FILING SAWS—THICK AND THIN SAWS—PITCH AND NUMBER OF TEETH.

The circular saw to-day is a tool that few have mastered. There is a vast difference between the kind of saws required for small mills and those needed for large, fast-cutting mills The great trouble with most circular saws is that they have too much set. Some 8 gauge saws have .5-16" set. This requires 25" more power, and the constant strain on the saw tends to buckle it, for it has no support, as the space between the saw and the log is 3-32", and this allows the saw to bulge that much betwixt the teeth and the centre, which will soon cause it to buckle or dish. But the worst evil of all is that the saw kerf is nearly as great as if not more than the thickness of the plate, so most of the dust that is cut out by the set is allowed to pass down between the side of the saw and the log, and this heats the rim. It is clear that 5-32" cannot carry 9-32" ahead of it when the tendency is for the tooth to press through the dust. Saws that are sharpened on an automatic sharpener overcome this difficulty to a great extent, as the throats are kept square and the edges sharp. But we cannot afford to sharpen a pony mill by the automotic device, and the saw throat does not wear so much, as it carries only about two inch feed. This kind of saws should be gummed but little, but the operation should be performed very often to prevent gumming, as they always dread it, some mill men make the teeth 2" long instead of 1¼", and consequently the saw brings dust enough back to keep the sawyer and tail sawyer covered. If his teeth were 1¼", the saw would be all right when it came from the gummer. It should be about an 8 gauge 56" saw with 36 teeth, with as much pitch as possible.

For this mill the sawyer wants a good upset, not a good sawyer and a bad upset, and as the upset is used in nearly all mills of larger capacity I will state how it ought to be employed. The upset should fit the tooth exactly, and the first blow must be lighter than the rest, so as to guard against a break. The swage should not be held too far over or too near the operator, as the result will be a broken corner or point, or the saw will be out of round. Great care should be taken in holding it square across and level, otherwise, when the front is filed square, the tooth will be at an angle, and to overcome this there must be as much filing on the back as on the front to get the tooth square, and then the set is nearly all gone, so more swaging must be done. Probably the next tooth will be swaged better, and it will then be longer. Such work with an upset fractures many corners and weakens others so that before the first log has been sawed they break, then the saw maker and the upset are blamed. If the upset had been properly used the teeth would not have been broken. A few strokes of the file are sufficient and a light touch on the back, then side-file, and the saw is ready for work so far as filing goes. I am speaking to show the difference in the way saws are managed, I know plenty of just such sawyers, and their employers are no better

A sawyer recently came into the mill I am connected with, and I happened to meet him in the yard, we were strangers, but being "brothers" soon got acquainted. Going over to the mill we passed a lot of newly sawed boards 12 feet long, and on seeing them my companion stopped me, looked at them, turned one over, put on his spectacles, looked again rubbed his hand over the board and then said to me:

"You carry pretty good feed."

"Sometimes we do," I answered.

"Yes," he said, "you were cutting over a 12 foot feed when you sawed these."

"Oh, no," I answered, "that's beyond all reason."

"No," he replied, "I have never been in a mill yet where I could not tell the feed as soon as I saw the lumber. I have been saw-milling since 1850 and know something about a saw, and don't you forget it."

I told him he must call the length of the board the feed.

"No," he replied, "show me the feed that saw cut if you can."

"I can't," I said.

"It is you who don't know what feed is, can't you see that saw cut that board before it made a revolution?"

"No," I said, "but tell me how you can always find out so easily the feed of a saw."

"Well, I'll tell you," he said, "When you see the marks on the board the distance between them is the feed, and I know the saw that cut these boards was cutting over 12-foot feed, because the lumber is smooth from one end to the other and has no marks."

"Look around," I replied, "and you will see that all our lumber is smooth. Our saws do not mark the lumber."

"How can you help it?" he asked.

"I keep my saws round."

"But when 'she' loses a corner or two.'

"But she 'keeps' them."

"But doesn't she mark anyhow?"

"No. I use the side-file which makes an even set."

"You file on the side. I file that way."

Then I told him I referred to a file made and put in a frame for the purpose. He had never seen one.

We went on to the mill, he looked around a little and then left without saying good-bye He was a sawyer of 35 years experience. So among sawyers there is as much of the "cutting out for a sawyer and missed in the making" as with the farmer and the merchant. The farmer who knows how to manage his farm will succeed, while his less skilled neighbor can scarcely make a living. One merchant will get rich, and the dealer next door will fail.

