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DOMINION MECHANICAL & MILLING NEWS

VOL. VII.—No. VI.

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COMBINED SAW TABLE.

THE accompanying illustration represents a new iron frame and iron top saw table which has just made its appearance on the Canadian market, and a brief description of its features may prove interesting to wood-workers. The machine has a steel mandrel 1 1/4 in. dia., and having cone bushing to take saws having eye from 1 in. to 1 1/2 in. Pulley on mandrel is 4 in. dia. by 5 1/2 in. face. The frame which carries the mandrel is raised and lowered by the hand wheel in front, so as to regulate the depth of the cut to suit the work and can be adjusted with the saw in operation. For use as a rip-saw table it has an adjustable fence that can be set at an angle either way from the perpendicular. As a cut-off saw table it is fitted with adjustable cut-off fences on both sides of the saw, independent of each other, and which may be set at an angle to suit the operator. The cut-off fences run in parallel guides which can be drawn out so as to make room for cutting off table tops or other wide boards. The cut-off fences have clamping bolts in them for holding patterns, etc., forms, or backs for mouldings, when cutting to mitre, or any other angle in picture frame making. Counter-shaft has tight and loose pulleys 12 in. dia., 6 in. face, and should make 450 revolutions per minute. The machine weighs 1340 pounds.

This machine is being handled by Mr. A. R. Williams, of the Soho Machine Works, this city, to whom any enquiries concerning it should be addressed.

THE CONSTRUCTION OF FLOUR MILLS.

Concerning the construction of roller flour mills of from 50 to 150 barrels daily capacity, the *American Millwright* says: In selecting a site for a mill one must be governed by the source of wheat supply, market for products and motive power. If water is to furnish the power then the location of the mill must be with a view to the most advantageous application of that power. Having determined the capacity of the mill and its location, go for a foundation and don't stop till you get it. If you can't find it with pick and shovel, send piles down one on top of the other if necessary until they stop. Now commence and build; put in good solid stone foundation wall from 3 to 6 feet in thickness according to size of the building, well grouted to above high water and better if throughout. If you build of brick, start your walls sufficiently heavy, gradually tapering off as approaching the top, yet retaining a sufficient strength to resist the constant tremor of the machinery. Set posts on secure foundations; use good cast iron corbels and beams strong enough to support the weight to be placed on them. Do not build beams into the wall, rather set them in a recess, saving your walls intact in case of fire; frame posts to give the floors a little camber, like the deck of a vessel; and if joists are used, place them all one way from cellar to garret with centres perpendicularly in line. Flooring may be of pine, except on roller and packing floors where we would advise the use of ash or maple. Place windows to well light each floor, and have one or more outside doors on every floor.

Mill stairs are open for a great improvement. They may be made winding, straight, or with a turn, to suit the arrangement of the mill; but never make them less than 8 inches rise and 9 inches tread. Have enclosed stairways with a door on each floor. The style of roof will be subject to the location of the mill, the extent of your bank account and your natural desire for display.

However built, it should be with a view of resisting fire and weather, staying up under heavy snows, and down under hard winds, and be the most serviceable generally. If you build in a crowded locality, provide tin-covered shutters for all windows; also cover all outside doors with tin, then paint well. To make a good mill door, use two thicknesses of 3/8 stuff, matched and laid at an angle of 45 degrees; use wrought nails or 1 1/2-inch No. 14 screws; let each door be in two sections, upper and lower, and provide durable locks and hinges therefor. Having completed the building with due reference to the nature of its proposed contents, we will now consider the grade or class of machinery to be used; and in this matter we will endeavor to pursue a system, leaving the milling system for others to discuss.

In selecting machinery, be it a set of rolls or a lot of pulleys and hangers, be guided in your choice—not by flaring advertisements nor gaudily painted machines of irresponsible parties, but by a close investigation of the record of the machines you want. This is the course that every reliable maker of machinery invites you to follow. Choose machinery neatly and durably finished,

the pressure of the atmosphere which renders the friction so considerable between a well-polished pulley and a belt of good quality and condition. According to this, we should seek to render the contact between the surface of the leather and the surface of the pulley as intimate as possible. This result is not obtained by means of resin, but rather with a fatty substance, such as fish-oil, tallow, or better yet, with a mineral oil. A belt so treated glues itself, so to speak, to the polished surfaces.

For some time mineral oils have been substituted for the oil, and other substances above mentioned. We could not recommend the former too highly for the preservation of belts. It suffices for maintaining them in excellent condition, to oil them about every two months on the exterior face; they will then remain supple, and consequently easily take the form of the pulley. It is needless to add that this suppleness contributes essentially to their preservation, because cracks and ruptures are not produced as in belts dried by the action of the atmosphere.

The experiments of Morin have demonstrated that the co-efficient of friction of new belts on wooden pulleys

.50; that of greasy belts on the same pulleys .47. The co-efficient of friction between humid belts and turned and polished cast-iron pulleys is .38; that of greasy belts on cast-iron pulleys .28. Belts heavily saturated with oil on the interior, and running on cast-iron pulleys, have a co-efficient of .12 only.

It is the humid belts which have the highest co-efficient of friction. Now the oiling of the external surface of the belt with a mineral oil maintains throughout the thickness of the same a species of humidity that is very advantageous. It is specially so in locations that are very dry or filled with dust, where the belts generally become dry in a short time, that



COMBINED SAW TABLE.

simple yet positive in adjustment, combined with the highest attainable degree of efficiency of actual operation. This will apply to such machinery as rolls, purifiers, centrifugal and other reels upon which depend the "results." Not quite as important a factor in the manufacture of satisfactory grades of flour, but equally important in the ease and economy of operation, are the shafting, pulleys, hangers and bearings, to the selection of which a fair amount of discretion may judiciously be given. Procure shafting of a diameter sufficient to serve its purpose faultlessly; use pulleys of a size and proportion consistent with the work they are to perform; have self-oiling bearings and hangers with good drip cups, also self-contained provision for vertical and lateral adjustment. Careful attention to these "unconsidered trifles" will insure you possession of a plant which, for perfection of products, durability, ease and economy of operation and first cost cannot be excelled.

THE CARE REQUIRED BY LEATHER BELTING.

A recent issue of *Annales Industrielles* says on this very important question: We have had occasion at various times to combat the widespread custom of employing resinous substances for augmenting the adhesion of leather belts to pulleys.

These substances for a short time produce the desired effect, but rapidly become inactive and deteriorate the belts. One must not forget that it is the more or less perfect contact between the belts and the pulleys which renders the adhesion more or less intense.

It has been suggested, perhaps with reason, that it is

this oiling is very useful.

The mineral oil may be applied while the belt is running, and ought to be employed every few weeks. For the best results a thorough cleaning of the belt should take place every three or four months.

For this purpose the belt is first removed from the pulleys, then washed with tepid water in order to remove the dust and other matters which are always deposited upon it. The belt is dried by rubbing it energetically with waste or a cloth, then the mineral oil is applied to it, likewise by means of a cloth, and it is hung in a warm place. After the first portion of the oil has penetrated the leather, more is applied.

The employment of mineral oils has up to the present given excellent results. A belt treated in the manner we have given above retains its suppleness for a long period, and resists the action of the atmosphere. Its running is noiseless and regular, the losses from passive resistances are much less, the belt has a much longer life, and the expenses of maintenance are by this same largely, and in fact we may say in most cases fully, compensated for.

ELECTRICAL SPARKS.

The Halifax Gas Light Company has called a meeting of its shareholders to authorize the adoption of the electric light by the company and enter into competition with the Halifax Electric Light Company.

In future the Gananoque Electric Light Company will use power instead of steam.

It has been calculated that the cash invested in the electric light industries of the United States amounts to \$150,000,000.

Northwest Letter.

MANITOBA millers are at variance with their eastern brethren on one point, namely, the duty on wheat. The discussion in the eastern press directed against the duty on wheat and in favor of a removal of the same, has caused a great deal of unfavorable comment here. The *Trade Bulletin* of Montreal, lately characterized it as a "great piece of folly," thus "depriving our millers of the very kind of wheat they most need, namely, American 1st spring, and at the same time affording not the slightest benefit to our farmers, the price of wheat being established in both Canada and the United States by the English markets." Now this may appear all right from an eastern point of view, but as seen here in Western Canada, it is all wrong. Millers here would not be disposed to oppose the increasing of duty on flour, say to 75 cents per barrel, to correspond with the duty on wheat, but to admit American wheat free of duty, would be a serious blow to the grain and milling industry in the Northwest. The result of such a move would be that Ontario millers would look to Duluth for their hard wheat, and thus the prices which are kept up here by the keen competition for Manitoba hard, would decline. One of the largest buyers in this province, for an eastern milling firm, told me a short time ago that his firm would not buy a bushel of Manitoba grain, if the duty on wheat were removed. His reason for this was, that he could go into Duluth and buy all the wheat he wanted, at a considerably lower rate than he was obliged to pay here and with a great deal less trouble about it. It is a well-known fact that wheat has been several cents higher in Manitoba during the past winter, than was paid at points in Minnesota and Dakota, where the value should be proportionately the same. Now, what has been the cause of this? Answer, simply the duty on wheat. It has been charged that railway and elevator monopolies were the cause of the lower prices to the south of the Manitoba boundary, but Manitoba possesses both these monopolies, especially the former, to a much greater degree than Minnesota and Dakota. As for the railways, it has been proved beyond dispute that the C. P. R. Co. charges from 5 to 10c. more per 100 pounds for carrying wheat to Lake Superior ports, than is charged by the American roads to carry wheat a proportionate distance to Duluth. But in spite of these hindrances, the same grades of wheat have brought higher prices in Manitoba than in the States to the south. The reason for this is, that there has been keen competition here between provincial and eastern millers for our wheat, and prices have accordingly kept up at the very most the market would allow. Without this duty on wheat, Ontario millers would have supplied themselves from Duluth, at the lower prices and more convenient market, a consequence of which would have been that Manitoba wheat would have been obliged to go begging at equal or lower prices, before it would have been purchased by these millers. Manitoba millers would also have been obliged to put down the price of wheat very low, in order to compete in eastern markets with the Duluth wheat, ground in eastern mills. The argument of the *Trade Bulletin*, that prices are regulated by the British markets, both in Canada and the United States, with the deduction that therefore the removal of the duties would not affect prices in Canada, is a statement which will bear a good deal of qualification. This statement has been so frequently made, that it has come to be accepted as a truism. But nevertheless it is not as true, generally, as is usually believed, and it has been made apparent on different occasions that large American markets are not without their influence in fixing the values of wheat. In fact, it was asserted by a leading American grain paper not long ago, that Chicago had quite as much to do in fixing prices of wheat as Liverpool. Of course this statement is no doubt wide of the mark, but it is not without its point. In the case of Manitoba, however, there are certain peculiarities surrounding the situation which make the statement that British markets fix prices quite without meaning. Under the existing state of things, British markets have less direct influence in this province than probably in any other part of the continent. This is owing to the fact, first, that our supply of wheat is limited; and second, that it is of a particular quality. Were the supply so large that there would be an abundance for both local and eastern millers, and a considerable surplus besides for export, prices of course would not be proportionately higher here than elsewhere. Knowing that there was plenty for all, there would not be the keen competition, and prices would not be advanced beyond an export basis. In regard to the second point of quality, as the *Trade Bulletin* says, hard spring wheat is the very quality Ontario millers need. With the duty on American wheat, they are obliged to look to Mani-

toba for the grain which they must have to compete with American millers. The supply being limited here, consequently prices are kept up to their full value. The benefit to the farmers and millers of Manitoba from the duty on wheat, is one which will not last. When wheat production increases to a point in excess of the local and eastern milling demand, then the enhanced value of wheat here or markets to the south of us will be lost. But in the meantime Manitoba farmers have a full right to any benefit which may be derived from the tariff. It is well known that the National Policy imposes a heavy burden upon the Northwest in many respects. We have fewer manufactures than any other part of Canada, and from our geographical position are obliged to import many things from the United States, upon which the excessive duties have to be paid. Upon the things most necessary to the Manitoba farmer, namely, agricultural machinery, the duties were twice increased, solely for the benefit of Ontario manufacturers, and the newly arrived immigrant was obliged to pay several hundred dollars more for an outfit of agricultural machinery than the settler in Dakota, and then get implements not as well adapted to prairie farming. However, protection and experience has enabled Ontario manufacturers of agricultural machinery to turn out just as good articles as the Americans, and at the same time reduce the price to about the same figures as the latter. Still there are other ways in which the protective duties continue to operate as a burden upon people here, more so than in Eastern Canada, and therefore I repeat, that Manitoba farmers have a right to the benefit of the duty on wheat, whilst it lasts.

The city mills were closed down for a week or so, owing to the dullness in the flour markets, both here and in the East. Something which was never before known in the trade here, has lately occurred. Up to the present season the mills here were never able to get a supply ahead of patent qualities of flour. Patents were all taken up by the local trade, and the bakers' grades were shipped east, with the low grades used for Indian and western trade. Lately, however, the local demand has changed largely to strong bakers, whilst patents have accumulated to a considerable extent. Eastern markets were not remunerative at present prices for high grades, and millers did not care about operating more than was actually necessary. One feature, however, which has been favorable to millers, has been the large demand for bran and shorts, which has existed during the entire winter, owing to a shortage in feed from the drought of last summer. Bran and shorts have sold at \$12 and \$14 respectively, during the winter, and since the middle of March prices have ruled at \$12 per ton for each, above quotations. After a short season of idleness, the mills resumed grinding, mainly owing to the demand for millstuffs.

Provincial wheat markets have continued very quiet for the past month, and at many points buyers had deserted their posts weeks ago. The principal buying has been for seed grain on government contract, which is being supplied settlers in the Territories in some districts north and west of Manitoba. For a month or six weeks back deliveries of wheat by farmers have been very light, and would give indication that there is not much unsold wheat in the province. An estimate of exports of wheat from the province would place the total for the crop of 1886 at say 1,750,000 bushels, up to the first of April. This would include shipments to Lake Superior ports, as well as shipments all rail to Eastern Canada. The provincial mills have probably ground about 1,250,000 bushels, making a total disposed of, of about 3,000,000 bushels. These figures are very moderate, the general estimate being about 500,000 bushels greater than the figures given. Wheat yet available, in store or held by farmers, will probably raise the aggregate, perhaps up to at least 4,000,000 bushels. This shows a falling off in comparison with last year. Up to the close of April, 1886, exports of wheat amounted to 2,933,744 bushels. At the close of the crop year of 1885-1886, the total exports from Manitoba of wheat (and flour represented in wheat) were placed at 4,250,000 bushels, with about 500,000 bushels still held in store, making the surplus crop of 1885 to nearly a total of 4,000,000 bushels. This would show a shortage of about 1,000,000 bushels in the crop of 1886, as compared with the previous year. But it must be remembered that a considerable quantity of Manitoba wheat has been shipped west, for grinding and for seed purposes, whilst there has also been a larger movement of flour west since the opening of the C. P. R. to British Columbia. These western shipments cannot be properly estimated as yet, but they would undoubtedly reduce the apparent shortage in the crop of 1886 to a considerable extent.

Notwithstanding the depression in the milling industry, there are good prospects of a considerable increase

in the grinding capacity of the province during the present season. Quite a number of new projects for establishing mills at points in Manitoba have come to the fore of late, several of which will no doubt be carried through. The only regrettable feature in connection with this is, that bonuses are wanted in almost every instance. Among the points where there is some prospect of establishing mills, are Birtle, High Bluff, Holland, Elk Horn, Manitou and Boissevain, all in Manitoba. At Holland a joint stock company has been formed, and at High Bluff a bonus by-law has been passed, granting \$6,000 in aid of establishing a mill. It is reported that the mill at Moosomin, Assiniboia territory, (which has remained in a half-completed state for nearly a year, though the failure of the party receiving the bonus to finish the work, and which has since passed through several hands), has been secured by parties who will complete it at once. The mill project at Shoal Lake, which also hung fire for a length of time, owing to a lack of funds on the part of the first projectors, has at last been successfully carried through, with the aid of an increased bonus, and the mill will commence to grind this month. The Rapid City mill, in aid of which bonuses to the amount of \$13,000 were granted, will shortly be completed and put in operation. A mill has lately been completed at Stonewall, and another at Balmoral, both in the Winnipeg district, in aid of which \$3,000 bonuses each were granted. The Carberry, Man., mill, which was badly wrecked by an explosion of dust a short time ago, has been thoroughly repaired and will soon be grinding again.

In Manitoba bonuses are granted not only for mills, but also for elevators, and in instances of the latter nature, the consideration is generally something in the way of special rates to farmers, as a return for the bonus assistance. A party has lately been endeavoring to secure \$7,000 bonus for the erection of an elevator at Portage la Prairie, specially for the benefit of farmers, but also for the use of grain dealers, on equal terms. The projector offers the following rates: For the first 15 days, or portion of same, 1¼ cents per bushel, to include storage, cleaning, elevating and loading into cars; ¼ cent per bushel for the next five days; and ½ cent per bushel for each succeeding twenty days, until 4 cents has accrued, after which no additional storage will be charged for six months. There are now two elevators at Portage, but they are both in the hands of millers, and independent buyers are sometimes crowded out, the railway company always being inclined to favor the elevators, against other shippers.

British Columbia lumber is now finding its way all over the province and territories, but this will not interfere with the local sawers. The B. C. lumber is all fine, finishing stuff, which is not produced here, and has to be imported from some quarter. Lumber dealers are anticipating a good trade during the coming season, especially in Winnipeg, where building operations promise to be on a much larger scale than last year. Preparations have commenced for the erection of half a dozen or so large blocks, and quite a number of residences are already under way. The thing most needed is an improvement in prices, which have been more or less demoralized for years, owing to excessive stocks held. This season, however, promises to place the trade upon a solid foundation.

THE HEATING POWER OF GAS.

A series of tests has already been made by Dr. Fischer, the well-known German chemist, showing that in ordinary domestic stoves in use not more than 20 per cent. of fuel consumed is really utilized for warming the rooms, whereas, with stoves burning gas, 80 per cent. and more of the possible effect is obtained. In a sugar manufactory at Elsdorf, it is stated no steam engines have been used for several years. Gas is made at a cost of about 10d. per 1000 cubic feet, and is used for lighting and driving gas engines. At the Essen works, water gas is made at a cost of 4d. to 8d. per 1000 feet, and serves both for fire and lighting.

CATARRH, CATARRHAL DEAFNESS, AND HAY FEVER.

[From Scientific American.]

Sufferers are not generally aware that these diseases are contagious, or that they are due to the presence of living parasites in the lining membrane of the nose and eustachian tubes. Microscopic research, however, has proved this to be a fact, and the result is that a simple remedy has been formulated whereby catarrh, catarrhal deafness, and hay fever are cured in from one to three simple applications made at home. A pamphlet explaining this new treatment is sent free on receipt of stamp, by A. H. Dixon & Son, 305 King Street West, Toronto, Canada.



A Mr. Derbyshire has leased the grist mill at Odessa, Ont. The machinery has arrived for the new roller mill at Rapid City, Man.

W. D. Matthews, of Toronto, has ceased to purchase grain in Napanee.

Mr. W. Sands, of Millburn, Ont., is making extensive repairs on his mill.

The new roller mill at Stonewall, in the Northwest, is completed and in operation.

The milling firm of Williams & Esson, Gladstone, Man., have given up business.

Mr. George Nimmo, millwright, has removed from Mount Albert, Ont., to this city.

The new roller mill at Theford, Ont., will be finished and in running order in a few days.

Mr. Wm. Harrison, proprietor of the grist mills at Wakopa, Man., will put in roller process machinery.

Bracebridge, Ont., with its fine water power, is said to offer extraordinary inducements to milling enterprise.

A roller flour mill company has been organized at Kincairdine, with a capital stock of \$30,000 in \$100 shares.

The flouring mill at Little Britan, Ont., owned by Mr. Isaac Finley, is undergoing changes and improvements.

Mr. F. Merner has completed the re-fitting of his flouring mill, which is now reported to be working like a charm.

A dispatch from Chicago says that the railroads leading from that city are heavily cutting rates for grain carrying.

Reports from some parts of Ontario state that mild weather followed by frost and ice has done considerable damage to the wheat crop.

Mr. Russell has leased the new mill building erected by Mr. Gould at Uxbridge, Ont., and will use it for an oat mill.

Mr. H. W. Harrison, of Elgin, Ont., is about removing to Newboro, where, it is said, he will start a steam grist mill.

The *Northwestern Miller* says a Canadian milling company will establish a flouring mill at New Rockford, Da., during the coming summer.

A workman on the new mill at Shoal Lake, Man., fell from the roof of the building to the ground, a distance of 30 feet, and escaped injury.

