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# THE DOMINION MECHANICAL & MILLING NEWS

Vol. VIII.—No. III.

TORONTO, ONTARIO, JULY, 1887.

Price, 10 Cents  
\$1.00 PER YEAR.

## GREEY'S NEWLY IMPROVED DOUBLE ROLLER MILL.

THE revolution in the process of flour manufacture, from the old and long used millstone to its substitution by the chilled iron rolls, has, within the last eight years, attracted a very large amount of careful study and inventive genius to discover the best methods of mounting the rolls in frames, of feeding the material on which the rolls operate regularly to the rolls and in an even stream the full width of the roll surface, providing the most convenient, positive and durable adjustments, tempering each pair of rolls to its special work, keeping the surfaces of each pair of rolls true with each other, keeping the surfaces of the rolls clean, permitting hard substances to pass through the rolls without injury to rolls or frame, spreading the rolls apart to prevent injury while running empty or while starting or stopping, tightening the driving belts, etc. The devices that have been adopted, patented, experimented with, discarded, have been legion, while the number that have pushed themselves to the front as meritorious of success by their superiority and intrinsic worth have been few.

The machine herewith illustrated is the result of large experience, careful study of the weak points of roller mills, and the best means of overcoming them, together with the employment of the best obtainable talent. The manufacturers claim for it the following improvements and advantages:

The roll frame has been made higher, and the rolls more conveniently placed, so that all awkward stooping to examine them is avoided.

The celebrated Sperry feed—a vibratory feed—with some improvements, has been adopted in place of the roll feed. This feed perfectly and evenly distributes the stock the whole surface of the roll, is perfectly adjustable to the greatest nicety, and is automatic in operation.

The method of suspending the adjustable roll is an entirely new departure, it being overhung, instead of suspended below, doing away with the liability to jar and loose action, and at the same time gaining a large percentage of leverage for the hand wheel adjustments, enabling the hand wheels to be turned readily, no matter how great the pressure on the rolls may be. This leverage also admits of the springs being more sensitive. Any hard substance passing through the rolls does not cause rack and strain as formerly.

The tension of the adjustment is on the pull principle, as opposed to the thrust principle, which is liable to jar and rattle. In addition to the pull tension, the compression of the spring is peculiarly arranged so as to take up all lost motion, rendering loose working or jarring impossible.

The adjustment for setting the rolls is positive, and can be regulated to the ten-thousandth part of an inch. The adjustment for levelling the rolls is easy of access, simple and permanent.

The spreading of the rolls is accomplished by a lever, operating which the tension of the spring is not affected, and when the rolls are set together again they necessarily come exact to the former adjustment.

The pocket hand hole for examining the work of the rolls is dustless and convenient, and is covered by an automatic door.

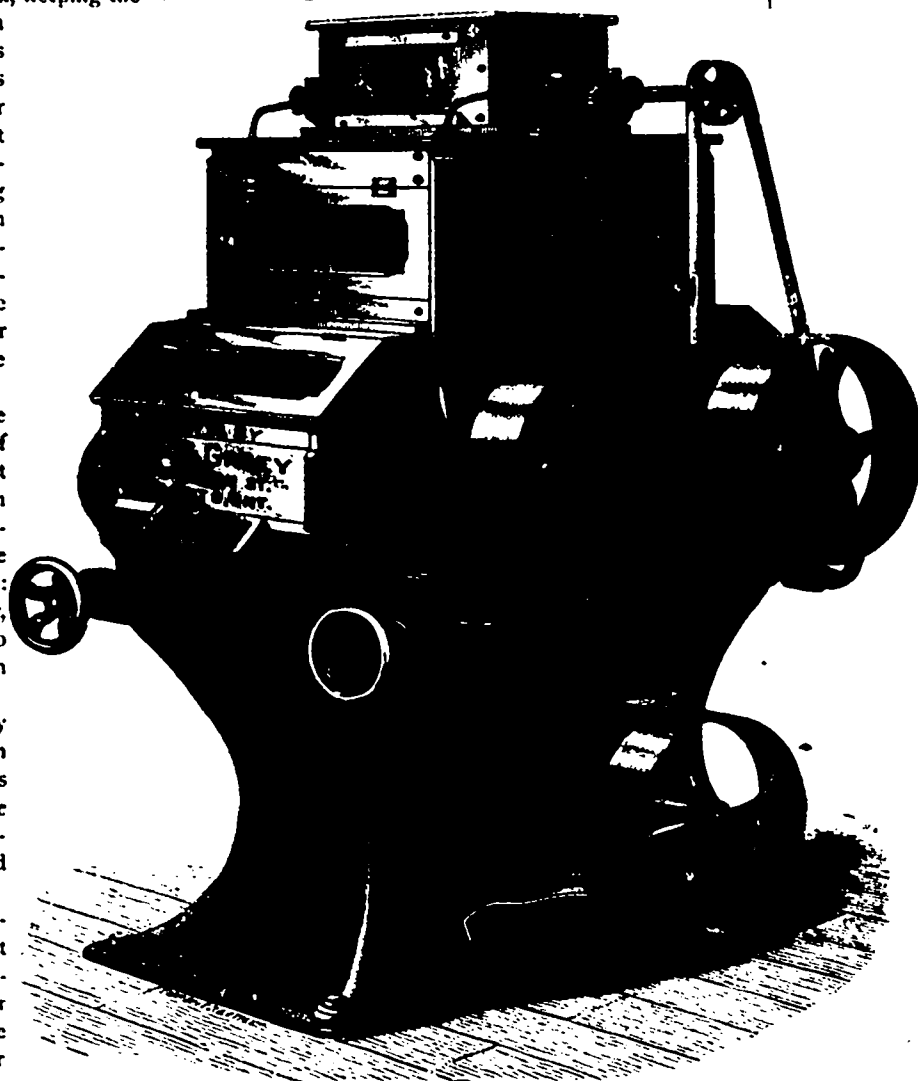
The method of applying the brushes and scrapers for keeping the rolls clean is new, is all on the outside, convenient of access, and the pressure is easily regulated.

The driving belts on both fast and slow rolls are tightened by simply turning a handle, and without leaving the side of the rolls.

We are informed by the manufacturers, Messrs. Wm. & J. G. Greey, 2 Church St., Toronto, that they have received orders for about 150 double pairs of these rolls during the last three months. Our readers who may desire further information concerning this machine, can obtain full particulars by addressing the manufacturers.

## ENGINEERING CONVENIENCES.

Some engineers seem to be determined to have as



GREEY'S NEWLY IMPROVED DOUBLE ROLLER MILL.

hard a time of it as possible, and are always engaged in a futile effort to catch up with themselves, while other engineers, with just as much to do take care of the matters entrusted to them just as well, and appear to have plenty of leisure time upon their hands. Of course this is in a large measure due to the different capacities of the men. In engineering, as in other matters, the capacity of different men for accomplishing work varies, and while one man will go quietly about utilizing his time and effort to the best advantage, and get ready to sit down and read his paper, another, with infinitely more hurry and bustle, will accomplish a great deal less and always have a half dozen odd jobs ahead to be done "when he gets around to it."

Many men, too, have an ingenious faculty of fixing up things to suit their own convenience, and in case of emergency will have tools at hand in proper condition for use instead of having to hunt the establishment over, go out and borrow, or put up with a make-shift, so that an occurrence which would be a simple inconvenience to them would mean an hour of hunting up tools and material, and a loss of patience and temper which would unfit the other man for doing the job in a workmanlike manner. Some little effort and even money can often

be laid out advantageously by the engineer in the direction of his own convenience. Most men have an idea that the "boss" ought to pay for everything required, even to an arm chair for them to sit in, and will spite themselves by sitting on an uncomfortable box rather than to buy a comfortable chair for themselves. There is no doubt but that a concern should furnish its engineer a clock to run by; but there is no doubt, either, that the man who bought himself one rather than walk through the cellar, climb a ladder into the back yard and half way across the next lot, to see how near shutting down time it was by the town clock, got the worth of his money in his own personal enjoyment of his purchase.

Another man, whose pump was in the dark boiler room out of sight from the engine room, spent a couple of evenings in rigging up a tell-tale which kept a pendulum in the engine room in motion while the pump was running. He could then tell the speed of the pump, or if anything had happened to stop it, without frequent excursions to the boiler room, and there was no chance for it to cheat because the pendulum could not go unless the pump did. He also had a cord and pulley attachment to an overhead valve, which enabled him to open and close it without the use of the poker, which by springing the stem kept it constantly leaking.

Still another man reduced the process of filling the sight-feed cylinder oil cup on a hotel job, where everything was kept especially bright and clean to extraordinary neatness and simplicity, by putting a bracket on his steam pipe above the oil cup, on which he secured a coffee urn kept filled with oil.

## THE SEASONING OF TIMBER.

Timber when freshly cut contains from 37 to 48 per cent. of water, the kind, the age and the season of vegetation governing the percentage. Older wood is generally heavier than young wood, and the weight of wood in the active season is greater than that of wood cut in the dormant season. Water in wood is not chemically combined with the fiber, and when exposed to the atmosphere the moisture evaporates. The wood becomes lighter until a certain point is reached in the drying-out

process, after which it gains or loses in weight according to the variations in the moisture and temperature of the atmosphere. Following is a table showing the percentage in weight of water in round woods from young trees at different lengths of time after cutting:

Kind of wood.	6 mos.	12 mos.	18 mos.	24 mos.
Beech. . . . .	30.44	23.46	18.60	19.95
Oak. . . . .	32.71	26.74	23.35	20.28
Hornbeam. . . . .	27.19	23.08	20.60	18.59
Birch. . . . .	38.72	29.01	22.73	19.51
Poplar. . . . .	40.45	26.22	17.77	17.92
Fir. . . . .	33.78	16.37	15.21	18.00
Pine. . . . .	41.70	18.67	15.63	17.42

According to these figures, taken from actual trials, there is nothing gained by keeping wood longer than 18 months, so far as drying or seasoning is concerned. In the woods mentioned there appears to be an actual loss in some and only a slow gain in others after that length of time. The pine, fir and beech gained moisture, and the others in the list lost only very slightly after the 18 months passed.—*The Lumber World.*

A new shake-feed has been invented and patented by Mr. W. H. Barnard, of Galt, which it is said materially increases the yield of flour.

## A FEW WORDS TO THE BOYS.

**BOYS**, as you are employed in the mill and schooling your minds and hands in the art of milling, do not forget that there is more to learn than how to clean wheat, grind, bolt, oil and take care of machinery. There are many other things necessary in the education of an accomplished miller, and in which practice only makes perfect. You must be a good judge of wheat, knowing its value by appearance when pricing it, and judging very nearly as to the amount in pounds of the kind of wheat it will take to make a barrel of flour, and as to the amount of stuff not wheat which the article contains. You must know when wheat is or is not merchantable stock—whether it is in or out of milling condition. Some kinds of wheat yield flour largely, and with some it is exactly the reverse. Make a study of this that you may be able to know the kinds on sight. Some wheats make strong flour, others weak. Some wheats yield white flour under any circumstances; some dark or yellow flour under the best milling possible. You must know about this, that you may be enabled to mix so that the flour will run uniform in strength and color. Remember that successful milling is money-making mill, and there are many things that must accord to make success. Good flour may indicate nothing as to this success, for the high price it may bring may be more than overcome by the large amount of wheat consumed in its production. Big yield indicates nothing, as in obtaining the big yield the flour may be lowered in value to such an extent that the yield is of no avail in securing profit.

There are many millers in charge of prominent mills to-day who are unable to tell whether or not offal is properly cleaned. Make sure that you do not prove like one of these. Make flour a study, that you can tell something as to its quality at quick sight. Make offal a study, that you may understand its condition at a glance. School yourself in figuring milling problems, particularly those of yields and percentages, and the minute total cost of manufacturing. This will prove a great incentive to watching and understanding the conduct of the business, the advantages of proper stock over the improper, the advantages of the competent over the incompetent engineer, the advantages of the competent mill employing good machines over the poorly-equipped mill employing worthless machines, and those of the fuel saving engine over the wasteful engine. Understanding the control of men, executive ability, is another thing, and is more dependent on training than on natural tact. It is an absolute necessity in the make up of a good miller, for it is not always the man who does the most work, spends the greatest number of hours in the mill and travels the longest distance in looking after affairs, who is the best miller, and accomplishes the most. A head miller may understand his business and work hard in attending to it, and yet fall far short as a competent head-miller, because, instead of being able to direct his men and keep them busy, he may allow them to trifle away their time; and, if not understanding the selection of associates who understood their business, he may choose the incompetent. If not appreciating the value of the faithful man above the unfaithful, he may employ the wrong men and be compelled to make good the inefficiency of help by his own personal exertion.

Remember that properly directed economy in everything, great and small, is a desirable characteristic in the miller. Economy, study and practice makes perfect, and vigilance accomplishes wonders. Train yourself to watch such things as that, the packer does not waste nails, linings, sacks and sack-twine, that the oiler does not waste oil, that the sweeper does not destroy brooms by carelessness. See to it well, that there are no little leaks through the mill or in the conduct of the business that are overlooked because of their insignificance, for wastes, though amounting to but little singly, may aggregate enough to overcome entire profits, or create loss instead of gain when margins are close.

Boys who do not observe and consider closely, who do not get old business heads on their shoulders early in life, are liable to pursue wrong courses, and in following the "showy" example imitate the wrong men. If they see a miller careful and accurate in every detail of his business, they become impatient at what they consider his slowness. For instance, if a miller, engaged in so simple a job as taking up or tightening a belt, is careful in arriving at the exact proper tension before fastening, and in making the tie exercises great care to draw every loop of the whang uniformly tight, they look on him as a "poke," while they will look with admiration on the miller who would quickly decide on proper length by guess, and do the "stretch or bust plan." Yet the "poke" is the worthy example, for, while the belt fixed by the "rapid" workman might prove too loose to per-

form its work, or seek early destruction while consuming power, by under strain, that fixed by the "poke" is apt to work advantageously in every particular.—*Modern Miller.*



**SMOKESTACK PAINT.**—A mixture of coal-tar and plumbago, thinned with turpentine or benzine, makes the best paint for an iron smokestack.

**PEAT PULP PAPER.**—Paper pulp from peat is a new idea. The fibrous peat is dried on trays and then treated so as to separate the clean fibre from which the pulp is made.

One-half ounce of camphor dissolved in one pound of melted lard, the scum removed, and a little graphite mixed with it, is said to be excellent to keep tools from rusting.

**TO REMOVE PAINT SPOTS FROM 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 FASTEN RUBBER TO IRON.**—It is claimed that rubber may be fastened to iron by using a paint made by steeping powdered shellac in ten times its weight of concentrated ammonia. It should stand three or four weeks before using.

**TO MAKE MALLEABLE BRASS.**—Malleable brass is made by forming an alloy of thirty-three parts of copper and twenty-five of zinc. The copper is first melted in a crucible which is loosely covered, after which the zinc, which has been purified by sulphur, is added.

Following is a statement of experiments made to enable an operator to tell the degree of heat in a furnace by the color of the flame: Faint red, 960° F.; bright red, 1,300° F.; cherry red, 1,600° F.; dull orange, 2,000° F.; bright orange, 2,100° F.; white heat, 2,400° F.; brilliant white heat, 2,700° F.

Irregular power and light feed will cause buhrs to "jump." In cases where the mill is geared too high this difficulty increases. Often when buhrs are "jumping" on a light feed with unsteady power, the difficulty may be obviated by increasing the feed, which will make them run steady.

**TO REPAIR BOILER FURNACES.**—When you have to repair your boiler furnace, says the *Stationary Engineer*, and can't get any fire clay, take common earth mixed with water, in which you have dissolved a little rock, or other salt; use same as fire clay—the furnace will last fully as long.

**WIRE BELTING.**—A method of manufacturing wire belting consists in interweaving sections of coiled wire to form the length of a belt, interweaving the ends of the sections with independent longitudinal sections of coiled wire to form the edges of the belt, and finally rolling the belt to flatten the links.

**BELTING CEMENT.**—Belts that have been loosened by getting wet should be thoroughly dried and fastened together by inserting cement into the cracks with a knife, and hammering until dry. A good cement for this purpose is equal proportions of good glue and Prussian gelatine dissolved in the same manner as ordinary glue.

**GREEN VARNISH FOR METALS.**—For a green transparent varnish for metals, grind a small quantity of Chinese blue with double the quantity of finely-powdered chromate of potash (it requires the most elaborate grinding); add a sufficient quantity of copal varnish thinned with turpentine. The tone may be altered by adding more or less of one or the other of the ingredients.

*Wool and Iron* says that one of the neatest and best ways of testing the soundness of a boiler plate is to sling it up by the corners so that it will lie in a horizontal position, and scatter a small quantity of dry sand evenly over the surface. By tapping the sheet lightly underneath, the sand will be thrown off wherever the plate is solid, while in places where lamination or blister occurs the sand will remain fixed.

**FIRE EXTINGUISHER.**—The ingredients of many of the fire extinguishers now before the public are said to be eight pounds carbonate of soda, four pounds alum, three pounds borax, one pound carbonate of potash, and twenty-four pounds silicate of soda solution, these being of course mixed together; one and a half pounds of this mixture is added to each gallon of water when required for use, the timeliness of application constituting the important feature in the matter of efficiency.

**TO REMOVE SHEPHERD'S MARKS.**—As is well known, the removal of shepherd's marks from the wool occasions great trouble. They are frequently cut out with shears. This however, is difficult, costly, and tedious. A French firm received a patent some time ago for a process by which they remove these marks quickly by submerging the raw or worked wool for from 15 to 20 minutes in a bath heated to 105° Fahr., and containing a sufficient quantity of water glass to raise the solution to 20° B., and besides this 4 pounds of soap.

**TO COMPUTE HORSE POWER.**—In a single-cylinder, high-pressure stationary engine the horse-power, may be computed by this rule: Multiply the area of the cylinder in square inches by the mean effective steam pressure in pounds; again, multiply this product by twice the length of the stroke in feet, multiplied by the number of revolutions per minute, and divide this last product by 33,000, the quotient will be the horse-power imparted by the steam. From this deduct about 15 per cent; the remainder will be the actual horse-power of the engine.

To remove one troublesome complaint that frequently causes grate bars to warp, have suitable space or clearness at each end of the bar; and grate bar bearers will prove more serviceable if they are placed a short distance from end of the grate bar, leaving

space so that whatever falls at the end may not lodge there. Some grate bar bearers are placed up to bridge bar at one end, and join the dead plate at the opposite end. As these places are most likely to accumulate ashes they speedily choke up, if openings are not provided for their escape.—*American Engineer.*

**THE WEIGHT OF STEAM.**—The weight of steam depends upon the pressure and dryness of the steam. Supposing the steam to be saturated, the weights per cubic foot are as follows: For a pressure of one pound per square inch above vacuum, .0030 pounds; two pounds absolute, .0058 pounds; four pounds absolute, .0112; eight pounds absolute, .0214; sixteen pounds absolute, or 1.3 pounds above atmosphere as registered upon the ordinary steam gauge, .0411; thirty-two pounds absolute, or 17.3 pounds by the gauge, .0789; sixty-four pounds absolute, or 49.3 pounds by the gauge, .1516; and at 128 pounds absolute, or 113.3 pounds above atmosphere, .2911 pounds weight. A cubic foot of water at 62° F. weighs 62.355 pounds.

**TO KEEP THE ENGINE CLEAN.**—Make a solution as follows: Dissolve a pound of concentrated lye in about two gallons of water and with a mop saturate the engine with the liquid—being careful that it does not get into the oil-holes of journals and bearings. After the lye has "eaten" all the grease and gum from surfaces, clean perfectly by scraping and brushing, and apply a thin coat of lead-paint. After this is thoroughly set, paint a deep black and varnish heavily—stripping or decorating can be done according to taste. After this the greater part of the works can be easily and quickly cleaned with a dusting brush or cloth, and escaped oil can be mopped off thoroughly with but little trouble. A very small outlay of money and work thus invested will do away with much work to no purpose, in keeping the engine clean and neat in appearance.

**AN ACID-PROOF CEMENT.**—A cement for resisting sulphuric acid, even at boiling heat, may be made by melting caoutchouc at a gentle heat and adding with constant stirring from 6 to 8 per cent of tallow. Then mix therewith enough dry-slaked lime to make the whole the consistency of soft paste; finally add about 20 per cent of red lead, whereby the mass immediately sets hard and dry. A solution of caoutchouc in twice its weight of linseed oil, aided by heating, and the addition of an equal weight of pipe clay, yields a plastic mass which will resist most acids.

**TO CLEAN BRASS.**—An exchange gives the following method of cleaning brass: Make a mixture of one part common nitric acid and one part sulphuric acid in a stone jar; then place ready a pail of fresh water and a box of sawdust. Dip the articles to be cleaned in the acid, then rinse them in the water, and afterward rub them with sawdust. This immediately changes them to a brilliant color. If the brass be greasy it must first be dipped in a strong solution of caustic potash or soda. This cuts the grease so that the acid has power to act.

**ARTIFICIAL WHITESTONES.**—The *Guide Scientifique* gives the following method of making artificial whiteners: Gelatine of good quality is dissolved in its own weight of water, the operation being conducted in a dark room. To the solution 1½ per cent of bichromate of potash is added, which has previously been dissolved in a little water. A quantity of very fine emery, equal to nine times the weight of the gelatine, is intimately mixed with the gelatine solution. Pulverized flint may be substituted for emery. The mass is molded into any desired shape and is then consolidated by heavy pressure. It is dried by exposure to strong sunlight for several hours.

**PRESERVATION OF WOOD.**—A simple method of treating wood with preservative solutions is employed in Norway for telegraph poles. After the poles are set in place a man goes from one to another with an auger, with which he bores a hole in each post, beginning at a point about 2 feet above the ground, and boring obliquely downward, at as small an angle as possible with the axis of the post, until the point of the auger reaches the center of the stick. The auger hole should be an inch in diameter, and, in telegraph poles of the ordinary size, will hold easily 4 to 5 ounces of sulphate of copper, which is put into it in the form of coarsely powdered crystals, and the opening then stopped with a plug, the end of which is left projecting as a handle, so that it can be pulled out and replaced. It is found that the crystals of copper sulphate disappear slowly, so that every three or four months the charge must be renewed; while the wood, both above and below the auger hole, even to the very top of the pole, gradually assumes the greenish tint due to the presence of copper in the pores.

