutting an unstable form. This picture was staged as what not to do, with the bandsaw switched off

Marking out

Marking out your designs on to the form first not only shows you where to cut but also allows you to gauge the composition of the design. For this I keep it as simple as possible and use tools I have in the workshop. Often all that is required is a pencil and a datum line set up with the aid of the lathe toolrest. To mark through its length and diameter the toolrest is set on centre height using the point of the revolving centre. Position close to the area to be marked to draw the line.

For marking around the diameter simply rotate the chuck by hand at the desired point to scribe all the way around.

Marking out equally spaced sections on a form can be tricky, especially trying to mark around a convex surface. For this



Marking grid lines



Placing dots next to the band

I simply use elastic bands with the number used equating to the number of areas that require marking. Dots are placed with the pencil along the wood next to the bands and then the lines are joined with a flexible rule.

Alternatively, the toolrest method previously described can be used in conjunction with the indexing plate of the lathe, or simply use a rule. A flexi rule is an indispensable tool for the marking of curved shapes. This type allows you to shape it as desired with it maintaining this shape for drawing. Note that I have marked a line on the rule so that it can be positioned at the same point every time for accurate marking of multiples of the same shape.



Elastic band help when marking curved surfaces



Using a flexi rule

Transfers

A method used by many for cutting out specific repeatable shapes, such as animals, insects, motifs and geometric shapes is making templates that can be stuck to or transferred on to the surface using a glue stick or transfer paper placed under the design. A method I often use, as you will have seen in previous articles, is computer software to draw various shapes than can then be scaled to the size required.

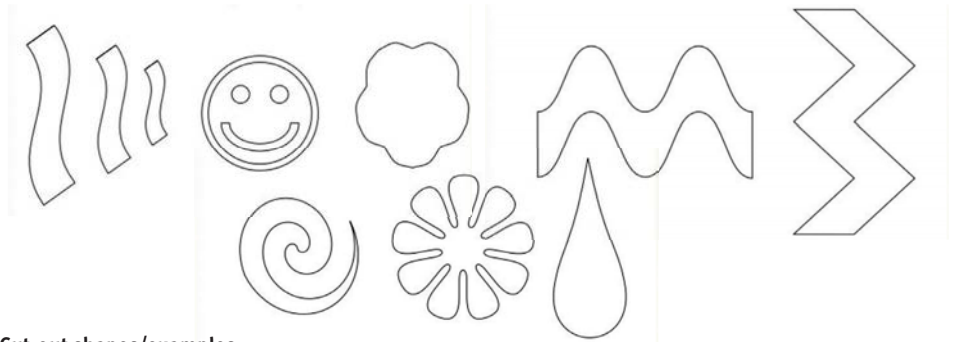


Typical items to help transfer patterns to work

There are many free online CAD programmes available or, of course, you can always just use pen and paper and a photocopier to replicate.

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Cut-out shapes/examples

shapes. Another option is to purchase some of the many 'royalty-free' design books from a publisher that allows

you to use the designs in your own work subject to the limitations of their specific licence.

CUTTING OUT

STRAIGHT CUTS

Cutting out small sections can be achieved using various saws, burrs, chisels and drills etc. The most important consideration is safety, as it only takes one slip of a chisel or saw to result in injury. Always cut away from your body, making sure the item is held or clamped safely.

The picture below shows a small selection of saws, burrs, carving knives, micromotor/rotary tool and homemade tools that can be used to cut and shape our projects. The middle left picture on page 56, was held on a jam chuck on the lathe while being cut with a pull saw at the previous marked lines. Pullsaws are an excellent tool for cutting straight lines as the action of pulling keeps the blade straight. If you do not have

these use a tenon saw or even a jigsaw for cutting if the walls are thicker. Choosing a fine, sharp blade will require minimal finishing with abrasive, but if you need to take several cuts to get through a thicker section simply cut slightly away from the guide lines and finish with abrasive.

There is also a selection of small saw burrs available from jewellers that allow accurate cutting along straight lines through thin walls, bottom right image. However, these are exceptionally sharp and can cause serious cut injuries, so note I am wearing cut-resistant gloves that have a fine steel liner for protection and are available online and from good tool suppliers.



Various tools for cutting and shaping



Using a fine-toothed saw



Using a saw-type burr to cut work

Safety when finishing

Cutting and finishing wood with abrasive, especially when using power tools, burrs and sanding arbors, can produce large amounts of hazardous dust. Always wear suitable eye/face and respiratory protection along with suitable air filtration.

CUTTING AND FINISHING CIRCLES

Cutting a perfect hole free hand is a difficult task, so for this I use hole saw cutters which many will have seen before used for cutting holes through cabinets, work surfaces and similar. I use sizes from 20mm up to 150mm and the central drill guides the cutter securely through the wall of the vessel compared to using,

say, a flat bit which will run off centre and ruin the cut. Simply accurately mark the centre of your hole and drill through to finish, turn a piece of scrap wood slightly smaller than the whole with a gradual taper. Stick abrasive to this with cyanoacrylate glue and simply rotate in the hole to finish.



Using a hole saw INSET: The disc of timber removed



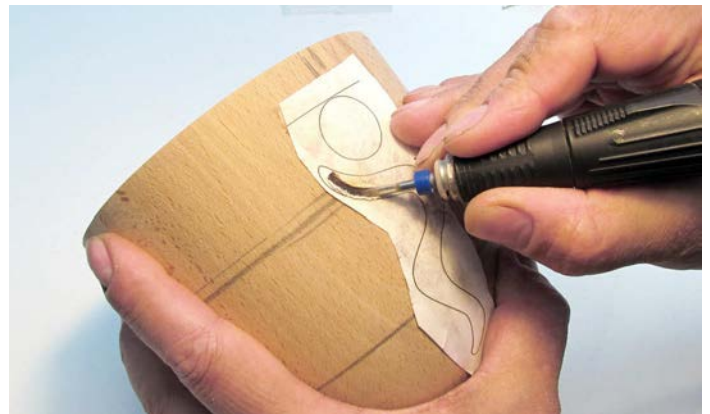
Sanding the hole

RANDOM SHAPES

Random shapes can be cut with various drills and saws, but for finer detail and for accuracy I have found over the years that a good piercing burr is the best all-round cutter for this. The are burrs that can cut both sideways and plunged into the wood. These can be found listed on the internet as PCB milling cutters or drills used to produce circuit boards and are used for piercing and cutting out of shapes in turned forms. For cutting out a general shape use the largest, normally 3mm, as it is less likely to break compared to much smaller drills used for fine piercing or to cut out a transfer shape.



PCB milling cutter



Cutting a shape in work with the milling cutter

Finishing

For finishing detailed cut-outs or larger edges I have found that a combination of hand finishing and power finishing works well. Depending upon the size of project being worked I use abrasive

by hand for most of the larger areas. Various flat and convex sections of wood/ply to which abrasive has been stuck using cyanoacrylate adhesive and small diamond files, abrasive

flapper and drum wheels which, while being designed to finish glass and metal jewellery, are highly effective at finishing fine detail in wood.



Sanding accessories



Diamond burrs

Development of form/examples

Here I will show examples of several forms and alterations that can be applied using the tools shown. Hopefully these will give you ideas to experiment with further and for you to come up with your own interpretations. Some have been left pure to show the wood, while others have additions of texture, colour and other media such as gold leaf.

BOWL FORM



A simple bowl on a decorative plinth



PHOTOGRAPH BY CHRIS HILL

Sculpted form, by Chris Hill



A sculptural form from a round-bottomed bowl



Combine various elements to create a statement



A pierced square form

A simple bowl is an excellent place to start experimenting as it is probably one of the most turned items in a woodturner's repertoire. Experiment with different forms to see what you can come up with and take pictures as you work so you can keep a record of tools and techniques used.

A simple, round-base sycamore thin-wall bowl presented on a contrasting oak (*Quercus robur*) scorched plinth is beautiful in its own right. But this can be developed further to take on a more sculptural feel, featuring a simple swirl cut-out achieved with a piercing burr and micro-motor as previously shown, finished with abrasive and the application of black spirit stain and a final coat of acrylic satin lacquer. Finally, by presenting it at an

angle on an ash plinth with an ash-turned sphere placed inside as a focal point we see that the simple bowl takes on a far more dramatic and sculptural feel. The middle image shows another sycamore bowl that has a similar swirl cut out to the previous but with the addition of a hole cut into the back to draw the eye through the swirl opening. A black sphere has been added again as a focal point and to contrast the wood of the bowl.

The above right image is a sculpture produced by cutting out a large section of a bowl. The cut-out was achieved using a micro-motor and piercing burrs with the edges being finished with a small abrasive flapper wheel. Finally it was presented on a scorched oak plinth with black sphere.

Another interesting bowl shape to work with is the shallow bowl, as this gives a low profile to work with and is at home being viewed either on a table, shelf or fixed to a backing as a wall hanging. For this you can turn a square blank, but if you are not confident in doing this turn a round bowl and cut away the sides into the square using a saw. The lower right image shows such a form, the making of which was shown in *Woodturning* magazine issue 250, where the cut-outs were first marked free hand and cut out using a piercing burr with rotary tool. It was then finished in silver metallic spray, presented on a black gloss base with a glass marble as a focal point.

◀ VASE FORM

A vase form offers many possibilities as the narrow profile and added height provide an interesting upright sculptural feel to the finished piece, often allowing for greater visual impact, especially when presented on a shelf at eye level.

