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THE DOMINION MECHANICAL & MILLING NEWS

Vol. VII.—No. V.

TORONTO, ONTARIO, FEBRUARY, 1887.

Price, 10 Cents
\$1.00 PER YEAR.

MEADOWVALE ROLLER MILLS, MEADOWVALE, ONT.

THE above mills are situated at the very picturesque village of Meadowvale, in the County of Peel, 23 miles from Toronto, on the Credit Valley branch of the C. P. R., and on the River Credit, a large and never-failing stream of water. The head is 11½ feet, and the motive power is furnished by a 36 inch Vulcan and 36 inch Perfection water wheel, both built by Messrs. Paxton & Tate, of Port Perry, Ont., with power estimat-

First storey (basement) contains flume and penstock, built of white oak, 2 water wheels, 2 Eureka power packers for barrels and bags, holding each 125 barrels, 1 hand bag packer holding 60 barrels, bran and shorts bins, bottoms of 22 stands of elevators, wheat elevator and conveyor from storehouse, heavy wood and iron cog bevel gears, line shafting and iron pulleys for belting to drive rolls.

Second storey contains 16 pairs of Case rolls with Case vibratory feed, 12 pairs being set in line

roller mill within a distance of 20 miles. It is also doing an extensive shipping trade. Considerable flour is being sold in Toronto to bakers and dealers, and it is giving the highest satisfaction wherever tried. The largest portion of shipments are direct to dealers in the Eastern Provinces, and the flour is making for itself an excellent reputation.

The mill throughout has been planned most conveniently, and the rolls, machinery and workmanship reflects much credit on the builders, Messrs. Inglis & Hunter,



MEADOWVALE ROLLER MILLS, MEADOWVALE, ONT.

ed at 120 horse. The basement or first storey of the mill, is of stone, 10 feet high. On this rest four other stories built of heavy timber, making in all five stories, size 40x70, with an addition 40x40 on stone basement 10 feet high, for storing wheat, with capacity of 20,000 bushels, which is received from farmers and railway, elevated to the store house, and returned to cleaners by conveyors.

This mill, containing 5 run of stones, and farm property connected therewith, was formerly owned and operated by Messrs. Gooderham & Worts, of Toronto, and in 1882 was sold to Messrs. Wheeler Bros., of Cataract, Ont., who in June last sold to the present owner, Mr. A. H. Wheeler, formerly of Uxbridge, Ont., who, immediately after taking possession, had the mill changed to latest full roller process on the celebrated "Case" system of Columbus, Ohio, U. S., and closed a contract with Messrs. Inglis & Hunter, of Toronto, sole licensees in Canada for above system. They have completed their contract in a most satisfactory manner, under the direction of Mr. Win. Petch, their well-known roller mill expert, who programmed the system of separations and mill throughout, and Mr. C. Forsyth, head millwright. The following is a description of the mill as re-constructed, with a capacity of 150 barrels daily :

across the mill and 4 pairs set in line at right angles in rear of front line. This arrangement gives plenty of room on this floor and a fine appearance to rolls. There are also bottoms of five stands of elevators and all spouting to rolls; also receiving hopper and scales for wheat.

Third storey contains large Eureka brush wheat cleaner, stock hopper (600 bus. capacity), chest of wire scalpels for break flour from rolls and bolting chest, containing 8 reels 16 feet long, each fitted with double conveyors, all driven by bevel gears set in iron brackets; also a large dust collector.

Fourth storey contains 1 Kurth cockle separator, 1 Eureka smutter and separator, 1 double and 1 single Case purifier, also bolting chest containing 4 reels 16 feet with double conveyors, fitted same as storey below, and air duct to blow room.

Fifth storey contains 1 rolling wheat separator, 1 single Case purifier, heads of 25 stands of elevators, 1 No. 4½ Silver Creek centrifugal bolting machine, 1 Excelsior bran duster, 1 Richmond shorts duster, and 1 large wheat conveyor.

The mill was completed and started about the 15th of October, and has since been running steadily day and night, doing a large custom trade, there being no full

and the general results of the mill both for high grades of flour and clean finish of offal is most satisfactory to the proprietor and the above firm, who have lately introduced the Case system into Canada, which they consider to be the most improved system of roller milling of the age.

ALLOYS.

In a recent lecture, Professor Austen Roberts mentioned that the union of copper and antimony by fusion produces a violet alloy when the proportions are so arranged that there is 51 per cent. of copper and 49 per cent. of antimony in the mixture. This alloy is brittle and difficult to work, so that its beautiful color can hardly be utilized in art. The addition of a small quantity of tin to copper hardens it, and converts it, from a physical and mechanical point of view, into a different metal. The addition of zinc and a certain amount of lead to tin and copper confers upon the metal copper the property of receiving, when exposed to the atmosphere, varying shades of deep velvety brown, characteristic of the bronze which has from remote antiquity been used for artistic purposes.

MECHANICAL FOOLHARDINESS.

CARELESSNESS kills more mechanics than old age or disease, and the number of accidents resulting from somebody's carelessness cannot be estimated.

There is not as much danger in doing risky jobs and undertakings as there is in the every day risks which are met with a contempt brought about by a long acquaintance therewith, and which are hardly regarded as risks by the men who take them.

The architect takes risks which are needless when he guesses at the strain to be overcome by beam or truss, and also, and doubly so, when he also guesses at the strength of that beam or truss. The builder in turn takes a risk when he passes defective construction with the guess and hope that "it will hold."

In driving piling for a block of houses in Harlem, the writer noticed that some of the piles were driven twelve to twenty inches by the last blow of the hammer, and he wondered at the risk taken by the builder for the sake of saving a few dollars thereby.

In building a railroad bridge in New Hampshire, the contractors put down piling where the last blow drove some piles four feet! In this case some piles were driven too far, whereupon the risky, rascally contractors laid hold of said piles and pulled them up again until they were in the required position.

In erecting buildings, hundreds of risks are taken by the workmen themselves, by the owners, and by the builders also. In erecting machinery, the risks continue to be taken, and after the machinery is running it seems almost as if the attendants vied with each other in courting danger.

Begin with the fireman. How many times will he risk his life by "guessing" that the safety valve is in perfect order, or that the combination water gauge pipe is not plugged up. All too often he will "guess" that his boiler is safe, and run with dirt, leaks, corrosion, and he knows not what else, in that straining and groaning iron shell under which he shovels coal.

Why is all this, we may well ask? Is the man a lunatic? Is the man a fool, or what is the matter with him? There is just two other causes which may effect his behavior, for he may be lazy or avaricious; then in this latter case he is a villain as well.

The architect was lazy; he didn't figure because it was easier to guess. The builder who drove the piling was a knave. He did thus in order to make more money out of the job, but the workmen who got maimed or killed, the fireman who lets his safety valve get stuck, he is sometimes a fool, but more often these things happen through pure laziness, and laziness alone.

The engineer who almost hourly exposes himself by walking under the expand belt from his engine, this man is lazy; but he is abetted in his laziness by knavery, in shape of an avaricious owner, who grudges the few dollars necessary to box up the dangerous place, and thus relieve the lazy man's temptation.

Lazy men run all sorts of risks in putting on belts, in fooling around moving machinery and in monkeying with running tools, such as circular saw, planers and molders. The man who crawls around exposed machinery to oil or clean the same, when he can just as well stop the machine before exposing himself, this man deserves to be sent up for ten days for every offence. Only a few days since, a party of masons were building a 100-foot mill chimney. They had got up eighteen feet, when all at once the whole party thought an earthquake had come to help them. They were all on the ground among bricks, mortar and splintered lumber, with two of their number seriously injured.

An examination showed that in nailing on the last course of ledgers only one nail had been put into some of the posts, where six should have been driven. Here was a clear case of laziness and foolishness combined, with the poor consolation, and the victims at least, of knowing that only themselves were to blame.

Sometimes this carelessness becomes criminal, and is occasionally brought to justice, and lately where knavery is the cause of accident, it has been frequently severely punished. There is no excuse for exposure to such accidents, and every man can educate himself out of it if he will.

Familiarity is one great cause of a man getting careless and lazy. He works around machinery so long without accident that he thinks, if he thinks at all about it, that he knows all the ins and outs, all the dangerous places and death-traps, so he will not have to be so continually on his guard. It is a good deal of work to keep his thoughts on his fingers all the time, so our man gets a little lazy, goes too near a quick-running belt, and the first thing we know he is a subject for the surgeon or undertaker.

Well, the writer remembers a man who was set at work running a circular saw. This man was mortally

afraid of the saw, and kept as far from it as possible. For twenty-three years the saw was operated by this man without accident, until one day he dropped his rule beside the saw, and attempted to pick it up without going back to the table. He got three fingers and his thumb cut off, all through a little laziness in not taking proper pains against accident.—J. F. Hobart.

POWER REQUIRED FOR FLOURING MILLS.

There is a wide diversity in the opinion and practice of millwrights as to the power necessary to drive a modern built roller mill. The old rule of fifteen horse-power per run of stone does not apply, and no sufficient number of tests have been made to demonstrate conclusively what may be adopted as a general rule. We have made several careful tests, in order to settle the question, if practicable, within comparatively narrow limits, and have noted other tests. The range so far found has been from .5 horse-power per barrel of daily capacity in small mills to .35 horse-power per barrel in mills of 250 barrels and larger capacity. These figures we know to be accurate in so far as the individual mills from which they are obtained are concerned, and we believe them to be a safe guide to follow. Yet, in a recent conversation with a prominent mill builder he remarked that he could not understand how so much power was required, as he invariably used smaller engines than his competitors, and had no trouble. While this may be true, it does not follow that the use of the smaller engines has been profitable for his custom. The rated horse-power of steam engines, especially automatic engines, is no criterion by which to judge of the power developed in use. In an automatic engine, the power developed varies with each change in the load, and if the load increases or is larger than the rated power of the engine, the power developed will increase, limited only by the conditions of speed of piston and boiler pressure. Take a Corliss engine, for example, rated at 100 horse-power, with steam at 80 pounds boiler pressure, and cutting off at one-fifth stroke and running at 80 revolutions. This engine, according to the recorded tests, would drive a 250 barrel mill, under above conditions. It will also drive a mill of double the capacity, providing the speed or boiler pressure, or both, be increased, or the point of cut-off be carried along to one-half stroke, with the engine, every other revolution, taking steam full stroke; but when it is doing this, it is developing more than 100 horse-power, and it is not doing it economically. If the speed is increased, the engine will wear out quicker; if the boiler pressure is increased, the strain and consequent wear and tear on the boilers will be greater; and if speed and boiler pressure be kept the same, the engine will work nearer like a slide valve, and the advantage of working the steam expansively will be lost in great measure, with a consequent loss in economy in fuel. While with an automatic engine it may be possible to make a small engine drive a big load, it is not economy to do so, or to load the engine beyond the point where it will work at the best economy.—*Milling Engineer.*

ENGINEERING POINTS.

Don't try to balance a double acting engine or to weigh its load with one indicator. Even an indicator cannot be in two places at one time.

Don't be too lavish in the use of leading pulleys. A little ingenuity will enable one in almost every instance to so arrange a reducing motion that the cords may be led directly to the indicator, and all the additional bother of pulleys and their supports, as well as what is of greater importance, the inaccuracy due to the stretch of the cord, avoided.

Annealed iron wire is better than cord which has ever been made for connecting the indicator with the reducing motion, and the price of one hank of cord will buy a supply for years of active practice.

When making a test or adjusting an engine it pays to keep an accurate record of each step which is made and every controlling circumstance. The value of a test does not alone consist in the determination of the result sought for, but a test made to determine one thing often furnishes the data for other matters, is of value in many ways for reference, and is of the more value the more complete the data which accompany it. When making changes in the adjustment of an engine always keep a record showing the engine "as found," and take a pair of each alteration, recording upon them the changes which have been made so that any step may be retraced on the whole record reviewed.

Do not depend altogether upon the indicator in setting an engine, but use a little horse sense with it. See where your valves and connections are before you start and be careful where you get them. An engine can make a good looking card when it is in a condition unfit to run.—*Boston Journal of Commerce.*



Italian cabinet work, unexcelled for finish, is first saturated with olive oil, after which a solution of gum arabic in alcohol is applied.

The curious observation that friction fails to produce heat in metals under the influence of magnets is now being discussed. Metals so exposed have been turned in a lathe quite cold.

The latest Belgian invention of a locknut is one threaded a little smaller than the bolt, and cut through on one side, to give it a spring.

TO POLISH STEEL.—To polish steel, rub it with a piece of emery paper, from which you have removed some of the roughness by rubbing it on an old knife.

AN ODORLESS SOLDER. A soldering fluid composed of a teaspoonful of chloride of zinc dissolved in two ounces of alcohol, will not rust and tarnish and has no bad smell.

To get a good working speed for a turbine, allow the wheel to run free for a while and then reduce its speed one-third. Fifty per cent. is an allowance that will only work where there is no hindrance to the flow of water or resistance through the wheel.

TO TAKE PAINT SPOTS OFF OF WOOD.—To take spots of paint off wood, lay a thick coating of lime and soda mixed together over it, letting it stay twenty-four hours, then wash off with warm water, and the spot will have disappeared.

TO BRONZE COPPER.—Clean the surface, then brush it over with a solution of sulphate of iron, acetate of copper, or peroxide of iron; heat it cautiously and gradually, rub off the powder and examine. If not a good bronze color, repeat the process.

PROCESS FOR SILVERING IRON.—An Austrian investigator has hit upon an ingenious process for silvering iron. The surface is first covered with mercury, the silver is deposited electrolytically as in the electroplating of copper, and the mercury is then evaporated by a heat of about 600 degrees.

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.

TO MEASURE LUMBER.—Multiply the length in feet by the width in inches, and divide by 12. When of varying width, find average width by taking half sum of end widths and proceed as before. Then a piece of lumber, 16 feet long, 10 inches wide at one end and 26 inches wide at the other, would have—10 and 26 are 36; one-half is 18 inches, average width; multiplied by 16 and divided by 12, equals 24.

TO MAKE A FLANGE JOINT THAT WON'T LEAK.—To make a flange joint that won't leak nor burn out, on steam pipes, mix two parts of white lead to one part red lead to a stiff putty; spread on one flange evenly, and cut a liner of gauze wire—like mosquito net wire—and lay on to the putty, of course cutting out the proper holes; then bring the flanges "fair," put in the bolts and turn the nuts on evenly. For a permanent joint this is A 1.

TO DETECT IRON FROM STEEL TOOLS.—It is difficult, says a Belgian journal, to distinguish between iron and steel tools. They have the same polish and workmanship; use will commonly show the difference. To make the distinction quickly, place the tool upon a stone, and drop upon it some diluted nitric acid (four parts of water to one of acid). If the tool remains clean, it is of iron; if of steel, it will show a black spot where touched with the acid. These spots can be easily rubbed off.

TO ENGRAVE ON IRON OR STEEL.—It is convenient sometimes to mark our tools. This can easily be done as follows: First, clean the place you wish to mark and then cover it with a thin layer of beeswax, raising the edges so as to form a basin. Now write your name in the wax with a sharp instrument, cutting it through to the steel. When this is done, fill the basin with undiluted nitric acid or aqua fortis, and let it stand awhile. The longer it stands the deeper it will cut. Then wash with water. The same process can be applied to hard wood, but great care is required.

WOOD POWDER.—Wood powder has recently been introduced as an explosive in the Belgian army in place of dynamite. The powder is obtained by treating ordinary sawdust with a mixture of nitric and sulphuric acids, which is afterward formed into cartridges by means of powerful presses. To protect these cartridges from moisture, they are afterward covered with paraffined paper. The instantaneous production of the gases arising upon explosion causes the air in contact with the face surface of the cartridge to act to some extent as a light tamping, and the power of the explosion is directed to the other face. In comparative experiments made with wood powder and dynamite it was ascertained that, for equal weights, charges of the first substance were at least as powerful as those of the second, and the results were more regular.

IMPROVED BRICKS.—For obtaining products that will offer greater resistance to humidity, etc., than ordinarily is the case, an improved process of manufacturing bricks has been brought forward in Germany. After drying and grinding the clay, a mixture is made of 91 1/2 parts of the latter, 3 parts of iron filings, 2 of table salt, 1 1/2 of potash, and 2 of elder or willow wood ash. The whole is heated to a temperature varying from 3,362° to 3,500° Fah. At the end of from four to five hours the argillaceous mixture is run into molds, then re-baked in the ovens—always protected from the air—at a temperature of 842° to 932° Fah. The product may be variously colored by adding to the above quantity two parts of manganese for a violet, brown, one part of manganese for a violet, one part of copper ashes for a green, one part of arsenite of cobalt for a blue, two parts of antimony for yellow, and one and a half parts of arsenic and one part of oxide of tin for white.

FOR THE DOMINION MECHANICAL AND MILLING NEWS.

ON THE ROAD.

BY "RAMBLER."

THE little "rambling" which the writer did during the first month of the new year was attended with many difficulties, some of which—in the shape of snow-banks—were well-nigh insurmountable. Starting out for London one calm, cold morning, he found himself before noon in the midst of a blinding snow storm, which continued with but slight intermission during the remainder of his trip. A brief outline of the information gathered will be found in the succeeding paragraphs:

LONDON.

A half day, no matter how actively employed, is much too short a time in which to note or attempt to describe the changes and improvements which are going on among the manufacturing industries of this prosperous city of the west. A glance is sufficient to show, however, that progress is being made along every line, and that the city is fast attaining the prominent position which the enterprise of its citizens destines it shall occupy. It is now a great railway center, and the excellent shipping facilities afforded by the Grand Trunk Railway, which branches out from this point in all directions, has done much to induce the locating of manufactories here. A few remarks concerning some of the leading manufactories to be found here are subjoined. Many others of not less importance must necessarily be left for another occasion.

MESSRS. STEVENS & BURNS.

One of the largest and apparently most prosperous manufacturing establishments in the "Forest City," is that of Messrs. Stevens & Burns. This business, which was established in 1871, has grown very rapidly, and now requires for its manufacturing operations several extensive blocks of brick buildings. The manufactured articles produced are of great variety, in wood, iron and brass, embracing engines and threshers, boilers, saw and shingle mill machinery, lathe and bolt cutters, traction engines, valves, boiler feeders, lubricators, etc. The ground floor of the establishment is devoted to heavy iron-working machinery, part of the second floor to light iron and brass-working machinery, the balance being used by the wood-workers. The third flat is occupied as a paint shop and drying room. The several departments are separated from each other by fire-proof doors. In passing through the shops in company with Mr. Burns, the writer's attention was directed to the largest brass castings ever turned out. They consisted of two sleeves for the pistons of the new pumping engines for the Hamilton water works, now in process of construction by the Osborne-Killey Co., at Hamilton. These sleeves, of phosphor-bronze, were 22 inches in diameter, 18 inches deep, and weighed 240 pounds. Messrs. Stevens & Burns are manufacturing all the brass valves, etc., required for the new pumping engines. The firm were the first manufacturers in Canada of the Ball system of electric light machinery. They are making a 12 horse-power traction engine, driven both from front and hind wheels, which they claim will draw from 15,000 to 20,000 feet of lumber over any ordinary road. On one of the upper flats "Rambler" was shown the novel invention of a Mr. Townsend, a Canadian who now holds a position in India with the East India Company. The invention consists of a vehicle wheel designed in such a way that the tire can be set without heating. This is done by driving the spokes upon an inclined plane by means of a screw-nut. The British army in India, which transports its stores in carts, has suffered great loss and trouble from the effects of the extremely hot climate, which causes the wheels of the carts to shrink and fall to pieces. The army authorities have intimated to Mr. Townsend that if he can construct a cart wheel which can be successfully used in India, they will give him an order for as many as the army requires. Mr. Townsend, having accomplished the object, is expecting an order for something like 10,000 carts. Messrs. Stevens & Burns being old friends of the inventor, have been entrusted with the right to manufacture.

MESSRS. E. LEONARD & SONS,

the well-known manufacturers of engines and boilers, have a fine building filled with fine machinery, and report business good, an improvement being especially noticeable the last few months. On a future occasion "Rambler" hopes to have the pleasure of presenting to readers of the MECHANICAL AND MILLING NEWS a complete description of this large and well-appointed concern.

LONDON MACHINE SCREW WORKS.

A very profitable half hour was spent at the above establishment, which is one of the fruits of the National Policy. Under the old tariff the Canadian market for machine screws was supplied entirely by American man-

ufacturers. In 1879, however, Frank Curtiss Jr., who had been engaged with his father in the business for a number of years in the United States, crossed over to the Dominion, and started the manufacture of machine screws in a small way at London. After a time, he sold out to Mr. John Morrow, but later on, at Mr. Morrow's request, again entered the business as a partner, the firm name being John Morrow & Co. For several years, owing to the fact that iron manufacturers were experiencing dull times, and American manufacturers of machine screws had lowered their prices 25 per cent. to Canadian buyers for the purpose of getting rid of their surplus stock, the new enterprise in which Messrs. Morrow & Co. had embarked grew but slowly. Last year, however, an improvement set in, the result of which has been that they have doubled their output and facilities for manufacturing within the last twelve months, and are starting the new year with very encouraging prospects. The firm manufacture all the machinery required for their business, and by this means effect a considerable saving.

