A NEW FEED FOR SAW MILLS.

We take the following description of new feed for saw mills from the Chicago *Northwestern Lumberman*, which, as will be seen by our remarks at the end of the article, are also manufactured in Canada by the Wm. Hamilton Manufacturing Co., of Peterborough :—

"Steam feeds have become so well known and are considered so indispensible in "every well regulated" saw mill, that any improvement in this direction will at once command the attention of every manufacturer of lumber.

"Herewith is presented an illustration of a new twin engine feed, which appears worthy of especial notice, and fully entitled to have its merits, as claimed for it by the manufacturers, examined. They modestly claim that it is the simplest, least liable to derangement, most easily and perfectly controlled, most economical in the use of steam, and the cheapest as well as best of all the steam feeds now in the market. The small model placed on exhibition at the exposition at New Orleans is said to have attracted more attention, and received more encomiums from visitors than any other single machine in the whole saw mill department there. It is the invention of Mr. Albert Cunningham, who also invented the famous "hoss dog," and various other machines, all of which have proved eminently practical and successful.

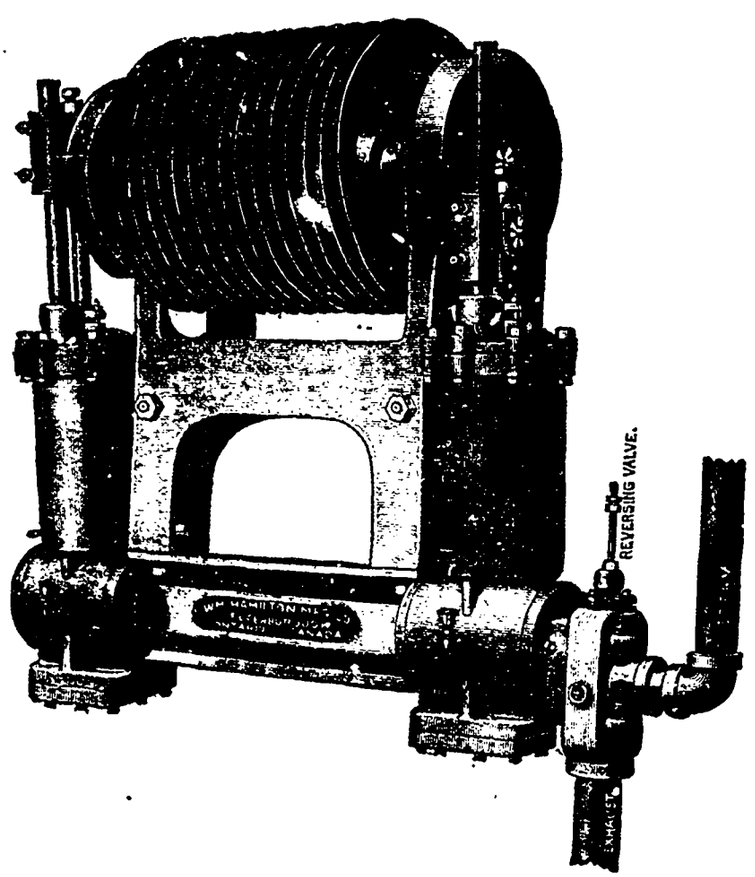
"It will be seen from an inspection of the cut, which illustrates a pair of 10x16 inch engines, that the matter of simplicity in engine construction has well nigh reached perfection, there being practically only two moving parts in each engine aside from the crank and shaft. The casting forming the lower part of frame projects at each side of the machine, and forms trunnions or pivots, on which the cylinders are vibrated. The cylinder castings being extended below the parts in which the pistons work, are bored out the receive the trunnions. The upper surface of the trunnions have steam ports communicating with two separate cored ways, passing completely through the central portion from end to end, and forming what may be termed valves. The cylinders have corresponding surfaces, which may be termed valve seats, working in contact with the trunnions, which are provided with suitable steam ports communicating with the ends of the cylinder. The crank-pin box is secured directly to the piston rod, and has a sleeve formed with it, which clasps and slides upon a guide bar which is secured rigidly to the cylinder head. Thus, as the crank revolves, the cylinder is caused to swing, and its motion upon the trunnion, in conjunction with the steam ports and steam passages in trunnion, effects the steam admissions and exhausts. It will be observed that the motions that accomplish this result are obtained directly from the crank-pin, which cannot possibly get misplaced in relation to these parts either through wear of parts or slippage. So when the parts have once been properly assembled in the shop their correct working for all time is assured, and a uniform and smooth working machine is made certain. By a novel and simple arrangement of the parts the pressure of the steam when working in the upper part of the cylinders and tending to separate their surfaces from the surfaces of the trunnions working in contact, this pressure is made to react on the lower cover plate in a manner to overbalance and retain the cylinder in place and maintain a tight working joint, and at the same time automatically compensate for differences of expansion or any wear of parts. Thus the usual expensive and complicated arrangement of eccentrics, yokes, valves, valve rods, valve fastenings, packing boxes, etc., and consequent lost motion arising therefrom, are entirely dispensed with, and precisely the same functions are performed by the single means above described.