The lower middle image shows the same cut-out and drilled hole that was utilised previously. Here the cut-out adds movement to the simple upright form and draws the eye up, accentuating the height, and offers a great canvas if you enjoy adding carving and texturing your work. The right-hand image shows a yew (*Taxus bacatta*) form by George Watkins that includes cut-out sections not only in the main body but also around the rim, with the surface being carved to flow around and connect these two areas together. The lower left image shows a second piece by George Watkins, a beech (*Fagus sylvatica*) form presented on a plinth.

Here George has opted for a simple design with cuts-outs drawing the eye up the form. The addition of a contrasting black acrylic paint interior is a simple but highly effective way of adding impact to a light-coloured wood and making the cut-outs stand out against the interior.

The lower right-hand image shows a straight-sided vase made from sycamore that is presented on a contrasting plinth. After removing and finishing the cut-outs and hole as previously shown, I textured/branded the surface with a high-powered pyrography unit,

Acrylic artists' paints of various colours were applied to the outside and then 24ct gold leaf was applied to the inside and bead at the bases of the form adjoining the plinth. A layer of matt acrylic lacquer was applied all over the piece to preserve the finish.



Simple vase form



Cut and drilled form



Sculpted form, by George Watkins



Drilled and cut form, by George Watkins



Cut, textured and coloured form

CONCLUSION

In this article it has only been possible for me to scratch the surface of showing the tools, techniques and designs that can be achieved by cutting sections out of the forms we turn. The possibilities are endless, as is the fun we can have exploring further with these ideas. I hope that this article will get you thinking as well as get you saving those 'it didn't work out right' projects that might otherwise be discarded for experimenting with. Happy making. ●

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PHOTOGRAPH BY GEORGE WATKINS



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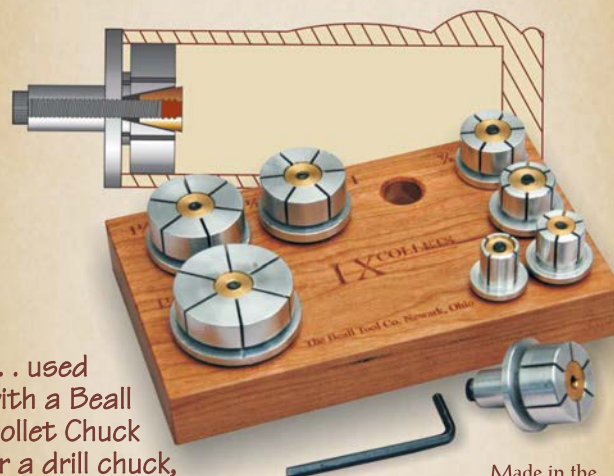
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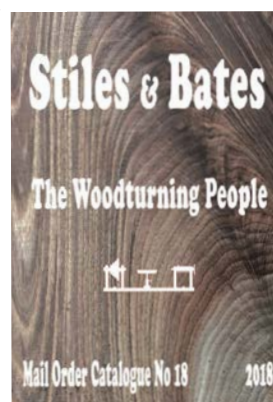
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Andy is a professional woodturner and has a workshop and gallery in Suffolk. He mostly makes one-off pieces, but is just as likely to be doing small-batch runs, antique restorations or any number of strange commissions. He also demonstrates and teaches turning.

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Chris has been turning wood since 2008. He has enjoyed making things with wood and metal all his life alongside his work commitments, but the discovery of the wood lathe reignited his enthusiasm for working in wood. Chris sells his work by commission, demonstrates and provides instruction.

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Chris has spent a good deal of his time designing, turning and writing on the subject of salt and pepper mills. His latest book, *Adding Spice to Woodturning: 20 Salt, Pepper & Spice Shaker Projects for Woodturners*, was published in 2017 by Artisan Ideas in North America.

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Mark pursued woodturning full-time in 2004, making one-off sculptural pieces that include colour and texture as well as pure woodturned forms. He demonstrates and teaches in the UK and abroad and is the author of *Turning Hollow Forms* from GMC Publications.

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Picture frame

Colwin Way creates a multi-window picture frame



PHOTOGRAPHS BY COLWIN WAY

I was inspired to make this next project by a mirror I bought for my wife some 20 years ago. The mirror came in a box, and on the outside of the box it said 'a box of beautiful smiles'. When the box was opened it contained a mirror frame full of holes with the mirror set behind it, looking like lots of tiny mirrors looking back at you, hence the box of beautiful smiles.

Of course this gave me lots of brownie points and is still hung in our snug studio den making us both smile remembering the day the box was opened.

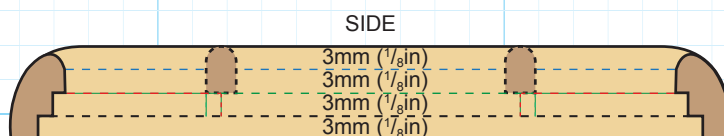
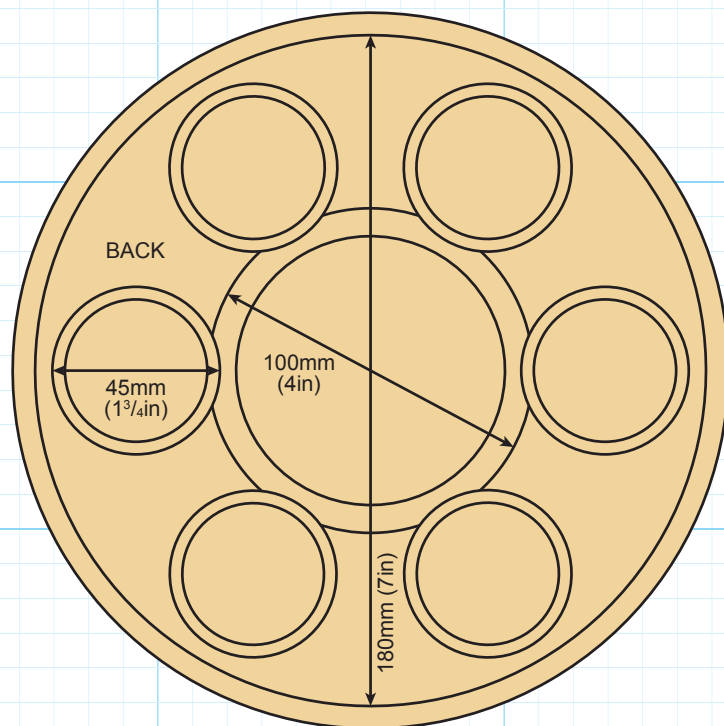
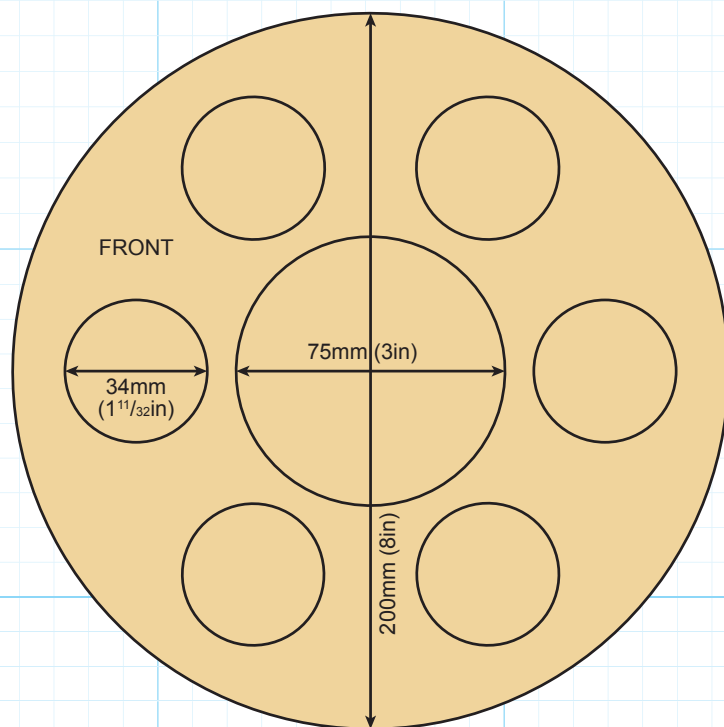
Although the original was a mirror, I thought we could expand the idea into a picture frame but add a personal touch that could

even better the original. You could even split the project into a mirror and picture frame by adding a mirror in the middle and small pictures around the outside. The options are endless and personal to you and the person you're giving it to, so I hope you enjoy this one.

The timber I'm using here is one of my favourites, oak (*Quercus robur*). It has great working properties but also, for what we're doing with the pictures and flowers, isn't too striking, keeping the emphasis on the subject not the material. Of course there are many timbers you can use that will suit the items being placed in the frames.

TOOLS AND MATERIALS

- Personal and respiratory protection equipment
- 10mm bowl gouge
- 6mm bowl gouge
- 3mm parting tool
- 12mm twist drill bit
- 34mm drill bit
- 45mm drill bit
- Chuck
- Screw chuck
- Bradawl
- Permanent marker
- 45mm hole saw
- Plywood or MDF
- Offset plate – plywood
- M12 bolt and nut
- 2mm thick clear acrylic sheet
- Dried and pressed flowers
- Backing disc



- - - Represents the acrylic panels
- - - Represents the 45mm hole
- - - Represents the 100mm hole
- - - Represents the 180mm backing board



1 Use a screw chuck to mount your blank to the lathe, adding a ply or MDF packer to give extra surface contact if required. The blank being used in this picture is a piece of oak with an 8mm hole drilled into the centre to screw directly to the chuck.