Mr. A. J. Green, near Lake Manitoba, offers to build a 40,000 bushel elevator at Portage La Prairie on condition of getting a \$7,000 bonus.

It is reported that the grangers of the townships of Sarnia, Moore and Sombra, will shortly build a flour mill. Capital \$50,000, in \$50 shares.

Mr. John Mitchell, a miller of long standing at Greenwood, Ont., has found it necessary to make an assignment for the benefit of his creditors.

It is reported that Mr. E. Peplow, of Port Hope, has determined to build at Lindsay, on the site of the paper mill, a flour mill of 150 barrels capacity.

The grist mill at White Rose, Ont., which has been closed down for some time, will be sold on the 5th inst. The community are anxious that it should be opened again.

The Dominion Government has refunded three-fourths of the \$400 fine imposed on the Gloucester schooner *Daisy* for landing flour at the Straits of Canso last season.

Winnipeg flour handlers use no barrels. The local and outside trade take all the flour in cotton and jute sacks. Barrels could be used if the price could be made low enough.

Bawf's warehouse at Rapid City, Man., collapsed recently letting out about 20,000 bushels of grain. Favorable weather prevented the grain from being very much damaged.

Messrs. A. W. Ogilvie & Co., of Montreal, who have made several trial shipments of flour to the West Indies, complain of the existence of "a ring of middle-men at West India points," who "control the trade and boycott those who make any effort to reach consumers more directly."

The residents in and about Crystal City, Man., are about to organize a company for the purpose of purchasing and refitting with roller process machinery, the mill at that place owned by Mr. Wm. Beach.

The Shelburne roller mill is now in operation and doing good work. The hands employed by Mr. Plewes at the time of his death have been re-engaged to run the mill, Mr. J. N. Beckett being in charge.

The Canadian government is being pressed to abolish or materially reduce the canal tolls, in order that forwarding companies can close charter in Chicago and other Western grain depots in advance of the opening of navigation.

The MECHANICAL AND MILLING NEWS had a friendly call from head miller D. M. Campbell, of the Glenora Mills, Picton, on Saturday last. He reports that the mill under his charge is working splendidly, turning out about 135 bbls. of excellent straight grade flour per day, and is making money for its enterprising proprietor, Mr. J. C. Wilson. Mr. Campbell went on to Buffalo Saturday evening to spend Sunday with old friends in that city.

Mr. Alexander Brown, who has been in the employ of the Citizens' Milling Co., of this city, during the last five years, started a couple of days ago for "Merrie England," his native land, and the home of his parents. On Saturday evening last the proprietor and employees of the mill gathered round him and presented him with a solid silver flour trier, bearing this inscription: "Presented to Alex. Brown by the Citizens' Milling Co., as an acknowledgement of five years' faithful service. Toronto, Canada. March 26, 1887."

The following is sent us by Messrs. J. E. McLaughlin & Bro., flour and grain commission merchants, of this city. "In these days of numerous commercial short-comings it is refreshing to receive such a letter as one which we have just received from a customer in the province of Quebec, an extract from which we give: "In car No. — there were ten barrels of flour more than you charged us for; that is, there were 160 barrels instead of 150. You will therefore add the price of your extra ten barrels to your next invoice." This action on the part of our customer, we need scarcely say, is very gratifying to us, and we are sure will be doubly so to the miller who made the shipment and who receives the price of the extra ten barrels of flour."

MACHINERY

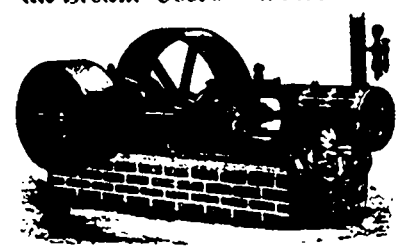
FOR SALE.

- WATER WHEELS. The following is a list of water wheels for sale by H. W. PETRIE, machine dealer, Brantford, Ont.
- 61 IN. LEFFEL, right hand.
 - TWO 43 IN. SIMPSON TURBINES
 - 48 IN. TYLER WHEEL, left hand
 - 42 IN. TURBINE, right hand.
 - 42 IN. CANADIAN TURBINE, left hand
 - 42 IN. TYLER, left hand
 - 40 IN. DOUBLE TURBINE.
 - TWO 35 IN. LEFFELS, left hand
 - 30 1/2 IN. LEFFEL, left hand
 - 30 IN. TURBINE, left hand.
 - 15 IN. GALT ARCHIMEDIAN TURBINE, right hand.
 - 13 1/2 IN. LEFFEL, brass gates, left hand
- ABOVE WHEELS are being thoroughly overhauled by a practical builder of water wheels. Send for descriptive catalogue. H. W. PETRIE, Brantford, Ont.
- MISCELLANEOUS MACHINERY for sale by H. W. PETRIE, Brantford, Ont. Send for new No. 13 descriptive catalogue.
- PULP MACHINERY, an outfit complete
 - ONE 12 FT. WIND MILL.
 - ELECTRIC LIGHT DYNAMO for 200 lights.
 - CLOVER HULLER AND CLEANER, Sawyer make.
 - TWO THRESHING MACHINES, refitted.
 - A NUMBER OF SMALL MEAL CHOPPERS
 - POWER MEAL CHOPPER, 12 in. block
 - ONE LUREKASMUTTER, first class machine
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MACHINE SHOP PRACTICE.

By JOHN BERTRAM.

THE following interesting paper was read at the annual meeting of the Manufacturers' Association last month by Mr. John Bertram, of the Canada Tool Works, Dundas, Ont.:

The development of manufacturing interests in Canada has within the last few years acquired such proportions as the most sanguine pioneer in any branch of industry, twenty years ago, hardly dreamt of. The results of long and persistent effort in perfecting steam engines for the mill, factory, or machine shop, seems now to have culminated in that success which places our new country in the list of nations competing in the world's market, and that in lines of manufacture which are now challenging the attention of countries old in the race. It will not be amiss at this stage to tender a few ideas on the present and past state of machine shop practice. It barely requires a retrospect of forty years to include all the history of Canada's manufacturing industries as they fluctuated between prosperity and depression, and consider the waste of time, loss of power, and consequent want of economy which was inseparably connected with the operations of a class of men fighting for existence and having barely a margin of time left for systematizing. Looking at the engineer's shop or factory of these days many can remember the different styles of motive power and the enormous quantities of water and steam required to make one horse-power; the mill and factory shafting, mostly of cast iron with ponderous pulleys four or five feet in diameter, revolving (in cases of the main line) at fifty per minute; the make-shifts for turning out steamboat engines, heavy land engines and mill work; the great power absorbed by the ponderous shafting and unbalanced pulleys, the waste of steam in engines innocent of expansion valves which seemed to keep pace with the destruction of our forest timber, and the wonder is how those men achieved so much. The engineer's shop appliances created a great waste of time, being built mostly of wood with as little strength as possible, to a great extent limited the amount of work done, and to attempt the experiment of cutting out the modern tool in those old-time machines was down the whole affair. But the rapid development of the forest timber and the clearing and draining of the land consequent drying up in summer of a large amount of water which made a permanent location and some of our chief centres of industry rendered the use of steam engine a necessity, and the consumption of fuel transported from a distance made it imperative that improvements for saving fuel should be made, and as a present result we find steam engines with automatic cut-off valves which have no superior in any country are made in various parts of Canada, and that smooth turned shafting with light and finely proportioned and balanced pulleys of moderate diameter revolving at speeds proportioned to the requirements of the driven machinery is in general use. The old dingy grist mill now gives place to the modern roller system with machinery and fittings built on scientific principles. Engineers' tools and appliances also came in for a share of the general improvement; the old lathe and planer which had to creep along at the rate of the fiftieth of an inch for each revolution and stroke now give place to those carrying one-eighth of half an inch, and still the aspirations of the engineer is heavier machinery. The same remarks apply to wood-working machines. A planing head revolving over two thousand per minute was a dangerous neighbor, now four thousand is a safe speed, and as the result of a few years of enterprise the record of to-day shows Canada with more labor-saving machinery (if we take large and small establishments) than most older countries relative to her population.

It was the writer's privilege as a Colonial visitor in England to get admittance to the works of Sir Joseph Whitworth, of Manchester, and if any manufacturer wishes inspiration on the power and adaptability of machine tools to produce such magnificent results in turning and planing metals, a visit to these works will amply reward him.

The new shops of this firm are situated at Openshaw, about four miles from Manchester town hall, and are for the production of breech-loading steel guns of the heaviest calibre down to the long Nordenfeldt for one inch and a half projectiles. All the machine tools for boring, turning and turning are of the most powerful description. For the largest class of guns a line of lathes eight feet swing and six hundred feet long set on stone foundations grace one side of the machine shop, and in one a steamboat shaft twenty inches diameter with its double cranks forged on solid, slowly revolves while a tool one inch wide travelling at the rate of three-quarters of an inch for every revolution leaves a finish like nickel plating. A planer fifty feet long carries a bed for a turning lathe

about fit. tons weight, and the great aim and end desired in the operation on every piece of work was to finish it with the machine. But the most wonderful feat in engineering here is the production of steel forgings by the Withrow plan. The steel is cast in moulds and pressed by hydraulic pressure to insure solidity, and for securing greater strength all shafts have a smooth hole through the center, and the steam hammer finishes the piece to the desired form. A model of the shaft for the steamer *City of Rome* bearing this peculiarity of construction was seen by the writer. A glance at some of Whitworth's justly celebrated machine shop appliances, such as measuring machines, standard gauges and screw threads which are almost universal over the world, places him in the foremost rank as an inventor. All the machines in the works are severely plain, but beautifully proportioned, and the working slides (especially of most modern tools) are made in straight lines, and some surfaces, after a work of fifteen years, look as if new from the fitting shop. In conversation with the manager he remarked that the principal machine tool men in the United States often visit their works, and there is no doubt that the remarkable change observable in machine tool construction among the Americans is largely due to observation in that line, while on the other hand British tool makers draw largely from the handiest and best points in American machine practice, even copying numbers of distinct machines which have become indispensable. I may here observe that Manchester, Leeds, Halifax, Nottingham and other large towns in England, and Glasgow and Johnstone in Scotland, furnish us a host of machine tool makers, while London and Rochdale are more noticeable for wood-working machines. But the great bulk of their productions, except those of a high class, find no place on this side of the Atlantic. In visiting the engineers' shops of Britain there is one thing which forcibly strikes a Canadian, and that is the dividing off, as if by mutual consent, on specialties; thus some firms seem to have a monopoly in a class of machines suited for marine engine work, others for the locomotive shop, and so on for agricultural and the endless variety used for cotton, woollen and flax machinery. And here it might be in place to give a noticeable illustration of the important part occupied by the engineers' shop in iron bridge building, in the construction of Forth Cantilever at Queensferry, Scotland. In this case as the work is on such a large scale the workshops are located close to the structure so as to save the cost of preliminary erection and transit of finished material, the bridge during construction forming the nucleus for the derricks and travelling cranes, thus the Queensferry approach, which is 1700 feet long, a lattice steel structure being placed on the ten pairs at high water mark, and being elevated by hydraulic presses forms the travelling crane for placing the granite blocks on the various piers till the height of 150 feet is attained. Two cantilever arches 1700 feet each have their centres resting on four granite piers, which were built by sinking caissons to a depth of 90 feet, each having a diameter of 80 feet at the base and 60 feet at the top. From the top of these four piers trusses 10 feet in diameter and made of one inch steel plate radiate upward and diagonally into the framework of the cantilevers, like the spokes of a wheel, and as each section is added, the rivetting together goes on silently by hydraulic pressure. And here comes the work of the engineers' shops, as all the various operations are performed by special machinery mostly designed by the contractor, Mr. Aroll. In the sinking of the caissons the material was dug out by hydraulic spades and ejected through tubes by machinery. In the machine shop are a number of special tools used in preparing the work, of which one example will suffice, namely, a drilling machine for the rivet holes in the ten-foot tubular trusses, and as these could not be handled in any ordinary machine this is made for the work. Parallel and directly over a line of rails in the yard lies a tube 150 feet long, four wheels on the track carries the machine which encircles the tube, cross slides, carrying a large number of drills, pointing to the centre, perform the work. Stages for the workmen and water tubes for each drill makes this, with a steam engine, a complete engineers' shop in itself, and as one section of the tube is finished the whole is moved on the rails to another.

But while the older countries have notably made great advancement in the application of special machinery to modern bridge construction, Canada has also made rapid strides in that direction. While the country was young, her forest timber furnished the chief framework of the bridge or viaduct, but in a changeable and wearing climate iron and steel have become the cheapest material, and the result is that a number of establishments have sprung up in different localities devoted to this industry, notably the Dominion Company at La-

chine, and any patriotic Canadian will be well entertained by a visit to the works and their greatest masterpiece close by, which spans the river St. Lawrence, and will soon form part of our great national highway, the Canadian Pacific Railway. Where rolled the great river a year ago unobstructed as it was in the days of Champlain, in a few weeks the iron horse will be crossing almost in sight of a sister structure (the Victoria bridge, erected by an English company thirty years ago), thus adding to the many interesting sights that delight the tourist who visits this beautiful region and instructive lessons to all who take pride in our growing nationality.

AN ELECTRIC MIDDINGS PURIFIER.

A German engineer named J. Kuhmunch, of Rottingen-on-Taubei, has invented an electric purifier, which is described as follows in *Die Muehle*: This machine, which is now built in Germany, has we hear, already been worked in several mills for more than a year with very good results. It consists essentially of a solid and strong oak frame, firmly screwed together and containing numdoors and windows to admit of easy inspection of all its parts. In the frame are mounted the axle bearings and moving mechanism of a sieve, an electric disk and a conveyor, as well as an inspirator which drives a gentle air current against the sieve from below, thus promoting the progress of the bran particles up to the electric disk. This disk receives its rotating motion from a friction wheel at the bottom of the machine, the axle bearing it passing through the machine and through the sieve. By adjusting it higher or lower a less or more intense action is secured upon the middlings passing underneath. The distance thus varied is from 10 to 40 millimeters, or from over one-third to 1 1/2 inches. Strips of goat skin arranged beneath the disk serve to electrify it. The material of which it is composed is so chosen that a light contact of the goat hair serves to remove the flying bran from the middlings treated. When in full contact with the rubbing cushion, the impurities of the coarse middlings are taken out with equal ease and promptitude and are conveyed to a suitable place. There is in the middle of the sieve a canal separated into two compartments. Into this canal falls the bran clinging to the disk, and is carried by it to be emptied at the back of the machine. The rubbing cushion or deflector is also in the canal, serving the double purpose of electrifying the disk and shaking off the clinging bran. While the bran is separated in this way and the small middlings carried between the sieve and the disk to be emptied, the purified middlings pass the meshes of the sieve, corresponding to their size, then falling on oblique walls beneath and through the slits between the air and middlings chambers. By means of the air current through these apertures the middlings can be divided into two qualities. The double conveyor, at the bottom of the machine, under which are the sacks or pipes for the purified middlings, have, according to the size of the purifier, from 3 to 9 slides, enabling the taking off of a corresponding number of different sized middlings. If there is no need of so many, only the middle and last, or only the last disk need be opened, so giving but two sizes or one.

THE WANZER LAMP.

Messrs. R. M. Wanzer & Co., the well-known manufacturers of sewing machines, Hamilton, Ont., have just placed on the market a new lamp to which they draw public attention in a full-page advertisement in another part of this paper. By this new invention lamp chimneys are dispensed with and the consequent loss and trouble resulting from breakages. This lamp is warranted to be positively non-explosive, gives no offensive odor, and supplies a 50 candle-power light while consuming only half a pint of ordinary coal oil in six hours burning. A novel and useful feature of this new invention is that in addition to its many commendable qualities as a lamp, it is designed to take the place of the oil, gas and cook stove for light cooking. A few weeks ago the ladies and gentlemen taking part in the Old Folks' concert, at the Hamilton Grand Opera house, were served an elaborate lunch in the Garrick Club rooms. The tea and coffee were made, and a liberal supply of hot water, by placing Wanzer lamps under the boilers, which heated on a small frame. In the sick room and nursery many of the little delicacies can be made, without obstructing the light, and many steps saved. The reflectors attached to these lamps are a boon to old people and a luxury to those having weak eyes. They throw a mild, soft steady light on the book or paper, while the head is in the shade. We understand that the many new and useful features connected with the Wanzer lamps are meeting with public appreciation everywhere, and the department of Messrs. Wanzer & Co.'s manufactory where they are made is crowded with work.

USEFUL INFORMATION

Sawdust thrown on a circular saw table will render the hauling of heavy planks quite easy. The grains act as small rollers and reduce friction.

Carbolic acid is now recommended for moistening the tools with which metals are worked. The efficiency of the grindstone is even said to be increased by the use of acid. The dark and impure acid can be used for this purpose.

TO HARDEN TOOLS.—A. E. Tucker claims that he has successfully edged grooving tools for chill rolls by dipping the actual cutting portion in mercury. No more of the steel than is actually necessary should be dipped, as, while imparting extreme hardness, it naturally makes the body of the tool extremely brittle.

TO GET THE OIL OUT OF A GRINDSTONE.—To remove the oil out of a grindstone, mix a pail of whiting and water to a consistency of thick cream. Move the grindstone near the stove, or where it can be made and kept as hot as its safety will allow. Give it a thick coat of the whiting, by spattering it on with a brush. It will soon become saturated with the oil. Then scrape it off and repeat until the oil is all extracted.

BEAUTIFUL SURFACE FOR TOOLS.—The wooden parts of tools, such as the stock of planes and handles of chisels, are often made to have a nice appearance by French polishing; but this adds nothing to their durability. A much better plan is to let them soak in linseed oil for a week, and rub with a new cloth for a few minutes every day for a week or two. This produces a beautiful surface, and at the same time exerts a solidifying and preservative action on the wood.

AN ELECTRIC LOW WATER ALARM.—An electric low-water alarm based upon a very simple principle has been recently described before the American Institute. The apparatus consists of two gauge-cocks, a water-gauge, a mercurial thermometer, two Leclanche cells and an electric bell. As the water in the boiler gradually lessens, steam comes down through the upper arm and gauge-glass, and when a certain level is reached it enters also through the lower arm. Being hotter than the water, the increased temperature of the steam expands the mercury in the tube and closes the circuit. The bell then continues to ring until sufficient feed water has been supplied; the feed-water being cooler, the mercury contracts, the circuit is broken and the alarm ceases.

TO PREVENT RUST ON IRON AND STEEL TOOLS.—1. All steel articles can be perfectly preserved from rust by putting a lump of freshly-burnt lime in the drawer or case in which they are kept. If the things are to be moved, put the lime in a muslin bag. This is especially valuable for specimens of iron when fractured, for in a moderately dry place the lime will not want renewing or many years, as it is capable of absorbing a large quantity of moisture. Articles in use should be placed in a box nearly filled with thoroughly pulverized slaked-lime. Before using them rub well with a woolen cloth. 2. To keep tools from rusting take one-half ounce camphor, dissolve in one pound melted lard; take off the scum and mix in as much fine black-lead as will give it an iron color. Clean the tools and smear with this mixture. After twenty-four hours rub clean with a soft linen cloth. The tools will keep clean for months, under ordinary circumstances.

TESTS FOR LUBRICATING OILS.—It is stated that a good test for lubricating oils is to place single drops of the different kinds to be compared in line across the end of a piece of plate glass about twenty-four inches long, one end being six or eight inches higher than the other, to form an inclined plane. The drops of oil run down this smooth plane in a race with each other. The quality of the oils for lubricating purposes is shown by the distance traveled and the trace left by the drops. Thus, on the first day sperm oil will be found in the rear; but it will in time overtake the rest and retain its power of motion after most other oils have dried up. A light-bodied oil flows quickly, like water, but also dries quickly, whereas what is needed is a good body combined with a limpid flow. Many oils have a good body but have a tendency to gum; and this will be distinctly shown upon the glass. It is scarcely necessary to remark that the test slip should be covered from dust while the experiment is being made. The method will show the physical qualities of different descriptions of oil; but if the presence of acid is to be detected, another simple device may be adopted. In a sheet of bright

copper a number of shallow pits are made by the blow of a round-faced hammer. Samples of oil left some days in these dishes on a shelf in the engine room will show, by the formation of verdigris, where acid is present. The existence of a blue tinge of fluorescence in a glass phial of oil is frequently assumed to indicate the presence of mineral oil; but this is an illusory test, since the same effect is frequently observed in the purest and freshest vegetable oils.

PERSONAL.

Items of personal intelligence from or concerning persons engaged in the various branches of mechanical industry represented in Canada will always be welcome to this column, with the stipulation that the name of the sender be given, not for publication, but as a guarantee of good faith.