**CREATING HARDWOOD LUMBER.**—Cleating is beneficial if done at the proper time, i. e., when the plank comes from the saw and before it has been split by handling. After a split has opened a plank two or three feet, a cleat cannot be put on securely enough to prevent the split from extending the first time the plank is handled or "dumped" from a truck. The proper way is for the mill hands or foreman to select the plank, generally the ones coming from the centre of the log, that indicate by their appearance a tendency, by small checks or free straight grain, to be liable to split perhaps the whole length of the plank, and at once nail on a cleat of some tough, strong wood. Oak or elm is best. Care should be taken that the cleat does not extend beyond the edges of the plank or lap over the sides so as to be easily pulled off in handling, or take up extra room in stowing if shipped where freight is charged by the cubic foot instead of board measure. Plenty of nails should be used. For two inch plank, the cleats should be ¾ inch thick and 6d or 8d nails used. Nailing on strips of lath is only a waste of time and material. Ash splits more readily than any other plank, and the better the quality and the freer from defects, the easier it splits. Inspectors usually take this fact into consideration; and if the plank is otherwise perfect, will measure down in width one or two inches, and grade it as firsts when it would be classed as seconds if ordinary square edged plank. Most of the best ash, oak and hickory is used for carriage material, and consequently cut into small and short pieces, and the quality is more important than the width and lengths. In such kinds of lumber, knots are a much more serious defect than splits. Cleats will help much to prevent the latter if put on as suggested.

## PROCTOR'S POINTS.

“PROCTOR” does not like to depart from the usual line of subjects embraced by the prospectus, and included in the scope of the reading matter found in the columns of the DOMINION MECHANICAL AND MILLING NEWS, but, having a sort of roving commission to write on whatever subject pleases him, he ventures to give your readers a few points on electrical matters, to pave the way for your “Jubilee and Exhibition Number,” which, from what he hears of it, will be a great “shock” to those Canadians who think it is not quite possible for Canada to produce a first-class mechanical paper.

The products and manifestations of electricity have advanced from the street corner show and the curiosity department of chemistry, into the active, vital and multiplied avenues of commercial life, until, in all the broad fields of human necessity, mechanical application and material development, no single element to-day holds so important a position as electricity. Let me illustrate, by a few points, some of these fields of usefulness. I can only touch some of them very briefly, and in fact cannot give in an article of this kind any more than a faint outline of the important relation of electricity to the subjects which I shall mention.

Electricity, as I shall discuss it, may be termed “that invisible or subtle force, existing in matter, and put in active operation or generated by friction or chemical decomposition.” The general science of electricity includes dynamical and statical electricity, or electric force in a state of motion or rest. For the purposes of these “points” at this time, I will treat more particularly of dynamical electricity, its uses and advantages. It would take up a great deal of space, and perhaps not be very interesting to a good number of your readers, for me to discuss the methods and constructions now in use for the generating of electric force, and so I shall not refer to the different kinds of dynamos, nor their individual advantages for certain kinds of work, but simply denote some of the uses and applications of dynamical electricity.

Electric lighting is no longer an experiment. Nearly all the important cities and towns in the civilized nations of the earth are lighted by electricity; and in Canada and the United States, smaller towns, and even villages, are now beginning to put in or prepare for putting in the electric light; manufacturing concerns and private enterprises of all kinds are hastening to adopt it in some or all of its varied forms, until it appears quite evident that it is destined to be, to a very large extent, the light of the future. In all the important elements that combine to produce a safe, useful, reliable and effective light, there is now no doubt in the minds of the men who know the most about it, that it is deserving of the very highest place. The chief difficulty in the way of its permanent and universal adoption at the present time, appears to be its cost, in the introduction and maintenance, but especially in the cost of plant, etc., for its production.

Transmission of power by electricity is already an important factor in the use of electricity. The completion and perfecting of the details of construction that will convey power from a great central force to a distance and divide it up to suit the necessities of the users, has so very nearly been accomplished, that the day is not far distant when large water powers can be utilized, by conveying their power to such locations as shall be adapted for shipping or manufacturing, and thus a considerable saving be effected in the maintenance of the necessary power in the purposes for which that power may be used. The field for the practical application of electricity here is almost unlimited—manufacturing, railroading, street-cars, mining, quarrying, canaling, besides a host of minor industries, including a number of the important operations of agriculture. “Proctor” is not a prophet, neither the son of a prophet, yet he ventures to assert that not many decades shall have passed over this continent before electricity shall have, to a considerable extent, revolutionized the transmission of power.

Storage of electricity: In this, until recently, unoccupied field, considerable progress has already been made. I do not mean static electricity when I speak of electricity stored up. I do mean electricity at rest, or packed away, in such a manner as to be available for use without the using of a dynamo, or the expenditure of power to put it in active operation again. It has been proved by practical experiment, that electricity may be

stored (literally packed away) for future use; that it may be conveyed in these accumulators any reasonable distance and used again. It has been used in this way to run street cars at Hamburg in Germany, with very gratifying results; it has been used to light railway trains, to run light powers, &c. The ways and means in which electricity may be used by storage accumulators are very great in number, and quite diverse in kind, and there is very little doubt but that the satisfactory character of the experiments carried on for the last two or three years, both in England and the United States, will lead to a very considerable development of this branch of electrical industry at an early date.

With electricity as used in telegraphy and telephony I shall not deal at this time, as the field is too broad to touch and make intelligible to the ordinary reader in the space of a few paragraphs in a short article; and, at any rate, this touches on another and a totally different field in the use of electricity.

PROCTOR.

### MILL BOOK-KEEPING.

In reply to a correspondent *The Office* says: Milling, whether of flour, cotton, wool, silk or lumber, is manufacturing. The general principles of accounting in each of these several divisions of industry are common in outline but dissimilar in detail. In one sense the accounts of all branches of manufacture possess similar marked characteristics of outline. The industry consists in converting raw material into manufactured products. The elements which contribute to the cost of production are: 1st, Raw Materials; 2d, Labor; 3rd, General Expense; 4th, Wear of Plant; 5th, Interest on Capital.

Against all these we have on the other side the sale of manufactured product. There may be minor sources of revenue, but it is to the manufactures chiefly we must look for returns. In the case of country mills, especially flour mills, a revenue comes in the shape of tolls. But as the product of these tolls must be marketed as a revenue before they are available, it is equivalent to the purchase of the grain which is milled and the sale of the product, the same as in other departments of manufacturing. In our accounting we must first provide for a record of Raw Materials purchased. If these are grains, we must subdivide this account into the various kinds which enter into our stock in trade, as, for instance: 1st, a wheat book; 2nd, a rye book; 3rd, a corn book. In these books we should record not only the amounts of our purchases, but also the quantity purchased, that we may be able to know precisely the number of pounds of flour obtained from any given number of pounds of wheat, and the exact yield in meal from one pound to any number of pounds of corn. Then our records of sales should be properly classified. The sales book may be prepared so as to keep each class of product by itself, through a columnar arrangement, under one general title, like a common merchandise account, the account debited for all purchases, and credited for all sales; but this plan furnishes no convenient means for the manufacturer to arrive at important statistics of his work, which may guide him in future operations. It is as essential to the success of the industry to classify the various grades of material purchased and sold as it is to separate the cost of raw materials from that of labor or general expenses.

### FEW UNDERSTAND IT.

Do common machinists, as a class, understand the principles of a running balance in mechanics?

A few days ago I had occasion to take out an exhaust fan for repairs, and among other things it needed balancing badly. I took the whole fan to a machine shop of good repute, which I knew put up good machines. When it came to the balancing part the man doing the job drilled the wing that needed the piece to be put on at one end, and on suggesting to him that it might not be right to put the weight on to the end, he said, “this is the lightest wing, isn’t it?” “That’s true,” I said, “but maybe that is not the light end of the wing.” “That doesn’t make any difference,” he said, “what part of the wing it is put on to, as long as this is the wing to put it on.”

I tried to explain the difference to him, but if I had talked for a year and a day, all that could be got out of him was, “this is the lightest wing, isn’t it, and here is where you want your balance.”

Here is what is called a good machinist, capable of building a steam engine from working drawings, and doing it well, too, and yet did not understand the difference between a standing and a running balance. I should suppose that a man learning the machinist’s trade would be taught that as one of the first principles of his trade, and that it was essential to the well-being and good-working of all machinery.

From this fact I was led to suggest to myself the question: How many good machinists understand the true principles of properly balancing machinery, and how many among the great army of mechanics ever read up in any mechanical publication, or the discussions and comments continually made on this subject in mechanical papers?

Surely it is a mystery to me why even the commonest mechanics do not understand this thing.—“Q” in the *Wood-Worker*.



The Osborne-Killey Manufacturing Co., of Hamilton, Ont., are supplying 3 boilers of 130 horse power each and a pair of engines for a new pulp factory at Chatham, N. B.

The Beckett Engine Co., of Hamilton, are placing a new steel boiler in the tug Minnehaha, the property of the Parry Sound Lumber Co.

We are informed by the Messrs. Greey that R. Muir & Co. report two more contracts of roller mills in the North West, particulars of which we hope to secure for next month’s issue.

The Hercules Manufacturing Company have established an agency at Winnipeg. The firm is represented by Mr. A. E. Hughes, Charlotte Street, who is establishing a general Northwest agency in that city.

Messrs. Inglis & Hunter have obtained from the Knickerbocker Co., of Jackson, Mich., the exclusive right to manufacture and sell in Canada the celebrated Cyclone Dust Collector, a cut of which appears in their advertisement in another part of this paper.

Messrs. Hutton, Price & Carr, of Wingham, Ont., are again increasing the capacity of their mill, and improving its efficiency, and have ordered from Messrs. Wm. & J. G. Greey improved roller mills, flour dressers, aspirator and cleaners, necessary for accomplishing their purpose.

The Hercules Manufacturing Company have shipped the following machinery during the month: No. 3 combined scourer, to Wheeler Bros., Cataract, Ont.; No. 1 scourer, R. M. Easton, Merrickville, Ont.; No. 1 scourer, S. Rennie, Hensall, Ont.; No. 2 combined scourer, Wm. Farrish, Rockwood, Ont.; No. 1 combined scourer, J. & R. Kidd, Tilbury Centre, Ont.

Donald McLeod, of Woodville, Ont., after making some improvements on the stone process and finding them unsatisfactory, has decided to change to the full roller process of about 50 barrels capacity, and has placed his order for the whole of the work with Messrs. Wm. & J. G. Greey, of Toronto, who are going to put in one of their 50 barrel roller plants.

The mill-furnishing works of Messrs. Wm. & J. G. Greey present the busy appearance of a bee-hive, 150 men being employed in getting out roller flour mill machinery, and their new buildings being fully occupied. Their new 100 h. p. Corliss engine keeps the machinery humming. About \$4,000 worth of new iron and wood-working machinery has lately been added. The Messrs. Greey have shipped 10 full car loads of machinery the last three weeks, besides hundreds of smaller shipments.

The J. B. Dutton Manufacturing Co., Detroit, lately shipped the following machinery: Blish Milling Co., Seymour, Ind., two No. 3 Dutton’s improved automatic feed scales; W. H. Kidder & Sons, Terre Haute, Ind., two No. 3 feed scales; W. C. Fuhner & Co., Mount Vernon, Ind., two No. 3 feed scales; Igleheast Bros., Evansville, Ind., one No. 1 and one No. 3 scale for grain; Blanton, Watson & Co., Indianapolis, Ind., one No. 3 feed scale; Carberry Milling & Brewing Co., Carberry, Man., one No. 1 grain scale.

The old stone grist mill at Port Albert, Ont., is about to be supplanted by something more modern, in the shape of a full roller mill of 75 barrels capacity. The property is owned by Mr. Jas. Mahaffy, who has improved the water power and erected new and commodious mill buildings for the new machinery. Mr. Mahaffy took a trip to Toronto last week, and while here placed his order for the complete outfit with Messrs. Wm. & J. G. Greey, who will furnish all machinery, plans, specifications and flow sheet, and superintend the work.

R. Muir & Co., the Winnipeg agents of Messrs. Wm. & J. G. Greey, of Toronto, have secured the contract for a 100 barrel full roller mill from Messrs. Mitchell & Bucknell, consisting of No. 1 cleaning machinery, 6 double 9x18 roller mills, 6 scalping reels, 2 purifiers, 4 dust collectors, centrifugals, flour dressers, packers, wheat heaters, scales, etc. The local draughtsmen of Messrs. Muir, Winnipeg, are busy preparing the plans, specifications, etc., and as soon as ready a large force will be employed and the work rushed to completion. The very satisfactory operation and light, easy running of the mill lately built by Messrs. Muir at Shoal Lake, Man., was an important element in securing this order for them.

Messrs. McKenzie Bros., of Kirkfield, Ont., have decided to change their flour mill to the full roller system, with a capacity of 75 barrels per 24 hours, and in order to accommodate the new machinery, will add to their mill building another full storey. They have placed their contract for the whole job with the well-known mill-furnishing firm of Wm. & J. G. Greey, of Toronto. The order for machinery consists of No. 1 oat and weed separator; No. 1 cockle separator; No. 1 improved smutter; No. 1 adjustable brush; 6 magnets; 2 double 9x15 and 4 double 9x18 Greey’s improved roller mills; 2 No. 3 and 1 No. 5 improved velocity purifiers; No. 1 aspirator; two No. 1 improved centrifugals; 8 No. 1 flour dressers; No. 1 bran duster, No. 1 shorts duster, No. 4 mill dust exhaust; five scalpers, flour packer, 4 bag fillers, etc. Messrs. Greey are busy preparing plans and machinery, and expect to have the mill in operation sometime during September.

**A DIAGRAM.**

A MILL diagram is often worth a good deal more than an extra wheat-cleaning machine, a pair of rolls, a reel or a purifier, or more than all of these together. The diagram represents a milling idea, either as a detail or as an entirety. The man who is on the road, the traveling salesman, makes it his business to sell machinery. If a miller lays his trouble before one of these gentlemen the remedy offered is a new machine. If he is selling wheat-cleaning machinery, it is said a new cleaner will do the business. If he is selling rolls, it is rolls that are wanted. Centrifugal reels are used to cover more milling sins than all other machines combined. It used to be a purifier which was the panacea, but now it is a centrifugal. A miller says his flour is muddy. "Rebolt it on a centrifugal," says the salesman. "If that does not do the work, buy another, and so on." Still there is trouble. "Build a complete centrifugal mill!" vociferates the salesman again. This is a regular game that is going on all the time. No one is more guilty than another. Those who build machinery make it their business to sell it. If the milling system is essentially wrong, additional wheat-cleaning machinery, rolls, reels or purifiers will not materially help that mill. The principle of reduction and separation must be correct. Then if there is anything wrong in the machinery, in its amount, it is time to correct it. How can one get a diagram? By paying some one who knows how to make it. That some one had better not be interested in the sale of machinery. His mind will not be warped in favor of additional centrifugals, rolls, reels, etc. A diagram will save a great deal of money in time. It may save a miller from the purchase of additional machinery. Very few mills are systematically arranged, or planned, and for that reason the miller does better by getting a good floor sheet than he does by getting more machinery.—*The Millstone.*

**MACHINE FOUNDATIONS.**

In a German paper, devoted to recent discoveries and experiments, we find the following upon improvement in foundations, for machinery: "Machine foundations, if built of hewn stone or beton, are said to have the disadvantage of being too rigid; this applies more especially to those for steam engines. The movements and vibrations of the machines occasion a reaction from the immovable layers of stone on the solid cement, which is injurious to the quiet and steady working of machinery. To overcome this difficulty, it is proposed to use an asphaltum-beton, consisting of asphalt, gravel and broken stone. Experiments made therewith in Europe for many years, have given most satisfactory results; and it has been shown that an asphalt-beton foundation for a 60-horse-power engine, after twenty years continuous working of the latter, had not undergone the slightest change or deterioration, although the weather at certain seasons of the year caused sudden and great changes in temperature of the surrounding atmosphere. Besides an inherent solidity, such asphalt-beton possesses a certain elasticity whereby the shocks from machines in action are entirely absorbed or dissipated, and any injury to ground or foundations is entirely prevented. These advantages, proved by experience, seem to recommend this material, not only for foundations of steam engines, but also for all descriptions of heavy machinery, especially steam hammers and centrifugal whizzers. An important consideration besides smooth working is, that a considerable amount would be saved annually through fewer repairs being needed by the machines.

**COMBUSTION.**

Considering the cost of the fuel consumed in making steam in this country, the following facts should interest all parties using steam power:

- 1st. That coal is distilled into gas before it can be properly burned.
- 2nd. That to burn this gas, a sufficient supply of hot air must be introduced at a temperature not low enough to cool the gases below their igniting point.
- 3rd. Every time a lot of fresh coal is thrown on the fire a great production of gas occurs, and if it is to burn to a flame it must have a corresponding supply of hot air. After a time, when the mass of fuel has become red hot, the supply of gas is greatly diminished, but at first the evolution of gas actually checks the draught; but bear in mind that, although no smoke may be visible from the fire, it by no means follows that its combustion is perfect; if you diminish the supply of hot air, or reduce the air space of your grate bars, you will be merely distilling carbonic oxide gas up the chimney.
- 4th. In ordinary boiler furnaces there is an insufficient supply of air; fresh coal is put on the grates, and the firing doors are closed; gas is being distilled from this coal. Now, if you do not furnish air above the fire (and

it must be hot enough to ignite the gas), how can you expect to get combustion? Whether it is expected or not, it does not burn properly, and your boiler furnace is nothing more than a gas retort in a gas works, making crude gas, and wasting it up the chimney; in other words, a first-class soot and smoke factory.

As most boiler furnaces are constructed they are nothing else than gas producers, that is, all gas producers are extra bad stoves or boiler furnaces. Consider how ordinary gas is made; there is a red-hot retort or cylinder, into which you shovel a quantity of coal, which flames and smokes vigorously as long as the door is open; when it is full of coal you shut the door, cutting off the supply of air and extinguishing the flame. Gas is now simply distilled and passes along pipes to be purified and stored. You perceive at once that the difference between a gas retort and an ordinary boiler furnace with closed doors and half-choked grate bars is not very great.—*Upton.*



Rapid City woolen mills are now ready for operation.

The Government is being petitioned to increase the duty on axes.

The Galt Felt Works were seriously damaged by fire a week or two ago.

The Canada Screw Company of Hamilton are erecting a new establishment 300 feet in length.

St. Thomas will not grant Essex & Company, brass founders, of London, a bonus to locate there.

Thirteen men were injured by an explosion of molten metal in the Victoria foundry at Kingston.

The Gibson Cotton Mills at Marysville is to have an addition to its machinery of 200 sheeting looms.

The erection of the new G. T. Railway locomotive shops at Stratford will be commenced at once.

The Orangeville woolen mills, owned by Classy & Robinson, were destroyed by fire on June 2nd.

A new paper mill factory is being built by Mr. E. B. Eddy, of Hull, at an estimated cost of \$20,000.

The New Glasgow, N. B., Steel Works purpose enlarging their works and engaging an extra number of men.

V. L. Rice purchased the works of the Pray Manufacturing Co., of Minneapolis, who lately assigned, for \$28,000.

Fire damaged the premises of the Toronto Parlor Frame Co., Toronto to the extent of \$2,000 on the 7th of June.

The French Canadian Board of Trade declared themselves in favor of the admission of all raw materials free of duty.

A company to manufacture whips from featherbones, with a capital of \$100,000, has been organized in St. Thomas.

David Darvill & Co., iron founders and manufacturers, London, Ont., have failed, with liabilities amounting to \$80,000.

A boiler explosion in a cotton mill at Natchez a short time ago caused the death of five men and wounded many others.

Mr. Wm. Smith, of Beaverton, has added a new planer and matcher to the wood-working department of his business.

Negotiations are in progress for starting a woolen tweed factory in the town of Mitchell, which will employ 60 or 70 hands.

Mr. B. Williams, Georgetown, has sold to Mr. Sykes the site of the woolen mills, where a new cloth manufactory will be erected.

The town of Sealforth will loan Messrs. Broadfoot & Box, furniture manufacturers, \$10,000 to aid them in enlarging their factory.

Seventy boiler-makers in the Kingston locomotive works are on strike because laborers were placed at the work vacated by strikers. The strikers asked for an advance in wages.

Mr. E. Kamper was in Ottawa a few weeks ago carrying on negotiations with the Government for the purchase of the Intercolonial railway and the erection of immense iron works at Picton, N. S.

Four years ago Graff, Bennett & Co., Pittsburg, iron manufacturers, got an extension of time to pay off their debt of a million dollars. That indebtedness is now paid off and an argument is furnished for the belief that there is still a profit in the iron business.

It was found by experiment some time since that a sheet of iron could be rolled to about the thickness of writing paper, 150 sheets of which would be required to constitute an inch of substance.

The large steam hammer lately manufactured for the Central Iron Works, Peterboro', by Messrs. Bertram & Sons, Dundas, has been tested and found to give the most satisfactory results.

The largest brickmaking establishment in the world is being constructed at Rantan Bay, New Jersey, by the Horilards of New York. The capacity of the plant will be 500,000 bricks every 10 hours.

The Courtland Cart and Wagon Company, of New York, are carrying on negotiations with Brantford, with a view to locating a branch establishment in that city. They promise to employ about 200 hands.

A telegraph wire is being manufactured in England in which the steel is made to completely surround the copper. The wire is drawn from compound metal consisting of a hollow ingot of steel filled with copper.

The firm of Clark, Harris & Co., furniture manufacturers, of Toronto, are negotiating with Ingersoll with a view to removing to that town. They desire a bonus of \$16,000 and exemption from taxes for ten years.

Simcoe has granted \$5000 to the Simcoe Woolen Co. to assist them in rebuilding their mill which was recently destroyed by fire.

Messrs. McClymont & Co.'s woolen factory at New Edinburgh was attacked by fire on the morning of the 10th of June, but was saved by the timely efforts of the fire brigade.

It is estimated that the steam power of Great Britain is able to perform the work of more than 40,000,000 strong men, which must nearly represent the labor capacity of the entire human race without the aid of machinery.

Berlin claims to have the largest button factory in America, the largest shirt factory, the largest corset factory, the largest felt boot factory in Canada. It has the largest tannery, and one of the largest furniture factories in Ontario.

A proposition for the re-opening of the London Steel Works, and the employment of 150 to 200 workmen, has been made to the corporation of that city by a wealthy firm of Cleveland, Ohio, on certain conditions, as a result of the increased duties on iron.

The Northwest town of Calgary boasts of a 75 horse power saw mill, with a capacity of 100,000 feet per day, a 25 horse power planing, sash and door factory, the largest in Manitoba or the Northwest, and a smaller planing, sawing and grinding mill.