2 The blank will need to be cleaned up both on the edge and face ready for shaping. Use a bowl gouge to do this. Start with the outside edge. True it up with the gouge, remembering to always cut on the lower edge of the gouge and have the flue pointing in the direction of travel, before moving to the facing surface which will be the back of the frame. Once the edge is clean, true up the face and periodically, with the lathe stationary, use a steel rule to check the face is flat.



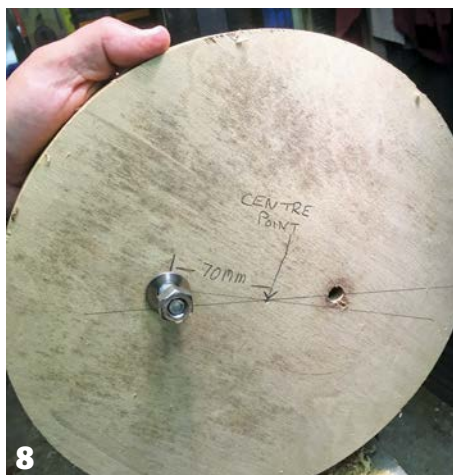
3 Now start shaping the back of your picture frame by making two cuts. The outer one needs to be 2mm deep and is made 13mm in from the outside of the frame. This cut defines the limit of the backing board that will eventually hold everything in place. The second cut creates the 100mm-wide hole in the back of the main central picture hole and it needs to be 6mm deep at this point.

4 Once cut, create a flat section 180mm wide by 3mm deep between the outer cut recess and the inner one. Once cut, to help hold the piece later when reversed, cut a recess 100mm wide and 3mm deep. Sand this area. There's no need to be too fussy as it will be covered by the backing, just de-nib.



5 Once the back is finished, turn the piece over and use an appropriate-sized set of jaws on your chuck to hold it securely in the inner recess you've just turned. Using a 12mm drill bit held in a tailstock drill chuck, drill completely through your blank.

6 This hole will be used shortly to bolt and secure the piece on to the offset jig. Use a gouge to flatten off the face of the blank to its final thickness. Use a push cut, pull cut, or even a scraper to do this and once done, sand it.



7 Now for some marking out. For accuracy, you need some form of indexing facility, which most lathes now have. If you do not have any, you measure the circumference and divide the old way or use a protractor. There are six outer windows on this project so each is positioned at 60° to each other. Each one of these points will need to be marked on the outside edge of your frame with a pencil.

8 To hold the work while you turn the offset holes, you need to make an offset jig. You can do this using ply or MDF. The jig I have here is roughly 350mm in diameter. You will need to drill a 12mm hole through the jig where you want the offset centre to be – in this case it's 70mm from its true centre. Draw a line through the centre point and through the centre of your 12mm hole. Make sure this line is drawn all the way across the face of the jig as it will be used to locate each drilling position.

9 On the reverse of the jig, counter-sink the bolt head and insert before you attached the faceplate and mount on the lathe. You can now attach the frame to the jig using an M12 bolt, nut and washer with the washer on the nut side of the frame. Line up your first drilling position using the straight line marked on the jig and one of the indexed lines on the outside of the blank then tighten the bolt to secure.

10 To select the correct drill size, spin the piece by hand and mark with a pencil a series of circles. Pick the one that looks the best fit and select the matching drill bit. In this case the bit size used was 34mm, and as you're going to be cutting into side grain it really needs to be a Forstner-type bit. However, if you don't have one you can get away with a sharp sawtooth bit.

11 Using a permanent marker mark this bit to the depth you wish to cut and, again, in this case it is 6mm. There will be a second, larger hole drilled into the reverse of the blank later to hold the backing.

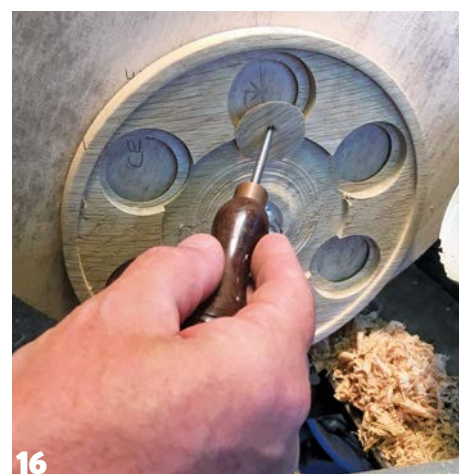
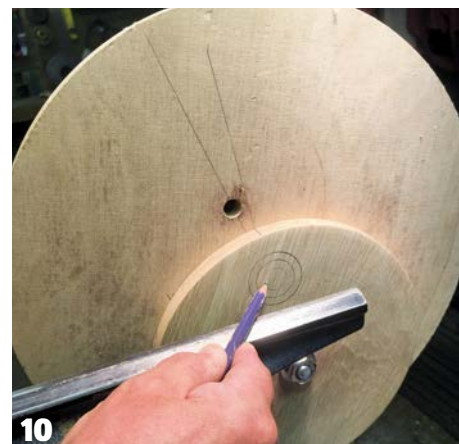
12 OK, so before we start to drill it's worth considering a few things for your safety. Make sure the speed of the lathe is set to slow, and if your lathe doesn't have variable speed, set it to the lowest belt speed you have. Check your centres – if your lathe has a swivel head make sure the centres are aligned. Tighten your bolt and be aware of where it is.

13 After the hole has been drilled to the depth marked on the drill bit, bring the tailstock out the way and soften the edge of the hole with a small radius. Use either a bowl gouge or scraper to achieve this. **WARNING:** Another word of warning here. Always check the nut will clear the toolrest before switching the lathe on and keep your fingers your side of the toolrest and away from the nut.

14 You can now continue drilling and turning the remaining holes until you end up with something looking like this. Sand each one as you go, remembering to remove the toolrest before you do. Take your time with this and don't try to cut corners with your safety.

15 Now turn the picture frame over and drill out the backs. For this frame I've used a 45mm bit and will be the hole for the backing of the flowers. Use the same lining up procedure you made for the front holes and drill through and into the front hole.

16 When this happens you will be left with a small disc of waste wood that needs to be fished out using a bradawl. The hole depth in this case was 6mm but will depend on the blank thickness you use. This drilling procedure should be done slowly, taking a small cut until you break through into the front hole – drilling too aggressively could end with a breakout and ruined frame.





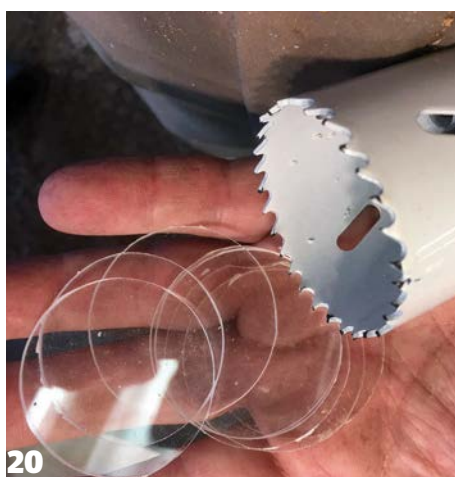
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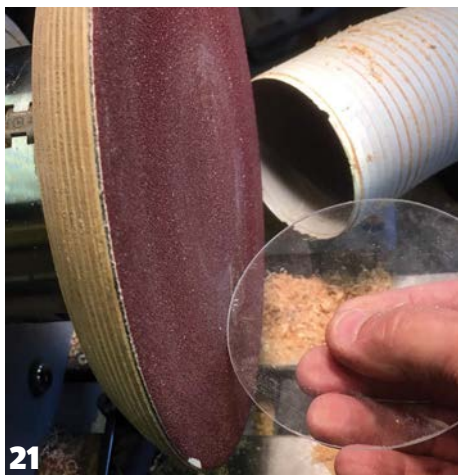
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19



20



21



22



23



24

17 Now you can take your frame off of the offset plate and remount your four-jaw chuck to the lathe. Attach the picture frame back on to the chuck using the recess on the back. You now need to turn out the main picture hole in the centre of the frame. Start by marking with a pencil the diameter of hole you want.

18 Using a bowl gouge, turn toward the centre, removing the waste wood. Be careful not to fall into the hole you make as your chuck is just on the other side. Slow, gentle cuts are used here, controlling the forward momentum with your fingers so you make delicate shaping cuts.

19 Once you've finished the turning you can sand the centre hole and surrounding areas. Be careful when doing this as the frame is full of holes and it can be quite easy to catch the abrasive. Sand to a fairly fine finish and take special care to deburr the inside of the holes.

20 To cover the holes use 2mm acrylic sheet or something similar. I used acrylic and cut it with a hole cutter. To do this, remove the centre drill from the hole cutter and clamp the acrylic down before attempting to drill out the hole. Make a few spare just in case you damage one. Make sure you stop the drill after cutting each one and remove it from the cutter before cutting the next one.

21 The larger frame has been cut on the bandsaw with a fine blade then cleaned up on the disc sander at low speed.

22 For this picture frame I've added some pressed flowers which I collected from my garden. What decorative elements you use is entirely up to you but this is a gift from me to someone special and will earn me some brownie points. If you use this idea you can say its yours – I wont mind.