Miller Wm. Brown, of Cadmus, Ont., has been visiting Toronto friends.

Müller Edward Harding, of Fort Stanley, lost an arm by blood poisoning.

John Hayes, of the Canada Tool Works, Dundas, intends leaving for Montana about the 1st of May.

E. C. Bennett, mill owner, Harrington East, Que., is seeking to obtain from his creditors an extension of time.

Joseph Miller, employed in a factory at St. John, N. B., recently had his arm split by a circular saw from wrist to elbow.

A lad named Edward Wilkins had three fingers severed by a circular saw in the Victoria Wheel Works at Galt recently.

Mr. Lane, engineer at the Canada Screw Works, Dundas, Ont., was severely scalded the other day by the bursting of a valve.

Mr. W. J. Trounce, the well-known lumber merchant and manufacturer of Port Perry, Ont., has taken up his residence in Toronto.

The employees of Goofrey & Co.'s woolen mill, Galt, Ont., recently presented Mr. Geo Goofrey with a couple of elegant easy chairs.

A young man named G. Smith had his foot badly lacerated by a saw in W. W. Bishop's saw mill at Jersey, Ont., the other day.

Mr. H. H. Cook, the well-known lumberman, was thrown out of his cutter and severely bruised while out driving in this city last month.

John Wilson and William Hetherington, of Dundas, Ont., have gone to Hamilton, Ohio, where they have secured good positions as machinists.

Mr. A. H. Cranston, son of Mr. Adam Cranston, of Galt, Ont., who left for New York a few months ago, is now engaged on the artists staff of the *Scientific American*.

Mr. J. F. Reynolds, formerly engineer in the Dundas cotton mills, has gone to Cornwall to take charge of the engines in the factory there, one of the largest in the Dominion.

Mr. Robert H. Brick, not long ago with the Canada Screw Co., Dundas, Ont., is now foreman of the tool-room of the Electric Light Co., Alleghany, Pa., and is receiving a large salary.

While Walter Feir, son of Mr. A. Feir, of Ops, was working on the roof of one of their mills he slipped and fell to the ground, a distance of about sixteen feet, receiving severe spinal injury.

John Edwards, boiler maker, Stratford, Ont., recently had one of his eyes badly injured with an iron chip. He feels anxious about his sight and has placed himself under special treatment in this city.

Miller D. H. Zeigle has removed from Belle River, Ont., to Berlin, Ont.; M. McNair from Elmira, Ont., to King's Creek, Ont.; and R. M. Hazlewood from Wingham, Ont., to Orillia, Ont.

Mr. R. R. McKechnie, of Dundas, Ont., has accepted a lucrative position in a large manufacturing establishment in Philadelphia. He carries with him the good wishes of hundreds of friends in Dundas.

Mr. W. A. Park, head miller for Mr. Thompson at Lynden, Ont., has resigned his position to accept a situation in Superior, Nebraska. His place will be filled by Mr. A. C. Smith, formerly of Brampton.

Mr. John McDonald, while working in his saw mill near High Bluff, Man., was in the act of passing a belt revolving at full speed, when his arm caught on it and in an instant was jerked between the belt and the pulley on which it turned. He was thrown off his feet with great violence and had his arm broken.

The MECHANICAL AND MILLING NEWS had a call the other day from Mr. Armstrong, proprietor of the new flour mills at Janetville, Ont. Mr. Armstrong thinks it will be necessary for him to change his mill from combination to the full roller process.

Hugh Wilson, one of Cannington's most enterprising merchants, having purchased a valuable timber limit in the township of Bexley, has decided to retire from mercantile life and devote his attention wholly to the timber business.

The report comes from Minneapolis that C. A. Schofield, the book-keeper referred to in this paper last month, who was supposed to have been murdered in McMillan Bros.' mill office at Winnipeg, and was afterwards arrested in Minneapolis, has been joined in Chicago by his wife and together they have gone south.

Christopher Quigley, of West Gravenhurst, Ont., was instantly killed at Debloquier's mill, Leg Lake, while attempting to put a belt on a pulley. The unfortunate man was wearing an apron, which caught on a key which fastens the wheel to the shaft.

Mr. Andrew Crosbie, of Guelph, who has been traveling agent for the Gowdy Implement Manufacturing Company for many years, has accepted the appointment of general collector for the Patterson Agricultural Implement Manufactory of Woodstock. He entered on his new duties on the 1st of March.

Mr. Frank Brothers, formerly with the Geo. T. Smith Co., Stratford, Ont., writes asking us to change the address of his paper to Wilmington, N.W.T., where he is present engaged in superintending a mill for Messrs Pursey & Jones, a large mill furnishing company whom he is employed. His Canadian friends will be pleased to hear that he is prospering.

On the 8th of March, Edward Gates, while adjusting a belt on a rapidly revolving pulley in Eaton's saw mill at Eatonville, Cumberland Co., Nova Scotia, got his clothing entangled with the shafting, and was whirled around the machinery at the rate of 100 revolutions per minute. His limbs were frightfully mangled, and at last accounts he was not expected to live.

Referring to the death of Mr. A. J. Cambie, chief clerk in the patent office at Ottawa, which occurred on the 19th, the *Scientific American* says: "Mr. Cambie acted as Deputy Commissioner of Patents for many years, and our extensive intercourse with him over which he presided enables us to say that he was the most efficient and obliging officer. He was always to be a gentleman in all his dealings and was always ready to transact at the patent office."

From the Orillia *Packet* we learn that John Strathearn had a narrow escape from death recently. He was alone in the mill and a friction wheel when his coat tail caught on it. He was drawn up against the shaft, there being no room to throw him, and the coat was torn from him. His left arm was held tightly over the shaft and suffered a very severe strain, when the fireman entered the mill and stopped the machinery.

The Manufacturers' Association, at its annual meeting in this city on the 9th ult., unanimously "resolved to present to the family of the former secretary, W. H. Fraser, a letter of condolence in view of their recent bereavement. The older members of this association remember his earnest efforts to vary and develop the field of Canadian industry, his labor in this behalf receiving but a scant recognition or reward. This association as it stands to-day fully understands the great work he accomplished in securing a field of industry free from foreign under-aluation. Every member knows the untiring industry, ability and urbanity which were his prominent characteristics, and therefore, while the loss to the public has been great, the loss to his family must be such as can only be realized by those similarly afflicted."

William Wiese, who came to Canada recently with \$1,500 borrowed from the employees of the celebrated Schumacher oatmeal mills at Akron, Ohio, where he held a responsible position, besides considerable fur belonging to the German Lutheran Church, of which he was treasurer, has proved the truth of the Scripture assertion that the way of the transgressor is hard. Mr. Wiese, who left his family in poor circumstances, sent them no news of his whereabouts and sent them no assistance until about ten days ago, when he wrote a letter to his wife, dated Tilsonburg, Ont., enclosing money and asking if he would be prosecuted should he return. The reply came from friends in Akron, informing him that his wife, shortly after giving birth to a child, had died from grief at her husband's desertion and anxiety for her children. The erring husband has now gone back to lay his wife in the grave and face the consequences of his misdoings.

The Windsor Electric Light Company has apparently not been making money, and now want to sell out to the town Council at 60 cents on the dollar. If the Council do not accept the proposition, the company will shut shop and leave Windsor to darkness.

PRIZE ESSAY Department

A cash prize of \$10 is given every month for the best essay contributed to this Department on a subject selected by the editor. The essay selected as the best in each month will be published, and \$10 forwarded within ten days to the author. The conditions on which these prizes are offered are as follows:—1. Competitors must be paid-up subscribers to the Dominion Mechanical and Milling News. 2. All articles sent in to become the property of the publisher of this journal. 3. Articles must reach this office, not later than the 20th day of the month next preceding the date of issue. 4. Every article must be accompanied by the bona fide name and address of the author, not, however, for publication unless desired. 5. Articles to be written on one side of the paper only, and not to exceed 2,500 words. The merits of all articles written for this Department will be decided by three thoroughly competent and impartial judges selected by the editor, and competitors may depend upon being fairly treated in all cases.

Subject for next competition: "How do the young Mechanic's Prospects compare with those of young men in other pursuits of life?"

"THE ESTABLISHED PRINCIPLES OF GRADUAL REDUCTION MILLING."

By W. J. BALDWIN, AURORA.

THE established principles of gradual reduction milling is a subject on which a diversity of opinion exists; but, that principles do exist which govern the whole system of gradual reduction cannot be denied. Carrying out these principles I will choose a mill of 100 barrels capacity on winter wheat for a comparison. Using 6 breaks on wheat, which, though not materially changing the established principles, may help by way of explanation. These established principles as they appear to my mind, are eight in number, and may be classed as the fundamental principles of successful gradual reduction. They are as follows:

1. Systematic separation, scouring and brushing of the wheat, for removal of all foreign admixtures and all impurities adhering to the outer coating of the grain.

2. The removal of the crease dirt by splitting or first

3. The reduction of wheat by grooved iron rollers or reduction machines, making a maximum amount of middlings and minimum amount of flour, leaving finished

4. The ridding of the light chaff or bran from the middlings

5. The grading and purifying of the middlings

6. The reduction of the middlings by smooth rolls, reducing the bran specks and making out the germ and bran specks.

7. The reduction of the clean middlings by either smooth, porcelain or iron rolls, to ensure a lively, granular

8. Full and complete bolting after each reduction.

Taking our No. 1 principle—cleaning of the wheat—which may be classed as the first principle in any mill producing good results, we will first consider the separation of the wheat from seeds and other foreign impurities. This is the easiest of any of the parts of cleaning, and can be successfully accomplished on an ordinary separator preceded by a rolling screen. In the next place, after separation, we will look at the scouring of the grain, which means a great deal for the successful manufacture of pure, clear, white flour. To the unskilled observer, wheat looks clean after passing a thorough separation; but to the close observer, with the aid of magnifying glasses, such proves not to be the case. We find a light covering of the same elementary composition of straw, and weighing probably $1\frac{1}{2}$ lbs. to the 100 lbs. of wheat, enveloping the grain. This covering could all be removed by scouring before passing on for reduction. The hair on the ends should also all be removed, as here is found a receptacle for dirt, besides not being a favorable adjunct to flour itself. Now, after knowing that the removal of these is highly beneficial to the finished product, we will consider which is the best way to get rid of them? "By scouring machines," is the only answer. But how many scourers do this successfully? From samples received from the scouring machines I am led to believe not one is doing more than 50% of the work for which they were intended. The majority of scourers consist of a cylinder revolving inside a stationary case, which does the scouring by the velocity of the cylinder, the centrifugal force keeping the grain travelling around against the case. This process gets rid of a good deal of hair, etc., but will break grain if fed light enough to scour sufficiently clean. A scourer, to ensure a good scouring of the grain, should act on a rubbing principle—gentle, so as to break the grain, but severe enough to remove the hair, etc., with a large amount of ventilation and a high speed, to remove all scourings as soon as liberated. Scouring machines should always be followed by brush rollers to brush off any loose scourings which have adhered to the suction on the scourer. Assuming from the

foregoing that our wheat is as near perfectly clean as it can be made by wheat cleaning machines, we will pass on to consider our next point.

2. The removal of crease dirt by splitting. In the first place we shall have to consider how this splitting can be successfully done, *i. e.*, to split each grain through the crease. It is necessary to grade the wheat in order to get a good first break, after which rolls are generally used for the purpose, some using fine corrugations, and others very coarse, with varying differentials—also smooth rolls are run against corrugated. Although rolls have advantages, it is the opinion of the writer that disc reduction machines should be used for a first break, because their action is a rolling between polished surfaces, and the action of rolls is more calculated to tear. When the grain is split through the crease, then comes the object sought for, *viz.*, crease dirt. Crease dirt is a deposit (if it may be so termed) in the crease of the grain, and is as natural to the wheat as the bran or germ, but, in addition to this natural crease dirt, there are several additions in the shape of artificial deposits, arising mainly from careless handling of the grain before being subjected to cleaning of any kind. Poor scouring machines leave a deposit of scourings in the crease, which no brush machine can eliminate before splitting. Here is a point in the selection of a scourer, *viz.*, to have a maximum amount of ventilation, so that all scourings may be removed as soon as released. The writer had a very dear experience on this particular point, and one which the furnisher of the scourer disputed, claiming that the fault lay with the separator for not removing every ball of dirt. For the removal of this dirt the only way is by attrition, or rubbing. Whether the ordinary scalper, clothed with wire, is sufficient, is a point open for dispute. On wheat with a large open crease, where a greater amount of crease dirt is found, I think it will be necessary to use brushing to get rid of it. This brushing should be very light, else we make too much crease dirt, by scouring off flour. This dirt, by actual work, will not amount to more than 1 or $1\frac{1}{4}$ %, which, though small in quantity, is of such a dirty color as to darken the break flour.

3. Next comes our third point. The gradual reduction of wheat by grooved iron rollers or reduction machines, making a maximum amount of middlings and minimum amount of flour, leaving finished bran. For this the only machine to successfully reduce the wheat is grooved iron rolls, using sharp corrugations, the second break being the coarser corrugated, and each succeeding reduction requires finer corrugations. Much has been written as to which corrugation is the best, the dull, or rounded, or the sharp. The dull corrugation may do very well for the second break, but on the finer breaks the action is too much of a squeezing, making the bran very difficult to clean, and making too much flour. The sharp corrugation having cutting action has a tendency to tear the stuff, instead of crush it, therefore making more middlings, and in better shape for handling further on in the system. The only objection is the cutting up of the bran, but with the proper speed and differential, a good broad bran can be made. Great care should be given the reduction of wheat in order to the proper carrying out of the after reductions and separations. The main object to be sought is the ridding of all the germ on the first and second breaks, to prevent its being cut up on the succeeding breaks. The middlings require to be of proper shape with as little bran adhering to them as possible.

4. The separation of the light chaff from the breaks by aspirators. Aspirators should be placed immediately over the rolls, and as the stock passes to the rolls, it may be relieved of this chaffy material, described in part 1, which may have escaped the scourer. Being of a brittle nature, it reduces by the action of the rolls to a powder finer than the flour, and being mixed with the flour, throws a reddish cast upon it.

5. Grading and purifying the middlings by purifiers. Middlings, such as are required for purification, should be round, even, sharp, and well dusted—as clean as possible, but containing all the germ. Such middlings are obtained by using the correct number of corrugations, and proper differential on the break rolls, carefully adjusted. After making the middlings, the next step is dusting and grading, both of which can be done at one operation. Soft middlings can never pass for good purification. Grading is just as necessary as dusting, in order to obtain good results and utilize the whole purifier sieve to good advantage. In case the purifiers are left to do the grading, too much surface is required, where the work should be purification; besides it is easier to adapt the draft to a uniform grade than if the large and small middlings are all together. To handle the middlings for a 150 barrel mill as spoken of at the beginning of this paper, it is advisable to make two grades of mid-

dlings. If more grades are made, more purifiers are required, which, for various reasons, are not necessary. In case more grades are made, the amount of feed would be light, and the purifiers must be small; and a greater number of small machines requires more power and extra spouting; also, more space is taken up in the mill, and where two do the first purifying successfully, it is useless to use more.

The chop from the break scalpers, except the fifth and sixth breaks, which should be handled separately, is sent to a reel, No. 1, 20 ft. long, clothed with 10 ft. No. 13, 6 ft. No. 10, and 4 ft. No. 8, silk cloth. The flour from 12 is bakers' grade. The product of No. 10 and No. 8, with the cut-off of No. 12, is sent to reel No. 2, clothed with 8 ft. No. 13, 8 ft. No. 14, and 4 ft. of No. 10, for dusting. The tails of these two reels are sent to the grader, clothed with Nos. 10, 6, 4 and 2. The 6, 4 and 2 should be sent to purifier No. 1, clothed with Nos. 8, 7, 6, 4, 2 and 1 silks. The pure middlings drawn off the head, the cut-off and tail go to purifiers No. 3, as will be seen. The tail of the grader, which will be coarse middlings, will go to purifier No. 2, clothed with Nos. 3, 2, 1, 0, 00, 0000. Such middlings as are clean may be drawn off the head; the cut-off is sent to the first sizing roll. The product of this roll goes to a 20 ft. reel, clothed with No. 12 for flour cloth and dusting, 3 ft. No. 6, and 3 ft. 00. The flour from this reel can go with either the patent or bakers' grade, or better still, be rebolted. The 3 ft. No. 6 are pure middlings. The 3 ft. No. 00 is stock for our purifier, No. 3, together with tail and cut-off of No. 1 purifier. This purifier should be clothed with Nos. 7, 6, 5, 3 and 00. The pure middlings are drawn off the head. The cut-off goes to the 2nd sizing roll. The tail of this purifier, with the tail of purifier No. 2, should be sent to the tailings rolls (smooth). The product here ceases purification. The product of the 2nd sizing roll is sent to a 20 ft. reel, clothed with Nos. 12 and 13 for flour, 3 ft. of No. 6, and 3 ft. No. 00. The product of No. 6 is good enough for 2nd middlings without further purification. The 00 goes to the tailing roll. The product of No. 6 may be purified by not reducing so much on the 2nd sizing roll, but the extra outlay in purifiers and machinery would more than counterbalance the benefit derived therefrom, as the middlings will be too soft to treat successfully on a purifier. The attention due purifiers is considerable in order that they may do the best and even work. A slight change in speed requires different draft regulation, else the middlings or dust room stock will show quite a change. Each draft should be regulated to suit the number of cloth over which the middlings pass. The machine itself requires to be very securely braced. All boxes should be as tight as possible, without heating, the spring adjusted to a proper tension, and a frequent examination of all working parts and products.

6. On this part—the sizing large middlings by smooth iron rolls, reducing their size, and taking out the germs and bran speck—very little here remains to be said as part 5 treats successfully with the sizing in connection with the purification of middlings. Here is a point, however, which requires good attention on the part of the miller, *i. e.*, the separation of the germ from the middlings. The 1st sizing rolls should be run with little differential speed, their duty being the flattening of the germ and bran particles which may adhere to some middlings. They require a rather light feed; should be run as wide as possible, and cool, as the heating of these rolls abstracts from the germ an oil, very detrimental to the keeping and color qualities of the flour. This germ should be flattened enough to pass over the tail of the reel; and get away for feed, or be run to a tailings roll; where the flour from this roll is sent to low grade.

7. The reduction of clean middlings now begins the chief manufacture of flour. The other six parts may be divided into wheat cleaning, the making of the middlings, and the purifying of them. The defects of these former operations, if any, may be seen now—when too late. But, suppose they are as near perfection as possible, we now reduce these middlings into flour. For this purpose we have the choice of rolls or a millstone. Of rolls we have three kinds, *viz.*, porcelain, smooth or corrugated; any of which will do good work. For the 1st and 2nd reduction we use porcelain rolls—they are the best adapted for a clear, white granular flour, the only objection to them I know of being their limited capacity, but if sufficient improvement is made in the flour they will become more generally used. Smooth rolls are mostly used in the reduction of middlings to flour not being so apt to cut up any impurities which may possibly have passed the former operations, but simply flatten them out, and they pass over the tail of the reel for feed. The next roll to be considered is the corrugated. About the only argument in its favor over smooth or porcelain is its great capacity; and where close finish is desired

it is necessary to use a corrugated roll. Millstones will successively reduce middlings; but any impurities are immediately reduced to powder to go with the flour. Millstones cannot make as white flour as either kinds of rolls, and besides, they require frequent dressing, which, from a financial standpoint is to be considered; as the wages of a man capable of taking care of and dressing a stone, amounts to considerable in the course of a year.

8. After the reduction, we pass to the last operation in the manufacture of flour: A full and complete bolting or separation after each reduction. As sure as reduction precedes bolting, no system of bolting can make up for the defects of the reduction. Bolting cannot add any elements to the finished flour, but merely classifies and separates the products after each reduction. The numbers of bolting cloth are therefore arranged to carry out the system of reduction; not the reduction made to suit the bolting reels. Quite a number of different numbers of cloth are employed throughout the system. For flour, the numbers run from No. 10 to No. 14, and some times as high as No. 16; of these, numbers 12 and 13 are generally used for baker's grade or patent flour. In handling different products from the various rolls in the order of their classification, it is frequently the case that the superior product requires finer cloth than the inferior products; because the stock is more granular and coarser. Heavy sharp material requires finer cloth than soft light stock to get clean flour. It is the aim in gradual reduction to keep all stock sharp and granular, but from repeated reductions it becomes soft, and consequently inferior in quality. To ensure a good lively flour, not apt to dry out, not too large a range of numbers of cloth should be used. To determine the numbers to clothe patent reels with, we have to consider the purity of the middlings and the number of reductions. But finer cloths than No. 14 should not be used, as patent flour should be sharp and granular, in order to give good satisfaction in bread making. From the foregoing, it will be seen that the manufacture of flour may be divided into two great classes, viz.: The reduction and the separation; one of which is not possible without the other, and both necessary in the manufacture of flour. Bolting may therefore be classed as the index to reduction; showing how to proceed, and when done. And therefore, as bolting is the key to gradual reduction, it requires the closest study.

