

NHLA – “Hardwood Matters”

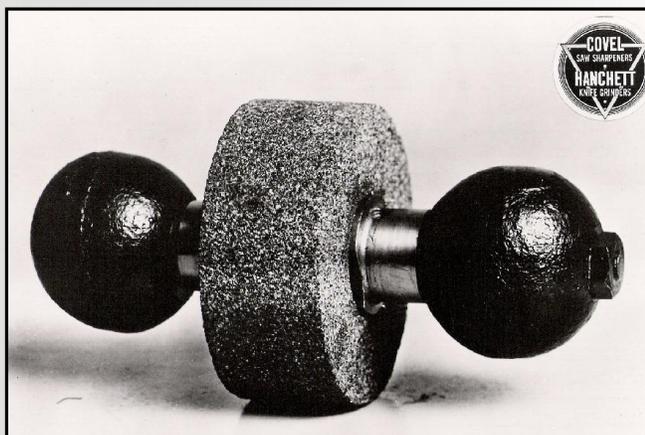
Staying in Shape

Maintaining tooth shape in wide bands is a critical part of the mission in the filing room. Every time a saw is sharpened all of the teeth have got to be ground completely throughout the entire tooth profile, this is particularly important through the bottom of the gullet. Any intermittent grind in the tooth profile will cause cracks that begin right at the transition point between the ground and un-ground sections of steel.

One of the creeping changes that will cause disproportionate problems with bands is allowing wheel shape to drift over time. When filers are dressing the grinding wheel on a bandsaw sharpener they are really doing two separate, equally important things. The first is establishing the correct shape; the second is opening up the surface of the wheel so that it cuts clean.

Shape

Step one, establishing the shape, can be done several ways. The most common method of shaping the grinding wheel is the use of a Metcalf or similar wheel dresser. This simple device uses a grinding wheel, held at an angle to the wheel of the sharpener, to rotate against the saw grinding wheel and remove material to re-establish shape. Used properly it also helps maintain the concentricity of the wheel. You’ve got to do this frequently because some parts of the saw grinding wheel do a great deal more work than other parts, so of course they wear away faster changing the shape. If you fail to put the whole surface back true you will get intermittent grind and cracks. Using a Metcalf type dresser well takes practice, it needs to be held at an angle that lets it rotate relatively slowly and it cannot be allowed to bounce. Used properly it’s a great tool, used badly it’s dangerous.



Some sharpeners have wheel dressers built in (or added on) that use a tool, typically a diamond nib, to duplicate the same shape on the grinding wheel every time it’s dressed. These wheel dressers can range from quite simple add-ons designed to produce a consistent radius or a prescribed shape to full blown CNC units that can be programmed to produce any desired shape.

The simplest method of all is the use of a “dressing stick”, just a piece of abrasive held against the wheel to modify wheel shape. What these methods have in common is that they generally leave the wheel surface very smooth, exactly the opposite of what we need for effective (cool) grinding. By themselves these tools do not do the whole job.

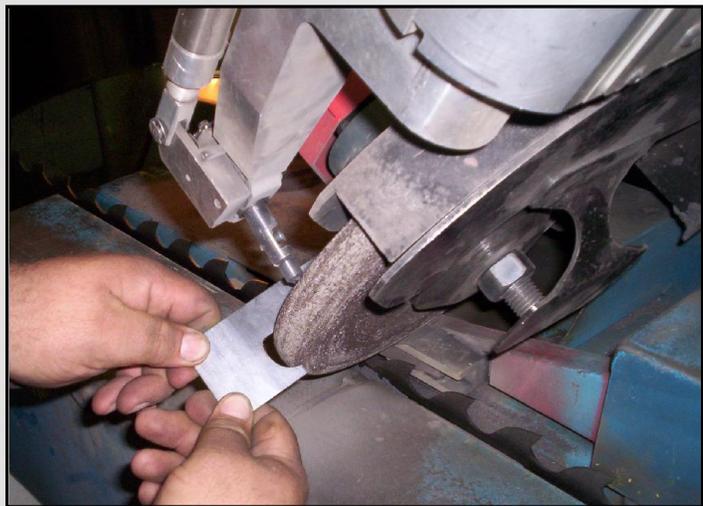
Cutting Clean

The smooth surface generated by shaping the wheel necessitates the use of the second tool, typically a “star” (or “Desmond Huntington”) type dresser. The Desmond dresser is held by hand against the surface of the turning wheel at an angle, like the Metcalf dresser. As the star shaped cutters move individually against the wheel they open up the surface of the wheel making it porous and sharp, giving the wheel the abrasive nature it needs to cut cleanly and avoid burning. The cutters themselves wear out very quickly, that’s the nature of their use. You need to buy them in quantity so that fresh cutters are always readily available - their cost in meaningless against the importance of what they do. It’s very common to find the cutters worn right down until they are no longer cutters at all, just washers. That does not do the job intended.

Solution

What all these wheel dressing processes have in common is that you cannot take any of them on faith. To steal a quote from Ronald Reagan, “trust but verify”. Okay, okay, wheel shape is likely marginally less important than the Cold War, but the idea holds. It’s important to be able to look at wheel shape over a long period of time, because the changes in shape can take place at a glacial pace. The change often shows up when new saws are put into service and problems with cracking occur right away. If the wheel shape from the factory is the same as it has been, but the shape the grinder is producing has drifted you are very likely to have intermittent grind on the saws initially or burned spots from limited contact (the grind sounds the same, but is focused on too small an area). The *best* result you can hope for is to spend too much time grinding the saws in, the *likely* result is a brand new batch of saws seriously damaged or destroyed in their first run or two! This part of the break-in process can’t be rushed or ignored. Take your time grinding in the new saws and get the saw plant a new rubbing if you want to change shapes.

To insure that wheel shape is consistent over time is quite easy in fact. By simply making a wheel shape template that’s kept for reference and used frequently this won’t get away from you. Making a template is easy, use an L-shaped piece of sturdy plastic or light steel, press it into the rotating wheel until the vertical part of the “L” is in contact with the wheel on its top side and the wheel shape is fully embedded in the template. Now that template can be compared to the shape as often as needed (at least daily) to ensure that wheel shape is not drifting. You’ve got to stop the wheel to use the template; otherwise the template will just drift with the wheel shape.



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