23 Carefully arrange the flowers on to the acrylic before covering them with the back. If you know where the picture is to go you can colour co-ordinate to suit. I'm using a pair of tweezers to hold and arrange the leaves. I have fat fingers so the tweezers make life easier. Depending on the foliage chosen, you might need to trim larger sections to fit the opening. A scalpel is ideal for this.

24 Once you have all the flowers arranged, you need to fit the backing to hold everything in place. Place the backing board in the hole. I used MDF for this. Once fitted it needs to be secured in place. Small tacks can be used to hold the backing mount into the frame, but I am using proper framing pins which can be fitted into place using a handy little tool designed for this job. This tool also enables you to push small pins in place. The wider framing pins I use keep the back flat and secure.

This has been a sweet little project which I hope you've enjoyed. It is a fairly complicated frame but if you feel this is too challenging leave out the offsets and just do one hole for one picture. ●



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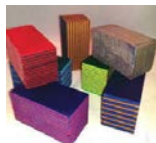


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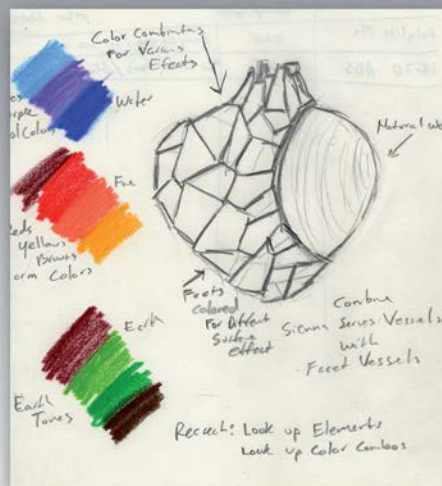
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Issue 323 on sale 6 Sept

Stuart Thomas shows how to create a set of stacking boxes



PHOTOGRAPH BY STUART THOMAS

Chris Grace, in his series Let's Talk, looks at shaping and sharpening

Richard Findley's Editor's Challenge, this month is to create something with a wooden inlay pattern

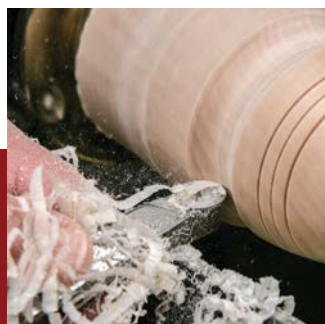
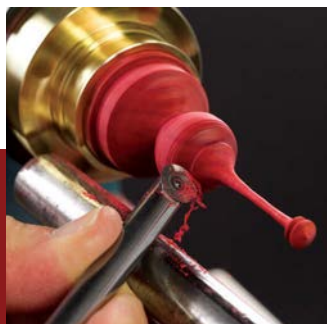
Andrew Potocnik shows how to turn a multi-part natural-edge burr goblet

Mark Sanger looks at the ins and outs of turning and texturing a hollow form

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Whether you're a beginner or an experienced turner, turn large bowls, pens or tiny miniatures, you'll find *Ultra·Shear* tools will eliminate the drudgery of sharpening and dramatically increase your confidence and success at the lathe.



Ultra·Shear full size tools cover bowls over 8" and large spindles. Mid-size tools handle small bowls and spindle projects down to pens. Our pen tools shine in turning delicate detailed projects like box finials, as well as being well suited to pen turning.

Community letters

Here are some letters the Editor has received from you, the readers



PHOTOGRAPH BY RICHARD FINDLEY

Staved barrel

Hi Mark

The article by Richard Findley about a staves barrel brought back memories of my first attempt at staves. That darn angle – seems like it's almost impossible to get the cut angle spot on, so as to have a perfect staved vessel come together with no gaps between staves. Most woodturners do cut their staves on a table saw. In the past I can recall cutting staves – putting them together – then making a small adjustment to the table saw blade angle, then, cutting more staves and hope for no gaps. Sometimes this process really used – wasted – a lot of wood and created a lot of frustration; this stuff is supposed to be fun!

One day I discovered to check your cut angle, you only have to cut one stave. It has to be long enough to cut off the

number of segment pieces equal to the number of staves you require. Example – a stave 10 inches long could be used to cut off eight 20mm segments and still have 100mm left over, which 100mm is about as close as you want to get to a moving saw blade. Arrange these segments flat in a circle – if there are no gaps, your cut angle is perfect. If there is a gap, make an adjustment to the table saw, cut another stave and repeat the process until your segments form a perfect circle. This saves time and material and is an excellent reason to have two saws. True, to use this method you need two saws to make this work, but most woodturners have a chopsaw; well here in the USA they seem to, which is ideal.

Regards Edward Jones

Turning apples

Mark,

I have written a poem on the subject of turning an apple. My husband is an avid woodturner and has been for many years. I have watched him turn apples many times.

Since turning is such a creative hobby, I thought woodturners might like to see the process written in a creative way.

Megan Smith

WOODTURNING

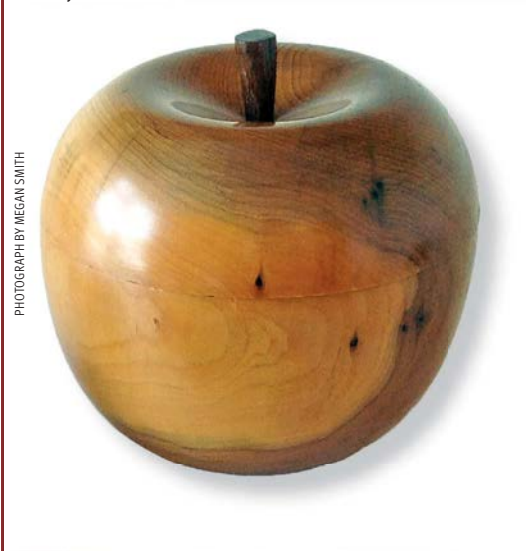
Metal
reverberates on wood,
the rough bark reluctant,
grumbling,
is sheared away.

A rich scent of heartwood
rises from the naked limb.
Then peeling and paring
and the slow curl
and coil
of shavings as they fall.

A form emerges
from the dust,
Rounded, full fleshed
and whole.

Now the sanding and shining
'til the steady whine
of the lathe
fades to a gentle throb.

A final snap –
and finished apple
is in your hand



PHOTOGRAPH BY MEGAN SMITH

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To add or to take away?

John Plater considers turned forms with additions and/or parts removed

Much woodturning involves starting with a piece of material which has greater proportions than the intended outcome. By cutting away that which is not required in the final piece, one is forming a shape by wasting away the unwanted material.

A common example of forming a shape in this way would be a turned bowl. Alternatively, some forms will require a number of parts to be made or turned and fitted together. A major aspect of the history of woodturning was the making of chairs including a number of turned elements. This would be an example of forming a shape by adding parts together. Plus any combination of the aforementioned permutations are unlimited.

With such massive sources of information and images of woodturned items at our fingertips, it is more than obvious that life is rarely that straightforward. In fact, it could be argued that woodturned items of note in the current climate are much more complex pieces featuring texturing, carving and or routing (wastage), laminating and/or segmenting (addition) and assemblages which feature the inclusion of metals, plastics, resins and found items. Many of the well-known woodturners produce signature pieces, which are much more involved than 'just woodturning'. Yet they call themselves woodturners. Does it matter? There are some well-known collaborations between woodturners and others who embellish the form made by the woodturner. Two or more people working on a single outcome. To find such variety within our craft is very pleasing. It shows that woodturning continues to evolve and its boundaries, if any actually exist, are constantly being pushed.

As a woodworker who happens to use a lathe, I gain much personal satisfaction from making pieces which are, in the main, turned. I want simple shapes and smooth surfaces which show off the features of the material. I have occasionally experimented with additional materials, often to make a feature of a defect, or 'design opportunity', in a piece of timber. I have added stainless steel pins to pieces to stabilise parts of them and have used wooden or metal keys or staples across cracks in the timber. These are typically responses to the turning as it develops. At another level I have tried



PHOTOGRAPH BY JOHN PLATER

making pieces which incorporate acrylic or epoxy resin. These are different in that the additional materials have been included in the design at the outset for their particular characteristics and the ways in which they contribute to the finished item. I have also cut and rearranged forms and have carved elements of a design, often in response to a particular commission. Whatever the intended outcome I always

log the amount of time that each piece takes to make. Maybe it's me, but the additional work always seems to take up the majority of the time taken on a piece and therefore its price. One thing though, if we accept that adding elements to a woodturning or cutting others away is appropriate, we must be careful not to add any grief or to take away any of the joy in the making.

