

A GREAT deal of carelessness is shown in the shipment of machinery by rail. The writer noticed a few days ago a lot of valuable non-working tools lying on a side track on an open flat car, and covered with rust from exposure to several showers of rain. It would require many days if not weeks of hard work to put this machinery in condition for work, and the purchaser will certainly prove himself to be an easy-going individual if he does not insist upon receiving a substantial rebate for the injury caused by careless shippers.

WE direct the attention of millers to the advertisement of Messrs. Runciman Bros., which appears on another page of this paper. They announce that they have made arrangements to manufacture the Hurford flour bolt, a machine which is widely known and well thought of by the millers of the United States. Messrs. Runciman Bros. are also agents for the new Cochrane roller mill, and are prepared to undertake the building of new mills and the refitting of old ones. They have opened an office at 20 and 22 Main street east, Hamilton, and millers are invited to correspond with them.

IT is very saddening to hear, as we frequently do, that some old time business man who years ago made money and was well to do, has in later years been losing ground, and is now in old age forced to make an assignment of his estate to satisfy the demands of his creditors. The ranks of the mill men and manufacturers furnish quite a number of such cases. The unfortunate individuals who have thus been reduced from affluence to poverty, can in many instances trace their misfortune to the changed conditions brought about by the march of time and improvement. There was a period in the history of this country when almost the only thing necessary to make money was to be industrious. There was no competition to speak of, and therefore no great amount of thinking was necessary in the direction of adopting new devices to cheapen production or new methods of disposing of the articles produced in order to secure the advantage over business rivals. It was during this period that the old timers of the present day made their money. The conditions under which they achieved success, however, have for years past been rapidly changing, until to-day the change is complete. Business is now conducted under entirely different circumstances and by different methods. Many of the old time mill men and manufacturers, having built up a profitable business and a substantial bank account, felt themselves secure, and refused to abandon the system under which they had been working for so many years in favor of any of the "new-fangled notions" and devices of younger men. As competition waxed fiercer, prices were beaten down, and profits reduced. The men who adhered to old-time methods suffered most severely from this cutting down of profits, because the cost of production in their case was greater, and the margin of profit consequently less. Still they refused either to adopt new methods or to retire from the race. Profits continued to dwindle, younger and more active competitors gradually succeeded in underselling them and taking away their trade. They began to draw upon the accumulations of former years in the hope of maintaining the fight and perhaps of regaining lost ground. Only when their savings had slipped through their fingers could they be convinced that it was impossible to achieve either of these results. The *finale*, as we said at the beginning, is a touching one. There are many old-time business men whose career has thus sadly ended, who might have finished their days in comfort if they had either retired from business when it became apparent that new circumstances had arisen requiring new methods, or has at once determined to keep abreast of the times.

VALUABLE AND CHEAP.

NICOLA LAKE, B.C., JUNE 18, 1888.

Editor Mechanical and Milling News:

DEAR SIR, Enclosed please find one dollar, for which continue to my address the DOMINION MECHANICAL AND MILLING NEWS. I think that it is one of the cheapest papers printed, and one which every mechanic should enjoy.

Very truly yours,

EDWIN CARSWELL.

Prices of lumber range very high in Australia. At Sydney the native lumber is reported to sell—native cedar, from \$60 to \$80 a thousand; pine of various kinds from \$50 to \$60, blackbutt hard, and a species of eucalyptus, from \$30 to \$40. There is a 24-cent duty per hundred feet in New South Wales, and a higher one in the other colonies. There are said to be about seventy new mills in the timber belt along the coast from southern New South Wales to northern Queensland.

SHORT BREAK MILLING, BOLTING SYSTEMS AND REELS.

THE following valuable paper on the above subject was read at the recent Millers' Convention at Buffalo, by Mr. J. M. Case, of Columbus, Ohio, and should prove interesting and instructive to Canadian millers:

We desire to present in this paper, in as concise a manner as possible, our views of the shortest system practicable and the least number of machines requisite for small mills to change to the full roller system, enabling them to produce a straight grade of flour that will give good satisfaction for local and exchange trade. Also to present what we think is requisite for a most complete three-break 100-barrel mill.

And further, to make some comparative statements as to the merits of the two prominent systems of bolting—the "round reel" and the "centrifugal system."

In doing this it will be necessary for us to refer to the mechanical action of such system, and to draw such conclusions therefrom as facts will justify; and if our position should seem to antagonize that taken by other prominent manufacturers, it is not because we would desire thus to do, but rather because we wish to present what we believe to be the truth and to give our reasons therefor.

The science of bolting is the most difficult and intricate problem connected with modern milling. The conditions under which separations have to be made are so varied; the evils arising from even a seemingly small imperfection are so marked, and the varied temperatures and varieties of wheat have such an influence upon general results that we may safely say that but few men, if any, have reached that position that their judgment can be relied upon to formulate the best system of separation, adapted to every locality and condition.

We may, however, present four general rules, with which, if followed minutely, the results cannot be far from right.

First: Return no material back into or in advance of the reel from which it was taken.

Second: Never permit granular stock to reach the tail of the mill.

Third: Throw off branny and fibrous material and deliver the same to the tailings roll at every point possible.

Fourth: Increase the bolting and dusting capacity as you enter the warm climate of soft wheat sections.

The first rule prevents accumulation and keeps the stock pure.

