BAND SAW SPEED AND TEETH.

THIS is a question of much interest and hard to answer. There are so many conditions that affect a standard speed, that it is out of the question and would be absurd to recommend any certain speed. These conditions extend from the filing room to the foundation of the mill. If all mills were built on solid foundations, perfectly balanced, had good filing and care of saws, then a standard speed and space of teeth could be adopted.

My experience, and I have tested it from 6,000 to 10,000 feet per minute, is that it takes speed to cut lumber, that is, about 9,000 feet. If teeth are not of the right dimensions, they will not stand this speed in hardwood. Other surroundings being perfect, any saw cutting hardwood must have the right space teeth or a peculiar shape must follow. If the right space tooth is had for hard wood, it will cut soft wood, but requires to be longer to give dust clearance, which soft wood requires, provided the saw is put to its test. If too many teeth, they should be short with not so much hook and with a rounder gullet. This is necessary, that the dust may pack or maintain itself in the throat of the teeth.

Right here is where the whole trouble is with the band saw in hardwood. Each tooth *must* cut sufficient to form a chip, otherwise the kerf is scraped, forming a powdered dust which passes between saw and log, heating the saw. This is noticed by the dust being packed hard against the side of the log.

To get feed enough to take a chip does not require teeth closer than 1⅜ inches, and then 8,500 speed is best, with everything in the best of condition. My experience has been with oak, ash, cottonwood, pine (hard and soft) and cypress, and on saws from eight to twelve inches wide, 14 to 16 gauge.

As previously stated, I prefer 1⅜ inches from point to point on 14-gauge saws, speed 9,000; but on account of iron in every conceivable shape, from a nail to the blade of an axe, I have adopted 1½. Teeth 1⅜ apart would not do as well on 8,000 as on 9,000; there is a liability to lose corners in knots, and it requires nice swaging to make them stand. Filers differ.

A saw that will run well in soft wood may not run at all in hard wood, but a saw that will run in hard wood, will certainly run in soft. The only difference in the teeth, is, being a little longer for the latter, as a certain kerf for soft wood will produce dust to consume more space than in hard wood. What is wanted is as few teeth as possible to do the work well, as the saw cuts lighter and will stand more feed.

As to the shape of the teeth, they must be shaped to have a straight back and as much hook as will make the tooth stiff enough to stand. The difference in 7,000 and 8,000 feet speed would require a stiffer tooth; that is, for a high speed it can be made a little slimmer, with a straight back. I don't think there can be too much hook The practice of rounding backs on band saws will not work; my experience with the round saw is that very little rounding is needed, and that for light feeds.

A saw that is not well hammered will not stand 9,000 speed; it will assume a flapping or trembling motion, which deprives it of that steady, firm motion necessary for fast and good work. Defective brazes will soon play out on high speed. Anything that is not right about saw or mill will necessitate the reduction of the speed to 8,000, or less.

M.

SAW MILL KINKS.

BY DIGS TOSMER.

IT is not an uncommon thing for circular saws to wabble a little, and when one is not skilled in the use of the hammer, very thin paper should be used to "pack" between the collar and saw on the touching side, the difficulty usually being to get paper thin enough. It is sometimes amusing to see how a beginner will be deceived in the amount a saw may seem to wabble. We have been often told, on sending out a new mill, that the saw was so crooked that it ran "out" over a quarter of an inch. To prove this, the owner should place a strip on the mill frame, the end touching the saw. Then, by slowly turning, the stick would be forced away by the bulging side, and when the slack side came opposite the stick, a space would be seen that really appeared to be more than one-eight of an inch wide, the bright surface of the saw making this distance very deceptive. By the means of a thinly whittled wedge, the actual width of this space was measured and found to be less than a sixteenth of an inch.

We were once greatly annoyed by a complaint similar to this; one which came near baffling all efforts to remedy it. Being so peculiar a case of "crookedness," we mention it. We finally discovered that the saw ran truly when the holding nut was screwed up with the hand; but when tightened with a wrench, the saw wabbled. This led to the discovery that in welding the saw-collar it was only stuck on one side, and yielded back on the other when forced by the wrench. We have wondered if anyone else ever met with a similar experience.

Before leaving this subject, we will mention another source of annoyance in saw-collars. This originates in the machine shop, and is caused by imperfectly turned collars. The lathe man cannot be too careful—First, to have the cutting tool sharp, the proper shape, and set to take a light chip, especially on the finishing cut. Secondly, to look closely for hard spots which may be found in the iron. These will cause a yielding of the tool which is almost imperceptible, and yet is sufficient to derange the running of the saw.

We have seen collars concaved gradually from the periphery to the mandrel. This is wrong, we think. The surface on which the saw is to bear should not exceed the distance from the pins on the outer edge of the collar. From the pins to the mandrel a slight recess should be made, which is a cross section of a collar, cut through the centre. The pins should be of the best cast steel and driven very tightly. Doing this will swell the iron around the hole, and the swell will extend to the surface where the saw is to rest. It is obvious, therefore, that after the pins are driven the bearing surface of the collar should be carefully turned, two or three cuts being sometimes necessary to secure perfect accuracy. A straight edge, when placed against the collar, should bear hardest at the outer edges. A thin coating of oil will serve best to show its bearing. Some allow a space between the straight edge and collar that will permit light to enter.

