

# SAWMILL FORUM

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**I have a scrag mill and I need a little better finish on the cants I am producing. Should I get some saws with more teeth to produce a finer cut?**

No.

Let's first realize that by design, scrag mills tend to be relatively crude machines. They are not as crude as a firewood processor, but they would be considered crude in comparison to the average modern headsaw and carriage combination and certainly crude and inaccurate compared to a line-bar resaw.

That doesn't mean there aren't things that can be done to improve the accuracy and even the smoothness of the finish. It just means we have to work around some of the basic design flaws.

The first rule of accuracy and finish quality in any form of machining is that the work piece must travel past the cutter (saws, in this case) in a true and proper fashion. Some scrag mills convey the log on a sharp chain while others use an overhead end dogging carriage. I definitely prefer the overhead end dogging carriage system, but it also has to be designed in a way that it is capable of holding the log securely and conveying it accurately through the saws.

Imagine what happens if there is any vibration or lateral movement of the log as it goes through the saws. It would not only saw harder and give you saw trouble, which will in turn create a saw wobble, which will appear on the finish of the cant, but just that vibration and lateral movement by themselves will affect the look of the finish.

Assuming that you have managed to find a very accurate scrag mill, or that you have made enough changes to yours to get that accuracy, now we need to look at the saws to smooth out the finish.

Getting saws with too many teeth is the wrong answer to this problem. When you have too many teeth in the cut you create a lot of problems. The more teeth you have, the more power you draw. When there are too many teeth in a saw, none of them are taking a large enough bite to produce a big

enough chip. So you make chips that are smaller than the side clearance of the teeth and you start to spill sawdust out of the gullet, which wears the gullet area prematurely and also heats the saws. Like all regular readers of this column, you're well aware of all of the bad ramifications of heating your saws; not exactly what you want if you are looking to improve the finish on your lumber. An added problem is that because the teeth are doing more grinding than chipping, they also tend to dull sooner than a tooth that is taking the proper bite.

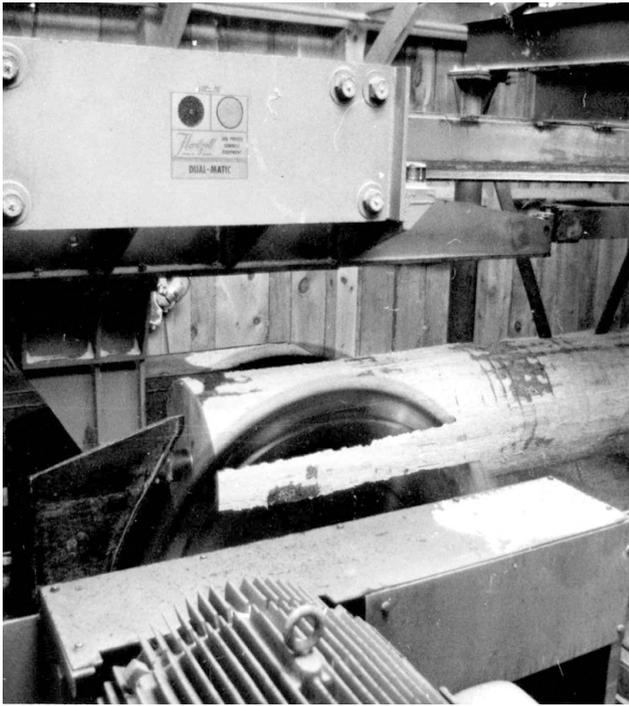
And even more important, no matter how many teeth you have, if one of them has a little more side clearance on one side than the others, it will leave a mark on the cant that will make it very easy for you to measure the amount of feed per revolution of the saw. That is not exactly what you want if you are looking for a better finish, either.

Assuming you have figured out how to start conveying the logs through the saws in a true and proper manner, and the saws are running properly and not heating, the next step is to make sure that all of the teeth on the saws are in the same plane.

I would suggest that you start with the shafts and collars to eliminate as much runout there as possible, because any runout at the collars will only multiply as it works its way out towards the rim of the saw. Even as little as five thousandths at one of the collars can multiply by a factor of ten by the time it gets out to the rim of the saw. That is easily enough to show up on the surface finish of the cant.

Once you work all of that extra runout out of the shafts and collars, it will be time to focus on the saws. First they need to be hammered in such a way that they have a minimum amount of wobble when turning by hand on a test arbor. Plus or minus fifteen thousandths would be considered to be within a running tolerance on the average headsaw. If you want an above average finish you will have to lower that running tolerance. The more you lower that tolerance, meaning the less the saws wobble, the better your finish will be if the teeth are in the right place.

If your saw only wobbles five thousandths, but one tooth is sticking out on one side (inaccurate side clearance) it will still



**A two-saw scrag mill.**

leave a mark on the cant.

So, now that you are conveying the log with a minimum of inaccuracy, and you have a very tight tolerance on the runout

of the shafts, collars and saws, you need to make sure that there are no bent shoulders and the side clearance on the bits are extremely accurate. If you are using inserted tooth saws, that side clearance accuracy will be dependent on the straightness of the shoulders, centrality of the vee groove in the saw, the accuracy of the side grinding of the bits when they were manufactured, and the accuracy of the squareness of your sharpening. If the saws are the type that use silver soldered carbide tips, it is then a matter of shoulder straightness and the accuracy of the side grinding and face grinding of those tips.

It sure would be easier to just go out and buy some saws that have way too many teeth in them, but that is not the right route to your desired destination.

Just start chipping away at each one of those places where inaccuracies can occur and little by little you will improve the finish and at the same time you will find that your scrag mill will run better and more efficiently. Other than that, do remember that there was a reason why they invented planers.

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**Questions about sawmills and their operation should be sent to Forum, The Northern Logger, P.O. Box 69, Old Forge, NY 13420, FAX #315-369-3736.**

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