In using the file it is essential to be able to detect when it is working "square." The sound of the file must be the operator's guide If the files squeak, it is too far over and out of the timber. If it cuts a clear cut, it is too far in. When the file is pushed square there is a slight squeak, nearly a clean cut. About one sawyer out of 20 will file nearly right. I know that perfection cannot be attained, but as a general thing the sound of the file makes your flesh crawl.

A few sawyers file a clear cut in front and then to get the tooth square, it is squeak, squeak on the back of the tooth and the saw is then generally filed into the timber. To run a file straight without rocking is more of an art than square filing. When the file is pushed straight, the front of the tooth will have the same light from edge to edge, but if the least rock is in the file it will be shown by one side being a shade darker than the other. Only a good eye can apply this test. I would like to hear from some others on this subject.

When the tooth is finished, and the centre of the tooth higher the file has rocked a little. If the centre is apparently lower that shows good filing.

Mills of 25 M to 40 M per day require a saw entirely different from those I have been describing. I see some of my brother sawyers in writing for your paper omit to mention the difference in the saws of different capacity The 8 gauge 56 inch, with 36 teeth, would run in our mill hardly long enough to saw up one log. We use No. 8x8 gauge, 64 in., 100 teeth; speed to 10,500 feet on an average feed of 6 in. and 8 in. and often 12 in. and 16 in. Our saws do not need as much pitch as the other and would not run with as much, § is what I give them with ¾ scant set. The teeth are 1⅝" long, the back as high as I can run to clear, which is pretty close, as the teeth are close together, but none, on an average, cutting over 1-16 in., but no more than the former with 56 in. teeth. But they can be easily crowded beyond that, so the teeth are not keep in a strain by being forced to do all they can. We saw cypress have the fastest cutting mill on the principal Mississippi river and make the best lumber.

We cannot cut as much as the pine mills, for our timber is large and cannot be handled quickly, some sticks making as much as 8,000 feet board measure. We average 25,000 and 30,000 and have gone beyond this, on a 12 block and hand feed shingle machine. We cannot run thinner saws because the bark is of a hemp nature, which is very tough to cut. I hammer my saws about once a week, but have no regular time. The tension will last about two weeks (I am including all the saws for log sawing).

We change three or four times a day, but cannot be regular, as timbers covered with mud may necessitate changing a little sooner. I never file our board or log saws, but sharpen them altogether on Covel's automatic sharpener, which gives an edge that will last much longer than the file. The corners are not worn so much as they are by hand filing.

We use the Kinny swage, as it is generally known. It is sold by M. Covel, Chicago. It gives entire satisfaction, for it is much quicker in operation than the upset and saves saw plates. I had about the same trouble a great many have had in getting it properly adjusted, but it is indispensable in a large mill.

I am an advocate of thin saws. They save timber, power and are much to be preferred when fixed up in the mill, but they have one serious fault, and this is that they are very liable to get sprung. If the filer understands his business it is only a few minutes work to repair them, but where it is necessary to send them to a saw hammerer some distance away, expense and delay follow.

Thick saws "stand the racket" better. Thin saws need more teeth and require more hammering. They will not hold their tension long I am alluding now to fast mills. Thin saws work better than thick one in smalls, if the sawyer has a fair knowledge of his trade. If not a thick saw should be used. It is never necessary for them to be sprung set. I believe in the work being regular on the point of the teeth, and as the corner does nearly all the work, sprung set teeth do nearly all their work on one side. They run heavier for several reasons, one is that the teeth do not cut clear, they wedge in cutting, and the side that has no corner is exposed to a great friction, and in knots will often spring and break out. A great many say the spring set runs lighter. They probably experienced with a saw that had twice as many teeth as it needed. if the sawyer will take a saw with 100 teeth and another with 50 teeth and fix the latter up "double set" it will make smoother lumber and run longer than the other. There is exactly the same number of corners in both cases, but the spring set teeth will spring and lose their set. Some say the double set will lose their corners, but they never will if they have been fixed up right. They might if they had 5-16" set, but we do not care about wasting that much timber, power, saw plate and money.

For shingle and small, thin circulars only spring set will do. The inserted tooth will not do; there are one or two makes which answer better than others and are used by a great many. I do not think they have dust room for the number of teeth needed for fast sawing, and if they have enough they are so close together as to leave hardly sufficient saw plate to hold them in. The throat soon lets the dust pass on each side, as I have described, heating and expanding the rim and loosening the teeth and soon out they come. These saws require more hammering than others, because the jamming and driving necessary in putting in new teeth and rivets stretches the rim. They are in use, as a rule, only in the small mills or for soft timber like white pine.