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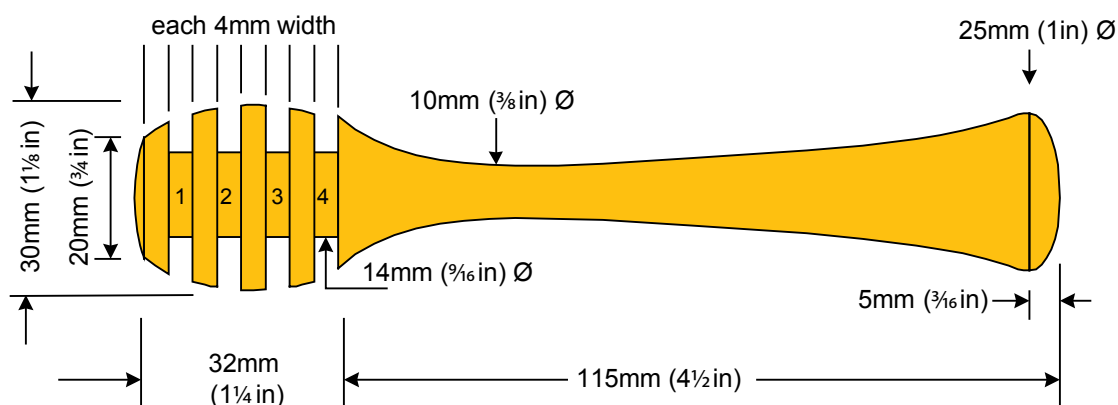
ZEBRANO

by wivamac

Honey swirl

Chris West proves a plan for you

PHOTOGRAPH BY CHRIS WEST



TOOLS AND MATERIALS

- Spindle roughing gouge
- Spindle gouge
- Skew chisel
- 3mm or 4mm parting tool
- Beech (*Fagus* spp.), maple (*Acer* spp.) or other dense, close-grained hardwood suitable for food use

This is a straightforward project which will please any discerning lover of honey.

Blank 170 x 35 x 35mm.

Place the blank between centres. The handle will be turned at

the tailstock end. Measure and mark the key dimensions shown. Begin by forming the curved end, continuing towards the handle for a little way. Then turn the curve of the handle towards the work end of the honey swirl. Once you have met up with the previously turned part, initial sanding can be undertaken.

Either a 3mm or 4mm parting tool can now be used to form the slots for the honey to be held. These dimensions are not critical. Sand the swirl. The turning is completed when the swirl is being held only by a small diameter of wood at each end. Remove from the lathe and sand off the excess wood.

Regarding a finish, do not use vegetable oil. Use either a commercial non-toxic safe food finish or something like walnut oil.



Twister FU180 lathe

Mark Baker tests a new mid-sized lathe

When I heard about a new mid-sized lathe, which can be bought as a bench-top model or fitted with a leg stand to make it freestanding, and reported to be at a good price, I was off like a shot to Simon Hope's to test it.

We all know that buying a lathe is a personal thing and it's always a bit of a balancing act when it comes to how much space you need to house the lathe and the type of work you're likely to undertake. So we need to know the maximum diameter it is able to turn over bed and what length between centres it

will cope with. Also, does the headstock slide, swivel or is it in a fixed position over the bed? If it is a fixed position headstock, does it have a bed extension or outboard turning option? And then, of course, there's the very important issue of how much it costs.

Many people would love to have a larger lathe, but the reality is that many will not create work much bigger than the diameter of a dinner plate, so about 300-350mm, and as far as spindle work is concerned many will never venture into making stair spindles, balusters or table legs so do not need much past about 350mm or so between centres. Yes, having extra capacity gives more options, but one thing that most turners want of a lathe is a nice range of speeds to work the larger and smaller pieces easily, the torque and motor power to do so and mass in the lathe set-up to dampen vibration.



PHOTOGRAPH COURTESY OF DREHSELEBEDIARF SCHULTE



Swivel-and-slide headstock

Initial inspection

The Twister FU180 is cast-iron with a nice white colour and blue leg set that contrasts well. It sports a nicely machined, wide flat-top bed on which sits the headstock.

The headstock can swivel and/or slide along the bed. This is done by releasing the lever arm on the end of the lathe, pulling the release toggle and adjusting the headstock as required before locking everything in the new position selected.

The lathe features electronic variable speed control and has a fixed on/off isolator switch and a has a moveable on/off variable speed box to position at a convenient location for you.

PULLEYS AND SPEED

The speed is delivered via a poly-V belt, two pulleys and a 1.5hp motor. The pulleys are accessed via a hatch at the back for the headstock, which is held in place with a screw. There are two pulleys giving speed ranges of 50-1330rpm and 150-3700rpm. It has 24 indexing positions built in, utilised by an integrated indexing pin at the end of the headstock. There is a hole in the spindle nose in which a pin fits to lock the spindle while removing chucks and work and such like. The motor is held in position via a rocking arm/plate and level clamp, and the clamp is released and the motor raised to change the belts.

There is a lever rod that you raise and lower the motor with, which is a nice touch. As you lower the motor, you can use this rod to apply the right amount of tension on the belt as you lock everything in place.

TOOLREST ASSEMBLY AND TAILSTOCK

The toolrest assembly looks solid and is locked in place via a lever cam system. The lever arm is of a size that fits in the hand nicely, is sturdy and clamps down the toolrest assembly nicely. The toolrest is a good size and held in place by an adjustable position lever lock handle. I moved the rest and assembly and everything moved easily and locked in place securely.

The tailstock is clamped in place via a lever arm housed on the rear side of the tailstock assembly and a cam-locking system. The lock was positive without slippage. The quill moved forward and back easily and the hand wheel rotation to facilitate this was smooth. Everything is locked in with a small adjustable lever lock handle. Both assemblies looked and felt sturdy and fit for purpose.

LEG STAND

The optional extra leg stand on which the lathe sat looks beefy and solid. It is heavy, so if fitting this on a lathe, I would recommend two people to do so. It is



End of lathe



Pulley system

held in place by machined bolts which screw through holes in the top of the legs into the underside ends of the lathe bed mounting feet.

BED EXTENSION WITH RISER STEM

There are two places you can fit an optional extra bed extension on the bench-top model. The extension is 400mm long, and it can be placed mid-way along the front of the lathe and at the end to increase the between-centre capacity from 560mm to 960mm. It can also be placed at a mid-way point along the bed so it sits at right angles to the lathe, which gives a nicer working position for some work, but only adds 10mm or so extra to the turning diameter possible.

If you use the leg stand, the bed extension can be fitted in a further five positions, which increases the maximum diameter turning capacity to 900mm with the extender post. The positions for the extension bed to be fitted to the legs are on the front and back of each leg and one at the tailstock end of the lathe.

In use

The lathe is nice and heavy and when fitted to the legs it is obviously heavier still, but the legs also allow space under



Turning between centres

the lathe for an extractor, moveable tool trolley and such like.

The first piece of work I tried was a bowl blank 320mm wide by 250mm deep mounted between centres. I selected the belt on the lowest speed range, 50-1330rpm, and set about using a 16mm bowl gouge with a swept-back wing design to shape it. The power delivery was smooth, progressive with no quick jumps in speed and it is a very quiet lathe. I was able to find quickly a speed needed to minimise any vibration on the out-of-balance timber and was able to make 20mm wide cuts without problem and shape the piece without any fuss or hassle. So the lathe has plenty of torque.

The second piece was a 125mm x 125mm x 300mm long piece of spindle grain timber mounted between centres. Using the 150-3700rpm pulley set, I used a spindle roughing gouge and bowl gouge to shape it and this presented no issues either. No hint of vibration whatsoever and again no hiccups with the speeds used, up to 1250rpm, or the torque.

TURNING WITH THE BED EXTENSION

The last piece was a 450mm diameter natural-edge burr elm bowl mounted with the headstock at 90° to the lathe bed, and the bed extension on the front of the leg stand at the headstock end of the lathe. The fitting of the bed extension is a bit fiddly as you have to hold the extension and lock it in place to the stand/bed as appropriate with machine screws and a hex key. It is definitely easier with two people. Once in place it is solid, but as I found when turning the burr, when making the largest and heaviest of 25mm-plus roughing cuts, it is possible to induce a tiny bit of vibration, but cutting up to 20mm was no problem. If you want, jamming a piece of wood or metal underneath the support at the extreme end of the bed extension when making huge cuts solved the minor vibration.

CONCLUSION

This lathe is nicely built and will allow the majority of turners to tackle most work

they will likely ever undertake. Should they wish to go bigger, then the bed extension will most likely solve the issue of the larger capacity requirement.

I think this is a lathe that sits wonderfully in a position that offers turners flexibility in what they turn and at a price that will not break the bank. Of course it costs money, but the price is very good for what you get. The lathe is quiet, solid, and the power and speed delivery is smooth and progressive. I could not find a glitch when turning on the lathe and everything worked well, locked down and stayed put as required.

Would I have one in my workshop? Yes, without question. If you are looking for a lathe with this capacity and flexibility, check it out as you do your research into what options you have to select from. It is well worth a test.

TECH SPEC

- Centre height 180mm max diameter 350mm
- 560mm between centres
- Spindle M33 x 3.5
- Spindle and tailstock taper MT2
- Pulley 1, 50-1330rpm
- Pulley 2, 150-3700rpm
- Motor 1.5hp (230v)
- **Accessories supplied:** Knockout bar, revolving centre, drive spur and faceplate
- Weight: bench-top model 79kg
- Weight including legs: 149kg
- L x W x H: 1345 x 530 x 1240mm
- Five-year German warranty

Bench top model: £1550 inc VAT

With legs: £1699 inc VAT

Optional 400mm bed extension and riser post: £174.99

Contact: Hope Woodturning

Web: www.hopewoodturning.co.uk

For the rest of the world stockist details

contact: Drechselbedarf K Schulte

Web: www.drechselbedarf-schulte.de



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Kitchen clock

Walter Hall makes a wall clock to match a kitchen refit

PHOTOGRAPHS BY WALTER HALL



At the time of writing I had not been spending much turning time in my workshop due to undertaking a complete strip-out and refit of our kitchen. Enjoyable as this was, it took up a great deal of my time. But it did present me with the opportunity to design the clock for this article, which has now replaced the old kitchen wall clock, which no longer fitted with the style of the new kitchen units and worktops. Apart from the oak and slate colour scheme of the kitchen, other design influences were the steam punk works of my fellow Northumbrian Woodturners Association member Nick Simpson and the clock and watch-part pen blanks of pen blank casters such as Brad Herrington.