A Scotch firm of locomotive manufacturers are said to have entered into correspondence with the Dominion Government, offering to remove their headquarters to Canada, provided the Government will buy fifty locomotives from them to give them a start.

Mr. H. W. Petrie, of Brantford, recently shipped a large quantity of wood working machinery to Liverpool, N. S., via Halifax, where they are to be used in a large shipbuilding establishment. Mr. Petrie's business is extending itself over the whole continent.

An English firm has lately completed a powerful hydraulic press to be used in compressing wood for the manufacture of loom-shuttles. Box wood which has hitherto been used in the manufacturing of shuttles has become so expensive that recourse has been had to the cheaper woods, powerfully compressed.

Five great branches of manufacturing employ together 85 per cent. of all the water power that is used. Flouring and grist mills use 38.4 per cent.; saw mills, 22.7 per cent.; cotton mills, 12.1 per cent.; paper mills, 7.2 per cent., and woolen mills, 4.4 per cent. The iron industry now uses scarcely any water.

According to a tabulated statement recently made by Mr. James M. Swank, manager of the American Iron and Steel Association, the production of steel of all sorts in Great Britain in 1886 amounted to 2,354,670 tons, and in the United States to 2,562,502 tons. While in crucible steel Great Britain surpassed the United States by 475,177 tons, and in tool steel by less than 30,000 tons, in Bessemer steel the United States surpassed Great Britain by 698,670 tons, or 44.5 per cent., and in the aggregate of all kinds of steel, 197,832 tons.

In commenting upon "Proctor's" article in these columns last month relative to the waste of valuable water power at Peterboro', Ont., the *Review* says: "When the adoption of the National Policy gave an impetus to manufacturing in Canada, Peterborough was not prepared to take advantage of the opportunity, because its means of carriage were so inadequate, compared with other localities, which thus secured the preference. Now, however, in addition to unsurpassed water power, we have railway connections which will compare favorably with those of most towns or cities. There is therefore no longer a sufficient reason for the waste of which "Proctor" speaks.

Heat in contact with the shell or flues of boilers is very rapidly dissipated; for instance, if the extra-hot air and the products of combustion in the fire box is assumed to be 2,500° Fah., and the temperature in the chimney of a 20-foot boiler 600° Fah., and the rate of motion taken at 22½ feet a second, it would follow that in passing under and through the boiler in about one and two-thirds seconds they would have parted with 2,500°—600°=1,900° of heat; so that it will be readily seen that perfect combustion can take place but little if any distance back of the bridge wall. The assumption of 2,500° in the fire box is a very generous one, comparatively few furnaces showing any such results. But a large majority of those who have charge of steam boilers delight in a long blaze, while really there is no better evidence of imperfect combustion.

The charter of \$5,000,000 to the Dominion Oil Pipe Line & Mfg Co., of which T. G. Hall, Judge Laird, G. D. Lane, A. R. Wilbur and F. C. Mills are the promoters, passed the Ottawa Senate on Wednesday without change, and thus becomes a dead certainty. It is one of the largest charters ever granted in the country for such purposes and means business. Quite a number of prominent parties from the States and Canada have been here within the last ten days looking over the plant of the Alpha Co., and more particularly seeing the liquid fuel of the company, its gas, etc. A great many say that it is but a question of a short time when the liquid fuel will be introduced into manufacturing concerns on a large scale and that the gas will revolutionize the lighting problem. The exchange building is lighted with gas right along and gives a clear, brilliant light, at such a low cost that it astonishes every visitor who sees it.—*Sarnia Sun.*

**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.

## Northwest Letter.

CROP prospects, up to the time of writing, continue to bear out the pleasing report furnished in our last letter. Indeed, the condition of the crops has improved every day, the weather having been simply perfect ever since the seed was first scattered. This has been a typical Manitoba spring in every particular—warm June weather, with showers occurring almost every day. Old settlers declare that the erratic weather of the past few years may now be considered at an end, and that the country has returned to the good old style—warm and showery springs. Vegetation has made most rapid progress, and “tall” stories of remarkable growth are reported from all parts of the country. To give an idea of how rank vegetation has been, I may mention, incidentally, that the other day in the Winnipeg market I saw stalks of rhubarb which weighed over two pounds each, and there were great bunches all of great sizes! You could easily knock a man down with some of the stalks.

The first crop bulletin of the season, issued by the Manitoba Department of Agriculture, has lately been published. It is shown that the area sown with wheat is very much larger than in any former year in the history of the province. The total area under wheat is placed at 432,134 acres, or an increase of about 50,000 acres over any previous year. Private parties, who have been through the province, estimate the increased area sown at a considerably higher figure, but taking the department figures as correct, at 25 bushels to the acre, we would have 10,803,350 bushels of wheat as the crop of 1887. The estimate of 25 bushels to the acre is a low one, with present prospects so favorable. The figures given are only for Manitoba, and adding the wheat crop of the Territories would bring the total crop up to at least 13,000,000 bushels. Allowing 1,500,000 for home consumption, and 1,000,000 bushels for exportation in wheat and flour. This may be counting our chickens before they are hatched, but the chickens may be counted upon with almost as much certainty as can any human undertaking. No authentic figures can be given as to the acreage of crops, etc., in the territories, but for the last two years immigrants have been mainly going beyond the boundaries of Manitoba, and consequently the increase should be greater there than in the province.

Considerable excitement was worked up among grain and mill men here by the announcement, made some time ago, that the C. P. Ry. Company intended going into the grain and milling business in this province. The statement was made from Ottawa, and though repeated on several occasions, has not since been contradicted. Dealers who remembered the C. P. Ry.-Mitchell grain syndicate of 1884-85 concluded that the railway company indeed contemplated such a move. The announcement some time previous to this, that Mitchell and others were to build a 1000 barrel flour mill at Keewatin, Lake of the Woods, was received with suspicion among millers and grain men here, and it was then mooted that C. P. Ry. officials were at the bottom of the move. When therefore the further announcement was made that the C. P. Ry. Co. intended going into the milling business, erecting a large mill and putting up elevators all over the province, the rumour was at once accredited, and connected with the previous report regarding the Mitchell *et al* mill at Keewatin. It is further said that the plans for the mill were prepared in the C. P. R. engineering department. Grain and mill men here have been very greatly exercised over the prospect of the railway which is doing the carrying for them, going into competition with them, and the movement has been vigorously denounced on all hands. It would certainly be very unfair for the railway company, either directly or through agents, to go into competition with those for whom it is doing the carrying, and it would place private corporations and dealers at a very great disadvantage to have to compete with a railway which has exclusive control of the carrying trade of the country, and could carry its own product at cost, whilst charging private dealers full rates. Nothing more had been heard of the project up to the time of writing, but it has just been reported that work on the Keewatin mill will commence shortly. Nothing has been done toward erecting elevators throughout the province.

The *Globe* of your city has been figuring up the returns of the grain inspectors at Port Arthur and Winnipeg for the crop year ending June 30, 1886, and from these statements makes out a very pitiful story of the great disaster which the frost of 1885 wrought to the crops of that year in Manitoba. The figures given by the *Globe* cannot of course be disputed, but they never-

theless are very misleading, and only prove that “a little knowledge is a dangerous thing.” To those not thoroughly acquainted with the situation, the figures would be taken as showing the state of the entire crop for 1885, and they would therefore mean a good deal more than can really be accredited to them. Many reasons can be given to show that the inference which would be drawn from the inspector's figures by a superficial examination of them, would be wide of the real truth, and there is every reason to believe that the actual proportion of frosted grain was very much less than the inspector's report would indicate. Moreover there is every reason to believe that, of the grain actually frosted, the proportion of badly damaged was not nearly so great as the inspector's figures would evidently show. The *Globe* says: “It is reasonable to suppose that the wheat which was offered for inspection, was better than that which was not.” The writer thinks he can prove beyond dispute that exactly the opposite was the case. The crop year of 1885-86 was the first year that grain was inspected at Winnipeg, and a great deal of the grain went through without inspection. The figures given by the inspectors from which the *Globe's* summary is taken, show a total of 2,182,533 bushels inspected, of which 2,110,933 bushels were inspected at Winnipeg, and the balance at Port Arthur. The committee of grain examiners at Winnipeg, show in their report for the crop year ending June 30, 1886, that in round numbers nearly 5,000,000 bushels of wheat (including flour) were exported from Manitoba eastward. There was also a considerable export of flour westward, which would at least make up any shortage in the total figures given for the exports eastward. Thus it will be seen that a large portion of the wheat (and flour) exported was not inspected, to say nothing of the proportion consumed at home. The *Globe* would try to make it appear that this uninspected grain was of a poorer quality than the inspected portion. The facts of the case are quite different. In the first place the C. P. Ry. Co. gave a lower freight rate on frozen grain grading No. 2 and under. All grain grading No. 2 frozen and under, was allowed a rebate at the rate of 8 cents per 100 pounds off the regular freight rates. In order to obtain this rebate it was necessary to have the grain examined and certified to by the official inspectors. Consequently all the badly frozen grain was inspected. Those who are in a position to know state that not a car of grain which would grade as low as No. 2 frozen, was exported uninspected. On the other hand, very little sound grain was inspected here, in proportion to the exports of the frozen grades. The same thing holds true of grain slightly damaged by frost. There was no incentive to have grain inspected which would not grade as low as No. 2 frosted, as such would not command the rebate of 8 cents per 100 pounds on the freight charges. It will therefore be seen that whilst every bushel of badly damaged grain was inspected, there existed no great incentive to have sound and slightly damaged samples inspected, and as a matter of fact I have it from those who know whereof they speak, that a very insignificant portion of the sound and slightly damaged qualities were inspected. Grain shippers were interested in having wheat grade No. 2 frosted, in order to get the rebate, and it is claimed that in some instances the quality of grain was reduced by mixing so as to have it grade No. 2. None of the grain ground in the country was graded, and the great bulk of this was either sound or very slightly frosted. There was a great deal of wheat which was very slightly touched with frost, and which was in fact not injured at all for milling; but no matter how slight the damage, this grain would have to grade as frosted if inspected. Consequently shippers preferred to sell it by sample to having it graded as No. 1 frosted. The writer saw elevators full of grain at Brandon and other places during the fall and winter of 1885-86, which was first-class milling wheat in every respect, and which no one but a person handling such grain would detect that it had been touched by frost. Perhaps one grain in a dozen would show a slightly shrunken appearance. Yet this would grade as frosted if inspected. Local millers paid about full prices for such samples, whilst No. 2 frosted was worth from 25c. to 35c. less. We have clearly shown why all the low grade frosted exported was inspected. We can now show why badly damaged grain was about all exported, in preference to being ground here. First, the very low price for No. 2 frosted created a great demand for it, and Ontario buyers, including mostly millers, were known to be active purchasers of this grade, when they would not take any other grades. The 8 cents rebate made it also preferable to export low grade frosted, in preference to grinding in the province. It will therefore be seen that almost the entire portion of badly damaged wheat was exported wheat, and that every bushel so exported shows up in the inspector's returns. On the

other hand, scarcely anything but sound or slightly damaged grain was ground at home, and the great bulk of the exportations of these grades was not inspected. In the case of grain very slightly touched by frost, it was manifestly in the interest of the shipper to sell by sample rather than have the grain graded No. 1 frosted. The very term “frosted” was sufficient to injure the grain in the sight of a purchaser, whilst in reality it might have been scarcely damaged at all. Indeed, I have heard millers declare that the No. 1 frosted wheat of the crop of 1885, grown in Manitoba, was better than the best wheat of any other country. The million and three quarters bushels of frozen wheat grading No. 2 and under, and including badly damaged and rejected wheat, shown by the inspector's figures as commented upon by the *Globe*, undoubtedly represented almost the entire portion of the crop of 1885 so damaged. Instead of 94 per cent., as the *Globe* makes out, there would therefore be about 33 per cent. of the entire crop of that year badly damaged by frost and from other causes. The *Globe* further makes it appear that some damage was done last year in this province, by stating that “of the crop of 1886 very little was frozen.” This is a direct mis-statement. Not a peck of grain was damaged by frost last year, and if any such was marketed, it was from the crop of the previous year.

### A NOVEL WHEAT CLEANER.

A new wheat cleaning machine has recently been invented, perfected by Mr. J. M. Case, of Columbus, Ohio. Like all of Mr. Case's inventions, it is a model of simplicity. It is an entirely new departure from the old system of wheat cleaning. Instead of depending upon brushes, and other means of producing a pressure upon the wheat, Mr. Case employs a vertical column, extending up in the mill any distance that may be required. This vertical column of wheat produces a pressure within a corrugated casing, provided with chilled corrugated surfaces. Within this enclosed casing there is arranged a chilled cylinder, the same as an ordinary roll for roller mills, and corrugated with a suitable corrugation.

The distance between the revolving cylinder and the outside casing is less than the length of two grains of wheat, and consequently the action of the revolving cylinder will always produce a motion of every grain of wheat inside of the chamber. This causes the rubbing of one berry against another under pressure due to the vertical column, and in this rubbing action the berry is thoroughly scoured and polished, and it is claimed, the fuzz upon the end entirely removed. It will thus be seen that the machine embodies the elements of the scourer and brush machine or polisher. After the wheat has passed through this rubbing cylinder, it drops into a second chamber provided with beaters, where it is thoroughly agitated, and during the time of this agitation there is a current of air passed through the wheat.

After leaving this agitating cylinder it drops into a vertical air spout into which a suction is applied, and which is provided with a means of producing a separation of the cheat, light grains and substances, the same as in all ordinary separators. All the working parts of the machine are chilled surfaces, and consequently it must necessarily be very durable. There are no perforated jackets to wear out, and no parts of any kind to get out of repair. The distance between the corrugated cylinder and the outside corrugated cases being so small, all foreign substances, straw and chaff are thoroughly disintegrated and broken up, so that the suction of air removes them entirely, thus obviating the necessity of an oat and weed separator.

This new machine is called the “Case Universal Wheat Cleaner.” A great deal is claimed for it, and we are anxious to see whether these claims will be fulfilled or not.—*Millers' Gazette*.

### RIVET HOLES IN BOILER PLATE.

In some practical tests of the comparative value of drilling and punching rivet holes in boiler plate, made in London, the result was in favor of drilling and the use of one-third-inch rivets. In these tests all the pieces were from the same sheet of five-sixteenths-inch boiler plate, and of one and three-fourths-inch width. Three pieces were torn in two by hydraulic pressure at an average strain of 32,685 pounds; three pieces punched, one five-eighths-inch hole in each piece, broke under an average tensile strain of 13,485 pounds; three pieces drilled one five-eighths-inch hole in each, broke under an average tensile strain of 17,645 pounds. The average strength of the drilled plate was then 4160 pounds greater than that of the punched plate. Three pairs of plates punched and riveted with the best five-eighths-inch rivets, one rivet to each pair, broke in the centre line of hole, at an average strain of 17,549 pounds.

### THE EXPLOSION OF A SAW MILL BOILER.

FOLLOWING is the description of the explosion of a saw mill boiler which occurred on February 18, of the present year, near St. Augustine, Florida: The boiler was of the hog-nosed type. It was 27 feet long over all, 48 inches in diameter, and had two flues 16 inches in diameter and 25 feet long, heads cast-iron, man-hole in each head. The following is the fireman's account of the accident: "We usually carried about 70 pounds of steam, and had 65 pounds when the engine stopped at noon. The water was fed to the boiler by an injector. It required hard firing to keep up steam. The boiler evaporated the water as fast as the injector could force it in, and as the water was low when the engine stopped, I kept the injector running until I had three gauges, and then shut it off. The pressure was then 70 pounds, and steam was beginning to blow off a little at the safety-valve. I was on the north side of the boiler getting ready to eat my dinner, when I was lifted from my feet and thrown 20 feet away, unhurt; but my little girl, who had brought my dinner and had started for home, was on the other side and was so severely scalded that she died two days later." An examination showed the boiler to be very thickly coated with scale. The water had been taken for about four months prior to the explosion from an artesian well. The plates were found to be very badly corroded about the dome, some parts of the sheet on which the dome was situated being so thin it was difficult to determine the exact thickness. By referring to the cuts it will be seen that this sheet was completely torn off and was thrown about 50 feet in a westerly direction, while the remaining portion of the shell was thrown 200 feet in the same direction, forcing its way through a large pile of heavy lumber. The dome was thrown still further in the same direction, going about 300 feet and passing through and tearing away the corner of a house on its way. The safety-valve, the front head of the nose and the top sheet of the same part are missing, and are supposed to have been thrown about 100 feet in a westerly direction and fallen into the river. From the above description, which was furnished by B. F. Robinson, of St. Augustine, we think there is no doubt that the explosion was due entirely to the fact that the boiler shell was so badly corroded that it had not sufficient strength to carry the ordinary working pressure. From the direction taken by the fragments it would seem that the shell gave way near the bottom of the dome-sheet, probably in the second girth-seam. A rupture occurring at this point would extend upward, allowing that portion of the shell forward of the break to swing upward and backward, giving it the direction taken. The strain brought about by the steam pipe, which was connected with the top of the dome, and the reaction of the water and steam issuing from the dome and hog-nose would be sufficient to bring about the destruction of those parts as described. With the front portion of the boiler gone, the reaction of the issuing steam and of the large body of hot water contained in the remaining and greater part of the shell would send it exactly as a skyrocket is propelled, in the direction it took. The boiler set east and west, facing the east, and it was blown in a westerly direction. The correspondent writes that there were various theories regarding the cause of this accident, but we do not see any grounds upon which to base any other than the one that we have expressed. There are thousands of boilers in this country at the present day running under similar conditions, and the only mystery surrounding them is the fact that so few of them comparatively do explode, not that there are such a large number of explosions.

The Stratford Herald, in a description of the Classic city mills of that city, among other things, says The contract for the new mills was given to the E. P. Allis Co., which is now the George T. Smith Middlings Purifier Co., who furnished it in a manner that few mills outside of those furnished by the Smith Purifier Co. can compete with.

### MILL DEFECTS.

Down here they have lots of queer ways of doing all sorts of funny things in the mechanical line, and out of it, too. I went into a saw mill where pandemonium would compare with this mill as a church fair with a boiler shop in regard to noise. The boilers were placed 150 feet from the mill, and had no covering over them, not even a shed, but rain, hail and wind alike came beating down on the boiler shell, and the long steam pipe, entirely uncovered, would have made a good condenser for a small compound engine.

Steam spurted in a thousand jets from the joints in the steam drum connections, and wherever a joint existed the steam came out in a halo like the leaf blossoms of a big sunflower.

Bolting a rigid cast iron steam drum or two plain

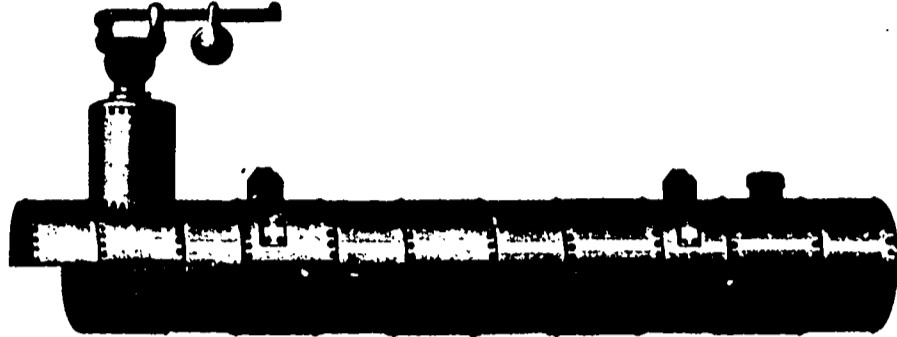


FIG. 1. BOILER BEFORE THE EXPLOSION.

cylindrical boilers by two 30-inch pieces of cast iron pipe never made a connection which would hold steam, even in Florida. Some day the bolts will get tired of stretching, or the cast iron pipe will get an extra wrench, and then off comes the steam drum and perhaps part of the old boilers.

The steam drum should be dispensed with, and two independent steam pipes run toward the engine, uniting in one at least ten feet from the boiler. If a steam drum

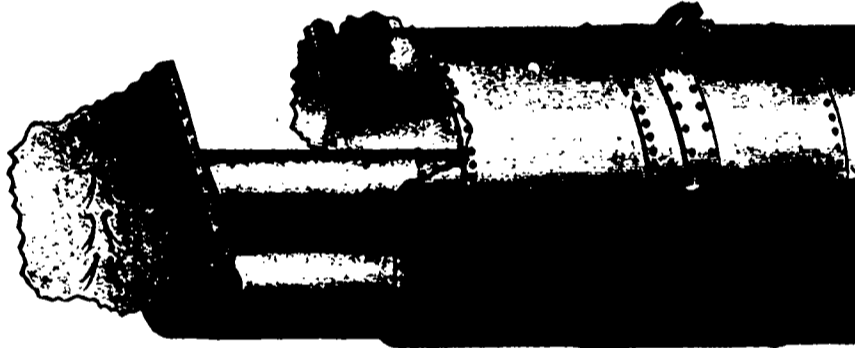


FIG. 2. FRONT END OF BOILER AFTER EXPLOSION.

is insisted upon, it should be made short enough to allow its being placed diagonally across and between the two boilers, and piped there too, by two horizontal and two perpendicular pieces of pipe which in turn were connected by two elbows. This arrangement allows the pipes to expand without tearing the joints all to pieces.

In the same mill the shafting was most horribly arranged, so that belts were miserably short. A binder had to be placed between every pair of pulleys, to add

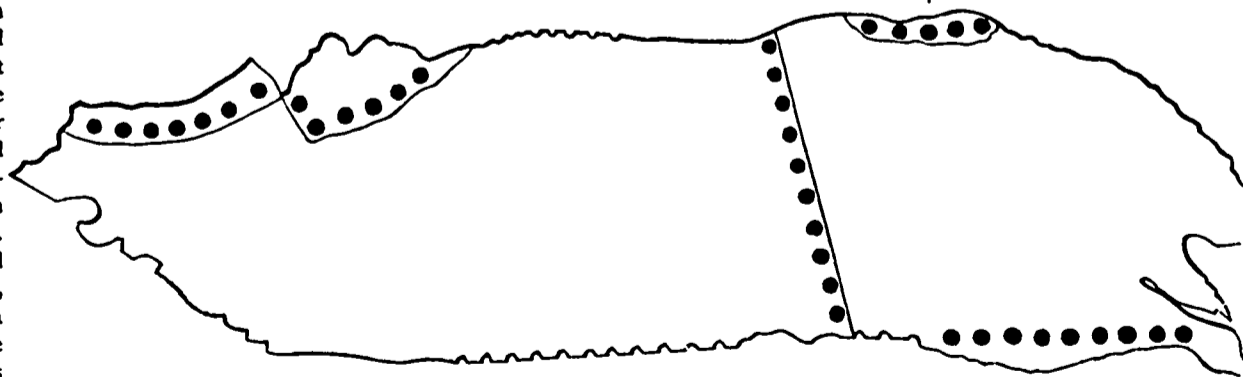


FIG. 3. DOME SHEET.

its weight to that of the belt. A 48-inch circular saw placed about 7 feet from the shaft, which supplied it with power, and even with a binder that saw was always slipping, the belt breaking out, and much time being lost by repairs. If there was no other way of doing, I would certainly erect a counter-shaft 20 feet or more beyond the saw arbor, then belt to the counter-shaft, thence back to the saw. It would be a rather expensive first cost arrangement, as far as the belts are concerned, but belting would be saved in a two year's run by this method.