LONDON MACHINE TOOL CO.

A visit to the above establishment, and a chat with its genial manager, Mr. Yates, revealed the fact that, as in the case of the other industries mentioned, it is enjoying a period of business activity and prosperity greater than ever before in its history.

MESSRS. ESSEX & BAILEY.

These well-known manufacturers of brass valves and other kinds of brass goods for use by manufacturers, state that they have been working overtime for the last two months, a thing they have never had to do before during the seven years they have been in business. About a week previous to the writer's visit, they dispatched to Quebec a shipment of goods which weighed four tons. They employ on an average from 20 to 30 workmen. Regarding the effect of the tariff upon their business, the firm state that while it gives them protection against the American manufacturer, the competition among home manufacturers is such that the Canadian consumer gets his goods at American prices and discounts.

BRANTFORD.

"The best laid schemes o' mice an' men gang aft a-glee" was Robbie Burns' experience. It proved to be "Rambler's" also. He went to bed with the determination to catch the early train next morning and reach Brantford in time for breakfast. His intentions, however, were not carried out. With the assistance of the porter he awoke all right, and reached the train exactly on time, but that was as far as he got—at least for some time. A train which left London shortly after midnight for St. Thomas, drawn by two engines, had not been heard of five hours later, although the distance between the two cities is less than fifteen miles. On this account "Rambler's" train did not start, and after waiting impatiently for an hour or more, he got on board another which had ploughed its way through from Sarnia, and started for Brantford via Harrisburg. These circumstances over which he had no control, and which for a time balked even the efforts of the G. T. R. authorities, left him only time to call on a couple of the most prominent firms in the machinery line in Brantford.

THE WATEROUS COMPANY.

The Waterous Engine Works Company, as it is now called, is one of the old "stand-bys" among Brantford manufacturers. The company is, in spite of its age, as vigorous and enterprising as ever. Its shops and offices are scenes of busy activity, and the various kinds of machinery manufactured there finds a market in almost every part of the world. The Company have recently invaded the United States, having removed the Winnipeg branch of their business to Minneapolis.

H. W. PETRIE.

This gentleman, with whose name machinery users have become familiar through the advertising columns of the MECHANICAL AND MILLING NEWS and the daily press, is among the youngest and most enterprising business men of this young and enterprising city. Starting life as a mechanic, he gained a thorough knowledge of machinery, which has been of good service to him since starting business as a manufacturer and machinery broker. From small beginnings his business has developed, until it is now one of the largest of its kind in Canada. Mr. Petrie, finding his present quarters too small, contemplates erecting a large three-storey building next spring which will give him the increased accommodation which he requires.

GALT.

This substantial and prosperous old town has just added to its other progressive features gas and the electric light. To the citizens, who have been accustomed

for so many years to the feeble flame of the kerosene lamp, one is about as much a novelty as the other. There is an old saying that "it never rains but it pours." It has been so in the case of Galt. The people have been trying for years to obtain gas for their streets and public buildings, but without success. Finally, an electric light company was formed a few months ago, which obtained the Galt Milling Co.'s building, and put in the machinery necessary to light the town by electricity. They had scarcely commenced operations, however, when a manufacturer of gas visited the town and asked permission to lay pipes and to establish gas works there. This permission has been granted him, and thus between the rival companies the town will be flooded with light, and that, too, at reasonable cost. The electric light company is under the management of Mr. John Gourlay, formerly a partner in the firm of Cant, Gourlay & Co. He states that the company are at present running 80 lights, using the water power in connection with the old mill for generating the electricity. He estimates that it requires about one horse power for each light. The gas company is also supplying an excellent light.

THE FLOUR MILLS.

If wheat is as scarce throughout Ontario as it is in the neighborhood of Galt, a substantial rise in prices may be looked for shortly. The Todd Milling Co. and Messrs. Cranston & Scrimger both complain of the difficulty they experience in getting a sufficient supply of wheat to keep their mills in operation. The Todd Milling Co.'s large mill, an illustration of which appeared in the MECHANICAL AND MILLING NEWS for December, is turning out 350 barrels of flour per day. The quantity of wheat required to keep it running steadily is very large, and under present circumstances, hard to obtain. Mr. Todd has almost concluded that there is a scarcity of wheat in the country, and that they may by and by be compelled to shut down or run short hours. It is his opinion that most of the wheat, above what is required for home manufacture and consumption, has already been exported from the Northwest, so that Ontario millers need not count on a supply from that quarter. "Rambler" is rather inclined to believe, however, that a good deal of wheat yet remains in the country awaiting a rise in price.

GALT BRASS FOUNDRY.

A comparatively new industry in Galt is the brass foundry started there five years ago by Messrs. H. & G. Dakin. The firm manufacture all kinds of engineers' and plumbers' supplies, and are hoping for quite an increase of business as the result of the introduction of gas into the town.

PARKIN & CO.

This old and reliable firm of file manufacturers, who make their bow through the advertising columns of the MECHANICAL AND MILLING NEWS this month, report business brisk. Mr. Parkin was for many years in the employ of Messrs. Jowitts & Son, the well-known English file-makers, which, together with the excellent testimonials which Messrs. Parkin & Co. have received from leading manufacturers throughout Western Ontario, is a sufficient guarantee as to the quality of their work.

AN OLD ESTABLISHMENT.

Scott's planing mill and wood-working establishment is one of the oldest concerns in this town of industries. It was established in 1831 by the father of Messrs. W. & F. A. Scott, the present owners. The factory, which is supplied with a complete set of wood-working machinery, manufactures sash, doors, blinds, and other materials required for the building trade. From 15 to 20 hands are employed. The factory is run by both steam and water power, and requires 30 h. p. for its operation.

COWAN & CO.

A call at the works of the above company, found Mr. Thos. Cowan, like many others in the manufacturing line, anxiously speculating as to the effect of the forthcoming elections upon the National Policy. Mr. Cowan, as is well known, is a firm believer in protection to home industries, and has done valuable service in the furtherance of that idea. The firm have added considerably to the size of their establishment during the past year, and report orders plentiful.

NOTES.

The extensive manufactory of Messrs. Goldie & McCulloch, is doing a brisk trade in most departments.

Messrs. Shurley & Dietrich, saw manufacturers, report business good. They lately received a large order from Australia.

Messrs. Royal & Percy, file makers, announce their intention of erecting a new building shortly, and adding steam power.

NORTHWEST LETTER.

At the time of writing there was still an insufficiency of snow for sleighing in Manitoba, and consequently grain deliveries have not been very large for some weeks back. It is now well on to the first of February, and only a couple of inches of snow on the level, which makes things look as though we were not going to have any sleighing at all this winter, though some of the oldest inhabitants predict heavy falls in March. Prices for wheat have been higher at Winnipeg for the past few weeks, and are now 3c. above quotations at the close of navigation, namely, 65c. for No 1 hard, and 62c. for No. 2 hard and No. 1 northern. These are the prices paid to farmers. There has been pretty keen competition for the grain at many provincial markets, and in some instances prices were run up above 70c., but as such quotations were above export value, they could not long remain at such high figures. The keen competition at some points gave rise to schemes which would enable buyers to obtain the start over others in securing the wheat, some of which were not of a legitimate trade nature. For instance, one buyer devised the plan of throwing in a meal ticket with the price of each load of grain.

There is considerable speculation going on here as to the amount of exports in wheat from the province, and it seems to be the general opinion that the total exports for the crop of 1886 will fall something under those for the crop of 1885. Up to the time of writing there has not been much difference in exports over those of the previous crop year, but a year ago there was a heavy movement of grain in January and February, whilst this year the outgoing movement has already slackened up considerably. It was known that the crop of the province as a whole was rather on the light side for the past year, but it was thought that the better quality of the grain, which would lead to a more thorough export, together with the increased acreage sown, would prevent a falling off in exports. This, however, would seem not to be the case. Those who are in the best position to know, say that fully two-thirds of the crop of 1886 has now been marketed, and if this estimate is nearly correct, there will be a falling off in exports, in comparison with the crop of 1885. However, the crop of the latter year was an exceptionally heavy one all over the province. Then there is also the very greatly increased milling capacity of the province which must be taken into consideration in estimating the exports of wheat. A very much larger quantity of wheat will be ground at home this year than in any previous year, which will account for part of the falling off in wheat exports. Still there is no doubt but that the total crop for last year was much lighter than the previous year, for whilst some districts had a fairly large yield, others were decidedly light. The Brandon market returns will show this to be the case, where wheat deliveries have fallen off to one-half what they were last year. Railway extensions have taken some of the wheat which formerly went to Brandon to other points; but in conversation with a gentleman who has travelled over that region, I was informed that the main reason for the falling off was that the wheat was not in the district tributary to the town named. A year ago at this time Brandon was crowded with teams from early morning till late at night, owing to the press of wheat deliveries, and on several occasions a complete blockade of the streets in the neighborhood of the five elevators occurred. Perhaps such scenes were never before witnessed in connection with the grain trade in any town in Canada. This year, however, there is no trouble in handling all the grain that comes in. Another reason for a shortage in eastern exports is, that considerable wheat and flour is going west to the territories and British Columbia.

There seems still to be some disposition to grant bonuses in aid of flour mills, and in several rural municipalities parties are agitating in favor of such bonuses. This bonus business has undoubtedly done injury to the milling business in Manitoba. Several mills which were started with the aid of bonuses have already passed through several hands before being completed, and others have been constructed in such a way as to make them unfit for turning out first-class work, thereby injuring the whole flour trade of the province. There are now in course of construction some seven or eight roller mills at different points in the province, varying from 75 to 300 barrels capacity, every one of which have been assisted with bonuses. One of these mills, which was to have been completed in September last, has remained in an uncompleted state for nine months. The parties who commenced work have abandoned the job; the men who worked on the building have not been paid, and mer-

chants who advanced material are just out that much. Several parties claim the ownership of the property, and additional bonuses are asked for to complete the work. This is only one instance in which speculators have taken advantage of these bonuses to perpetrate a scheme upon the public. Other instances have occurred of a similar nature.

In connection with mill building you will probably already have heard of the project to establish a 1000 barrel mill at Keewatin. Keewatin is located on the Lake of the Woods, about 135 miles east of Winnipeg, and 3 or 4 miles west of Rat Portage. A considerable lumber manufacturing industry is established at both of these points. At Keewatin the waters of the Lake pass through a narrow channel, forming the entrance to the Winnipeg river, and the falls at this point furnish excellent water power. This water power has often been referred to, and it has long been considered that the place would yet become famous as a large manufacturing centre. One of the drawbacks is the exceedingly rough and rocky nature of the surrounding country, which renders building rather difficult. However, the country furnishes plenty of building material in the shape of stone, and the lumber tributary to the lake could also be supplied at a low cost. There is also the drawback in regard to freight rates, for whilst Winnipeg and other western centres will undoubtedly become railway competing points in time, the nature of the country and the location of Keewatin will be a hindrance to railway construction toward the latter place. Of the water power at this place, Professor Macoun says: "There is no question as to the possible milling facilities there. It possesses water-power and natural facilities second not even to those of Minneapolis." The mill above referred to will be the first movement toward utilizing this great water power, and is probably the commencement of what may yet prove an industry of great magnitude at that point. Mr. John Mather, of the Keewatin Lumber Co., is one of the movers in the establishment of the mill, and those who know him will understand that the undertaking is in good hands. Montreal capitalists are also said to be interested in the scheme. A large elevator will be erected in connection with the mill, and the work will be commenced at once, and completed in time for the crop of 1887.

Aside from milling, the manufacturing interests of the prairie province are not yet of a very extensive nature. A number of lumbering companies have their headquarters at Winnipeg, but there is now only one mill which saws in the city. The logs for this mill are procured from tributaries of the Red River, which flow into the river from the east side. Supplies of timber from this source are pretty well exhausted. The companies represented here have their mills at Keewatin and Rat Portage, on the Lake of the Woods, and some on Lake Winnipeg. There are also supplies of timber on Lakes Manitoba and Winnipegosis, and on the streams and tributaries of the head waters of the Assiniboine, in the northern portion of the Province, but these have only been available for local purposes. The great central portion of the Northwest is devoid of timber to a great extent, though the Wood mountains and Cypress Hills supply some timber districts. In the Cypress Hills there is a saw mill which does a considerable trade in supplying the stations along the C. P. R., in the central parts of the territories with lumber. The lumber is hauled to Maple Creek, on the C. P. R., 600 miles west of Winnipeg, from which the mill is about thirty miles distant. Calgary promises to be a centre of the lumber industry of considerable importance, and will likely be the chief supply depot for the far-western country. Already several companies have their headquarters there, and a large mill is now in course of erection. There is plenty of timber tributary to the Row river west of Calgary, whilst the mountains furnish almost an unlimited supply.

The lumber trade has been demoralized here ever since the boom days of 1882, and is only now being placed on a firm footing. At that time anything in the shape of lumber was bought up immediately on arrival at exorbitant prices, and the mills were unable to keep up with the demand. In the following year, however, the business was greatly overdone. Stocks became excessive, and prices were demoralized by a course of cutting, which was vigorously indulged in by all the firms. Surplus stocks have now been reduced and during the present year there is every indication that the trade will be a satisfactory one. The log crop in the district tributary to Winnipeg will be somewhat larger than last year, but will not be excessive, and dealers expect to do a paying business for 1887.

TORONTO BAG WORKS.

Dick, Ridout & Co. are the proprietors of these works, recently removed from Dundee, Scotland, to Esplanade

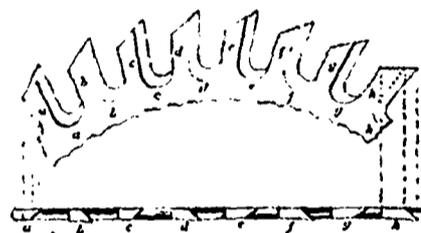
St., Toronto. The proprietors have made a new departure in the Jute bag trade, by introducing special lines of Jute bags made from the pure fibre and guaranteed unadulterated with any kind of starch or dressing, and with the threads in their natural round state. They finish their cloth so as to remove, as far as possible, all loose or fixed "stuff" which might come off and mix with the flour or other contents of the bag, but they avoid all heavy calendering or mangling which might crush or weaken the fibre. Nearly all the Jute bags supplied in this market hitherto have been heavily finished with the object of making the cloth look coarse and heavier than it really is, but this crushing weakens the yarns so that the sewing thread tears them and causes many a burst, which is blamed erroneously on the sewing.

The trade has appreciated Messrs. Dick, Ridout & Co.'s efforts to such an extent that they have for several months past been unable to fill many of the orders offered as promptly as they desired, and they have therefore been fitting up a new wing which was opened a few days ago, and which gives them increased facilities for printing bags in several colors and for finishing the cloth; and as the firm have large stocks and immense shipments of raw material on the way, they will hereafter be able to fill all orders with unprecedented speed. They are in the habit of finishing, sewing and shipping bags on the day ordered, which proves a great convenience to millers or others who often require special sizes at short notice.

Latest Canadian Patents.

No. 352,624.

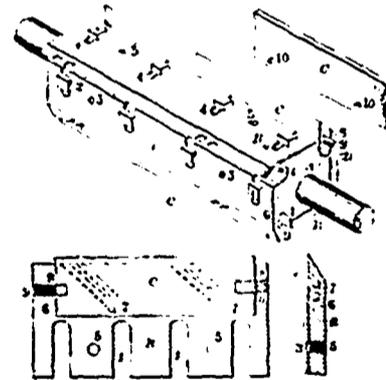
Terrence O. Loughlin, Spanish River, Ontario, Canada. Filed June 19, 1886. Dated Nov. 16, 1886.



Claim. A circular cross-cut saw constructed with teeth having a knife edge on the front of each tooth, and terminating in a beveled gullet at the base of each tooth, and the face of the tooth running in a line to a point behind the center of the saw, each alternate tooth having the cutting edge beveled in one direction, and the cutting edge of the intervening teeth in the opposite direction, the teeth which act on the end of the board being without set, and the teeth which act on the part being cut off having a small portion of set only.

Bit-Holder for Cutter-Heads.

353,509. Samuel J. Shimer, Milton, Pa. Filed March 22, 1886. Dated Nov. 30, 1886.



Claim 1. The combination, with a cutter-head stock, a holding-plate removably secured to the said stock and having a knife-seat formed thereon, and a knife provided with studs to move in diagonally-arranged grooves in its seat, of adjusting-screws let in the ends of the holding-plate, whereby the knife may be moved forward or backward in its seat.

2. The combination, with a cutter-head stock and a holding-plate detachably secured thereto and formed with a knife-seat, and diagonally-arranged grooves across the knife-seat, of a knife formed with studs to set within the said grooves in the knife-seat and adjusting-screws let into the ends of the holding-plate, whereby the knife may be adjusted to any desired cut.

3. The combination, with a cutter-head stock formed with countersinks on its faces, a holding-plate secured to the stock and provided with set-screws to set within the countersinks of the head-stock and having a knife-seat formed with diagonal grooves across its face, and a knife formed with studs to set within the grooves of the knife-seat, of adjusting-screws let in the ends of the holding-plate to move the knife backward and forward.

4. The cutter-head knife consisting of a plate of steel formed or provided with studs to, projected from its face, near opposite ends of the knife, and arranged to set in and traverse parallel guiding-grooves in the cutter-holder plate of a cutter-head.

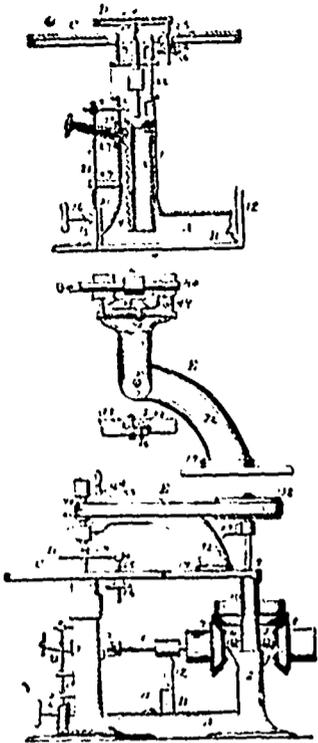
5. In combination with a cutter-head and a knife thereof formed with studs on its face disposed in diagonal grooves in the holding-plate, of adjusting-screws let into the head from both ends parallel to the knife-bed and engaging with the ends of said knife, whereby the knife may be moved forward and backward and set at any desired cut.

Variety Molding Machine.

353,510. Samuel J. Shimer, Milton, Pa. Filed May 13, 1886. Dated Nov. 30, 1886.

Claim 1. The combination, with the lower tool, the main table, and the upper tool arranged in the hinged arm E, of the intermediate detachable and adjustable table, D, formed with a too

...ature, and projected from and supported by an adjustable support on the main table, whereby th



work may be accommodated to the action of the lower tool or to the tool in the hinged arm.

2. The combination, with the sliding housing of the lower tool spindle, of the vertical lifting rod provided with a lifting arm, a vertical rod or turning bar beneath the lifting rod, a cam shaped block secured to the top of said turning bar and serving as a rest or support for the lower end of the lifting bar, and an operative device for rotating said cam block and vertically reciprocating the lifting bar.

3. The combination, with the hand lever of the slanting mechanism formed with a cam shaped surface upon which the lower end of the lifting rod rests and is supported, and the sliding housing of the lower tool, of the lifting rod disposed through guide arms in the post of the machine and having a projecting arm extending within the housing.

4. The combination, with the table of a molding machine, of the over-hanging arm E, comprised of a stationary base piece, and a forearm hinged to said stationary base piece by a lap joint secured by a pivotal bolt, and having in one face a quarter turn groove and in the other a pin projected with a said groove.

STANDARD CHOPPING MILLS

Now furnished with Shaking Screen over hopper to take out nails, stones, &c.



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

FOR SALE, -VALUABLE- CANADIAN PATENT on an Improved Automatic GRAIN, FLOUR AND FEED SCALE.

Not wishing to extend our manufacturing business into Canada, we have concluded to dispose of our CANADIAN PATENT on above invention. We have our Scales in operation in some of the best mills in Canada.

A full set of Patterns will be included in sale of Patent. Address

J. B. DUTTON & CO., 42 Woodward Ave., DETROIT, - MICHIGAN.



SCIENCE OF ACCOUNTS

PRICE, \$1.00.

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THOS. DEAN,

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PHOSPHOR BRONZE,

Babbit Metal, &c.,

NO. 158 YORK STREET, TORONTO.

HUXTABLE'S

Purifier Attachments

GEORGETOWN, Dec. 17, 1886.

JAS. HUXTABLE ESQ.

Dear Sir: "We have given your purifier attachment a good trial, and are well satisfied. We find that it will do just what you claimed it would do, and we think it's just the device required by all millers having more purifier surface than they can properly cover with stock. We would recommend it especially to those millers who are trying to keep their purifier cloths properly covered by returning stock. Every practical miller knows that to be a very wasteful operation."

Yours truly, R. & W. S. LAW. ADDRESS JAMES HUXTABLE, Horning's Mills, Ont

GRAND TRUNK RAILWAY.