ANOTHER PATENT SUIT.

Mr. John E. Wilson, the well-known milling expert, of Galt, Ont., who has recently been on a visit to friends in the United States, sends us for publication copy of a decision in a dust collector patent suit delivered by the Hon. H. B. Jackson, in the United States Circuit Court held at Detroit, on Jan. 15th last. Mr. Wilson states that the case will be of interest to Canadians from the fact that some of the same patents will shortly come up in the Canadian Courts. The decision is as follows: "This cause having been brought on, to be heard upon pleadings and proofs, as against the G. T. Smith Middlings Purifier Co., hereinafter mentioned as the Purifier Company, the other of said defendants not having been served with process and their appearance not having entered therein, and due consideration thereof having been had, and it appearing to this Court that the material facts charged in the Bill of complaint in this cause are true, as against the said The Purifier Co., and that the complainant is the lawful owner of the patent mentioned and described in the Bill of Complaint in this cause, and known as patent number 211033, and that the said The Purifier Co., on the first day of May, A. D., 1883, did, together with the said Alva H. Kirk, Wm. J. Fender, Samuel L. Bean, under a certain contract, bearing date on that day, a copy of which is appended to the answer of the defendant, The Purifier Co., in said cause, license the Milwaukee Dust Collector Co., of Milwaukee, Wisconsin, to manufacture and sell dust collectors under certain patents, to wit: Patents number 63325, 125518, 149434, 171973, 207585, 211033, 228023, 235194, 235376, 248984, 239755, 250813, 251120, 251121, 258875, 258876, 258878, 259872, 259873, which said number 211033 covered the said patent so owned by said complainant; and that under such contract said Milwaukee Dust Collector Company, has paid to the defendant, The Purifier Co., and Samuel L. Bean, Alva H. Kirk, and Wm. J. Fender, constituting the firm of Kirk & Fender and Wm. J. Fender, the gross sum of \$43,125.10, of which said amount \$11,058.12 was paid to and received by the defendant, The Purifier Co., for and on account of the license to manufacture and sell under the patent of said complainant so numbered aforesaid, with the other patents above mentioned; and that the further sum of \$16,000 has accumulated to the said combined licensors under such contract and is now involved in a controversy relating thereto; and after hearing Mr. C.

E. Warner, of counsel for complainant, and Gibson & Parkinson, Solicitors, and Rodney Mason, of counsel for defendant, The Purifier Co.:

"It is ordered adjudged, and decreed, and the Court doth order, adjudge, and decree that the said defendant, the Geo. T. Smith Middlings Purifier Co., is liable to the complainant for a proportionate share of the royalties received by the said defendant, or which it may hereafter receive under the said contract. It is further adjudged and decreed, that the said The Purifier Co., do account and pay to the said complainant such proportionate share of the said royalties so received, or which may be hereafter received and which may be properly assignable to the said patent of the said complainant under said contract.

"It is further adjudged and decreed that said cause be referred to Wm. J. Weels, Esq., of the city of Detroit, in said District, as special Commissioner, to take proofs or determine what proportion of such royalties so received or which may be hereafter received is properly assignable to the said patent of the said complainant, under such contract, and that he report to this Court, with his opinion thereon, on or before the first Tuesday of June, A. D. 1887; that such Commissioner in determining such question shall be at liberty to consider the proofs already taken in said cause, so far as the same may be properly assignable thereto, and such other proofs as may be offered before him by either party, and that proofs may be taken by oral testimony or by disposition under the ordinary rules and practice of this Court. It is further adjudged and decreed that all questions concerning any accumulated royalties not actually received by the said defendant as in this order provided, or which may be subject to the determination of any suit relating thereto, or which may hereafter accrue to the said defendant under such contract, be reserved for the further judgment and consideration of this Court.

"This Court doth reserve consideration of the question of costs and further directions until the said Commissioner shall have made his report, when either party is to be at liberty to apply to the Court as occasion shall require."

Correspondents' Opinions.

This department is set apart for the free use of subscribers in asking or answering questions, expressing opinions, or relating bits of shop practice or experience. The editor hopes to see it liberally employed and promises to enlarge it to any necessary extent to accommodate communications.

WHAT ABOUT KEEPING THE MILL CLEAN?

Editor Dominion Mechanical & Milling News:

Dear Sir: I noticed in your January issue a correspondent, "O. S.," referred to the subject of keeping mills clean, and promised that in his next letter he would tell those wishing to know how to do it. I have been looking earnestly for further light from "O. S.," on this all-important subject; but while he finds time to spread himself out very large on other matters in your March issue, he failed to keep his promise about the "dirt." Now, Mr. Editor, although I am a young roller miller, I have some old-fashioned notions about keeping a mill clean. A clean mill may mean one thing to one man, and quite another thing to many others. One miller feels very proud of a clean swept floor, while the cobwebs are floating overhead and making connections with the machines and shafting that may in time prove a drag on the power. Another feels his ambition satisfied by getting all the dirt swept into a corner, leaving it there, until it begins to move down stairs; then he finds an opening between a stand of elevators. This space in time gets full. There is still one space left, between the last pair of rolls and the wall. This space has now to do duty as a passage and hold the sweepings. A third man has strong-minded ideas of what constitutes a clean mill. He will probably varnish up daily the wood cabinets of all rolls and machines on roller flour (which is all right and proper) but just notice the bearings and gears of these machines with the mirror-like wood-work, the oil receptacles are overflowing on the floors, or grease and dust are forming cones on the floor under each roll bearing. You can trace him, when oiling up, all over the mill. The oil costs him nothing. Dirt, made up of oil and flour dust, gathers all through the mill the mill until it beggars description. The Americans have not invented the word yet that would do justice to this "burnished mill." Likely the spouts in such a man's care will be daily choking up and giving trouble, because they are never cleaned until they get full. Fancy a perpendicular spout from a roll or other machine that just gives off a little stream, being allowed to run until it gets perfectly full. Chokes up then. What a push! You would think the mills had taken fire; and I will just right here extend my sincere sympathy to the poor roustabout during that scene.

Now, sir, a thorough clean workman, who has learned his trade under a good skillful, thoughtful, systematic miller, rides none of these hobby horses, but works by rule as it were; having a place for everything and everything put in place; cleans up at the right time and with a system; takes care to instruct those under his charge how to do so; and if perchance he gets an apprentice to instruct in all the ways that are dark in the noble art of flour milling, he will endeavor to turn him out a credit to his own painstaking merit, and a credit to the craft. Allow me to say, in conclusion, that a clean mill means much more than a great many modern millers think of. I take it to extend to every machine and part of a mill—not excepting between the smutters, iron scouring case and the wooden outside, which, in some miller's charge, you will find blocked full of chaff and dust and all the passages blocked, while the really good machine is doing just half less than it is capable of, and this applies with equal force to the wheat brush and bran duster. Hoping some one will discuss this subject who is better able to do so, I remain,

Yours very truly,

METHOD.

A WORD OF ENCOURAGEMENT.

Editor Dominion Mechanical and Milling News.

Dear Sir: I have been a reader of your paper for some years, and watched its progress with interest. Especially during the past year have I looked for its arrival with increasing faith in finding in its pages something of practical usefulness. I have picked up so many worthy pointers from your various contributors, and from your editorial matter, that I feel indebted to you to the extent at least of this "word of encouragement." First I mention "Proctor," whose well written philosophy, always fresh, practical, and incisive, carries with it in every point something worth reflecting on. The Prize Essays have brought out ideas—proved sound by the experience of their writers—the reading of which has saved me more than one experiment. In this is one strong argument in favor of technical newspapers. An attentive perusal of their pages month by month, cannot fail to guard one against going blindly into some error through which the writer of the article has passed. Our every day life is so pregnant with errors of one kind or another, that any experience that can be utilized to lessen their number is a boon.

I am a friend of good common sense practical technical newspapers, a thorough believer in their mission, and hereby tender you a hearty God-speed.

Yours very truly,

MILLER.

FLOUR MILLING IN BRITISH COLUMBIA.

Editor Mechanical and Milling News:

It will no doubt surprise many of your readers to learn that two enterprising Englishmen are building a large flour mill in a section of your country which some of your politicians used to say was a "wilderness of rocks," and could not grow pig feed. After the two English gentlemen referred to had made full investigation of the needs of the country in the flour line, and its ability to grow the wheat to make the flour, one of the partners, Mr. Geo. S. Lawes (who is a thorough, practical miller himself, having milled in Budapest, England, the States and British Columbia), took the rather unusual, but sensible course, of making a tour, not of the mill-towners, but of the mill-owners, to see what was being done by the different systems. After satisfying himself as to what would best suit him out of all the different systems he had seen, he went, not to our great milling centres, but to the little town of Galt, Ontario, Canada, where he stayed until they prepared plans which they could recommend to him to suit the wheat grown in his section of the country. When these were prepared he asked them to tender on the plans they had made, which tender he at once accepted, and then started on his return journey home. Your correspondent learns that the Galt company have hitherto made it a rule not to make plans until they received the contract, and he hopes that the success attending their first departure may not lead them to adopt it as a part of their system.

Yours truly,

CHICAGO.

The C. P. R. Company have issued a notice to the effect, that in order to utilize the storage capacity of the elevators, and to afford more general accommodation, no grain will hereafter be received for storage in special bins for the purpose of preserving the identity of particular lots, unless the full capacity of bins required for this purpose be paid for by the consignee. The company reserves the right to unload into store for storage bins with other grain of the grade, all grain received at Port Arthur, Fort William, Toronto and Montreal, unless ordered to special bins that have been previously secured and paid for.



Mr. D. McLeod has taken a half interest in the Aurora planing mill.

J. W. Perry, lumber merchant, Cole's Island, N. B., has as signed.

Mr. Ed. Bradley has been repairing his saw-mill at Kilgorie, Ont., and has put in a new engine.

Messrs. Hamilton & McGowan, of Laurel, Ont., have moved their saw-mill to lot 26, con. 5, Amaranth.

Mauder's sash, door and shingle factory at Little Britain, Ont., is being overhauled and improved.

Mr. Wm. Hall, late of Stanton, has leased the Shelburne planing mills, and has commenced operations.

Messrs. John and Thomas Cross, of Chesley, Ont., have purchased Gardner's saw mill at Dobbington, Ont.

An American vessel recently carried a cargo of 1,500,000 feet of lumber to Melbourne, Australia, from British Columbia.

Already quite a large number of logs have been hauled to the banks of the Belleisle Creek and Pascolac streams, N. B.

Lewis and Hiram Vanest have purchased from W. Estis one half interest in the saw and feed crushing mills at Parkham, Ont.

The large lumber firms of R. A. & J. Stewart and Guy, Bevan & Co., have failed as the result of the suspension of the Maritime Bank.

The lumber cut in the Ottawa valley, it is estimated, will be reduced twenty-five per cent., owing to the almost unparalleled depth of snow.

A correspondent writing from Arden, Ont., says: The cut of saw logs and timber for the Rathbun Co. will not exceed eighty thousand pieces this season.

The Parry Sound Lumber Company have commenced fitting up their saw mill so as to be ready to commence work immediately upon the opening up of spring.

The extensive business in lumber and woodenware heretofore carried on by E. R. Eddy at Hull, will be hereafter carried on by the E. R. Eddy Manufacturing Company.

A carload of British Columbia lumber was received by Mr. E. J. Barclay, at Brandon, Man., recently. This is the beginning of what promises to be an important interprovincial trade.

Manitola papers state that a good deal of timber has been got out in that province, and most of the lumber firms expect to complete their operations in the woods by the end of March.

The Allenford, Ont., saw mill, which was purchased three months ago by Messrs. Asmus & Meiner, was destroyed by fire on March 13th. The insurance covers only about one fourth of the loss.

The shingle manufacturers of western Michigan met in Grand Rapids recently to perfect the organization of an association, the object of which is mutual benefit and the promotion of the shingle interest.

The failure of the Maritime Bank at St. John, N. B., has been a heavy blow to hundreds of lumbermen who had just returned from the winter's operations in the woods, and been paid their wages in Maritime Bank bills.

Last year prominent New Brunswick lumber firms paid stumpage revenue as follows: R. A. & J. Stewart, \$9,467; J. H. Snowball, \$14,071; D. & J. Ritchie & Co., \$7,740; John McLaggan, \$5,666, and S. F. Burns, \$5,780.

Mr. J. Dovey has arranged to at once build at Lindsay a large shingle mill. The site selected is on the east side of the river, where the Thurston mill stood some years ago. The new mill is expected to be in operation by the end of May.

Mr. James, of Pickering, Ont., is opening a large lumber yard in Toronto. He has twenty-five men at work near Gambridge, Ont., getting out cedar for fence posts, paving blocks, etc., for shipment via the Midland railway to this city.

The St. Croix (N. B.) *Courier* says the authorities of the United States have sent men to the upper waters of the St. Croix and Saint John rivers to take account of marks and the quantity of logs got out on American soil with a view of stopping the alleged smuggling of Canadian lumber into Maine ports.

A prominent lumber merchant of Ottawa says the Canadian duty on unsawn lumber has almost entirely stopped its export across the line by Americans, and has so much improved the prospects of Canadian lumbermen as to make their competition with Americans probable in the near future.

The Winnipeg *Free Press* says, Woods Bros., lumber merchants, recently brought into the city a car of British Columbia cedar—the first lumber from the Pacific Province to reach the city. It is becoming very popular for inlaying and other fine cabinet work, and a large demand is expected to spring up for this class of wood.

While the bog-wood of Iceland proves the former existence of extensive growths of large trees, the present forests consist chiefly of dwarfed larches, and trees fifteen or twenty feet in height are said to be rare. The decrease of woodland is not a result of climatic change or volcanic outbursts, but has been brought about by the inconsiderate destruction of trees by the inhabitants themselves.

The news comes from Ottawa that the extensive timber limits, mill's and river improvements owned by Mr. Peter McLaren on the Mississippi River, in the Counties of Lanark, Frontenac and Addington, have been purchased by Mr. W. C. Edwards, M. P. for Russel, in conjunction with some other Ottawa capitalists. The whole property, limits, mills, lumber, etc., has been formally transferred to Messrs. Edwards & Co. The area of the timber limits is about 300 square miles, and the price paid is about \$900,000.

W. J. Miller, who has for some time had charge of the Minor Lumber company's yards at Alpena, is stopping in Windsor. It is alleged that he issued paper on the firm to the extent of \$10,000.

Bay City (Mich.) *Lumberman's Gazette*: There has never been a winter since the first saw mill was erected in this country when there were so many mills in operation, and so much lumber and timber manufactured as during the winter of 1886-7 just closing. This shows unusual activity in the trades which demand timber and lumber for their prosecution, and expected activity in railroad rolling stock building.

Winnipeg *Free Press*: It is estimated that during the past winter 2,000 men have been employed along the line of the C. P. R., from here to Port Arthur, in taking out ties, wood and saw logs. In the western portions around Whitenouth there was very little snow before February, but further to the east there was plenty of it. The winter was an excellent one for working in the woods, being singularly free from storms.

Ottawa lumber men report that it is almost impossible to do anything in the woods, owing to the great depth of snow, which in some places averages over twelve feet. It is said there will be a great scarcity of logs for next season's sawing, in consequence of which the industry must suffer severe loss. Prices are expected to advance, and the export business will likely be curtailed to a considerable extent. Heavy floods are feared in the spring.

A man named Grover, of Chicago, has invented a steam traction log hauler, and has it in operation in Michigan. It has four drive wheels, furnished with teeth, upon which steam can be played which keeps them hot, so that they will set into an ice road without tearing it up. It has a 150 horse power motion, and is intended to draw on an ordinary logging road from 8 to 12 sleds, each loaded with 2,000 or 3,000 feet of logs, the speed being four miles an hour.

The Dominion government is establishing agricultural stations in the northwest provinces, and a special feature of these stations will be the attention paid to forestry. As large a variety as possible of fruit and forest trees will be tested with a view to future forest planting in the prairie sections. For the more rapid distribution of desirable varieties of trees, a nursery will be started for their propagation, and the distribution of such as may be found adapted to the climate.

A Springfield correspondent of the St. John, N. B., *Star* writes: Charles Perkins, of Norton, has given employment to quite a large number of men. He has now under his employ some 22 men. During the winter he has got out some 150 cords of pulp, which is now at Norton station ready to ship to the contractors in the United States. He is now getting out lath wood, and expects to ship some 100,000. He says the winter in our country has been very favorable for his business.

The Peterborough *Examiner* says that few people living in that neighborhood have any idea that there is within six miles of the town of Peterborough pine timber growing of the value there shown. A sale was completed a short time since by Mr. Donald Campbell, of Colborne, to Messrs. Thomas P. Pearce, of the city of Belleville, and Joseph P. Pearce, of Norwood, of the pine only upon one hundred acres of land in the 12th con. of Otonabee, near the Otonabee river, the price paid therefor being ten thousand dollars. The Messrs. Pearce are now busily engaged in taking out this pine as square timber for the Montreal market.

The report comes from Montreal that Messrs. Alex. Stewart, of St. John, N. B., and John Stewart, of London, Eng., trading under the firm name of Stewart Bros., lumbermen, have entered action in the Superior Court against the Bank of British North America, to recover \$500,000 alleged damages they have sustained by the bank refusing to honor their cheque for \$1,250, which a clerk of the firm presented at the counter of the bank here when there was a much larger balance to their credit. Messrs. Stewart Bros. are also suing the proprietor of the Montreal *Star* for \$100,000 for an alleged libel that appeared in that journal lately in connection with the failure of the Maritime Bank.

The Pontiac *Advance* says:—"The saw log makers in the employ of Messrs. Gilmour & Co., have ceased cutting. Some of the jobbers were put to cut cedars; others turned in to help those who were behind with their hauling, to get the logs out. The peculiarly stormy character of the winter has been greatly against lumbering operations. Roads had to be shoveled to every tree before the horses could get to the logs. The drawing of lumber supplies is also far behind. The slush on the lakes has been so deep that loads of supplies are found laid up at almost every stopping place. We hear of one firm that has 9000 bushels of oats to get in and very poor prospects of getting them drawn. No such weather as we have experienced this winter has drawn a parallel for the past thirty years."

Holcaycon *Independent*. The immense territory to the north of this village is still in a great measure clothed with the primeval forest, for settlement is so slight and scattered that no material change has been made in the original condition of the country. It is true that a large proportion of the pine has been cut and removed, but the forest has been but little changed in its character and thousands of square miles are yet untouched by the axe of the settler. Throughout this immense territory the best, most thrifty, and largest timber is that of the black birch, which grows everywhere in rich profusion. Up to the present time but little of this timber has been used for other purposes than fuel, but it would seem that its valuable qualities are at length beginning to be recognized. There is probably some exaggeration in the price mentioned, for black birch is a wood of too universal a growth throughout the Canadian forest to permit of so rapid a rise in price, but a general increase in its value may be safely calculated upon in the future. It is a beautiful furniture wood and becomes of exceeding hardness with age. Its present value is probably not more than \$14 to \$15 per thousand, but as soon as the price advances to \$18 or \$20 there will be an opening for an enormous trade. The supply is unlimited, but as the logs cannot be floated in water, they have to be transported on the railway, and at a less price than that mentioned they can not be profitably handled. Those settlers in the back country who possess black birch within hauling distance of a railway would do well to hold them, for their value is certain to become greater.

The annual report for 1886 of the Commissioner of Crown Lands of Ontario, tells us there were sold during the year, 55,641 acres of Crown Lands. The sales amounted to \$50,169.65. The collections amounted to \$55,452.15. The sales of Clergy Lands during the year aggregated a total of 1,788 acres. The sales amounted to \$2,087.17. The collections amounted to \$8,129.89. There were sold during the year 157 1/4 acres of the Common School Lands. The sales aggregate \$685. The collections were \$17,997.25. There were sold during the year 784 acres of these lands. The sales equalled \$765.50. The collections on account of these lands amounted to \$3,235.76. The accruals for timber dues, bonus, ground rents, for the year 1886 amount to \$742,029.64, and the total collections under same heads amount to \$715,804.51. The total collected from all sources during the year was \$820,895.68. The total expenditure of the Department for the year 1886, amounts to \$259,564.51. The total collections during the year from woods and forests is \$715,804.61, which includes \$147,471.00 payment of bonuses on sale of timber berths of 22nd October, 1885, which became due in 1886. This sum being deducted leaves \$568,333.61 as revenue proper from timber dues, ground rents, etc.