While the design of my clock is neither truly steam punk, nor from genuine clock parts, it nonetheless draws on these

influences to incorporate an oak body with an insert from laminate to match the cabinets, floor and worktops, and uses imitation antique brass clock cogs where the numbers would normally be. The hands and mechanism are proprietary items of the type available from many clock suppliers. I chose bold brass 'spade' design pointers that can easily be seen from across the room.

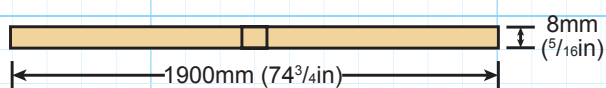
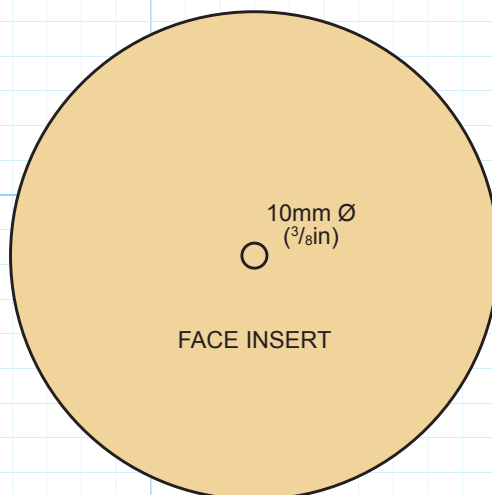
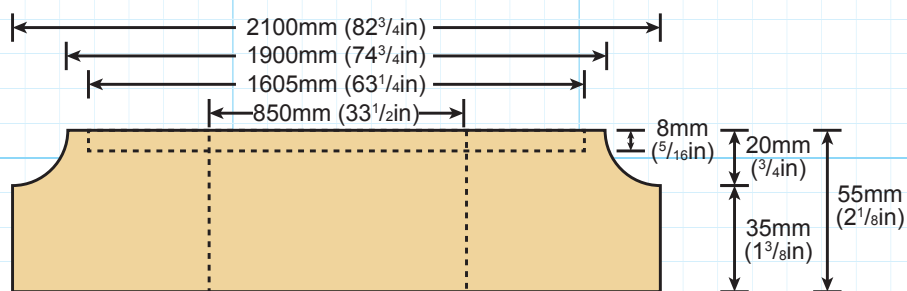
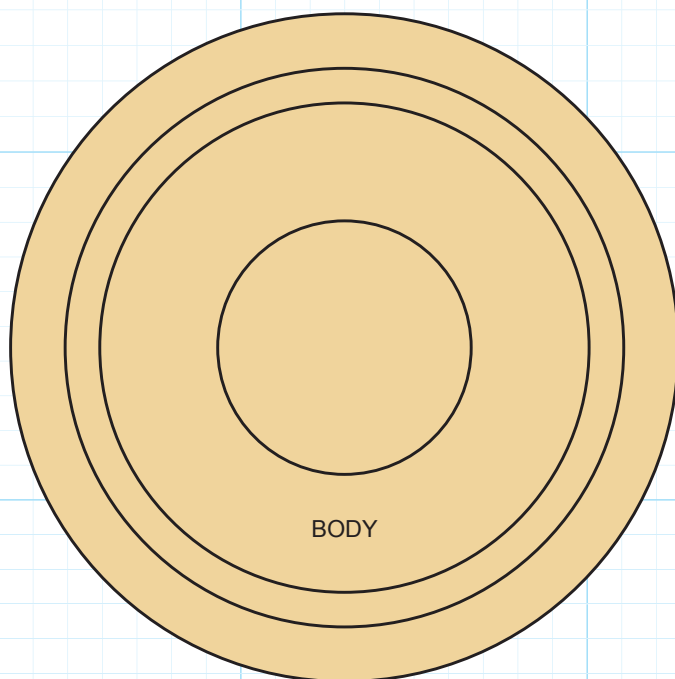
I chose to use my bandsaw to cut the insert to the correct thickness because I felt this would be the safest and most accurate method. Doubtless there are other ways that this could be done, but if your bandsaw is not large enough or accurate enough for the job, then simply turning to size and parting off to thickness on the lathe would be a good alternative method.

TOOLS AND MATERIALS

- Personal and respiratory protection equipment
- Bowl gouge
- Skew chisel
- Parting tool
- Beading and parting tool
- Abrasives
- Chuck
- Cordless drill/pillar drill
- Drill bits
- Router and keyhole bit

MATERIALS

- Hardwood blank
220mm Ø x 60mm
- Offcut of laminate worktop
- Clock mechanism and pointers
- Clock parts for number positions
- Brass escutcheon pins





Alternative designs

This clock was designed for a specific situation, but alternative face inserts could be made from other materials such as Corian or other solid surface material, coloured acrylic sheet or even a proprietary chapter ring. Clock mechanisms are available with various lengths of shaft to accommodate different thicknesses of face and a wide variety of alternatives are possible to mark the hours, ranging from actual numbers to the brass ends of shotgun cartridges. The only limiting factor is your imagination.

Clock insert

1 Begin by making the insert that will form the face of the clock. Cut a square of laminate just larger than the finished size of the insert. In my case the finished size was 165mm, so the blank required was 170mm square. Carefully mark the centre.

2 Using a pillar drill, or carefully by hand, drill a hole through the centre of the blank. This must match the size of the shaft of the clock mechanism you have chosen and will also be used to align the blank on the lathe for the next step.

3 Mount the work on the lathe. I used a friction drive made from plywood faced with rubber and screwed to a faceplate. Alternatively, a screw chuck could be used in the centre hole or the whole blank screwed to a faceplate. Whichever method you choose, bring the tailstock up to align and support the work.

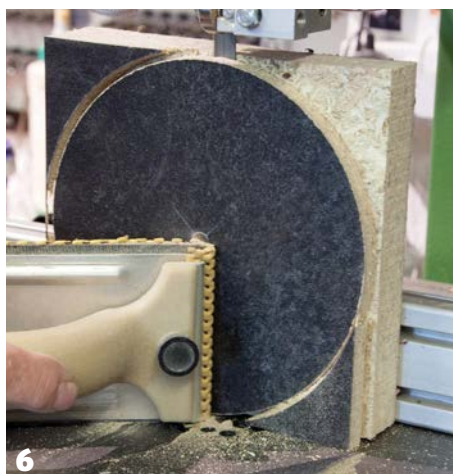
4 Mark the diameter of the finished insert on the face of the blank. This will help to gauge where the initial cut needs to be. Then, with the point of a sharp skew chisel, make a clean cut through the laminate surface to exact size.

5 Once the laminate is cleanly cut you can switch to a parting tool or beading and parting tool to cut a groove to just slightly more than the thickness of the finished insert. This needs to be the correct thickness to accommodate the length of the clock mechanism shaft.

6 Remove the work from the lathe and, with the bandsaw set up to cut the insert to exact thickness, use suitable push sticks (mine is made from router mat in a decorator's sanding plate) carefully cut through the blank to release the insert. (See intro for an alternative method.)

7 Return the work to the lathe and use abrasives to tidy up and smooth the edges of the insert. A friction drive works well for this or you could simply do it by hand off the lathe.

8 Using a matching spirit stain, colour the edges of the blank to ensure a neat edge when fitted in the frame. This will also conceal any minor scratches or chips in the edge of the cut laminate. Set the completed insert aside.



◀ Main clock body

9 Drill a suitable-sized hole in the hardwood blank that will form the body of the clock and mount it on a screw chuck. When drilling the hole for the screw chuck make it a few millimetres deeper than the length of the screw so that you avoid catching it with the gouge at step 11. Use a bowl gouge to true up the face and edge of the blank. Check across the face with a steel rule to make sure that it is perfectly flat and even.

10 Measure and mark the diameter of the recess for the clock mechanism. Measure against the mechanism and then increase the size to match a suitable set of gripper jaws which will be used to hold the blank when it is reversed.

11 Open up the recess for the clock mechanism with the bowl gouge. Turn away the waste until you hit the bottom of the hole drilled for the screw chuck. Now you can see why the hole needs to be deeper than the screw. Continue turning away the waste as far as possible without hitting the screw and then square off the sides of the recess with a beading and parting tool or the point of a skew chisel.

12 Remove the blank from the screw chuck. If your lathe has a proper spindle lock then use this to lock the spindle and turn the blank to remove it. Otherwise remove the screw with the work off the lathe using a suitable spanner. Don't try to use the lathe's indexing system as it is not designed for this and you may damage it.

13 Reverse the blank and re-mount it on a scroll chuck fitted with suitable gripper jaws to match the recess. As with the screw chuck, ensure the jaws do not reach the bottom of the recess to facilitate breaking through later without hitting the jaws. Carefully measure the exact diameter of the previously completed insert and use a bowl gouge to cut a recess to fit. If you are not confident of achieving an exact fit with the bowl gouge you could use a parting tool or beading and parting tool to delineate the outer edge and work to that with the gouge.