Trains Leave Toronto as Under: [STANDARD TIME.] MAIN LINE EAST. 7:15 a.m.—Local for points East to Montreal. 8:35 a.m.—Fast express for Kingston, Ottawa, Montreal, Quebec, Portland, Boston, etc. 1 p.m.—Mixed for Belleville and intermediate stations. 5:30 p.m.—Local for Cobourg and intermediate stations. 8:00 p.m.—Express for main points—Ottawa, Montreal etc., runs daily.

MAIN LINE WEST. 7:55 a.m.—Local for all points west to Detroit. 7 p.m.—Express for Port Huron, Detroit, Chicago, and all Western points. 4:00 p.m.—For Goderich, Stratford and London. 6:25 p.m.—Mixed for Guelph and intermediate stations, p.m.—Express for Sarnia and western points.

ARRIVE FROM THE EAST. 10:10 a.m.—Local from Cobourg, 9:00 a.m.—Express from Montreal, Ottawa, and main local points. 11:00 a.m.—Fast Express from Montreal, etc. 6:40 p.m.—Mixed from Belleville and intermediate stations. 10:40 p.m.—Express from Boston, Quebec, Portland, Montreal, Ottawa, etc.

ARRIVE FROM THE WEST. 7:55 a.m.—Accommodation from Weston.—8:10 a.m.—Express from Chicago, Detroit, Port Huron, and all western points. 9:45 a.m.—Mixed from Guelph and intermediate stations. 12:32 p.m.—Local from London, Goderich, etc. 7:10 p.m.—Express from all points west—Chicago, Detroit, etc. 11:50 p.m.—Local from London, Stratford, etc.

GREAT WESTERN DIVISION.

LEAVE TORONTO. 7:10 a.m.—For Niagara Falls, Buffalo, Detroit, Chicago and St. Louis. 9:15 a.m.—Local between Toronto and Hamilton. 12:20 p.m.—For Detroit, Chicago, Buffalo, New York, and all points East and West; runs daily. 3:55 p.m.—For Niagara Falls, Buffalo, New York, Boston, and local towns bet. Hamilton and London, and Brantford, St. Thomas, etc. 5:55 p.m.—Local between Toronto, Hamilton and St. Catharines. 11 p.m.—For Niagara Falls, Buffalo, New York, Boston, and all points East and West of Hamilton.

ARRIVE AT TORONTO. 8:35 a.m.—Express from Chicago, Detroit, Hamilton, etc. 10:15 a.m.—Express from London, St. Catharines, Hamilton, etc. 1:55 p.m.—Express from Hamilton, London, Detroit, and points west. 4:30 p.m.—Express from New York, Boston, Chicago, Detroit, London, etc., runs daily. 7:05 p.m.—Mail from Buffalo, Detroit, London, Hamilton, and intermediate stations. 7:45 p.m.—Express from Detroit, St. Louis, etc. 11:10 p.m.—Local between Toronto and Hamilton.

CANADIAN PACIFIC RY. ONTARIO DIV.

DEPARTURES.—Going West.—Detroit Express at 8:10 a. m.; Chicago Express, 1:05 p.m.; Express, 4:15 p.m.

Going East.—Mixed (for Peterboro', Carlton Place, and intermediate points), 5 p. m.; Montreal and Quebec Express, 8:10 p.m.

ARRIVALS.—From the East.—Montreal and Quebec Express—8:27 a.m.; 9:30 p.m. Mixed (from Peterboro', Carlton Place, and intermediate stations, 11:30 a.m.): From the West.—Detroit and Michigan Express, 9:10 a.m.; Express from St. Thomas—8:30 p. m. Chicago Express 5:20 p.m.

OWEN SOUND BRANCH. Depart—Mail, 7:45 a.m. Express 4:50 p.m. Arrive—Mail at 10:55 a.m.; Express at 9:10 p.m. Steamboat Express over the Credit Valley to Streetsville Junction, Wednesdays and Saturdays only, 10:45 a.m.

ORANGEVILLE AND ELORA BRANCHES. Depart—Orangeville and Elora Mixed, 8:10 a.m.; 4:15 p.m. Arrive—Orangeville and Elora Mixed, 9:05 a.m.

TEESWATER BRANCH. Depart—Teeswater Mixed, 7:45 a.m.; 4:50 p.m. Arrive—Teeswater Mixed, 10:55 a.m. 8:10 p.m.

NORTHERN & N. W. RAILWAY.

Trains Leave City Hall as under 7:55 a.m.—Mail for Gravenhurst, Orillia, Meaford, Penetang, and intermediate stations. 11:45 a.m.—Accom. Gravenhurst, Collingwood, and Meaford. 5:15 p.m.—Express for Collingwood, Penetang, Orillia, and Barrie. Trains are due to arrive at 10:15 a.m., 2:00 p.m., and 7:45 p.m.

CHRISTIE, KERR & CO. LUMBER DEALERS,

OFFICE: No. 9 VICTORIA ST., TORONTO, ONT. LUMBER FREIGHTS AND PRICES. (Canadian Quotations furnished by above firm.)

Gravenhurst, Penetang, Orillia, Severn, Phepston, and Wyevale, to

St. Thomas Suspension Bridge St. Catharines Paris Woodstock Ingersoll London Brantford Goderich Buffalo Detroit Tonawanda 15c. per 100 lbs.

From G. T. R. Stations—Midland, Waubushene, Victoria Harbor, Sturgeon Bay and Fesserton to

Suspension Bridge St. Catharines London Goderich Tonawanda St. Thomas Buffalo, 11c. per 100 lbs. Paris Woodstock Ingersoll Brantford 15c. per 100 lbs.

From G. T. R. Stations—Midland Waubushene, Victoria Harbor, Sturgeon Bay and Fesserton to Toronto and Hamilton. 8 3/4c. per 100 lbs.

From C. P. R. Stations—Owen Sound and Teeswater to Toronto. 9c. " " From Ottawa to Toronto and Hamilton. 10c. " "

From N. & N. W. R. Stations—Gravenhurst, Severn, Phepston and Wyevale to Toronto and Hamilton. 9c. per 100 lbs. Collingwood, Penetang, Orillia and Barrie to Toronto and Hamilton. 8 3/4c. " " New Lowell, Angus, Barrie, Lisle and Iloga to Toronto and Hamilton 8c. " "

PRICES OF LUMBER.

Table with columns for Toronto Jan. 1st, 1887, and prices for various lumber types like Pine, Spruce, Fir, etc. in different sizes and quantities.

BUFFALO. Jan. 1st, 1887.

Table listing prices for Buffalo lumber, including items like Uppers, Common, Culls, and various sizes of lumber.

We quote wholesale prices of hardwood lumber delivered on cars or boat

Table listing prices for hardwood lumber such as Walnut, White Oak, Cherry, etc.

SAGINAW VALLEY. CARGO QUOTATIONS.

Table listing shipping and cargo quotations for various lumber products.

YARD TRADE.

Table listing yard trade prices for different types of lumber and wood products.

Surfacing and stretching. Dressing and stretching. Making drop siding. Making bevel siding and casing.

Advertisement for DONALD C. RIDDOUT & CO. PATENTS, featuring a logo and text about patent services.

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HOWLAND & ARNOLDI, BARRISTERS, SOLICITORS, ETC., Canada Life Assurance Chambers, 46 King Street West, Toronto, Ont.

FRANK ARNOLDI. O. A. HOWLAND. Also Patent Solicitors—Correspondents in Foreign Countries.

SHAVINGS AND SAWDUST PRACTICAL FOR PRACTICAL BY A PRACTICAL. BOOK MEN MAN. Treats of the care, operation, designing and construction of wood-working machines.



Large quantities of lumber are being shipped from Hawham, Ont.

Messrs. Rowe, Avery, and Hare, of Hampton, Ont., intend running the saw mill at that place.

A. D. McNab and R. C. Campbell have opened a new lumber shanty near Golden Lake, Ont.

Mr. Wm. Robinson is said to have leased the saw mill at Furnace Falls, from Parry & Mills.

L. J. Hughson & Co., lumber, Sarnia, Ont., are succeeded by the Muskoka Mill and Lumber Company.

A gentleman from Perth is trying to get a site for a small mill which he intends erecting in the spring at Calabogie, Ont.

The area of timber limits under license on the Ottawa, in the Province of Quebec, is 9,732 square miles; in Ontario, 7,153 miles.

It is reported that Mr. McKossie, lumberman, of Kingston, is about to build a large mill on the Madawaska river near Calabogie, Ont.

The Longford Lumber Co. have now about 15,000,000 feet piled up, and in another fortnight will have nearly all the logs in the water.

Mr. J. C. Thorne has commenced operations in his saw mill at Battersea, Ont., after having refitted the interior and added some machinery.

Boyd Caldwell's mill at Wilbur Station, Ont., started to cut shingles on Jan. 1st, and will cut all winter. Donaldson's mill will also run all winter.

The A. Mfg. Co.'s men and teams have been in the lumber woods west of the Albert Mines, N. B., about three months, and at the present time have more than 5,000 logs yarded.

In the construction of the snow-sheds on the line of the C. P. R. in the mountains, the enormous quantity of 22,000,000 feet of lumber has been used and 5,000 navvies employed.

The contributions of the various streams of the Saginaw district, Michigan, to the mills on the river the past season aggregate 586,440,000 feet, all which were rafted and delivered by water.

The celebrated suit involving 2,500,000 feet of lumber between the liquidator of the Rainy Lake Lumber Co. and the Union Bank, has been decided in favor of the bank by the supreme court.

W. A. Quinton, M. P., has about 70 men lumbering in the vicinity of Loch Lomond and 25 men in the woods in Lancaster, N. B. Mr. Quinton will get out a large quantity of logs this winter.

Smith, Wade & Co., lumber, Quebec, are succeeded by Edward Harper Wade and Henry Talbot Walcot, under style Smith, Wade & Co., Quebec, and Walcot & Co., London, England.

The Chatham Manufacturing Company have secured a valuable tract of timber land in the vicinity of Newbury. There are walnut, chestnut, oak, white ash and other timbers of good quality on the limit.

For want of snow lumbering operations in New Brunswick have been somewhat curtailed. Patrick Long intends putting in about 1,000,000 feet on the Kennebecasis river this winter for Freeze Bros., of Penobscot.

Rat Portage Progress.—We understand that Mr. Mather is sending a gang of men under the superintendence of DesMarris, up to Rainy River to build a boom to facilitate the transportation of his logs the coming spring.

The Glencoe sash and door factory is to be rebuilt by Messrs. Huston, Hopkins and Stevenson, who are about to purchase a couple of lots near the railway station from A. P. McDonald for the purpose. The new building will be of brick.

Reports from Baltimore, N. B., state that times are dull there this winter. Very little lumber is being cut. William and Edward Stevens will get in about 20,000 feet at their mill for spring sawing. George Irving will get in 10,000 feet or upwards at his mill.

The Wm. Cane & Sons Mfg. Co., of Newmarket, Ont., which has suffered so severely by fires on several occasions, have just erected an addition to their factory 12x16, covered inside and out with sheet iron, to be used for storing small supplies of paints, oils and varnish in immediate use, where the same can be mixed apart from any other combustible material.

Mr. Hooper, President of the British Carriage Manufacturers, after a tour throughout Ontario and Quebec, is writing a book upon our hard woods. He advocates the utilization of our immense and injurious waste of sawdust by mixing with pitch or something similar and pressing into bricks to be converted into charcoal, for which there is a great demand in England.

Fine specimens of French walnut have come as high as \$2 a pound. Ebony is as costly as French walnut. It often brings as much as \$300 a ton, providing the wood is of the finest quality. Five dollars a pound is often asked and received for exceptionally fine pieces. Rosewood and mahogany are popular woods and are always in demand. The best mahogany comes from San Domingo. Rosewood is worth from three to six cents a pound.

The office of Messrs. McClellan & Cann, coal and lumber merchants, Bowmanville, Ont., was entered by burglars a few nights since, the safe broken open, and some \$50 carried off. The safe door was drilled through directly over the small bolt in the combination, which was then broken with a punch. The inside door was then smashed in and the cash taken. As it happened, Mr. Cann and the book-keeper, Mr. T. C. Jewell, each carried home \$100 with them that evening, otherwise the thieves would have made a larger haul.

We learn from the *Lumberman's Gazette*, of Bay City, Michigan, that C. L. Ortmann sold to Ross & Co., of Quebec, a tract of pine south of Ashland, estimated to cut 12,000,000 feet; consideration, \$43,000.

The development in the export of Canadian lumber from Montreal in late years has been enormous. In 1877 only ten vessels sailed from Montreal, with 3,400,000 feet of timber, whilst in 1886 the quantity shipped to South America and Great Britain in 181 steamships and sailing vessels was 100,700,000. This growth shows the absolute necessity for extending the wharfage accommodation for shippers of lumber.

A Winnipeg lumber dealer states that at the present reckoning, the number of feet of lumber in Winnipeg and points between that city and Port Arthur, including the latter place, is estimated to be between twenty and twenty-five millions. It is claimed that at this season last year there were about forty-five million feet, and present prices are pretty stiff in consequence of the limited stocks held by dealers. They report no heavy transfers, but are perfectly satisfied with the outlook, as considerable activity is expected in the province and the west when the building season opens.

Mr. Alexander Feir's lumber and shingle mill, at Feirville, Ont., was entirely destroyed by fire on the 30th of December last, and it was with much difficulty that the grist mill was kept from the flames. If the wind had been blowing in the direction of the grist mill it could not have been saved. A large quantity of first-class slungles to the value of \$600, stored in the mill, were also destroyed. The fire is supposed to have originated from the stove in the mill. The loss is a very heavy one to Messrs. Feir & Son, and also to the surrounding country. There was no insurance on the building or contents.

The lumber dealers of New York have formed a corporation under the name and style of "The New York Lumber Trade Association," the objects of which are: "To foster trade and commerce, to reform abuses in trade to protect trade and commerce from unjust and unlawful exactions, to diffuse accurate and reliable information among its members as to the standing of merchants, to acquire, preserve and disseminate valuable information relating to the lumber interests of this and the surrounding cities, to produce uniformity and certainty in the customs and usages of trade, to settle differences between its members, to establish rules for inspection, and to promote a more large and friendly intercourse between merchants."

The large saw mill at Pleasant Point, opposite Indiantown, N. B., owned by Messrs. F. T. Spearin, G. A. D. B. Warner and Capt. J. R. Warner, was totally destroyed by fire at the beginning of the new year. About 3,000 feet of lumber was also destroyed. How the fire caught is not quite clear, but it is supposed that a coal oil lamp in the shingle room blazed up and set fire to the woodwork. The mill was built by Lewis Rivers sixteen years ago and was in a good state of repair and supplied with a lot of fine machinery. During the summer it gave employment to 120 men. It was the intention of the proprietors to run all winter, in which case it would have supplied work for 22 men. The mill and other property destroyed was valued at \$25,000. The insurance is understood to be altogether inadequate to cover the loss.

The following clipped from the *East Saginaw Courier*, refers to Wm. Merrill, of Norwich, Ont. The *Courier* several weeks ago gave a history of the case of Wm. Merrill against Joseph Wilson et al. It has been decided by Hon. J. H. Steere, Circuit Judge of Alger County. The Judge decides that the complainant is entitled to the relief prayed for in his bill. This gives Mr. Merrill title to 320 acres of pine land in Alger County under a deed given by him October 3, 1885. As previously stated, Mr. Merrill had placed in the hands of his agent 1000 acres of pine land in Alger County for sale, and as he claims, the 320 acres of land were held by Wilson and others through fraud, and filed his bill to set aside the pretended title held by them. The case will be carried to the Supreme Court.

Nova Scotia papers announce that all efforts to launch the big raft at Joggins has hitherto failed. Since the raft has been upon the waves it has altered in shape considerably. It was originally 55 feet broad and 36 feet high. It is now 62 feet broad and 31 feet in height. At high tide the water at the lower end of the raft is 19 feet in depth and causes the structure to lift a trifle. A number of hydraulic jacks have arrived from New York and the work of pushing the raft to deep water will be proceeded with at once. Mr. Robertson has obtained some eye-bolts which will be placed in the rocks on the ledges on either side of the passage way through which the raft has to go. Hawsers will be attached to these and the raft will be kept there in position until the tugs arrive to take her in tow. It may interest the public to know how much this great raft cost and how much would have been saved if it had been launched when the first attempt was made. A reporter interviewed several of the principal business men in the vicinity of Joggins, most extensively engaged in the piling business. The result of the interview was about as follows: There are in the raft about 2,225,000 feet of lumber, which could not be carried from the Finger Board to New York in less than fifty schooners. The average price of piling conveyed to the shore ready for shipment is 1 1/4 cents per foot. There are required to place it on board the vessel 2 1/2, which includes the freight and the cost of discharging. This brings the cost of the piling delivered in New York, up to 3 3/4 cents per foot and in addition the port charges and commission will bring the costs up to 4 1/2 cents. An ordinary schooner will carry about 20,000 feet and her cargo landed in New York will cost the shipper \$825. As there are about fifty such cargoes in the raft, the cost of the lumber, if it had been carried in vessels, would have been about \$40,000. The raft, as it stood in August last, when it was first in readiness for launching, was in the vicinity of \$13,000. It is perhaps not out of the way to mention that the builder, B. B. Barnhill, lost something like \$5,000. Already about \$10,000 have been expended in attempts to launch it, which brings the cost up to \$23,000. From this it will be seen that the owners can afford to expend some thousands of dollars yet to launch the raft and land it in New York with a lesser outlay than would have been required had the lumber been shipped in vessels.

The Muskegon (Michigan) papers report the particulars of a suit of interest to lumbermen. The case was tried at the Newaygo circuit court. It was developed on the trial that the booming company began to assort and deliver logs at Muskegon last spring on the 13th of April, but within a day or two was obliged to suspend operations for want of logs and was unable to resume for many days. The river opened early and logs were stopped and jammed at the piers and sorting booms of the plaintiff at Newaygo. The officers of the Newaygo Manufacturing Company, contending that the water was too high to assort and run with safety, continued to hold the great mass coming down the river at its piers, until on the 28th of April there were 15 miles of solid jam, containing, as the proof showed, about 100,000,000 feet. The officers of the booming company insisted that the logs could be run at Newaygo as they were at other points on the river, without injury, and demanded that the "drive" be allowed to continue. On April 28 Mr. Ira O. Smith, President of the booming company, with a foreman and ten men, went up the jam and began to pass the logs through; after they had run for an hour or so one of the Newaygo booms broke, swung into the channel and stopped the passage of logs until the next afternoon. In the meantime the Newaygo company procured an injunction to be served upon the officers of the booming company, and thereafter controlled the piers and assorting works, the boom company's employees assisting both in repairing the boom and in passing the logs through. Soon thereafter the Newaygo company brought suit, claiming that a large quantity of its logs were carried to Muskegon by this unlawful action of the boom company, and seeking to recover an account of the same, placing its damages at \$10,000. The boom company on the trial conceded that the plaintiff had an equal right with itself to run its logs and assort them from the common mass at Newaygo, but denied the right to obstruct the navigation of the river by stretching a boom across the channel, and holding the logs at its own will. It further appeared there was about 600,000,000 feet of logs in the "drive" bound for Muskegon, and the boom company was put to the exercise of the utmost diligence to finish during the driving season. Under these circumstances the defendant insisted that it was not liable for any damages the plaintiff might have suffered in the premise. The trial resulted in the virtual defeat of the plaintiff's claim, the jury rendering a verdict for six cents.

CLEANING CHERRY OR ASH.

BY OWEN B. MAGINNIS.

As the proper cleaning and finishing of oak or cherry require considerable care and skill it will be interesting to notice the practical treatment which the woods undergo under the hands of the woodworker.

Cherry, as in tables, framing, etc., is usually roughed off by the planing machine and worked into its required shape before finishing. When, as in the case of a veneered door, the frame is ready for cleaning off it is laid on and firmly fastened to the bench by strips cut in between the joggles, then carefully surfaced or leveled over with the fore plane. This is in itself a delicate operation, as the surfaces of the pieces must be exactly flush under a straight edge—that is to say, across the face stiles must be on the same level as the face of the rails, and the latter on the same level as the mullions: in short, the surfaces must all be in the same plane and the stiles likewise straightened. All lumps must be reduced and great caution exercised to avoid sprawling corners. Use the plane with the grain, as the contrary works out holes and causes more trouble with the smoother. This done, it is usual to smooth off with a closely set, well-sharpened plane, or, better still, a Bailey iron plane. Some woodworkers object to using the iron plane, as it marks the stuff, and causes much scraping afterwards, but it never breaks corners and will work well against cross-grained stuff like this. Having finished smoothing, proceed to scrape the surface with a scraper which will cut to a shaving. Work carefully with the grain and take out all holes and rough spots, especially near the joints. When scraping across joints bend the scraper with the hands and avoid tearing up the grain on either side of the joint. Obliterate every imperfection noticeable before applying the sand paper, which should be No. 1, and used with a broad, flat, cork rubber. On no account sandpaper across the joints, as the grit in the sandpaper will score across the sensitive surface, but work close to the endwood joint and then with the grain of the jointed stile or rail, as the case may be. Of course the result of the operation depends on the operator's skill, but an exceedingly neat job can be done with a little care.