In another mill not long since, I found a young sawyer who was having a terrible time with a 52-inch saw. He would start a cut into a log, and all would go well for six or eight feet; then the engine would begin to

take more steam, the saw to run out of the log, and belts begin to slip generally.

When the sawyer backed the saw out of the log, the saw shook and rattled like a piece of leather. It seemed as if the rim of the saw was two or three inches too large. The sawyer looked at the saw, set up the guides, and tried again, with no better success. A second time the saw was backed out and looked at, then a dish of cold water was procured and dashed upon the saw. When the cold liquid struck the steel, the saw seemed to quiver and shrink. It seemed hurt. The saw was hurt, and such treatment is always liable to spoil a saw.

After stopping a few minutes to lace the feed belt, the sawyer tried again and again until dinner time, without getting off a single good board. When he had left the mill I went up to the saw and placed my hand on the nut. I took my fingers off instantly, for the nut was almost smoking hot. The collar and two feet across the center of the saw were in the same condition, and on going to the other side I found the box and arbor to be both very hot. Probably that sawyer came back after dinner, and began all over again to try and make that stick saw work, and probably he succeeded in permanently dishing the saw, rendering it useless until hammered.

Just one thing ought to have been done. The sawyer should have shut down, taken off the saw, unbolted the cap, and ascertained why the box got hot. If dirt was the cause, have it removed; if lack of oil or a tight bearing was the cause of the trouble, let the proper remedy be applied, then wait patiently until the saw arbor got entirely cold. No matter if this takes three or four hours, wait patiently, then you can start up and saw good lumber from the word go.—*Manufacturers' Gazette.*

### ACCIDENTS FROM RUNNING MACHINERY.

One of the best things that appeared in the late *American Millwright* was an article on the above subject. Among the hints given were the following: Wear close-fitting clothes. Have a blouse or jacket to button tight around the waist or body; have the sleeves to fit the arm closely as far up as the elbow. Never wear a coat around machinery. Never approach a pair of gears or a pulley from the driving side. Never attempt to save time by putting or trying to put on any fast-running belts without slacking up or stopping entirely to do it. It is cheaper to stop to put on a belt than to attend a funeral, perhaps your own. Never allow an inexperienced person to go through the mill without an attendant. Never allow a woman to go through a mill—no matter how many attendants—while in motion. Never attempt to go through a mill in the dark. You may forget the exact location of some dangerous object, and seek to avoid it, but it is still there, noiselessly awaiting a chance to wreck you. Never allow any dangerous place to be left unguarded. Keep your eyes open while oiling. Never relax your vigilance for an instant; it may cost you your

life. Cold cast iron has a total disregard for human flesh, and the safest way is to acknowledge its power and avoid a test of strength. Many people need no telling to "grab a post" or anything that you can hang on to, but if you feel a gentle tug at your clothes grab, and grab quick, and don't let go till the cloth does. We always thought we were as careful as a man could be, nevertheless we have been "caught" more than once, and only an instantaneous effort saved us from injury and possible death. We have been an unwilling witness to many a mill and factory accident, and have seen some victims escape with the loss of their clothes, while others have been torn and mangled by the merciless machinery. One cannot be too careful. Too much cannot be done to lessen the dangers of machinery. Experience seems to give no absolute safety. Nothing can. Your own carefulness will be your greatest protection.

Mr. D. P. McLauren's grain elevator at Brandon was burned on the 15th inst. It is supposed that it was struck by lightning. About 6,000 bushels of wheat were destroyed and the total loss is \$20,000, of which 10,000 is covered by insurance.

A LARGE CANADIAN MILL.

THE most important contract let in the Northwestern country for sometime was taken last week by W. D. Gray, milling engineer for E. P. Allis & Co., Milwaukee. It was for the erection of a 1,200 bbl mill at Rat Portage, Manitoba, the builders being prominently identified with the Canadian Pacific railroad, and carrying out the project under the style of the Lake of the Woods Milling Co. The mill and its adjuncts are to be of a most substantial and complete character, and will cost over \$200,000. The mill building will occupy a ground space of 100x110 feet and will be constructed wholly of granite, a large amount of this stone being quarried from the race-way. The mill proper, 50x110 feet, will be six stories high, exclusive of basement. The remaining 50 feet frontage will be three stories and basement in height, and designed for the packing department and warehouse. Contiguous will be a building 30x50 feet, to contain two 60-inch water wheels, working under a 24 foot head, and leaving ample room for two more wheels in case the company should at any time in the future desire to build another mill adjoining, as is thought possible. With the exception of cleaners and packers, which are to be of Canadian manufacture, the machinery is to be of Allis' make. Included in the list will be 50 double sets of Gray 9x24 and 9x30 rolls, Gray scalpers, round reels and a few Morse bolts. Seven reductions on wheat are to be made. About 200 feet distant from the main building is to be erected a 125,000 bushel elevator, the wheat being conveyed to the mill by means of a belt wheat carrier. A race-way 30 feet wide and to have 10 feet of water will be cut through the solid granite at a cost alone of \$24,000. In this manner the Lake of the Woods is secured as a natural and inexhaustible

reservoir for water, the race emptying into the Winnipeg river. Allis & Co. have the contract for doing the entire work, and will receive \$120,000, exclusive of the mill and elevator buildings and construction of the race. Work will be begun immediately on the mill house, and the intention is to have the millwright work done during the coming winter, completing the entire plant by spring. Mr. Gray will give his personal attention to the job, intending to make the mill the equal if not the superior of any ever put up, and in attaining this end will not lack for money. The matter as to who will be head miller for the company is not fully settled. It is understood that the main object of the enterprise is to mill Manitoba wheat in transit, and that it is probably but the first of several mills that will be erected. Montreal, where Ogilvie & Co. have just completed a new mill, is mentioned as the location most likely to be chosen by the new company for another mill. As to who compose the Lake of the Woods Milling Co., the Miller has been unable to hear, further than that Alex. Mitchell is president and John Mather vice-president, both of Montreal, and the stockholders are among the wealthiest citizens of Canada.—Northwestern Miller.

HOW GRAIN LOSES IN STORAGE.

Interesting experiments made by Mr. Muntz, in Paris, some time ago, in laboratory research and in observation in the great grain stores of the Paris Omnibus Company, revealed some curious phenomena in connection with the storage of grain. Grain placed in air absorbs oxygen and gives out carbonic acid; and even when air is excluded grain still liberates carbonic acid through intracellular fermentation. The carbonic acid formed in any case measures the alteration and loss. Comparing the

influence of renewal of air with that of confined air, Mr. Muntz found that in the former case the grain liberated about ten times more carbonic acid than in the latter. In contact with air the carbonic acid formed is always inferior in volume to the oxygen absorbed. There is a secondary and incomplete combustion like that in oleaginous seeds. The oxygen is chiefly fixed by fatty matter. As to moisture, grain usually contains 11 to 18 per cent. of water. Very dry grain gives little carbonic acid; in consequence it is exposed to the ravages of insects, which do not then meet with asphyxiating atmosphere. The proportion of carbonic acid increases very quickly with the degree of moisture, and beyond 13 to 14 per cent. of moisture the progression is enormous. The proportion also increases very rapidly with temperature till about 50°. Here there is a stoppage, but on heating further the combination acquires fresh energy. Mr. Muntz distinguishes two phenomena of combustion, one of physiological order, corresponding to respiration; the other purely chemical. Anesthetics, such as sulphide of carbon, diminish, without stopping, the formation of carbonic acid.

The Manufacturer and Builder, published by Henri Gerard, 83 Nassau Street, New York City, is a large quarto journal of 32 pages and cover, published monthly. Every number contains a large number of handsome illustrations and a great amount of valuable reading matter relating to mechanical topics. New machinery, the latest inventions, recent discoveries in manufacturing processes, chemistry and science, house designs, and a Notes and Queries department, in which questions asked on all subjects by readers are answered, go toward making up a rich storehouse of useful knowledge. Sample copies will be sent free on application.

MACHINERY

FOR SALE.

- SAW MILL MACHINERY for sale by H. W. PETRIE, Brantford, Ont.
SAW MILL, Reid & Barr's make, 30 ft. carriage, modern rig.
SAW MILL, Goldie & McCulloch's make, with inserted tooth saw.
SAW MILL, Waterous make, direct action, complete with power, good saw, all ready for use.
LOG AND LUMBER CARS, several in stock, prices low.
ONE WATEROUS ADJUSTABLE BOLTER and picket machine.
LATH MACHINE, one Waterous self feeder, good as new.
TWO STAVE CUTTERS, complete with pitman rod and counter shaft.
TWO DOUGHERTY SHINGLE MACHINES in good order, price very low.
UPRIGHT SWING SHINGLE MACHINE, Laws' patent, Galt make, iron frame.
SHINGLE MACHINE, Smallwood patent, Waterous make, with jointer and drag saw.
3 WATEROUS SELF ACTING SHINGLE MACHINES and edgers, new saws.
GOLDIE & McCULLOCH self acting shingle machine, latest make, a fine mill.
WHEEL JOINTERS, 4 by different makes, and very cheap.
12 WATER WHEELS of different makes. Send for descriptive catalogue.
FULL STOCK of pipe dies and taps, also hand taps and dies, pipe vices, &c.
FLOUR TRIERS, Chicago make. Every miller and flour buyer should have one.
FULL DETAILS of any of the above machinery forwarded on application. Address H. W. PETRIE, Brantford, Ont.

BECKETT ENGINE CO., HAMILTON, for shafting and pulleys.
BECKETT ENGINE CO., HAMILTON, for patent couplings and hangers.
BECKETT ENGINE CO., HAMILTON, for mining machinery.
BECKETT ENGINE CO., HAMILTON, for repaired boilers.
BECKETT ENGINE CO., HAMILTON, for repaired engines.
BECKETT ENGINE CO. test all their boilers to three times the working pressure, before leaving the works.
THEIR BOILERS AND ENGINES are specially built with a view to safety, economy and efficiency; get our quotations before deciding your purchase, by writing BECKETT ENGINE CO., Hamilton, Ont.
ECONOMY—TO STEAM USERS—great saving in fuel; a steady and uniform steam supply and a positive increase of steam capacity are effected by using the U. S. Rocking Grate Bar Co.'s grates, manufactured under patent by Beckett Engine Co., Hamilton, Ont.; from twenty to twenty-five per cent. saving according to testimonials; in use in over one hundred and forty thousand and horse-power of steam boilers; two boilers with these grates do the work of three with the fixed grates. Full particulars from BECKETT ENGINE CO., Hamilton.

SITUATIONS WANTED.

AS MILLER—BY A YOUNG MAN WITH FOUR years' experience on rolls and stones, a situation now or in a month's time. Single and sober, and can furnish best of references. Please state wages and kind of mill. Address "YOUNG DUSTY," Box 237, Paris, Ont.
WANTED—A SITUATION AS GENERAL Miller or to take charge of grist mill. R. WHITE, Foxmead P. O., Ont.

BY FIRST-CLASS BURR MILLER, SOME EXPERIENCE with rolls. Best of references. Would rent a small mill. Address, FOSTER, Miller, Bryson, Que.



Notice to Contractors.

SEALED TENDERS, addressed to the undersigned, and endorsed "Tender for supplying Coal for the Public Buildings, Ottawa," will be received at this office until THURSDAY, 30TH JUNE next. Specification can be seen and Forms of Tender obtained, on and after Wednesday, the 15th June, at this office, where all necessary information can be had on application; also at the office of James Nelson, Architect, Montreal, and at the Dominion Public Works Office, Post Office Building, Quebec. Each tender must be accompanied by an accepted bank cheque for the sum of \$200.00, made payable to the order of the Honourable the Minister of Public Works, which will be forfeited if the party declines to enter into a contract when called upon to do so, or if he fails to complete the work contracted for. If the tender be not accepted the cheque will be returned. The Department will not be bound to accept the lowest or any tender. By order, A. GOBEIL, Secretary. Department of Public Works, Ottawa, 23rd May, 1887.

CHRISTIE, KERR & CO.

LUMBER DEALERS,

OFFICE: No. 9 VICTORIA ST.,

TORONTO, ONT.

LUMBER FREIGHTS AND PRICES.

(Canadian Quotations furnished by above firm.)

July 1st, 1887.

The following are the present railroad freights from N. & W. R. Stations—Collingwood, Gravenhurst, Penetang, Orillia, Severn, Phelepton, and Wyeval, 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, Waubausene, 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 Waubausene, Victoria Harbor, Sturgeon Bay and Fesserton to Toronto and Hamilton... 8 1/2 c. per 100 lbs.
From C. P. R. Stations—Owen Sound and Teeswater to Toronto... 9c " "
From Ottawa to Toronto and Hamilton... 10c " "
From N. & W. R. Stations—Gravenhurst, Severn, Phelepton and Wyeval to Toronto and Hamilton... 9c. per 100 lbs.
" Collingwood, Penetang, Orillia and Barrie to Toronto and Hamilton... 8 1/2 c. " "
" New Lowell, Angus, Barrie, Lake and Tioiga to Toronto and Hamilton 8c. " "

PRICES OF LUMBER.

TORONTO July 1st, 1887.

Table listing prices of lumber in Toronto, including items like Pine, Spruce, Fir, and various sizes and grades, with prices per M (1000 board feet).

BUFFALO.

July 1st, 1887.

Table listing lumber prices in Buffalo, including various grades of lumber, shingles, and other wood products, with prices per 1000 board feet.

SAGINAW VALLEY.

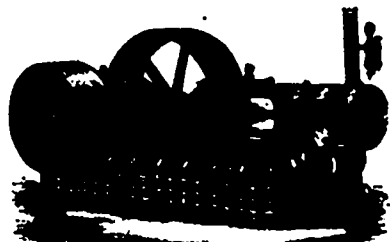
CARGO QUOTATIONS.

Table listing cargo quotations for Saginaw Valley, including shipping culls, common lumber, and other items, with prices per 1000 board feet.

YARD TRADE.

Table listing yard trade prices, including various sizes of lumber, shingles, and other wood products, with prices per 1000 board feet.

To Millers, Manufacturers, and all Steam Users—Write



BECKETT ENGINE CO., HAMILTON, for automatic engines.
BECKETT ENGINE CO., HAMILTON, for marine and stationary boilers.
BECKETT ENGINE CO., HAMILTON, for portable engines and boilers.
BECKETT ENGINE CO., HAMILTON, for saw mill machinery.
BECKETT ENGINE CO., HAMILTON, for mill engines.



## Correspondents' Opinions.

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

### THE "MECHANICAL AND MILLING NEWS" IN BRITISH COLUMBIA.

POPCUM, B. C., June 10, 1887.

Editor Dominion Mechanical and Milling News.

Enclosed pleased find \$1.00 for which send the MECHANICAL AND MILLING NEWS for one year. The sample copy June No. to hand last night is so interesting that we decided to subscribe at once.

We see under the head of lumbering, copied from the Winnipeg Free Press, an item about B. C. lumber of a sample board 36 inches wide and 16 feet long. Why, that's nothing with such timber as we have here? Wishing your paper every success,

Yours truly,

KNIGHT BROS.

### THE PETERBORO' WATER POWER.

Editor Mechanical and Milling News.

DEAR SIR: I read with a great deal of interest the article in your journal by "Proctor" on the water power of Peterboro'. In some respects he was right, and if he awakes the people of Peterboro' to what they are careless and indifferent about, he will have done more than their representatives have. The water power is the best, without exception, in Canada, controlled as the river Ottonabee is by government dams on all its head waters, so that there are no floods nor low water unless interfered with by meddling officials, which is sometimes the case. The large lumbering interests which have been centered in or near Peterboro', on this grand water power, combined with the fine agricultural country surrounding the town, have added greatly to Peterboro's growth both in population and wealth. Now that the lumbering interests are on the wane, Peterboro' will have to depend more and more on the surrounding country, unless she wakes up to her responsibilities and through this grand water, gives employment to thousand of operatives, thereby adding immensely to her wealth and population. "Proctor" says the reason for this power not being utilized is private interests for personal gain. Quite so. Any private individual would not show much business tact who would spend money even on such a power as this without a return for the investment, although the present proprietors of this power have spent in dams about \$200,000, \$200,000 on buildings \$400,000—and on machinery probably nearly as much more. And what has the town of Peterboro' done towards developing this magnificent power? Practically nothing. The finest display of her public enterprise was shown when Lieutenant-Governor Robinson paid Peterboro' a visit not long since—the Governor and Mayor, with the Council, riding in state along this said "mud ditch," as "Proctor" calls it, and some 300 operatives tramping through the mud day after day and year after year—one quarter of them girls. And why? Because there has not been public enterprise enough in Peterboro's representatives to build a sidewalk for their accommodation. If this is encouraging the industries along this grand water power, Peterboro', through its representatives, deserves the palm. Along the Dickson race there is to-day literally no fire protection, so that insurance companies hesitate about taking risks. Even at the Auburn, the fire pumps are private property, as also are those at Brodie's mill. But notwithstanding all this, it seems that as soon as a manufactory starts up, and even before it gets started, the assessor has his eye around, and while making a great pretence of encouragement to manufacturers, when their tax bill appears any of the manufacturers will tell you what they think of Peterboro's encouragement to manufacturers on this grand natural power. Give Toronto such a power and see how she would make things hum along its banks. Instead of censuring the private interests in this water power for its lack of development and enterprise, it is the town of Peterboro', through her representatives, that deserves censure for her undeveloped resources, which are greater than falls to the lot of most towns, and of which she makes such a very small use. The cause is not far to seek—petty jealousies and wire-pulling. You will find the best of sidewalks on streets with half a dozen houses, and yet this mud pond is thought good enough for the manufacturers and their employees.

Yours truly,

ONE OF THE SUFFERERS.

### "PROCTOR" ON FARMING.

Editor Dominion Mechanical and Milling News.

Your able contributor, "Proctor," takes exception to my giving first place in the race for worldly position to the young Northwest farmer, and while charging me with lack of argument, confines his own logic to his "personal, practical experience all the way through."

He loves not farming, which would not be easily understood in one whose writings usually breathe so much of tenderness, did he not with rare ingeniousness give us the explanation. He cleverly sketches the cloud that darkened his young life. He knows what it is to "pick stones on a rough farm in the back woods, to follow a plough from daybreak until sunset in a stumpy, stony field—both as boy and man—and do the chores and attend to his team after that, before bedtime, and then get up at break of day and go through the same drudgery, week in and week out." Truly a veritable "poverty flat" picture! And he "thinks he knows just about what opportunities are in the possession of the average farm hand nowadays for financial, intellectual, social and religious advancement."

It was unfortunate that "Proctor," before proceeding to smash my essay so ruthlessly, had not read it, for surely if he had read it he would not have overlooked this part of it: "The young man, brought up on a farm, who plants himself on the great prairies of the Northwest, has the best prospects of any young man in Canada, all being without capital, or with very little, and next to the farmer, and second only to the farmer who settles in the Northwest, I place the young mechanic."

Did "Proctor" ever have "personal, practical, experience" in following a plough in a "stumpy, stony field" in the great prairies of the Northwest? Did he ever read of it? Did anyone ever have the experience—or hear of it? "Stumpy and stony fields" on a prairie farm! "Drudgery week in and week out" on a prairie farm! Horns on a muley cow, or Protectionist principles from the mouth of a Grit orator!

"Proctor" chooses his own "personal, practical experience all the way through," as the weapon with which to lay low my conclusion. Surely he will permit me to utilize the same life as an illustration of the soundness of that conclusion.

He tells us in his last "Points" that he was a farm hand both as boy and man—but he does not tell us that he has changed his occupation—nor do I recall his having said so in former "Points," and I have been an admiring reader of the same for long. In view of his own statements, as to what he was, and in the absence of any information or evidence as to a change, it is, then, I think, fair to presume that he is still a farm hand.

A farm hand—and in "stoney, stumpy fields on a rough farm in the backwoods"—and yet he tells us (not alone in choicest English, but calling in the dead languages to his assistance as well; that he knows just what opportunities are in the possession of the average farm hand nowadays for "financial, intellectual, social, or religious advancement," and so tells us that we are expected to believe there are none. Surely that bad farm was productive of at least one magnificent crop—modesty.

I wish to ask you, Mr. Editor, to solve this problem: If such a miserable farm in the backwoods as your gifted contributor was brought up on, and presumably is still on, permitted opportunities for "intellectual" advancement that would make "Proctor's Points" and criticisms possible—what would result should another "Proctor" rise from the prairies of the Northwest where "stumpy and stony fields" are known of only by traditions from the east. What a power he would be in letters, and what a murderous critic!

From this standard, measure the merits of the mechanics' advantages. Who will undertake to find even in the whole of the great city of Toronto, with its great population of mechanics, any mechanic who could so enchain the interest of his readers, as does this farmer of the "stony stumpy fields" by his inimitable "Points?"—always in choicest English, embellished betimes with gems in the dead languages: enriched with poetry of thought and rylime of words.

If I demur to the advantage of having "his hours of toil measured out to him" which "Proctor" quotes in favor of the young mechanic's position, it is not that I place a low estimate on the advantages of mechanical knowledge, it is because I wish to remind him that is no assistance in the developing of the manhood within him. It may make him a better "Knight of Labor," but that it will improve his individual "prospects" in any way, no one with any knowledge of human nature will deliberately claim. Measured-out toil is a poor incentive to manly independence, as is measured-out leisure to attainment of manly knowledge.

Different it is with the young farmer of the Northwest, a large portion of whose year is to him a season of leisure, with his own ambition for a "Master," and every surrounding an incentive to exertion.

