

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/  
Couverture de couleur

Coloured pages/  
Pages de couleur

Covers damaged/  
Couverture endommagée

Pages damaged/  
Pages endommagées

Covers restored and/or laminated/  
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/  
Pages restaurées et/ou pelliculées

Cover title missing/  
Le titre de couverture manque

Pages discoloured, stained or foxed/  
Pages décolorées, tachetées ou piquées

Coloured maps/  
Cartes géographiques en couleur

Pages detached/  
Pages détachées

Coloured ink (i.e. other than blue or black)/  
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/  
Transparence

Coloured plates and/or illustrations/  
Planches et/ou illustrations en couleur

Quality of print varies/  
Qualité inégale de l'impression

Bound with other material/  
Relié avec d'autres documents

Continuous pagination/  
Pagination continue

Tight binding may cause shadows or distortion along interior margin/  
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Includes index(es)/  
Comprend un (des) index

Title on header taken from:/  
Le titre de l'en-tête provient:

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/  
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Title page of issue/  
Page de titre de la livraison

Caption of issue/  
Titre de départ de la livraison

Masthead/  
Générique (périodiques) de la livraison

Additional comments:/  
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below/  
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

# THE DOMINION MECHANICAL & MILLING NEWS

VOL. VIII.—NO. IV.

TORONTO, ONTARIO, AUGUST, 1887.

Price, 10 Cents  
\$1.00 PER YEAR.

[FOR THE MECHANICAL AND MILLING NEWS]

## A PROSPEROUS WINNIPEG INDUSTRY.

By our NORTHWEST CORRESPONDENT.

THE name "Ogilvie" has gone hand in hand with the development of the export breadstuffs trade of the Canadian Northwest. The Ogilvie Milling Company has been identified with the wheat and flour trade of Manitoba since the very inception of the industry as one of more than local importance, and to this company more than to all others belongs the lion's share of the credit for that stage of development which the grain exporting and milling industry has now reached here. The company was the first to cast a covetous eye toward the Northwest as a future field for development in the milling line, and to this company also belongs the honor of having exported from Manitoba the first consignment of wheat for milling purposes. The first consignment of wheat exported from this province, was from the crop of 1877, and consisted of about 500 bushels, forwarded in bags. It was shipped from Winnipeg by the Red River boats to Fargo, thence by the Northern Pacific to Duluth. From the latter place it was carried by steamer to Goderich, Ontario, and ground in the company's mill at the last named place. The wheat was described as a beautiful sample, and was received with such satisfaction that the company were encouraged to continue their operations in this direction. From this small beginning commenced the export breadstuffs industry of Manitoba and the Northwestern Territories, which is yet bound to reach vast proportions. The proportions which the industry has already reached are indeed vast, when we contrast the present with ten short years ago. The lowest estimate of available wheat for export from the present crop is placed at 7,000,000 bushels, or 14,000 times what the exports were ten years ago.

Previous to the year 1877 the Ogilvie company had imported Minnesota wheat largely from Duluth and Milwaukee, which latter place was at that time an important port for the American Northwest. In the year 1878 a regular agent was appointed in Manitoba to purchase wheat for the company. The total exports of the company for that year (the second year which wheat was exported from the province) amounted to about 20,000 bushels. The first cargo was carried by the propeller Argyle from Duluth to Goderich. In 1878 and 1879 the wheat went by the same route as the first consignment in 1877, and was carried from Duluth to Goderich by the Beatty line of steamers. In 1880 the bulk of the exports went all rail via Chicago direct to Montreal, the St. Paul, Minneapolis and Manitoba railway having in the meantime been extended northward to the Manitoba boundary, where it was connected with the Winnipeg and Emerson branch of the Canadian Pacific Railway. These early shipments of wheat were not made as a paying business speculation, but more to test thoroughly the capabilities of the province as a wheat-growing district, as well as to encourage the production of the grain. Prices paid for the wheat in those days were too high to make it a very profitable business,

but the quantity obtainable was so small that the company were able to pay high prices without netting a very heavy loss. Prices paid to farmers ranged from 80 cents to \$1.05. These prices, with freight rates at fancy figures, rendered Manitoba wheat a costly commodity by the time it reached its destination. The quantity of wheat available for export steadily increased each year, and in 1881 the purchases of the company amounted to 200,000 bushels, a portion of which was exported as flour, as will be seen later on in this article. In 1881 other competitors had entered the field, and of the crop of that year, about 50,000 bushels were also exported to Minneapolis. The total exports of the year would therefore amount to from 250,000 to 275,000 bushels.

Encouraged by the steady growth in the grain pro-

duction of the province, and having firm faith in the future of the country, the company determined to embark in a new enterprise in Manitoba. This was nothing less than the establishment in Winnipeg of a new process flour mill of large capacity and of the most improved design. It was recognized that Manitoba would soon be a large producer of the finest wheat in the world, and a mill situated at the very base of supplies, could not but prove a success, if properly handled. Minneapolis flour was at this time finding its way into Eastern Canadian markets, and the growth of the Manitoba industry must be looked for to drive the foreign commodity from the field. Nevertheless, it required a good deal of foresight, as well as an unbounded faith in the future of the country, to launch into an undertaking which at the time was considered by many as Quixotic. There were not wanting those who predicted that the great enterprise would prove a failure, and certainly at the time it looked as though the commencement was being made on too large a scale for the requirements of the country; but after events will show that the projectors had not miscalculated.



MESSRS. OGILVIE & CO.'S WINNIPEG MILLS.

Work was commenced on the erection of the mill early in August, 1881, and carried on under the special difficulties of the time. This was the great boom year in the history of Winnipeg, and consequently wages were high. Bricklayers were paid \$7.00 per day, and laborers received \$3.50 per day. The building was enclosed by Christmas following, work having progressed steadily and rapidly, and with the thermometer sometimes registering 20 to 30 below zero. The heavy timber and lumber for fitting the machinery was imported from

Minneapolis. The mill was completed in June, 1882, and immediately commenced grinding, a portion of the purchase of the wheat crop of the previous year having been held in store for that purpose. The first shipment of roller process flour from the province was forwarded to Montreal in July following.

The cut of the mill and outbuilding, shown herewith, is procured and engraved specially for THE DOMINION MECHANICAL AND MILLING NEWS. The mill proper is 50 x 100 ft. in size, and six storeys high, and is built of brick, with massive stone foundation. The engine and boiler house is also of the same material, size 80 x 50. The stack is 18 feet at base, ten feet at ground surface, and 101 feet high above ground. The elevator adjoining the mill is 70 x 50 feet in size, and has a capacity of 140,000 bushels. Between the elevator and the mill is a building, 30x50 feet in size, and the same height as the mill, for the storage of feed and offal, and also containing a 20 horse power engine to drive the elevator. Across the railway switch to the mill, is situated the flour storehouse and packing room 120 x 60 feet in size, and two storeys high, capable of storing 30,000 sacks of flour. The packing is done on the second storey, from which the flour is spouted into the cars at the rate of a car of 300 sacks in eight minutes. The flour is carried by conveyors from the fourth storey of the mill to the packing house. The packing bins have

a capacity of 1,800 sacks, or equal to a run of 24 hours for the mill. The motive power for running the mill is furnished from a compound Corliss engine, with surface condenser, of 350 horse power, and built by E. P. Allis & Co., of Milwaukee. The water to supply the condenser is pumped from the Red River, distant about 400 feet, through an eight inch metal pipe, and lifted 24 feet from the surface of the river. The steam is supplied by four horizontal boilers, 14 feet long, 60 inch diameter, and fitted with Jarvis patent furnaces. The mill is driven from the fly wheel of the engine by a belt 120 feet long and 36 inches wide, and which runs 4,500 feet per minute. The contents of the mill proper are as follows: The ground floor or basement, four feet above the level, is mainly taken up with shafting to drive rolls and stones, also the packers. On the second floor are forty double sets of Gray rolls, 9 x 18, manufactured by Miller Bros. & Mitchell, of Montreal. There are also two run of four feet stones, and a large Sturdevant suction fan. The third flat is mainly used for spouting. There are also small bins to hold feed over rolls, together with one bran duster, and a dust collector for the fan. On the fourth floor are nine middlings purifiers, one centrifugal reel, and five bolting chests, with four reels each. The fifth flat also contains nine purifiers, five four-reel bolting chests, two bran dusters and two centrifugal reels. In the sixth flat are the scalping reels—sixteen in number—for the breaks; also 22 dust collectors, four centrifugal reels, two bran dusters and two graders.

The cleaning machinery is inside of the mill proper, but divided from the milling machinery by a heavy brick wall, extending across and to the top of the building.

This wall was constructed for the double purpose of preventing dust from reaching the mill, and as a fire wall. The first floor of the cleaning department is used to receive wheat from farmers' wagons. The second flat has stones for grinding feed, and scales for receiving wheat from cars. On the third flat are two Richmond brush machines. On the fourth flat, two Richmond smutters. On the fifth flat is located one four-cylinder cockle machine. The last flat is occupied with three Richmond separators and one large Barnard & Leas' receiving separator. One half of the cleaning department is divided into four bins for grinding supply of wheat, with a capacity of 20,000 bushels. The total cost of this extensive milling property amounted to over a quarter of a million dollars.

Since the completion of the mill, the business of the company has constantly and rapidly expanded. Supplies are now readily obtained to keep the machinery steadily at work throughout the year, and the product is ever in increasing demand. For the past year the mill has been at work night and day without interruption. Since the mills were completed, quite a number of roller mills have been erected throughout the province, and these have of course cut off considerable local trade, but in spite of this, the demand for the brands of flour turned out at this mill has enormously increased. The trade of the company now extends from Victoria, B. C., on the west, to the Lower Provinces, Newfoundland and the United Kingdom to the east. Ogilvie's Hungarian patents, and Ogilvie's strong bakers have successfully competed with foreign shippers of flour to Canada, and these two popular brands of Manitoba flour have taken the lead in driving out Oregon millers from the markets of the Pacific Province, as well as the Minneapolis and St. Louis millers from the markets of the Lower Provinces. In both the eastern and western extremes of our country, Manitoba has almost succeeded in annihilating foreign competition, and to the two brands named belongs a great share of the credit for this result.

Commencing at first with two or three purchasing points, the company now has grain buyers at all principal points throughout the province, extending along over 800 miles of main line and branch railways, mostly in the province of Manitoba. At many of the principal points commodious steam elevators have been erected, and at minor points horse-power elevators and store-houses have been established. The country storage capacity is being added to yearly. In addition to the properties already described, the company has erected a commodious brick building at a central location in the city, from which the business affairs of the institution are directed.

The amount of wheat handled each year since the completion of the mill, will give an idea of the rapid expansion of the business of the company. In 1882 the purchases of wheat amounted to 400,000 bushels; in 1883, 650,000 bushels; in 1884, 1,000,000 bushels; in 1885, 1,250,000 bushels; in 1886, 1,750,000. Figures are given for the crop year. The figures will also serve as an index to the expansion of the wheat-growing industry of the province. The Ogilvie company expect to handle fully 3,000,000 bushels of the crop of 1887.