Ash is, perhaps, the most difficult of all the woods to clean, as the grain is of an open and straight nature, varied with a frequently recurring tough cross spot. Like cherry wood, after going through similar treatment, it shows a beautiful surface which, being filled and varnished or polished, looks rich and glossy, the one dark and warm and the other light and elegant. After sandpapering, rough spots are seen by white blotches and they can be easily scraped out as before. In these days when pine is almost obsolete and the hardwoods growing in favor, it is essential that their treatment be understood.

Robert Connors, lumber operator, reports about three feet of snow in the woods of the upper St. John, N. B.

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J. B. Dutton & Co., Detroit, Mich. ATTON Ont., May 15, 1886.
GENTLEMEN:—Enclosed find certified cheque in payment for Automatic Scale. We are not in want of any more Automatic Scales at present, but when we want any we will give yours the preference. We consider it strictly reliable, as we test it every week; and what we particularly admire is its simplicity, so little to wear and get out of order.
Yours truly,
N. WENGER & BROS.
Messrs. J. B. Dutton & Co., Detroit. WOLVERTON, Ont. March 5, 1886.
GENTLEMEN:—The Automatic Scale we bought of you is a GRAND SUCCESS. We have tested it many times, and in every case found it correct. We made one special test of 5,000 bushels to our entire satisfaction. It is so simple in construction that it cannot get out of order, and requires no attention. We can now take our yields daily and know exactly what we are doing; besides we can always tell just what wheat we have on hand. We consider it indispensable.
Yours truly,
A. WOLVERTON & CO.
Write for Circulars and Best Discounts.
J. B. DUTTON & CO.,
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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 letters, 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.

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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 bestowal 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.

IN renewing his subscription to the MECHANICAL AND MILLING NEWS, Mr. Manson Campbell, of Chatham, Ont., writes: "I am very well pleased with your paper. No paper that I take pays me as well."

PERSONS wanting machinery of any kind, new or second-hand, should examine the list headed "Machinery for Sale" which appears in this paper every month. If they do this, they are sure to find what they want.

IN renewing his subscription to the MECHANICAL AND MILLING NEWS, Mr. Wm. Crowston, Manitowaning, Ont., writes: "I am highly pleased with the paper. I find that it has improved greatly, and I trust that its future may see it second to none in America."

THE terrible explosion in a Carberry, Man., flour mill, particulars of which are given elsewhere, should prove a sufficient warning to millers of the danger of bringing fire into contact with flour dust. It is about as safe an experiment as dropping a lighted match into a powder magazine.

At the meeting of the Toronto Board of Trade recently held for the purpose of electing officers for the ensuing year, Geo. A. Chapman and R. C. Stells were appointed to represent the grain interest, H. N. Baird, milling; Wm. Christie and R. W. Elliott, manufactures; and J. Donogh, lumber.

It is said the Dominion Millers' Association will shortly discuss a proposal to make a distinct grade of flour by the patent roller process. There are a great many other questions quite as important to the milling industry which the Association might profitably discuss if it could be aroused from its lethargy long enough to do so.

THE project of an Imperial Institute, which would be representative of the commercial and industrial enterprise of Great Britain and her colonies, and which would be calculated to promote closer trade relations between the various parts of the empire, is occupying a good deal of attention in England at present. It is intended to be a permanent memorial of the jubilee of Queen Victoria's long and prosperous reign. The Queen's dominions will be appealed to for funds to maintain such an institute.

It is said that the construction of the proposed line of railway in New Brunswick, beginning at Hartland and extending northeasterly through the fertile parishes of the County of Carleton to the Tobique river, and thence coalescing with the Tobique Valley railway scheme, extending it to the I. C. R. at Campbellton, will open up a "fertile belt" capable of producing 30,000,000 bushels of grain annually. By the opening up of this district saw and flour milling industries would be greatly stimulated and developed.

WE received too late for publication copy for a change of advertisement from Mr. W. B. Bragg, of Rockwood, Ont. He has just started in successful operation a 9x24 3-High Monitor Roller mill in Dr. Grove's mill at Fergus. Mr. Bragg writes that on a fifteen hours test the mill averaged over 90 bushels per hour of very damp mixed peas and oats. Letters received by Mr. Bragg from Thos. Bell, proprietor, and James M. Horn, head miller, of the Erin roller mills, speak in the highest terms of the success achieved by the 3-High Monitor mill which has been in operation there since last summer. These letters will be published in full next month.

WE are pleased to notice the growing interest which is being manifested in the Prize Essay Department lately opened in this journal. We welcome among other new contributors this month, Mr. J. L. Hughes, Public School Inspector for this city, whose excellent essay on technical education in our public schools carries off the prize. This essay will doubtless be read with a great deal of interest, and tend, as we hope, to awaken an interest in this important subject. We desire to repeat the invitation given a couple of months ago to those who may feel disposed to fairly criticize statements made in any of these essays. We shall be pleased to find room for such criticism, believing that, if properly conducted, it would have a beneficial effect.

PROTECTION TO HOME INDUSTRIES.

It is not the business of a trade journal to deal largely in politics. Acting upon this belief, the MECHANICAL AND MILLING NEWS has hitherto confined itself to the diffusion of practical knowledge required by those engaged in the various lines of mechanical industry represented in this country, and to the promotion of the welfare of those industries. If on this occasion we seem to depart from the above rule, it is from a sense of duty to the industrial interests of the Dominion. In the general elections about to be held, it is of the utmost importance to know what is to be the fate of the National Policy of protection to home industries which has prevailed in this country since 1878. Under that policy, manufactures have developed, employment for the working classes has been more plentiful and constant, and the country as a whole is enjoying prosperity. With this satisfactory state of affairs, we desire to see no interference in the direction of a return to one-sided free trade. There may be defects in the present tariff—probably there are—but on the whole it works satisfactorily. We are in a position to know that it has not only been the means of stimulating and developing home industries, but has also brought into active operation in Canada a large amount of American capital. It would therefore be suicidal for Canada, just as her native industries are taking root, to take away protection from them, and allow them to be strangled by long-established, powerful, and often unscrupulous competitors in the United States.

Until a few days ago the Reform party in this country were the recognized opponents of the National Policy and of the protective principle. In his speech in East York the other day, however, Mr. Blake takes entirely new ground on the tariff question. While not announcing himself as a convert to Protectionist doctrines, he claims that the changed circumstances of the country, and the need for a large revenue, makes it necessary to maintain a high tariff, and that therefore little or no alteration would be attempted should the Reform party attain to power.

It speaks much for the growth of Protectionist ideas that the former opponents of the National Policy have found it necessary to change their ground in regard to it. So far as our observation goes, no party placing itself in direct antagonism to that policy at the present time would have the shadow of a chance to obtain a majority. Mr. Blake appears to have recognized this fact, though so late in the day that it is a question whether he will be able, in the short time before polling day, to remove from the minds of the electors suspicions as to the sincerity of his new departure, in view of his conduct and that of his party on this question for a number of years past. It is necessary, too, if the Opposition expect to receive the support of National Policy voters, that the other prominent men of the party and the leading news-

papers of the party should show themselves to be in accord with the position taken by Mr. Blake. If the leading Reform newspapers continue to advocate free trade doctrines or maintain silence on this issue, as they are now doing, Mr. Blake's utterances will have but little effect.

We care but little which party, as a party, attains to power, but we care a great deal about the growth and prosperity of the industrial interests of Canada. A correspondent in another column points out in a very forcible manner the disastrous effect which a removal of the flour duty would have upon the milling industry of this country, which, owing to large milling capacity and keen competition at home in Canada, is not over profitable at present. Our correspondent also shows conclusively that while such a change would ruin hundreds of our millers, it would reduce prices to the farmer by removing the competition between the millers and exporters. This is a sample of what would happen all along the industrial line should a free trade policy, or policy for revenue only, obtain. It is for the electors to see that the continuance of the National Policy is assured.

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.

E. L. Foss, foreman of the New Brunswick cotton mill, St. John, N. B., was presented by the men of his department with a handsome silver lake basket.

Miller McNaughton, of Oakland, Ont., who had resolved on going back to Scotland, has decided to remain at the old stand. He will put some new roller process machinery into the mill at Oakland.

The employees of Simmons & Pool, Newcastle, Ont., presented them on the occasion of the opening of their new planing mill and work shop, with a fine eight day clock.

The employees of the Aldous factory presented H. J. Aldous, book-keeper of the firm, on his return home to Georgetown after his marriage trip, with a handsome silver pitcher and a complimentary address.

Mr. Wm. Robertson, an extensive and wealthy manufacturer of Pennsylvania, has been spending the holidays in Stratford, the guest of his old friend, Mr. John Corrie. Mr. Robertson was a well-known citizen of Stratford a little over 20 years ago.

THE MECHANICAL AND MILLING NEWS records with deep regret the death under very sudden and painful circumstances of Mr. James S. Plewes, the well-known miller, of Shelburne, Ont. The particulars of his death, as told by the Shelburne Economist, are as follows: It appears that Mr. Plewes had started out immediately after dinner to make his usual delivery of flour, etc., and that his first stopping place was to be Dr. Rolstin's, where he was to leave some bran. To deliver the bran at the stable he drove up the lane at the back of the doctor's place. Mrs. Rolstin saw Mr. Plewes' rig in the lane and told her husband that he had better go down and show Mr. Plewes where to put the bran. When the doctor arrived at the stable he threw open the doors, expecting to see Mr. Plewes drive along in a moment or two. But Mr. Plewes did not come. By-and-bye the doctor took a look-out to see what was the cause of the delay. He saw the horse and rig standing only a short distance from the stable door, but could not see Mr. Plewes. Curiosity prompted him to go to the sleigh, and there he found Mr. Plewes, face downwards, with his body partly over the dashboard of the sleigh, his head almost touching the whiffletree, and his hands on the rails of the sleigh. The doctor immediately raised him up, but he was dead. It is supposed the deceased took one of the fits to which he was subject, while sitting in his sleigh, and that he fell forward to the position in which he was found as above described. Mr. Plewes was a little over 40 years of age. His sudden death sent a thrill of horror throughout the community. The deceased was up town during the forenoon and seemed in perfect health. Before two o'clock he was dead—struck down in his vigorous manhood. The grief of Mrs. Plewes and family was indeed painful to witness, and evoked the sympathy of all. The funeral took place on Saturday (Christmas) afternoon, the remains being interred in Shelburne cemetery. The members of the Ancient Order of United Workmen, of which deceased was a prominent member, attended the funeral in a body and assisted in the last sad rites of interment. The funeral cortege was one of the largest ever seen here, the citizens turning out almost en masse. The funeral sermon was preached in the Presbyterian Church last Sabbath evening by Rev. T. J. McClelland.

MACHINERY

FOR SALE.

THE FOLLOWING IN STOCK READY FOR SHIPMENT.

New Iron Tools:

4 IRON PLANERS, 3 GAP LATHES, 6 ENGINE LATHES, 4 bench lathes, 2 set-over lathes, 1 Fox lathe, 1 Monitor lathe, 5 Turret lathes, 6 foot-power lathes, 20 dotting machines, 3 milling machines, 1 globe miller, 2 dotting machines, 2 bolt cutters, 1 bolt header, 2 Bradley hammers, 1 drop hammer, 1 steam hammer, 5 iron tappers, 2 punch and shears.

Second-Hand Iron Tools:

2 IRON PLANERS, 12 IRON LATHES, 6 SPEED LATHES, 5 Turret lathes, 2 foot-power lathes, 1 Bull lathe, 2 gear cutters, 8 drilling machines, 4 milling machines, 1 heavy slotting machine, 6 bolt cutters, 2 nut tappers, 2 bolt pointers, 1 power hammer, 1 steam hammer.

New Wood Tools:

4 PLANERS AND MATCHERS, 2 E. H. PLANERS, 2 pony planers, 1 Whitney planer, 3 Husz planers, 2 moulding machines, 4 shaping machines, 2 tenon machines, 4 post boring machines, 1 combined saw table, 1 top saw table, 1 cross-cut table, 4 hand saws, 4 scroll saws, 1 swing saw, 6 wood lathes, 2 door clamps, 3 blind tenon machines, 2 hand wires, 2 elbow sanders.

Second-Hand Wood Tools:

6 PLANERS AND MATCHERS, 1 E. H. PLANER, 1 E. H. double planer, 53 pony planers, 1 door planer, 1 Whitney planer, 6 moulding machines, 3 shaping machines, 5 tenon machines, 3 mortising machines, 1 gang saw table, 2 hand saws, 4 scroll saws, 3 re saws, 1 sand papering machine, 5 wood lathes, 1 hand lathe, 1 pole lathe, 2 axe handle lathes, 2 door clamps, 1 sash clamp, 2 blind tenoners, 2 hand wires, 1 foot wire, 12 wheel machines.

New Engines and Boilers:

5 ENGINES, 5 BOILERS, 2 UPRIGHTS (connected), 1 hoisting engine, 2 22-h. p. portables, 2 14-h. p. portables, 1 20-h. p. portable.

Second-Hand Engines and Boilers:

25 ENGINES, 24 BOILERS, 3 UPRIGHTS, (connected), 3 20-h. p. portables, 21 22-h. p. portables.

New Saw Mill Machinery:

2 SHINGLE MILLS, 2 LATH MILLS, 5 LATH cutters, 2 black bolters, 10 shingle packers, bolting and brass goods.

Second-Hand Saw Mill Machinery:

21 SHINGLE MILLS, 2 SHINGLE MILLS, 2 printers.

CATALOGUE on application. A. R. WILLIAMS, Soho Machine Works, TORONTO, ONT. (Refer to this paper.)

SAW MILL MACHINERY for sale by H. W. PETRIE, Brantford, Ont.

DIRECT ACTION SAW MILL, engine cylinder newly bored, is 10x12, all parts complete.

SAW MILL, Waterous make, direct action, complete with power. Good saw, all ready for use.

SAW RIG, Haggart Bros' make, St. Thomas, Ont., with or without power.

SAW RIG, 35 ft. carriage, new saw frame, mandril and 22 ft.

SAW MILL, Reid & Barr's make, 30 ft. carriage, modern rig.

LOG AND LUMBER CARS, several in stock, prices low.

ONE DRAG SAW, with log car, &c., price low.

ONE SINGLE EDGING TABLE, complete, in good shape, very cheap.

ONE WATEROUS ADJUSTABLE BOLTER AND Picker Machine.

LATH MACHINE, one Waterous self feeder, good as new.

LATH MACHINE, in good order, price \$30.

TWO STAVE CUTTERS, complete, with potman rod and counter shaft.

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GOLDIE & McCULLOCH'S SHINGLE MACHINE, latest make, a fine mill.

WHEEL JOINTERS, 4 by different makers, and very cheap.

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Manufacturers of all kinds of files and rasps. All descriptions of re-cutting done promptly. Terms and discounts given on application. Address GALT, ONT.

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No charge for announcements under this heading. Persons replying to advertisements will please mention this paper.

AS MILLER IN ROLLER MILL, LATELY IN charge of hundred barrel roller mill (late J. S. Plewes, Shelburne). Steady employment wanted. Good recommendations, and good results guaranteed. Strictly temperate. Married. Address Box 124, Newmarket.

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McKEE & MARWICK,

Engine Builders

—AND—

STEAM

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FOR SALE.

1 Bolting Chest, 4 Reels, return canvas gears and all complete; 1 run of 4-foot Hurrs, as good as new; 1 Harter Purifier, with brush, as good as new; 1 Eureka Smutter, in good order.

ALL THE ABOVE MACHINERY WILL BE SOLD VERY CHEAP FOR CASH. ADDRESS

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SMITH'S

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Secretary—JOHN SMILEY, M.A.

MANAGER—W.H.M.

General Offices—18 Court St., Toronto, Ont.

Telegraph Address—Agency, Toronto.

Having for its special objects the furnishing to subscribers of reliable information on the financial standing of otherwise of tradesmen and others, the collection of outstanding accounts, and the procuring of the most reliable information from independent sources of the value and conditions of land and other properties in any part of Canada and the United States, with correspondents in Great Britain and other parts of Europe.

Our method of procuring for our subscribers the most reliable information is through Solicitors of the highest standing, and from other equally reliable sources in the several localities indicated, who are under contract with us to supply the necessary information promptly.

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W. SMITH, Manager.

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, who will make such suggestions as to improvements required for safety against fire as may be for the mutual interests of all concerned.

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The most perfect method of insurance must, in the nature of things, be one in which the self-interest of the insured and the underwriters are identical, and this has been the object aimed at by the organizers of the company.

W. H. HOWLAND, JAMES GOLDIE, Vice-President, President.

HUGH SCOTT, Managing Director.

Applicants for insurance and other information desired, please address MILLERS AND MANUFACTURERS' INSURANCE COMPANY, No. 24 Church Street, Toronto.

BOLTING CLOTHS



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

R. WHITELAW, Woodstock, Ont.

B. GREENING & CO. Wire Manufacturers

—AND—

Metal Perforators,

VICTORIA WIRE MILLS,

HAMILTON, ONT.

—X—

Send for Catalogue, mentioning your requirements.

TO MILLERS.

THE GALT EDGE TOOL AND CARRIAGE SPRING WORKS have on hand a number of

GRINDSTONE BUTTS

of a superior grit, for grinding MILL PICKS, AXES, &c. Diameter, 24 in. to 36 in.; thickness, 7 in. to 20 in. Price, \$1 each, F. O. B.

WARNOCK & CO.

Galt, 9th Nov., 1886.

DOMINION BANK

FOR ALL ILLUSTRATIVE AND PURPOSES

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 us liberally employed and promises to enlarge it to any necessary extent to accommodate communications.

THE ELECTIONS—HOW SHALL WE VOTE?

Editor Dominion Mechanical & Milling News:

SIR: The air is full of politics. Voting to sustain the policy that has prevailed in the Dominion of Canada since 1879, or to discard it in favor of the policy that ruled previous to that year, is near at hand. The time for thinking earnestly of both sides has come, and for deciding which way to vote. Notwithstanding all the noise about patriotism and the welfare of Canada, my observation is this: The practical, common-sense man, if not tied to something called Party, decides that question from the standpoint of what is best for himself individually.

What is the important question to be settled by the forthcoming election, so far as the individual voter is concerned? The one great question that looms up over all others, throwing everything else into the shade, is Protection vs. Free Trade—whether the spirit and effect of our tariff for the next five years is to be in the interests of Canadian farmers, manufacturers and workmen generally, or in the interest of American farmers, manufacturers and workmen. Many other questions will fill party newspapers, and go to make up the speeches of the politicians when the contest is well begun, but outside these two classes, who cares whether Riel should or should not have been hanged, or what effect will the decision of that or any such question have on the prosperity of the individual voter?

I will take the farmer's case, as he belongs to the largest class, and with him associate the miller, since their interests are the same. All the wheat grown by a farmer has to be sold, except what he requires for his own flour and for seed. He has his choice of two classes to sell to—and only two—the miller and the exporter: the miller of his own town or the buyer for some other Canadian miller, or the exporter or the exporter's agent. Which of the two, the miller or the exporter, does he sell to? To the one who pays him the best price every time. Which of the two does give him the best price? Which of the two has given him the best price during the past seven years? I want the answer to these questions to come from any man who comes much in contact with Toronto exporters or their agents at any outside places, such as Aurora, Newmarket, Bradford; and I want that man to say how continuously he hears this remark: "We are not getting any wheat, the millers are taking it all." Why are the millers taking it all? There is only one answer to that question, and the answer is, because they are paying more money for it than the exporter can allow his agent to pay. I am not stating more than the fact when I say that nine months out of every twelve the state of affairs is exactly as set forth above, and in many large farming sections where there are plenty of mills, the exporter can scarcely ever touch a bushel the year round, because "the mills are taking it all," and of course paying the grower more money than the export price warrants.

I challenge any man to establish any other conclusion than this—the millers pay the farmers better prices for their wheat than the exporters do or can pay.

This is under a system of protection. Change that system. Come back to free trade. Remove the duty from wheat and flour, and what will result? The great millers of the Western States will send their salesmen to Toronto, and Montreal, and Quebec, and Kingston, and Ottawa, and London; and later on to the smaller cities and the towns and the villages of this country—to every place where there is a flour store with cash enough to pay for a car load of flour—and will sell car loads and train loads of flour at prices lower than the Canadian miller can afford to sell at, even if he gets his wheat at export figures. There will be no more complaints among wheat shippers that the millers are taking all the wheat. The miller will have to shut down, and silent mills will become as plentiful in Canada as they are to-day in England, Ireland and Scotland. When once thoroughly shut down, workmen scattered—gone to the United States to help make American flour out of American wheat to supply Canada with—when customers are lost, it is an easy matter for the American millers to keep them shut down, and get high prices for their flour, too. The plan is an old one, well tried and found satisfactory by the manufacturers of the protected United States who wanted free trade. Canada for customers in years gone by, before the N. P. was taken hold of by this country. I ask any farmer to recall the prices he has had from millers all the year round, the eager competi-

tion between millers in his own town and buyers who wanted his wheat for millers at other points in Canada, to say whether he can afford to kill off this competition for the wheat he has to sell.