The slaves of the South had their hours of toil measured out to them in ante-war days, but their advancement under the system was not great.

Yours truly,

"CANADA."

### THE SPEED OF CIRCULAR SAWS.

Competent authority has decided after long experiments that the rim of a circular saw should travel about nine thousand feet or nearly two miles a minute. Following is a table compiled to show the number of revolutions a minute saws of different sizes should make to reach an average speed of 9,000 feet a minute:

Size of Saw.	Revs. a minute.	Size of Saw.	Revs. a minute.	Size of Saw.	Revs. a minute.
8 in.	4,500	30 in.	1,200	52 in.	700
10 in.	3,600	32 in.	1,125	54 in.	675
12 in.	3,000	34 in.	1,058	56 in.	650
14 in.	2,585	36 in.	1,000	58 in.	625
16 in.	2,222	38 in.	950	60 in.	600
18 in.	2,000	40 in.	900	62 in.	575
20 in.	1,800	42 in.	870	64 in.	550
22 in.	1,635	44 in.	840	66 in.	545
24 in.	1,500	46 in.	800	68 in.	529
26 in.	1,384	48 in.	750	70 in.	514
28 in.	1,285	50 in.	725	72 in.	500

These calculations are based on the assumption that the circumference is just three times the diameter. This assumption is for ease in computation, and the reader of course understands that, as the circumference is more than three times the diameter, by a small fraction, the saw will in each case run a little faster than this computation demands. The speeds are near enough for all practical purposes.

### BAND SAWS FOR CUTTING LUMBER.

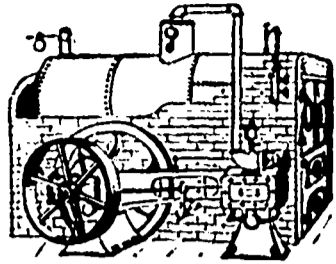
Regarding the use of band instead of circular saws, the Northwest Lumberman has this to say: "Not until this season could it be said that band saws had come into anything like general use. It is singular that they were not used so extensively heretofore. Nine out of ten of the manufacturers of white pine lumber knew that the band would save them dollars every day; they knew that their supply of timber was growing smaller year by year, yet they waited until there was started what might be called a band-saw craze before they availed themselves of the profit and advantages which the band saw ensures. Ask these men now to take their good logs to the circular to be sawed, and they would call it a step backward that they could by no means afford to take. The thin "ribbon" delights them. They cannot look at the sawdust pile made by the band and think that a half or more of it ought to be in the shape of lumber that would sell from \$15 to \$40 a thousand. They know that there is the greatest possible economy in the manufacture of lumber when it is sawed by the band; and when any man feels that his business is conducted economically—in fact, just as well as it can be conducted—it is a constant inspiration to him. There is no use crying over spilt milk, but one cannot help thinking what a saving of timber, and what a benefit to the lumber business at large it would have been, had the band been introduced in the Northwest twenty, or even ten, years ago."

### COMMON FLOUR TEST.

While there are a number of ways of testing flour as to color and of comparing samples, the one most popular and in most general use is smoothing with the flour slick on the flour board, placing samples for comparison side by side. This method is very simple, and nearly everybody who handles flour knows how to do it, and yet everybody is not aware that the test admits of deceptive practices. If the party conducting a comparative test of samples desires that a certain sample may gain precedence over another, he can accomplish it by boning, and the superiority thus obtained by manipulation of the slick in boning may be made to show in the smoothed sample when first dipped in water and when it is partially or thoroughly dried out. To prove that this is so, take a portion of a sample, place it on the trier-board and bone it down until it is compactly pressed on the board, having a perfectly smooth face, cut one side off square and place another portion of the same flour by its side, lightly pressed and only partially smooth, and the tightly compressed portion will prove whiter under the bone when first dipped and dried out. The reason for this is that the surface of the one being smooth there are no shadows cast by one particle over another, while with the portion of the rougher surface the darkening shadows abound. In dipping, the tightly compressed portion will retain the starch on its surface, while it will be washed from the surface of the other.

### E. LEONARD & SONS

EXCLUSIVELY MANUFACTURING



#### ENGINES AND BOILERS

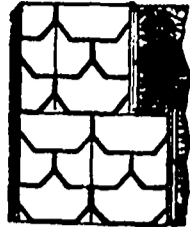
Leonard-Bell Cut-off 8 to 75 h. p.,  
Plain Slide Valve, to 100 h. p.,  
and Steel Boilers of all  
Styles and Sizes.

LONDON, - CANADA.

SEND FOR CATALOGUE A.

... MONTROIS PATENT ...

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HEAVIEST MADE.  
5 Patterns.  
Storm and Fire Proof.  
Send for Catalogue.

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Steel Letter Cutter, Die Sinker  
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STEEL, BRASS AND RUBBER  
STAMPS, TURNING BRANDS,  
SEALS, HAT-TIP DIES,  
BOOKBINDERS HAND  
AND PRESS STAMPS,  
THE BEST IN THE DOMINION.  
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MONTREAL.

### B. GREENING & CO. Wire Manufacturers

—AND—  
Metal Perforators,  
VICTORIA WIRE MILLS,  
HAMILTON, ONT.

Send for Catalogue, mentioning your requirements.

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FOR PRACTICAL MEN BY A PRACTICAL MAN.  
Practical treatise of the care, operation, designing and construction of wood-working machines. Substantially bound in cloth: 150 pages; illustrated. Price, \$1.50 by mail, postpaid. Address, C. H. MORTIMER, 31 King St. West, Toronto, Ont.



### MACHINE KNIVES

Of every description, for  
Planing,  
Moulding,  
Stave Cutting

SEND FOR PRICE LIST

### COX & CO., STOCK BROKERS.

Members Toronto Stock Exchange  
Have the only Independent Direct Wire giving continuous New York stock quotations and which are received QUICKER THAN BY ANY OTHER LINE.

Buy and sell on commission for cash or on margin. All securities dealt in on the Toronto, Montreal, and New York Stock Exchanges. Also execute orders on the CHICAGO BOARD OF TRADE in grain and Provisions. Daily Cable Quotations of Hudson Bay and other Stocks.

26 TORONTO ST.,  
TORONTO.

### To Mill Owners and Manufacturers.

USE

# Phoenix :- Belt :- Oil,

## THE ONLY PERFECT BELT DRESSING.

TO BE HAD ONLY OF

### F. E. DIXON & CO,

— MANUFACTURERS OF —

## PAT. LAP-JOINT LEATHER BELTING STAR RIVET

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

70 King St. E., Toronto.

### BUCKEYE AUTOMATIC ENGINE.



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

HAS NO SUPERIOR AND FEW EQUALS  
— ALSO ALL SIZES OF —

Boilers and Every Description of Mill Machinery and Furnishings.

**R. WHITE LAW,**  
Oxford Foundry - - Woodstock, Ont.

# GOLDIE AND McCULLOCH, GALT, - - - - - ONTARIO.

TO PARTIES WHO CONTEMPLATE

# BUILDING OR RE-BUILDING FLOUR MILLS,

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

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

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



**FIRE AND BURGLAR PROOF.**  
**SLATES**  
V. A. DILLI - DOORS, - & CO.  
First Floor, Agricultural, Toronto, 1882, 1884.  
CORRESPONDENCE SOLICITED AND ORDERS PROMPTLY ATTENDED TO.

### CENTRIFUGAL FLOUR DRESSING MACHINE

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

**GOLDIE & McCULLOCH.**

# DOMINION MECHANICAL & MILLING NEWS

PUBLISHED MONTHLY.

CHAS. H. MORTIMER,

Office, 31 King Street West,

TORONTO, - - ONTARIO.

## ADVERTISEMENTS.

Advertising rates sent promptly upon application. Orders for advertising should reach this office not later than the 20th day of the month immediately preceding our date of issue.

Changes in advertisements will be made whenever desired, without cost to the advertiser, but to insure proper compliance with the instructions of the advertiser, requests for change should reach this office as early as the 12th day of the month.

Special advertisements under the headings "For Sale," "For Rent," &c. at not exceeding five lines, 50 cents for one insertion, or 75 cents for two insertions. If over five lines, 15 cents per line extra. Cash must accompany all orders for advertisements of this class.

## SUBSCRIPTIONS.

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

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

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

Subscribers may have the mailing address changed as often as desirable. When entering change, always give the old as well as the new address. Failure upon the part of subscribers to receive their papers promptly and regularly should be notified at once to this office.

## EDITOR'S ANNOUNCEMENTS.

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

This paper is in no manner identified with, or controlled by, any manufacturing or mill-furnishing business, nor will a 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.

Readers of the "MECHANICAL AND MILLING NEWS" will confer a favor upon the publisher and derive material benefit themselves by mentioning this paper when opening correspondence with advertisers. Drop us a postal card when you have written to an advertiser, give us his name, and then we will put you in the way of getting the benefit. Don't forget this.

## OUR SPECIAL NUMBER.

In the MECHANICAL AND MILLING NEWS for June, our intention of issuing a large Jubilee and Exhibition Number on the 1st of August, was announced. No particulars could at that time be given, as the enterprise was almost "without form and void." Our efforts during the past month have to a considerable extent resulted in giving definite shape to the project, and we are now able to indicate a few of the special features which it is hoped will make this special number a success.

Mr. M. McLaughlin, of the Dominion Mills, Toronto, will contribute an article on "The Milling of Fifty Years Ago, with Notes of its Subsequent Development."

Mr. L. A. Morrison, of the Soho Machine Works, Toronto, will sketch the "Wood and Iron Working Machine Business of Canada."

Mr. Geo. C. Robb, Inspector of Steam Boilers for the Boiler Inspection & Insurance Co., of Canada, will give, for the benefit of engineers, some "Engineering Reminiscences."

The clever and popular Canadian writer, "Garth Grafton," Miss Sara Jeannette Duncan will contribute a short original story, which is certain to prove highly interesting, to men in mechanical lines of life, and also to their wives and daughters.

In the belief that "a little nonsense now and then is relished by the wisest men," we have secured the services of Mr. J. W. Bengough, the talented editor of *Grip*, who will contribute a humorous illustrated sketch, entitled: "Sammy Munhausen Giles, the Champion Liar of our Township, gives an Account of his Visit to the Toronto Exhibition."

Several pages will be occupied with portraits of prominent Canadian mill men and manufacturers. A considerable amount of space will likewise be given to illus-

trated technical articles dealing with mechanical questions in a manner both interesting and highly instructive to the practical reader.

These are a few of the many original and interesting features of this special number. They are sufficient, however, to give an idea of its character. The value and attractiveness of its contents, and its extensive circulation, combine to make its advertising pages of great value to manufacturers, many of whom have contracted for space during the past month. Those who desire to have their business properly represented should lose no time in making the arrangements necessary for that purpose. All advertisements for this special number must reach us on or before the 25th inst.

We are pleased to observe that during the last month the Government has entirely abolished tolls on the Welland Canal.

PARTIES applying for patents in the United States are referred to Mr. Roscoe B. Wheeler, whose card appears in another column. Mr. Wheeler is careful and painstaking and in every way fitted to serve the interests of those who may have business to do in this line.

MESSERS. E. Leonard & Sons, of London, Ont., who are among the oldest manufacturers of steam engines and boilers in Canada, have something interesting to say to machinery users in our advertising columns this month. Persons requiring steam engines and boilers should write them for catalogues and prices.

AMONG our new advertisers this month is the Metallic Roofing Co., Toronto, who manufacture five different patterns of storm and fire-proof shingles. Our readers who may desire to protect their buildings should correspond with the above company for particulars of their goods.

We have been highly amused at the many unsuccessful attempts made by the editor of the *American Miller* to get five simple Anglo-Saxon words into their right places. His latest attempt, "DOMINION MILLING AND MECHANICAL NEWS," is a slight improvement on former efforts, and leads to the hope that ultimate success will crown his perseverance. Try, try again.

ATTENTION is directed to the advertisement of Run-ciman Bros., of Goderich, Ont., which appears in our columns for the first time this month. This is one of the oldest mill furnishing establishments in Canada, and "their work speaks their worth." Persons requiring machinery such as they advertise will find them enterprising and obliging and their goods superior.

AN important case to mill men was decided in the United States on the first of June, when judgment was given in favor of the Geo. T. Smith Middlings Purifier Co. against the Milwaukee Dust Collector Manufacturing Co. Reports to hand state that the Smith Co. have been awarded damages to the amount of \$80,000, and are given the sole right to manufacture and sell the Printz Dust Collector.

OUR excellent contemporary, the *Winnipeg Commercial*, places us under obligation to it for the following flattering paragraph: The DOMINION MECHANICAL AND MILLING NEWS is preparing a special jubilee number, which will be issued on the 1st of August. This journal is the leading publication of its kind in Canada, and when it undertakes a special effort, something worthy may be expected.

THE Hercules Manufacturing Company have shown their appreciation of the DOMINION MECHANICAL AND MILLING NEWS as an advertising medium by increasing their space from 1/8 of a page to 1/2 page in this issue. The firm intend building a large addition to their factory and furnish it with the most complete machinery for manufacturing their celebrated scourers. Parties desiring anything in that line would do well to communicate with the Hercules Company.

We are in full sympathy with the *London Miller* in expressing the hope that the time may soon come when the miller and farmer shall consider their interests identical and labor for their mutual good. Why should there be any friction between interests so closely allied to one another as milling and farming? Let there be a mutual recognition on the part of each of the interests of the other, and soon any unpleasantness that may exist will disappear.

THE immense flour mills at Minneapolis, situated in the midst of one of the finest wheat growing countries in the world, and beside one of the greatest water-powers, have shipped flour to Great Britain in such quantities, and sold it at such prices, that a very large number of old country mills have been closed down and their owners in many instances driven into bankruptcy. If this can be done at a distance of 3,000 miles, what would be the effect of bringing Canadian millers face to face with the same competition. Yet Mr. Henry W. Darling says Commercial Union would be good for our milling interests!

THE attention of millers and others using barrels and keys is called to the advertisement of the London and Petrolia Barrel Co., with headquarters at London, Ont. The excellence of the barrels manufactured by this Company has become so widely known and appreciated that they lately received an order from a firm in New York city for 500 large casks of a particularly heavy pattern. Our readers who may require anything in the barrel line will find it to their interest to correspond with this company.

IF, as the *American Miller* asserts, the article it clipped from and partially credited to this journal, was of no particular value, it was at least not out of place in our contemporary's pages, which of late have presented the appearance of an "old curiosity shop," where the milling methods of hundreds and thousands of years ago are fully described and illustrated, almost to the exclusion of modern milling processes. Our contemporary seems anxious to get back to the "good old days" of its grandfathers, but it is doubtful whether progressive millers will accompany it.

THE Chicago wheat ring which had been operating for some weeks and had got control of millions of bushels of wheat, suddenly came to grief on the 14th inst. The July yield dropped from 86 1/2 c. to 73 1/2 c. in one day, and June ranged from 92c. to 73c. a bushel. The greatest excitement prevailed among the "bulls and bears," and many failures are the outcome. Such attempts to control the markets and monopolize the trade at the expense of those who are not so wealthy, are manifestly unjust, and the general feeling is that justice has fallen on the guilty, though many innocent traders may be affected by the sudden collapse in prices.

THE mill owners and farmers of the Northwest have no better proof of the justice of their demands for a reduction in the rate of freight between their districts and British Columbia than the fact that the Canadian Pacific authorities have reduced freight rates between Winnipeg and Vancouver, Victoria and New Westminster, forty per cent. When a railway company can make a reduction of forty per cent. in the carriage of freight, no other conclusion is possible than that their rates were previously exorbitant, and the outcome of monopoly. Now that the Canadian Pacific Railway has been forced to accede to the demand for lower rates, a healthy and prosperous trade will probably soon be built up between the sister provinces of Manitoba and British Columbia. In this trade the millers of the Northwest will largely share.

THE advocates in Canada of Commercial Union with the United States have thus far not condescended to enter into particulars of the many ways in which, as they affirm, the scheme would increase the prosperity of this country. Mr. Henry W. Darling, for example, in his speech before the Toronto Board of Trade, said, "Commercial Union would be good for our fisheries, our carrying trade and our milling interests." Having made the assertion, he stopped there. It does not seem to have occurred to him that in order to carry conviction to the minds of those who should hear and read his remarks, it was necessary to tell how Commercial Union would operate for the benefit of the interests mentioned. "Glittering generalities" may do well enough for impracticable theorists, but when the question at issue involves a nation's prosperity, speakers are expected to give a reason for the faith that is in them. Until they do so, hard-headed business men may be pardoned for refusing to become converts to their ideas.

The Manitoba Department of Agriculture has had prepared a folder map of the province, showing its counties, municipalities, system of survey, towns, railways, elevators, mills, bridges, roads, churches, school-houses, post offices, etc., together with the general topography of the province. On the back of the map is a general description of the province in its several districts and their adaptability to the different forms of agriculture. There will also be indicated a large number of post offices, churches, school houses, elevators, mills, etc. Of this map the first edition will be 25,000. It will be circulated freely through Great Britain by means of agencies already established there.

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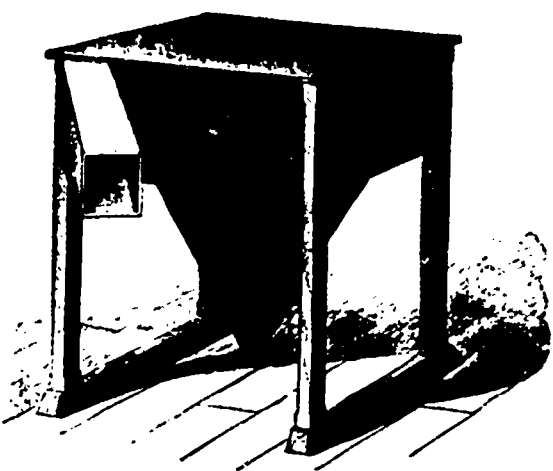
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# CASE SYSTEM GRADUAL REDUCTION MILLING.

**INGLIS & HUNTER**



**No. 6 Strachan Avenue, TORONTO.**

SOLE LICENSED MANUFACTURERS FOR CANADA OF

## CASE'S CELEBRATED ROLLS AND MILL MACHINERY

-AND-

### Silver Creek Flour Bolts and Centrifugals.

-SPECIALTIES-

*Corliss and Marine Engines, Stationary and Marine Boilers,*

*Wheat Cleaning and Flour Dressing Machines for Flour and Grist Mills.*

Plans and Specifications for fitting up new and changing over old Flour Mills on the Most **ADVANCED SYSTEM.** Special attention to the Short or Reform System of Milling.

**ROLLS RE-GROUND AND RE-CORRUGATED ON SHORT NOTICE.**

All Descriptions of Gearing, Shafting and Pulleys, Brass and Iron Castings.

Write for Prices and Catalogues. Correspondence solicited. Prompt attention to orders

**J. B. CLOUDSLEY,**  
MANAGING DIRECTOR.

**CHARLES SIMS,**  
SUPERINTENDENT

## TORONTO ENGINEERING SUPPLY CO.

ESPLANADE ST.

(Between Bay and Lorn st.)

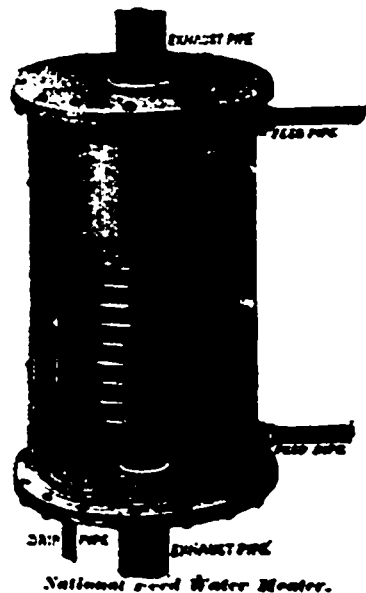
Manufacturers of **TORONTO,**

**Engineers'**

—AND—

**Steam Users'**

**SUPPLIES.**



National Feed Water Heater.

## LITTLE GIANT

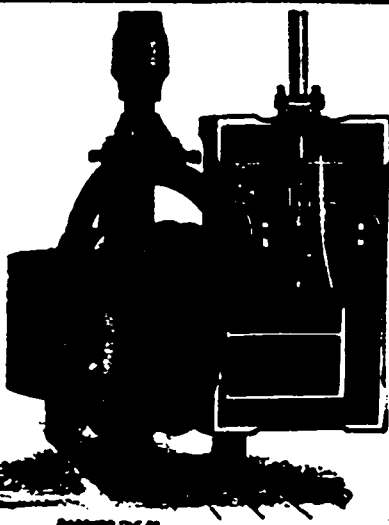
TURBINE WATER WHEEL.

For Simplicity, Strength, Durability, and Economy in use of water has never been equalled by any other wheel.

Send for Descriptive Pamphlet

which gives a full description of the Wheel and other valuable information. Also contains a very extensive list of Gear Patterns.

**J. C. WILSON & CO.,**  
PICTON, ONT.



## TIMBER AND LAND SALE.

CERTAIN LOTS and the timber thereon situate in the Townships of Allan, Assinick, Bidwell, Billings, Carnarvon, Campbell, Howland, Shegwisandak, Tebbunmah and Mills on the Manitoulin Island, in the District of Algoma, in the Province of Ontario, will be offered for Sale at Public Auction in blocks of 200 acres, more or less, on the first day of September next, at 10 o'clock, A. M., at the Indian Land Office in the Village of Manitowaning.

Terms of Sale.—Bones for timber payable in cash, price of land payable in cash, a license fee also payable in cash and dues to be paid according to Tariff upon the timber when cut.

The land on which the timber grows to be sold with the timber without condition of settlement.

For full particulars please apply to Jas. C. Phipps, Esq., Indian Supt. Manitowaning, or to the undersigned.

No other paper to insert this advertisement without authority through the Queen's Printer.

**L. VANKOUGHNET,**  
Deputy of the Supt. Genl. of Indian Affairs.

Department of Indian Affairs,  
Ottawa, 2nd June, 1887.



## CAPE BRETON RAILWAY.

SEC. -STRAIT OF CANO TO GRAND NARROWS.

### TENDER FOR THE WORKS OF CONSTRUCTION

SEALED TENDERS, addressed to the undersigned, and endorsed "Tender for Cape Breton Railway," will be received at this office up to noon on Wednesday, the 6th day of July, 1887, for certain works of construction.

Plans and profiles will be open for inspection at Office of the Chief Engineer and General Manager Government Railways at Ottawa, and also at the Office of the Cape Breton Railway at Port Hawkesbury, C. B., on and after the 6th day of June, 1887, and the general specification and form of tender may be obtained upon application.

