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OVERWORKED MILLING MACHINERY.

BY LOUIS H. GIBSON, IN "MILLING."

[A conversation with one who has always been intimately associated with milling construction, one who has been quite as instrumental in developing results in connection with the modern history of milling as any one else, he said "It disturbs me greatly to see what I must see every day in nearly every mill that I go into. "To what do you refer?" was asked. "Primarily," he replied, "nearly every machine in the mill is overworked and few of them are made to do work in quality, which they are capable of doing.

"Does what you say bear any relation to the short system?"

"In a general way, yes. The short system evil had its growth and development from a desire to do a large amount of work with a small amount of machinery. If, instead of shortening the mills and increasing the capacity of the amount of machinery they contained, they had been lengthened, the millers would be in much better shape to-day, in that they would have been able to get more money out of the wheat. This is certainly the aim of every miller's work. There is a tendency among millers at this time to do away with short system methods and to reduce the amount of work which is being done by the machinery of the mills. This change is slow but gradual. It is slow for the reason that the movement is resisted by those who have capital in mills. They do not care to invest in additional machinery. On the other hand they dislike very much to reduce their output. I have in mind the history of one milling establishment which made 500 barrels of flour with a given amount of machinery. As soon as the short system idea impressed itself upon them they increased their capacity to 750 barrels. Now, if instead of doing that, that mill had reduced its capacity from the original 500 barrels to, say about 400, and continued to operate on that basis, I have no doubt but they would have more money to-day. It takes a good deal of courage to go against the face of a general movement, and when a large number of establishments are changing from one method to another, it is difficult to keep out of the swim. This mill was doing good work making a barrel of flour out of four bushels, twenty-eight pounds of wheat, when they were making 500 barrels. When the change was made to 700 or 800 barrels, their yield varied from 4 40 to 4 50, and the quality of flour was not so good. Now, if the capacity of the mill had been reduced from 500 to say 400 barrels, there would have been a large reduction in the yield; as low as 4 22 or 4 20. To be sure they would have had a comparatively large amount of machinery for doing a given amount of work. They would be making a large volume of middlings, however, because of slow grinding, and would have provided large bolting capacity for their clear flour and could have finished up leisurely with a large number of smooth roll or other reductions. This would mean good proportion of patent flour because of the large volume of middlings and because of the improved character of their yield, because of slow grinding, a high grade of clear flour; because of the slow reductions and careful work generally, a quality of low grade flour which would be well up. Thus, on one hand, there would be an improvement in the quality of the flour and again there would be an improvement in the yield. Take the case of the mill which increased from 500 to 700 or 800 barrels. They make very few changes in their wheat cleaning machinery. Machines had an increased amount of work to do without a corresponding increase in equipment. It is true that the mills which I speak of are reducing the relative volume of output, but it will be a good while before they are at the 500 barrel point again, and certainly a

long time before they are working on a 400 barrel basis.

"Those who have capital invested in milling are very restless. When they are making 600 to 700 barrels of flour and selling freely, they wish for an increase in capacity, and the capacity which is fixed under pressure, is subsequently maintained as a regular and ordinary capacity of the mill. There was a time when this was somewhat different. Every man that was engaged in milling work knew something about the general practice of milling. Now those who manufacture the product stay in the office and pay very little attention to what is going on in the mill. When the quality of the flour is off, they object seriously, but on the other hand they insist on the work being done in a way which greatly reduces its value. That is, by an increase in capacity. Thus the trade of the product is greatly reduced and in a way that does not show definitely through the buyers. The quality of the flour is greatly reduced and for that reason does not bring positive and immediate claims from them for rebate or damage. They notice, however, in course of months that they can buy equally good flour from other mills which are in general competition, and for that reason the value of the product and the general trade is affected.

"I wish to register the statement that there is being a gradual change made from short milling of all kinds and that it will only be a little while until we will be back from the point where we started from several years ago."

"Do you believe that milling machinery will ever be worked at a capacity less than that of the time previous to the introduction of the short system?"