Calais, (N. B.) *Times*: The lumbermen don't count much this year on "six weeks' hauling in March." The teams are coming out of the woods, as the snow is too deep, and all the logs hauled this month will be only those that are yarded. A reduced stock of logs was left in the river at the close of last season, and all the firms started in last fall with the intention of cutting more than the average quantity. The severe winter and bad hauling have prevented, and the available stock of logs for next year's sawing will fall short of what was expected by at least ten millions. Up to a fortnight ago the work in the woods progressed much as usual, but since then the snowfall has been so heavy as to almost entirely suspend operations. Around the head waters of the St. Croix the snow will average four feet in depth and is covered by a thick crust, which makes the woods almost impassable for teams, and necessitates an immense amount of shovelling. From other rivers from 10 to 15 feet of snow is reported. A team which arrived here on Tuesday from Pleasant Lake was obliged to have a road broken before it for twelve miles through the woods. On this river yarding was done early; but operators on the St. John failed to take time by the forelock and are badly tied up in consequence. A good driving season is anticipated. The ice on the streams is thinner than usual, owing to the protection from frost afforded by the snow. This promises an early break-up, and it is believed that the logs will come into the booms without much trouble. Of the five manufacturing firms below Baring, four of them expect about the same quantity of logs; F. H. Todd & Sons, Murchie & Sons, C. F. Todd and E. C. Gates will have 8,000,000 feet each. H. F. Eaton & Sons will have from 12 to 14 millions.

In the Ontario legislature a couple of weeks ago Mr. Wood moved an order of the House for a return of the number of standard logs cut by local mill owners by authority of the Crown Lands Department from the timber of limit holders during the year 1886, such return to give the location of mills, names of mill owners, with the amount each paid by way of dues to the Department, and to the owners of limits, with a copy of the Departmental Regulations affecting the same. In speaking to his motion Mr. Wood said he had no complaint to make of the manner in which the order in council was carried out by the Commissioner, but he complained of the injustice done by the regulations to the local mill owner and the settler as now carried out. The local mill owner pays (1) 15 cents per standard to the Government, (2) 15 cents per standard to the limit holder; (3) to this add the expense of cutting and drawing, and it will be seen that the first expense to the mill owner is not less than from \$3 to \$5 per thousand feet. Add to this the sawing and it will be seen that in order for the local mill owner to make a "reasonable profit the settler must pay a high price for his lumber. Then again the local mill owner is prohibited from shipping outside of his locality any lumber. Now those who are acquainted with the cutting of lumber, know that in ordinary timber there is a certain quantity of what would be called first class, which is not extensively used in the newer sections. If the millowner could ship this outside, when seasoned, he would find a market for it at a good price and be reimbursed for a part of his outlay made in cash. But by the present regulations this is not allowed to be done, and hence the best lumber does not have, by a long way, its fair value. Again, there are hundreds of acres of timber killed by fires, valueless for the lumberman, that could be used by the settlers, but can only be got by first getting the consent of the Department, and then paying \$1.50 per 1,000 feet to the Department and limit holder, thus virtually throwing this away. Mr. Wood said the remedy he thought desirable was that the local mill owner should pay the 15c. to the Government. The timber was the property of the Dominion, but that he should not be compelled to pay the limit holder. The claim of the limit holder was based on the sum paid the Department for bonus and ground rent. The Government have this sum. Let them settle with the limit holder, and not add to the inconveniences that the new settlers have to undergo by this additional burden. He said he felt satisfied that a system more equitable in the interest of the settler and local mill owner could be framed, and the information asked was desirable to that end.

At a recent meeting of the Canada Rubber Company it was decided to increase the capital stock from \$1,000,000 to \$2,000,000 to extend the business and develop other branches of the trade not included up to the present in the goods manufactured by them. The extra stock has been taken up, and it is stated that if the company wished for another million they would readily find more than enough subscribers to invest.

A petition has been circulated in Winnipeg asking the Local Government to appoint a boiler inspector for the Province, whose duty it would be to periodically inspect all boilers, and see that no engineers are employed who have not the Dominion certificate of competency. It is said that there are many engineers employed in the city who have not these qualifications.

—(Millers' and Manufacturers' Exchange)—

31 KING ST. WEST,
TORONTO ❖ **CANADA**

— THE —

Millers' and Manufacturers' Exchange

Which has just been established at the above address, solicits correspondence from
Parties wanting to Sell, Purchase or Rent

FLOURING MILLS,
SAW MILLS,
PLANING MILLS,
FOUNDRIES,
MACHINE SHOPS,

Or any other kind of Manufacturing Properties.

If we fail to get you what you want, we
charge you nothing.

In constant communication with mill men and manu-
facturers throughout Canada and United States.

: : : : : **ADVERTISING FACILITIES, THE VERY BEST.** : : : : :

— ADDRESS —

Millers' and Manufacturers' Exchange,
31 KING ST. WEST, TORONTO, CANADA.



PUBLISHED MONTHLY,

BY

CHAS. H. MORTIMER,

Office, 31 King Street West,

TORONTO, - - ONTARIO.

ADVERTISEMENTS.

Advertising rates sent promptly upon application. Orders for advertising should reach this office not later than the 25th day of the month immediately preceding our date of issue.

Changes in advertisements will be made whenever desired, without cost to the advertiser, but to insure proper compliance with the instructions of the advertiser, requests for change should reach this office as early as the 22nd day of the month.

Special advertisements under the headings "For Sale," "For Rent," &c., if not exceeding five lines, 50 cents for one insertion, or 75 cents for two insertions. If over five lines, 10 cents per line extra. Cash must accompany all orders for advertisements of this class.

SUBSCRIPTIONS.

The DOMINION MECHANICAL AND MILLING NEWS will be mailed to subscribers in the Dominion, or in the United States, post free, for \$1.00 per annum, 50 cents for six months. Subscriptions must be paid strictly in advance.

The price of subscription may be remitted by currency, in registered letter, or by postal order payable to C. H. Mortimer. Money sent in unregistered letters must be at sender's risk. The sending of the paper may be considered as evidence that we received the money.

Subscriptions from all foreign countries, embraced in the General Postal Union will be accepted at \$1.25 per annum.

Subscribers may have the mailing address changed as often as desirable. When ordering change, always give the old as well as the new address.

Failure upon the part of subscribers to receive their papers promptly and regularly should be notified at once to this office.

EDITOR'S ANNOUNCEMENTS.

Correspondence is invited upon all topics pertinent to the mechanical and milling industries.

This paper is in no manner identified with, or controlled by, any manufacturing or mill furnishing business, nor will a bestial or refusal of patronage influence its course in any degree. It seeks recognition and support from all who are interested in the material advancement of the Dominion as a manufacturing country, and will aim to faithfully record this advancement month by month.

Mill-owners and manufacturers requiring help, and millers and mechanics in search of situations, may make their wants known through these columns, free of charge.

THE *Milling World* of Buffalo comes to hand with a handsome new heading and clothed in a bright yellow cover.

WE have received, too late for insertion this month, an interesting description of the Fort Qu'Appelle mills, from the pen of a well-known northwest writer, Mr. Geo. B. Elliott, of Regina. It will appear in our May number.

THE attention of our readers is directed to the advertisement in another column of Mr. J. C. Shepherd, of Guysboro', Ont., manufacturer of barrel-making machinery, etc. Parties requiring anything in his line will find him and his goods reliable.

VESSEL owners are jubilant over the prospects of a greatly increased carrying trade during the coming season, due to the advance in freight rates by many of the principal railroad companies. Floating property has largely appreciated in value during the last few weeks.

THE latest testimonial to the value of the MECHANICAL AND MILLING NEWS as an advertising medium for manufacturers comes from the J. B. Dutton Manufacturing Co., of Detroit, Mich., who write: "We are much pleased with your journal, and think probably will increase space in near future."

THE attention of mill men and others is called to the half-page announcement of the Canadian Rubber Co., in this issue. This is an old and reliable concern, and those of our readers who require anything in the line of rubber goods cannot do better than correspond with Mr. J. H. Walker, Manager of the Toronto Branch, cor. Front and Yonge Sts.

THE Welland canal will be opened on Monday, May 2nd, for vessels drawing 12 feet, and on and after May 16th a draft of 14 feet will be available throughout. Grain men are greatly dissatisfied with the late date fixed for the opening. They think the canal could have been got free from ice by the middle of April.

AMERICAN competition has driven British mills to the wall. One after another British mill has had to close down, the industry is in a deplorable condition, and it is

felt that some steps must be taken to save it from utter annihilation. The British millers have accordingly initiated an agitation in favour of an import duty on foreign flour. One-sided free trade works the same all the world over.

THE Beckett Engine Co., of Hamilton, Ont., occupy a place for the first time in our advertising columns this month. Millers and manufacturers who watch our machinery column from month to month will notice the variety of machines manufactured by this Company, and will find it an advantage to correspond with them.

IT is reported, on what authority we know not, that a gigantic combination of capitalists has been formed in New York which aims at controlling all the iron deposits of Canada. Seeing that of late years the tendency has been to do everything on a large scale, there is probably some foundation for the report.

ATTENTION is called to the full-page announcement of the Millers' and Manufacturers' Exchange which has just been established in this city for the purpose of bringing together buyers and sellers, landlords and tenants of all kinds of mill and manufacturing properties. Parties wanting to buy, sell or rent this class of property, will do well to correspond with the Millers' and Manufacturers' Exchange.

SECRETARY Fairchild, of the United States Treasury, has decided that it is illegal for a Canadian saw mill, factory, or railroad company, to send broken machinery into Michigan to be repaired and sent back to Canada, without paying duty. Some of our American exchanges are complaining that this decision is in favor of Canada and hurtful to the United States, inasmuch as it will create business for Canadian repair shops.

THE closing of the doors of the Maritime Bank seems to have been the beginning of a series of large failures in that Province, which have for the time being at least, demoralized business. The latest sensation was caused by the assignment of Mr. Geo. McLeod, of St. John, a prominent mill man and lumber dealer, whose liabilities are estimated at a quarter to half a million dollars.

IN England and America the importance of technical education is beginning to be felt and understood. The Industrial Association of New York, which has been devoting considerable attention to this subject, declares that industrial training must be an integral part of general education. If Canada is to hold her own in the industrial arts she must provide means of instruction in technical as well as other branches of knowledge.

THE project of utilizing the enormous water power at Niagara Falls for manufacturing purposes, has advanced so far that a company has been formed, with several well-known gentlemen of this city at its head, to build a tunnel from a point above the falls through the town to the whirlpool, for the purpose of supplying mills, factories, etc., on the Canadian side of the river with power from the falls. A bill is before the Ontario Legislature asking for a charter for the undertaking. Beyond a doubt the immense source of power at Niagara which has heretofore served only to excite the wonder and admiration of the traveler, will ere long be made to play a practical part in the economy of modern civilization.

THE advertisement of Mr. W. H. Banfield, machinist and die maker, which appears for the first time in the MECHANICAL AND MILLING NEWS this month, speaks for itself, but a word or two concerning the growth of the industry of which Mr. Banfield is the head, may interest some. In a little shop 14 feet square Mr. Banfield began business in this city less than five years ago, with little or no machinery and one mechanic to assist him. His venture proved so successful that he now occupies 3,000 square feet of area at 80 Wellington St. West. His manufactory is fitted up with the most improved machinery, driven by a 40 h. p. Wheelock engine, and employment is given to about 20 skilled mechanics. Mr. Banfield manufactures dies for every purpose for which they are used, and makes a specialty of manufacturing and repairing every description of fine machinery.

PROF. W. L. Goodwin, of Queen's University, Kingston, in the *Canada Educational Monthly*, makes a strong plea for the establishment of a school of practical science for eastern Ontario. He says: Canada, with her vast agricultural, mineral, and other resources, surely needs to make more adequate provision for technical education than is now available. The wealth of a coun-

try can only be increased in one way, and that is by increasing the rate of production. This can be done by increasing the number of productive labourers, and especially by increasing their efficiency. Wealth must be raised from soil, rock, and sea; or it must come from the laborious hands of the skilled artificer. It is useless to look to any policy of government for material prosperity, until we have attended to this point, viz.: to see to it that the producers are as efficient as possible. To this end, we require technical schools.

JUDGING from the statements presented at the annual meeting of the Millers' and Manufacturers' Insurance Company held a fortnight ago, the institution has met with remarkable success. So carefully have its affairs been managed that 40 per cent. of the rates charged has sufficed to cover all losses and expenses. Its rates, to begin with, were 25 per cent. lower than those previously charged by other companies, notwithstanding which it has been able to pay back to its members a ten per cent. dividend on the amounts they paid in. After putting aside a re-insurance reserve of 50 per cent. as required by Government, writing off half of preliminary expense account, providing for all losses and a dividend to policy-holders, the Company show a balance of \$15,801 to profit and loss. With such an institution as this there would seem to be no reason why millers and manufacturers should continue to pay extraordinary high rates for insurance.

A CASE which came to our knowledge the other day goes to show that it is economy to employ one really first-class mechanic at high wages as compared with two or three "cheap hands," with an imperfect knowledge of their business. A certain Canadian firm of tool makers lately imported a highly-skilled American mechanic to supervise the construction of their machines. After being a short time in the position the new superintendent, addressing the head of the firm, said: "The boys in the shop here are no doubt doing the best they know how, but I can get you a man for \$4 a day who will turn out the work on that planer so exact that you will be able to dispense with the services of a couple of fitters to whom you are paying \$2 a day. I can also get a man to run that lathe who will effect a similar saving." The head of the firm replied that if it was possible to make such a saving the sooner the change took place the better. The superintendent was as good as his word, and with the two skilled workmen which he procured the firm are saving a considerable amount in wages, and the superior work put upon their machines is having the effect of largely increasing their sales.

ANNUAL MEETING OF THE MANUFACTURER'S ASSOCIATION.

THE Canadian Manufacturer's Association held its 12th annual meeting in this city on Wednesday, March 9th. There was a fair attendance at both afternoon and evening sessions.

President Thos. Cowan in his address, referred to the prosperous condition of the Association, the enlargement of the boundaries of trade which had followed the completion of the C. P. R., the satisfactory result of the elections in their bearing upon the tariff, the beneficial effects of the Colonial Exhibition, and the appointment of commercial agents to London, the West Indies, and Australia.

The following officers were elected for the ensuing year: Mr. Thomas Cowan, Galt, President; Mr. Samuel May, 2nd Vice-President; Mr. George Booth, Treasurer; Mr. Frederic Nicholls, Secretary, re-elected, and Mr. W. H. Storey, Acton, 1st Vice-President, 2772 Mr. Goldie resigned.

The following resolutions were adopted:

"Resolved, that the Dominion Government be requested to favorably consider the advisability of awarding the usual Dominion Exhibition grant of \$10,000 to the Industrial Exhibition Association for this the Queen's jubilee year. The Industrial Exhibition Association having the finest buildings and grounds in Canada for the required purpose, and Toronto being a great commercial, industrial, and railway centre, the Manufacturers' Association is of the opinion that the interests of the exhibitors generally would be materially advanced, and a really representative display of manufactures and natural products from all parts of Canada secured, were the Government to adopt the suggestion of this Association."

"Resolved, that this Association is opposed to reciprocity in manufactures with the United States, and that the executive committee be requested to draft a memorial to the Government setting forth the views of the members of the Association on this question."

Interesting and instructive papers were read on "Some of the Factors which lead to Success in a Manufacturing Industry," by W. H. Storey, Acton; "Trade with the Topics," John Taylor, Toronto; "The Silver Currency Question," W. K. McNaught, Toronto; "Organization," Frederic Nicholls, Toronto; "Machine Shop Practice," John Bertram, Dundas. The latter will be found *in extenso* in another part of the paper.

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A. ALLEN, President.
 F. SCHOLLES, Man. Director.
 J. O. GRAVEL, Sec.-Treas.

CANADIAN RUBBER COMPANY

CAPITAL
 \$2,000,000



— MANUFACTURERS OF —

RUBBER SHOES, FELT BOOTS, Rubber :- Belting, :- Packing,

ENGINE, HYDRANT, SUCTION AND FIRE HOSE

Valves of Superior Quality and Make,

Car Springs, Wringer Rolls, Tubing, Gaskets,

Corrugated Matting, Mats, Carriage Cloths, Rubber Horse Clothing,

Fire Department Supplies, Flexible Branch Pipes,

Salvage Covers, Screw Couplings and Nozzles, all designs,

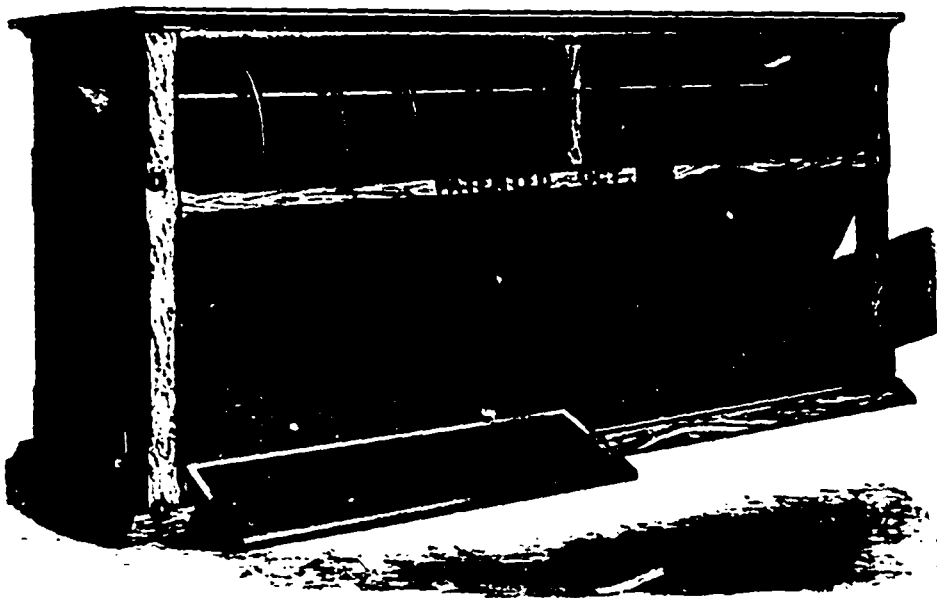
Rubber Blankets, Stopples, etc., etc.

Head Office: 333 & 335 St Paul St., MONTREAL.

CANADIAN RUBBER COMPANY,

Branch: COR. YONGE AND FRONT STS., TORONTO.

J. H. WALKER, Manager.



THE PLEWES PATENT BOLT

Millers desirous of improving their entire bolting system, should enquire into the merits of this Bolt. It is

Simple in Construction,

Easy Running,

Occupies but Little Space,

DOES ITS WORK IN THE MOST PERFECT MANNER,

HAS IMMENSE CAPACITY,

And is sold for less money in proportion to the quality of the work it performs, than any other Bolt in the market.

Bolts built to replace Centrifugals and Hexagon Reels: small cost—for which I invite correspondence. Send for descriptive circular to

ISAAC W. W. PLEWES

ESPLANADE (between Bay and Lorne streets) TORONTO, ONT.

To Mill Owners and Manufacturers.

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PHENIX BELT OIL,

THE ONLY PERFECT BELT DRESSING.

TO BE HAD ONLY OF

F. E. DIXON & CO.,

— MANUFACTURERS OF —

LEATHER BELTING STARRIVET

Send for Price List and Circulars and our latest Pamphlet on Belting.

70 King St. E., Toronto.

BUCKEYE AUTOMATIC ENGINE.



The Simplest, Most Durable and Most Saving in Fuel of all the Automatic Engines Made.

HAS NO SUPERIOR AND FEW EQUALS.

— ALSO ALL SIZES OF —

Sellers and Every Description of Mill Machinery and Furnishings.

R. WHITELAW,

Oxford Foundry - Woodstock, Ont.

A CANADIAN'S PROPHECY.

CANADA THE FUTURE GRANARY OF THE WORLD AND KINGSTON THE MINNEAPOLIS OF THE DOMINION.

