

HOW TO HAMMER CIRCULAR SAWS.

On this subject J. H. Miner, of Baton Rouge, La., speaks as follows: The saw being the life of your mill, keep it in good condition. The chief element of this is in hammering and keeping the saw straight and true. The former we will term tension, which applies to keeping the saw open to accommodate the centrifugal force applied by its speed. The latter, straightening, applies to keeping the plate true and free from lumps. Saw hammering is a peculiar art, and accomplished by but few to any degree of perfection, simply from the many foggy ideas advanced by men, some of whom boast of their 20 years' experience. I have stood for 10 years at the lever, watching closely every so-called peculiarity of the saw.

The first thing is to straighten your saw. This is done on a wooden, firm, end-grain block or leather padded anvil. All mill saws dish more or less from the log, and are full on that side. It is necessary to lean the saw until the center says so that it will appear as straight as possible, then with a 20-inch straight edge mark all the full places, watching closely just outside of the collar. Near the rim apply the straight edge at right angles in several positions; it is best to use, say, a 12-inch straight edge on the rim, as you can get closer to the teeth, mark your saw with chalk or hard soap, on the rim when you find places to show straight one way, but high the other way; make a long mark directly in line with the straightest way. This indicates a twist, and will in all cases on the rim, extend toward the center of the saw. When the 20-inch straight edge is applied on the radius (from center to rim) such a place will not show, but take the 12-inch and apply across this line, and you will find it to be high. If there is a twist it will be higher on the extreme edge. The straight pene hammer must be used on such places, the straight way of the hammer directly on the straightest way of the saw, which is toward the center. As the extreme edge is the highest, nearly all the blows must be applied there, care being taken not to go too far in. A twist showing six inches is often removed by hammering only on the rim. Twisted places are sometimes found at the center when the saw is dished.

Having laid off the saw, go to the block and strike one blow on every mark with the round face of the hammer, using the long face on the long marks. The first operation may dish the saw in the other way, which, if not too much, shows good work. Don't rub out your marks, and when the other side is laid off notice if any of the marks correspond; if so, too heavy a blow was applied; in this way the heft of blows can be determined. Work on both sides of the saw, getting the rim as true as possible and leave it leaning a trifle to the log. This constitutes straightening. If your saw's tension is nearly right it will now run much better, but this is not always the case. I will add here that before attempting to straighten a saw as described, a careful inspection must be made. All saws get long or loose on the rim by use, and it's no common thing among small mills to find saws so loose on the rim as to form a twist or winding position; if not quite so loose it will not be winding, but may appear nearly straight with the rim—very flimsy, while the center will be as stiff as a board. In short, all such saws are stiff in the center and will not give and must be tensioned before straightening.

This tensioning is done by stretching the saw nearer the center on an anvil with firm blows, regardless of the lumps in the saw. First, strike a circle line one-half way the radius, then two lines two inches apart below this, and one above, four lines in all. Hammer the two center lines first on both sides of the saw, but if it is very loose on the rim it will often require four to six lines; in such cases the lines can be closer together. Never go nearer the rim than one-third the radius, and not much closer to the center. Keep this in view. The one-half way part of the saw must be the more open. A saw open too near the center will not run at all in many cases. After giving your saw some tension, nine times out of ten your twisted saw, to your surprise, will show up straight. Sometimes a saw gets twisted through accident; such saws will show the center a little loose, and when they

do, take the twisted saw to the block with a long pene, as stated. High-speeded saws require to be more open in the center, many of them dishing through with a snap. A saw too open, will heat in the center and crowd from the log, while a saw too loose on the rim will snake and assume a complete wind or twist when a little hot on the rim. In such cases the center has to run hot in order to get anything like work out of the saw. A saw too open in the center is stiffened by hammering the rim not nearer than two inches of the teeth; very little work on the rim will change a saw. When the saw has about the right spring straighten it up on the block; then a trial will determine its tension. If the saw will not screw up true the collar should be turned. If a saw is to remain on the mandrel it may be papered if the collars dish it.

It is very essential that unequal tension be corrected in a saw that runs at a high or even moderate speed. Not one man in fifty knows anything about this, to say nothing of how to remove it.

Unequal tension is this: One part of the saw being tighter, or more open than the other. I could write a volume on this important part of the saw's life. Now, to remove it, and in the simplest way, screw the saw up on the mandrel, take hold of the "tail" of the saw with the right hand (if it is a right hand mill) and spring the saw all you can to you, and at the same time apply the long straight edge and notice closely the opening. Apply the straight edge say every six inches, moving the saw and noticing the variation in light. You will find some places spring more, while others, remain nearly to the straight edge; mark these places plainly. Now go on the outside of the saw, having everything free, so you can spring the saw, except the guide pins, which must be close to the saw. On this side mark the variations as before. If your saw has a loose place you will find that it stood off more on both sides at that place. A tight place will stand off less and alike on both sides. In simpler words, loose places appear as though the plate was very thin, while tight places appear thick because they stand closer to the straight edge on both sides of the saw; loose places the farthest away. An open place on one side which shows high on the other indicates a lump; such a saw is not true and must be taken to the block and trued up.