I am not a politician—certainly not a Tory one—and never gave a Conservative vote in my life except on two occasions when I voted for the protection candidate who was the Conservative candidate as well; but I am interested in getting the best pay for my labors that I fairly can get, and do not propose to give my vote to assist in clearing the way for American wheat and American flour to deluge this country and throw mine on the mercy of the exporter, who, however patriotic he may be, is limited in the price he pays me by the competition he has to meet in the European market, from every wheat field from India to California.

In the contest that is soon to come off, there is no place for smaller issues in comparison with this question of protection vs. free trade. No farmer, manufacturer or workman in this country can afford to give his vote for any candidate who does not come out clearly and honestly and say, "I go to Parliament to support protection and home industries." No equivocations should be tolerated. It will not do to say "there is no danger of duties being lowered; the requirements of the government necessitate high duties." That will not do. High duties are not what we require. We require the spirit of protection to home industries to be first and uppermost and all through our customs tariff. The candidate must say, without reservation, "I believe in protection to home industries of all legitimate kinds, and my seat in the House of Parliament will be on the side of the leaders who are sound on that question, and who will preserve that spirit intact in our tariff."

"A."

Our Portrait Gallery.

MR. M. McLAUGHLIN.

Mr. McLaughlin, whose portrait we present this



MR. M. McLAUGHLIN.

month, was born at Mono Mills, Ont., thirty-nine years ago, and got his first lessons in milling in the "old mill" in that village. Fifty-five years ago his father, now a resident of Toronto, bought the first mill in that county, and afterward, replaced it by a new and larger establishment, known to the present generation in that vicinity as the "old mill."

In 1873 the subject of this sketch formed the present partnership with Mr. Moore, to carry on the business of the Cottingham Mills, Omemece, Ont. Three years later the firm bought the Royal Dominion Mills, Toronto, which came into their possession in a very run-down condition, and without any trade. During the decade that has since passed, they have twice enlarged the capacity of the establishment, and now hold a large and steady trade for their brands of flour.

Mr. McLaughlin was one of the first Canadian millers to recognize the advantages of the gradual reduction system, and has been thoroughly in line with all its developments since. During his residence in Toronto he has taken an active interest in the affairs of the Millers' Association and of the Corn Exchange, of which latter institution he was an ex-President. In politics he is an ardent believer in protection to home industries, but thoroughly independent, having no sympathy for either party, further than their measures commend themselves to his judgment.

Several new machines and tools are being placed in Ingle & Co.'s factory at Lindsay, Ont., including a large and improved steel band saw, and a special planer for taking material out of wood.



Thomsonville, Ont., boasts of a flouring mill and a foundry. The Yarmouth, N. S., woolen mills have six months' orders ahead.

Mr. Sander, of Toronto, has started a new elum and washing machine factory at Delta, Ont.

The Galt saw works have a large order for their lance tooth cross-cut saws from the Western States.

Messrs. D. W. Thompson & Co. are building a large addition to their coffin factory on Hayter Street, this city.

The Gananoque carriage company have just received an order for five hundred buggies, to be delivered during 1887.

Messrs. Colquhoun, Drummond & Co., machinery and mill supplies, Montreal, have dissolved, John J. Drummond continuing alone.

Some one truthfully asserts that it is cheaper to get a good engineer and a good engine than to procure an inferior quality of both articles.

A quarter of a million dollar fire occurred at the works of E. P. Allis & Co., Milwaukee, on the 6th of January. The firm will at once rebuild on a larger and better scale than before.

A meeting of capitalists has been held at Montreal for the purpose of organizing a new rubber company with a capital of \$200,000. The work of organization has been partially completed.

The Dominion Lubricating Company, which has just commenced operations at Moncton, N. B., shipped its first order to the bolt and nut works at St. John. There are said to be good prospects for large orders, and the products of the establishment are shortly to be tested on the Canadian Pacific railway.

Mr. T. P. Pierce gives notice in the *Canada Gazette* that he has purchased the property of the Cobourg, Peterborough and Mar-Mora Railway and Mining Company, and will apply to Parliament for an Act authorizing him to build the road and operate the mines.

The addition to the Marysville, N. B., cotton mills (which addition is as large as the St. John cotton mill), has just commenced the manufacture of colored goods. Mr. Gilson has secured enough cotton to supply his mills till next August at the recent low prices.

The machinery for the New Westminster, British Columbia, woolen mill has arrived, and in a few months the people of the Pacific Province expect to see home-made blankets and tweeds on the counters of their merchants. If well and carefully managed, it is believed the business will pay, and if successful it will encourage the breeding of sheep for wool, and by this means Oregon mutton will gradually be driven from the province.

A new automatic feed for threshing machines has been invented and is about being patented by Mr. Myron Drew, of Oshawa, Ont. It is understood two leading firms of the Dominion have made overtures to Mr. Drew, with a view to obtaining the right to manufacture his invention, but he desires to see what settlement will be made by the Joseph Hall Machine Works, preferring if possible to have the article manufactured in Oshawa.

A number of Canadian manufacturers have formed an organization called the "Industrial League," one of the principal objects being, it is understood, the maintenance of the National Policy. The names of the officers-elect are:—W. H. Storey, Acton, President; J. F. Ellis, Toronto, Vice-President; M. H. Perine, Daon, Treasurer; Frederic Nicholls, Toronto, Secretary; Executive Committee—W. H. Cross, Barrie; Henry Hickford, Dundas; Wm. Bell, Guelph; Thomas Cowan, Galt; R. W. Elliot, Toronto; E. A. Daller, Hamilton; George Booth, Toronto; P. Lawson, Port Dover; George Lang, Berlin; J. R. Armstrong, Guelph; and others.

Mr. Watt, of Chatham, is the inventor of a new automatic pressure and draught regulator. He has attached one of the instruments to the heater in the fire hall in that town, where, it is said, it keeps the water in the boiler at a higher temperature than was possible before, and is so sensitive in operation that from 3 to 5 pounds of steam is maintained day and night without any variation. It also saves a great amount of attendance, as the heater can now be run 12 hours without opening the furnace door. The best point is, it is a fuel saver, as only the quantity of fuel required to give the desired pressure or heat, can be consumed. It is the subject of a patent.

A destructive fire occurred on the morning of Jan. 10, in the premises of Messrs. Robert Gardner & Son, machine manufacturers, Nazareth street, Montreal. It originated in the pattern shop and extended to the machine and blacksmith's departments, as well as the engine and boiler rooms. The fire had made rapid progress before the fire brigade reached the scene, and its labours were chiefly directed to saving the pattern room, finishing shop and office, as well as some large warehouses adjoining, in which the fire-ten were successful. The fire was subdued in about two hours. The loss is estimated at \$15,000, which is covered by insurance in several offices, including the Royal Canadian, Citizens, Liverpool and London and Globe, and some American Mutual offices.

About midnight on the 15th of Jan., Messrs. Wilson & Co.'s Scale Works on the Esplanade, in this city, were discovered to be on fire. The rear portion of the building was gutted, leaving the front portion, in which were stored a number of new scales, almost intact. The loss is in the neighborhood of \$3,000; covered by insurance. Incendiarism is supposed to have been the cause of the fire, as it was found that inflammable black Japan had been applied to the base boards of the building. It is only a little more than a year ago since these works were totally destroyed by the destructive fire which swept away half a mile of buildings on the esplanade.

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A NEW YEAR SURPRISE.

JUST after the January number of the MECHANICAL AND MILLING NEWS had gone to press, news was received of a pleasant event which took place at Messrs. McLaughlin & Moore's mill in this city, on New Year's Eve. On that occasion the employees of the mill waited upon the two members of the firm and presented them with the following address, accompanied by a token of their respect and good wishes:—"We, the undersigned employees of your establishment who have been the recipients of so many favors at your hands, feel that we cannot allow the opportunity afforded by the holiday season to pass without, in a small measure, testifying to our appreciation of your kindness, and would therefore ask your acceptance of the accompanying pocket-book and ink-stand as a mark of our esteem. Wishing you a happy and prosperous New Year, we are, very sincerely yours:—Sam Best, Silas Best, Jas. Gardiner, Robert Linn, Wm. Hagey, Robt. Mills, A. Hagerman, Tom Hobbs, I. F. Corrin, Rd. Poyner, Geo. Rogers, E. Banadell, Thos. Crawford, Martin Moore, I. A. Harper, A. Graham, James Hobbs, Tom Welford, Tom McLeod, Peter Moon, Walter Butchart. A. E. Clemes, S. H. Foster." Messrs. McLaughlin & Moore expressed their surprise and gratification at the honor done them, and heartily reciprocated the kindly New Year wishes contained in the address.

A FLOURISHING INDUSTRY AT DUNDAS, ONT.

THE MECHANICAL AND MILLING NEWS takes pleasure in reproducing from the columns of the Hamilton Spectator, the following description of the Canada Tool Works, situated at Dundas, Ont., and owned by Messrs. John Bertram & Sons: "The plant of this mammoth iron working industrial interest, covers over eight acres of territory. It is equal in capacity, character of product and commercial rating to any similar company on this continent, and is by far the largest of its class in the entire Dominion. With a view of learning something concerning its workings and of the general system which governs so vast a concern, a Spec. reporter recently interviewed the new firm, Messrs. John Bertram & Sons, who succeeded on November 1, 1886, to all the manufacturing interests and business of the founders, Messrs. McKechnie & Bertram. The history of the work, covered on the expiration of 1886, one quarter of a century. The reporter was received with an affable courtesy, and began his rounds by passing through the elegant general and private offices of the house, now located in the new two story brick building which adjoins the works on the west side, and which connect the same at the second story by a covered archway that bridges the open space between them. The second story front in the main building shows the pattern room, also the sections just finished, to be devoted to a stock room, where taps, rimmers, mandrils, gauges, etc., will be kept. Passing in through these departments and the pattern room, we come to the No. 1 turning and fitting shop on the second flat, where all machinery for light wood and iron work is made. They have in use here everything of a modern character in a mechanical way, calculated to advance and perfect their operations. No. 2 shop, also on this floor, is wholly devoted to turning. No. 3 fitting shop, is reached by descending to the ground floor, where all medium sized iron and wood working machinery is built. The most impressive department in the light of showing up the magnitude of the plant of the Canada Tool works is found in the erecting shop, which is classified as No. 4 shop. Here the massive machinery is displayed in its proportions. The largest planer in Canada can here be seen in process of construction. It will handle, when built and wholly completed, metal six feet wide and twenty feet long. In the vicinity of this ponderous piece of machinery can be noticed in noiseless operation, a twenty feet planer and an immense turning lathe seven feet in diameter. The blacksmith's shop is adjoining, and is thoroughly fitted out with steam hammers and four fires. The casting capacity in the foundry amounts to thirty tons of metal daily, which, in connection with the moulding, shows an area of 150x30 feet, and both equipped with all modern appliances, including two cupolas, two cranes, and other devices whereby the greatest intended results can be reached. The warehouse, which is 150x50 feet, is lighted by 32 eight glass paned windows, and is in every sense a mammoth building. A broad gauge railroad track connects it directly with all other sections of the grounds and works. All machinery is painted, set up, greased and otherwise completed for the market here. The east end of this house is devoted to the storing of patterns. The store room for castings is 80x50 feet and adjoins the moulding shop. The No. 1 fitting room contains slotting and drilling machines,

and the No. 2 turning shop, where all heavy turning is handled, contains milling machines, iron planers, turning lathes, gear cutters, the latter ranging from two inches to four feet, shafting lathes capable of handling metal 27 feet in length, together with other machinery called into requisition by the work of this company. The motive power is derived from a sixty horse engine. Altogether this is one of the chiefest manufacturing industries in all of Canada. Nothing known to modern ingenuity that is calculated to produce a greater degree of perfection than can be reached without it, is wanting, and the present proprietors stand unrivalled for enterprise, and for producing the highest grade of locomotive and car machinery; also tools and machinery in general use by the iron and wood working interests of the country."

Our Portrait Gallery.

MR. ARTHUR MOORE.

The subject of this sketch, who is the second partner in the firm of McLaughlin & Moore, proprietors of the Royal Dominion Mills, in this city, was born at Oranston, Que., in 1850. He began his milling experience in 1871, but a few years before the dawn of the new era in roller milling. Mr. Moore has a decidedly mechanical turn of mind, and is quick to understand and appreciate any new idea in that direction. This trait in his character has led him to direct his energies to perfecting the mechanical equipment of the mills. Mr. Moore is a man of liberal and independent views, untrammelled by any reverence for by-gone systems, and fully alive to the importance of keeping in the vanguard of the great change that has been, and still is being worked out in milling. An inspection of the Royal Dominion Mills shows a



MR. ARTHUR MOORE.

variety of appliances, entirely his own invention, for the better carrying out of the process.

N. WENGER & BROS.' MILL AT AYTON, ONT.

A correspondent kindly sends the MECHANICAL AND MILLING NEWS the following particulars concerning the above mill: The village of Ayton where the mill is located, is situated on the Warton branch of the Grand Trunk railway. The mill was fitted up on the roller system about four years ago by Messrs. Wm. & J. G. Greey, of Toronto. Its capacity was afterwards increased to 150 barrels. Messrs. Wenger Bros. the proprietors are regarded as among the most enterprising milling firms in Canada. They are continually adding new improvements to their mill, which is said to be one of the best 150 bbl. mills in the Dominion. Our correspondent states that since last July they have invested nearly \$2,000 in the following new machinery: One Craig scourer, Sperry feeder (said to be the only one in Canada) on fourth, fifth, sixth and seventh breaks, one new warehouse separator, cloth cleaner for purifier, double set of break rolls, manufactured by Wm. & J. G. Greey, Toronto; two centrifugal machines for bolting all the flour of the mill—one made by the Geo. T. Smith Co., of Stratford, and the other by the Messrs. Greey—and one dust collector from the establishment of Messrs. Goldie & McCulloch, Galt. All these machines give good satisfaction. The mill has 21 sets of rolls making seven reductions on wheat, and thirteen on middlings. It has also nine 18-foot reels, five small centrifugal reels, and two large centrifugals for re-bolting, making in all sixteen reels and five cleaning machines. The receipts of wheat from farmers for several weeks past have been from five to twelve hundred bushels per day. The firm also have buyers at three different points.

[For the DOMINION MECHANICAL AND MILLING NEWS.]

NEW BRUNSWICK LETTER.

The manufacture of lime in the vicinity of St. John, N. B., has been quite an industry, and will in years to come continue to increase as it has in the past. Few have any idea of the number of men who find employment in this business; and when we consider that the deposit of lime rock is inexhaustible, it is not surprising that the Americans have begun to look to St. John as the best place to procure their lime. Several firms have already purchased properties and commenced the erection of kilns. Hayford & Stetson, the well-known lumber manufacturers, have purchased and leased large properties, and have in course of erection four kilns, which will cost in the vicinity of \$20,000, and will employ over 60 hands, and turn out next year over 80,000 barrels of lime. A syndicate of Americans, principally from Rockland, have purchased the property of Jewett & Co. The deposit of lime there is large and counted to be the best in the world. There are at present three kilns on the property. They intend to build three more in the early spring, and will employ nearly 100 men. Charles Miller has three kilns, and employs about 30 men. Purdy & Green have two kilns, and as their lime is excellent and in great demand, they intend to put on some extra hands the coming year. They now employ about 30 hands, and will need the next year over 50. W. D. Morrow has one kiln on the Adelaide Road and employs about 12 hands. Frank Armstrong has one kiln, but is now building another, and intends to go into the business on a larger scale, and give employment to about 20 men. F. & J. Armstrong, A. L. Bonnell, Isaac Stevens, Mr. J. Homebrook, Mr. Lawlor & Son, each have one or two kilns and do quite a business, employing from 8 to 20 men. There are others engaged in the business on a small scale, the products of their kilns being for the local market.

Mr. J. Pender, a native of New Brunswick, commenced in 1877 the manufacture of horse shoe nails. He commenced on a small scale, only employing 3 men. He has kept on, and by trying to make the best article that was on the market, has extended his trade so that to-day he has orders from the Old Country, from Australia, the West Indies, and Newfoundland. His output per week is about three tons, and with the machinery and about 15 hands now at work, he expects to increase it to about four tons.

Your correspondent lately visited the establishment of F. S. Simms & Co., who manufacture all kinds of brushes and brooms. The firm make a speciality of paint brushes. They ship to Montreal and Newfoundland, and supply the maritime provinces. Their business has doubled in ten years. They now employ over 50 hands.

The output of vessels carrying wood from the port of St. John during the past summer amounted to 241 cargoes of soft wood and 52 of hard wood. Probably there were from the other ports of New Brunswick as many more, making about 600 cargoes of cord wood shipped to the United States from New Brunswick during the past year.



Mr. John Dickson, Glen Eden, Ont., has placed his order for roller machines, iron work and bolting cloth, with the Geo. T. Smith M. P. Co., Stratford, Ont.

Mr. James Norris, St. Catharines, Ont., has ordered two No. 3 Smith purifiers, and one No. 5 Prince dust collector from the Geo. T. Smith M. P. Co., of Stratford, Ont.

The Geo. T. Smith M. P. Co., of Stratford, Ont., have closed a contract with John A. Brackbridge, of Nottawa, Ont., for 5 double noiseless belt drive roller machines and 1 No. 6 Smith purifier.

Mr. Manson Campbell, the well-known manufacturer of fanning mills, Chatham, Ont., recently got an order for thirty of his machines from London, Eng. This order is the result of Mr. Campbell's exhibit at the Colonial Exhibition.

Mr. Isaac W. W. Flewes, of this city, has recently replaced hexagon reels with his improved bolting device, in Mr. Isaac Warcup's mill at Oakville and Mr. Wm. Flewes' mill at London, Ont. He has also put in an entirely new machine of large capacity for Mr. David Flewes, at Bramford.

Messrs. Satter, Dundas & Co., of Lindsay, have taken a number of reels out of their mill and are replacing them with reels made by Messrs. Dobson & Campbell, at Henverton, Ont. If the new reels give satisfaction the firm will put in nine of them.

Miller's Journal: The question is often asked, "What is a good straight grade of flour?" And the proper answer seems to be that it is a mixture of the best patent and the best baker's, and the better these grades are separately, the better they are "straight," of course.

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 2,000 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 to Manage a Steam Engine."

"SHOULD TECHNICAL INSTRUCTION BE MADE A PART OF OUR PUBLIC SCHOOL EDUCATION, OR COURSE OF STUDY?"

By JAMES L. HUGHES, TORONTO.

EDUCATORS of all ages have been misled by the fallacy that "knowledge is power." Man is the grandest power created by God. Man gives to knowledge whatever power it seems to possess. Knowledge possesses no power of development within itself. Man is created with a germ of progressive power in his very nature, that under favorable conditions must continue to grow forever. Yet the teachers of the past have devoted nearly all their attention to the unvarying element, knowledge, and have almost entirely neglected the systematic training of the being who acquires and uses the knowledge.

There is a class of educators who would subordinate both knowledge and development to what they call the practical in education. They assert that all education is valueless unless it aids a man in earning his livelihood. Both classes of educators are wrong, and yet each class possesses the element of truth. They are not really so antagonistic as they at first appear to be. Men are now beginning to understand that by a combination of the aims of both classes the true ideal of education is found, because in this way the glaring errors of both are discovered. We are now able to see that the human being is vastly greater and therefore more important than any knowledge that can be communicated to him, and that he is also superior to anything he can make from even the most costly material. Most educational authorities now agree that the highest function of the school is to enlarge the pupil's sphere of usefulness and increase his power and rate of development, physically, mentally and morally. The following propositions summarize the opinions of modern educators in regard to the aims of an educational system:—

1. It is well to communicate useful knowledge.
2. It is much better to increase the capacity for the independent acquisition of knowledge.
3. It is still better to develop the power of using knowledge so as to accomplish the most definite results.
4. It is best of all to train pupils so that they will desire to use all their knowledge and all their powers for the accomplishment of good to themselves and their fellowmen.

The question, "should technical instruction be made a part of our public school education?", can be answered satisfactorily only by an examination of its relationship to these four conclusions. It will aid in making an intelligent investigation into the subject to remember the following fixed educational principles:

1. It is of the utmost importance to train pupils to be able to concentrate their attention on one thing at a time. There can be no education without fixed and intense attention by the pupil.
2. Attention may be given to the study of a book or an object, or it may be paid to oral descriptions or to black-board or objective illustrations by the teacher. In either of these cases the attention of the pupil does not arouse him to independent activity. His attitude is merely one of receptive attention.
3. The most developing attention is that given by the pupil in guiding his own hands in accomplishing some definite purpose with material things. This is productive activity.
4. The same kind of mental occupation continued too long leads to inattention and consequent dullness.
5. Change of mental work is more restful to the mind than cessation from work, during the period when we are awake.
6. We learn by doing. We know most clearly what we have translated into activity. Expressing an idea in material form defines our thought. The mind guides the hand; the definite action of the hand reacts upon the mind.

7. To give a child knowledge beyond his ability to use it, weakens him intellectually and reduces his power as an active agent.