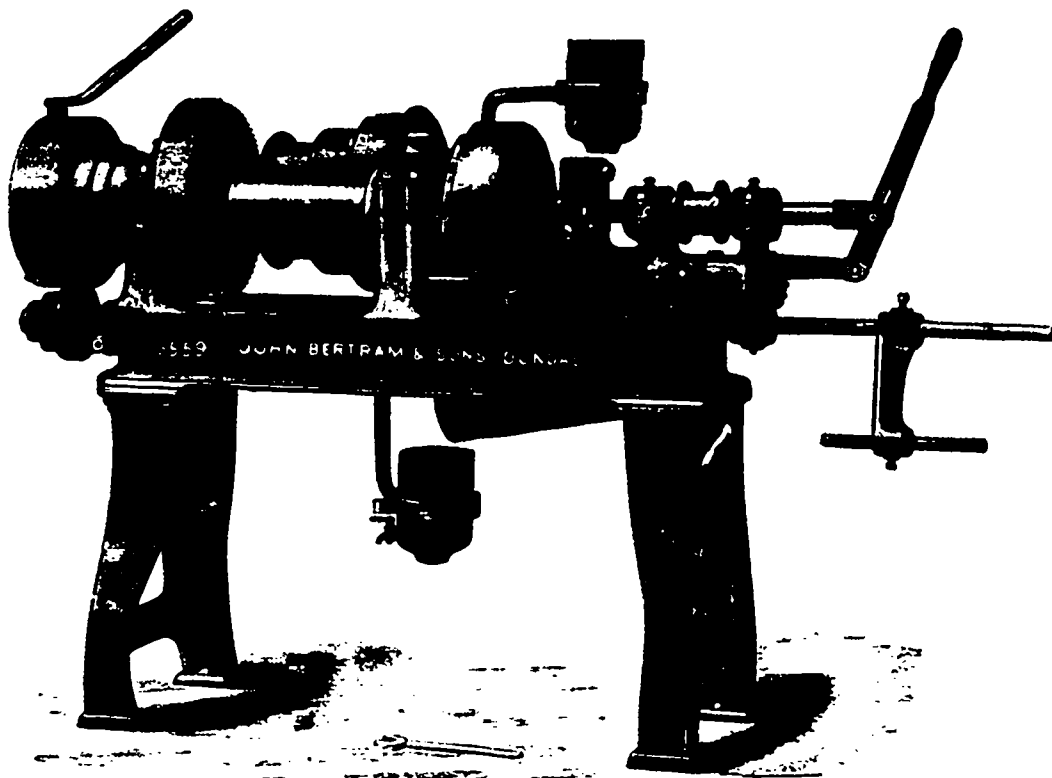
This brief sketch of the milling industry at Winnipeg of the Ogilvie Milling Company, would be incomplete without some reference to the *personnel* of the company, so well known throughout Canada and even beyond our national boundaries: The following are the officers: President, John Ogilvie; Vice-President, W. W. Ogilvie; Directors, W. A. Hastings, Geo. V. Hastings and S. A. McGaw. The local officers here are: W. A. Hastings, managing director; F. W. Thompson, secretary; Geo. V. Hastings, superintendent of building, machinery and manufacturing, and S. A. McGaw, director of the grain purchasing department. Mr. Geo. V. Hastings is considered a very competent man in his department, and the mill here was built under his superintendence. He has just returned from superintending the construction of the Company's Royal Mills at Montreal with a capacity of 1,500 barrels daily. Geo. H. Kelly is the head miller at the Winnipeg mill. F. G. Simpson travels for the western branch of the company's business, his route extending from Ottawa Ontario, to Kamloops, B. C.

A. O. Hastings represents the company on the Pacific coast. The Winnipeg branch also necessitates the employment of an office staff of twelve men, whilst about 150 men are given employment in the purchasing and manufacturing departments.

### IMPROVED CUTTING-OFF MACHINE.

The firm of John Bertram & Sons, Dundas, Ont., to keep up with the increasing demand for improved labor saving machinery, have placed on the market lately a number of new tools, one of which, for cutting-off and centering bars from 3½ inches down, is herewith presented to our readers. No well organized machine shop can do without such a machine as this, and stick to the old style of nicking, breaking-off, centering and facing the rough ends of bars and forgings. The satisfaction to a good lathe hand when all the work is put to his hand centered and faced ready for the tool, can be easily understood.

This machine can cut off and centre steel and iron bars from 3½ inches down. The two tools are set in sockets in the rests so as to cut close to the revolving jaws on hollow spindle. The frame and headstocks are cast in one piece and the hollow spindle is provided with a universal chuck at each end. The tools feed to the centre automatically and can be adjusted from the front while running, a stop motion throwing the feed out at any point. The centering device can be thrown back while cutting off, the tools are planed with the proper clearance. Countershaft has fast and loose pulleys,



IMPROVED CUTTING-OFF MACHINE.

14x3½ inches and should make 80 revolutions per minute. Weight, 2,100 lbs.

### A \$50,000 CONTRACT.

AND MANY MORE, ENTRUSTED TO THE SMITH PURIFIER COMPANY—ORDERS IN HAND FOR PLANT FOR NINE ROLLER MILLS.

From a recent issue of the Stratford Daily Herald we clip the following article:

The Geo. T. Smith Middlings Purifier Co., of this city, has the contract for the iron work and machinery for a new 1200 barrel roller flour mill at Rat Portage, Manitoba. This contract, which calls for about \$50,000 worth of machinery, includes about 40 roller mills, 36 Smith purifiers, and centrifugal reels and other machinery, with 180,000 pounds of iron work, shafting, pulleys, &c.

The machinery of the mill are prominently identified with the Canadian Pacific Railway and carrying out the project under the style of the Lake of the Woods Milling Co., Alex. Mitchell being president and John Mather vice-president, both of Montreal. 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, 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. 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.

The contract was given the Smith Purifier Co. by E. P. Allis & Co., of Milwaukee, the head contractors. 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, so that the Smith Purifier Co. has a series of fine orders in prospect, of which the present is only the first.

Besides the large contract referred to, the Smith Purifier Co. has numerous other orders, which will keep the works fully employed for some time. The company has orders for milling plant for two other mills in the Northwest, one at Portage la Prairie and another at Moosomin, Assiniboia; for a mill at Waterford, Ont.; and for five mills on the new C. P. R. cut off from Smith's Falls to Montreal, namely, at Smith's Falls, Oxford Mills, West Winchester, Chesterville and Maxville, the last of which is about completed and will be running in a few days.

The constant stream of business at the Smith Purifier Co.'s works is the best testimony that could be furnished of the company's manufactures. The *Herald* hopes this leading Stratford institution will prosper yet more in the future.

### WHERE IS THE ADVANTAGE FROM HIGH SPEED?

It is very easy to leave out the part that the strength of a shaft has to take, in looking for the benefit of high speed in transmitting power and to overlook a small factor of safety which every one is fond of seeing when a number of heavy shaft wheels are to be strung up overhead. Take the line shaft that runs down through the centre of the room loaded with pulleys from end to end and notice how much can be gained by driving it at a slower speed. Make the pulleys twice as large and the shaft only needs to go one-half a turn as before, and what a change it makes in the arc of contact for the belting? The same belts will answer to run just the same, only they need to be made somewhat longer to allow for larger driving wheels, and see how much easier it is to carry all the load on the bearings, than to strain everything up to high speed? All the friction found in the journals are not to be overcome through but half the space as before, and a great improvement is indicated in the direction of the coal pile. It is very easy to see that the strength of the shaft has been made the most use of by such a proceeding and the factor of safety reduced to almost the breaking point. Another enlargement of the shaft wheels would give it more of a torsional strain than it could hold. If it would do to make the wheel twice as large, and drive the shaft slowly to keep up the same surface speed to save power, then it would be just as well to let the pulleys remain as they are and turn down the bearings where the shaft is to be supported as far as loss of power is concerned. There are two things that go to make up the driving energy of power. One is speed and the other is moving force. The advantages of high speed are, that it takes less force to operate with than a driving strain that has a slow movement to work from. High speed gives a chance for a small belt to do as much work as a large one; for a small pulley to accomplish as much as a heavy flywheel, or a light shaft to transmit the same amount of power as a heavy one; and whenever this important element of speed is interfered with an increase in the driving force must be called for and the modes of transmission strengthened accordingly.—*Journal of Commerce.*



## The Corn Home from the Mill.

'Twas a low brown cabin, as if grown up from the ground,  
For the chinks were filled with mortar, and green moss  
had grown around.  
All the air was filled with murmurs of the summer bird's  
last thrill,  
For the autumn leaves had fallen and the corn had gone  
to mill.  
On the rail-fence seven urchins at once had chanced to  
light,  
Perched up like so many ravens, only all their heads  
were white;  
Laughing, chattering—it were thraldom if they passed  
one moment still,  
They were very, very hungry, for their "Pap" had  
gone to mill.

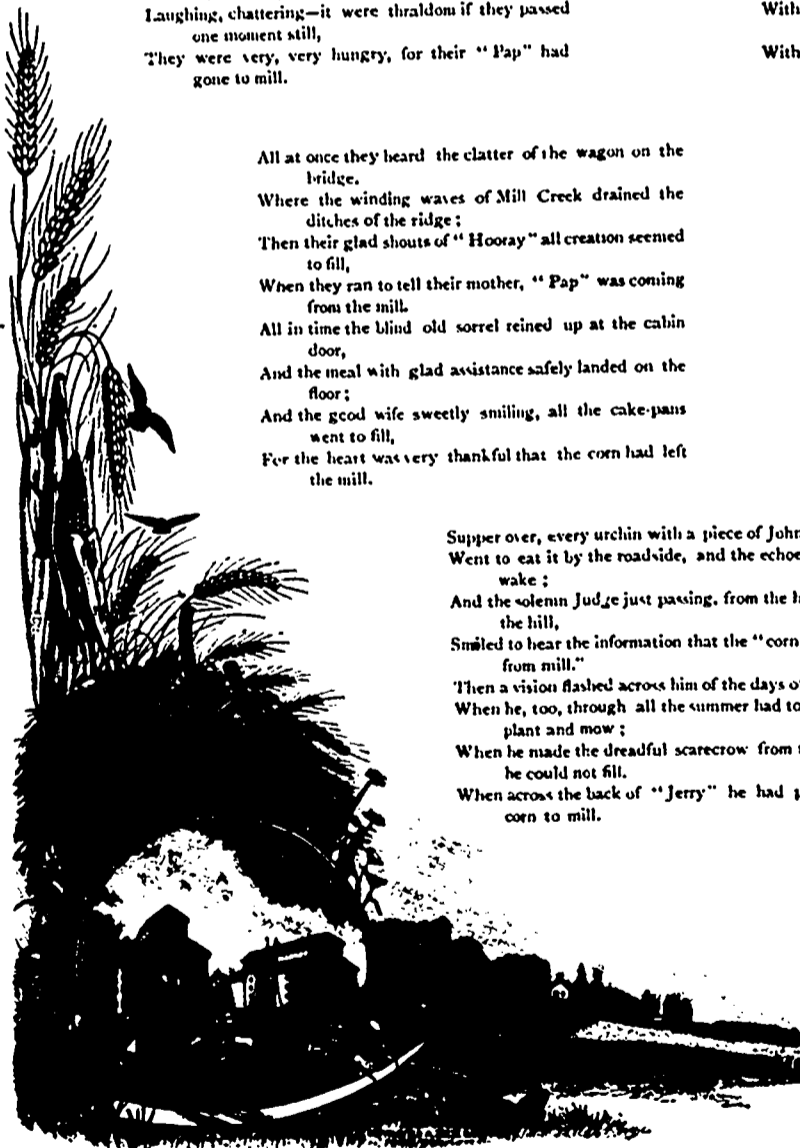
Then he thought of one bright being who had wandered  
at his side,  
Dropping golden grains in furrows that he followed on  
to hide;  
And upon the horse behind him, laughing, chattering,  
never still,  
With her golden curls all flying, he had carried her to  
mill.  
And throughout the next long summer how his heart was  
full of pain,  
With the thought of all the beauty he could not see  
again;  
With the thought of pale hands folded, as he covered up  
the hills,  
With the thought of golden ringlets as he rode off to the  
mill.