No tender will be entertained unless on one of the printed forms and all the conditions are complied with.

By order,  
**A. P. HRADLEY,**  
Secretary.

Department of Railways and Canal,  
Ottawa, 27th May, 1887.

-THE-

## London & Petrolia Barrel Co.

MANUFACTURERS OF

FLOUR, OATMEAL, OIL, VINEGAR, BEER AND OTHER BARRELS,

Flour Barrel Staves and Headings.

WORKS: Simcoe St. East, LONDON

All Work Guaranteed.



## WIRE CLOTH AND PERFORATED SHEET METALS

Of every Description

### FOR MILL USE.

**TIMOTHY GREENING & SONS,**

**DUNDAS, ONT.**

## THE CONSTRUCTION AND EQUIPMENT OF ELEVATORS.

THERE should be as much care exercised in the selection of machinery for an elevator as for a flour mill or any other kind of a manufactory. The machinery should not be purchased of every Tom, Dick, and Harry that comes along, but from reputable men who represent reputable and well-equipped houses only. Sometimes well-known houses do not turn out the kind of work they should. All elevator men should spot such houses and cease buying from them until they cease to be careless or get better equipped for doing work. To turn the carpenter shop of an elevator into a machine shop for the purpose of refitting the machinery is not a very pleasant experience, to say the least. It is really a most provoking and outrageous undertaking, but it oftentimes has to be done and always when the machinery is purchased from careless and incompetent parties.

I would like to say this much in the way of advice to elevator men, and that is, never accept a piece of machinery not properly fitted up, no matter who you buy of; throw it back on the maker's hands and in time all such evils will be eradicated. With well equipped shops there is no excuse for badly fitted up work. It is the result of carelessness, and those to blame for it should be taught to assume the responsibility for their own carelessness and negligence or that of their employees.

The machinery for an elevator should not be too heavy. On an elevator consuming not over 50 horse power, no shaft in the building requires to be over 2 15-16 inches in diameter. Heavy shafting is not required if proper speed is maintained. In large elevators the friction shaft should be fully as heavy as any other in the building, not so much for the purpose of resisting torsional strain as transverse strain, as the heavy head pulleys, together with their loads of grain, rest on that shaft, and where there are a number of them in one line the weight is very material. On all such shafts there should be a journal bearing on each side of each friction pulley.

Where it can be done the main line shaft should be connected directly with engine shaft; but if that cannot be done then the engine and main shaft should be so set in relation to each other that a belt of reasonable length can be used. The main shaft ought to have a speed of about 150 revolutions in all cases, and can much exceed that in small houses. There are very few cases where country elevators need more than a 10x16 engine, which should make 165 revolutions at least. A good 12x20 engine will do the work of the largest country house and should have a speed of not less than 140 revolutions per minute. Good engines should always be selected. Every one now admits that elevators discharge by centrifugal force and that the head pulley speed in revolutions should be about the same for all sizes; albeit when the writer first announced this truism years ago he was denominated a crank by all the M. E.'s and other trade experts, just as much as he is now denounced as a crank for pushing forward the short system of milling. If it was not necessary to throw the material beyond the mouth of the down leg of the elevator, the spread would be uniform for all sizes of pulleys, but owing to that fact the smaller the pulley the greater the number of revolutions to get over and discharge properly. A 36-inch pulley discharges well at 38 revolutions handling corn and cobs, and will do very well at 40 revolutions with loose grain. A 60-inch pulley can be speeded lower to obtain equally good discharging results.

The laws governing centrifugal force are: First, the centrifugal force of a revolving body is as the square of its velocity; second, the centrifugal force of revolving bodies of varying sizes and velocities are to each other as the squares of their velocities multiplied by their diameters. If mechanics will study the laws they will be readily enabled to adapt them to practical uses so far as will be required.—R. James Abernethy in *Modern Miller*.

### DON'T MAKE A MISTAKE.

Don't make the too common mistake of thinking a cheap engineer is the man you want. The engine and boiler which furnish the power are important factors in the success of any business, and no matter how simple or strong they may be, it will pay to put them in charge of a man fully competent to care for them, and particularly so if far from facilities for quick and proper repairs. For a small plant it is not necessary to have the highest grade of ability—for there are grades among engineers—but it is better to pay a suitable man for competent and faithful service, than to pay for what may happen through the incompetence or neglect of one whose only recommendation is that he is "cheap."

## REASONS WHY TORONTO CANNOT BECOME A GREAT MILLING CENTER.

THE ADVANTAGES ENJOYED BY THE MESSRS. OGILVIE, OF MONTREAL.

A gentleman remarked to a Toronto miller the other day: "It is a wonder to me that the generally recognized advantages of this city as a manufacturing center has not led to the establishment here of one or more flouring mills of large capacity similar to those of the Messrs. Ogilvie at Montreal." The miller replied that Toronto was not a good point for milling, being surrounded at short distances with numerous mills, the competition among which kept the price of wheat in Toronto at a higher point than almost anywhere else in Canada. He went on to say that the high price of grain was not the only disadvantage with which Toronto millers had to contend. The absence of water power, which made it necessary to use steam all the year round, was a still greater drawback. "Why," said the miller, "if I had the money that I've paid for coal since I started business, I could have retired long ago."

"How much does your coal bill amount to in a year?" asked the gentleman, looking considerably surprised after hearing the miller's last statement.

"As a matter of fact, the latter replied. "I'm always ashamed to tell anybody what the amount really is, for fear they might not believe me. You spoke of the Ogilvies, of Montreal, a few minutes ago. They are a couple of mighty smart men—the smartest pair of millers by all odds that I have ever known—but it isn't alone their cleverness that has made their wealth. The advantageous location of their mills at Montreal has had more to do with it, situated as they are on the Lachine Canal, which affords them ample water power the year round. I took the trouble once to figure out what it would cost to run the Ogilvie mills by steam. I came to the conclusion, as the result of my calculations, that it would have cost more than the present sum total of the Ogilvies' wealth. In other words, if the firm had been obliged to pay for steam power all these years instead of having had free water power, their profits would have been nil, provided they had not discovered some other method of cheapening production or of increasing the value of the product. The Ogilvies enjoy advantages superior probably to any milling firm on this continent. In addition to the one just mentioned, they have a market right at their doors in the populous city of Montreal, inhabited largely by French-Canadians, who consume twice as much bread as do our people in the west. This, and the fact that they are comparatively free from local competition, accounts for their success, and affords at the same time a reason why Toronto, which offers none of these advantages, will probably continue to be an unprofitable spot for milling."

## HINTS AND POINTS ON BELTS AND THEIR USE.

Some belt users claim that elasticity is a good and a bad quality in a belt. It introduces a loss of motion and of power. In a case where tested with a dynamometer in a five-story building, with leather belting, there was a loss of two per cent. with each transmission, which was ascribed to the elasticity. Belts do not usually slip to such slight extent. There is a marked step from rest to slip. The hold is greater with rest. One authority made repeated tests in one case where a belt would hold up to just five horse power without slipping. The moment it began to slip, the power transmitted would drop to about three and a half and stay there.

Some of the best leather beltings show an edge as solid as though made of varnished mahogany. There is an object in this finish, apart from the elegance of appearance of the belt in its mercantile coil. The fibers of the leather should be laid in the direction of the progress or run of the belt. A proper finish is made by a "laying" gum that is given by a series of brushes, which burnishes the edges and makes them thoroughly solid.

Gut belting is made chiefly of sheep's entrails. They are on an average over 50 feet long and after being cleaned are put into brine, when they shrink in thickness very much. They are then treated as if they were twine to make a round rope form, or they are connected in strands and woven on a loom into flat belts in the same way as ribbon is made. They make in Oakland, Cal., round ones, from 1-16 to 1½ inches in diameter, and the flat ones of any size desired. They are so strong that a ¾ inch round belt will stand a strain of over 7 tons, and a ½ inch, consisting of 150 strands, almost half as much. They are claimed to last ten years, while the best hemp rope with the usual usage scarcely lasts three years.

## ELECTRICAL SPARKS.

Dunnville claims to have the best light in Canada.

The electric light will be introduced into the St. Croix woolen mills.

Thorold will vote a by-law for raising \$8,000 to supply the town with electric light.

The Galt Electric Light Company have reduced the cost of the light one-half during the summer months.

The new mill built by A. W. Ogilvie & Co. in Montreal, is to be lighted by the incandescent system of electric light.

The ratepayers of St. Mary's have petitioned the town council to introduce the electric light for illuminating the streets of that town.

The water in the Grand River at Brantford has got so low of late that sufficient power cannot be got to run the electric light machinery.

Halifax purposes adopting the electric light for lighting the whole city, considering that it is much better, while little dearer, than the present light.

The Ball Electric Light Co., will furnish light for the town of Uxbridge by means of dynamo of 25 light capacity, which produces a light of 2000 candle power.

The effects of the Western Ontario Electric Light & Power Company, of Windsor, were sold recently by the sheriff to the United States Electric Light Company.

The New York Electrical Society, the membership of which comprises the leading men in scientific and electrical circles in that city, will hold an electrical exhibition during the approaching autumn in connection with the annual exhibition of the American Institute. The only exhibition specially devoted to the applications of electricity thus far held in this country, says the *Manufacturer and Builder*, was the notable electrical exhibition held in Philadelphia in 1884, under the patronage of the Franklin Institute. In the few years that have passed since that event, however, such progress has been made in this branch of technology that some of its applications have been practically revolutionized while so many important and novel inventions have been made, which extend the scope of its applications in new directions, that there would be no fear of a lack of new material to make the proposed exhibition one of extreme interest and value.

## ALUMINUM BRONZE.

When aluminum bronze is made by a simple mixture of ingredients, it is brittle, and does not acquire its best qualities until after having been cast several times. After three or four meltings it reaches a maximum, at which point it may be melted several times without sensible change. As it cools rapidly, large castings require some care to prevent cracking, so numerous runners and a large feeding-head should be employed. The 10 per cent. bronze fuses at about the temperature of brass containing 33 per cent. zinc, and the 5 per cent. melts at a somewhat higher temperature. The former should be poured as cool as possible, to produce sharp castings, and should be kept covered with charcoal up to the moment of pouring. Considerable care must be taken in the preparations of "risers," so that the metal will free itself of impurities. The metal can conveniently be freed from slag, or other impurities, when pouring into the mould, by the following method: A supplementary pot, or crucible, with a hole in its bottom, is secured over the pouring-gate of the mould. This hole is first plugged up by a carbon or iron rod, heated to redness, and the pot is filled with the melted metal before the plug is withdrawn. This allows the oxide and slag to rise to the surface, and admits only pure metal to the mould. It also prevents the oxidation that a stream of metal would suffer in pouring through the air to the "pouring-gate," as is often practiced.—*The Engineer*.

## CORRUGATIONS.

As we have frequently remarked, the roller being a comparatively new factor in milling, there undoubtedly remained much to be learned of its capabilities. These would necessarily be in the direction of speed, differential and corrugation, and there might be an infinite variety of corrugations. Corrugations that will so granulate as to yield a larger proportion of middlings and a flat broad bran without necessitating a wider adjustment of the rolls, would improve the results and reduce the necessary number of breaks, thus effectually shortening the system. Many experiments have been made with corrugations, and no doubt much improvement will be made in the direction indicated. We hear of a late improvement in the matter of corrugations which is well spoken of, and as it is in the hands of a pushing firm, no doubt we shall soon learn much about it, and we hope it will prove a real success.—*Miller's Review*.

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**UNEXCELLED!      UNEQUALED!      UNRIVALED!**  
**THE HERCULES Automatic Wheat Scourer and Separator**

**THE ONLY WHEAT SCOURER  
 EVER AWARDED A GOLD MEDAL.**

**THE ONLY AUTOMATIC WHEAT SCOURER  
 EVER INVENTED.**

**THE ONLY WHEAT SCOURER**  
*That Needs No Attention Whatever.*

THE HANDSOMEST AND MOST DURABLE MACHINE ON THE MARKET.

**DUSTLESS**

**FIREPROOF**

THE  
**HERCULES**

THE HERCULES

— IS —

— HAS THE —  
**MAGNETIC ATTACHMENT**

**WARRANTED**

*To Improve the Color of the Flour  
 in any Mill.*

— FOR REMOVING —  
**METALLIC SUBSTANCES.**

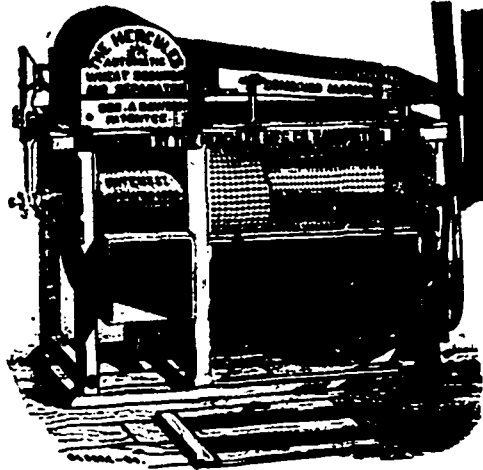
IT WILL REMOVE

**FOUR TIMES MORE FUZZ**

THAN

**ANY OTHER WHEAT SCOURER**

**NO EXTRA CHARGE FOR SAME.**



WE ARE NOW READY, AFTER EXHAUSTIVE TESTS, TO PLACE UPON THE MARKET  
**THE HERCULES DUSTLESS RECEIVING SEPARATOR,**  
**THE HERCULES AUTOMATIC BUCKWHEAT SCOURER,**  
**THE HERCULES AUTOMATIC CORN SCOURER.**

**SATISFACTION GIVEN OR NO PAY.**

Write for Circulars, Prices and Guarantee on all the above machines. Address

**THE HERCULES MFG. COMPANY,**  
**PETROLIA      —      ONTARIO.**

**JAMES JONES,**

— MANUFACTURER OF —

**CORRUGATED ROLLER MILLS,**

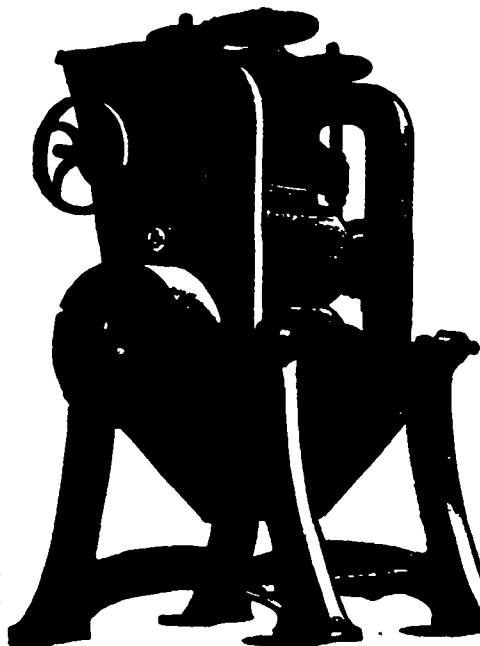
*Smooth Rolls, Roller Disc Mills, and Stone Rolls for Middlings.*

**THOROLD,      —      —      —      ONT.**

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

**MY LATEST IMPROVED ROLLER MILL**

is the best Roll made in the Dominion. It is made in two parts: In the lower part of the frame is set the stationary rod, 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 MIDDLINGS**

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

**JAMES JONES,**

**THOROLD, ONT.**



**A CHEAP STEAM BOX.**

**I**N nearly every shop some form of apparatus for bending wood would be often used if it were available. Where steam is at hand there is not the slightest excuse for not having a steam box for use in wood-bending.

Steam is so scarce in some shops, where the work is too great, and the boiler and engine too small, that the exhaust steam must be utilized. In a number of cases the writer has successfully used the exhaust for this purpose, by building a perpendicular box of plank and making doors for the introduction of the wood to be steamed.

In many shops the exhaust steam is allowed to escape from the end of a horizontal pipe and no notice is taken of what the steam comes in contact with during its absorption into the atmosphere. In all such cases the steam box will be a benefit in the preservation of surrounding buildings alone.

The steam box in question was built of two inch white pine planks, each 14 inches wide, two of them rebated upon their edges 1/4 by two inches to receive the edges of the two planks. This steam box was 16 feet long. One foot from the bottom a head of two inch plank was cut in and finally nailed. This head was bored three or four times with a 1/4-inch bit to allow the water of condensation to escape. Just above the head, as the box stood on end, a hole was cut to receive the end of the exhaust steam pipe. A cast-iron flange was bolted to the steam-box and the pipe screwed into the flange, but if the exhaust pipe be of cast iron, the threaded flange may be dispensed with, and the cast-iron pipe bolted or lag screwed direct to the wood.

The plank forming one side of the box is not nailed into its rebate. Instead, it is cut into three feet lengths, excepting the top length, which is four feet long, and together with the bottom piece is nailed in place, leaving three loose sections of three feet length each. These sections were hinged on one edge and made fast when closed, by pins of wood, one to each section, which were placed in holes bored through the rebated plank, into the hinged section.

The box in question was fitted with iron hinges - common eight inch hinges - the end of each hinge being bent around the corner of the rebated plank. If the writer ever constructs another steam box of this kind he will use brass hinges, as they will not rust out, a thing the iron hinges will do in six months unless they are kept well greased or tarred.

Suppose the stop moulding of a big circular window is to be made. This moulding can be got out straight, and bent into place by sawing into one side at regular intervals. With the steam-box this moulding can be got out straight, steamed half an hour, and forced upon a form, there to remain until cold.

A convenient way to make a form or mould is to cut out of plank, with a band saw, the shape desired. Now, nail pieces of board upon each side of the plank, letting the ends of the boards project six or eight inches, and placing them directly opposite each other. These bits of board must be distributed at the parts of the moulds requiring pressure to be applied, and the location of these boards will call for the exercise of considerable judgment. Get a supply of common framing pins, and bore holes through the bits of wood large enough to allow the pins to pass freely. 1 1/2 inch holes should be made for one inch pins, which are large enough for ordinary work. Bore the holes just far enough from the form to allow the pin to go in, after the piece to be bended is in place. For 1/2-inch stock, place the worm of the bit 15-16-inch from the edge of the plank form.

Stock to be bent should be left considerably longer than its finished length to allow plenty of room at the ends for the removal of poorly bent material. It is very hard to bend the extreme ends of the work, especially where the work is placed upon the convex surface of a mould. The convex side is usually used because the work can be easily forced into position thereon. To force work into the concave or hollow side of a mould requires enormous leverage and much time. It can sometimes be profitably done in the case of small, light work, and when the stock *must* be bended close to the ends of the various pieces. When concave moulds are employed, it will pay to make a follower, or convex mould. This is forced against the stock to be bended, and when both moulds are in contact with the work, sufficient pins are inserted to hold the moulds firmly together until the work is cold.

A cheap and efficient mould can be quickly made by sketching the desired shape on a plank, then boring holes at certain points and inserting pins therein. The steamed stock can be sprung between three pins, then others inserted until the work is brought to the desired shape. This method answers well for thick, heavy pieces, but with thin delicate stock it does not give satisfaction, owing

to the liability to *kink* or bend abruptly where the pins engage the stock.

The several doors in the above described steam-box, are for putting in different lengths of stock, one or more of them being opened as necessary.

A fine box nearly like the above, was seen by the writer in an eastern shop, but instead of standing vertical it lay upon its side, and the stock was inserted and removed at one end. In this case, the steam entered and was removed through wrought iron pipes five inches in diameter.

Small shops in which steam is not employed make good use of the above described steam-box and generate steam in a ten or twelve gallon iron kettle or pot. A wooden top is fitted to the kettle and cemented therein with "elastic cement." A pipe leads to the steam-box, and the kettle is supplied with water through a hole in the wooden top, after which the hole is closed with a plug. Although not as quick as the first box, this one will do good work.—James Francis in *Builder and Woodworker*.

**Latest Canadian Patents.**

*Telegraphic Alphabet.*

William A. Leggo, Montreal, Quebec, Canada, assignor to Jackson Rae and James Cradock Simpson, of same place. Filed June 26, 1886. Serial No. 206,362. (No model.)

A . . . . .	P . . . . .
B . . . . .	Q . . . . .
C . . . . .	R . . . . .
D . . . . .	S . . . . .
E . . . . .	T . . . . .
F . . . . .	U . . . . .
G . . . . .	V . . . . .
H . . . . .	W . . . . .
I . . . . .	X . . . . .
J . . . . .	Y . . . . .
K . . . . .	Z . . . . .
L . . . . .	& . . . . .
M . . . . .	
N . . . . .	
O . . . . .	

*Claim.* A telegraphic alphabet or code consisting of groups representing groups of letters of the ordinary alphabet, with different signs for each group, the several group-signs being common to all the letters of these several groups, and with specific letter-signs for each letter of a group, the letter-signs being common to all the groups, substantially as described.

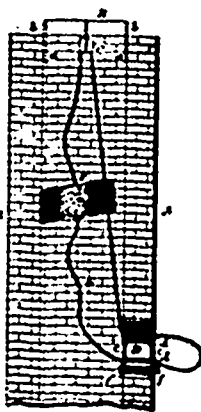
*Process of Extracting Copper From Its Ores.*

364,174. Thomas S. Hunt, Montreal, Quebec, Canada, and James Douglas, jr., New York, N. Y. Filed Aug. 6, 1885. Serial No. 173,756. Dated May 31, 1887.

*Claim.* The process of extracting copper from its oxidized ores containing arsenic by the combined solvent action of ferrous chloride, common salt, and free acids, as follows: First, using the solution of ferrous chloride and common salt without sulphurous acid; second, treating the clear neutral solution thus obtained, free from arsenic and peroxide of iron, with sulphurous acid to reduce the dissolved cupric to cuprous chloride, with generation of free acids; third, precipitating from this solution the copper by metallic iron, avoiding an excess of this, the acid liquid thus obtained being used, as in the first place, to dissolve fresh portions of the oxidized copper ore, with separation, before, of hydrous peroxide of iron holding any arsenic which may have been dissolved, and the above steps of the process being repeated indefinitely with the same liquid.

*Apparatus for Cleaning Chimneys.*

363,893. George Harvey, Winnipeg, Manitoba, Canada. Filed June 3, 1886. Serial No. 204,045. Dated May 31, 1887.



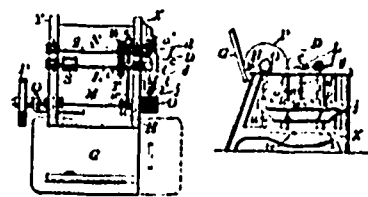
*Claim.* The combination, in a chimney cleaner, of a support at the top of the chimney, a thimble located in the wall of the chimney at the lower end and provided with two openings, a continuous cable passing through the openings in the thimble and over a pulley upon the support at the top of the chimney, and a brush located transversely in the chimney and secured to and carried by the cable.