14 Once the recess for the insert is finished, begin to turn away the centre of the blank to meet the recess on the back, working slowly and carefully to avoid hitting the jaws of the chuck. Use a beading and parting tool or skew chisel to match up the recesses.

15 Now use the bowl gouge to form the shape of the clock body. What shape you choose is up to you, it could be an ogee, torus, ovolo, cove or a combination of these shapes. I chose a simple cove to reflect the coving on the kitchen cabinets.

16 Once the shape is completed to your satisfaction, hand or power sand through the grits to a good finish. Don't forget to reverse the work on the chuck to tidy up the back too.





17



18

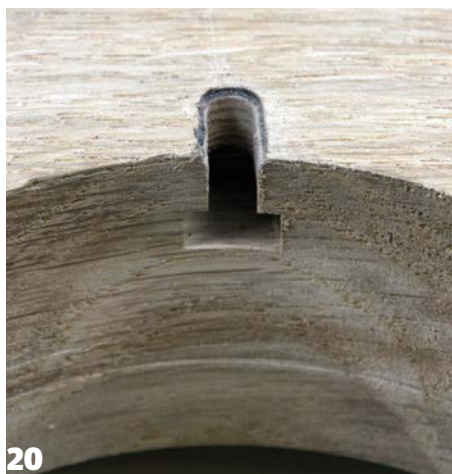
17 Apply the finish of your choice. There is plenty of choice as the finished work will not be handled much, so anything from wax to acrylic lacquer would be appropriate. I used three coats of a finishing oil which gave a nice satin sheen.

Assembly & final fittings

18 Mount the clock mechanism on to the back of the face insert and tighten it firmly in place, making sure that any washers and inserts are correctly positioned. If a mounting bracket is included do not fit this as it will not fit in the recess and is not required.



19



20

19 I added a decorative cog under the face washer to bring up the nut to the end of the thread and avoid any unsightly thread showing. Whether you need to do this will depend upon the length of your clock spindle and the thickness of the insert.

20 With the clock body face down on the bench and retained in position by bench dogs or a router mat, use a keyhole router cutter to cut a recess for a screw head to mount the clock on the wall. If you don't have the tools to do this you could simply drill a recess in the back of the clock with a Forstner bit and fit a picture hanging D-ring.

21 Glue the face insert into the recess in the clock body. Any good-quality wood glue will do but take care not to get adhesive on the finished body. Leave this to set before continuing to the next step.



21



22

22 Re-mount the clock on the chuck and use the lathe's indexing system to mark the hour positions, starting at the top in line with the mounting recess on the back. If your lathe does not have an indexing system you can do this carefully by eye or using a protractor. Line up your selected cogs with the hour marks and pre-drill for the brass pins that will be used to attach them to the face. Pre-drilling will remove any risk of chipping or cracking the laminate and will make inserting the pins much easier.

23 Attach the cogs to the face using brass escutcheon pins. Make sure to remember to wipe away the marks on the face before hammering them into place as they can be difficult to remove afterwards. (Don't ask.)



23



24

24 Once all the cogs are in place, all that remains is to press the hands into place, insert a battery into the mechanism, set the time, and your kitchen clock is complete. ●

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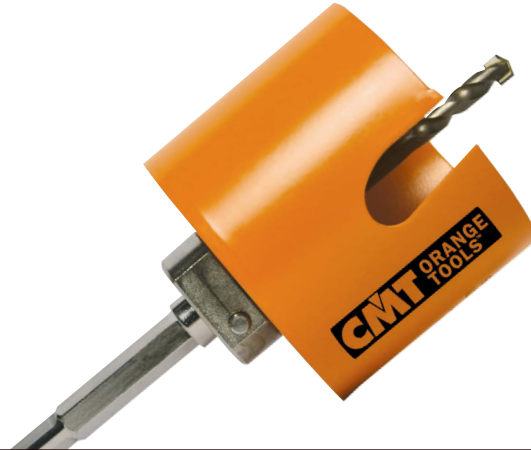
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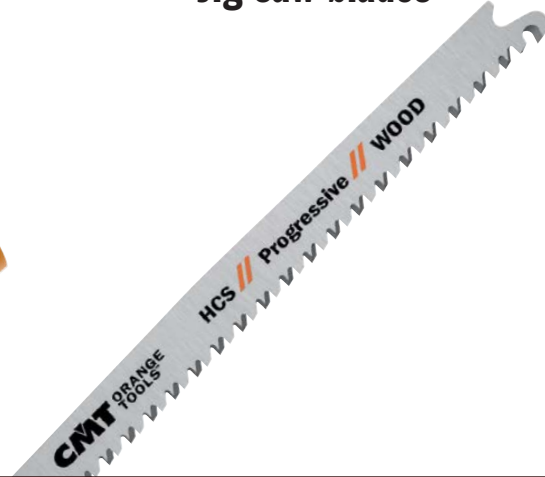
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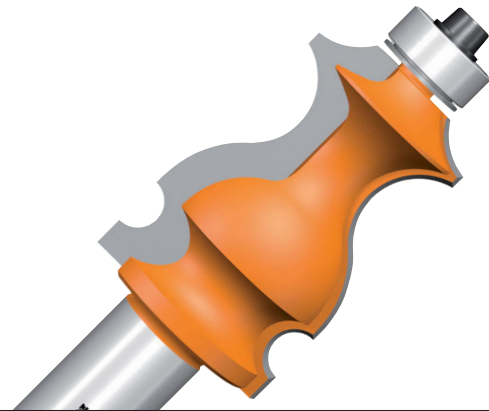
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Hearing loss

Geoffrey Laycock discusses his diminished hearing



PHOTOGRAPHS BY GEOFFREY LAYCOCK

A couple of issues ago I wrote about hearing loss and the benefits of hearing protection. I also wrote about my own recent experience of testing, which identified moderate hearing loss in the higher frequencies – the typical result of presbycusis, the gradual degradation of hearing ability in later life. The reality is that hearing loss begins in the 20s, along with sense of smell and numerous other functions. I used to enjoy talking about that on training courses full of the younger generation.

Having confirmed low to moderate loss I decided to do something about it. The short version is that I underwent the more detailed audiometry and selected a pair of hearing aids that the audiologist and I felt most appropriate. They were then programmed to respond to the frequencies I have trouble with and a period of adaptation has begun.

I chose external behind-the-ear units that have a thin wire connecting to the in-ear speaker. They are hardly visible and, for me, a significant benefit was being rechargeable. The 'in-ear' type are now very popular but the environmental concern of changing two batteries every two days – yes that's how long they last – was not something

I wanted. Mine simply pop into a small charger station every night.

Other than an expected feeling of having something where you don't normally – in the ear canal – it does feel strange. My own voice sounds weird and too loud, but that is improving. The recommendation is to read aloud to yourself so your brain acclimatises to the different acoustics. Most of the time I do not feel they're doing anything positive but if I remove them spoken words then sound muffled – I now recognise what was being lost previously. Conversation, particularly in crowded areas, is becoming easier and the birds in our garden have become very loud. I have a 'tuning' session any day soon, intended to refine the frequency settings and maybe turn up the volume slightly now my brain is getting used to the new balance of low, mid and higher frequencies. It isn't just a case of making sounds louder, the brain has to reset itself to hear them again. In the previous article, I wrote that current aids are nothing like the old screeching units of the past, it's true, the technology is simply amazing.

A week ago, I was increasingly sceptical about the whole idea of wearing hearing aids and the benefit I was getting. I was driving from Surrey to Norfolk and put

Pink Floyd's *Dark Side of the Moon* on the car audio system – quite a pricey one in my partner's Land Rover. Resetting the mid and high tones to zero – I usually had them higher to compensate – I was quite surprised how much more I heard. They really do make a subtle but significant difference. I put off doing something about the very gradual increase in hearing difficulty I had but now I would recommend to anyone thinking they may have hearing loss to go and have a test sooner rather than later. Initial audiometry is about 15 minutes and available either through your GP – you may have a significant wait – or free from a number of high street businesses. Being tested is not a commitment to anything, what happens later is your decision. Many woodturners are, like me, 'more experienced in life', and age-induced loss, possibly with added noise-induced loss, is quite possible. It is worth doing something about it now.

FURTHER INFORMATION

For an explanation of the different types of hearing aids and more visit: www.nhs.uk/live-well/healthy-body/hearing-aids/

Kit & Tools

A collection of tests and press releases showing the latest tools and products on the market

All prices are correct at time of going to press but are subject to change without notice. Products from US & overseas to UK are subject to shipping & taxes

Air Stealth half-mask

Mark Baker tries out the new half-mask respirator from Trend



PHOTOGRAPH BY MARK BAKER/GMC PUBLICATIONS

Wearing appropriate personal and respiratory protective equipment (PPE & RPE) to protect eyes and lungs from hazards is a simple but often-ignored procedure. Ejected debris and dust is common in workshops, so eye and lung protection will help minimise some risks when used as part of an overall package of measures and procedures.

Trend Machinery has recently introduced a compact and lightweight half-mask respirator with full P3 protection, available in small/medium and medium/large sizes. Trend says: 'It is suitable for protection from all woodworking nuisance dusts, including MDF, as well as other industrial dusts such as silica, glass fibre and also agricultural related dusts. The Air Stealth has an Assigned Protection Factor of 20 and is certified to BS EN140 and BS EN143 P3R.'

