

## A SUCCESSFUL MILL MAN.

BY JUNIUS IN "WOOD WORKER."

A MAN has much to learn after he can place the log on the carriage and gig it back and forth to the saw, before he is a sawyer. He must practice the three A's (alertness, activity, accuracy) for both himself and the saw; the saw will be accurate enough if the sawyer knows how to be on the lookout for it and make it do accurate work.

The saw should have nothing to do (that is, no force to overcome) but to saw lumber. I have been in mills where the saws would not make an accurate line for hours at a time, but the sawyer (?) seemed to think it was running all right. The lines might all be about parallel, but none were straight, the saw being subjected to hundreds of pounds side strain at every line. This is true more particularly of band saws, as the circular will generally make such vigorous protest if there is any considerable side friction, that some one about the mill must find the trouble if the sawyer does not know; but the band saw will stand it a while, until it cracks all to pieces or the planer foreman makes a "kick" against the "scoops" and lumps on the lumber. Then, as frequently happens, the filer gets "jacked up" by whoever is in authority, and he in turn lays the blame on the sawyer, and if the foreman is not capable of deciding who is at fault he says the saws are "no account" (and they cannot deny it); but it generally ends in the filer or the sawyer, or both, "taking a walk."

It seems to me an easy matter to fix the responsibility for bad sawing where it belongs. There need be no controversy about it. The sawyer and filer should both be able to tell by the kind of lines the saw makes whether it is properly fitted and tensioned or not, and by its behavior and the noise it makes while in the cut, whether it is the fault of the saw, track, guides, head-blocks, set-works, or from any other cause it makes uneven lines. It is the sawyer's duty to know how to put his track in line and level across, and to properly adjust the mill and guides and keep them in perfect condition, so that if a saw does not "saw wood and say nothing," he can say to his filer: "Here are the levers; if you will take hold and prove the fault is in the machine, or my handling of it, I will gladly admit it." The filer should be able to tell when his saws are all right, and be capable of taking hold of the mill and moving it.

If the sawyer and filer work in harmony they can aid each other very materially, as sometimes a difficulty comes up that is new to one or both of them, and if they are "at outs," each one laying the blame on the other, they are not likely to find the trouble very soon but if both are trying to locate the cause, there is a good chance of finding it.

Some time ago I called the sawyer's attention to some thick and thin lumber that I found on the track, and suggested that the set-works were not correct, as each board was of even thickness from end to end and the lines straight, but some of the boards were of proper thickness and others too thin. I also spoke to the filer about it, although it was evidently not the fault of the saw. They were warm friends and both interested in having the lumber correct. One would saw while the other watched. The filer soon detected the offset in making the uneven lines. It was a poorly-devised affair connected by a belt, which, unless kept very tight, would slip at one time and not at another. The sawyer, being used to running a circular mill where the off-set is not used, did not think to look for the trouble there, but the filer, having had experience with off-sets on band mills, knew they sometimes did not work right, and readily found the cause of the uneven lines. My friends accuse me of making a hobby of this work of keeping the track and mill in perfect condition, but as I have hidden it to success on more than one occasion, I may be pardoned for believing it very essential.

I will relate my experience on one of these occasions, as it may help some poor filer out of difficulty, and the beginner may learn to avoid it. Some years ago I had some correspondence with a firm with a view to running its mill by the thousand, and finally went to see the firm and the mill. I found a band mill in a bad shape. It had been running about a year "off and on" (more "off" than on I would judge, from the looks of the saw book, which I afterwards looked over) and had "frozen out"

some dozen or more filers and half as many sawyers (that is, they recommended themselves as such to the firm). The building had been put up by contract and the machinery put in on a guarantee of 40,000 feet per day, but so far have failed to come up to it by 10,000 ft., and had resulted in a compromise price being paid for it.

The filer I found at work was about ready to "pack his kit," as he claimed the sawyer was trying to "down" him and that there was nothing fit to work with in the filing room—which was true, as he had it arranged. I told him I was something of a filer myself, but was not looking for work of that kind. He remarked that I or any other man could have his job, as he did not want to lose his reputation on the old trap. It was a question with me whether he would not have been better off without that article, such as it was, but as he was a large man and in a bad humor, I said nothing, as I was not looking for a sore head either. The superintendent was

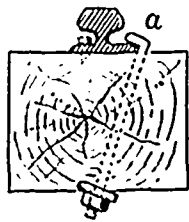


FIG. 1.

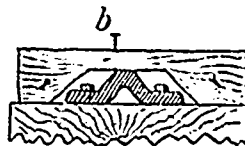


FIG. 2.

an excellent man (and is at present a personal friend of mine) and had been successful with circular mills for the company, but confessed to knowing nothing of band mills. We failed to agree on running the mill by the thousand. As I was leaving, the head of the firm asked me how I would like to take the filing room, stating that the man they had was then on trial and they wanted to give him a fair chance to show what he could do, but rather thought he would not stay long. I arranged with him to let me know if the filer quit and I would name a price that I would come for. In a few days the filer left and I engaged to take his place for one month.