All at once they heard the clatter of the wagon on the  
bridge,  
Where the winding waves of Mill Creek drained the  
ditches of the ridge;  
Then their glad shouts of "Hooray" all creation seemed  
to fill,  
When they ran to tell their mother, "Pap" was coming  
from the mill.  
All in time the blind old sorrel reined up at the cabin  
door,  
And the meal with glad assistance safely landed on the  
floor;  
And the good wife sweetly smiling, all the cake-pans  
went to fill,  
For the heart was very thankful that the corn had left  
the mill.

But the children, laughing, playing, nor the Judge with  
solemn brow,  
Knew the scene just then enacted in the great house  
down below;  
Where the miller, white and dusty, busy with the grind-  
ing still,  
Smiled when Bess, the cottage maiden, brought his sup-  
per to the mill.  
How they, seated close together—watched the wheels  
go to and fro,  
And the waters dance and sparkle in the mill race down  
below;  
How he clasped her tight and closely, while she listened  
very still,  
Listened to the "old, old story," in the shadow of the  
mill.

Supper over, every urchin with a piece of Johnny cake,  
Went to eat it by the roadside, and the echoes there to  
wake;  
And the solemn Judge just passing, from the house upon  
the hill,  
Smiled to hear the information that the "corn was home  
from mill."  
Then a vision flashed across him of the days of long ago,  
When he, too, through all the summer had to plow and  
plant and mow;  
When he made the dreadful scarecrow from the clothes  
he could not fill.  
When across the back of "Jerry" he had packed the  
corn to mill.

Thus our lives flow on forever, echoes of each act and  
word,  
Will with joy and sad remembrance in the coming years  
be heard.  
Life is like a false thread winding through the mystic  
future still,  
We must work an unknown mission, like the waters at  
the mill.



FOR THE DOMINION MECHANICAL AND MILLING NEWS

## CHECK-MATED.

BY "GARTH GRATION."

ONE exceedingly warm afternoon in a June that has not yet had half a dozen successors, the griffins and gargoyles that adorn the rafters of Toronto University Convocation Hall, heard, gaping-mouthed, quite an enthusiastic burst of applause greet the closing lines of Mr. Jackson Macdougall's prize poem. It was a very pretty prize poem indeed, with a burden of "vale, vale, Alma Mater"—its metre a little defective, its suggestion rather sad, its motive a vague guess at the secret of life, embellished by Truth's white sunlight, the future's purple haze, and the shadows of the coming years. The venerable Oxonian whose pleasing duty it was to address Mr. Macdougall, interpolated his reminiscences of a more prolific Alma Mater with the hope and belief that did this gentleman but fulfil the promise that day evinced. Canada should not long suffer the reproach of poetic sterility; and if this noble effort might be taken as an indication of future fruitfulness, our broad Dominion, now, as it were, an agricultural and economic waste, would bud and blossom as the rose, and myrtles be as plentiful as maples. Whereat there was also a vigorous clapping, and Mr. Jackson Macdougall walked to his seat amid the other newly fledged B.A.'s at the end of the hall in a tremulous consciousness that he had laid a new line of ecstatic psychical communication with several charming feminine affinities he knew to be in the audience. You must excuse Mr. Jackson Macdougall for the weakness this consideration displays. The score and odd years of his existence had been passed under circumstances that made a charmed back-ground for pleasures of this sublimated sort. His father, a gentleman in whose soul the ideal fought the real to such an extent that while neither was ever wholly vanquished, both were quite incapacitated to exert any marked influence in his character or his life, was the even-tempered descendant of a choleric member of the Family Compact. A few other British essentials beside the splenetic characteristic had been lost in transmission, among them all trace of independence, self-assertion, hardihood of any sort. The fact remained, however, and for Douglas Macdougall it was a valuable fact, for it brought about his union with his income, in the person of Mrs. Douglas Macdougall, from whose direct antecedents the Macdougalls had received nothing previously but tailors' bills. This enabled him to dabble in law and in oils with the harmless satisfaction of a man of leisure. It helped to procure him a partner of energy and reputation; and made it possible, as he often said in a gratified way, for him to give away the landscapes which the kind indulgence of the Ontario Society hung upon its walls, instead of selling them to his friends, "as so many of we poor beggars of the brush are compelled to do." Mrs. Macdougall shared her husband's tastes, and Jackson might be said to have been born and brought up among the *debris* of two aspirational lives shattered against the solid compact of the social body of Toronto. This young man, this prize poet of his class, had lived and moved and had his being in a rarefied atmosphere of anti-philistinism which he created for himself as soon as he became conscious that his soul had lungs. He privately consulted his emotions long before the robust young men of his acquaintance were aware that they possessed any. He found out very early in life, and it was a genuine find, that the crying want of his nature was sympathy of an order that they could not give him. With a very conscious desire to supply it, he cultivated, therefore, in the intervals of rather a studious career, the friendship of the three or four clever girls in the Macdougall circle. He found them receptive and responsive, and far enough advanced upon the stream of current thought to listen intelligently while he talked of impressionism in art or realism in fiction. He was very young and doubtless he often mistook the subtle flattery of feminine interest and regard in which he felt his spirit expand so happily, for a *rapproch* which did not exist. But it was useful to him and comforting, although he described it much more poetically to Miss Helen Forrest as he sat on her father's verandah on the evening of Convocation Day as a preface to asking her to marry him. Miss Forrest was perhaps the most sympathetic of Jackson's girl friends, and on this soft June night, their natures seemed keyed to perfect harmony. She was a young lady of very artistic temperament who nearly always wore white and yellow in the summer, with a suggestion of the antique about her drapery, and had been told by her drawing master that she had only to go to Paris and place herself for instance in the *studio Julien* to begin a career. And on this

particular evening she sat in the shadow of the swaying clematis and watched the playing of the wind in the moonlit chestnut branches, and seemed to acknowledge, Jackson thought, with every graceful movement of head or hand, with every tone modulated to suit the time and the circumstances, the bond of communion that existed between them. She refused him however, and with much credit to her self-control, in exactly the terms wherewith she had always intended to clothe her refusal. They had a sad little time which Miss Forrest enjoyed immensely, she giving its phases and attitudes an artistic touch that made the interview, when it came to be a reminiscence, quite a gem in the gallery of Jackson's memory. Two weeks later she sailed very effectively for the *studio Julien* under the chaperonage of a maiden aunt, who made the most of the interesting circumstances under which the career of her niece was begun. Jackson felt some grief and some mortification, but more surprise that he had not been harder hit. He pulled his fair moustache a little sadly and self-consciously in the family pew at St. Sebastian's the Sunday after his rebuff, and found himself frequently wondering whether life could possibly mean the same thing to him with the part he had lately hoped Helen would play in it left out. He was not at all prepared however, for the concern which his parents manifested over the affair, and rather disliked it. Indeed, though he did not acknowledge this, it was chiefly to escape the assiduous attention and commiserating glances of his mother, that he acceded to her wish that he should immediately have the distraction of change. And about the same time that Helen Forrest embarked upon her future at Quebec, Jackson Macdougall set his foot on an old fashioned lake steamer that plys no longer, I think, along the northern shores of the upper lakes, and sailed with his baffled hopes, indefinitely westward.

To this day our hero privately recommends a storm on Lake Huron, taken immediately after a disappointment in love, to banish its unpleasant effects and leave the disappointed in his normal condition. His own experience certainly justified the advice. His self-pity was so absorbed by the immediate circumstances in which he found himself during the first twenty-four hours of the voyage that he had none left to use upon Helen's account. And when the gale subsided and people began to appear, he found himself sitting at table next to Miss Grace Kendal of Tempe, Illinois.

We should have breakfasted, lunched and dined a great many times with Miss Kendal before discovering that she was a graduate of Vassar, a gold medallist in mathematics, and on her way to St. Paul to take charge of this department in a flourishing ladies' academy of that city. Miss Kendal knew it was American to gossip of one's affairs—she had not read Henry James for nothing—and she stipulated with herself that she should be un-American in points that were open to just criticism. She had the cuticular sensitiveness of most of her countrymen, but otherwise she was a very patriotic young person indeed. In fact it was rather an aggressively loyal remark of hers regarding the morality of the civil war that roused the antagonism toward her in Jackson Macdougall's breast that he was convinced he should always feel. It took more than one evening's chat in the stern with this tall pale grave-eyed girl from Tempe, Illinois, to dispel the antagonism, more than one ramble among the juniper thickets of Manitoulin Island or over the rocks of Michipicoten. But in the end it was not only dispelled but replaced, and Jackson Macdougall was for the first time in his life seriously in love. It may be said in passing that he found the reality of this condition as different as possible from his dreams. During his week's acquaintance with Miss Kendal he had not discovered any points of common feeling that they might gloat over together except within the limits of general culture, which were wide in both of them. And when he thought of this it filled him with a kind of shame, because it was simply the beauty of the girl's character which he half knew, half guessed at, that had taken possession of him, and it was a painful reflection that he was unable to feel himself in touch with any of the sublimities he saw in her. It was a vigorous passion too; it roused the latent manhood in him; it gave him a sense of power to cope with forces the existence of which he had before hardly apprehended. The fabric of a great deal of his dreaming vanished; things became clothed upon with reality as never before; Philistinism for the moment ceased to be.

And yet their engagement was not altogether void of sentiment. It was the afternoon before their arrival at Port Arthur; and he had given her the volume of Dobson's verses they had been laughing over that day. Taking his pencil he had the temerity to write on the fly-leaf, lines that ran, I think, somewhat like these:

We stand in the stern with shaded eyes,  
While the sun is low in the western skies;  
And we think we are leaving those islands soon,  
Wrapped in the golden afternoon.

And the harbor is very far to see—  
That safe, safe harbor where we would be:  
Will any country be half so fair  
As those dear islands to westward there?