As regards the makes of saws I have but few preferences. Some are a little better than others, but they will all run. One thing may be said with reference to the manufacturers who make saws without hammering. Their saws generally show more hammer prints and lose their tension quicker than those of some other makers. The tension cannot be put in a saw to stay. Gumming, the constant strain and the centrifugeal force stretch the rim. But the worst trouble of all is the heating of the rim, for then the rim is laboring four different ways to give the hammerer work, and he soon gets it —*J. H. M. in Saw Mill Gazette.*

MESSRS. Ira O. Smith, of Michigan, and J. H. Swan, of Chicago, within the past week or two have bought thirty-five million feet of pine timber in northeastern Missouri. Mr. Smith informs that they expect to buy about one hundred million feet of pine in that vicinity and are continually buying small quantities. "We have great faith in pine trees," remarked Mr. Smith, "and have bought these as a speculation."—*Muskegon Chronicle.*

MUTUAL INSURANCE.

A MOVEMENT is on foot in England for founding a "Mutual Insurance Association for Saw Mill Owners" The idea was mooted a few years ago, but for sometime has been in abeyance. An effort is however, being made to give it practical shape. The scheme is outlined in the *Timber Trades Journal* as follows:—

"It is proposed that the insured become shareholders, in the proportion that they participate in the benefits of the company in the same manner that is now adopted by many shipowners, in the insurance of their ships, but that no one policy, in the early days of the Association, at all events, be larger than £2 000; that certain well-digested rules be laid down for observance by the insured, with the object of minimising the risk of fire occurring on their premises; that a scale of charges be laid down, regulated by the quality or condition of the risk, as favorable to the insured as can reasonably be framed to carry on the successful working of the undertaking, and it is hoped this would not exceed 1½ per cent. There would, of course, be various questions to be decided by the directors or other officers appointed, such as naming a time before which a loss shall be claimed in full against the Association in the event of fire, also the foundaton of a reserve fund and other details.

"The object of forming such an Association is to mutually assist owners of saw mill property to insure at reasonable rates of premiums, as the present system of being dependent upon companies, who do not specially lay themselves out for such business, is felt to be an injustice, especially so as their rates are at times out of all proportion to the nature of the risk.

"The rates of premiums imposed in many cases are such as to impose a heavy tax upon saw mill owners, such a tax that no small number are uninsured, or only partly insured, as they prefer to carry all or part of the risk themselves, and to become their own insurers, to paying extortionate premiums.

"We believe there is a desire on the part of many saw mill owners for the establishment of such an undertaking, as it cannot be sound or politic for them to pay extortionate premiums, or to become in all or in part their own insurers."

THE INVENTOR OF THE CIRCULAR SAW.

Referring to an article on the above subject *Timber* gives the following extract from a letter received from a Canadian correspondent:—

"Referring to the article 'The Inventor of the Circular Saw,' in the issue of *Timber* of the 19th December, I do not think Mr. Benjamin Cummings, the inventor of the circular saw, as I remember one brought from England some 63 years since, which was in use near my old place in Co. Queens, in this province, and can still be seen there. The arbor is used for an intermediate shaft, and the old saw is knocking about the shop; but I will hunt it up and take care of it, so as to fight the Yanks on it. The grinding was done across instead of as at present, circling. The old chaps ran it by a chain belt; the nut was placed on the wrong way and would yield to the strain, slacking the saw and puzzling the old chaps generally. It was discarded before I can remember, but when a lad, I recollect looking through the mill and amusing myself with it. I was born in 1819, and it was put up about 1822 or 1823; but your 'auld folk' can put the Yankee straight if they like. I do not know when circular saws came into use, but Mr Cummings, if he made the first, must have done so more than 60 years ago."

MR. CHAS. MICKLE has purchased a mill site opposite the railway wharf, and has commenced to build a new mill. The size of the main building will be 40x90, two stories high, and attachment to one end of twenty feet. It will contain one circular and two shingle machines. Mr. Mickle has a stock of about 12,000,000 to cut, and in order to accomplish it it will require to run both mills to their full capacity through the season. Mr. Mickle is also building for his own use a steam tug of 40 feet keel—48 feet over all, and 11 feet beam. The contractor is Mr. Simpson who built the Kenozha.—*Banner*