These are the vital principles of true education. If technical instruction can be introduced into schools without violating these principles, there is room for it on a school programme. If it be found that technical instruction aids the teacher in carrying out these principles, then it is an essential part of the work of a school-room. The opinions of modern educational authorities go to show that a technical education is not only in harmony with a comprehensive scheme for the proper training of the human race, but that it is the best means for putting into practice the broadest and soundest educational theories. The experience of those who have most thoroughly tested these opinions proves them to be correct. Technical instruction is at once the most practical and the most developing part of the course of study in schools, because (1) it readily secures and retains positive and interested attention; (2) it develops creative attention in the most natural way by calling on the mind to form a definite conception of some work to be done, and by requiring the hands to carry into execution the work planned by the mind; (3) it applies knowledge as soon as it is gained; (4) it defines knowledge by applying it; and (5) it affords the best possible change and mental relaxation after a period of study. What should be the nature of a course of technical instruction in schools?

1. It should begin with the earliest school life of the child, because it is identical in character, if not in extent and definiteness, with the work he has been doing during the time of his play life before going to school. He has been constantly becoming acquainted with the laws of nature and the means of over-coming and of using them both in his indoor and outdoor sports.

2. It should begin very early, because the hands of young children are most easily trained, and their minds have been accustomed to deal with real things, instead of with abstractions. The minds of many children are injured by the suddenness of the transition from the realities and sense perceptions of the home and the field, to the abstractions and the obscure conceptions of the school room.

3. The best foundation for a technical education is the Kindergarten. Fröbel recognized not only the great importance of industrial training, but the direct connection existing between mental growth and hand work.

4. It should include in the ordinary public school, drawing, especially object drawing and mechanical drawing; hand-training, in making simple articles in wood by the use of the jack-knife and gimlet; and an introduction to the study of the natural sciences.

5. In advanced public schools, and in High Schools and Collegiate Institutes, there should be manual training schools and a more thorough study of the sciences immediately useful in connection with the leading manufacturing or agricultural interests of the district in which the school is situated.

The manual training suggested would really be the only radical change necessary to be made in our present programme of upper school work in order to carry out these suggestions. A manual training school need not be—should not be—a separate institution. Practice in using tools can be carried on as a part of the regular course of school work, and forms the best means for relieving the pupils of the weariness and lassitude that result from too long a period of study. What is the aim of a manual training school? It is not to teach particular trades, but to give a training in the intelligent application of mechanical principles, and in hand skill, which will fit a boy for entering any trade. It is not to make perfect specimens of woodwork, but to aid in making more perfect citizens. A mere mechanic is too often a mere machine, whose brain needs to do very little in connection with his daily labor. A new invention may turn large numbers of such mechanics out of employment. Ordinary training by apprenticeship would not give them the ability to adapt themselves to new work and to enter intelligently upon new departments of labor. But even systematic apprenticeship is a thing of the past, and hence the absolute necessity for a substitute for it of a better character. The different effects of apprenticeship and manual schools on the training of boys has been well expressed by Mr. Jacobson, of Chicago. He says, "In the manual training school the boy is the object for which the school exists. He is the material that is to be finished. Instead of being left to himself to pick up what he can, as is the case in a shop, competent and intelligent instructors devote themselves to his training. As an apprentice, the boy exists for the benefit of the shop. As a scholar in a manual school, the shop exists for the benefit of the boy."

There are really only a few hand tools to be used in

the various trades. The hammer, the saw, the axe, the chisel, the plane, the square, the brace and bit and the file include most, if not all of them. A boy who can use these dexterously and who has had a practical training in the application of mechanical principles, will take a very short time to become proficient in any trade. It does not necessarily follow that every boy who attends a manual training school must become a mechanic. Every boy should learn drill in order that he may receive the many physical and moral advantages that result from such training, but because a boy has learned to drill, it does not follow that he must become a soldier. Neither does it follow that because a man can handle tools well that he must become a mechanic. The aim of the manual training school, the object of all technical education, is not to make mechanics or expert manufacturers, but to train a race of skilful and intelligent men.

Can such a course of training be given in schools without injury to the pupils in what has been regarded as the legitimate work of the school? Those who have tested the matter say "Yes." Dr. Woodward, director of the St. Louis Manual Training School says, after ten years experience, "Not only does the work-shop not detract from the interest boys take in books, but it stimulates it either directly or indirectly." Dr. Belfield, Principal of the Chicago Manual Training School, says: "An hour in a well-conducted manual training school develops as much mental strength as an hour devoted to Virgil or Legendre." The young men in his school do equally good work in their studies with the students of the High Schools of Chicago who devote no part of their time to manual training. Mr. Goss, of Purdue University, Lafayette, Indiana, says: "An hour in the shop is as valuable for intellectual training as an hour of book study." The opinions of the best European experts on this question are in harmony with these statements of American experience. Dr. Lyon Playfair says: "The true education of a laborer is to make him an intelligent being, not a mere dexterous manipulator, so that he may have the moral dignity and intellectual force derived from a thorough understanding of the principles of the work in which he is engaged;" and again, "it is a truth incapable of being gainsaid that science must be joined to practice in the advancing competition of the world." In summing up his conclusions regarding the importance of technical education, he lays down the two following laws:

1. "Common sense as well as the experience of other nations, indicates that an elementary knowledge of the principles of science and art involved in the occupations of the people should be introduced into primary schools, in order to make them a fitting preparation for secondary schools."

2. "That a higher education in relation to the industries of the country is an essential condition for the continued prosperity of the people; for intelligence and skill as factors in productive industry are constantly becoming of greater value than the possession of native raw material or local advantages."

Technical schools should form a part of a national system of public school education for the following reasons:

1. The subjects taught afford the best means for training the observant powers, and for securing active and productive attention.

2. Because as the intellect is stored it is at the same time necessarily developed by the application of knowledge to practical purposes.

3. Because it affords to individuals the best opportunity for cultivating the essential elements of success, described by Herbert Spencer as "A constant progress towards a higher degree of skill, intelligence and self-regulation."

4. Because it gives young men a higher respect for labor, by showing that the humblest work may be combined with a high degree of intelligence.

5. Because it increases the money earning power of the working man, and therefore affords him an opportunity for bettering his surroundings at home, and for providing for himself and family not only additional comforts, but the means of culture, such as books, pictures, music, etc.

6. Because it increases the value of the raw material supplied to the workmen, and enables them by this means to increase the wealth of the nation in which they live. Mr. J. Scott Russell estimates the value in England of unskilled, moderately skilled, and highly skilled men at £25, £50, and £75 per annum, respectively.

While strongly condemning any system of training that would subordinate intellectual development to practical utility, or encourage industrial education at the expense of true culture, it should never be forgotten that the mere acquisition of knowledge is only the first step in the four-fold process of education, and that technical education affords the teacher the fullest opportunity to add the other three essential steps: ability to gain knowledge independently, power to use knowledge, and desire to use it for good purposes. We must free our schools from the charge made against them by George Eliot, that "They mostly make people like bladders—just good enough to hold the stuff poured into them." We must make our pupils investigators as well as accumulators, producers as well as receivers.

THE GEO. T. SMITH CENTRIFUGAL MILLS



LAKEFIELD, Ont., Nov. 16th, 1886.

S. S. Heywood, Manager,
Geo. T. Smith Middlings Purifier Co., Stratford, Ont.

Dear Sir: I commenced grinding wheat in my mill Thursday, Nov. 11, and with my acceptance of it, I take pleasure in testifying to the entirely satisfactory manner in which you executed your contract with me. The machinery was shipped promptly as agreed, and the diagram, plans and millwright work were in every detail everything that I could wish, and your Mr. McAuslan, who had charge of the work, is a thoroughly competent man for the position, and gave me a mill that I am proud of.

As regards capacity, I find that the mill will run to 150 bbls. easily and make a perfect finish. 125 bbls. was all that you contracted to give me. I am very thankful that I adopted the full Centrifugal system instead of the old style of long reels, and although the mill has been running but four days, I am already convinced of its superiority, and I have never seen any bolting device that could equal your Centrifugal in quality and quantity of work done.

The quality of my flour, the yield and finish, I have never seen surpassed. Should you desire to do so, I shall take pleasure in showing any parties you may send here what a CENTRIFUGAL mill can do.

Yours truly,
JOHN HULL
LAKEFIELD, Dec. 7th, 1886.

S. S. Heywood, Manager,
Geo. T. Smith M. P. Co., Stratford, Ont.

Dear Sir: Mr. John Hull's mill, Lakefield, which you furnished with your complete Centrifugal system, has given entire satisfaction since the first day it started. I have seen a number of systems which I thought were good, but I must say this complete Centrifugal system excels them all both as to quantity and quality of work done, and it is the nicest running mill I have ever handled, and any one wishing to see a complete mill, I would heartily recommend this one to their notice. I am sure that they would go away well pleased with the mill. Your millwright deserves praise for constructing the mill to give so little trouble to us. Have not had a choke up since it started.

Yours truly,
JOS. L. SMITH,
Head Miller for John Hull.

RIDGETOWN, Nov. 25th, 1886.

The Geo. T. Smith M. P. Co., Stratford, Ont.

Gentlemen: I have my mill running after being changed over to your short system of milling, and I am well pleased with the work done by the mill. The flour is good and the offal is well cleaned. I like your Centrifugal reel and cleaning machines. The separator is doing good work and is admired by everybody that sees it. Your millwright did me a first-class job. I cannot find a fault with it. I think your short system cannot be beat.

Yours truly,
JOS. SMITH,
Proprietor of the Star Mills.

BOWMANVILLE, Oct. 18th, 1886.

S. S. Heywood, General Manager,
Geo. T. Smith M. P. Co., Stratford, Ont.

Dear Sir: In accepting my mill from you, I take pleasure in saying that the contract entered into with your Company last July has been carried out on your part to my entire satisfaction. The mill, as diagrammed by your Mr. Everett, started up without a spout or cloth being changed, and the machines located by your draughtsman, Mr. Oslen, were placed to the best possible advantage, and the millwright work, which was put in by your Mr. McKay, was done in so thorough and workmanlike a manner, that the mill is absolutely dustless, and not a choke-up since it started. You have given me the finest line of special machinery I have ever seen in a mill, and the quality of their work is as fine as their appearance. I do not think the quality of the flour could be improved, but my customers say the offal will have to be made richer or I will not be able to sell it.

Yours respectfully,
C. VANSTONE.
KINGSTON, Nov. 16th, 1886.

Geo. T. Smith M. P. Co., Stratford, Ont.

Gentlemen: Our mill has now been running long enough to give us an opportunity to test it thoroughly, and we are satisfied with it. The yield and quality are excellent. It takes all the flour out of the wheat, and as far as capacity is concerned, instead of making 75 barrels as the contract called for, we run from 100 to 125, and clean up in good shape when doing it. The Centrifugals, on which nearly all the separations are made, do more work with less attention than any other machines in the mill, and do it well, too. We consider ourselves indebted to your Mr. Everett for supplying such an excellent flow sheet, to Mr. Black, your miller, for his send-off, and also to your firm for the prompt manner in which you carried out your contract. All our business with you has been very satisfactory.

Yours truly,
J. G. CAMPBELL & SON.
LONDESBORO, September 25th, 1886.

The Geo. T. Smith M. P. Co., Stratford, Ont.

Gentlemen: We have our mill which you built for us in operation on the full roller and Centrifugal system, and we are very much pleased with the working of the same. The separations are good and the flour very nice, and the offal well cleaned. Our trade is picking up, our flour is giving good satisfaction, and my prospects for a good business are good. I believe that I have a mill that will do 10 or 15 bbls. more than it was rated by you.

Oct. 17th, 1886.

We are getting along nicely. All going well. On the whole I am better pleased every day so far.

Nov. 11th, 1886.

We have sold one car load of flour at a fair working profit and have an order for three cars more. So much for a start.

Yours truly,
E. HUBER.

We are giving special attention to mills on the Geo. T. Smith Centrifugal System. The best mills in the United States are abandoning their long reels and putting in Centrifugals instead.

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.

[FOR THE DOMINION MECHANICAL AND MILLING NEWS.]

SOME IDEAS BY A PRACTICAL MILLER.

BY XXX.

THERE is a great difference of opinion among millers in regard to the style and shape of the corrugations that are the best to be used on rolls. There are some millers that prefer the sharp or saw-tooth, while others prefer the V-shaped. There are others again who favor the use of the round-rib or non-cutting corrugations. While we often hear millers claiming that the style and shape of the corrugations on the rolls makes but little difference in the results obtained in the work of the mill, there should be quite a difference in the separations when either style of corrugation is used, and by the use of the sharp cut there is a larger percentage of middlings made than when using the round-rib, and this increase of middlings should be provided for when the diagram is made, by the use of a larger number of purifiers and smooth rolls. When the round-rib cut is used, there is a larger percentage of break flour made as the wheat is reduced, which requires more dusting reels at the head of the system than would be necessary if the other style of cut was used. The same separations used on the stock reduced on either the sharp or round corrugations, would not produce as good results as if the diagram was made to suit each one separately. The nature of the wheat to be reduced should be taken into consideration when deciding on the style and shape of the corrugation to be used; for if the wheat is hard and of a brittle nature, such as is grown in the North-West, the sharp cut will be severe on the bran; and if the wheat is of the soft, white variety, such as is grown in Western Ontario, the round-rib rolls will do too much mashing and rubbing, and will have a much less capacity on this stock than the sharp cut.

The writer has had some experience with the different styles of corrugations, both on soft and hard wheats, and is of the opinion that the sharp cut rolls are better for all grades of wheat, as they can be relied upon to clean the bran when the wheat is damp, and after they have been in use for some time they are then in condition to do as good work as the round cut rolls will do at the start. Therefore there is quite a saving in re-corrugating from time to time; and if the wheat is of a hard nature, and the sharp rolls cut the bran some, it will in that condition do but little harm to the following separations, if they are well made on the diagram, as the last breaks should be treated separately from the others, and the products sent to the lower grades of flour.

The best corrugation for a first break is two cuts to the inch, running the back of the rib down against a smooth roll having a differential motion of three to one. This break will open about ninety per cent. of ungraded wheat through the crease; and if two pairs of these rolls are used and the wheat is graded, sending the small wheat to one pair of rolls and the larger wheat to the other, nearly every kernel can be opened in the crease, which will allow the crease dirt to escape, and will also remove the germ. By using a pair of rolls corrugated eight or ten cuts to the inch, there is a large percentage of the wheat that is broken crosswise, and some of it is drawn through between the rolls without being broken. Hence the work is very unevenly done. By using a corrugated roll running against a corrugated concave or stationary roll, it makes a direct action on the grain, and is too severe on the bran. The second break should have 12 corrugations to the inch; third, 16; fourth, 20; fifth, 22; sixth, 28. The corrugations on all the break rolls except the first one, should have a spiral of 2 inches to the foot. On all the breaks after the first one, the differential motion should be $2\frac{1}{2}$ to 1, and if the sharp cut rolls are used the corrugated ones should have a speed of 300 revolutions and the smooth 350 revolutions per minute, while for round-rib corrugations the speed should be increased to 450 revolutions to do the same amount of work. The speeds are based on 9 in. diameter rolls.

The scalping between each break is a very important factor in roller milling, and since the introduction of that system, there have been great improvements made in each machine that has been used in the same, with the exception of the scalpers. We find in general use today the old-fashioned six-sided reels covered with wire cloth of different degrees of fineness, and run at the same speed as was used when roller milling was first introduced. Yet a large majority of the best millers are satisfied that in some way the work done by these ma-

chines should be improved, as a separation poorly made on the scalpers is very hard to overcome later on in the system; and very often when poor results are obtained in a roller mill, the cause for the same can be traced to the bad separations that are made on the scalping reels. It is often the case that the scalpers are put in too small for the capacity wanted, and to overcome this defect the wire cloth is put on of too coarse a number, and the result is that the stock going to the separating reels is in no shape to be handled on these reels with success. The writer is of opinion that there is a larger percentage of flour made as the broken wheat passes along through the wire clothed reels, than is made in passing between the break reels, and the flour made by the broken grain must necessarily be mixed with the impurities taken from the bran, and which it is impossible to separate again on the flour cloth. The writer's opinion is that in the future there will be great improvements in scalpers, and that the round reel covered with perforated zinc is a very great improvement over the common scalping reel covered with wire cloth. The reasons for this opinion are that the stock inside of the zinc covered reels slides along down the sides of the reels, and does not become pounded and scoured, as is the case when using the other form of reels; and the zinc does not clog up in the perforations and allow the reduced stock to pass over the tail of the reel with the unfinished material. The only objection to the use of the zinc reel is that it has less capacity of same length of reel than the wire ones. But this difficulty can be overcome by adding more surface, and the extra cost of the same would be more than made up in the excellence of the results obtained. There is one of these reels, such as has been described, working in one of the largest mills in Canada. The results obtained from it have been entirely satisfactory. The head miller claims an increase in the amount of coarse

out on flour cloths and placed beside stock treated in the same way after being scalped on the old-fashioned wire covered reels, shows a decided improvement in color. These new scalpers are as yet only experiments, but it is evident that ere long we will have better machinery for scalpers.

* * *

At the present time there seems to be a tendency among millers to use the short reels in place of the long six-sided bolting reels, as they believe that better results can be obtained by the use of the former than the latter. In the future the writer will attempt to argue the points of each of the short machines for bolting that are on the market and offered to millers to-day, but at this time he will simply give his ideas in regard to handling the stock as it comes from the scalper, using the long reel system, and will show a daily capacity of 100 barrels or more. To do the dusting and grading of the middlings and finish the break flour ready for the packer, aspirate and size the coarse middlings, purify the medium middlings and size them, and prepare these grades for re-purifying, and to then be reduced into patent or high-grade flour, he would use as shown in the following diagram: 3 bolting reels, 2 purifiers, 4 pairs of smooth rolls and one centrifugal, or in place of the latter, another long reel. As will be noticed, after the stock has been scalped on the break reels, it would be sent to the first bolting reel, covered by numbers 12 and 1 silks. If the flour as it comes from the No. 12 is clear enough, it can be sent to the packer; but if not up in color, it can be sent to the other reel with the middlings that pass through the No. 1 and be re-bolting on dust reel and the following centrifugal. The coarse middlings that tail over the No. 1 cloth on the first bolting reel are sent to the first aspirating purifier, and after being treated by a strong suction on this machine, are then sent to the first sizing rolls to

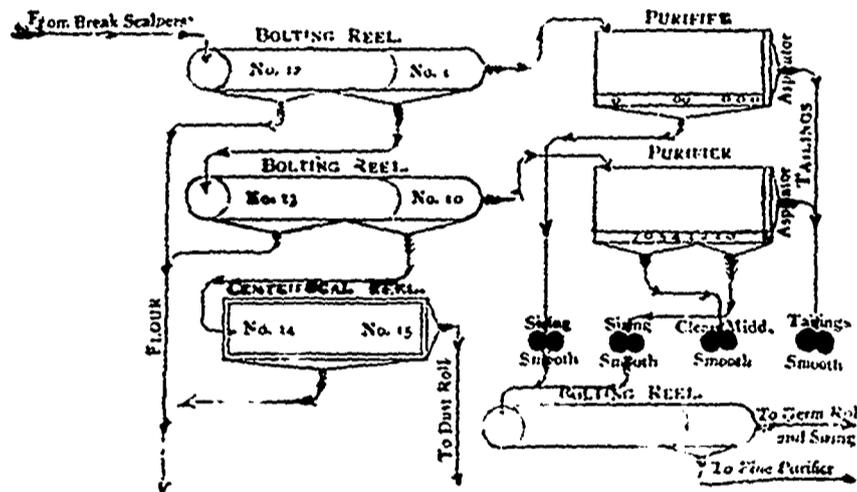
be broken down lightly to remove the germ and to size them for re-purifying. The stock that passes through the No. 1 cloth on the first bolting reel, and over the No. 10 cloth on the tail of the second reel, is sent to the second purifier, and the stock that passes through the coarse cloth on the reel that passes through the coarse cloth on the second pair of smooth rolls to be broken down. The reason that these two materials are not sent to the first rolls is that there is more germ in the stock that passes over the No. 1 than what comes through it, consequently that material should be reduced with less differential motion on the rolls than can be used on the second pair. After the coarse middlings have been sized down on the two pairs of rolls, the material is sent to the third bolting reel to be dusted and graded for re-purifying. By taking the middlings from the

head of the following purifier and sending them to smooth rolls to be reduced lightly and again dusted, graded and re-purified, all the germ and dark material can be removed. It will be noticed by referring to the diagram that the purifiers are shown to have aspirators on the tail end to draw away the light stock as the tailings pass over the end of the sieve. The tailings are then sent to a pair of smooth rolls. These rolls are so set that the tailings are reduced down enough so that the coarse cloth on the tail of the reel that handles this stock will throw off finished material. The stock that passes through the coarse cloth on the reel that handles the reduced tailings, can be sent to the fine dust rolls, or, a better way to do would be to send this stock to a purifier clothed to clean this size material before being reduced again. The writer is aware of the fact that by using more machinery than is shown on the diagram, and consequently reducing aspirating and re-purifying a number of times more, the middlings can be brought down to an even grade and they will thus be purer. Yet the extra expense of the machines added to do their part of the work, would overbalance the profit on the higher grades of flour in a mill of this capacity.

AIR POWER.