The young lady from Tempe, Illinois, took the book and read the lines. Then she looked at the writer in a silence that was unusual with her, and as her lip was trembling ridiculously she turned away her head. Then—well, then it happened; and the astute steward, when he came to ring the tea bell on that side of the boat ten minutes afterwards, added another to the notches on his pantry shelf that scored the matches made by the "*Assiniboia*" during that season.

It would have gone a little harder perhaps, with the Jackson Macdougalls, as their friends called them, in the second year of their married life, had it not been that Jackson's cousin Harry, a young civil engineer who had done himself credit at Kingston and made a reputation by accomplishing one or two feats of some difficulty for the C. P. R., took up his abode with them while he assumed the duties of Toronto's city engineer during the six months of that gentleman's absence in Europe. Ward, Douglas Macdougall's senior partner, had died just about the time Jackson passed his final examination in law, and the firm had become "Macdougall & Macdougall." People wondered whether the young man's undoubted talent and energy would successfully counteract his father's dilettanteism. A very severe shrinkage in the Macdougall income consequent upon misplaced confidence in the future of Winnipeg real estate gave them, about this time, an opportunity of coming to a conclusion upon this point. Jackson was able to keep his pretty little place on College street, where their housekeeping had begun so happily, but everybody saw that Osgoode Hall did not require his presence often enough to warrant the mare and the dog-cart, which were privately sold. Some of Jackson's friends knew, too, that he was supplementing his income by reporting certain matters for the newspapers. It was a struggle to keep the little red brick home on College street, especially in the face of the elder Mr. and Mrs. Macdougall's constant and pathetic entreaties that they should live with them, but Jackson was determined to do it, and when Harry Macdougall stated his desire to come and lodge in it, both the Macdougalls took an undisguised satisfaction in the chance that sent him.

"Jackson" said Grace to her husband one day, as she sliced up an egg for the salad she was preparing, "I rather like working for my living, don't you?"

"I would" he said "if there were any chance of getting ahead. But if there is I don't see it, especially in law. Now if I had only taken to journalism in the first place—"

"You would always have regretted that you hadn't gone into law" laughed Grace. "Wouldn't he, Harry?"

"Think you would, old fellow," said his cousin, who shared Jackson's liking for watching Grace's housekeeping operations, "there's a good deal of the treadmill about newspaper work, I fancy. Give yourself time. It is too much to expect the public to grasp the full and valuable significance of your call to the bar in six months you know."

Jackson said he did know, and in the badinage that followed lost some of the despondency which came home with him often from the office. Grace and Harry had a mutual though unacknowledged understanding that he should be cheered up at these times by their joint effort. People dropping in after dinner on such an evening said how surprisingly little the Macdougalls' trouble seemed to affect Jackson's spirits. He bore it, they said, so much better than Mrs. Macdougall, who seemed a good deal depressed. But then she always was quiet.

His natural sweetness of disposition was unimpaired, but his placidity of temper failed him occasionally, and he grew impatient, if not irritable, over trifles. It was so one February evening when the student-lamp that illuminated a sketch he was writing for the *Forum* on Canada's literary prospect, insisted upon smoking disagreeably. He really thought of a sarcastic little remark to make to their one servant, as he carried it to the kitchen to be set right. But Mary was not to be found, and he brought it back with an accession of ill-humor. He put out the light and turned up the insufficient gas jet, and when Harry came in with Grace, after spending the evening with the old people, he found his cousin still manipulating burner and wick in the midst of a very evil smell.

"They have sent us Canadian oil again," said Grace, pulling off her gloves. "Let it alone, Jackson; it won't give a pleasant light until the bowl is re-filled."



"I don't care about being mastered by any sort of circumstances when I can help it, my dear girl; and to be vanquished by a coal-oil lamp—There! That's a victory that I shall flaunt in Mary's face to-morrow. Sorry to make it unpleasant for you—I'll take the thing out."

"Not at all—after half an hour's work," Grace declared. "It burns very well now. Show me what you did to it, that I may initiate Mary in the morning."

Jackson explained, and Harry listened as he pressed down the contents of a small brown Indian pipe. "The fact is," he said, "what we want is a flame that will consume the wick so completely as to leave an imperceptible amount of carbon or gas to escape."

"Yes," said Jackson eagerly, "I've been thinking of that. And this automatic arrangement of putting it out might easily be improved upon. There's no reason, either, why such an improved principle might not be applied to the common lamp."

"There's money in it for some fellow," responded his cousin, throwing the match he had lit his pipe with into the grate, "a lamp that would burn cheap oil without saturating the air with it would be a boon to our oppressively protected masses."

"A lamp that would burn it without danger," Grace added. She had been looking and listening quietly. "It could be done, I think, with air currents." She said this absently, and when Jackson in surprise asked her how she happened to guess at that, she told him that the young brother who had died before she graduated had put his wasting energies into a device with this very object, and had made her his only confidante.

"It was defective though," Grace said. "He had the opinion of two or three reliable men upon it, and they assured him his lamp was valueless. And he died very soon after that."

Jackson asked many questions about this conception of young Kendal's, and Grace told him all she could remember. He put aside Canada's literary future, which lay in a corner of his desk for several months after this, and smoked late alone that night. When he went to bed it was with an exultant consciousness that he had on a sheet of MS. paper, diagrams that contained the germ of an original theory for illumination by oil. Uncertainty as to the name he should give his invention kept him awake until nearly daylight. He wondered whether his father would like it called simply the "Macdougall Lamp," and concluded that he wouldn't.

But in all the weeks that followed Jackson said nothing about his project. And he had not returned from the office one afternoon about a week later when Harry brought up from the Custom House a small wooden box addressed to Mrs. Macdougall, sent from Terre, Illinois.

Jackson had little difficulty keeping his plan to himself. The tiny library in which it was conceived had always been somewhat exclusively his work-shop when his pen was his tool, and he took care not to seem more absorbed in this new task than he had in the old ones. I have hinted that he was a vain fellow, and he knew that failure was at least a remote possibility which would be harder to bear if anyone else knew. He felt, too, that his enthusiasm would lose momentum if he imparted it, and he understood the value of its help. But he was not secretive by habit, and he did not enjoy the possession of his experiment. It wore upon him, and made him nervous and a little suspicious. As he dreaded to be watched, he watched the others, and so vigilantly that if any lightest fancy of her husband's occupation had crossed Grace's mind he could not have failed to detect it. As it was he thought he detected something else.

This is to put it coarsely, much more coarsely than Jackson Macdougall ever allowed the idea to present itself to him. He did not for an instant believe that his wife was consciously allowing herself to grow more and more deeply interested in that good fellow, his cousin, and only this state of things would have admitted detection, with the detective purpose, on his part. But there gradually stole upon him the conviction that Grace and Harry had more in common than he had ever dreamed. He wondered that, with his interest in and knowledge of subtle human affinities, he had not discovered before how much these two thought alike and what pleasure they seemed to find in it. It flashed upon him one day that in almost all their differences of opinion he was in the minority. His secret alienated him, and he unconsciously transferred the burden and the blame of the alienation to her. There was nothing which he could assume even to himself to be a reasonable ground for conclusions which he never went so far as to formulate to himself, except that his cousin and his wife usually read together while he was occupied with his model, and once or twice he had surprised them in very earnest and

animated conference. He often told himself that there was nothing in his fancy, but it grew upon itself, and just as often he found himself gazing into a vague tragic future with a very definite present unhappiness. He fairly conquered the sore feeling that rose in him toward his cousin, however, and never allowed it to get the better of him but once. That was one spring evening when he had gone down stairs for a moment, leaving his first construction for the lamp completed on his desk. Hurrying in he found Harry standing with his back to it, scanning the book-shelves.

"What the devil—" began Jackson; but his cousin turned upon him a face of such genuine astonishment that he stopped.

"I'm after the 'Summer in the Garden,' old fellow. 'Didn't mean to disturb you. Grace thought she'd like to anticipate that season a little to-night."

"It's down-stairs," Jackson said, thankfully, I—I was a little startled just now. Your figure doesn't lose its impressiveness in this light, Hal. On the piano," he added, as his cousin went out without glancing at the desk. He dismissed the incident as he turned the key and got his composure back, but it returned again and again.

It was about the time in June that Jackson, after many elaborations in directions which he had himself recognized as false ones, had perfected a lamp which he burned half a night in the ecstasy of success, that Harry Macdougall's people besought them both to escape the heat indefinitely by coming down with Harry to their summer place among the Thousand Islands. Jackson felt the discomfort of his misgivings only occasionally now, and he knew he could afford to give Grace no other change. She was looking thin, he thought, and was so visibly exhilarated at the prospect of the St. Lawrence that he consented without reluctance. He even sent them on ahead of him. He would be down in a week at most, he said. And two days after they had gone he took the night train for Ottawa, with the precious sections of his idea wrapped carefully in tissue paper and stowed in the middle of his "Gladstone."

He slept little that night, and the solicitous darkey who dusted his coat in the morning could not persuade him to take any breakfast. The train was late; it was quite ten o'clock before it steamed into the station. Jackson was familiar with Ottawa, but he passed up street in a fever which took away his associations of the place, and he stopped to ask a youth in the uniform of His Excellency's body guard, the shortest way to the Parliament Buildings. The young man told him, and as he spoke Jackson remembered having met him twice at Rideau the last time he had been in Ottawa, thanked him and hurried quickly on, hoping he had avoided mutual recognition. His informant stared after him.

It was terribly hot for the last of June, Jackson thought, and wondered why he had not taken a cab. He distinctly wished he had when he saw a girl-cousin of his, Harry's sister, coming directly toward him. He did not wonder at her being there, nor did he speculate as to whether she had seen him. He only knew he could not speak to her, and walked rapidly down a side street to avoid it. There was an odd little parti-colored slant-roofed French cottage on this street, and out of one of the windows a girl in blue was leaning, fastening up some sweet peas and singing with all her might,

"Marianson, dame jolie,  
Elle m'a été fiddle assez."

Jackson smiled as the rest of the old Norman ballad came to him; and then thought it remarkable that his feet kept such accurate time to the measure, while the couplet repeated itself again and again. Even in his trepidation as he went up the stone steps of the Main Building, his heart seemed to pound against his side,

"Marianson, dame jolie,  
Elle m'a été fiddle assez."

"The Patent Office? yes sir. Up two flights and turn to the right," said a subordinate.

There were a number of clerks behind the office desks of the large light room into which Jackson walked, and he fancied they all regarded him very closely. As a matter of fact they hardly glanced at him, being accustomed to the appearance there of worn-looking young men carrying black bags, and the stout clerk in the seer sucker coat who directed him to an inner room where he asked for the head of the department, was almost instantly oblivious again to everything but his pen-knife and his pencil. The room was empty, both the head and his deputy having "stepped out" for a moment, and Jackson sank into an easy chair more than glad of the respite. He felt, however, that his excitement was gaining on him every moment, and when he had unstrapped his bag, taken out the pieces of his model and put them together on the table, he looked at the brass completion of his endeavor and felt as hysterical as a woman.