"I certainly do, and I base my judgment on something more than the fact that there is a general tendency at this time, as there has been in the past, to do away with the short system methods. I base my opinion on the fact that better milling can be done by working machinery lighter, than was done even previous to the inception of the short system idea. It is in milling as it is in everything else: people gradually work around to the best thing, after all. To one who is interested in seeing the best thing done and the one who feels that there is a departure from the right methods, the process of righting is altogether very slow. But, nevertheless, the general movement in all minds is improvement. There are occasional lapses and there are occasional movements backwards, but in the end the right prevails, in milling, as it does in history and in morals.

"You said something about machinery not being worked to the limit of its capacity. Just what did you mean?"

"A good deal might be said about that, but the thing that I had in mind at that particular time was in reference to purifiers. I think I know more about purifiers than anything else connected with milling work, and at the particular time that I was talking to you, I had them distinctly in mind. I will say that I do not believe that one machine in ten is handled as it should be. I am safe in that statement. You can understand just what that means, how true my statement is, when you bear in mind that every purifier, to do its best work should have the cloth evenly and properly covered from head to tail, with the proper size of middlings."

"In how many cases does such a condition exist, and with purifiers as now constructed how is it possible for the ideal condition to exist?"

"A machine which handles middlings must be changed as to its feed from time to time. Occasionally it has the proper amount of work to do; again there is a reduction of the volume of stock. At other times there is an increase. The increase is great occasionally, as any one who is concerned in the practical operation of a mill knows. On a machine which has no proper

method of increasing or reducing the working capacity of the machine, it is clear that that machine cannot operate properly at all times, even if the conditions change. On a roll when one puts on more feed the miller changes the set of the roll. The same as in the time of grinding with millstones, when one changed the feed on the buhr he changed the set of the buhr; but on the purifier it merely changes the feed or increases or decreases the volume of stock on the sieve. Sometimes the sieve has the proper quantity of material. Often-times it has too much, and again not enough. When the cloth is bare in any one point the operation of the machine is greatly changed. Its efficiency is largely destroyed. There are two vital reasons for this. The efficiency of the purifier is largely dependent on its sieve action. By means of the vibration of the sieve the light particles or bran particles of the middlings are floated to the top. If the top happens to be a bare cloth the bran and other material of that character naturally finds its way through the cloth and hence the purity of the middlings is affected to their disadvantage. Again the efficiency of a purifier is dependent upon the suction through the cloth. If there can be no suction, as there cannot through a quarter or a half inch bed of middlings, or when on the other hand the cloth is bare so that the air can flow up through the uncovered portion and leave the rest without suction, it is easy to see that the character of the purification will be affected thereby. If one bears in mind that the eye of the fan is only eight or ten inches in diameter, it is easy to see what the effect of the bare cloth two or three or four feet square, will have upon the middlings where the cloth is covered.

"What would you suggest as a change in the purifier to bring about the proper results? You know a good many machines are made with hangers so that by adjusting them their capacity is increased or diminished."

"That is all true enough, but you know that if a miller has stock traveling over his sieve he is not going to work to change four hangers in order to improve the quality of the product. It is not only too much work but it is liable to make him a great deal of trouble. If the miller can keep the middlings moving over the sieve, that is about all he is going to do unless it can be done easily and with the certainty of making him no more trouble. There is no way more certain of getting into trouble with a purifier than by maneuvering with the hangers. My plan would be to devise mechanical arrangements so that the speed of the shaker could be altered without affecting the speed of the fan or other moving parts of the machine. Thus the middlings could be made to pass more rapidly or more slowly, over the sieve according as the volume required. Another way to secure this same result would be by changing the eccentricity. By changing the throw of the eccentric the capacity of the machine may be increased or decreased. But the mechanical device of bringing about the change of the speed of the shaker or the change in its throw must be exceedingly simple. It should be so simple that it can be done as easily as raising or lowering a buhr with a lighter screw. I am sure I am right about this, as time will prove."

NEW MILLING MACHINERY.

The Dubuque Turbine and Roller Mill Co., of Dubuque, Iowa, have contracted with John Inglis & Sons, of Toronto, for supplying the Hueffner Corrugations to Canadian millers and also to supply the necessary machines for the One-Break Milling System, which has been successfully introduced in the States in over one hundred small mills doing custom work for farmers. Full particulars of these machines will be furnished in the advertising pages of the MILLER next month.

Is there any place where there are more wrong ways of doing the right thing than in a mill?