The lack of a convenient and economical power for small industries is often felt, neither water, steam nor electricity seeming to meet the requirements. The attempts now being made to distribute power by rarefied air in Paris and by compressed air in Birmingham have much interest. In each case central pumping stations, with steam power, supply the requisite energy. The success of these systems remains to be shown.

A Boston firm has made an offer for the whole output of light homespun for summer wear, from the Golden Grove Woolen Mills in New Brunswick.



middlings coming from it over what came from the old reel that was replaced. The only point he wishes to determine now is the wearing qualities of the zinc. Should that prove satisfactory, he will replace all his old reels with this form of scalper, as he believes that by so doing he can save all the coarse middlings, as they are made by the rolls and improve the color of the baker's flour. The double scalper, with a perforated zinc reel inside, and an outside reel covered with silk cloth to again separate the material that passes through the inside zinc, does very fair work, and as the machine does not take up much room and can be driven with one belt, it is convenient and cheap; yet there is no combined machine that will wear as well, or when it gets out of order can as easily be put in repair again, as a single and separate machine. With all combined reels, there is danger of the stock falling back from the outside cloth onto the inside one, clogging up the perforations again, and spoiling the separation on each reel. A sieve having a reciprocating motion and run at a high speed, with a travelling brush under the same to keep the meshes of the cloth open, makes a very good scalper, as it does not scour the stock, and with a light suction at the tail end for aspirating, it will do good work. It is very necessary on this style of scalper that the motion should always be uniform, or the stock will bank up and lay on the cloth. Another style of scalper which seems to have many good points, is made by using a set of falls the same as is used in the aspirator, and having a travelling brush passing back and forth under each set of falls. The cans should be about six inches wide, and the stock falls from one to the other along down through the machine. The reduced stock passes through the wire cloth, and the unfinished material passes down along the top of the falls and out at the bottom of the machine to the rolls to be reduced again. A sample of the break stock taken from this style of scalper, after being sifted

BARTER MANUFACTURING COMP'Y

TORONTO, ONTARIO.

MANUFACTURERS OF

Flour Mill, Elevator and Warehouse Machinery.

Mitchell Roller Mills, Aug. 10th, 1886.
 BARTER MANUFACTURING CO., Toronto.
 GENTLEMEN: In reference to your enquiry about the Dust Collector which I have been using for nearly a year, I would say: The power used is not noticed on the mill and cannot be much for the reason that when the machine was started it was driven with a new 4" belt which has never been tightened since, and for cleanliness there is not an accumulation of 2 lbs. of dust from it in a week's run. Am perfectly satisfied with the working of the machine. These are the facts. If you can use them to your advantage you are at liberty to do so.
 Yours very truly,
 S. R. STUART.

Kirkton, Ont., Aug. 27th, 1886.
 BARTER MANUFACTURING CO., Toronto.
 GENTLEMEN: As to how I like the mill you built for me would say I think it can not be beat for making first-class flour. As to the machinery I like it very much indeed. The purifiers work first-class; can't be beat, no matter where they are made. Would say all the separate machines work well, and I say this after running the mill one year.
 Yours truly,
 I. B. SPARLING.

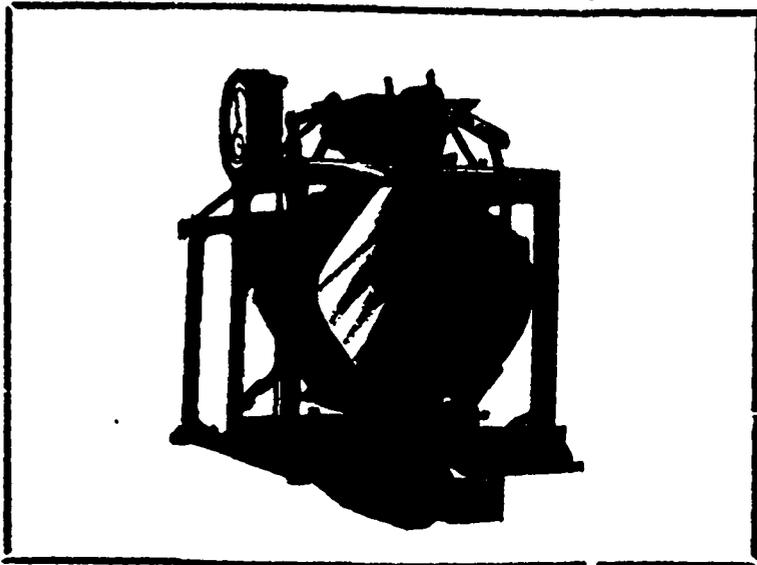
Lucan, August 11th, 1886.
 BARTER MANUFACTURING CO., Toronto.
 GENTLEMEN: The Purifier we got from you works well, the suction from the fan being on the tail end of the purifier, where the heaviest middlings are, it does not take the good middlings into the blast. We also like the CLOTH CLEANER you use. They keep the cloth clean. We have no trouble with it, and can recommend it to any miller wanting a purifier, as we believe they cannot do better in this or any other country.
 Yours, etc.,
 BREWER & CO.

THE above are sample letters received from some of our customers, of which a host are in our possession, referring in similar terms to our various Milling Machines. All parties intending to build, refit, or buy special milling or cleaning machines, are invited to correspond with us before purchasing elsewhere.

BARTER MANUFACTURING CO., TORONTO, ONT.

Kuhlman :: Automatic :: Scale.

SEATON & SAGE, MANUFACTURERS, LONDON, ONT.



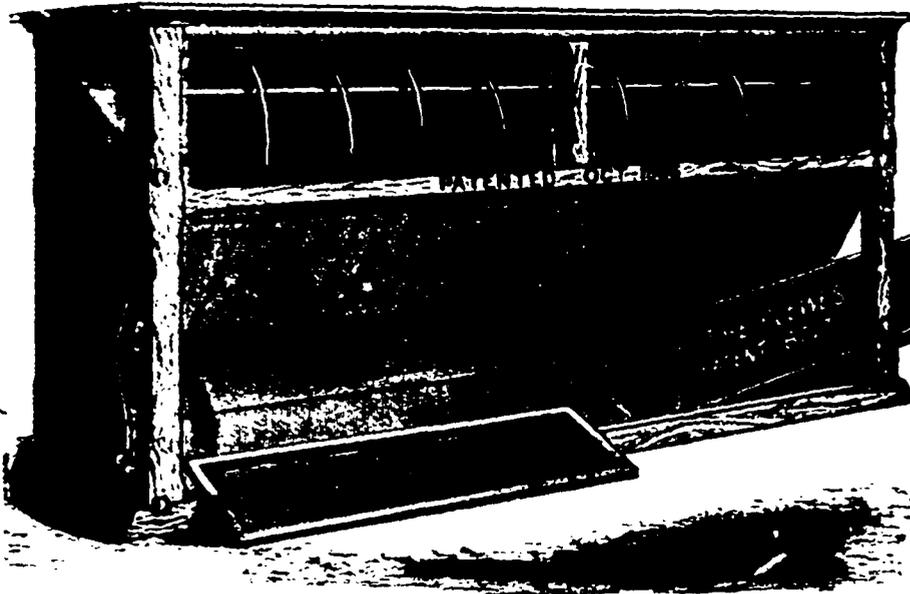
It is the only Scale introduced that has come to stay.

WE TAKE PLEASURE IN REFERRING YOU TO THE FOLLOWING PROMINENT MILLERS OF ONTARIO:

- SEATON & LEA, Atchison, Kansas. LONDON, Ont., Canada, July 30, 1886.
 We, the undersigned millers in the City of London, Canada, certify that we have been using the Kuhlman Automatic Scales in our mill, and find them a great convenience in testing our yields and also a means of testing the amount ground each day. After careful tests we find them accurate and reliable.
 HUNT BROS.
- SEATON & LEA, Atchison, Kansas. PARIS, Ont., Sept. 13, 1886.
 Gentlemen: The Kuhlman Automatic Scale you furnished our mill works satisfactorily, and from all tests we have made we are confirmed in the belief of its being absolutely correct.
 Yours truly,
 WHITLAW, BAIRD & CO.
- SEATON & LEA, Atchison, Kansas. INGERSOLL, Ont., Sept. 11, 1886.
 Gents: The Kuhlman Scale placed in our mill by your agent, gives perfect satisfaction. I tried it against four pair of scales in my mill and find it absolutely correct, and I cheerfully recommend them to the milling fraternity.
 Respectfully yours,
 WM. BARTLO.
- KUHLMAN AUTOMATIC SCALE CO., Lincoln, Nebraska. LONDON, Ont., Sept. 13, 1886.
 Gents: The two Automatic Scales placed in my mill by your representative, are giving entire satisfaction.
 Yours truly,
 J. D. SAUNBY.

SEATON & SAGE are General Agents and Manufacturers of the Kuhlman Scale.

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

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- HAS IMMENSE CAPACITY,
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PROCTOR'S POINTS.

POLITICS! Politics! Politics! From the standpoint of a cottage door in Lancashire, Jean Ingelow said long ago:—"All the world was in the sea." "Proctor," from the standpoint of a workshop, repeats:—"All the world is in the sea of politics," and it's no plagiarism. Never, perhaps, in the history of this world, did a year usher in with so many momentous questions, in national or local politics, agitating humanity. "Politics" mean "Party" to so many people, however, that it is almost impossible for a great many very respectable citizens to look at, or see politics from any other standpoint than that of their party. What "Proctor" has to say at this time is not said from a partisan standpoint, although he has as strong convictions on current political matters as most men.

Politics, or political economy, is the science of government, or an exposition of the measures necessary for directing the movements of society, so that man may act in harmony with those natural laws which control his efforts to improve his condition. This is a definition of politics, in the abstract or purely ethical condition, found in works on political economy, and practised—where? In Christian England? Let one glance at the legion of side issues that entered into the last general election, suffice to convince that politics in England means "party success" in the lowest sense of that term. In cultured Germany? Witness the factious opposition of the Reichstag to the will of the Emperor and the necessities of the Empire, during the scenes immediately preceding its dissolution, this present year, and in one of the gravest emergencies of German history, and see how little trivial differences of opinion in minor matters, can make even the representatives of a great people forget the sacred trust imposed in them, and barter their country's weal for the gratification of some personal pique or ambition.

Canadian politics, as represented by Canadian politicians and Canadian people in their voice at the polls, does not always move in the direction of bringing the people into fuller harmony with natural law. We are a much governed people: Dominion Parliament, Provincial legislatures, county councils, township councils, ward politics—all run, to some extent, on the same "party lines," Tory or Grit; "ins" or "outs"; all sorts of schemes by the "Ins" to keep in, and all sorts of schemes by the "Outs" to get them out, and get in themselves. The measures that are for the benefit of the country are to a very large extent only secondary, and used as stepping stones to, or reasons for, a longer ease of power to the party who introduced them. This pernicious principle seems to be permeating everything and everybody, from the leader of the party to the school trustees in a back township.

Personal gain and personal ambition are motives that influence very many in the exercise of the franchise. For instance:—the millers, at this present time, with the old Ephesian cry of "our craft is in danger," are using all sorts of arguments in support of the party in power. The manufacturers, also, to a large extent, are doing the same thing. It is not "the greatest good for the greatest number," but "how can I shape things so as to make the most money out of them," that seems to be the rule in politics now-a-days. Never mind convictions as to what I ought to do or what I ought to support, but which way will put the most money in my pocket, or advance my interests the most.

Partyism, without reference to the principles involved, or the measures advocated, is a rank evil in politics. On this very day (Jan. 27) on which I write, one of the strong manufacturers of this province said to the writer: "I shall vote for the Liberals, but will be sorry if they get in, because I am a strong "National Policy" man," and no longer ago than yesterday, a very intelligent Roman Catholic remarked, in a discussion of the Northwest Rebellion, its causes, and consequences, with the writer, "I am thoroughly satisfied, in my own mind, that Sir John Macdonald and his colleagues are responsible for the rebellion, and treated the half-breeds most shamefully, but I've always voted in support of that party, and I shall give Sir John a plumper this time too. So it goes. Party! Party! Party! Never mind right: never mind wrong; Party first; Party last; Party all the time.

The good sense of very many of our Canadian people is recoiling against this partyism, gain-making, time-serving, place-seeking policy of our politicians and our papers. Already, the breaking away of the masses from

the trammels of party, for clear potent purposes of human good, as in the Toronto civic election this year, indicates the desire of our Canadian people to be free from and rid of the present bonds of partyism that fret and chafe them, and is a "Nathan" singer of warning to our politicians, that if they desire the continued support of the people, they must seek for the welfare of the people. Another strong indication in this direction, is the breaking away of one of our leading dailies from the party it has so long supported, but which it can no longer support and be consistent with what it considers to be its duty to the country and the people.

"Proctor" hopes that only motives that will stand the test of good citizenship laid down by that master politician, the Apostle Peter:—"Love the brotherhood; fear God; honour the King," will guide his friends of THE DOMINION MECHANICAL AND MILLING NEWS in the recording of their votes in the present Dominion Election, and when the turbulent sea of party strife shall have subsided, they each will understand that every true man, faithful to duty, is a unit in the right place.



Mr. J. Cook has started his new mill at Zephyr, Ont.

Ogilvie's new elevator at Griswold, Man., has been completed.

Mr. John Jackson intends erecting a roller mill at Ida Hill, Ont., on the site where the old saw mill now stands.

The Cadmus, Ont., grist mill is reported to be doing a large business under the management of Mr. Wm. Brown.

Mr. Robert Armstrong's new grist mill at Janetville, Ont., is about to start operations.

The proprietors of the oatmeal mill at Wingham, Ont., recently received an order for 20,000 centals of meal from Liverpool.

Feek & Co., an elevator firm of Winnipeg, Man., has dissolved partnership.

T. B. Bragg, formerly of Aeton, Ont., has purchased the Cumminsville mills.

The new roller mill and grain elevator at Shoal Lake, Manitoba, will be completed about the 1st of March.

The Messrs. Botsford, of Port Huron, have leased the Grand Trunk elevator at Point Edward for the storage of their grain for the winter.

Mr. John McDougall has started a chopping mill at Atherley, Ont. His enterprise is very much appreciated by the farmers of that section.

As instancing the spread of the popularity of Manitoba flour the Ogilvie Milling Co. recently received an enquiry from Christiana, Norway, regarding their wheat flour.

The new roller mill at Westport, Ont., has commenced business. James Rossman, lately of the Perth roller mills, has been engaged as head miller and D. G. Ripley as manager.

Shipments of flour from Toronto and other western points over the Intercolonial Railway, within the past few weeks, have, says a Marum exchange, been very heavy, amounting at times to 40 carloads a day.

A new departure has lately been taken by Mr. Nairn, the Winnipeg oatmeal miller. He is importing Ontario oats, which, he says, are cleaner than the oats brought to market by local farmers and can be delivered at the mill at about the same price.

Farmers living near wheat stations in the Northwest, are said to have delivered the major portion of their grain, but the present cold weather deters those who have to haul their grain a long distance from delivering.

Rapids City, Man., lately voted bonuses to a railway and flour mill. These bonds were no sooner issued than they have been secured by the shenit, the town's debentures to the amount of \$10,000 now being in the hands of that office.

The following shows the stocks of wheat (expressed in bushels) in store at the places named on Jan. 8th, 1887. Duluth, 9,701,735; Minneapolis, 7,141,875; Chicago, 13,157,897; Toronto, 139,000; Montreal, 255,294; New York, 10,610,751.

Moosomin, N. W. T., *Courier*.—"We are informed on credible authority that Mr. A. E. Hughes has at last withdrawn his interest in the Moosomin roller mill, and assigned it to Theodore Fletcher, Esq., of this town, who is making every possible arrangement for the speedy completion of the same."

Mr. John Wright, the well-known miller of Owen Sound, writes us contradicting the statement made by "Rambler" in our last issue that his mill never exceeded 60 bls. per day until Mr. Tineck took charge, but now with skilful handling turns out 125 bls. Mr. Wright says both statements are incorrect. And he ought to know.

Reports from Edmonton, in the Northwest, state that the mills are running steadily on grists of new wheat, which is universally of excellent quality, but so far there have been practically no sales of wheat at any price. The general impression is that what is bought will be at something less than \$1 a bushel. Oats are selling freely at 70c. to 75c. a bushel, and barley at 50c. to 55c.

The Jackson (Mich.) *Patrol* says: "Geo. T. Smith has just returned from an extended business trip with his pocket full of orders, among them being one from Chas. A. Pillsbury & Co., of Minneapolis, for forty-one Geo. T. Smith centrifugal reels, to take the place of Morse bolts and centrifugals now in their mill built by

E. P. Alls & Co., of Milwaukee, Wis. This is probably the largest single order for centrifugal reels ever taken in this country. The Pillsbury mill is being changed to the full centrifugal system.

Mr. Peter Shaw, of East Oro, is reported to be pushing on the construction of his new flouring mill and shingle works.

The largest room in some mills, and the smallest in some others, is the room for improvement.—*Roller Miller*.

A Sours, Man., correspondent of the West Durham News writes: "The Glenwood roller mill is doing a rushing business just now. It is never shut down from Monday morning till Saturday night. This mill has got its name up for making a very superior grade of flour, and the proprietors, Messrs. McCulloch & Herriot, are determined to retain the same against all competition."

The Bristol Grain Washing Company is the title of a new company proposed for the purpose of acquiring and developing the business of washing and drying Indian wheat by special machinery, now carried on at Avonmouth Dock by Mr. R. M. Brinkworth, the well-known corn merchant of Bath. The capital is £200,000 in 2,000 shares of £10 each, of which 1,200 shares are offered to the public.—*London Millers' Gazette*.

A large flour mill and elevator will shortly be built at Keewatin, the mill to have a capacity of 1,000 barrels daily. A. Mitchell, of Montreal, and J. Matler, of the Keewatin Lumbering Co., are at the head of the concern. There is fine water-power at Keewatin for running machinery. An elevator having a capacity of half a million bushels will also be erected at Keewatin, and smaller ones will be put up at the principal grain centres in the province.

The rates of storage in Montreal are as follows: On grain ex craft—elevating and weighing in, 2c. per bushel, 10 per cent. off; transshipping from one vessel to another (each vessel), 2c. per bushel, 10 per cent. off; storage for each term of 10 days, 2c. per bushel. On grain ex cars and cariers—storage for first term of 10 days, 1c. per bushel; each succeeding 10 days, 1/2c. per bushel; loading on cars, 51 per car. No extra charge for weighing out and delivering grain in bulk on board craft, or in hoppers for bagging. On flour and meal—storage for 48 hours, 1c. per bbl. and 1c. per bag of 100 lbs.; storage for 10 days, 2c. per bbl. and 1 1/2c. per bag of 100 lbs.; storage for first month, 3c. per bbl. and 2c. per bag of 100 lbs.; storage for succeeding months, 2c. per bbl. and 1 1/2c. per bag of 100 lbs.; delivery to craft, 1 1/2c. per bbl. and 1 1/2c. per bag of 100 lbs.; up-ending or re-piling, 2c. per bbl. and 1 1/2c. per bag of 100 lbs.; loading on cars, 51 per car. The cooperative on flour 1 1/2c. per bbl. On short weight there is a fine of 2c. per bbl. on flour. The inspection of flour is 2c. per bbl. or bag.

A grain buyer who has bought and shipped many thousands of bushels of wheat within the past few months, in conversation with a reporter of the *Winnipeg Free Press*, related some of the grievances which make his lot not altogether a happy one. First and foremost in the category of evils is smut holes in wheat. Many a car load of genuine hard wheat has graded "rejected" owing to smut. Millers are not desirous of having anything to do with wheat damaged by smut, because the balls break in elevating, and if, during the process of milling, they are mixed with the wheat, no matter how excellent or plump and hard it may be, the flour is rendered worthless. The percentage of wheat afflicted with smut is not large; but the sooner the evil is entirely overcome the better it will be alike for farmers and shippers, as smutty wheat invariably grades rejected in Winnipeg and Port Arthur. Then nail holes in the cars cause considerable loss to the shippers. One nail hole will drop a bushel of wheat while the car is in transit. One of the most serious evils in the past has been the uncovered railway track scales. If when the cars were shunted on the scales a strong wind was blowing, they recorded a fictitious value. Lots of money had been lost through this; but the railway was now erecting sheds over the scales, which would do away with this difficulty.

At five o'clock on the morning of Jan. 8th, an explosion took place in the Carberry, Man., roller flouring mill, completely wrecking the building and seriously injuring Mr. Ritchie, the miller in charge, whose face and hands were badly burned. The mill's pump was out of order and they were using the injector for putting cold water into the boiler, and consequently were running a light feed on the rolls. About 5 o'clock Thursday evening the middlings bins were getting low, and Joseph Ritchie, the second miller, who was in charge, went up to take off the second stone. He set his lantern down about fifteen feet from the stone, and was removing it, when a quantity of middlings which had stuck to the sides of the bin came down the spout with a rush. This filled the air with dust, which caught fire and in turn ignited all the middlings in the spout and along the ceiling; almost instantly there was a great burst of flame; both ends and a side were blown out, the machinery was knocked out of place, the floors and partitions were torn up, and the whole structure irretrievably injured. Ritchie, who was bending over the stone when the explosion occurred, was stunned for a moment, and then groping blindly about in the smoke and darkness, provisionally reached an opening and dropped ten feet to the ground. He was so terribly burned about the hands that the flesh peeled off, and his neck and face was also badly burned. William Cuthness, the engineer, who happened to be upstairs at the time getting a drink, was badly scorched. There was a third employee in the building, but he escaped without injury. Immediately after the explosion fire broke out in three places on the ground floor, in two purifiers on the second floor, and in some bolting chests on the top flats. As they had a good supply of water on each flat the fire was speedily extinguished. At the time the explosion occurred it was 40 below zero. The mill was only built a year ago, and had a capacity of 200 barrels. The loss through damage to the building and machinery will be from \$8,000 to \$12,000. The insurance on the mill was as follows: Royal Canadian, 1,500; Citizens, \$2,000; Northern, \$4,000; Norwich Union, \$1,500; Commercial Union, \$1,500; City of London, \$2,500; Imperial, \$2,000. Mr. R. T. Rokeby, general manager of the company, says they will begin rebuilding as soon as the weather will permit.

