February 2022

Crosscut

◄ **Textured lid made with contrasting woods by Poena Coetzee at the January 2022 WWA woodturners' meeting.**

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Next Turners' Meeting on **Monday, the 7th February 2022** – from 18h00 at **Made in Workshop** – Poena will demonstrate how to make a tapered wooden cone to fit into the head-stock of a lathe to hold serviette rings for finish turning.

Next Cabinet makers / Main club meeting – Wednesday, the 9th January 2022 – Graham Swallow will talk further on blade selection for table saws and band saws.

News

Turners' meeting. Monday, 10th January 2022. Poena Coetzee demonstrated the use of texturing tools to make patterns to decorate lids for jars. He has a selection of Robert Sorby texturing wheels that he uses to make spiral patterns on the lids. By careful choice of pitch and the angles he presents the tool to the surface. Poena can create a variety of patterns. He has 2mm, 4mm and 5mm pitch toothed wheels, as well as a pointed wheel for making an orange-peel pattern. To clean off the loose fibres afterwards, he uses a stiff, fine brush such as a suede brush.

Main Club meeting, Wednesday, 12th January 2022. Graham Swallow introduced the topic of blade selection for table saws and bandsaws. He spoke of the need for proper guarding to protect both the operator and the blade. He is concerned that untrained people are using the panel saw and the band saw, putting themselves and the machines at risk. A formal training course has been made mandatory before the panel saw can be used by individuals at MiW. Graham qualified the first group in January 2022, and more courses will be held.

Schedule for Regular Events at Made in Workshop

Meetings – regular meetings in addition to those given above

1. Second Saturday of month - Herman – all things turning related – 083 631 0501 hermanpotgieteresq AT gmail.com

This list is subject to change, so please consult your Crosscut each month.

Show & Tell meetings are held at Hardware Centre every Friday Morning at 09:30. All members welcome. Contact Eugene on 0824953394 or eugene@antlerfin.co.za

Ken's Saturday Workshop. Ken Bullivant holds a Saturday workshop at his house in Boksburg. The location is 13 Franklin Avenue, Comet, Boksburg on the first Saturday of the month from 09:00 to 12:00. They decide on an annual project and work throughout the year making it. Individual projects are discussed and problems solved. Ken also offers private lessons too. Contact Ken on 082 809 0020 if you wish to take part.

Woodworking 101 side table project. Bobby led the group and demonstrated each stage of the process. The three tables shown below were produced as part of the WW101 sessions. Tom's table has an inlaid treble clef. Gary's table has two metal tube stretchers and Bobby's table, produced as part of the demonstration for the project, has inlaid stringing in the top with a contrasting lighter wood.

Participation in WW101 has dropped off, so the regular sessions have stopped. It may be possible to arrange to make a specific project over one or more sessions, if there is interest. Members are invited to suggest projects and also to volunteer to lead them too. Simple projects that only take a few mornings are likely to be more popular. To keep people engaged, they may have to pay up front for the materials and tuition, albeit only a nominal amount.

Custom making special handsaw blades

Trevor Pope

If you use hand saws, you will need to sharpen them eventually. So saw sharpening is a useful skill to add to your skill-set. There is much information on internet on saw sharpening, with Paul Seller's videos being particularly easy to follow. It is illuminating to watch him sharpen a handsaw

in five minutes for a touch-up and perhaps 20 minutes for a complete resharpen where he reshapes the teeth. (www.paulsellers.com and on Youtube)

Some tools such as **frame saws** use replaceable blades. It is not difficult to make a frame saw, like the one shown, from scratch, once you have blade. In the past many artisans and apprentices will have made their own.

The example shown on the right is also called a turning saw because the blade holders can be rotated to cut in different directions.

It is important have a blade in hand before you start making one, as the blade length is a key measurement. I have two old examples with different blade lengths – one is 295mm hole-to-hole and the other is 345mm hole-to-hole.

These old blades are resharpenable with a small triangular saw file. The blades were quite narrow to start with. With each sharpening, the blade will become narrower, as one would expect. You can see that the upper blade in the picture on the right is somewhat narrower. It has been resharpened by hand as some of the teeth are uneven. For replacements, the required lengths were probably freely available when it was made, but no longer. There are only a limited number of lengths available nowadays, so good luck finding one in the length you need, off the shelf. You can make one as I describe below.

A **pad saw**, also known as a key-hole saw, is useful in awkward places. These blades are push blades, so they require a delicate touch to avoid bending them. I found a Marples example second-hand with a wavey, blunt blade. Because it is a push blade, it was probably inclined to bend and kink if the user was ham-handed. With some careful hammering, resetting and sharpening, I was able to restore this blade to working order. But it is not as good as new – you can see it fitted into the handle in the picture above. Slight kinks are still visible. These blades are 1.4mm (about 1/16”) thick which is quite thick, but this is needed to avoid them being too fragile. These blades are still available by mail order from overseas suppliers, which is good news.

You may be aware of Japanese pull-saws and their virtues of being easy to use and having a narrow kerf because the blade is so thin. This is possible due to being pull-saws – if the blade needed to be pushed, it would kink in no time. To solve the blade kinking problem for my pad saw, I resolved to make a pull version of the blade. The first attempt in the bottom is rather snaggle toothed, but it does cut, albeit a bit unevenly. The second attempt in the middle, has more even teeth and cuts quite cleanly.