MR. John McMillan, a former resident of Kingston, Ont., has addressed the following interesting letter to a business firm in that city, from which it will be seen that he takes a sanguine view of our future as a grain producing and flour manufacturing country:

"It is a matter of fact that wheat has been grown in our great north-west for several years, extending from the United States boundary line for 750 miles to the north and over 1,000 miles to the west, and of a quality superior to any other known in the world, then that settles the certainty of Prince Arthur's future. In any manufacture, quality is the first consideration to build up and populate a city, a territory, or dominion; the next is the cost or cheapness at which you can lay down your flour or other manufacture at the prime markets of the world. Taking the quality into consideration and with a great inland water way of over 2,000 miles to the ocean, then in Kingston you have the prime factors for success for production and manufacture. Wherever the best wheat can be grown there is the healthiest abode for men. Never mind the cold. Men can always provide against that. There the air is pure and bracing, free from contagious or epidemic diseases, and the life of man has a longer duration. Allison, in his history of Europe, reports that empire comes from the north. If his adage is true—and he was too keen an observer to make an assertion unless based upon fact—then the future of our great north-west is assured. When the people of the over-crowded old world realize the fact that this Canada of ours is destined to be the wheat granary of the world, and the home of healthy, burly men and blooming women, then the nations will pour in their superabundant population in greater numbers than ever landed on the shores of the United States of America. 'Revenous a nos moutons,' what has Kingston got to do with all this any more than Montreal or any other point in Canada so far as the manufacture of this great produce is concerned? Much every way. If it is acknowledged that Canada possesses the wheat granary of the world, and of the greatest excellence, and of the greatest yield to the acre, her yearly production must increase; it cannot possibly be otherwise until her last acre is occupied and cropped. Then where is the best point to manufacture this enormous production, these millions and millions and millions of bushels of wheat, which will annually be carried down our great lakes to feed the peoples of the less provided nations of the earth? Has Kingston an advantage of one per cent. or two per cent. or more against any other point in the Dominion? In either case her destiny is assured, but it is a matter of time, depending on the enterprise of her citizens. I assert that she has an advantage, a convenience, or point, beyond any other city in Canada. Wheat can be carried to her shores in bulk, its cheapest and easiest form. There it has got to be transferred, to be manufactured or forwarded as its owners may elect, with judicious arrangements to take advantage of our great canals. I think it possible to bring a propeller with three barges, laden with 250,000 bushels of wheat, from Port Arthur to Kingston for a cost not to exceed \$5,000, or say two cents per bushel! Is it possible to get up a joint stock company to undertake such a transport? Is it possible to get up a joint stock company to put this grain into elevators and to build a flour mill with large capacity to manufacture this grain into flour? Who has faith and confidence that the supply can always be got to keep the propeller and barges running continuously during the entire shipping season? Who have confidence that they can transport this flour to Europe, and in such quantity, and with such a low rate of freight cost, that they can defy competition in the British markets? You say this is all very well in open navigation. Well, let it be so. Shut down your mill in the winter, and there is no doubt cheap water transport will force cheap railway freight. In any event you need not manufacture during winter unless you get railroad freights to suit, and that will bring them. The Canadian government has done its duty well in building that magnificent C. P. railway, and it is for the people of Canada to take advantage of the opening up of our magnificent north-west heritage. Given the fact that we have the finest wheat-growing country in the world, and that we have the cheapest and easiest transport from the country to Britain, where we have a sure market at the highest prices for the best article, a larger market than we can possibly fill for the next century, where is the possibility of loss or failure? Now, can India compete with us? Can Australia compete with us, with a transportation of treble the distance? As for Russia and the United States the quality of our flour is advantage enough to give us this great market

of our fatherland against all comers. Moreover there is a possibility, some day a probability, that when Britain finds that she can get all the grain she needs, and more than she needs, from her own loyal colonies, she will think it time to reward their loyalty by giving them a favored national tariff as against other nations, who place a heavy tariff on her manufactures in exchange for their produce. In conclusion I think the people of the Dominion, and more particularly the citizens of Kingston, might fairly ask the Dominion government, in the interest of our great north-west, to build two elevators of a capacity of one million bushels each at Kingston and at Prince Arthur, as the most suitable points to receive and deliver grain, and to form part of the system of canals and inland navigation under the control of the government, and for the general benefit of the grain production of the Dominion. I had a dream, which surely will not be all a dream, that Kingston will become the second city of the Dominion, that our wise and paternal government will build a large half-moon breakwater running out into the bay to protect her shipping; that her bay from Portsmouth to the barracks will be lined with flour mills and elevators; that from this industry will arise another great industry, the feeding and fattening of cattle with the offal and waste of wheat, the killing, preparation and canning of the beasts to feed the nations of Europe. I hope that I have opened your eyes to the possibility of Kingston becoming the future Minneapolis of Canada."

OAT MEAL MILLING IN SCOTLAND.

The method of milling oats that has prevailed from time immemorial in Scotland, the "Land o' Cakes," is described by a Scotchman as follows: The kiln for drying the oats is generally eighteen feet square inside; the kiln floor is laid with cast-iron plates pierced with numerous small holes for the passage of the hot air; these are laid on iron joists from sixteen to twenty feet above the furnace, and from the floor to the apex of the roof is generally from fourteen to eighteen feet. The roof is surmounted by a large cowl ventilator, locally known as an "old wife," to carry off the moisture from the oats; nothing but the best anthracite coal is burned in the furnace, as oats are very susceptible in flavor. When the fire is kindled the smoke is always allowed to go off before the oats are put on; the heat of the plates is brought up to about 220 degrees, and the oats are put on from 5 to 2 inches deep and nicely leveled. The heat is kept steadily up, and the oats are carefully turned over with a wooden shovel as required to prevent them from browning, and when thoroughly dried, which they should be in from four to five hours, they are shoveled off into a bin and afterwards drawn into sacks to cool. Great care should be taken in the drying and the heat kept steadily up, as unless the oats are properly dried it is impossible to make good, sweet meal. The way to test if they are dry enough is when they break freely between the fingers; if they feel tough they are not dry enough. The oats are generally allowed to stand twenty-four hours to cool before being milled; when perfectly cool they work much more freely than when warm; they are first run over a series of sieves to separate any small seeds from them and any small oats, which are shelled by themselves. The shelling stones are generally Kaimhill or peak stones, from four feet six to five feet in diameter, and run at a speed of from 130 to 140 revolutions per minute, according to size. They are set on a three-toed rhind, and the face is dressed perfectly level, not furrowed in any way, and are set so as just to touch the ends of the corn, which passes from the stones into a brush machine to take out the dust, and from the brush machine to a pair of blast fans to clean the groats from the loose husks; the groats are then elevated to a second pair of shelling stones where the same operation is repeated, and it is very important to have the corn thoroughly shelled before grinding. From the second shelling the groats are run on to the grinding stone, which is of French buhr, built specially for the purpose, and is opener and keener than a flour stone. A ten-three or twelve-three dress is generally put in these stones; lands and furrows about equal breadth. These stones are generally four feet six inches in diameter and are run about 130 revolutions per minute; they are likewise set on the three-toed fast rhind. Balance irons do not answer for either shelling or oatmeal stones, as they are inclined to wobble, and the greatest steadiness is required. These stones are cracked deep and sharp, as the object is to make the meal as evenly as possible with as little fine dust as possible. From the grinding stones the meal is run on to the sifter, which is a case containing three sieves made of punched sheet iron or tin. The top sieve is a little wider in the holes than the middle one, and the lower one a little narrower; the sifter is hung on iron rods and

receives a rotary motion from a crank on a vertical shaft, which is driven about 120 revolutions per minute. The returns from the sieves are thrown into a pair of small fans, which separate the particles of meal from any small pieces of the husk of the corn which may be amongst them, and are again elevated to the eye of the grinding stone to be reground. The meal falls from the sifter to the floor, where it is thoroughly mixed by the shovel before being put in sacks. Such a mill will make about fifty sacks of oatmeal a day if good heavy oats are used. In many mills there is only one pair of shelling stones, but the oats are shelled twice by being run into a spare hopper and from that on the same stones a second time.

STRICKLAND'S NEW MILLS AT LAKEFIELD.

Readers of the MECHANICAL AND MILLING NEWS have doubtless not forgotten the fire which destroyed Messrs. R. & G. Strickland's new roller mills at Lakefield, Ont., a few months ago. The mills had only been in operation a short time after having been remodelled to the roller process, when they were totally destroyed. The owners at once set to work, however, to have them re-built, and the work has just been completed and the mills started in operation again within a period of four months by the Geo. T. Smith Co. of Stratford, who also built the mill which was destroyed. The following particulars regarding the new mill are taken from the Lakefield Chronicle: "The mill which has been built on the old site is four storeys in height, with a foundation, of 40x56 feet, and an elevator erected in front over the driveway and in conjunction with the main building. This elevator contains eight large bins with capacity for storing 12,000 bushels of grain. The first floor or basement contains the power connections, with a main line of shafting running across the entire floor. From the wheels on this shafting, belts pass through the floor to the second story, driving the rolls which are upon that floor. In the basement are also placed separators, smut and brush combined, and brush polishing machines, used for cleaning and preparing the wheat. On this floor are also the boots of 28 sets of elevators running from there to the top floor, also an iron continuous conveyor for carrying grain from the store house, or the receiving hopper to a large bucket elevator which has a capacity for elevating 800 bushels per hour. The second or main floor contains six double sets standard noiseless belt drive rolls, with a capacity of 75 barrels per day, hand flour packers, 1 power packer, and 1 chop stone which can be run with or independent of the roller system. Also on this floor are the weigh scales and receiving hopper for the grain as it is brought in by customers. On the next floor above are 2 centrifugal flour dressers, bran and shorts dusters, 3 purifiers, 1 aspirator, bin for receiving flour, bran, shorts, and chop; and 3 large wheat bins, 8 scalping reels, 5 centrifugal reels, 1 scalper, and an inclosed dustroom in connection with the purifiers. The top floor contains the heads of the 28 sets of elevators, which are mounted by a fine line of shafting with numerous wheels for carrying the elevator belts. These wheels and elevator tops are capped by recently improved adjustable heads, which can be readily adjusted or removed in case of accident or necessity. Here also is an ingenious contrivance for distributing the grain as it is elevated into whatever bin of the elevator it is desired. It consists of a revolving spout, governed from and regulated by a dial on the main floor, where, at will, it can be placed over the mouth of any spout leading to the bins."

ANOTHER PROCESS FOR MAKING STEEL.

Reports from Louisville, Kentucky, announce the tests of a new process for hardening and tempering steel. A drill made of new steel penetrated in forty minutes a steel safe plate warranted to resist any burglar drill for twelve hours. A penknife tempered by the process cut the stem of a steel key readily and with the same blade the inventor shaved the hairs on his arm. A number of other interesting and successful tests were made. The inventor is a young blacksmith who has been experimenting with the process for years and who claims that this tempering is done without expense and skilled labor. He has also a new process for converting iron into steel at small expense. He claims to be able to make steel plates so elastic and hard as to turn a ball fired from the heaviest gun ever constructed. The invention is a secret, not having been patented, and a company has been incorporated to push it, with Charles Godshaw as general manager. It is intended to call the attention of the Navy Department to the discovery and ask for facilities to test the steel made by the process.

Messrs. Booth & Woodruff have put their new shingle and saw mill into operation at Sydenham, Ont.

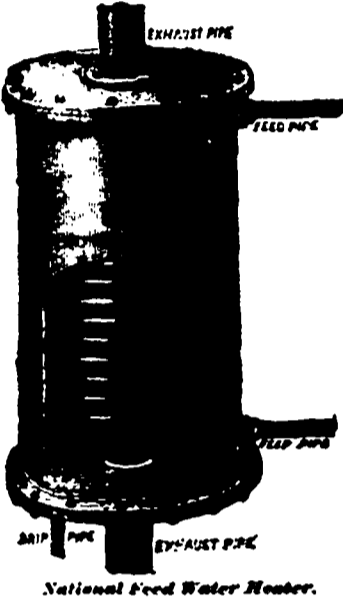
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TORONTO ENGINEERING SUPPLY CO.

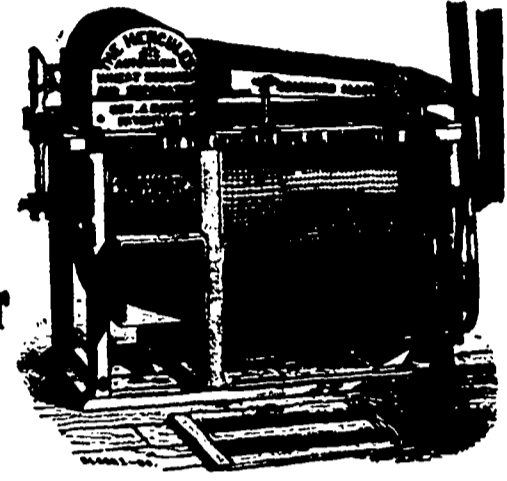


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Wheat and Scourer and Separator



AWARDED GOLD MEDAL AT WORLD'S FAIR, NEW ORLEANS.
 In use in Canada, United States and other foreign countries.
 The only Automatic Wheat Scourer ever invented.
 Requires no attention but oiling, and collects its own dust. Of very light draught.
 Warranted to improve the color and value of flour in any mill. Sent on trial.
 Circulars, Testimonials and Samples of Work sent on application.
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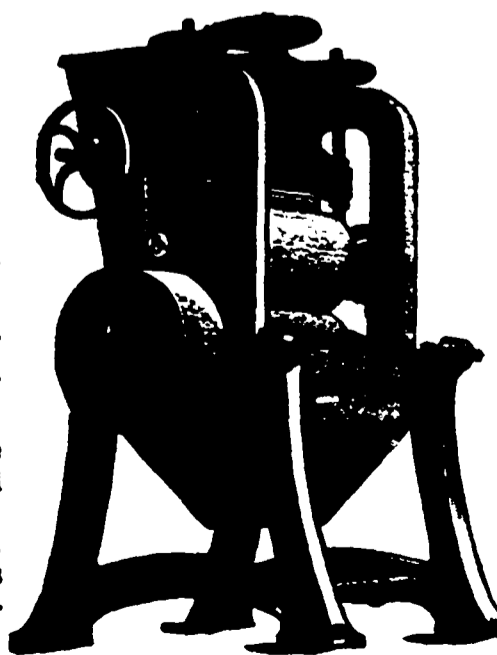
CORRUGATED ROLLER MILLS,

Smooth Rolls, Roller Disc Mills, and Stone Rolls for Middlings.

THOROLD, ONT.
 ESTIMATES GIVEN FOR BUILDING MILLS, OR RE-MODELING THEM TO THE ROLLER SYSTEM.

MY LATEST IMPROVED ROLLER MILL

Is the best Roll made in the Dominion. It is made in two parts: In the lower part of the frame is set the stationary roll, and in the upper part is the adjusting one. The top roll is kept true to the lower one by means of set screws at the four points at the end of the frame, thus making it an easy matter to keep the rolls true to their work. The adjustment for setting the roll to its grinding point is the threaded rod with hand wheel attached. This rod is attached to a slide bearing, which allows the adjustment of the roll to the grinding point. This roll commends itself to all practical millers as the best one in the market. Concerning my first and second break machine, there is nothing better in the market. It splits the wheat and prepares it properly for succeeding breaks.



MY STONE ROLL FOR PURIFIED MIDDINGS

Will produce better results than any iron roll can. It has more than double the capacity of iron rolls, and will produce a granular flour that cannot be equalled by any other process of grinding. This stone roll will also handle the fluffy material made in full roller mills, preparing it for bolting or purifying as no other machine can. Isaac Warcup, Esq., of Oakville, Ont., whose judgment and experience in milling is second to none, says of this Stone Roll that he likes it well, and that he can make a larger yield out of the material he is using it on than could possibly be made on any other roll, and the flour will be more granular. Nine of these stone rolls are used in the Welland Mills, Thorold, where it is said the best results in milling are obtained. **BUCKWHEAT GRINDING.**—Send for information about the new Buckwheat Grinder. It has great capacity and will grind damp buckwheat when a millstone will not, and the flour made will be superior to any other process. For further information, apply to

JAMES JONES, THOROLD, ONT.

PROCTOR'S POINTS.

THE elections are over! Both parties have won great moral victories. It looks pretty much, however, as if the policy of Protection had been sustained, and a very large majority of the Canadian people (for both parties really supported Protection) were of the opinion that Canadians ought to "trade and get rich" among themselves, and have confidence enough in each other's ability to produce integrity in quality and method of production, and the substantial character of the goods placed upon the market, to purchase their requirements at home and of Canadian manufacture.

Consistency is a virtue—even in politicians—in national as well as moral obligations. A good many people that talked "Protection to home industries" and "National Policy" very loudly and very persistently at the last election (1882), have never ceased in a business way since—then to decry Canadian production, and laud up foreign manufactures as being just right; and for all their requirements in machinery, mill supplies, and an almost numberless line of goods, have sent their orders to a foreign market. These people who preach National Policy so loudly, and practice it so poorly, say: "We can buy as good or better goods for less money abroad, and of course it pays us to import." Does it? Just follow that argument to its logical conclusion, along the line of universal practice, and see where it will land you.

"Better goods." Well, perhaps so. They ought to be better, in finish. "Practice makes perfect." With large production for an extensive market, accuracy of construction ought to be obtained, but really, after all, hasn't prejudice a good deal to do with this boasted superiority of foreign over Canadian manufactured productions? "Proctor" thinks so. Will some of your readers name a single important line of manufacture in which Canadian goods are not almost, if not altogether, equal both in quality and finish to the best American or English goods. Our neighbors, the Yankees, haven't got very much the start of us, except by having been longer at it, in any of the following lines, to wit: milling machinery, iron tools, wood-working machinery, agricultural implements, cotton and woolen manufactures, as well as a host of minor but not unimportant industries; and it is not necessary for Canadians in any of these lines to go out of their own country for good goods.

"Less money." That may be true, in part. And yet, one of three causes only can combine to make goods cost less money. (1) Cheaper raw material; (2) cheaper labor; (3) very much larger production. There are some other causes that might have an effect upon the cost of production, such as capital, skilled labor, and improved machinery, but capital is plenty, skilled labor fairly so, and machinery unexcelled; therefore it is only in the three points mentioned above that any advantage can be gained by the foreign manufacturer over the Canadian one. Let us look at them one at a time and see how much of an advantage there is against us. (1) "Raw material"—in iron, wood, wool, and grain no other nation has any very great advantage over us. (2) "Cheaper labor"—our mechanics do not receive, on an average, as high wages as American mechanics. (3) "Larger production"—well, our competitors have the advantage of us in this to some extent, but not enough to make a very large difference in first cost; therefore I hold that the statement is incorrect.

"It pays to import"—does it? From what point of view does it pay? "Proctor" holds that neither from a standpoint of "better goods" or "cheaper goods" does it pay; therefore, the conclusion seems to be certain that it is only because people want to buy abroad that there is any advantage over buying Canadian made goods in the home market. I am quite free to admit that there are a good many special lines of machinery and manufactured goods, in which the trade is so light that the expense of pattern making and special fitting up to produce them, would hardly be repaid by the sales in our limited market, and on these lines importation might be the most advisable for all concerned, but I do most earnestly insist, however, that it is about time our Canadian people quit puffing foreign goods and began to appreciate their own productions. It would materially assist and encourage many of our manufacturers to more earnest and persistent efforts for the production of better goods, if the customers who can patronize them would do so in a cheerful way, and benefit themselves, their neighbors and their country, by assisting to devel-

op, in some measure, industries which the voice of the people, at the polls, have declared to be desirable for the well-being of the community and the nation.

PROCTOR.

TRADE NOTES

Mr. R. M. Easton, of Merrickville, has decided to adopt the roller system in his mill, and has bought his rolls, &c., from Messrs. Wm. & J. G. Greey.

Alexander Wood, of Smith's Falls, is building a new centrifugal mill, 50 barrels capacity. The contract has been placed with the Geo. T. Smith Company.

Wm. & J. G. Greey have sold Mr. C. Bonfield, of Eganville, one of their new style separators for removing oats, chaffs, tares, &c., from wheat.

The McDougall mill at Maxville, Ont., is being changed to the full roller and centrifugal system with a capacity of 75 barrels, by the Geo. T. Smith Company, Stratford, Ont.

Mr. J. C. Willson, Picton, Ont., lately purchased from Messrs. Wm. & J. G. Greey, of this city, a dust collector, centrifugal and 9x18 double roll.

Mr. John Ratz, Elmira, Ont., is making some changes in his mill, adding to his bolting capacity the Geo. T. Smith centrifugal reel.

Mr. John Ball, of Baltimore, Ont., is increasing the capacity of his mill. The necessary machinery is being supplied by the Geo. T. Smith Co., of Stratford, Ont.

Thos. Stevens & Co., Chatham, Ont., have recently been increasing their machinery plant by the addition of a 9x24 standard roller mill, from the Geo. T. Smith Company's shops.

Messrs. J. & R. Kidd, of Tilbury Centre, have bought one of Messrs. Wm. & J. G. Greey's No. 1 smutters and separators, with their new improved scouring cases made of woven steel wire, one of the latest improvements in this class of cleaning machinery.