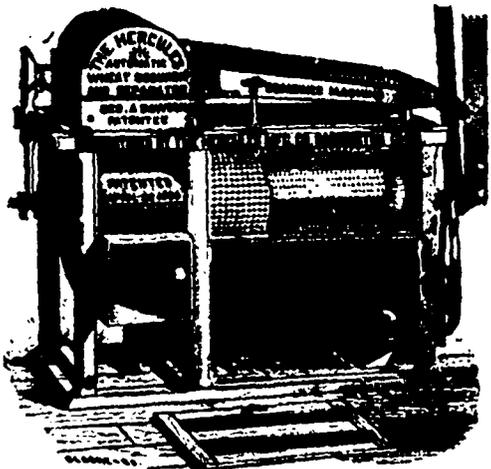


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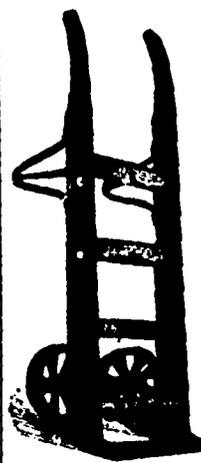
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IMPROVED STANDARD SCALES, RAILROAD SCALES, DEPOT AND
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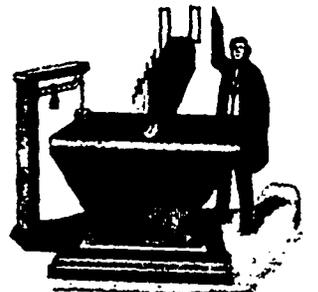
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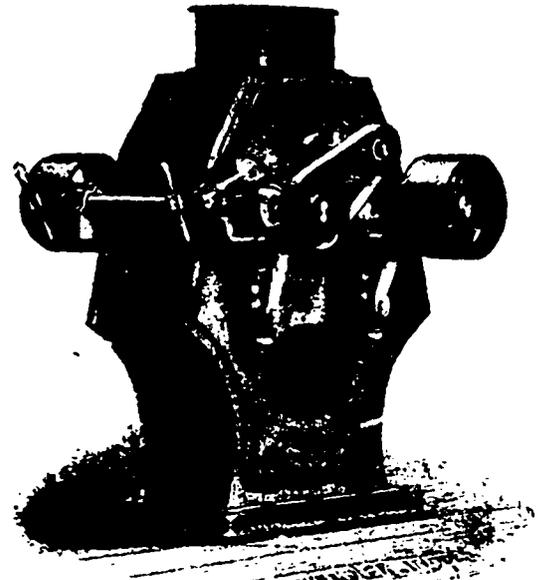
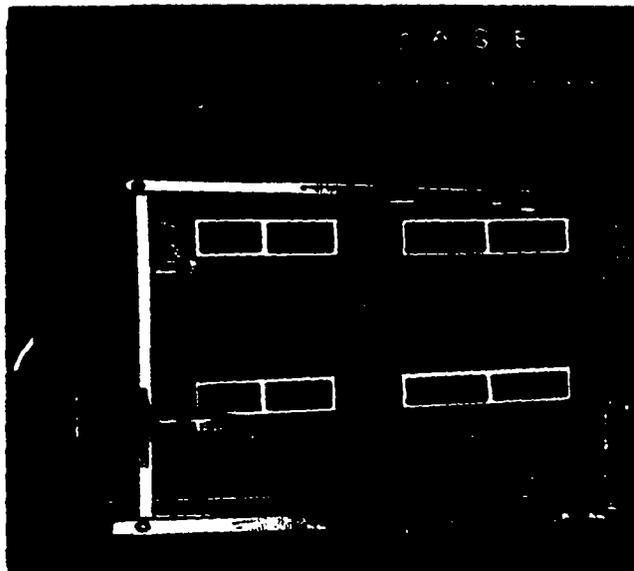
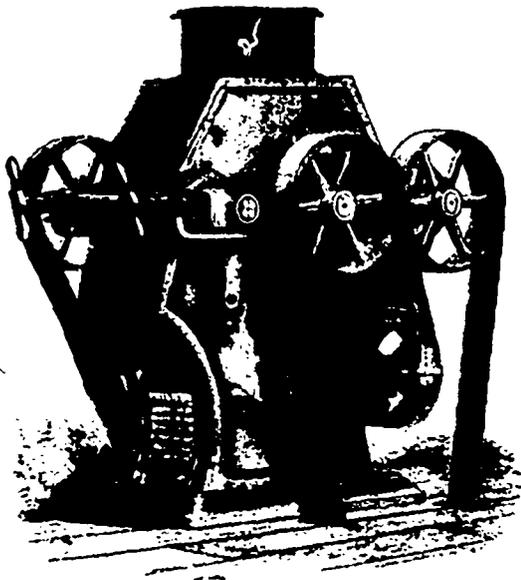
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[FOR THE DOMINION MECHANICAL AND MILLING NEWS.]

WHAT CONSTITUTES GOOD MANAGEMENT IN A MANUFACTURING ESTABLISHMENT?

BY "SINE."

It is not easy to answer a query of what constitutes good management in a manufacturing establishment, because success is usually dependent upon close, intensive knowledge of a multiplicity of detail either local in its nature, or if general, is specialized to every trade, and not applicable either to other trades or even to different establishments in the same trade.

Manufacturing in a commercial sense implies three accomplishments—knowledge of the grades and values of raw materials; how to work up these materials with the greatest economy, so that when the product is finished it will represent a popular want; and knowledge of the art of putting such wares into the hands of consumers with the greatest directness and economy. These conditions are very much involved. No degree of skill in buying, nor finish and economy in manufacture, will suffice for success if the article produced is something the people do not want. No mistake is so often repeated, and no misconception is so widespread, as the one that success is certain to follow if the goods manufactured are of the highest finish and most perfect construction. The conception is true only to the point where the utilitarian objects of the article are well fulfilled, and the artistic object what people will buy. If a wagon maker were to finish a dump cart to the same degree that he would a Victoria carriage, he would not only fail to sell it at its value, but a certain mental unbalance would be attributed to him. If a maker of scythes were to put a razor polish on his blades, he would lose his labor, and cast pearls before swine. If a mill furnisher were to give his machinery the fine fitting and finish that a maker of mathematical instruments is compelled to, his mills would not only cost so much that they could not be built, but they would not do the work of milling appreciably better than the rougher machinery. If a miller (as many of them have, to their sorrow) goes to great expense for machinery to make a grade of flour that his customers do not appreciate, simply because another miller has made an advance for a set of customers who demand a higher grade, he commits an error in management that, with a market on close margins, would eventually ruin him.

In short, the first element of success in manufacturing is a close adaptation of means to ends, and this implies that one must neither be in advance of, nor fall behind popular requirements. It also may be applied in a mechanical sense to the internal workings of the mill or shop.

In the matter of buying, it is a good rule to buy only sufficient raw material for the economical administration of the work in hand. Many buyers, believing the market to be low, and likely soon to advance, invest beyond the requirements of a reasonable future, and over stock; thus they take two speculative risks, neither of which naturally pertains to the legitimate business of the house. Perhaps trade slackens beyond the calculation of the buyer, and the commodity, instead of advancing, declines, making loss number one. Perhaps, also, the trade of the house declines, and instead of working up the normal quantity of raw material, only half is utilized, making loss number two, traceable to the mistaken judgment of the buyer. If this mistake is further repeated, by working this surplus of raw material into a surplus of manufactured goods, under a hope that in this form the original investment will be returned, the manufacturer will find that to a useless investment of raw material he has added another useless investment in labor, in handling, and in storage. He is paying interest on all these investments (or at least losing it), and in time is compelled to offer the goods at cost, or below, to stop the waste of interest, loss in deterioration, and others involved in the creation of a useless surplus. He has lost money himself. He has injured both his own and the entire trade by selling below a fair profit. The chain of consequences is endless. Instead of following his trade legitimately he has speculated in it, and lost. And he has caused others, innocent of destructive business methods, to lose with him. If I have laid undue stress upon this point, it is because it is, by many odds, the most fruitful cause of failure, surpassing any other many fold. Every reader may doubtless recall several cases that have come to his own observation, during this ten years of slow sales on low margins, where failure was caused by speculative over-buying and over-production.

The great shrinkage in values and profits that has now become so chronic as to threaten, like the poor, to be always with us, demands close economies throughout the shop where the manufactured product is created. This economy does not consist in making a quarterly demand

on the workmen for a reduction of wages, although this lowering has come as inevitably as the other, but consists in furnishing good tools, steady and reliable motive power, keeping every machine in the highest order and productive efficiency, and more than all, having them operated by skilled and contented men who will put out the work accurately, rapidly, keep their machines in good order, and do it all with a will that, to be continuous, must spring from a knowledge of the mutual identity of interest between the employer and the men, and from confidence that the employer is always doing his best for all concerned.

Good and skilled men are a necessity in any business that would achieve an enduring success. But neither good nor skilled men will survive in a shop under an inefficient foreman. Good men and skilled become bad men and slovenly, when they have over them a careless, methodless and brutish foreman. The want of method makes the best workman careless and slovenly; the want of courtesy will convert saints into anarchists, or at least to careless discontent. No shop can thrive where either find lodgement. The foreman is the employer's representative with the men, and much of the labor discontent that overspreads the land is due to the want of observance of principles of equity by foremen.

Economy in the shop means good fuel, good boiler and engine, and an intelligent engineer. It means also good belting and transmission kept at its maximum of efficiency. It means good machines that will produce the most good product with the least waste of material and labor. It means foreman and hands who will act as the brains of the machines, and keep them at their best, both in quality and quantity. There are machines in the flour milling industry that when taken together will make a barrel of flour from four and one quarter bushels of No. 2 wheat. There are other machines provided for the same work that will require five bushels, yet the three pecks difference represents nearly or quite the whole margin in operating. It is needless to say that no matter how cheap the inferior machines may be, they are so dear that the ruin of one using them is only a matter of time.

This element of manufacturing industry, which to the western continent has grown with the last twenty years, brings us to consider the most absolute requisite for success in manufacturing—capital. While this requirement is not inexorable, it has become the rule. The day of make-shifts is past. Demand is no longer sharp, and articles will not sell at all now that would readily have found acceptance in earlier days. Every article of manufacture finds a dozen counterparts, if not counterfeits, on every market, asking for a division of trade and a subtraction of profit. While profit will be lacking if the finish of the article makes it too costly, it will be equally lacking if the article be so crude as to suffer in comparison with others of the same kind. One who begins in manufacturing must, like Minerva from the head of Jove, spring forward developed and already armed for combat in the commercial arena. The day when a mechanic, with his limited kit, could, with sobriety and industry, grow into a mammoth concern, has nearly drawn to its close, and the man who starts with the crudest of tools will find no patrons for his products. The little country mill with its single pair of burrs, is almost as much a curiosity as relics of the mound builders. Their owners either have provided the finest appliances or gone to work at wages for others more fortunate. The wayside blacksmith may not hope to develop into a rolling mill producing steel rails.

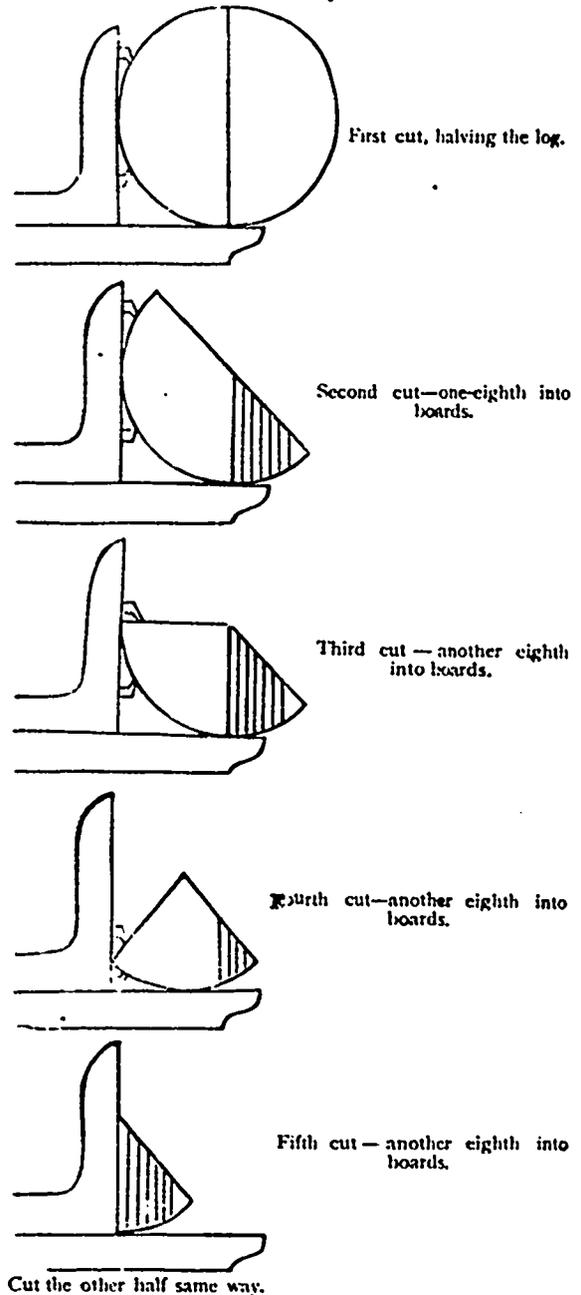
Experience to begin with—an experience that has grown up in the trade it would follow; that knows how to buy, the kind of tools required; that will surround itself with skilled and able men in all departments; that can produce efficiently and with economy, and that can sell with tact; that knows of the people who want their goods, and of how to reach them easily; that takes the most ready means to find new customers; that advertises liberally in the journals of their trade. These are the men who, allied with capital, will succeed in manufacturing. Success is no less certain now than ever; its conditions have changed, that is all. The end is more difficult, but the means, although changed and requiring great concentration, are also more ample, and equal to all demands.

Men whose capital is insufficient to engage in the manufacture of staple products as they are made nowadays, should not enter a hopeless contest. Such men must either associate with men who are similarly situated and form a company, or they must be content with their simpler life until their resources expand to the occasion, or seek a simpler field. The commercial world is strewn with the wrecks of enterprises begun without means sufficient to compass the various requisites of buyer, maker

and seller with economy. He who borrows his capital is as a straw in the wind, at the mercy of the least untoward circumstance. Staggering under a load of interest, he is prostrated by a bank failure, a bad account, or a season of "dull times." He buys piece-meal, and fails to get the trade cash discount; he produces with difficulty, with poor tools, and discontented or unskilled men; he sells at a discount, and with great exertions, in the employment of expensive salesmen. What chance has he with the house that buys for cash, at the lowest discount; that produces in quantity and the greatest economy; that supplants the drummer with copious patronage of well-selected advertising mediums, and that gives the customer a benefit out of each of these economies; that depends upon a uniform grade of goods at the lowest price, sold to the world in the most copious and least expensive way. None at all, in these days. Yet indeed, there yet be places—eddies on the outskirts of the commercial whirlpool, where the railroad and telegraph have not yet penetrated, where the currents of life are more placid, where these remarks will not strictly apply, where the old primitive methods may still be followed. Yet even here success is the proper adaptation of means to ends.

QUARTER-SAWING.

A correspondent, a man of large experience in the saw mill and lumber business, sends the *Southern Lumberman* the following method of cutting quarter-sawed lumber. The sketch, which is merely intended to show how the log is turned and dogged, without reference to the position of the knee on the head-block, is reproduced for the benefit of Canadian sawyers:

**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.

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—> MANUFACTURER OF <—

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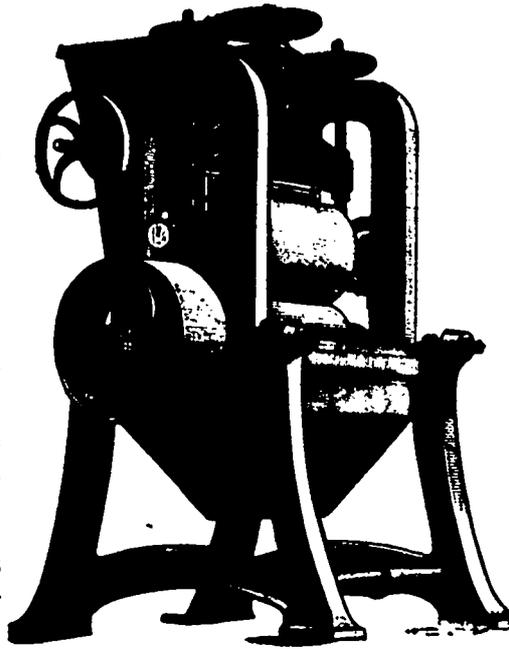
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Is the best Roll made in the Dominion. It is made in two parts: In the lower part of the frame is set the stationary roll, and in the upper part is the adjusting one. The top roll is kept true to the lower one by means of set screws at the four points 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 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

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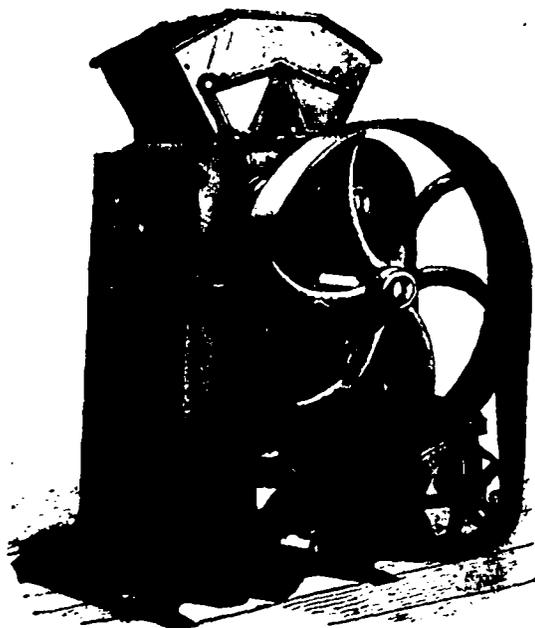
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CANADA PATENTS. Patented Sept. 4, 1875. July 16, 1883.

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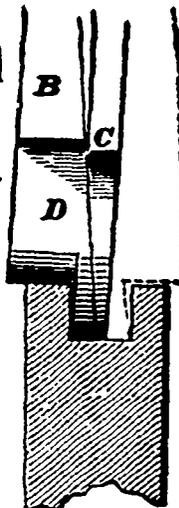
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MILTON, PA., U.S.



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

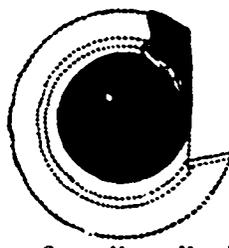
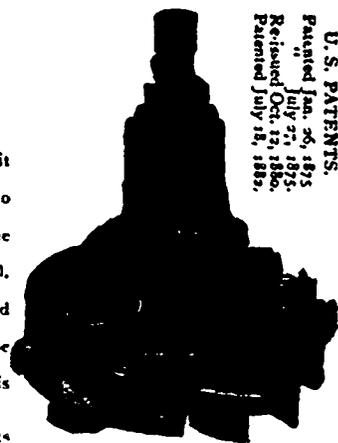


FIG. 2—CUTTER NEARLY USED UP. A. R. Williams, - - - Toronto

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.

SELLING AGENT,

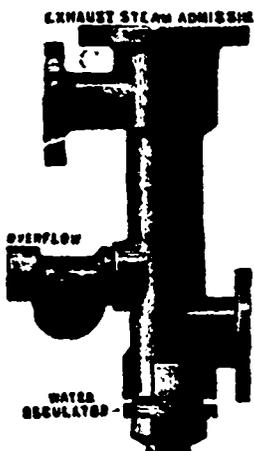


GROOVE HEAD.

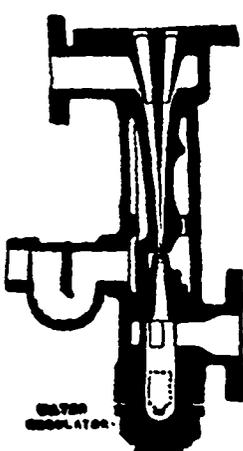
U. S. PATENTS. Patented Jan. 26, 1875. July 27, 1875. Revised Oct. 17, 1880. Patented July 15, 1883.

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