To remove loose places hammer near the rim opposite such a place. Tight places are stretched right where they show it. For practical purposes, the saw should show very nearly the same spring all around. Always test both sides, and when even a slight variation is found it should be removed; then, if the saw is too open or too stiff, treat the center or rim a little on the anvil.

The foggy method is to always hammer a saw on the anvil, striking it as heavily as possible. When a saw requires a little straightening, it is mostly on the rim (the outlet of the saw); if this is done on the anvil what is the result? Lumps partly beaten down, with all the tension gone; then the hammerer goes to the center to overcome just what he ought not to have done. A few blows on the block, and the saw would have retained its tension—been in better shape with 10 times less work. No man can remove a twist in this way, directly on the rim. I have noticed over 50 such men, and they never get right up to the rim of the saw. Why? because it will curl up, every time, on the anvil. Test this with a piece of sheet iron, and be convinced. The tinner, iron and coppersmith are sensible men; they have their copper or mallet hammer and a smooth block to straighten their work on. Why? Because only a blow or two on an anvil would stretch it into a wind, and then they are done. The saw is precisely the same way, and it remains only a question of time that the saw will be unequally tensioned, and then it is done. A man that knows anything about tension in a saw, will take care of that vital part. Take a dished saw that requires only a few light blows near the collar, on the block. What does the foggy do? Stretch the rim, "pulling the dish" out, and a lot of other foolish things. A saw too open requires the rim stretched, but never a dished saw. Another idea is to hammer in lines from the center to the rim, only to result in tight and loose lines, and to buckle the saw. A man of gumption ought to know better than this,

and this is the cause of many fractured saws. Others' theories are, that when a saw is sprung it must be sprung more to get the lump back. My idea is if it is sprung it ought not to be, and should be gotten back without additional stretching, namely:—the block.

Small saws are treated precisely the same as larger ones, but much more mildly. An expert changing from a thick saw to a thin one invariably will strike too heavily; great care must be exercised. They require but little tensioning, and should be stiff. Blue spots are treated on the block, and when they come back the rim should be stretched opposite such a place. Their appearance continually indicates a loose place.

SCALING LUMBER

A correspondent writing to a Quebec exchange has the following to say on the subject of scaling lumber: In these enlightened days of standard measures, standard weights, and even standard time, it does seem incongruous that no one fixed rule has been established by law for the buying and selling of so important an article of commerce as the natural products of our timber lands. In many parts of the eastern townships there are no less than four different log scales in use, all more or less at variance one with another, while the Provincial Government adds still one more to the list, which is used by them for levying timber dues on leased government timber lands. No doubt contracts can be made according to any one rule agreed upon, and where both contracting parties are fully conversant with the way in which this one peculiar rule will hold out in board measure over log scale no injustice will be done to either, but while all other rules, weights and measures are being for the sake of convenience and simplicity reduced to one acknowledged standard, and this usually a decimal one, it does seem as though there was some peculiar design in keeping up this puzzling state of confusion for the purpose of taking advantage of the unfortunate settler, who finds it difficult enough to master sufficiently for his own protection any one table by which he can measure the contents of his own logs before surrendering them to the insatiable man of the presiding demon of the mill yard. Taking for the rate of example logs of twelve feet in length, and of 8, 12, 24 and 36 inches diameter, it would appear that the difference in these five tables is not only remarkably great but also that in varying they do so with no apparent irregularity.

Log Rules	Length of Log. Feet.	Diameter of Log. Inches.	Amount in Feet.
Bangor	12	8	33
Oughtred	12	8	28
Scribner	12	8	22
Quebec Government	12	8	24
Doyle's Rule	12	8	16
Bangor	12	12	78
Oughtred	12	12	68
Scribner	12	12	59
Quebec Government	12	12	50
Doyle's Rule	12	12	48
Bangor	12	24	327
Oughtred	12	24	300
Scribner	12	24	303
Quebec Government	12	24	315
Doyle's Rule	12	24	300
Bangor	12	36	770
Oughtred	12	36	
Scribner	12	36	692
Quebec Government	12	36	710
Doyle's Rule	12	36	786

In following a comparison of the different rules in the above tables, through the various sizes of the logs, it will be seen that in the larger sized logs the discrepancies are not so great as in the small, also that some of those which cut severely on small timber give the best measure on large. This fact is well known to lumber sawyers who use two rules in buying logs, applying whichever suits their purpose best. I have also known those who ship round timber to the United States use the Scribner, or even the Doyle rule for buying logs from the farmers, and sell by and pay the duty on the Bangor scale, by which they gain in actual measure from 250 to 500 feet on every thousand f' bought and sold where the logs are 10, 12 and 14 inches in diameter. Piratical as this undoubtedly is,