The Holland Milling Company has been organized at Holland, in the Northwest, with the following gentlemen comprising the directorate: Dr. W. A. Baldwin, President; Messrs. T. H. Pentland, J. Moir, R. H. Peil, Ed. Mawhinney, and Jas. Stewart.

Messrs. Freur Bros., of Acton, have lately put in a new centrifugal reel built by Wm. & J. G. Greey, of Toronto. They write that they are highly pleased with the machine, and it is doing splendid work.

Wheeler Bros., of Cataract, Ont., have recently added to their bolting capacity a Geo. T. Smith centrifugal reel. Their opinion of it will be found in the advertisement of the Geo. T. Smith Company.

Messrs. Wm. & J. G. Greey have booked an order from Mr. Timothy Gray, of Don P. O., for the rolls, purifiers, grain cleaners, centrifugals, &c., to convert his mill into a 50 bbl. roller mill. Mr. Israel Courtney will do the millwright work.

Rutherford & Co., millers, Stonewall, Man., have dissolved. J. M. Toombs retires from the firm, and J. H. Rutherford will take in another partner, and continue the business under the same style as formerly.

Mr. Wm. Mack, M. P. I., of Cornwall, Ont., has ordered from Wm. & J. G. Greey, of Toronto, one of their new combined cockle machines and separators. This machine is built on a new principle, which the manufacturers claim overcomes the difficulties formerly existing in combined machines of this class.

A representative of the MECHANICAL AND MILLING NEWS, who dropped into the Detroit Saw Works a couple of weeks ago, found the establishment crowded with orders and working to its fullest capacity. The firm manufacture a good article, as a large number of Canadians who have used their saws can testify.

Mr. Isaac Gould, of Uxbridge, is moving his oatmeal, split pea and barley mill into a new building for the purpose of increasing the capacity. He has also bought of Messrs. Wm. & J. G. Greey a complete outfit of oatmeal machinery to double his capacity in that line.

Messrs. Wm. & J. G. Greey have received an order from Mather & Sancier, of St. E. Point, for a 35 bbl. roller mill, the machinery to consist of 8 sets of 6x15 rolls, No. 1 purifier, No. 1 centrifugal, No. 1 brush machinette, flour packer, &c.; also all iron-work, belting, cloths, &c., to complete the job. Work is to be commenced immediately and pushed to completion as rapidly as possible.

The Rapid City roller mill is rapidly nearing completion, and will form an important addition to the milling industries of the Northwest. It is being fitted up with a new system of bolting. The plans and machinery were supplied by Messrs. Goldie & McCulloch, of Galt, the bolts used are the Wilson patent universal flour dresser. This is the second mill built by Messrs. Goldie & McCulloch for the same company in the Northwest.

Latest Canadian Patents.

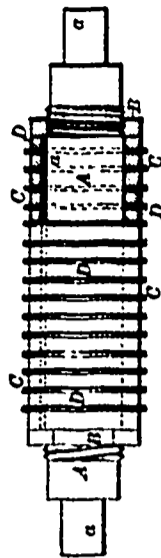
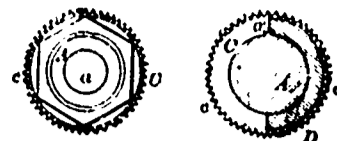
Feed-Roll for Gang-Saws.

358,550. William Harvey, Arnprior, Ont., Canada, assignor of one-half to Hugh Frederick McLachlin, same place. Filed Jan. 18, 1886. Serial No. 188,820. Dated March 1, 1887.

1. A feed-roll for gang-saws having circular rows of teeth, such rows being so spaced as to be in line with the gang-saws, whereby channels are formed in the lumber in the lines of cutting and a smooth finish to each cut is insured.

2. A feed-roll for gang-saws carrying annular toothed rings spaced on the roll so as to be in line with the gang-saws and gage-collars.

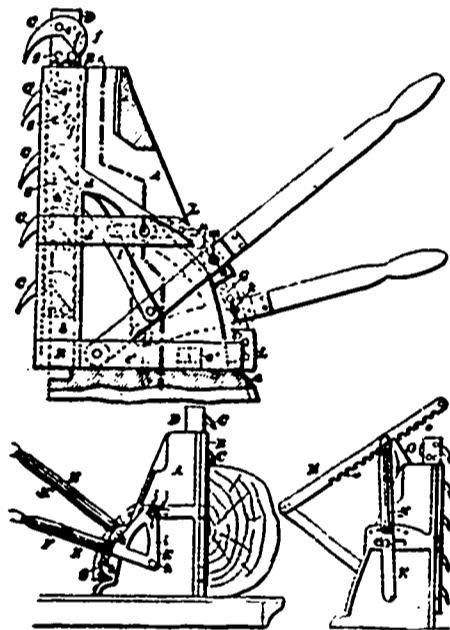
3. The combination, with the roll threaded and feathered substantially as described, of the toothed rings C C, spaced on the



roll so as to be in line with the gang saws, gage-collars D D, and nuts B B.

Saw Mill Dog

358,159. Thomas Manley, Prince Albert, Northwest Territory, Canada. Filed April 8, 1886. Serial No. 108,174. Dated Feb. 22, 1887.

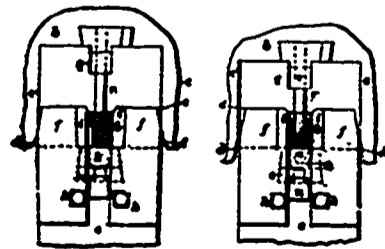


Claim 1. In a saw-mill dog, the combination, with the case having an apertured rack, the horizontally-movable frame carrying an apertured rack, and the teeth carrying bars arranged between uprights of the same frame, of the lever pivoted to said frame and connected to a link connected directly to the teeth-carrying bars, and the additional lever pivoted to said case and connected to said frame, said levers having retaining detents engaging with the racks of said case and rack, said lever carrying an upwardly-extending arm engaging with a stud which is secured to horizontal arms of the frame and projects outward through an elongated slot formed in the side of the case.

2. The combination, with a case, of the adjustable frame R, carrying adjustable tooth-carrying bars D, and manipulating-levers E and H, the lever E, being provided with an arm, N, while the lever H is provided with an arm M, formed with teeth e, a catch-tooth, O, being formed on the case.

Mechanism For Forging Hammers.

359,113. Henry H. Warren, Cote St Paul, Montreal, Quebec, Canada. Filed Nov. 15, 1886. Serial No. 218,929. Dated March 8, 1887.



Claim 1. The combination of the swage g and punch r with swinging jaws f, having swages i, (actuated by) and with a spring, o, and inclines e, inclines d' of the horns c' and with lower die, d.

2. The combination, in a hammer-forging mechanism, substantially as described, of the swinging jaws f, having swages i, spring o, and head n, whereby the swages i are enabled to automatically bring the bar b' to the proper relative position required.

3. The combination, in a hammer-forging mechanism, of a reciprocating punch arranged to punch the eye of the hammer with a pair of swages arranged to open further apart as the punch first enters the material, and it is extended by the said punch, as described and shown, and said swages being, furthermore, arranged to close and swage the sides of the material after the punch has entered the material and as the further process of punching is being carried on.

4. The combination of the swage g, having incline e, punch r, swages i, and lower supporting die or anvil.

PATENTS PROCURED in Canada, the United States, and all foreign countries... ROYALD.C. RIDD... ESTABLISHED 1857 23 KING ST. EAST TORONTO

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For Sale—The Clifford Roller mill, Clitheroe, Ont. Capacity 100 barrels. Driven by steam. Complete in every respect and doing good trade.

COX & CO., STOCK BROKERS. Members Toronto Stock Exchange. Have the only Independent Direct Wire going continuous New York Stock Quotations and which are received QUICKER THAN BY ANY OTHER LINE.

McKEE & MARWICK, Engine Builders — AND — STEAM PUMPS, Petrolia, Ont.

STANDARD CHOPPING MILLS Now furnished with Shaking Screen over hopper to take out small stones, &c. Using Best Burrstones. Capacity 6 to 40 bus. pr. hour.



Waterous Engine Works Co., Bradford and St. Paul, Minn., U.S.

SCIENCE & ACCOUNTS. PRICE, \$100. Address CONNOR O'DEA, TORONTO, ONT.

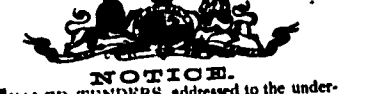
DIAMOND MANAGED ANTI-FRICTION BEAL. Being the only model successfully containing... PAPER BUSHINGS. THEY CANNOT POSSIBLY INJURE A JOURNAL. THOS. RATCLIFFE, AGENT.

JUDICIAL SALE — OF — Mill and Farm Property Near Aurora.

PURSUANT to a Judgment of the Queen's Bench Division of the High Court of Justice in the action of Benington v. Clark, there will be sold with the approbation of the Master in Ordinary, by Messrs. Oliver Coste & Co., Auctioneers, at "The Mart," King Street East, Toronto, at the hour of 12 o'clock, noon, of TUESDAY, the 6th DAY OF APRIL, 1887, the following lands and premises: Parcel 1. The east half of lot No. 16, in the 2nd concession of the Township of Whitchurch...

MILLERS — AND — MANUFACTURERS' INSURANCE COMPANY.

STOCK AND MUTUAL OBJECTS. To prevent by all possible means the occurrence of unavoidable fires. To obviate heavy losses from the fires that are unavoidable by the nature of the work done in mills and factories. To reduce the cost of the insurance to the lowest point consistent with the safe conduct of the business. METHODS. All risks will be inspected by a competent officer of the company...

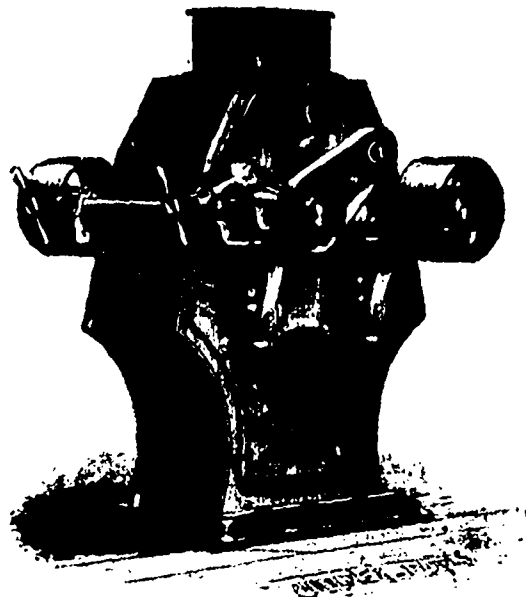
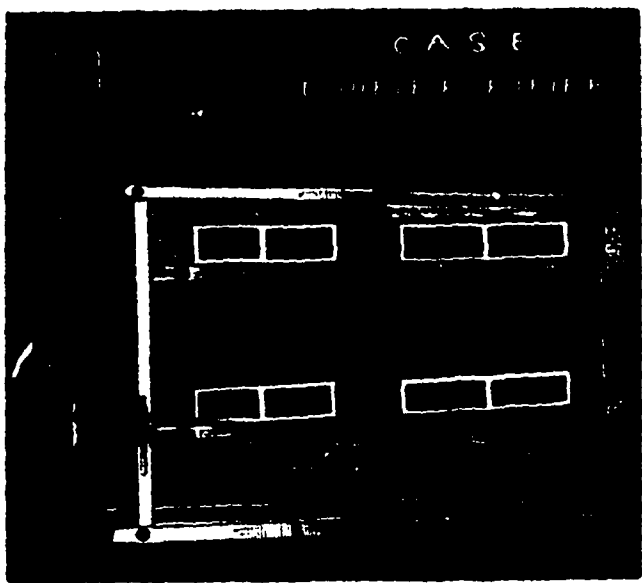


NOTICE. SEALED TENDERS, addressed to the undersigned, and endorsed "Tender for Indian Supplies," will be received at this office up to noon of SATURDAY, 30th April, 1887, for the delivery of Indian Supplies during the fiscal year ending 30th June, 1888...

Parties may tender for each description of goods (or for any portion of each description of goods) separately or for all the goods called for in the Schedules, and the Department reserves to itself the right to reject the whole or any part of a tender. Each tender must be accompanied by an accepted Cheque on a Canadian Bank in favor of the Superintendent General of Indian Affairs for at least five per cent. of the amount of the tender, which will be forfeited if the party tendering declines to enter into a contract based on such tender when called upon to do so...

Department of Indian Affairs, Ottawa, Feb. 1887. L. VANKOUGHNET, Deputy of Superintendent-General of Indian Affairs.

CASE SYSTEM GRADUAL REDUCTION MILLING



INGLIS & HUNTER,

No. 6 Strachan Avenue,

TORONTO.

SOLE LICENSED MANUFACTURERS FOR CANADA OF

CASE'S CELEBRATED ROLLS AND MILL MACHINERY.

-SPECIALTIES-

*Corliss, Westinghouse and Marine Engines, Stationary and Marine Boilers,
Wheat Cleaning and Flour Dressing Machines for Flour and Grist Mills.*

Plans and Specifications for fitting up new and changing over old Flour Mills on the Most
ADVANCED SYSTEM, furnished at reasonable cost.

All Descriptions of Gearing, Shafting and Pulleys, Brass and Iron Castings.
Write for Prices and Catalogues. Correspondence solicited. Prompt attention to orders.

GOLDIE AND McCULLOCH, GALT, ONTARIO.

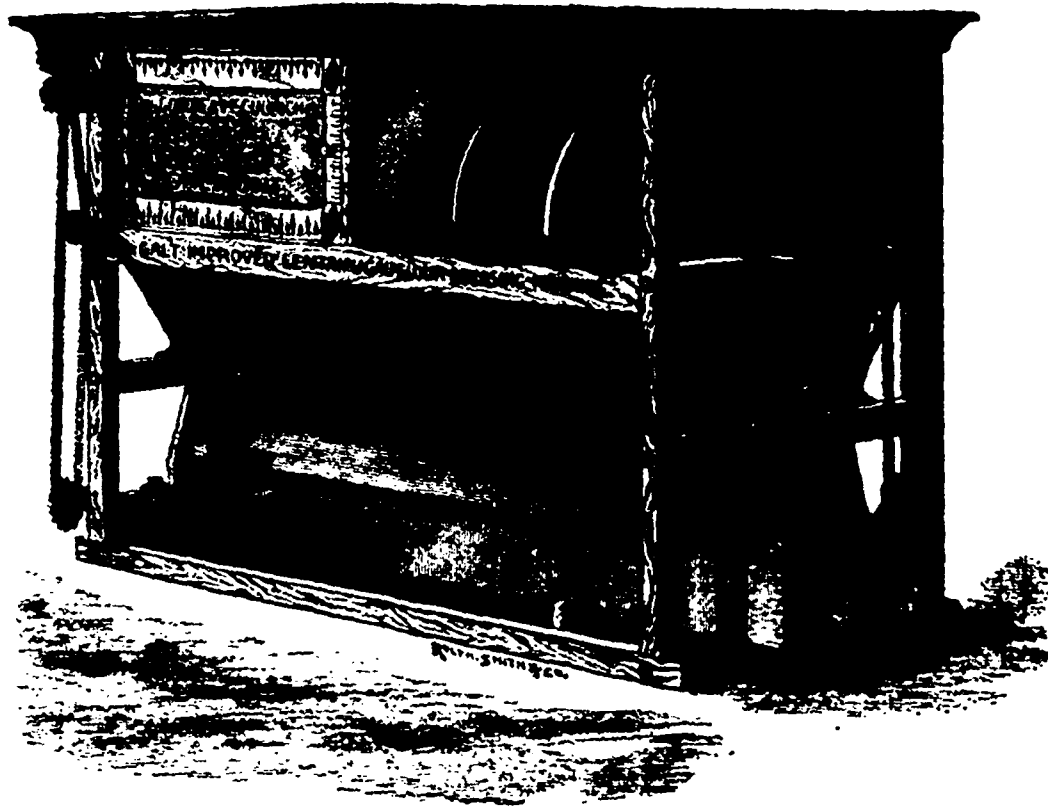
TO PARTIES WHO CONTEMPLATE

BUILDING OR RE-BUILDING FLOUR MILLS,

On the full or combined roller system, we are prepared to furnish estimates or specifications, using a full line of our machines—**NONE IMPORTED**—manufactured under Canadian Patents controlled by us.

ALL WHO INTEND TO MAKE CHANGES WILL DO WELL TO SEE US BEFORE DOING SO.

THE WHEELOCK AUTOMATIC ENGINE,
WOOD WORKING MACHINERY,
SHINGLE AND BARREL MACHINERY.
WOOL MACHINERY.
Special Price Lists furnished on application.



FIRE AND BURGLAR PROOF.
SAFES
VAULT DOORS, & CO.
First Prize Awarded, Toronto, 1882, 1884.
CORRESPONDENCE SOLICITED AND ORDERS PROMPTLY ATTENDED TO.

CENTRIFUGAL FLOUR DRESSING MACHINE

Our Centrifugal, as shown above, contains important improvements covered by Canadian Patents which we control. Parties purchasing elsewhere, will do well to look out for infringements. All machines are made under our own immediate supervision, of the best materials and workmanship. Satisfaction guaranteed.

GOLDIE & McCULLOCH.

R. M. WANZER & Co.

SEWING MACHINE MANUFACTURERS

Hamilton, - - - Canada.

MORE LIGHT.

LAMP DEPARTMENT.

THE WANZER LAMP

PATENTED AT HOME AND ABROAD,
1886

50 CANDLE-POWER.

No Chimney!
No Smoke!
No Odor!
Positively Non-Explosive!
OIL FOUNT ALWAYS BEING KEPT COOL.

Every

Lamp

Guaranteed.

Ask for the

Wanzer Lamp.



Every

Machine

Guaranteed.

Ask for the

Wanzer Machine.

Positively Non-Explosive!
No Heat around the Oil Well!
Does not vitiate the air by imperfect combustion, and is very useful in the sick room.



Oh! Why did we use Explosive Lamps?



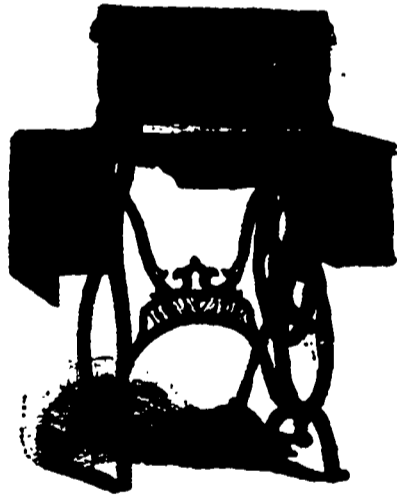
What a number of steps I can save by this handy appliance.

No. 1 TABLE LAMP
Produces a fine, clear, 50 candle-power light. Consuming only Half Pint of Oil during 6 Hours.

OUR Lamp is all we claim for it, being positively non-explosive, the oil being kept continually cool, consuming only half a pint of ordinary coal oil during six hours burning; using only an inch wick, and producing a fine clear 50 Candle Power light. No chimneys are required, but ordinary globes or shades may be adjusted to it. No smoke or offensive odor. Water can be heated in a few minutes. Tea or Coffee made, and Oysters Cooked, &c., without obstructing the light. Reflectors of entirely new designs, for both out-door and in-door use are furnished at low figures. Made in all styles—Table, Hanging, Library, attach to Chandeliers, Gas Fixtures, etc.

Agents Wanted where territory has not already been taken.

ASK FOR THE WANZER.



A large want filled: Light and heat utilized.

THE WANZER "C."

GOLD MEDAL

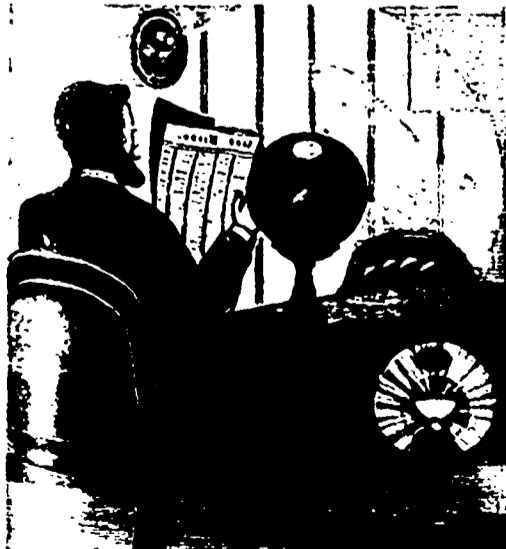
—FOR—

FAMILY AND LIGHT MANUFACTURING

The Principal Points in This Machine are:

The large and roomy space under arm. The adjustability of its parts—the principal ones being of hardened steel. A Steel Feed on both sides of the needle. A Triangular Needle Bar, with Oil Cup. Nickel-plated Balance Wheel, with Loose Pulley. Positive Take-up. Extremely light running with little or no noise.