The gray-headed gentleman to whom he was explaining it a few minutes later noted this and asked him if he wouldn't have a glass of iced water before he went on, and Jackson drank two. Then he listened in a grave silence as the young man went feverishly on—a silence that seemed to Jackson a wall of passive resistance which he must break down. He leaned back in his chair and put his finger tips together and looked at Jackson very penetratively.

"You didn't think of getting this arranged through a solicitor?" he said tentatively, without relaxing his keen attention.

"Yes; but I could not feel that there was anything in the drawings, and when the model was finished I wanted to know its value without any unnecessary delay. Beside, the only man in Toronto I would trust is an intimate friend, and—well, I didn't care about his knowing of the attempt if it was—useless, you see."

"I see—I see," said the gray-haired gentleman. "Curious! Well sir," he continued, dropping the train of thought, "you may go through the necessary formalities if you like, but I am sorry to tell you that it won't do you any good. A lamp on this very principle, carried somewhat further, was entered here yesterday. I am not at liberty—"

He looked at Jackson and stopped. There was something in his face that made the gray-haired gentleman understand that it was unnecessary to explain the limitations of his position, and suggested to him the assistance of a small cut-glass decanter in the lower part of an old-fashioned mahogany book-case in one corner of the room. But Jackson rose so suddenly that he had not time to invoke it. His voice was rather incoherent as he took his brass toy to pieces and mechanically put them into the bag again.

"You must know," he said, "I've heard of such things. But I—I didn't anticipate it." There was no note of protest or enquiry or indignation in his voice. The shock had made him incapable of anything but acquiescence.

"That—that finishes it, doesn't it?" he said in a broken way, with half a smile, as he strapped his bag. He was conscious of little beside a desire to get away from the place, to drop the thing in the river, to separate himself from this episode in his life. But another thought flashed upon him as he searched for his hat. It sent a glow to his face and gave a different fibre to his voice.

"You can of course tell me the name of the patentee," he said quickly.

"I wondered that you did not ask for that. One moment!" and the older man, adjusting his spectacles, turned to a safe behind him, unlocked it, and took out a bulky volume of entries.

"Macdougall—Toronto, too. Anybody you know?" asked the chief kindly, closing the book and turning the key upon it. There was no answer, and when he pushed his revolving chair around to repeat his question, he found the room empty and heard Jackson's footsteps hurrying along the corridor as he blindly made his way down to the door.

A lady and gentleman were walking up the gravelled road to the entrance through the glare, which had increased in intensity. Jackson almost stumbled between them. Recovering himself and looking up he recognized his wife.

"Why Jackson!" exclaimed Grace.

That was all he heard her say, and she knew only that for the first time in his life he had repulsed her, staggering on alone. He fell before she or Harry had grasped even that.

It was some weeks before Jackson Macdougall recovered from the attack of congestion of the brain, through which he dragged painfully at the Ottawa hotel where Grace and Harry and his sister had been staying. His wife found nothing so heart-rending during its progress as the way in which he sometimes sang,

"Marianson, dame jolie,  
Elle m'a été fiddle assez."

She and Harry guessed his secret, of course, finding the model in his travelling bag; and it completely spoiled Grace's pleasure in the very handsome cheque that represented the value of her invention to an American manufacturing company. She showed it to him, however, before he was able in his weakness to impart to her his unhappy belief that Harry had robbed him of anything, so that she never knew he had it. It was not quite the delightful surprise she had intended it to be, but to Jackson it was a revelation infinitely more precious.

"The Princess Lamp" was negotiated in two or three other markets with tolerable success, but was soon superseded, and now Jackson's law business is the main feature in their prosperity. They have never invented anything since either separately or jointly, and Jackson

gave his model privately to Harry for a wedding present. To this day Mrs. Harry Macdougall, who, by the way, gave up the *studio Julien* and a career as Miss Helen Forrest for the stalwart young engineer, declares that it burns better than "The Princess."

[FOR THE MECHANICAL AND MILLING NEWS.]

### THE MILLING OF FIFTY YEARS AGO, WITH NOTES OF ITS SUBSEQUENT DEVELOPMENT.

By M. McLAUGHLIN, TORONTO.

FIFTY years ago milling may not have been recognized—as it is now—as the most extensive manufacturing industry in Canada. Statistics then were little dealt in, and the relative extent of an industry was little known and little cared about. Yet was the mill in those days felt to be of more immediate importance than the mill of to-day. In a new settlement, just beginning to feel the first vigorous attack of the army of brawny immigrants from over the seas, the mill was king.

While forests were laboriously levelled, and farms carved out, the mill was started as one of the first necessities—started always with less regard to any other circumstance than to its own need for a good water-power.

The mill did not follow the village in those days, but the village followed the mill, and because of it.

A specimen of the first mills of Canada is on exhibition at the Canadian Institute in this city. It is a man-power grinder, on the "short system"; a beech log—the bark still on it—cut squarely off at both ends, and standing upright; in height 35 inches, diameter 29 inches; bed-stone about 21 inches in diameter, let into the top of the log, so that the face of the bed-stone is 3 inches below the rim of log surrounding it; runner 20 inches diameter, and 5½ inches thick, with a 3 inches square hole in the centre for feed to enter and for upright, to which was attached the lever to turn it with; capacity unknown, but the designers made provision for a good output in making a discharge hole 5 inches by 1½ inches.

This variety was in disuse 50 years ago. A greater stride had been taken in Canadian milling than was the leap of a decade ago, which landed us among rolls, centrifugals, etc. Water-power mills had come in, some of them curiosities in their simplicity. A water wheel, the wooden shaft of which ran up through the floor and formed the stone spindle, a pair of rock stones quarried near by, with hoop, hopper, damsel and shoe, comprised the outfit. Cleaning the wheat was considered as much a superfluity then as nosing after the "crease-dirt" would have been considered, if any one had been disposed to look closely enough to discover that there was any "crease-dirt," as none probably did.

By the year 1837, however, milling had advanced considerably beyond this stage. Cleaning machinery of some degree of excellence had come in, as had also the use of bolting cloth. More roomy buildings—solid enough if the measurement of timber in them was a criterion—were being built to accommodate the more elaborate process, and the increasing and more fastidious trade.

There are few of those mills standing now. There is none of which I know, in this Province at least, equipped as it was equipped half a century ago. The everlasting "change over" of the business has dealt as mercilessly with the representative mills of those days as time has dealt with the men who were active in building and running them. Few of the millers, as few of the mills, have reached this Jubilee year. The father of the writer, one of few, gives a description of his mill at Mono Mills 50 years ago—a good specimen of the most advanced class of mills at that period, for he had just finished its enlargement a short time before.

The Humber Valley at Mono Mills, and the pure clear stream that ripples through it, and the two lines of steep hills that enclose it, out of which run scores of springs of such water as is nowhere else, the variety of forest trees and shrubbery and meadow that vary its beauty, all together form the ideal of a charming country scene. But in the early days the utility of the stream, which, carried along the side of one of the hills a short distance, was made to turn an 18 feet overshot, was much marred by the difficulty of reaching it or getting from it over one or other of the hills.

The Mono Mills of 1837 was a strong frame building, 38 by 26 feet, two and a half stories high, six windows and two doors in the lower storey, eight windows and one door in the second story, four windows in the attic. Built close to the side of the hill, the principal entrance was the second floor door. Wheel house 26 by 10 feet, water wheel 18 feet diameter, 4 feet buckets, wooden pit-wheel 10 feet diameter, with iron bevel segments; iron

pinion, upright, and wooden spur-wheel 7½ feet diameter to drive the stone pinions; all the shafts wooden, with iron gears; one run of buhr stones 4 feet 4 inches in diameter—a recent acquisition; one run of rock stones 4 feet in diameter; one single reel bolt 18 feet long, No. 9 cloth, and one single reel 18 feet long, No. 8 cloth, both Anchor brand; shaking screen, suction fan, both home-made, and Cobourg smutter. Capacity: buhr side, 6 to 8 bushels per hour; rock side, 4 bushels per hour.

This was a representative Canadian mill of 1837. A small number, nearer the lakes, were of larger capacity; a majority were smaller—all equipped with the same class of machinery.

It is noticeable that the mill described above was, in one important respect, a model of the very latest mills being built to-day. It had two sides, that is, it was two separate mills under one roof, and was used, no doubt, when the power was sufficient, to drive both runs at once, as the double mills are used now on the different varieties or grades of wheat.

Little "merchant" work was done then, nearly the entire trade of the mills being gristing for the settlers, who came long distances, many of them with oxen, only a few Nabobs being able to turn out with a horse team. Many, indeed, of the settlers at that period could raise neither the one or the other. In those primeval days, and in the Mono Mills section, more than one youth whose name in after years rose among the highest in the commercial circles of the country, hauled their grists over hills and dales in a hand-sleigh and home again by the same process. Those hand-sleigh transactions were small and humble ones, but thoroughly sound. That father of bankruptcy—the expense account—had a poor show for getting in any of his murderous work there. It would be interesting to know the influence of the hand-sleigh experience in the wider fields to which the ambition and energy of those youths directed them.

Millers had good wheat to grind in those days—better wheat in many parts of Ontario than now. This was especially true of the white fall wheat, which was plump, white and strong—so good indeed that the flour from it became famous later on in the New York and Boston markets. Careless or ignorant farming, however, was something of a drawback, and resulted in much smutty wheat. The same cause was at the bottom of the frozen spring wheat that for many years was not an unusual thing in the back townships. We do not hear of frozen wheat in Ontario now. Fall ploughing, earlier seeding, drainage, and a little care in selecting seed, have got over that difficulty in Ontario. The same difficulty will be overcome in the Northwest by the same means, recent experiments there showing the finest No. 1 hard, side by side with No. 2 frosted, the land and even the seed the same, but in the one case the ground was ploughed and harrowed in the fall and the seeding done early; in the other case the ploughing was done in the spring, leaving the seeding too late.

For many years after 1837 there was little change in the process of milling, or in the machines for carrying out the process. Established mills went on the round of the year, ending it as they began it, so far as machinery or methods were concerned. They were not falling behind, for, though new mills were being built as the area of settlement extended and the population increased, the new mills were, if not exact reproductions of their predecessors, at least on the same system, and making the same class of work.

Less wood and more iron, with at long intervals a new cleaning machine, the addition of coolers, packers and bran dusters, marked nearly all the changes of more than a quarter of a century. Millowners then had a reasonable chance of putting some of their profits away as net gain. They did their honest work (honesty and milling became proverbially associated) and did not torture their brains to discover whether or not their hexagon reels were giving results commensurate with the power they absorbed, or any such problem the working out of which or the application of which was to drain their purses for "improvements."

True, there were inventors in those days, but they were harmless. Their object was "perpetual motion." A day came when this class of demons turned their attention to commoner things. The purifier idea, followed as a result by the gradual reduction idea, leading on to rolls non-cutting and rolls sharp-cutting and smooth rolls, rolls of chilled iron and rolls of porcelain, scalpers, centrifugals, round reels and inter-elevator bolts, dust-catchers, aspirators, degerminators, automatic feeds and automatic weighing machines, magnetic separators, wheat heaters and sprinklers, long system, short system and combination, and the whole whirligig of modern milling devices and systems.