*Wood-Working Machine.*

362,993. Delphis Picard, Montreal, Quebec, Canada. Filed July 9, 1886. Serial No. 207,617. Patented in Canada June 2, 1886. No. 24,213. Dated May 17, 1887.

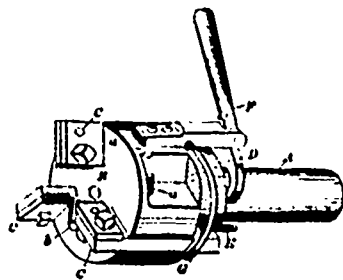
*Claim.* In a wood-working machine, the combination of a supporting-frame, a saw-table hinged to the frame, a saw-shaft journaled in bearing secured to the frame and having the end hole, c, the vertically-adjustable end table provided with a screw for holding it and spring-guides for holding the work, the shaft M, jour-

naled parallel with the saw-shaft and capable of a vertical movement at one end, the revolving feed-roll O, secured upon the said



*Screw-Cutting Die.*

363,754. William Murchy, Toronto, Ontario, Canada. Filed Dec. 22, 1886. Serial No. 222,287. Dated May 24, 1887.



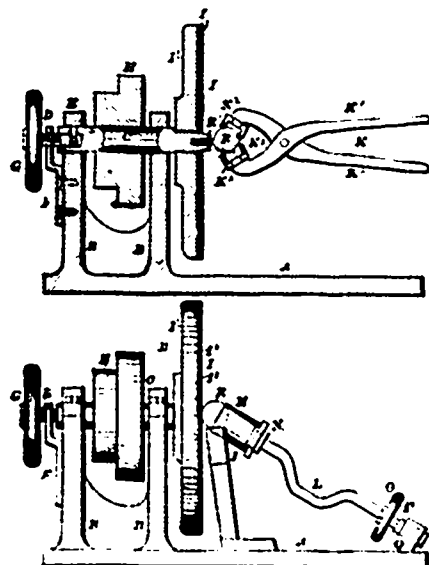
*Claim 1.* The combination, with the head B and cutters C, pivoted therein, of the collar D, and the lever F, pivoted to an arm attached to and moving with said head and actuating said collar.  
*2.* The combination, with the head B and pivoted cutters C, of the movable collar D, gage-rod E, having a shank secured to said collar, and the lever F, pivoted to said head and engaging said collar.

*3.* The combination, with the head B and pivoted cutters C, of the movable collar D, gage-rod E, having a shank adjustable secured to said collar, and the lever F, pivoted to said head and engaging said collar.

*4.* The device described, consisting of the slotted head B, mandrel A, cutters C, pivoted in the slots of said head, the movable collar D on said mandrel, the forked lever F, pivoted to said head and engaging said collar, the gage-rod E, passed through the head and having engaging the collar, and a contracting-spring G, around the inner ends of the cutter-arms.

*Ball Turning Lathe.*

363,994. Tronson Draper, Petrolia, Ontario, Canada. Filed Sept. 3, 1886. Serial No. 212,630. Dated May 31, 1887.



*Claim 1.* In a ball turning lathe, the combination of a cushioned leather cover face plate with an adjustable spindle.

*2.* The combination of a cushioned leather covered face plate with the spindle C, turning and sliding in the standards B, the screw D, having the annular groove D', the set screw E, and the screw threaded bracket F, in which screws the screw D.

*3.* The combination of the cushioned leather covered face plate I and the spindle C, carrying the said face plate and the ball to be turned, with a pair of tongs, K, having steel cups K2.

*4.* The combination of the adjustable cushioned leather covered face plate I and the spindle C, carrying the said face plate, with the ball rest J.

*5.* The combination, with the face plate I, having the rubber backing I2 and the leather disk I3, of the cup I4, supporting the ball to be turned.

*6.* The combination, with the face plate I, provided with the disks I2 and I3, of the rest J, supporting the ball to be turned, the holder I5, and the adjustable cap or guide M, screwing on the said holder I5 and held in place by a jam nut.

*7.* The combination, with the face plate I, covered with the disks I2 and I3, of the rest J, having the inclined edge J', the cup I4, supporting the ball to be turned, the holder I5, having a screw threaded portion, I2, and the cap or guide M, screwing on the part I2 and held in place by the jam nut N.

*8.* The combination, with the face plate I, covered with the disks I2 and I3, of the rest J, having the inclined edge J', the cup I4, supporting the ball to be turned, the holder I5, having a screw threaded portion, I2, the cap or guide M, screwing on the said part I2 and held in place by the jam nut N, the hand wheel O, supporting the lower end of the holder I5, the screw P, attached to the said hand wheel O, and the screw threaded keeper Q, in which screws the screw P.

**PATENTS**

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1	" " " 44 " " with sun.
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1	" " " 20 " " against sun.
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**For Sale.**—First-class roller flouring mill, elevator, storehouse and coopeage, doing good trade. Cost \$40,000. No finer property in Ontario. Reasons for selling. Can be bought at a bargain and on easy terms.

**For Sale.**—Foundry and machine shop, situated at Lunenburg, near Cornwall, Ont. Has done a successful business for many years. Present owner's advanced age the reason for selling. Large assortment of patterns on hand for mill machinery, canal castings, water wheels, stoves and implements for the farm. Machine shop contains three engine lathes, one planer, one boring and drilling machine, one wood lathe, small circular saw and hand saw. Power supplied by a 20 h. p. engine. This desirable property can be purchased at a low figure, and will bear looking into.

**For Sale.**—Grist and saw mills in first-class order doing good business. Grist mill has 2 run of stone, and 3 sets of rolls with modern bolting and purifying machinery. Saw mill has a capacity of 20,000 feet per day. A new 60-inch saw. Both mills run by steam. A first-class dwelling and stables, coach house and ice house. This property is situated at Maidstone, in good locality, and will be sold on terms to suit the purchaser.

**For Sale or Exchange.**—Grist, saw and shingle mills, in running order and doing a profitable business. Good stock of timber in mill yard, which will be sold separate from the mill, plenty of timber in neighborhood. Saw mill capable of turning out 8,000 to 10,000 feet of lumber per day. Always good demand for lumber and shingles. Present proprietor's books will show good business done since the mills were built. Grist mill contains one run of stone, bolting machine, smutter and scourers. Mills situated close to railway station in thriving village 75 miles from Toronto on branch of C. P. Railway. Will sell for cash, on time, or exchange for good city property or farm near Niagara or fronting on Lakes Erie or Ontario.

**For Sale.**—One of the finest oatmeal, pot barley, and chopping mills in Canada, situated in a flourishing western town. An established and paying business. This property is all in excellent repair; machinery all new in the fall of 1885, and will stand the closest scrutiny. Mills situated on a switch of G. T. railway, with excellent accommodation for loading and unloading cars. To the right man, this is a rare opening.

**Partner Wanted.**—With \$1500 to \$3,000 capital, to take interest in one of the best paying milling properties in Ontario. Must be practical miller. Situated in thriving town about 125 miles from Toronto. No competition.

**For Sale.**—Large 3-run stone steam grist mill in the village of Wallaceburg, Ont., in the center of one of the finest grain producing counties in Ontario. Running all the time, and selling bran, shorts and chop all at home. Room and power to add rolls if necessary.

**For Sale or Lease.**—Stone flouring mill, saw and shingle mills, on the Rideau canal, 23 miles from Ottawa, 3 miles from Osgoode Station on the C. P. R., in the heart of a splendid farming country. Flour mill could be profitably changed to the roller system. Good trade being done. Machinery nearly new. Will sell or lease for term of years.

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

**For Sale or Rent.**—Full roller mill, 50 barrels capacity; has been in operation about a year. One of the best water powers in the country. Also saw mill, two storey brick dwelling, 12 acres of land, good orchard, within half a mile of station on the G. T. R., and 2 miles from the town of Simcoe.

**For Sale.**—Excellent flour mill property, double house, stable and shed, and 30 acres of land, situated in the village of London West, Ont. Plenty of wheat can be had at mill door. Four runs of stones and modern cleaning machinery. A bargain.

**For Sale.**—Oatmeal, grist and saw mills, well equipped and established, situated 17 miles from Collingwood, Ont. Can be bought at a bargain. Reasons for selling.

**For Sale.**—Valuable saw and flour mill property in the township of Elderslie, five miles from the village of Paisley. The flour mill is full roller process and contains 2 sets of stones for grinding chop. Run by steam and water power. Sufficient water power exclusive of steam to run it 7 months in the year. The saw mill is operated by water power, contains 3 saws, and has a cutting capacity of 5,000 to 6,000 feet per day. This desirable property can be purchased at a bargain.

**For Sale.**—Saw, shingle and grist mill property, all in first-class working condition and doing profitable trade. Large stock of logs on hand. Good reasons for selling. This is a No. 1 chance for the right man to secure a valuable and old-established business cheap.

**For Sale.**—Iron foundry, at present occupied by Whalley & Gilbert, Oshawa. An excellent opening for one or two practical men with small capital. These works command a good local trade, and are only offered for sale because of failing health on the part of one of the members of the present firm. Terms of purchase will be made easy to a competent man.

**For Sale.**—Steam roller flour mill in the village of Henheim, Ont., 6 breaks on wheat, double set of rolls on germ and low grade; full line of cleaning machinery; capacity 75 barrels. This mill is doing a first-class local and gristing trade, besides a large trade in Boston and Halifax. The owner being advanced in years, feels incapable of properly attending to the business, which is the reason for selling. This is an excellent opening for a live man.

**For Sale.**—Fine milling property in the village of Pickering, Ont. First-class buildings. Mill overhauled last summer. The mill, which has a capacity of 175 barrels per day, contains the following machinery, which is almost all new, having been put in by E. P. Allis & Co.: 4 runs of stone; 2 sets rolls, 92x2; 9 flour reels; 2 purifiers; 1 separator; 1 smutter; 1 bran duster; 1 packer, bags and barrels; hand packers, and full complement of elevators; 1 leaf water wheel; 60 h. p. Corliss engine, only run about six months. Size of mill 40x70, 4 1/2 stories; storehouse, 38x48; engine house, 20x40. Storehouse well arranged with elevators and conveyors. Railway siding belonging to the property, affording very best facilities for loading and unloading. Rates for shipping are always the same as Toronto. This property which includes seven acres of land, cost in the neighborhood of \$40,000, and can be bought at a great reduction, as owner wishes a smaller mill.

**For Sale.**—75 per cent. interest in a new 100 hbl. full roller process flour mill and 20,000 bushel elevator situated in one of the most favored locations in the Canadian Northwest. Owner compelled by ill health to go out of business. This is a rare chance for a practical man with the necessary capital.

**For Sale.**—The whole or part interest in a very desirable milling property situated on G. T. R. system a short distance from Toronto. Present owner not being a practical man wishes to either dispose of the property outright or meet with a good practical miller with some capital to take a share in the property. With the right man liberal arrangements would be made. The mill now contains 2 runs of wheat stone, 1 run of middlings stones, and 1 run of chopping stones. There is a first-class water privilege in connection with the mill, but the dam gave way about three years ago, and it has been run since then by a Corliss engine, put in by Hamilton, of Peterboro. The mill contains a Eureka smutter, 2 germ scourers and a separator; also barrel and bag flour packers, and will turn out about 75 hbls. superior flour or 80 of extra per 24 hours. It is situated in a first-class section of country for wheat, and has excellent shipping facilities. Present owner would exchange for city or farm property. For a practical man with small capital this is a rare opening.

**For Sale.**—Stone process flour mill, situated about a mile from the town of Pembroke, Ont. Contains 3 run of stones, and complete list of cleaning machinery.

**For Sale.**—3-run stone mill, with good water power and doing a fair business, situated in the village of Delhi, Ont., on the G. T. R. and within 4 miles of station on the Michigan Central Railway. Terms to suit purchaser.

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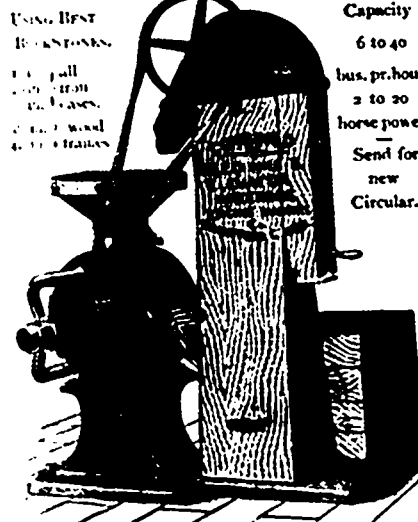
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**W. SMITH, Manager.**

### CHEAP AND SENSIBLE.

I SAW a cheap and wholly sensible refuse burner up at White, Friant & Letellier's mill at Leroy, Mich., the other day, a description of which may be interesting. The average country saw mill "hell" is the source of a large proportion of fires in the backwoods mill and lumber properties, owing to a careless construction, and to the fact that usually it is a case of perpetual fire. This burner, an example of the genius of Supt. Hadden, of the above named concern, is the usual circular space surrounded by a high sheet iron fence. In the center is placed, about three feet apart, and two and one-half feet out of ground, four twelve-inch walls of brick some twenty feet in length, upon which iron grating is placed. The iron apron of the refuse carrier terminates immediately above, and is arranged to swing somewhat sideways to maintain an even distribution of the waste over the grating. The result of the arrangement is that all the refuse is promptly consumed by aid of the draft under the grates, and a mass of live coals and cinders are not allowed to accumulate to be blown into mill or lumber piles by any sudden gust of wind at night. Within an hour after the mill shuts down at night the entire day's refuse is reduced to ashes, raked out, and shoved into a fill.—*The Timberman.*

### 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.*

John Watson, the implement manufacturer, of Ayr, has gone to Scotland.

Mr. Jesse P. Luke, of the firm of Luke Bros., cabinet makers, Oshawa, is dead.

Frank Burnett had three fingers nearly severed from his right hand while working a saw in Hay's factory, Woodstock.

Richard O'Brien had his hand badly cut while working a cosette saw in Lindsay & Selden's furniture factory at Peterboro'.

Mr. J. Gregory, miller, Rothsay, Ont., had his thumb and three fingers badly cut a few days ago, while working a circular saw.

Mr. Peter McDemid, who was employed by Messrs. Martin & Sons, oatmeal millers, at Mount Forest, Ont., died on the 19th inst.

Mr. Robt. Dixon has been engaged by Wheeler Bros., flour and grist millers, of Meadowvale, to represent them in the lower provinces.

Mr. J. H. Shakleton, a native of Jordon, Ont., who is now Mayor of Saginaw, Mich., is a prosperous flour and grist merchant in that city.

Mr. Chas. L. Bailey, representative of the Maple Leaf Saw Works, Galt, is taking a business tour through the States of New York and Pennsylvania.

Andrew Smith, Bothwell, was severely injured by having both his hands badly cut and mangled while working a buzz planer in a pump factory.

Mr. Edmund Moulds, Jr., Newmarket, Ont., had the first finger of his right hand sawn off while working at the slab saw in Mr. Stellwood's mill a few days ago.

David Sayer, of Repon, Que., was killed, and D. Ferguson, of Carleton Place, seriously injured on the drive of Edwards & McLaren's logs, when it was passing Almonte.

A young man, George Taylor, met his death in a mill at Port Elgin, New Brunswick. While fixing machinery his head was severed by a saw, and he was hurled into the river.

Mr. G. M. Hoover, who moved from Caistorville, Ont., to Dodge City, Kansas, about 12 years ago, is now a wealthy mill owner of that city and a member of the Legislature.

Mr. George W. Bourne has leased the Marquette flour mills, Portage la Prairie. Mr. Bourne has for a long time been head miller for Mr. Edward McDonald, the late lessee.

Mr. J. Flough, while working in Firstbrook Bros.' planing mill in this city, had his arm so badly crushed that it was found necessary to amputate it about two inches below the elbow.

We are pleased to congratulate Mr. George Geddes, manager of the Tilsonburg roller mills, on the event of his marriage with Miss Maggie Alexander, daughter of the Head Master of Tilsonburg Public School.

The Stratford *Herald* speaks thus favorably of the manager of the Classic City mills: Mr. Cullen is a practical and experienced miller, as is evidenced by the wonderfully large trade they have. The flour is the best in the market.

Mr. A. C. Smith, miller, Jerseyville, Ont., had two fingers taken off a few days ago, by getting them between the rolls in his mill.

While in attendance at Bishop's mill at Lynden, Ont., Mr. Henry Smith met with a sad accident, by which one leg was almost severed from the body and the other badly maimed.

Mr. Jones, an employee of the Classic Mills, Stratford, Ont., has been unfortunate of late. A shortly time ago he was scorched by an explosion of mill dust, and more recently his hand got caught and badly lacerated in the machinery.

A young man named Crawford, who formerly lived at Warton, Ont., and who some time ago invented a flour purifier, has lately invented a machine for cleaning cotton seed, and is said to have been offered \$2,000,000 for his right. Such an offer is worth accepting.

One of Montreal's most prominent business men died on June 1st, in the person of Mr. M. H. Gault, ex-M. P. Among the positions of trust and honor held by him during his life, not the least prominent was the Vice-Presidency of the Montreal Milling Company.

Benjamin Hagaman, who has been in gaol at Welland for some months past on a charge of forgery alleged to have been committed while the prisoner was in the employ of Howland, Jones & Co., millers, Thorold, Ont., has been admitted to bail in the sum of \$6,000.

The following changes in millers' residences are reported: Allison DeVall, from Simcoe, Ont., to Bardstons, Kentucky; E. B. Campbell, from Amherstburg, Ont., to Lynn, Ont.; J. W. Plowman, from Hartford, Ont., to Delhi, Ont. J. A. Gowans, millwright, has lately removed to Toronto from Stratford, Ont., and is engaged with Mr. Alex. Laidlaw, of Parkdale.

A little son of Mr. Stewart, Hastings, Ont., while playing around Mr. Fould's mill met with an accident which might have proved fatal but for the prompt action of Mr. Tinck, the miller. The child's frock was caught in the gudgeon of an elevator foot and whirled around through a space of about 12 inches wide until the water was shut off and the mill stopped by Mr. Tinck.



Leamy & Kyle are erecting a sash and door factory at Vancouver, B. C.

A great quantity of lumber is shipped to Chicago from the Nipissing district.

Mr. Isaac Fier, Fairville, has commenced operations in his new shingle mill.

Dovey's new saw mill at Lindsay began operations recently with good prospects.

The shingle mill owned by Mr. Edward Pilkey, Uxbridge, was destroyed by fire recently.

The planing mill owned by James McDonald, of Oakville, was recently destroyed by fire.

Gilmour & Co., Trenton, Ont., have a mill with a daily capacity of 350,000 feet of lumber in 10 hours.

Low water in the Eau Claire river, Northwest Territory, has stopped for a time the rafting of logs down that stream.

The saw mills of British Columbia are reported to be very busy, a great part of their lumber being sent to foreign markets.

A log jam from Little Quinesee falls to "Big Quinesee falls on the Menoniree River, Mich., contains 100,000,000 feet.

The saw mills owned by McLaren & Edwards, Carleton Place, are running at full force, and expect to cut 25,000,000 feet this year.

The firm of McCool, Boyle & Wilson, lumber dealers of this city, has been dissolved, Messrs. McCroney & McCool succeeding them.

The average cut of the Norman mills, Rat Portage, in one week, was 75,000 feet of lumber, 13,000 feet of lath, and 34,000 shingles daily.

Henry Bros., Randwick, Ont., have sold their saw mill to Mr. J. D. Smith, Toronto, who intends removing the machinery to North Bay.

A great amount of lumber will probably not get down stream on account of the rapid fall of the waters in the Upper St. John and tributary streams.

Tester & Wichman, cabinet makers, of Humblerstone, have dissolved partnership, the business being carried on by the firm of Wichman & Son.

The Alberta Lumber Company are establishing a saw mill at Red Deer, Alberta. They have lumber limits on the Red Deer and Saskatchewan rivers.

The Presbyterian Church of Canada have earned on during the last year a prosperous mission among the lumbermen. Colporters of the Ottawa Auxiliary Bible Society have distributed literature of a moral and religious character in the English and French languages.

The amount of pine standing in Michigan, Wisconsin and Minnesota is estimated by Mr. A. G. Van Sharek, of Chicago, at one hundred and seventy billion feet.

The planing mill owned by Mr. James St. John, Sunderland, Ont., was burned to the ground a short time ago. A quantity of lumber was destroyed.

The saw mills at Crow Bay, Ont., owned by Messrs. Gilmour & Co., have a capacity of 14,000 feet per day. A drive of 130,000 logs was received by them a week or two ago.

D. Den Bleker's manufacturing works and saw mill at Kalama-zoo, Mich., was destroyed by fire on the 4th ultimo. The loss was very heavy, as a great quantity of manufactured goods of different kinds and lumber was burned.

The schooner Aurora landed at Owen Sound the first consignment of the twelve million feet of lumber which we understand will be brought there for shipment over the C. P. R.

The piles in the boom works of the Port Arthur Lumber Company, Port Arthur, Ont., 300 in number, were raised from six to twelve feet, last winter, by the action of the frost.

About 400,000 feet of lumber was burned in a fire in Richard & Hickson's mill at Newcastle, Ont., recently. The lumber was the property of the New Brunswick Trading Company.

The planing mill owned by Mr. George Cormack, of Whitby, was recently destroyed by fire together with most of the machinery, patterns, etc. Mr. Cormack's loss is about \$9,000.

W. H. Pugsley, of Richmond Hill, is president of a joint stock company which has purchased the Wilson mill property and are manufacturing fanning mills, with prospects of a good trade.

A large shingle mill has been erected at Gatineau Point by Mr. Adam, who intends cutting shingles with his new patent saw. This saw cuts broad-edged shingles which are represented as far superior to the ordinary shingle.

The planing mills owned by Mr. Gibson, and the lath mills owned by Mr. Bates, at Freshwater, N. S., which adjoined one another were totally destroyed by fire on the morning of the 18th of June. The loss was very heavy.

At a meeting of the English creditors of Guy, Biran & Co., lumber merchants, of St. John, N. B., held in London last week, the liabilities of the firm was found to be £180,000, of which £106,000 is unsecured. The assets are £25,000.