Band-saw blade stock is a good starting point for making frame saw blades and pad saw blades. If you have a band saw, you may have a collection of broken and blunt blades that you may be wondering what to do with. If not, they are probably available for the asking. The used blade shown below is a 19mm wide, 3 tpi blade that broke at the weld after some use. The stock is 1mm thick.

There are a few practical issues with using bandsaw blades as stock for making your custom blade.

1. The teeth are very hard, which is a virtue, but it does mean that they can't be resharpened with a saw file as one might expect for hand saws.
2. The teeth are usually a hook shape, which is too aggressive for a hand saw.
3. The blade needs to be cut to length and holes drilled.
4. They may be full of fatigue cracks because they are worn out – this happens eventually to all blades, particularly if they have been resharpened and rewelded more than once.

I will address each of these issues in turn below.

1. **Hard teeth.** Sometimes only the teeth are hard and the backing stock is soft enough to be file-able. Then you can just grind off the teeth and work with the backing stock, which will still be quite hard enough. To cut off a length of the blade, just grind a notch in it and bend it back and forth a couple of times. New teeth can be marked out on the blade and refiled as required. This can be rather tedious, so there are a couple of alternatives – you could send the blade out to have new teeth cut by a commercial saw-sharpener. You will need to specify the TPI (Teeth per Inch) and the shape of the tooth form if you can, such as 10 TPI, cross-cut. Depending on their tooling, they may find the bandsaw blade stock too hard, so check with them first. They may be able to make up a blade to your spec as an alternative.

   Or you can grind your own teeth. This is a bit fiddly, but it can be done with some care – a steady hand and a good pair of eyes are essential. Using a small triangular grind-stone in a high-speed die grinder or a small router, the required tooth form can be shaped using a profiled stone. The picture below shows a worn stone (top) and a reshaped stone (below). On the right is a diamond dressing tool which was used to shape the point. Only a very light touch is needed as the diamond very efficiently cuts away the aluminium oxide stone.

Using a black marking pen, lay down a background on the blade stock, against which you can mark out the tooth profile you want using a sharp point. I used an existing saw blade as a template. Then you can use the triangular stone to cut the teeth. I proceed slowly, grinding each tooth a little at a time, proceeding along the blade, before returning to deepen each gullet until the desired shape is reached.
The key with small stones is to run them as fast as possible, to get enough surface speed for efficient grinding. An electric drill is just not fast enough – 24,000 rpm is the sort of speed needed. Even at high speed, the stone will wear quite quickly, so it may need to be reshaped a few times. This is why you need to grind each tooth a little at a time, otherwise the teeth at one end may have different shapes to the other end. This is how the pad saw blades shown above were made.
You may notice the teeth becoming blue with the grinding heat, even with a light touch. On a working band-saw blade this would be a problem as the teeth will have lost some of their hardness and will then become blunt very quickly with the heavy use expected of a band-saw blade. However, for a hand-saw blade this is not going to be a problem, as the steel will still be quite hard enough, and may still be too hard to file!

2. **Tooth form.** If you look at the blades I made for the pad saw, you can see the pull teeth, sloping in the opposite direction to the push teeth of the original blade at the top. These pull-tooth blades are made from 1mm thick band-saw blade stock as shown in the picture above. The bottom blade is the first one I made and you can see the teeth are rather irregular – they still cut, but not well. The middle blade is the second one I made, and you can see that teeth are much more regular. The tooth form is a combination rip/cross-cut with a slight backwards slope so that the saw doesn't cut too aggressively. The tpi is the same as the original pad-saw blade at 9 tpi. Before the final grinding pass the teeth were set using an Eclipse saw-set at the #11 tpi setting. When resharpening, try to keep the same tooth form, unless you have some insight on what you want, based on another blade that you like. If you are unsure what tooth form to use, copy an existing saw that you are happy with, using it as a template to mark out the teeth.

3. **Cutting to length and making holes.** The blade can be cut off using a bench grinder or a fibre disc wheel in Dremel type high-speed grinder or an angle grinder with a fine metal cutting disc. The holes for pins at the ends of the blade for a frame saw are best drilled using a carbide drill, but a sharp HSS drill bit, preferably a high cobalt one, may also do the job.

4. **Fatigue cracks.** If you find these, scrap the blade stock, as it may fail later on – it is not worth investing any further time. Careful inspection should reveal these cracks – they often start at the gullets of teeth as this is the narrowest part of the blade. They can often be seen along the back of the blade too, under a magnifying glass.

This whole blade making process may seem rather fiddly, but if a replacement blade is not available, there may be no alternative to making your own. As a guide, the second pad-saw blade took about 2 hours to make, starting with 19mm wide x 1mm thick band-saw blade stock, which had to be reduced in width, before the teeth were cut. It can be done. At 1mm, the blade is thinner than the 1.4mm thick push blade, but it is intended to be pulled.

Another advantage with making your own is you get to choose the tooth form you need – crosscut, rip or combination, as well as the number of teeth per inch.

I have also made a blade for the larger frame saw shown, from narrower band-saw blade stock. The blade stock I used had a fine-tooth form, probably from a metal cutting blade. These finer teeth suited the application I had in mind, so I could use it as made. I just cut it to length and the pin holes were drilled with an HSS drill bit. I have tried a coarser tooth form as provided with a wood cutting bandsaw blade, but the hook tooth form was too aggressive and the blade required too much force to cut with. Regrinding the coarser blade with a less aggressive hook, perhaps even a slight backwards slope may make it usable.