We are in that whirlpool now, and are making purer

and better flour than our fathers did, in the days of peace, but it is a fact that after many years of battling, the problem of practical milling is not worked out. The mill born in 1887 is a better mill than that born in 1886, as will be the mill of 1888 better than the best existing to-day.

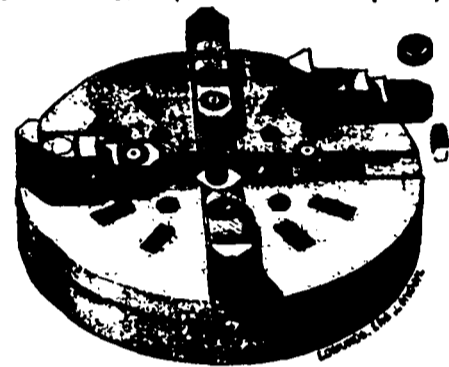
Practically, the changes of the last 50 years are but the changes of the last 20 years. The aim so far during this period of evolution has been unaltered—to make purer flour, a larger yield of it, and at a decreased cost of manufacture. It is improbable that these aims will be discarded for others, and if not, there will come a limit to the ingenuity of the milling expert, and when that is reached—when machines are allowed to wear out as they do now in other long established manufacturing industries, instead of being kicked out—one help towards raising the milling business in the estimation of men with money to invest will have shown itself.

Royal Dominion Mills, July 20th 1887.

### AN IMPROVED LATHE CHUCK.

Mr. J. Walmsley, of Woodstock, Ont., whose card appears in our advertising columns, is the manufacturer of a lathe chuck which claims to be superior in four points to any others.

In the first place they are made of steel which renders them more durable; secondly, they have a quick reversible jaw; thirdly, the jaw and nut are separate, which



permits a take-up, in case of wear. This is an important point not found in other chucks. By a simple contrivance in the inside of the combination chuck, the loose rack which drives the pinions and screws when not in use is held in its place, thus preventing jarring of the teeth.

The chucks are all made very strong and warrant the success they have had.

### LACING RUBBER BELTS.

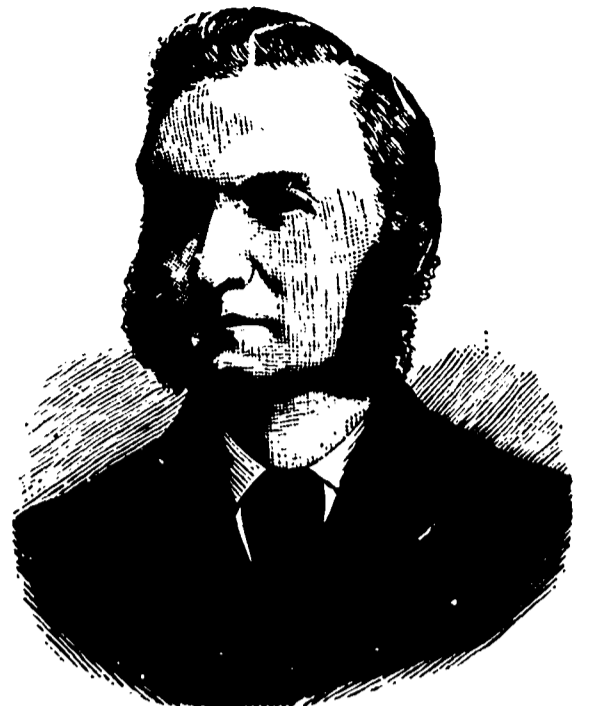
The belts should be placed on the pulleys as tight as possible. This can best be done by the use of belt clamps, except in the case of very narrow belts. In all cases the belt should be cut about one-eighth of an inch less than the distance around the pulleys with a tape line. The seam of the belt should always be on the outside. For narrow belts, butt the two ends together, make two rows of holes in each end, thus obtaining a double hold, and lace with lace-leather. For wide belts put in addition on the back a strong piece of leather or rubber, and sew or rivet it to the belt. If the belt should slip, it should be lightly moistened with boiled linseed oil; animal oil will ruin the belt. If one application does not produce the desired result, repeat until it does. The belts will be greatly improved and their durability increased by coating the surface lightly with a composition made of equal parts of black lead and litharge mixed with boiled linseed oil and Japan, enough to cause it to dry quickly; the effects of this will be to produce a finely polished surface.—*The Engineer and Iron Trade Advertiser.*

### COST OF POWER TO RUN A FLOUR MILL.

It ought to take about 40 horse power to make 100 barrels of flour per 24 hours. This, if steam is used, will require the evaporation of from 25 to 40 pounds of water per hour per horse power; or from 1,000 to 1,600 pounds of water for the 100 barrels of flour. This will be from 240 to 384 pounds of water per barrel of flour. The boiler will require from one-fifth to one-tenth pound of coal per pound of water; so that if the water required is only 240 pounds per barrel of flour, the coal required may range from 24 up to 48 pounds per barrel of flour. If 384 pounds of water are required per barrel of flour, then the coal required may run from 38.4 pounds per barrel, up to 76.8 pounds. So you have the extreme of 24 and 76.8 pounds of coal; the maximum being about three times the minimum. The coal will run from \$2.50 to \$5.00 per gross ton, which is from 0.1116 to 0.2232 cent per pound; so we have a further range of cost, of from  $24 \times 0.1116 = 2.68$  to  $76.8 \times 0.2232 = 17.141$  cents per barrel.—*Power and Transmission.*



M. McLAUGHLIN, TORONTO.



DAVID PLEWES, BRANTFORD.



CHAS. C. WHITLAW, PARIS, PRESIDENT DOMINION MILLERS' ASSOCIATION



ARTHUR MOORE, TORONTO.



WALTER THOMSON, MITCHELL, PRESIDENT ONTARIO OATMEAL MILLERS' ASSOCIATION.

# PROMINENT CANADIAN MILLERS



## Our Portrait Gallery.

### L. A. MORRISON.

No face is better known in connection with the machine business of Canada than that of the subject of our sketch, whose portrait appears on this page. Mr. Morrison was born in Peterboro' county, a few miles north of the village of Norwood, in the year 1846, and is therefore just in the prime of life. His early years were spent on a rough farm, without any advantages except hard work. His early school education consisted of a few months attendance at a country school, during the autumn and winter of his boyhood's years, and only gave him the simplest rudiments of a common school education, but of this he made as good use as it was possible for a boy under the conditions and surroundings of life in which he found himself, by diligently cramming his mind with every item of information that came within his reach. A severe hurt, received in a logging fallow in his 20th year forced him to leave the farm and endeavor to obtain an education, by the use of which he might be able to obtain a livelihood. His early habits of study and thought began then to be of practical service to him, for at the end of the first year at Norwood Grammar School he obtained a first-class certificate for school teaching, at which he spent two years—studying diligently all the time, intending to take a course at Victoria and go into the ministry, but just when he was ready to start for college his health entirely failed him, and with no other hope than that of lengthening out a short life, he decided to spend a summer in Detroit with some friends. A change of air and a change from in-door to out-door work, restored him to some degree of health. An opportunity to go to work in connection with a machine shop—apparently a providential guiding—put him where he found a field of thought to his liking, and in connection with which he has remained ever since. We need not follow his course for the five years that elapsed till we find him back in Canada again and in business as a machine broker in the city of Toronto. This he began in 1876 and has been connected therewith ever since. For the last four years he has been known principally in connection with the iron tool trade, as representing the London Machine Tool Co., and the impress of his dogged determination to have as good tools made in Canada, by a Canadian firm, as the best American shops could produce, is showing up in a very satisfactory way.

Mr. Morrison has made it one of the ambitions of his life to master, as far as possible, the details of construction in nearly every line of wood-working and iron-working machinery, and including engine and boiler construction. He learned years ago that to put one's thoughts on paper, sometimes, if not always, discovered to the writer just how much he knew, or did not know, on any subject. Thus for years he has been a contributor to various mechanical papers, over one *nom-de-plume* and another, on a very great number of mechanical subjects. Not alone as a writer on mechanics, however, is he known. His song and hymn writings have placed his name in many a home and heart that as a mechanic he never could have reached. In a late number of *Truth*, to which he is a regular contributor, these kindly appreciative words appeared in the editorial columns: "We have pleasure in referring to the beautiful hymn of Mr. L. A. Morrison, entitled, 'The Jubilee of the Nations.' Mr. Morrison's compositions are deeply spiritual and highly poetical."

The indications are that the lumber supply will be short this year. Many of the Chaudiere lumbermen have been compelled to stop running their mills for a short time owing to the shortness of the supply of logs. A well-known lumberman in Ottawa stated the other day that he was very much afraid the mills would not run till the usual time this fall, and if they did there would be no logs in reserve to begin next summer.

The Longford Lumber Company, of Longford, Ont., are doing a good business this season. A full train of 22 cars of lumber has left their yards every day for the past two weeks, most of it going to Ogdenburg, N. Y. Extensive improvements and purchases have been made this year. A shingle mill has been built at Orillia and a steamer purchased to run between Orillia, Rama, Longford and Washago. They also purchased the mill and limits of the R. C. Smith estate.

While on a visit to the St. Catharines Saw Works the other day, the MECHANICAL AND MILLING NEWS was shown an old inserted tooth circular saw made by a Mr. Packard, father-in-law of D. Palmer, of Toronto, at Niagara Falls, N. Y., in the year 1836. The inserted teeth are the same as the subject of the quarrel in the United States Courts by Spalding and Emerson, showing that neither of them was the inventor. This old saw, which is made in four parts, was presented to Messrs. R. H. Smith & Co. by the maker, in 1876.

### 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.*

Mr. Abram Stricker, miller, Elmira, Ont., has gone to California.

Mr. W. Myers, late of the Orillia Foundry, left recently for British Columbia.

Mr. Colin Campbell, of Riverview, lost two fingers while working in Bank's saw mill.

Mr. George H. Lewis, of London South, has been made manager of the Parkhill roller mills.

Mr. D. Crosby, bookkeeper in Cowan & Co.'s foundry, Galt, sailed recently for Scotland, his fatherland.

Mr. William Luke had several fingers badly cut with a circular saw in his factory at Oshawa, the other day.