The second reduces the percentage of low grade and insures a good finish. The failure to follow this rule is costing the millers of this country and Europe an inestimable loss, and is the key note to many failures.

The third relieves the bolt of impure material and increases the capacity.

The fourth nearly all the mill builders have learned from individual experience, and it should be borne well in mind.

These conditions can not be carried out with a limited number of reels. We have shown in one of the accompanying programmes of a one hundred barrel mill all these conditions, but in the program for a small mill, figure 1, we have not a sufficiency of reels, yet the stock is so handled that a very excellent straight grade of flour can be made; a flour that will give general satisfaction to the local and custom trade and also, make a very good finish.

The outfit, as you will observe from the program, consists of three stands of four roller mills, two pairs corrugated and four pairs smooth, two scalping reels, four bolting reels and one purifier. The system of separation as it will be seen, is calculated to throw off impure and branny stock from the tail of each flouring reel, the amount thus discharged being under the control of the miller, by the use of the double conveyors reversed at the tail. This system gives the miller perfect control of the mill, under the varying temperatures and conditions of wheat, and enables him to prevent the accumulation of woody fibre at the tail of the mill, whereby the rolls are often held apart and prevented grinding the finer stock, and which also causes the rolls to run hot. And inasmuch as the tail of the mill generally measures the capacity, this system also increases the output. It can be made more perfect by adding a bran duster to handle the tailings stocks, the material from which should be dressed on a small centrifugal reel. But I have given this outline of machines and bolts, as the limit necessary to profitable milling and the addition of a bran duster and centrifugal would simply take from the finished feed a small percentage of low grade flour.

In reference to a first break machine calculated to split the berry and relieve what is termed the "seam

dirty," if the wheat is not well cleaned and polished this machine will prove a good wheat cleaner, as the rubbing and jarring action of the break machine and the scouring action of the scalper will remove much of the adhering bran scales. If, however, the wheat is thoroughly cleaned and polished, the advantages, if any, will not be apparent. It remains with the miller to determine whether he would prefer the first break machine or a good wheat polisher to make a final cleaning of the wheat. When the wheat is only split on the first break that cannot be justly regarded as a reduction, as it does not add to the capacity of the following rolls to a finish. It is simply a wheat cleaner.

We wish to be understood in presenting this flow for small mills that we are not advocates of the two break system, except for small mills operating upon local and exchange trade, for the reason that in two breaks the corrugations on the first break must be fine and the set very close to insure perfect finishing of the bran on the succeeding break, by which means soft flour is made, which would not be suitable for merchant milling, but which will give good satisfaction for household use.

In three breaks we have the true scientific system. The corrugations on the first break can then be made coarse so that only a small percentage of flour is made, and a large percentage of middlings and the germ relieved entirely, and without being crushed or broken. In this break, also, fully two-thirds of the entire work is accomplished, and the unfinished stock from the scalper going to the second break is left "ragged," so to speak—not "crushed." So that the action of the second break produces a fine quality of granular middlings and leaves the stock so that it is readily finished by the bran roll or third break. The product from these two breaks being handled independently from that of the bran rolls, and having been made by only two abrading actions on the bran, we necessarily have a clear, sharp, break chop, free from fine fibre which fine gentle scrap-iron action would produce.

I now call attention to program, figure 2. This plan of making out flow-sheets by the use of numbers and letters of reference, we have used in preference to tracings owing to the fact that it is simple, much more convenient both for the miller and the millwright, and there is much less danger of mistake; besides which the eye may glance in an instant from the letter of reference to the number referred to; whereas in tracing the lines much time is required, and mistakes are liable.

This program embraces, as we believe, all the machines necessary for a complete and perfect one hundred barrel three break mill. It embodies the three fundamental rules before referred to. There are no returns; sharp stocks cannot reach the tail of the mill; fibrous material is thrown from the tail of all the reels where it is practicable, they being under control by reverse conveyors at the tail of reel. A complete finish is assured by the use of an abundance of tailings roll surface and a bran and feed duster. The last finishing roll is simply a sentinel to catch any material which may reach that point in the mill. We have nine round reels, eight feet long and thirty inches in diameter, also one centrifugal reel to operate upon the bran and feed duster stock, which is the only low grade flour we make. The grades of flour above the low grade, that is, fancy patent, second patent and family, as we have denominated it, mingled together will make a high straight. The fancy patent and second patent will constitute about eighty per cent. of the entire output, and will grade with the standard patents. The yield may be made as close as the miller desires it, and the low grade will vary from two to ten per cent., according to the manipulation of the tailing stock.

The break roll surface is 72 inches. The smooth roll surface is 132 inches. The entire roll surface is 204 inches, or in round numbers two inches of surface to every barrel of flour in twenty-four hours. This is double the surface advocated as necessary by some of the prominent short system writers, and while we are fully aware that this roll surface will produce one hundred and fifty barrels in twenty-four hours with a fairly good finish, yet to allow for all the contingencies of climate and wheat, and to insure a granular flour of a high market value, a small percentage of low grade and perfect finish, a less amount of roll surface is not to be desired.

All of you who have read our articles on short break milling from time to time, in the milling journals, understand fully our position on the "short break system." We have never advocated a reduction of smooth roll surface; neither have we advocated the system of making flour on the breaks. Our stand has been: "Reduce the number of breaks and increase the length of rolls." "Make middlings and maintain an extended smooth roll surface." And the experience of the large merchant mills which have followed out this line has