I went out to the mill and found it shut down for want of saws, all of them being cracked more or less and only one good braze in the lot. I tentoned the one and brazed two others the first day, which gave me a "set" to work with. The superintendent came into the filing room the first evening and remarked that he supposed I "would want to change everything around in the filing room, as all the rest of the filers had done," to which I assented. He wanted to know if I had enough saws ready to start up in the morning. I replied that so far

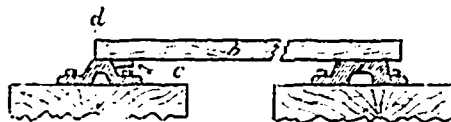


FIG. 3.

as the saws were concerned we might make a start, but I wanted to look over the mill and track before I put on a saw to start. He thought the mill and track were all right, as the millwright had lined them up a short time before, but I told him I preferred to see for myself and I would try and get ready to start Monday morning (this was Thursday evening).

They had just employed a new sawyer, who proved to be a competent man, and under my directions he went to work the next morning to put the mill in good shape. I found the track timbers were 6 x 12 inches, in spans of ten feet, so I put in 6 x 1 inch "shores" from the ground up to the middle of each timber, to prevent springing down from the weight of the carriage and log, and also put in side braces to prevent side spring. The steel T-rail track was so loose it was about ready to fall over, so I put in longer lag-bolts and in addition put in angle-head bolts through the timbers to help hold the rail solid (see a, Fig. 1).

I found the track crooked sideways from  $\frac{1}{4}$  inch to  $\frac{3}{8}$  inch and "in wind" up and down as much or more. The back end of the lower wheel shaft (eight feet long) was 14 inches farther away from the track than the front or wheel end, and to overcome this "lead" the guides were set straight with the track, causing the saw to run

in a twist; and as the guide liners were hardened steel, it was easy to account for the cracked saws and broken brazes. (I replaced the steel liners with brass ones in a short time). One who knows any thing about a band mill can imagine how this mill must have run, and there is no trouble to account for the frequent changes of filers and sawyers. I have no doubt that among the lot of filers there were some who knew how to tension and fit the saws, but they missed it sadly in not knowing the condition of the mill. The putting up of the mill frame was a shoddy piece of work—not a mortise or tenon, and the braces nailed in so that it was necessary to line up about every two weeks. I remained my mouth out and two more, as filer, when the company started a circular mill at another location, placing the superintendent of the band mill in charge of it. I took charge in his place, at his earnest solicitation, and run it satisfactorily for a year.

My success in this case was due as much to having the mill, guides and track in good shape, as it was in having properly-fitted saws. Do not be too hasty to lay the blame on the saw when it makes a bad line; be sure that your part of the work is all right before you condemn that of the filer. It is a simple job to put a track in line and level if it has been properly put down (I will give my plans for putting down a track in a chapter on millwrighting.) It is two straight lines, level across and parallel with each other, and square with the mill, if a band mill, or with the front of the saw a little nearer the track than the heel, if a circular mill. This is called "lead." The amount of "lead" necessary is a matter of opinion. Some successful sawyers run with  $\frac{1}{8}$ -inch in 20 feet, and others equally successful run without any.

In levelling up a track the "shims" or wedges used should be put in between the track timbers and the cross-sills, and should be the full width of the track timbers. I have found it a good plan to use wide shingles when it requires much of a raise, starting one in from each side, allowing them to meet or lap in the middle of the cross-sill. After the low places are all wedged up level, drive a six-penny nail into each wedge just outside of the cross-sill and up into the track timber, leaving it out  $\frac{1}{4}$ -inch so as to get a hold on it with a claw-hammer when necessary to again move the wedges. These nails prevent the wedges working loose and coming out.

To line the track, take a fine fishing line (a knitted silk or linen line is best) and stretch tightly from one end of the V track to the other, from nails placed in a cleat as shown at a, Fig. 2, the cleat toe-nailed to the track timber. If the iron does not extend to the end of the track timbers, a spike can be driven at the end of the iron to attach the line to, and the cleats will not be necessary. To the under side of the straight edge (b, Fig. 3) put a block to fit the bevel of the V track at c, the end of the straight-edge just even with the outside edge of the iron top, as shown at d, and just touching the line. It is evident if you adjust the track along so that the end of the straight edge just comes up to the line, that the track will be in perfect line. The end of the straight-edge should be tapered to almost an edge up and down, to adjust the line nicely. As I have said, this is all very simple, so much so indeed that I had almost concluded to not mention it in these papers, but I have seen such clumsy attempts at lining up tracks with coarse lines (twine strings and other botching contrivances) that perhaps this description of a neat and accurate way of doing it, will not be space misused.

## A BROKEN TOOTH.

TO mend a cast gear having a broken tooth the proper method is to dovetail in an iron, taking care not to sink the tooth into the rim deeper than can possibly be avoided, as it weakens the wheel very much. Cut the dovetail wedging from one side to the other to give a chance to fit the tooth and then coat it over with red lead and oil, and set it in solid with a hammer. Three rivets should be used in securing the tooth in place as every form of a screw will work loose; then the tooth can be faced off with the wheel and brought to its true form by means of a template. But alas! how many are patched up by drilling three radial holes into the rim and setting in pins as tight as possible, and the wheel set going, after they have been pointed off a trifle.