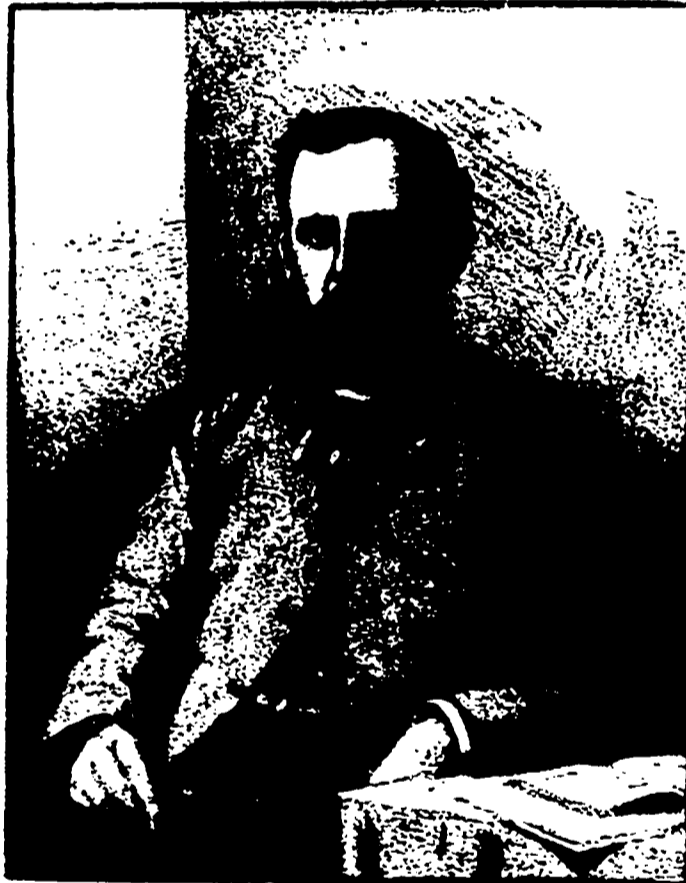
Mr. R. H. Block, a retired lumberman of Aylmer, will contest Ottawa county in the Conservative interest.

Arthur Lane, of Kingsville, Ont., had his arm very badly crushed in Fox & Gordon's saw mill at Romney.

Thomas Flynn, a rolling mill employee of Hamilton, Ont., was seriously burned by a bar of red hot iron falling on him.

Mr. William Shaw had his finger badly jammed while working a shingle machine in Mr. Kidd's saw mill at Warton.

The Belleville *Intelligencer* states that Mr. Joseph B.



L. A. MORRISON.

Weller, grain merchant, of that place, is suffering from serious mental depression.

Mr. James Grose, of Oshawa, recently had two fingers of his right hand badly cut in a shaper at Luke's factory in that town.

Mr. R. H. Marshall, of Waterloo, has been engaged to take charge of Moody & Sons' new flour and grist mill at Dunnville.

Luke Golby, a young man employed in Scott's planing mill at Galt, had the misfortune to lose a finger while working the shaper.

Mr. M. Crydennan, of Belleville, while working a saw in the Dominion Organ and Piano factory, had a finger taken off a short time ago.

Mr. D. Plewes, of the firm of Pennee, Peer & Plewes, commission merchants, of this city, sailed on the 8th of July for Glasgow, Scotland, where he will represent the firm.

Mr. Robert Tinck, of Owen Sound, writes that he has assumed control of the Trent Valley mills at Hastings, Ont. These mills are owned and operated by Fowlds Bros. & Co.

Mr. Emerson Wright, foreman in the Hamilton Bridge Company's foundry, has been granted two months leave of absence and has taken his family to Sacramento, Cal., where his wife has some valuable farming property.

Frank Pratt, painter, while engaged in painting on the corn elevator at Walkerville, Ont., had a fall of over 70 feet. The ladder on which he was standing slipped at

the base and Mr. Pratt fell headlong, receiving injuries from which he died soon after.

Charles Wadell, a moulder in the St. Thomas bronze monument works, while carrying a pot of molten solder, had the misfortune to spill a quantity of the hot metal against his leg. It ran down into his boot and burned the flesh in a most horrible manner.

Mr. Leuzarder, formerly manager of E. P. Allis & Co.'s business in Canada, paid a friendly visit to the office of the MECHANICAL AND MILLING NEWS a few days ago. Mr. Leuzarder looks hale and hearty and reports business in Milwaukee rushing.

Mr. Thomas Montgomery, of Bradford, Ont., was very seriously injured some days ago in the mill there, by a piece of wood being hurled by a saw against his head. An artery was severed, which, had medical aid not been close at hand, would have caused fatal results.

Mr. Samuel Cook, an employee of Messrs. John Mann & Co., Brantford, Ont., met with a severe accident while helping to unload a planer at H. W. Petrie & Co.'s, in that city. While the planer was on a plank it slipped and struck Mr. Cook, cutting his head very severely.

Mr. Martin Hanmore, of Walkerton, met his death in R. Truax & Co.'s saw mill in that place a few days ago. A Mr. Curry let fall a piece of board, which struck the rip saw he was working, and was hurled against Mr. Hanmore with such force as to break three ribs and imbed them in his lungs. From these painful injuries he died.



The firm of Reddick & Snow, founders, Mount Forest, has dissolved.

Heard & Co., manufacturers, of Amherstburg, are about moving to St. Thomas.

Ingersoll voted \$16,000 bonus to the Hault Manufacturing Co., a week or two ago.

The Burns & Robinson Manufacturing Co., of Hamilton, are soon to erect a new factory.

Mr. Allan Graham, of Mount Albert, is building a new woolen factory on the site of the old grist mill.

A fire breaking out in Gagne's foundry, St. Remi, Que., spread through the village and burned about 25 dwellings.

Mr. Staehler, Waterloo, Ont., had three fingers cut off recently, while working a planer in Merner, Killen & Co.'s foundry.

A mill for the manufacture of writing paper, has been erected at Montreal, which claims to be the first of this description in the Dominion.

Messrs. Stevens & Huras, of London, have purchased the plant of the Darvill foundry, and have commenced operations with a full staff of men.

Galt, having failed to induce the Courtland Carriage Co. to locate in that town, propose to form a local company for the manufacture of carriages.

The Washago, Ont., woolen mills have been purchased by the Hutton Woolen Manufacturing Company, of Glenora, Ont., and are undergoing extensive repairs.

Mr. John Harrison and his sons, it is reported, are about to commence the manufacture of pails, tubs, etc., and are to erect a new factory for that purpose at Owen Sound.

The ratepayers of Simons are anxious to have the Alpha Oil Company locate their proposed manufactories within the limits of the corporation, so that the town may get the full benefit of all its works.

A consignment of drilling tools and machinery was recently shipped to South Africa by a Sarnia firm. The government of this far distant land contemplates sinking artesian wells in the waterless districts.

The citizens of Oshawa passed a by-law on the 16th of July by a vote of 392 to 8 in favor of granting a loan of \$15,000 for ten years to E. H. Heaps of Toronto, to operate the late Oshawa Cabinet Company's factory.

A fire in Symmes Bros.' pulp factory, Sherbrooke, Quebec, a few nights ago completely destroyed it, with all its contents. In the factory were S. S. Jukes & Son, machinists, Thompson & Co., bobbin factory, S. Twose, furniture factory, besides Symmes Bros.' pulp factory.

A fire in Hamilton, Ont., on the evening of the 12th of July, started in the furnace of A. M. Forster & Co., brass manufacturers, and getting into the carpenter shop, completely gutted it. The firm had lately put in \$1500 worth of machinery. The loss is about \$2000.

Mitchell will submit a by-law for raising \$20,000 to loan three industries to be started in that town. \$10,000 will go to a large flouring mill, \$7,000 to Mulron & Co. to extend their foundry, and \$3,000 will be given to a Buffalo firm to establish a wholesale carriage factory.

The St. Hyacinthe Manufacturing Company's establishment was destroyed by fire on the 17th of July. The Granite mills, which were near, also caught fire, but were saved. The loss to the St. Hyacinthe Manufacturing Co., is said to be about \$75,000 and about 400 hands are thrown out of work.

# TRADE NOTES

The Toronto Paper Co., of Cornwall, have purchased from Inglis & Hunter, a new 100 h. p. boiler.

Mr. Wm. Ross, miller, of Brussels, Ont., lately purchased from Inglis & Hunter a Silver Creek flour bolt.

The Dental Supply Association, of this city, have purchased a Corliss engine and boiler from Messrs. Inglis & Hunter.

The Gutta Percha and Rubber Mfg Co., of Parkdale, have ordered from Inglis & Hunter, five large rubber presses.

Messrs. Inglis & Hunter are supplying the Rossin House, in this city, with a new steam boiler for heating purposes.

Sills Bros, of Brantford, have placed an order with Inglis & Hunter for rolls and centrifugals to improve the working of their mill.

Messrs Inglis & Hunter have received from the Dominion government, an order for two Corliss engines for the examining warehouse, Toronto.

Chas. Russell, the well-known oatmeal miller, of Uxbridge, has purchased from Messrs. Wm. & J. G. Greey, of Toronto, one No. 1 centrifugal reel, one motion indicator and a brush polishing machine.

Raymer Bros., of Stouffville, have added a new packer to the mill, manufactured by Wm. & J. G. Greey, of Toronto.

May Bros., of Orangeville, have bought from Wm. & J. G. Greey, of Toronto, one of their improved Monarch wheat brush machines.

The Niagara Navigation Co. have ordered from Inglis & Hunter, three new steam boilers for the new iron steamer which they are building at Deseronto.

Inglis & Hunter report orders coming in rapidly for the Cyclone dust collector, and we understand they are making arrangements to manufacture on a large scale.

Mr. Isaac Finley, of Little Britain, has finished the alterations necessitated by a change to 4 roller milling. His machinery was supplied by Wm. & J. Greey, of Toronto.

Messrs. Gardner & Jones, Castleton, Ont., have placed their order with Inglis & Hunter for rolls, Silver Creek bolts, purifiers and all other machinery required to equip a 50 barrel roller mill.

Mr. Peter Inglis is having rolls introduced into his mills at Inglis Falls. The change has been made under the direction of Mr. D. McGillivray, a roller mill expert. The rolls and cleaning machines are from Messrs. Inglis & Hunter, the rest of the work being from Messrs. Kennedy & Sons' shops, Owen Sound.

Messrs. F. W. Fowlds & Co., of Hastings, Ont., have completed their mill on the full roller system and are now running full time. Messrs. Wm. & J. G. Greey, of this city, were the contractors, and we are informed their work gave such satisfaction that Messrs. Fowlds paid for the work in full immediately after test of capacity, etc., was made.

Wm. & J. G. Greey, have sold to Jas. Hortop, of Eden Mills one double set of 9x18 rolls in new style frame and fitted with the new noiseless wood and iron gear. Mr. Hortop has been using gears of this kind for over 18 months on the Greey rolls at Elora with perfect satisfaction.

Messrs. Wm. Kennedy & Sons, of Owen Sound, are busily engaged in the manufacture of a large New American water wheel for Mr. John Crilly's paper mill near Montreal, the water wheels and pumping machinery for the Morrisburg water works, and a number of water wheels and propeller wheels for different points. They are also negotiating with the Penman Manufacturing Co., of Paris, with a view to putting in a new American wheel in this Co.'s No. 2 mill, and making other improvements therein. The specifications for the large Keewatin roller mill call for New American water wheels and the above firm expect to make them, as they control the Canadian market for that turbine.