This is a new Reflector especially designed for the Wanzer Lamp.



Oh! For Old People and Weak Eyes. My heads in the shade and the paper in the light.

The Cheapest, Best and most Durable Lamp ever invented.



The Wanzer Lamp is just the thing for Morning Toilet.

After using the Wanzer Lamps you would not be without them.



What a comfort to Read and Work by!

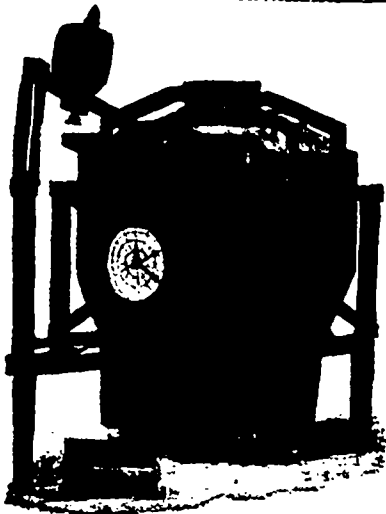
Agents wanted for territory not already taken up. For particulars, apply to

R. M. WANZER & CO.

HAMILTON, CANADA

DUTTON'S
IMPROVED AUTOMATIC
Grain, Flour and Feed Scale.

Simple in Construction, Has Large Capacity, Requires Small Space, Weighs and Registers Absolutely Correct.



Machines are sent on 30 days trial, and guaranteed to work satisfactorily. Write for Circular and Prices.
J. B. DUTTON MFG. CO., - 22 & 24 Woodward Ave., DETROIT, MICH.

DICK, RIDOUT & CO.,
- MANUFACTURERS OF -

**JUTE AND LINEN BAGS,
FACTORY COTTON BAGS,**

In all sizes. Samples sent on application.

TORONTO BAG WORKS

FACTORY---Esplanade Street.
Office and Warehouse: 11 to 13 FRONT ST. E., TORONTO.



ROBIN & SADLER

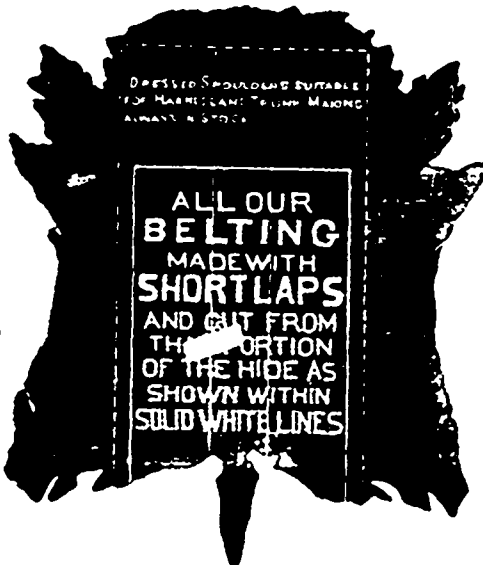
Manufacturers of

Leather

Belting

2518, 2520 and 2522
Notre Dame St.

MONTREAL.



ROBIN & SADLER

Manufacturers of

Leather

Belting

129 Bay St.

TORONTO.

== All Sizes Kept in Stock, and Orders Filled Promptly. ==

DEALERS IN

**COTTON AND RUBBER BELTING,
LACE LEATHER, BELT HOOKS AND MILL SUPPLIES.**



BOLTING CLOTHS



IMPORTANT TO MILLERS.—Agent for the Dominion for the Celebrated *Bodmer Het Anker* Bolting Cloths, furnished by the yard, or made up to order. Full stock of all numbers on hand.

R. WHITELAW, Woodstock, Ont.

W. STAHLSCHMIDT & Co.

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CHURCH and LODGE

FURNITURE

PRESTON, ONTARIO

SEND FOR CATALOGUES.

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To advertise in first-class trade journals.



BUTTERFIELD & CO.,
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MANUFACTURERS OF TAPS AND DIES

For every use. Send for new Illustrated Catalogue.

**FREED'S
BOILER CLEANING COMPOUND**

WILL REMOVE SCALE FROM BOILERS WITHOUT INJURY TO THE IRON.

It effects a Great Saving of Fuel, and will not foam.

J B FREED, Proprietor

68 MARY STREET, - HAMILTON, ONT.

W. H. BANFIELD,
TORONTO - ONTARIO

Machinist and Die Maker

— MANUFACTURER OF —

Foot and Power Presses,

Combination and Cutting Dies,

Tinsmiths' Tools,

Canners' Supplies,

KNITTING MACHINES,

CAP SCREWS: PLANER BOLTS: PLANO SCREWS

Cutting and Stamping to order for the trade.

Railway, Hotel Checks and Dog Tags.

SPECIAL ATTENTION PAID TO REPAIRING FACTORY MACHINERY

80 Wellington Street West.

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10 KING ST. EAST
WOOD
ENGRAVER
TORONTO

LONDON MACHINE TOOL CO.,

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MANUFACTURERS OF

Machinist--and--Brass--Finishers'--Tools.

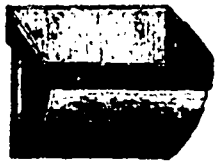
L. A. MORRISON, with A. R. WILLIAMS, General Agents, TORONTO, ONT.

Established 1849. **THE DETROIT SAW WORKS**
Incorporated 1884
—MANUFACTURERS OF—



CIRCULAR, GANG, MULAY, DRAG AND CROSS-CUT SAWS,
Moulding and Planing Knives, French Band Saws, Emery
Wheels and General Mill Supplies.
We guarantee to make a better Saw for the same
or less money than any Saw manufacturer in the country.
It will pay you to send for our catalogue and prices.
66, 68, 70 & 72 Fort St. East, DETROIT, MICH.

FAVORITE MILL BUCKETS



Manufacturer and Dealer

JOHN RADIGAN,

68 Mary Street,

HAMILTON, ONT.

SEND FOR PRICES.

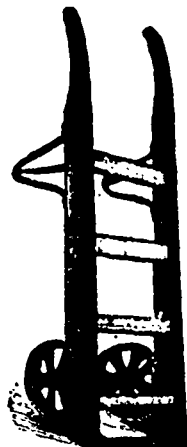
THE FENSOM ELEVATOR WORKS,

34 36 AND 38 DUKE STREET,
TORONTO,

SOLE MANUFACTURERS OF THE

Bostwick Steel Gates and Guards

FOR BANKS, WAREHOUSES, PRISONS, VAULTS AND DWELLINGS.



HAMILTON SCALE CO.,

Osborne Co., - Hamilton, Ont.

MANUFACTURERS OF ALL STYLES OF
IMPROVED STANDARD SCALES, RAILROAD SCALES, DEPOT AND
WAREHOUSE SCALES.

WE MAKE A SPECIALITY OF

**Grain Hopper Scales,
Flour Packer Scales,**

AND

AUTOMATIC ELEVATOR SCALES,

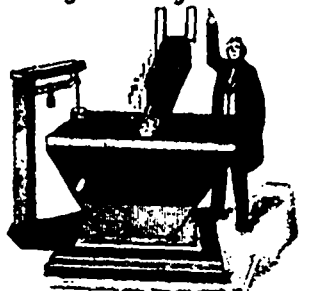
ALL STYLES OF TRUCKS
Unequalled for Excellence, Durability and Elegance of Finish.

EVERY SCALE

TESTED TO ITS FULL CAPACITY, INSPECTED
AND STAMPED BY A GOVERNMENT INSPECTOR.

WRITE FOR ILLUSTRATED PRICE LIST.

Hamilton, - - Ont.



The SHIMER MATCHING HEADS

Have been awarded

A World-Wide Reputation

By actual Every Day Work in Almost every Planing Mill.

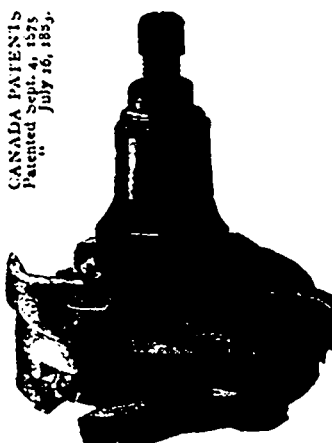
UPWARDS OF 11 000 NOW IN USE.

The Cheapest, The Strongest, The Most Durable,

—AND YET THE—

LIGHTEST AND EASIEST RUNNING

Matcher Heads in the World.



TONGUE HEAD.

TEA FINISH HARD

Cross-Grained & Knotty Lumber
Neatly, showing Clean Edges, and often

Save their Cost in One Day's Run.

SAMUEL J. SHIMER,

(Successor to SHIMER & CO.)

MILTON, PA., U.S.



FIG. 1—A New Cutter.



THIS diagram represents a Bit (D) in the position it occupies when making a cut the Bit (C) which follows to complete the work is given in outline. This explains the division of cut and the free and easy working of the Tool. The Bits are arranged in upper and lower series, and secured to a Head having seats alternately inclined for the purpose of giving the side clearance to their cutting points. This

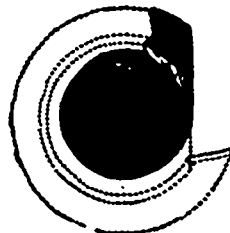
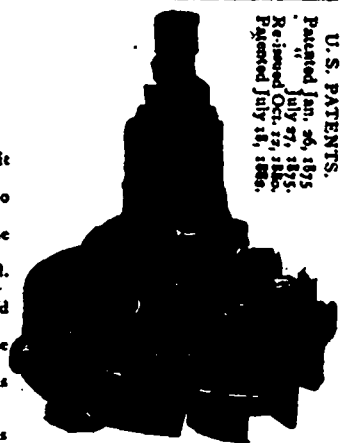


FIG. 2—CUTTER NEARLY USED UP. A. R. Williams, - - - Toronto

explains why these Bits hold their shape and turn out standard work until used up; the entire circle of Bit being Too cutting edge—see Figs. 1 and 2. The Head carries its weight low down and in line of cut, and runs like a Top.



GROOVE HEAD.

SELLING AGENT,

MILLERS

STUDY YOUR OWN INTEREST

And read the following letters:

W. B. BRAGG, Esq.

Erin Roller Mills, Jan. 21, 1887.

Dear Sir: Our mill, after being refitted with a full set of rolls by you, has given complete satisfaction from the start, being easily driven, never chokes, and runs like magic. The planing and millwright work shows a high degree of skill and thorough workmanship. We have not yet found a single fault. We are making an excellent grade of flour, with a yield considerably under 4 bushels and 30 pounds. Should it be in our power, we shall heartily recommend you to anyone requiring machinery or work in your line.

Yours very truly,

THOS. HELL,
Proprietor Erin Roller Mills.

W. B. BRAGG, Esq.

Erin Roller Mills, Jan. 20, 1887.

The mill runs like a top. The chain drives are A 1, they run so quietly and easily. The speed of machines seems about right. The stock from the rolls is invariably cool. You have solved the problem of the "speed of elevators" in this mill; they discharge perfectly and are dustless; spouts flowing into them can easily be left open. I never had or saw less trouble in running any mill, and when Mr. Hell communicates with you, I think you will find he is more than satisfied. Trusting you will have the success your marked abilities deserve,

I am, yours respectfully,

JAMES W. HORN, Miller.

GENUINE SAMPLES AND GUARANTEED GENUINE YIELDS SENT ON APPLICATION.

The above mills were programmed by myself, on an entirely new system, which is an undoubted success.

NOT AN INCH OF SILKS WAS ALTERED, NOT A NAIL WITHDRAWN,

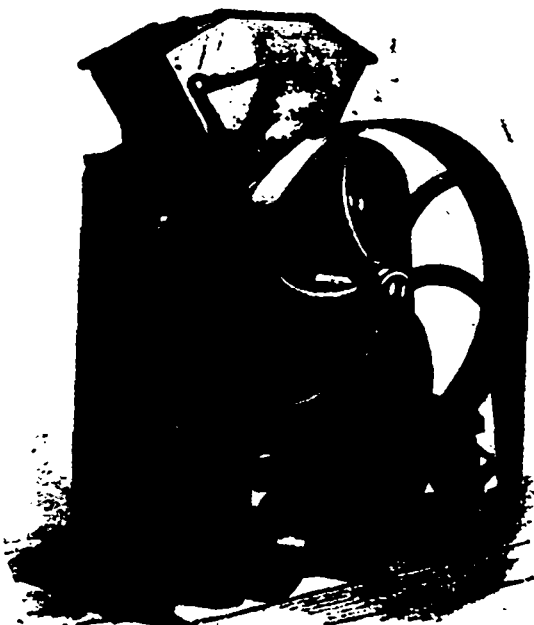
which shows that mills can be built perfect at last, by

THE MILLER'S FRIEND,

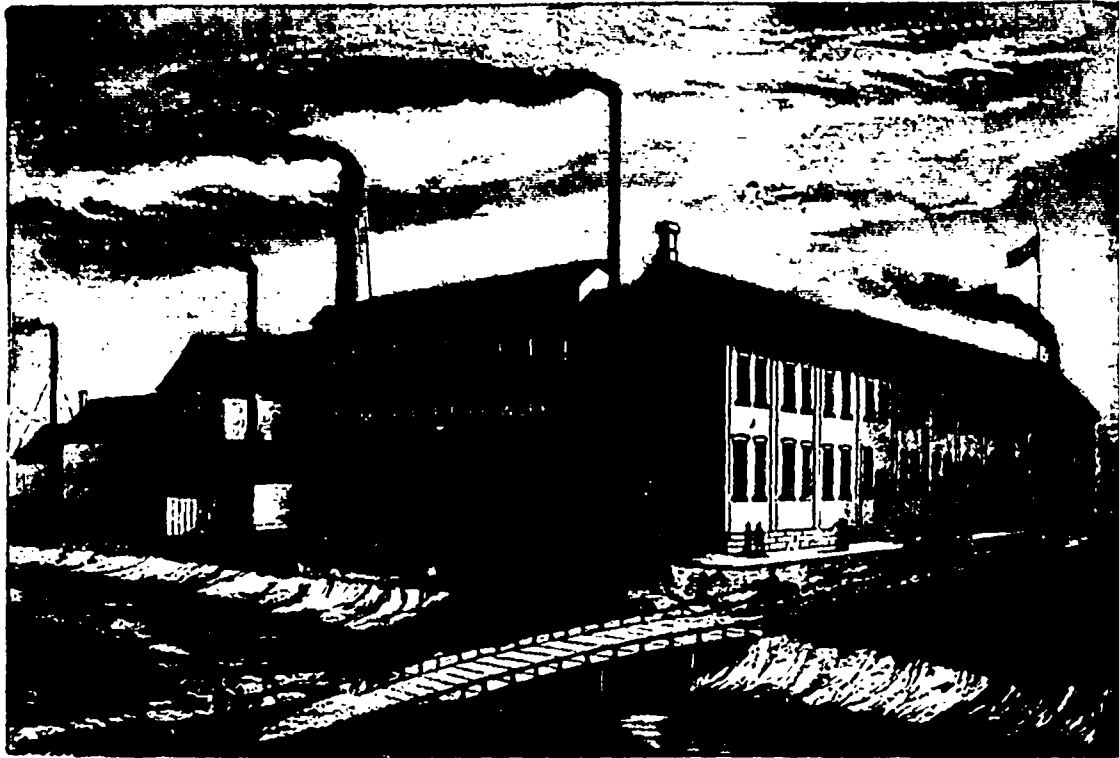
W. B. BRAGG, PRACTICAL MILLWRIGHT,

Rockwood,

Ontario.



THE GEO. T. SMITH CENTRIFUGAL MILLS



CATARACT MILLS, (daily capacity 300 bbls.)

WHEELER BROS.,
Full roller process Flour.

CATARACT, Ont., March 17, 1887.

THE GEO. T. SMITH M. P. CO., Stratford.

GENTLEMEN: Your No. 6 Centrifugal arrived here a few days after we wrote you last. We have it now at work and we must say that we are delighted, and more than pleased with it. The workmanship of the machine is perfect, making it a very handsome machine, and the great quantity it will bolt with the cleanness it will dress the flour greatly surprises us. It runs very quietly and with very little power. We must say that were we building a new mill or remodelling an old one, we would use your Centrifugals only to do *all* our bolting, and would discard the hexagon reel entirely.

Respectfully yours,

WHEELER BROS.

Office of Donald McLean, Trent Valley Flour Mills,
Lakefield, March 18, 1887.

S. S. HEYWOOD, ESQ.,

GEO. T. SMITH M. P. CO. of Canada, (Ld.), Stratford, Ont.

GENTLEMEN: After thoroughly testing the mill built for Messrs R. & G. Strickland by your company, I have much pleasure in certifying to the great merits of your Centrifugal system. The mill works like a charm, sure, swift and smooth, and I challenge any mill in Canada to produce a better quality or larger quantity of flour from the same amount of wheat. After the first week's run I started the mill on the following Monday and ran continually day and night until a late hour on Saturday night, and have never had a "choke" or anything to delay us since the mill started running. I might mention that I am selling large quantities of flour in the town of Peterboro', and one of the parties to whom I sell tells me that his customers are continually bringing in bread for him to see, and tell him that there was never such good flour sold in Peterboro' before. If any one wants to see the "A 1" mill of Ontario, I consider I can show it to them if they take a trip to Lakefield.

Yours truly,

DONALD McLEAN.

CANTON, Ont., March 16, 1887.

S. S. HEYWOOD, ESQ.,

Manager GEO. T. SMITH M. P. CO., Stratford.

DEAR SIR: Having settled with you in full for my mill which you built for me upon the Geo. T. Smith Centrifugal system, I can only say everything in connection with my contract with you has been carried out on your part to my entire satisfaction. Wheat was turned on the mill on Thursday last, and the mill has run steadily ever since, making good flour from the first, and finishing as clean as I can wish, in fact, I may have to make my feed better in order to make it saleable. The mill was contracted for 60 barrels in 24 hours. We have been running it at 72 barrels, and I am confident can make 75. The millright work was put in the mill to suit me in every way, and the machinery runs with very little care or attention. Although my first experience with a Centrifugal mill, I have already seen enough to be convinced that it is a great improvement over the old long reel system of bolting.

Yours truly,

W. H. KINSMAN.

Lakefield, Ont., March 18, 1887.

S. S. HEYWOOD, ESQ.,

GEO. T. SMITH M. P. CO. of Canada (Ld.), Stratford, Ont.

DEAR SIR: We have been running our new mill which you built for us on the full GEO. T. SMITH CENTRIFUGAL SYSTEM one month, long enough to be convinced of its superiority over the old long reel system. Our first mill was built by E. P. Allis & Co. and started in the spring of 1886, about one year ago. It was, we thought, as good a mill for its size as could be built. When it was burned last October we made a contract with you before the runs were cold, to rebuild it, and could think of no better protection to ourselves in the way of a guarantee than to require you to give us as good a mill as we had before. As you advised us to adopt the Geo. T. Smith Centrifugal system, and in writing the contract left it at our pleasure to put in either system as we might decide, we sent Mr. McLean, a practical miller who was negotiating for the lease of our mill, to Jackson, Michigan, to examine the "Eldred." Upon his return we instructed you to put in the Smith system. The result is a pleasant surprise to us. Wheat was turned on the mill Friday, Feb. 18th, and on the following Wednesday, after careful tests of capacity, quality of flour, yield, and finish, we accepted the mill as entirely satisfactory in every particular. Our contract with E. P. Allis & Co. as well as with yourself was for a mill of 75 barrels capacity. The mill you built runs to 85 barrels much easier than the old one did to 65. It takes less power, the machinery occupies much less room and requires less attention, and the results are a better flour and closer finish. Our business relations with you have been of the most agreeable nature. When the mill was finished a few minutes only were occupied in settlement, there being no disputed bills or claims for damages to be adjusted. Should you find it convenient to send any parties here to examine our mill, we shall have much pleasure in affording them every facility for doing so.

Yours truly,

R. & G. STRICKLAND.

We now have a large number of our FULL CENTRIFUGAL MILLS running here in Canada, and parties about to build new or remodel old mills, will find it to their interest to examine some of these before deciding what style of mill they will put in. A list of these mills will be furnished upon application, and every facility afforded for a careful examination of the work they do.

ROLLS RE-GROUND AND RE-CORRUGATED AT SHORT NOTICE.

The Geo. T. Smith Middlings Purifier Company, of Canada (Ltd.)

United States Shops, JACKSON, MICH.

STRATFORD, ONT.