The Moodyville, B. C., saw mills are working night and day at present to keep up with the demand for lumber and to hasten the loading of the vessels now taking in cargo at their wharf. This is rendered absolutely necessary, as a number of vessels are now under charter and are on their way to this port to load at the company's mills.—*Vancouver (B. C.) News.*

Says a traveler who has recently visited the Pacific coast: Among the myriads of natural curiosities and wonders that confront the visitor to the coast of the North Pacific ocean, nothing impressed me so deeply as the gigantic forests of Puget Sound. That arm of the Pacific is 200 miles in length, with shore so irregular and indented so plentifully with bays and deep harbors that its measurement is over 1,800 miles in extent. Along this whole shore line and extending thence on both sides miles and miles farther than the eye can see, is one vast unbroken area of forest trees, the like of which I never saw. A few saw mills have been erected along the sound, and although for several years they have ripped 500,000,000 feet of lumber from these forests annually, these spaces made by what seem like tremendous inroads on the timber, appear like little garden patches. The markets for this product of these mills in the depths of the Washington territory wilderness is South America, Australia, Central America, and the Pacific ocean islands. The great belt of virgin timber covers 30,000,000 acres, an area equal to that of the States of Massachusetts, Connecticut, Vermont, and New Hampshire. The forests are of fir, cedar, maple and other valuable wood. The firs comprise two-thirds of the timber. An official estimate places the amount of timber on this belt at 500,000,000 feet, enough to last the mills now there for more than 1,000 years. The fir trees grow to the enormous height of 250 feet, and I have seen piles of boards cut from them, not one board in which was less than 10 feet long and six feet wide, without a knot from one end to the other.

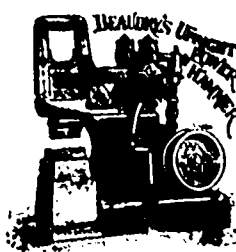
Is Mr. Darling quite sure that with Commercial Union Canadian timber "will no longer be exported?" If Political Union also is not to take place, what new influence is to induce the Michigan lumberers to act differently from the course they pursued a year ago, when, according to the *Lumberman's Gazette*, of Bay City, Michigan, the American purchaser of 500,000 acres of standing white pine in the Georgian Bay district announced his intention to carry the logs over Lake Huron, and saw them in Michigan? "We are Michigan men," he said, "and hope to make our purchases enure to the advantage of our people here. Notwithstanding our investments in Canada, we will stand by protection for Michigan lumber." Again, in the same paper, another American, the Hon. Mr. Weston, criticising the Morrison Tariff Bill, says: "We now admit Canadian logs free of duty. On the north shore of Lake Erie the Canadian saw mills are in ruins, but the mills at Tonawanda, N. Y., are employing thousands of American workmen, manufacturing Canadian logs towed from the Erie north shore. The Saginaw mills are running out of American stock, and already they are looking to Georgian Bay for Canadian logs to cross the Huron Lake, and keep their mills and men at work." Now, we beg the farmers, to whom all the actors seem now to be plying, to observe the spirit displayed here. Is it a spirit that is likely to be changed by giving the Americans freer access to what they now covet? We are told by the advocates of Commercial Union that the political connexion of Canada with Great Britain will not be endangered by Commercial Union with the States; but is it not abundantly manifest from the utterances of these Americans, that while we are under the British flag we shall be regarded as lawful prey for the American exploiter? We believe the position of the country would be intolerable with Commercial Union with the United States and Political Union with Great Britain. Trade follows the flag; perhaps the arrangement of Commercial Union might be regarded by Great Britain favor-

ably as enabling a portion of the Empire to enjoy free trade with the United States; but it is manifest from the speech and acts of these American lumbermen that it would be regarded by them favorably, as enabling them to keep their mills going and their men employed at the expense of a portion of the British Empire. It is an error to suppose that Ontario would be as favorably considered as a State of the Union; while the two are under different flags, Canada would be regarded as foreign, and no patriotic sentiment would stand in the way of using her as a bona constructor does a rabbit.—*The Week.*

"Which is the stronger, green or dry timber?" This question is now under discussion by many of the leading lumber journals, and has provoked a perfect avalanche of opinions from experts and others. This discussion, after all, seems rather needless. Some kinds of timber are stronger when wet or green. All woods are harder and less liable to bend when dry than when wet or green; but most hardwoods when wet possess more tensile

strength than when dry. Timber thoroughly seasoned is more brittle than when green, and with the necessary force will break square off, while the same timber, green, would stand about the same pressure by bending without breaking. Take a hickory sapling that is almost impossible to break in its green state, although it may bend double, and after it is thoroughly dry one may easily break it almost "square off." So with almost any kind of timber. Drying makes it stiffer, more unyielding, but in a very few instances stronger.—*Dixie.*

We learn from the *Calgary Herald* that Mr. J. J. Dalton, of that town, has received the plant for the saw mill belonging to the Colonization Company which is to be placed on the Red Deer river as soon as possible. At the same time the plant for the saw mill owned by the Alberta Lumber Company has arrived. This mill will have a 100 horsepower, and with a circular will cut 50,000 feet daily, but by means of a gang it will average 100,000 feet. This mill will be placed on the Little Red Deer River.



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CORRESPONDENCE SOLICITED.



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PIT, ICE, CROSS-CUT, ONE-MAN  
CROSS-CUT AND BILLETT  
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USING EITHER THE LONG OR SHORT SYSTEMS.

Our full Roller and Centrifugal Mills on the short system are especially adapted for small mills for gristing purposes. They cost comparatively little, effect great saving in room and power, and produce a high grade of flour and close finish.

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

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

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

United States Shops, JACKSON, MICH.

STRATFORD, ONT.

### THE NEW RAPID CITY FLOUR MILL.

FROM a lengthy and interesting detailed description published by the Rapid City *Indicator*, of the new roller process flour mill lately put in operation at that place, we condense the following particulars:

The mill, which was built and furnished throughout by Messrs. Goldie & McCulloch, of Galt, Ont., from plans furnished by their milling expert, Mr. John E. Wilson, occupies a solid stone building, 42x42 feet, four stories high. The basement, second, and third stories are each twelve feet high; the fourth is eighteen feet. The foundation walls are four feet thick; the first story, three feet; the second, two feet, six inches, and the third and fourth two feet thick. The roof is covered with galvanized iron and has a pitch of three feet.

The motive power that drives the machinery is a Lefel turbine of 68 h. p., and an Archimedian turbine of 26 h. p., which are driven by an eight feet fall of water, from a dam across the Little Saskatchewan. In ordinary seasons, there will be sufficient water to run the mill eight or nine months in the year. As an auxiliary to the water power, an 80 h. p. Whelock steam engine and a 90 h. p. boiler will be used in the depth of winter and at other times when the water is low.

In the basement a line shaft extends the whole length of the building, being fitted with pulleys, from which power is transmitted by belts to the rolls and other machinery above.

The mill is fitted with a full complement of cleaning, grinding, and purifying machinery, and was fitted up under the superintendence of Mr. J. C. Miller, a thoroughly skilled mechanic, the proof of whose ability is the fact that the mill started up without a hitch or alteration. We are pleased to learn that the mill is turning out a first-class article in flour.

### THE CLEANING OF STEAM BOILERS.

A mechanical writer sums up the work of cleaning boilers as follows: 1. The frequency with which a boiler should be cleaned of incrustation and mud depends partly on the quality and quantity of water used and partly on the boiler type, and is best determined by experience. 2. Thin incrustations, up to the thickness of an egg-shell on the plates next to the furnace and up to 0.06 inches thick, the parts not exposed to the flames, are not harmful. Indeed, they are often useful, since they protect the boiler plates from the effect of injurious substances in the water. 3. If the incrustation is thicker than above specified, then it is best to remove it. In pressing cases it suffices to remove it from the surface next to the furnace. 4. If incrustation cakes and heaps of mud gather on the boiler over the fire, then they should be removed at least as often as once in fourteen days. 5. Boilers with narrow spaces inside, like tubular and portable boilers, must be cleaned especially early and carefully. 6. When a boiler is used for the first time with water whose qualities are not well known, it is wise to empty it after using two or four weeks and observe how much, in what form and in what places incrustation and mud have gathered. The same is true for every new boiler, or when changes have been made in an old boiler.

Of late years iron has taken the place of other kinds of material for railway bridges, because of the belief that it is stronger and more durable. The collapse of several iron bridges, however, with the consequent destruction of human life, has shown that long exposure to the atmosphere and the jarring motion of passing trains, causes the iron to crack. The public safety demands that iron railway bridges should be made as far as possible impervious to atmospheric influence, and should be subjected to careful inspection at short intervals.

We have received a letter from a correspondent in British Columbia, who has been a resident of that Province for twenty years, in which he says that there are excellent openings there for men of energy and push. According to his letter, the principal industries of that far off province are lumbering, fishing, and mining. The lumbering business is very extensive, and now that the railway passes through the Province, it is increasing every year. The fishing industry is, in his opinion, yet in its infancy, and will be one of the greatest industries in the Province. Mining is becoming more important every year, and the yield of gold from the quartz ledges gives prospect that British Columbia will soon be one of the great gold producing countries of the world. Our correspondent also says that there is a great want felt for artesian wells, and well-diggers would have good prospects there now. The soil in many districts requires irrigation to make it most productive of fruit and grain of all kinds. The wheat in the lower section of the Province is described as being of an especially fine grade. The climate is all that can be desired.



### THE OLD MILL.

Here from the brow of the hill I look  
Through a lattice of boughs and leaves  
On the old gray mill, with its gambrel roof,  
And the moss on its rotting eaves,  
I hear the clatter that jars its walls,  
And the rushing water's sound,  
And I see the black floats rise and fall  
As the wheel goes slowly round.

I rode there often when I was young,  
With my grist on the horse before,  
And talked with Nellie, the miller's girl,  
As I waited my turn at the door.  
And while she tossed her ringlets brown,  
And flirted and chatted so free,  
The wheel might stop or the wheel might go,  
It was all the same to me.

'Tis twenty years since last I stood  
On the spot where I stand to-day,  
And Nellie is wed and the miller is dead,  
And the mill and I are gray.  
But both, till we fall in ruin and wreck,  
To our fortune of toil are bound,  
And the man goes and the stream flows,  
And the wheel moves slowly round.

— Boston Beacon.

Millwood, Minn., bonused Mitchell & Bucknall's grist mill.

Minneapolis, Manitoba, proposes to bonus a roller mill to the extent of \$5000.

The roller mill at Crockstown was burned recently. The loss was very heavy.

65,000 bushels of corn and 28,000 bushels of wheat came into port at Owen Sound in one week.

The Ogilvie Co. have commenced making large shipments of flour from Winnipeg to England.

Lightning struck an elevator at Brandon, Man., a few days ago and burned it to the ground.

Indiana papers say that Indianapolis is losing her grain trade since the Inter-State law went into effect.

The firm of Jeremiah Harrison & Co., St. John, N. B., flour and West India merchants, have assigned.

The flour and grist mill at Burlington, under the management of Mr. W. H. Finckmore, is doing a large business.

W. H. Parsons & Co., commission merchants, Montreal, have assigned with liabilities amounting to \$50,000.

A flour mill in Oregon reduced its expenses for fuel from \$100 to \$50 a day by buying saw dust from an adjacent mill.

The municipality of Odanah proposes to aid Mr. J. Jermyn, Minnedosa, Man., to convert his grist mill to the roller system.

The value of St. Louis flour and grist milling for 1886 is estimated at \$1,025,000. This is the product of six establishments.

About 13,000 bushels of wheat and 1,600 bushels of oats were burned at Morris, North West Territory, in McKean Bros.' elevator.

A. Shepherd & Sons, Petrolia, are erecting a new grain elevator with a capacity of from 30 to 40 thousand bushels, opposite their mills.

Penetanguishene is endeavoring to recover from a grist miller who failed to keep the terms of his agreement \$800 granted him as bonus.

Flour milling in Bombay is overdone, from the fact that the output is greater than the demand and no foreign trade of any importance exists.

W. Barnard of Galt, Ont., has been granted a patent for improvement in machinery for feeding rollers and purifiers in roller flouring mills.

Mr. R. Cockburn, of Campbellford, has sold his storehouse to Mr. H. M. Loids, of Hastings, who purposes changing it into a steam elevator.

Mr. Alfred Watts warehouse at Brantford partially collapsed a week or two ago. A large number of barrels of flour were broken open and destroyed.

Ireland has 500 flour mills, and of these 50 are working on full time, while the others are forced to restrict or close down through foreign competition.

The farmers elevator at Portage la Prairie is progressing favorably, and much enthusiasm is exhibited by the directors in the success of the scheme.

Judge Ryan has set aside the by-law of the municipality of Portage la Prairie, granting \$6,000 to Mr. H. J. F. Rose to aid in the erection of a grist mill at High Bluff.

A despatch received from the Northwest early in June states that the mills and stores of the Otter Tail Mining Company have been destroyed by fire. The loss is heavy.

The Moncton, New Brunswick, steam flour mill is doing a large business. Hay being scarce in the surrounding country, the mill has to supply a great demand for fodder.

We understand the Canadian Pacific intend handling grain in the Northwest this year on its own account. A large flour mill will be erected at Keewatin and its buyers will be placed along the line of the railroad to purchase grain for through shipment or milling purposes.

Mr. Newton J. Kerr, of International Bridge, met with a very heavy loss by fire. The flouring and grist mills, which he has occupied for a short time, were totally destroyed a few days ago.

Millers who wish to keep up with the procession must keep up with the times. That is to say, they must put in their mills the best machines and operate them upon the best system of milling.

Wapella, Man., offers a bonus of \$1000 and a free site to any one who will erect and have in operation by the 1st of December next a roller process mill with a capacity of not less than 25 barrels.

Messrs. Meldrum, Davidson & Co., the Peterboro' millers, have commenced to build a 50,000 bushel elevator on the north side of their mill. The elevator is to be completed in time for the fall trade.

Delegates from Montreal, Toronto, Hamilton, London and Ottawa waited on the Government a week or two ago to urge the necessity of amending the Flour Inspection Act before the close of the session.

The Vancouver *News* says Manitoba flour is obtaining a very strong hold on the market in that city. Carloads are arriving every week, principally from McMillan's Winnipeg mills, which seem to be the favorite brands.

Flour costs \$16 per one hundred pounds in the Peace River country, the charges being made up thus: Cost at Calgary, \$3.50; freight to Edmonton, \$3.50; Edmonton to Athabaska Landing, \$1.50; thence to Peace River Landing, \$5.50.

Chicago is to have the largest elevator in the world. It will be situated on the Chicago, Milwaukee and St. Paul tracks on Goose Island, and will have a capacity of 4,500,000 bushels. It is being built by the railway company and Mr. P. D. Armour.

The average yield of wheat in Australia this year is estimated at about 12 bushels per acre, giving a total of 12,000,000 bushels. From this yield about 5,000,000 bushels will be available for export, while the export from all the Australian colonies will amount to about 8,200,000 bushels.

The first crop bulletin of the Manitoba Department of Agriculture, just issued, shows an increase in the wheat area over last year of 47,693 acres, while oats and barley show decreases of 5,854 and 13,455 acres respectively. The reports of the condition of the crops are most favourable.

The Chicago *Tribune* says. Nearly half of the wheat now in store at Duluth is reported to be under charter to go over Canadian roads to the seaboard for export to the Continent of Europe. It is presumably going to Belgium, which is able to import wheat free of duty, grind and make it into bread, and sell the latter over the French frontier, while the French miller or baker is obliged to pay the custom house officer for material received direct from abroad.

The celebrated elevator at the deep water terminus at Halifax, about which so much has been said in connection with the Inter-colonial railway expenditure, passed through its stores nearly one and one-quarter millions of grain between July, 1885, and May, 1887. Though in comparison with Montreal elevators this does not look large, yet it is a business that is bound to grow, and when the short line railway is completed Halifax will be able as a shipping port to compete with Portland and Boston for the trade of the west.

On the morning of the 24th ult., Mr. B. F. Reesor's flouring mill—among the finest in Ontario—was totally destroyed by fire. The proprietor had just had the mill remodeled to the roller process, at a cost of about \$7,000. Between \$14,000 and \$15,000 worth of flour and wheat were consumed, as also were the books and documents of the firm. The insurance in the Gore District Waterloo Mutual, Hand-in-Hand, and Millers' and Manufacturers' Insurance companies on the building and machinery is \$13,000, and on the stock \$9,000. The loss above insurance will probably reach \$10,000.

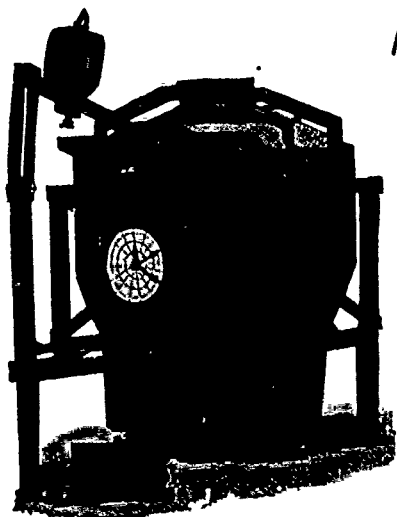
The Punjab in 1886 yielded 100,000,000 bushels of wheat, and this year the crop is estimated at 75,000,000 bushels. The Central Provinces will yield this year 16,000,000 bushels, against 32,000,000 bushels last year. The Bengal crop is reduced from twelve to nine million bushels. These figures indicate the total reduction of yield in these three Indian provinces from 144,200,000 to 100,000,000 bushels, a very large falling off. Should the decrease be equally large in the other portions of India, there will be an important decrease in Indian exports to Europe and a probable increase in price.

At a meeting of millers and wheat merchants held in Dublin, April 26, the question of protection was fully discussed. It was asserted that the millers of the United Kingdom were unable to compete with the American product in quantity or price, although they could produce as good flour as the better brands imported. The Americans were extending their agriculture, the great prairies were becoming one vast wheat field, and the overplus of production was sent across the sea, and sold under cost price. A resolution was introduced providing for a protection duty of \$5 a ton, or 62½ cents a sack on imported flour, which was amended by making the duty \$1.25 a sack, and carried. The feeling among the millers was very strongly in opposition to foreign competition in any branch of industry.

The Owen Sound correspondent of the *Daily Mail* says. About five years ago Middleton-Crawford, a young man living in Wiar-ton, finding himself possessed of inventive powers, went to reside in the States. There he first produced a flour purifier, which was taken up by capitalists, and after being thoroughly tested, Crawford sold his patent for a snug sum in the thousands. Crawford has now several working patents, the best of which is a machine for cleaning cotton seed. Formerly the seed was allowed to go to waste, as owing to the combustible nature of the fluffy covering, it could not be carried to the Old Country. Two companies operating Crawford's machine, with a combined capital of two and one-half million dollars, now buy the seed at about \$5 per ton, and after operating it, sell it for \$15. Mr. Crawford, it is said, has been offered two million dollars for his right to the machine.

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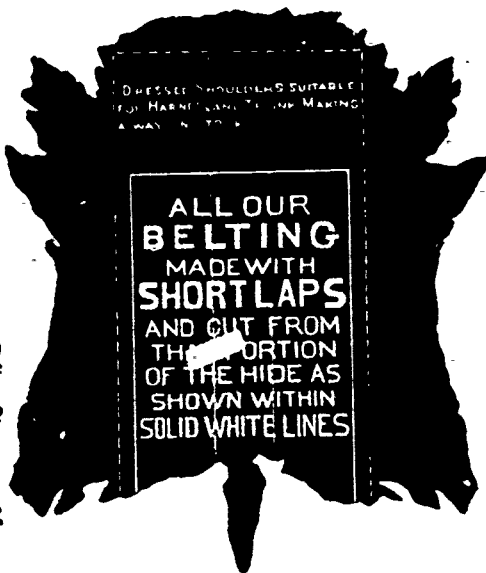
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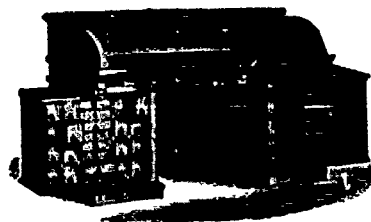
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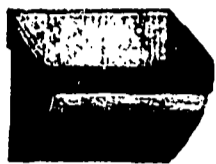
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**FLOUR MILLS, SAW MILLS,**

**STEAM ENGINES AND BOILERS**



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*Centrifugal Reels for Bolting Flour, Bolting Reels with Double Conveyors, Scalping Reels, Purifiers to Clean Middlings, Flour Packers, Out and Cackle Separators, Smutters, Brush Machines, Dust Catchers, Bolting and Wire Cloth, and all kinds of Mill Furnishings.*

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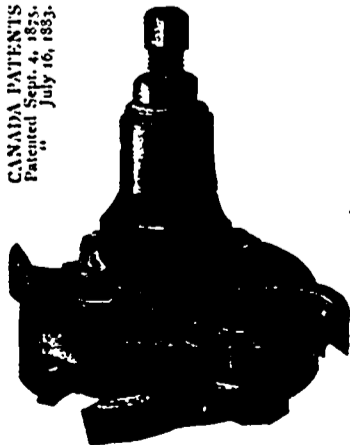
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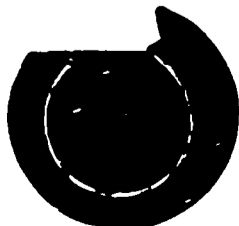
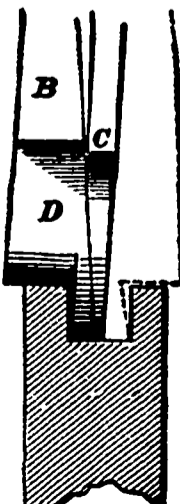


FIG. 1—A New Cutter.



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

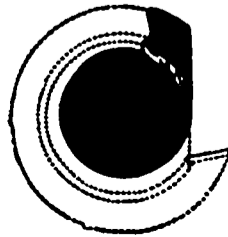
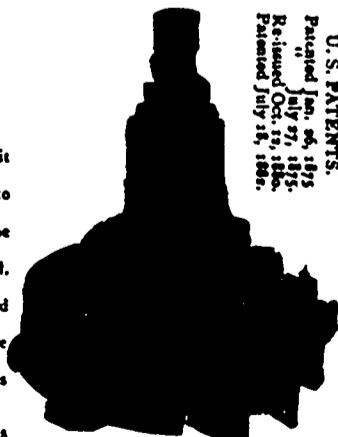


FIG. 2—CUTTER NEARLY USED UP. A. R. Williams, Toronto



GROOVE HEAD.

explains why these Bits hold their shape and run 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.

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