Initial inspection

The mask is well made and features adjustable straps. Once I had adjusted it and put it on in the right position it moulded easily and gently to my face and there were no gaps at any point where it had failed to seal against the skin.

Trend states: 'The mask is odour-free and non-allergenic, with latex and silicone-free thermoplastic elastomers offering a soft, comfortable fit to the

face while sealing against inward leakage beyond the standard recommendation for maximum protection. The mask offers superb all-round vision, can be worn with prescription or safety glasses, and is designed to prevent fogging and misting.'

In use

I tried the mask for extended periods of time in the workshop when turning, sanding, power carving, hand carving, routing and drilling, carrying out wire brushing work and much more. So I really put it through its paces in a variety of work situations and also head positions.

The thing I noted first was how comfortable it was to wear and how lightweight too. The second thing was that the mask was easy for me to breathe in. The nature of the air coming through the filter by default creates some resistance, but I did not find it uncomfortable or difficult.

Of course, each person is different and needs to find out what suits and is appropriate for them in the environment they are working in. But with some other such respirators I have tried over the years, they became uncomfortable to use after a while – something I didn't encounter with this one. Trend comments that it incorporates 'easy-to-change flat

filters while the large filter area offers less breathing resistance in use'. As stated, I found the breathing aspect fine and I did not find any issue with fogging up of glasses or air getting past the face seal. It is worth noting that, for those with a beard, the seal of the mask against the face may be compromised.

Setting about seeing how easy it was, or was not, to change the filters, I found them easy to remove and replace. Checking the literature I received regarding the filters I noted that Trend also offers replacements, 'including a carbon filter option to deal with nuisance odours and fumes while still offering full P3 protection'. This makes the mask even more versatile.

Conclusion

The mask is comfortable for me to wear and use. The filters are easy to change. The half-mask respirator did not cause me any issues whatsoever and was easily integrated as part of a range of measures to minimise risks in the workshop. I think it is well worth looking at.

Prices:

Air Stealth P3(R) Half Mask: £21.95

Additional filters start from £9.25

Contact: Trend Machinery & Cutting Tools

Web: www.trend-uk.com

CHARNWOOD MICRO CLEAN AIR FILTERS



Charnwood has introduced a range of four air filters for the workshop. Manufactured in the UK, they are designed to remove airborne dust particles from the air in the workshop.

MC200 has an airflow rate of 200 cubic metres per hour. Therefore it is suitable for a small workshop with a volume of up to 20 cubic metres.

Designed to sit on a shelf or bench, the filters can be located either close to the centre of the room to create the best airflow, or closer to the source of the dust.

The following three units are designed to be suspended from the ceiling:

MC420 has an airflow rate of 400 cubic metres per hour. Therefore it is suitable for a workshop with a

volume of up to 40 cubic metres, roughly equal to a single garage.

MC760 has an airflow rate of 780 cubic metres per hour, therefore it is suitable for a workshop with a volume of up to 78 cubic metres, roughly equal to a double garage.

MC1210 has an airflow rate of 1200 cubic metres per hour, therefore it is suitable for a workshop with a volume of up to 120 cubic metres, roughly equal to a triple garage.

Prices from £209-£355

Contact: Charnwood machinery

Web: www.charnwood.net

Conversion chart

2mm (1/64in)
3mm (1/8in)
4mm (1/32in)
6mm (1/4in)
7mm (9/32in)
8mm (5/16in)
9mm (11/32in)
10mm (3/8in)
11mm (7/16in)
12mm (1/2in)
13mm (11/16in)
14mm (7/8in)
15mm (11/8in)
16mm (11/4in)
17mm (11/8in)
18mm (3/4in)
19mm (7/8in)
20mm (1in)
21mm (11/8in)
22mm (11/4in)
23mm (23/32in)
24mm (5/8in)
25mm (1in)
30mm (11/8in)
32mm (11/4in)
35mm (13/8in)
38mm (11/2in)
40mm (15/8in)
45mm (11/4in)
50mm (2in)
55mm (21/8-21/4in)
60mm (23/8in)
63mm (21/2in)
65mm (25/8in)
70mm (23/4in)
75mm (3in)
80mm (31/8in)
85mm (31/4in)
90mm (31/2in)
93mm (35/8in)
95mm (33/4in)
100mm (4in)
105mm (41/8in)
110mm (41/4-43/8in)
115mm (41/2in)
120mm (43/4in)
125mm (5in)
130mm (51/8in)
135mm (51/4in)
140mm (51/2in)
145mm (53/4in)
150mm (6in)
155mm (61/8in)
160mm (61/4in)
165mm (61/2in)
170mm (63/4in)
178mm (67/8in)
180mm (7in)
185mm (71/4in)
190mm (71/2in)
195mm (73/4in)
200mm (8in)
305mm (12in)
405mm (16in)
510mm (20in)
610mm (24in)
710mm (28in)
815mm (32in)
915mm (36in)
1015mm (40in)
1120mm (44in)
1220mm (48in)
1320mm (52in)
1420mm (56in)
1525mm (60in)



SPINDLE ROUGHING GOUGES

Carter & Son Toolworks has introduced two spindle roughing gouges, 22mm and 32mm in diameter. Each spindle roughing gouge is milled from round bar and is designed for strength and control. Both feature a round tang so they can be fitted into a handle of your choice. As with all Toolworks tools, these are made from M42 high-speed steel.

Prices \$99 – \$134.99 unhandled

Contact: Carter & Son Toolworks

Web: <https://carterandsontoolworks.com>

For UK sales and prices contact: The Toolpost

Web: www.toolpost.co.uk



COFFEE TAMPER

For coffee aficionados with espresso machines, Niles Bottle Stoppers has just released a new coffee tamper (patent pending) made from solid FDA food-grade stainless steel. It has a very slight domed bottom with spiral ridges to allow for a more even tamp of the coffee.

Measuring 58mm in diameter and weighing in at 10.5oz, it comes with a 1in set screw that is 3/8in x 16 tpi. You would just need to turn a handle to your desired shape as you would a bottle stopper or bottle opener.

Price \$20

Contact: Ruth Niles

Web: nilesbottlestoppers.com

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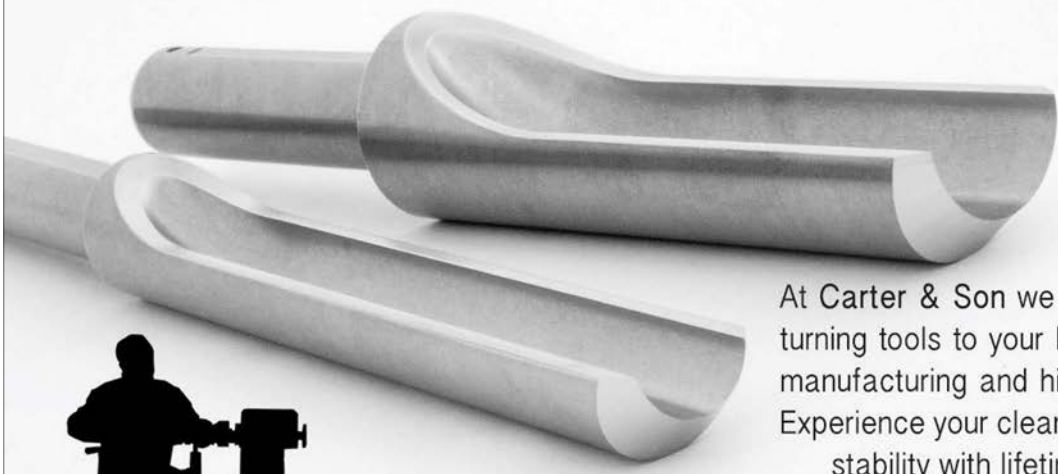
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Koi Pond

Phil Irons shares with us how his latest piece came to fruition

This piece of rippled or fiddleback eucalyptus gunnii was dry when I turned it and had a lot of envelope shake, small pockets that open up when the wood is drying.

From the outset I knew I was going to fill them with what I call 'metalised epoxy', five minute two-part epoxy glue with powdered metals mixed into it which I use to fill and enhance splits, cracks and voids rather than disguise them.

I have a selection of copper, brass, bronze and aluminium to choose from.

I chose copper epoxy but after removing the excess I was disappointed to see that the copper didn't contrast enough with the pinky brown of the eucalyptus so I decided to enhance the ripple figure with my colouring technique; initially I wasn't going to because I thought there would be plenty going on with the fiddleback, the natural colours and the copper epoxy.

Now colouring or staining wood can be quite unforgiving if you make the wrong choice of colour or they don't blend as you hoped or the stain doesn't penetrate as it should and you can end up with something you're not totally happy with.

My favourite colour combination is Royal blue and Azure blue which normally works very well but in this case I had forgotten how dry and non porous the piece was and I didn't get the penetration or the depth of colour I wanted. The full effect of colouring isn't truly apparent until the last coat of lacquer has been applied and burnished. The shape and form were good, it was an OK piece, but I wasn't totally happy with it.

A month later I was running a surface decoration course which includes gilding, in preparation I had ordered some new colours of variegated metal leaf that I wanted to try and using the piece as a canvas I threw caution to the wind. A couple of coats of lacquer to stop the leaf tarnishing and I was finally happy.

A friend saw it and said "wow, it looks like a pond full of Koi."



PHOTOGRAPH BY PHIL IRONS



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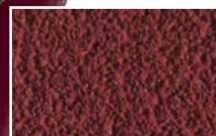
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