A WORD ABOUT MILL FOREMEN.

A WELL proportioned and arranged mill allows the foreman to establish his reputation in many instances as an A No. 1. Such a mill, well-set, of course, will run for months without putting him to test. To his surprise a line shaft wrings in two. He flies around, finds a flaw in the shaft and a dozen things to clear his skirts. A line drawn through the boxes shows it to be a trifle out of line. This is sufficient to break any shaft, and only remains a question of time under heavy duty. Pretty soon one of the boilers needs patching. No cause under the sun for it, only that the boiler was defective, etc. The truth of the matter is, that he has allowed the engineer to blow out with fire in the furnace and refill with cold water. This remains only a question how long the rivets and sheet can stand this enormous contraction. It is not advisable to have such an engineer. But how long does it take a man to realize whether the foreman is up to his business or not? Not long. He nine times out of ten will hurry such jobs as cleaning boilers—in fact, slight what he can; the foreman can only lay it to the maker, etc. One Monday morning a battery of five boilers in a saw mill were found to be leaking. A new engineer had been lately put on. He had his way out of it, of course. He had found the engine to be one hundred and fifty horse-power, and in such "bad" condition that the excessive firing had burned or strained the boilers. The foreman coincided with him, and the mill owners had to stand a day's loss and pay a large boilermaker's bill. The competent engineer, who had been fired by the order of the new "cracked-up" foreman, was put on the black-list.

All mill owners cannot be practical mill men, but if they would only investigate the matter more closely they would save many hundreds of dollars annually by kicking out such men or making them bear the loss. Going through a mill just as the engine was starting up, I heard a slight squeaking noise in the hub of a driving pulley. I remarked to the foreman that something was wrong there. He could not be told anything. Four hours later parts of that pulley were all over the mill, one part of the line shaft pulled down, the belt wound around the engine shaft. The foreman thought it amounted to nothing (the slight squeaking noise), and got out of it by scientifically arguing that the pulley burst from centrifugal force. The mill owner could only stand off and look. Had he examined the broken ends of the shaft and condition of the hub, he could have located an old break, and not have been completely deceived. A case of a seven-inch friction shaft, carrying a 24x24 friction pulley broke early one morning in a ten-inch cut. I discovered that this friction, which drove the main sixty-six inch saw, had been slipping a little. The engineer whose department it was in had tightened it all from one side. The other side of the friction was smeared with grease, by the new greaser pouring too much oil in the bearings which was very close to the edge of the pulley. The motion soon had it out to the edge and over the face. The engineer to keep me off the racket, tightened the other end of the shaft, which put the entire strain on the center of shaft, driving from about ten inches contact. This was another mysterious case. I at once saw the cause, by drawing a line and discovering the oiled surface of pulley. The engineer went. He should have charged the boy about those particular bearings, and should have wiped the grease from the pulleys and chalked them until no slipping was perceptible.

In my experience, I find that in most cases saw mill break-downs can be attributed to the neglect of the foreman. A competent foreman will at once call attention to parts that are too weak, and insist on duplicate parts. If such parts break he can not be blamed, unless in an extreme case of revenge, which no man of honor would do. A good foreman has sufficient mechanical judgment to pass readily upon a certain machine. He may not like the style and workmanship, but will make it go—will not kick it out because it's not what he is used to. A good gang edger was thrown out of a large mill for no other reason than that the saw collars had worn until the saws would not go straight. The incompetent foreman figured around the rollers to make straight lumber and could not; so cried out for a new $600 edger. The mill owner bought it. While new it went well, of course. Other things turning up, and the mill owner making no money, realized his fate and let him go.

There are many good machines thrown out for the want of a few new parts. The competent foreman will keep a mill right up to its full capacity until worn out—that is, until the expense of keeping it up, which does not run in break-downs, but in replacing and keeping up parts, until the machine can no longer be kept to its capacity without more or less loss of time. Such mill men have a good bank account, have made money, and are ready to sell the old mill for what they can get and put in the latest. The mill men who are constantly changing do not make money in these competitive times. The old adage, "A poor workman grumbles at his tools," can be well applied to incompetent foremen.

A STRANGER IN A STRANGE LAND.

SOME time ago a sea captain in the Pacific coast trade visited Australia, and there saw a large log which was being examined by the people of that country as a great curiosity. They were at a loss to know what the lettering on the log meant, and consulted the aforesaid sea captain in relation thereto. But he could not inform them, and having somewhat interested himself, made up his mind to learn from whence the log came, believing it to be from some point on this coast. Upon his return to this country he began making inquiries, and at last found a boom superintendent at Port Gamble who informed him of the meaning of the brand, B B, which showed the log to belong to Blackman Bros., of Snohomish. The testimony at hand would seem to warrant the assertion that one of Blackman Bros.' logs had found its way from the river into the Sound, thence into the sea and across the ocean for a distance of over 6,000 miles before being picked up on the coast of Australia.