NHLA – "Hardwood Matters"

Bandsaws……Under Stress

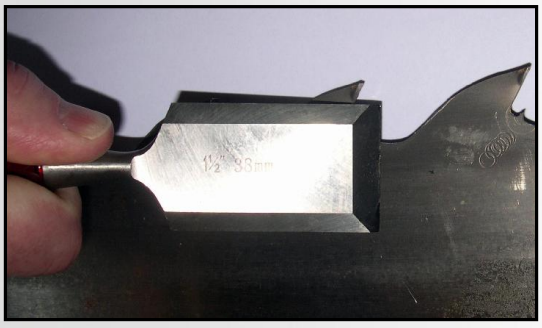
One of the key elements in making bandsaws run well is keeping them genuinely sharp, but getting the cutting edges keen and uniform is only one part of maintaining the teeth. A quick look at some other aspects of tooth maintenance, or "fitting" in filing room parlance, is well worthwhile.

We demand an amazing combination of things from bandsaw steel when you think about it. First, it has to take and hold a very good cutting edge and maintain that edge for several hours under heavy loads and high horsepower between sharpenings. It's hardened into the low to mid 40's on the "Rockwell C" scale so it's still quite workable, but very tough. It has to have the ductility to withstand flexing over the curve of the bandmill wheels at 8000-12,000 surface feet per minute. This is not an easy combination to achieve. Then to add insult to injury we have to be able to cold form it both with the swage and the stretcher roll.

This is a tough combination of requirements – edge retention, flexibility, malleability, and memory. Add to that the relatively small quantities required worldwide and the extremely close tolerances it has to be machined to for thickness, straightness, and flatness and it's very easy to see why it is only available from a few sources!

The point of all this is that bandsaw steel in the best of circumstances is working very near the edge of the envelope, with almost nothing held in reserve. If it's not handled very carefully it will jump into failure mode immediately. What can we do, in simple practical terms, to shift the odds a bit in our favor?

Eliminate the Grinding Burr – One very easy way to help reduce the likelihood of cracks is getting rid of the burr left by the grinding process. This burr is always on the inside of the saw as it sits on the sharpener. It's easy to feel by drawing you fingertip up across it. This burr is material that the grinding wheel has removed from the body of the saw but not thrown free, in this process it has gotten very hot, and as a result it's extremely hard at the point where it is still attached to the saws. When it's going around the wheel it cracks instead of bending, these microscopic cracks can lead into the body of the sawblade.



To remove this burr there are a couple options, but the easiest it simply to wipe it off the saw with a good sharp woodworking cold chisel. One pass around the inside of the saw, particularly through the deep part of the gullet, and the burr is gone.

Dress the Gullet - Dressing the gullets after the saw has been ground is another easy way to protect the steel. Because the steel is on the very edge of being able to stand the required flexing it's very easy to push it too far. Grinding just a little too heavy on the sharpener will create grinding chill (small streaks of hardened steel perpendicular to the length of the saw), giving cracks a place to start. Most filers make a pass around the saw after it's sharpened and dress the deepest part of the gullet with a hand file or a small grinder. Either of these methods will work quite well, but take care if you use a hand held electric or air driven dresser, they have the potential to create heat in the steel if they are not used carefully. At least with them any hard spots will run parallel to the saw plate, not perpendicular to it.

Proctor Roll - One extremely effective method for protecting gullets from cracks is the Proctor Roll. This simple device mounts on the side of a saw sharpener. Once the saw is sharpened the crowned rolls in the Proctor Roll are aligned with their center line 1/8" above the bottom of the gullet and drawn together under gentle spring pressure. The saw is then fed through the sharpener one more round (not grinding – just feeding) and as each tooth is pulled through the Proctor Roll it gently crimps the bottom of each gullet. This disrupts most of the features that give a crack a place to start, and dramatically reduces cracking.

The Proctor Roll does not "fix" the root cause of cracks, but in most cases it will radically reduce the number of cracks that show up. It will not work effectively unless the grinding burr has been removed from the inside of the teeth – but that's no problem, we're already doing that with the cold chisel, right? It's also important to set it so that the crimp we're looking for just forms. It the tool is used too aggressively it can start to elongate the front tire. The Proctor Roll is available from Hanchett Mfg. (231/796-7678), it's been around forever but has never gotten the consistent use or attention it merits. For my nickel I wouldn't have a grinder without one.

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