"The starting, reversing, stopping and controlling the feed is all accomplished by the simple balance piston valve contained in the casing, shown in the cut at right of machine. The sawyer's lever may be attached by suitable connections from any desired location. This valve casing is interchangeable with the cap at the other end of trunnion, so that it may be placed in the most convenient position as to steam and lever connections.

"The machine illustrated by above cut has a rope drum 30-inch diameter by 30-inch face, and will drive carriage to saw a log 80 feet long. The drum can be made longer or shorter, to saw any length desired.

"Heretofore two sheaves have been used in connection with the drum; one at each end of carriage way. But when the required movement of carriage is less, or a wire rope is used, permitting a shorter drum, so that it may be brought up between the carriage ways, it is advised that but one sheave be used, the rope drum taking the place of the other. Thus a much shorter line is used to produce the feeding movements of carriage, and there will be, therefore, less spring of line, and also avoiding at least one-third of the wear on the line due to the sheave which is dispensed with. By substituting a gear wheel for the rope drum, this feed can be applied to carriages having a rack and a movement secured, which is preferred by some to the rope connection.

"The manufacturers intend also to build these machines after a plan of a different proportion having a larger drum of much less force, more particularly for wire rope, believing that when thus applied, the former objection to wire rope, that they are not durable, will be done away.



The short life of such a rope is due to their being used, heretofore, on drums and sheaves much too small, as is abundantly proved where used in transmitting power over larger sheaves. A slower movement with larger engines using sheaves not less than five feet in diameter, will, in the opinion of the manufacturers, make the most durable, economical and perfect feed yet introduced. We had almost forgotten one principal claim for this invention which is that every ounce of steam is utilized, as none is admitted into the engines that is not used effectively. This style of engine it is thought will commend itself for its economy of construction, durability and simplicity for various other uses, such as running elevators, hoisting engines, etc., where a simple, easily reversible engine is required.

"The Filer & Stowell Company Cream City Iron Works, Milwaukee, Wis., are the manufacturers, who will give all other information desired, and quote prices on application."

MANUFACTURED IN PETERBOROUGH.

In addition to the above we might here state for the benefit of the lumbermen of Canada, that the William Hamilton Manufacturing Company, of Peterborough, are the manufacturers of the Cunningham steam feed for the Dominion of Canada. They, from drawings sent by the inventor, built, and had running in their shop this spring, the first of these engines, and before they had them got up in Milwaukee. They have shipped two of them this spring, one to Messrs. Playfair & Co., of Sturgeon Bay, with rope feed, and one to Messrs. Francis Carswell & Co's. new mill at Calabogie Lake, on Kingston & Pembroke railroad—(they also supplied them engines, boilers and all machinery for mill).—They are now building one for the Rathbun Company, of Deseronto, for their heavy timber mill. This one will work like the one for Francis & Co., with rack feed. Any other information can be had from the William Hamilton Manufacturing Company, Peterborough. Send for circular.

POWER REQUIRED TO DRIVE MACHINERY.

"How many pounds of steam does it take to turn your engine over without the machinery at work?" said one engineer to another recently. "Well, I don't know," he replied, "about ten, I suppose."

"I will wager," said the other, "you cannot pass the centre with less than thirty."

He looked incredulous. "To-morrow morning I will try it."

And he did so. He opened the throttle when the gauge showed 15 pounds, and the crank was on the dead half centre; but the wheel never stirred. He waited a little while until the cylinder got hot; he blew the condensed water out and tried again at twenty, but the crank never moved. At twenty-five pounds it made half a stroke, but stopped on the centre, and at thirty, after being pryed off the centre, it moved off slowly.

"I wouldn't have believed it," he said.

This was a high pressure engine, 12 inch cylinder, 30 stroke, working at a boiler pressure of 60 pounds to the inch. Half the pressure was absorbed in the friction of belts, shafting and machinery. This is not an isolated case. It is quite common, and few engineers are aware of the great loss daily incurred by simple neglect. It is not difficult to account for it when we reflect that in many shops it is accounted of no importance if shafting is out of line, or belts laced up so tight that bearings heat; that it is of no moment whether the separate machines are in good order or not, and that one kind of oil is thought as good as another. To us it seems strange that men should be willing to pay tithes to carelessness, to waste means on nothing when money is so hard to get. It is certainly a small thing to line up shafting, and to look after the other details. *In the matter of oil, it is a well settled fact* that the purist is the best and cheapest, and that the use of cheap lubricants (so-called) is a mistake. Pure graphite, which is fast coming into use as a lubricant, is said to give very satisfactory results. Shafting that is in line will work without any binders on the bearings, for the belts serve the same purpose, and no cap is needed except a slight cover to keep dust out. By actual test with a dynamometer, Bourne gives the following work done by an engine of 23½ horse power; two pair of stones four feet eight inches in diameter grinding wheat; two of the same size grinding oat meal; one dressing machine and fanner; one dust screen, and one sifter. One set runs 35 revolutions per minute, the other 80. The oat meal stones run 120 and 140 revolutions per minute.

It also instances a cotton mill of 2,562 spindles, each making 2,200 revolutions per minute. The bobbins were 1⅞ inches long, the thread portion being 2 3-16 long. There were also five turning lathes, three polishing lathes, two bobbin machines, two saws—one 22 inch the other 14-inch—and 24 bobbin heads. When all the machines were off except the spindles, the actual power required was that of 21 horse, so that each horse power drives nearly 123 spindles. *A small engine of ten inch bore, and* 4 feet stroke, making 35 revolutions with steam at 90 pounds, drove two muley saws of 34 inch stroke, cutting 30 feet of yellow pine per minute, 18 inches thick.

The friction of a steam engine in good order is variously estimated at from five to eight pounds to the square inch. Of course, the proper way to find out the actual figures, is to take a diagram with the engine and shafting in motion and another with the engine alone, the difference of the two showing the effective pressure. Very few are will to take the trouble to do this, but go on grumbling at the high price of coal and the waste of fuel, when they alone are to blame for not keeping their machinery in proper order.

Another thing that is very generally overlooked by manufacturers is the selection of the best and most suitable engines and machinery for the work they have to do. This is very often left to some one who has no practical knowledge of machinery whatever, but may control a good deal of stock in the company; or he may be a friend of some officer of the company lately graduated from a technical school, who knows everything about machinery, as all technical graduates do; and there is no one a machinery builder likes to get hold of as well as one of those theoretical mechanics, as he can put off the most inferior workmanship on him, if it is nicely painted, and looks good, and has some new attachment on which he lays the greatest importance, and without which the machine would be imperfect, when in reality the whole machine, attachment included, would not be worth the freight it would cost to take it to the factory, and the same with the engine.

He has read of some new design with several patent attachments, each one saving upwards of 25 per cent. of steam, so that with half a dozen of them he can run all his machinery without any steam or boiler, and some generated for heating his shop and steaming his lumber, but when these machines and engine come to the practical test of doing the work, all those improvements are found to be worse than useless; they are an actual injury, and will need the care of a machinist continually to keep them running at all, until the company got their eyes opened by having their rival in the same business turning out 50 per cent. more work with less men. Then the machinery has to be all changed in order to be able to compete with those others that had their machinery selected by a thorough, practical mechanic, that didn't know a word of Greek or Latin, or that such men as Archimedes or Euclid ever lived.—*American Wood-Worker.*

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