During the last month Messrs. J. C. Wilson & Co., of Picton, Ont., have placed the following water wheels: One 24 inch Little Giant for Allton Teskey, Appleton, Ont.; one 24 inch Little Giant for Snider & Wisner, Doon, Ont.; one 33 inch Little Giant for Skyes & Ainsley, Glenwilliams, Ont.; two 33 inch Little Giant for Stormont Electric Light Power Co., Cornwall, Ont.; one 24 inch Little Giant for Long Bros., Sherbrooke, Que.; one 33 inch Little Giant for J. H. Lightbody, Belmont, N. S.; one 16 inch Little Giant for James Taylor, Whitevale, Ont.; one 21 inch Little Giant Shirk & Snyder, Brien, Ont.; one 44 inch flume wheel and machinery for the town of Gananoque, Ont. The above firm are having enquiries from all parts of the Dominion for their water wheels, and are now furnishing a 14 inch wheel and all machinery for Woodward Bros., of Lower Nicola, B. C.

## MACHINERY FOR SALE.

**WATER WHEELS.** The following is a list of water wheels for sale by H. W. PETRIE, machine dealer, Brantford, Ont.

**TWO 42 IN. SAMPSON TURBINES.**

**48 IN. TYLER WHEEL,** left hand.

**42 IN. TURBINE,** right hand.

**42 IN. CANADIAN TURBINE,** left hand.

**42 IN. TYLER,** left hand.

**40 IN. DOUBLE TURBINE.**

**30 1/2 IN. LEFFEL,** left hand.

**TWO 33 IN. LEFFELS,** left hand.

**30 IN. TURBINE,** left hand.

**15 IN. GALT ARCHIMEDIAN TURBINE,** right hand.

**13 1/2 IN. LEFFEL,** brass gates, left hand.

**ABOVE WHEELS** are being thoroughly overhauled by a practical builder of water wheels.

**MISCELLANEOUS MACHINERY** for sale by H. W. PETRIE, Brantford, Ont. Send for new No. 11 descriptive catalogue.

**ONE 12. FOOT WIND MILL.**

**ELECTRIC LIGHT DYNAMO** for 2 arc lights.

**CLOVER HULLER AND CLEANER,** Sawyer's make.

**TWO THRASHING MACHINES,** refitted, and one new one.

**POWER MEAT CHOPPER,** 32 in. block.

**CABLE WHEELS** and endless wire rope for transmission of power.

**ONE PATTERSON FEED GRINDER.**

**ONE CORN HUSKER,** Sell's make.

**ONE 50 GALLON OIL TANK.**

**ONE SET OF BUTTER TUR MACHINES.**

**WOOD BOWL MACHINE,** with knives for the various sizes.

**ONE WARD SULKY PLOW,** Cockshutt make.

**CARD OR PAPER CUTTER** for printers or bookbinders.

**SODA WATER APPARATUS,** Tuff's make, Boston, Mass.

**POWER CUTTING BOX,** Maswell's make.

**LEATHER SPLITTER,** heavy machine.

**ONE FRENCH WATER FILTER,** same make as used by the Nile expedition.

**ONE CORN AND COB MILL,** Noyes' make, Buffalo.

**FLOUR TRIERS,** Chicago make, constantly in stock.

**CANNING MACHINERY,** a complete outfit.

**5 HYDRAULIC RAMS** of various capacities.

**1 STEAM ROCK DRILL.**

**5 ROTARY PUMPS,** various sizes.

**TWO BRICK MACHINES** and one tile machine.

**ONE PAIR 52 in. French lath stones,** with curb hopper, spindle, &c.

**WOOD YARD OUTFIT,** power splitter, circular saw, etc.

**ONE PAIR 36 in. lath stones,** with all parts.

**ONE GRAIN CRUSHER,** Maxwell make.

**ONE NIAGARA CORN SHELLER,** Noyes' make, Buffalo, N. Y.

**ONE BURRELL CORN SHELLER,** hand or power.

**TWO AIR PUMPS.**

**30 IN. PORTABLE CHOPPER,** Noyes' make, Buffalo.

**ONE HAND FIRE ENGINE.**

**THREE SETS** of locust machinery.

**FRUIT EVAPORATOR,** several sizes.

**LACE CUTTERS AND LACING,** large stock.

**SPEED INDICATORS,** only \$1 each sent post paid.

**BOILER PURGER.** Try a sample lot.

**TUBE EXPANDERS AND CLEANERS,** all sizes.

**EMERY GRINDERS AND WHEELS,** all sizes.

**WOODWORKING MACHINERY,** surface planers and matchers, Daniels' planers, Shimer matching heads, jig saws, moulding machines, shapers, blind machinery, morticers, mitering machines, turning lathes, handle lathes, sewing machines, loom machines, letting leather, rubber and cotton. Am offering a lot of best quality rubber belt very low at present. Please write for prices before you buy.

**DON'T FORGET** to send for a copy of my No. 11 catalogue. Address H. W. PETRIE, Brantford, Ont.

**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 saw mill engines.

**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 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. K. WHITE, Foxmead P. O., Ont.

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

**AS MILLER—**TO TAKE CHARGE OF STONE Mill—long experience and thoroughly competent to manage mill of any capacity. PETER DAVIDSON, Udera P. O., Ont.

**AS MILLER—**BY A YOUNG MAN OF 4 YEARS experience with rolls and stones. Temperate and not afraid of work. Single, and can go anywhere. Wages moderate. Address, J. D., Box 237, Paris, Ont.

**WANTED BY MAN OF EXPERIENCE,** A position as head miller. Able to take charge of mill of any capacity, either rolls or stone. The best of references furnished on application to "MILLER," Galt, Ont.

### STEAM USERS!

Have you scale in your boilers?

Send for Circulars or order a Box of Parger from the **EXCELSIOR BOILER PURGER CO.,**

18 Wellington St. East, TORONTO.

Highest recommendation from the Inspector of Boilers and others.

**SEALS STENCILS RUBBER STAMPS**  
**H. BARNARD**  
Flour Barrel Stencil Brands a Specialty.

## Queen City Oil Works.



## PEERLESS OILS

ARE THE **BEST IN THE MARKET.**

MADE ONLY BY **SAMUEL ROGERS & CO.** 30 Front St., Toronto.

ALSO HEADQUARTERS FOR ALL KINDS OF ILLUMINATING OILS, CANADIAN AND AMERICAN.



## TIMBER AND LAND SALE.

**CERTAIN LOTS** and the timber thereon situate in the Townships of Allan, Assiniboia, Ridwell, Fillings, Carnarvon, Campbell, Howland, Shaguanadah, Terkum mah and Mills on the Manitowlin 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 Mani-towaning.

Terms of Sale.—Bids for timber payable in cash price of land payable in cash, a license fee also payable in cash and does 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 conditions of settlement. At the same time and place the Merchable Timber of not less than nine inches in diameter at the butt, on the Spanish River Reserve and French River lower Reserve, will be offered for sale for a cash bonus and annual ground rent of \$1.00 per square mile, and does to be paid on the timber as cut, according to Tariff of this Department.

For full particulars please apply to Jas. C. Fitzg., 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, Ottawa, 2nd June, 1887.

### Boadry's Upright Cushioned

## POWER HAMMER

Simple, Practical, Low-priced, Entirely New Design.

—SEND FOR PRICES— **MILLER BROS. & MITCHELL,** (Sole Agents for Canada) - MONTREAL.



**D. S. BARGLAY.** Office Stationery & Specialty 39 Colborne St. TORONTO

[FOR THE MECHANICAL AND MILLING NEWS.]

**SAMMY MUNCHAUSEN GILES.**

THE CHAMPION LIAR OF OUR TOWNSHIP GIVES AN ACCOUNT OF HIS VISIT TO TORONTO'S BIG FAIR.

By J. W. BENGOUGH.

WHILE up at the corner store the other evening with a lot of the boys, who should come along but Sammy Giles, who is known around the village as the "champion liar." We knew that if we gave him half a chance we would be sure to hear some of his remarkable yarns, drawn out in his remarkable style. Now, I've been studying shorthand for a spell, and I always carry a note-book with me. So it struck me that it would be a good scheme to get Sammy started on some thing or other, and then take down a full report of what he said for the sake of the practice. His speech is so slow and deliberate that I knew I could do it all right, so when he came up and began to join in the conversation, I gave the wink to the other fellows and says I: "By the way, Sammy, are you going to take in the big fair at Toronto in September? You were there last year, I understand."

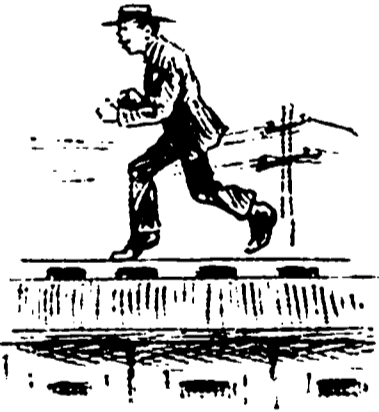
"Yes, I was there last year," he responded—and I could see by the expression of his eye that we were in for one of his best—"and that's jist the reason that I don't intend to go this year."

"Why, how's that?" asked Jimmy Slocum, the Deacon's son, and before Sammy had got his answer in shape, I had my note book and pencil all ready.

"Well," resumed Sammy; "I generally know when I've had enough of a good thing, and I got enough of the big fair that time to last me for a long while. Fact is, I come pretty near gittin' killed several times, and besides I ain't got any money to spare this year. But I've told you all about that little jaunt before, haven't I?"

Everybody protested that the account would be a complete novelty, and thus encouraged Sammy at once set off:

"Well, to commence at the beginning, I got down to the station at Copetown and caught the 8.40 train that morning, and started for Toronto. I was just a little bit late, and didn't have time to buy a ticket, so I made up my mind to ride free as far as Hamilton anyhow, and I did it. I'll bet none of you fellows would ever guess just how I managed that, so I'll tell you. I took a seat in the back part of the car, and when the conductor came in the front door I slipped out of the back one and shinned it up on to the roof. Then I walked along and



got down on the next platform and took a seat in the other car. Of course, the conductor never knew any difference, as he had been through and punched all the tickets there. It was a mighty risky thing to do, though, as I remember. Just when I got about half way across the top of the car, the train went under a bridge and the blamed thing caught me an awful crack on the side of the head. It pretty near knocked me over, but no harm was done, excepting to the bridge. I saw a couple of big stones tumble out of the place as the train passed along, and there was a slight lump over my ear all that day. Well, now, I don't know how I came to forget, but I did forget that the conductor would come around again before we got to Hamilton. Of course he came. He started to take up all the Hamilton tickets and to look at all the others, and he had got within three seats of me before I noticed him. What was I to do? I couldn't get out, and there wasn't room to hide under the seat, but I was determined not to be fooled out of my free ride anyhow. So what does I do but climbs gently out of the window and hangs on to the window sill till the old duffer had passed on to the next car. You would hardly believe it, but he never noticed me a particle."

"Weren't the other passengers surprised?" asked the postmaster, who had joined the party a few minutes before.

"They would have been if they had seen me do it, I guess," drawled Sammy, "but they didn't happen to be

looking. So nothing further happened till we got to Hamilton, and there I changed cars for Toronto, but before getting on board I bought a ticket this time. There was a lot of people on board, as there generally is fair time, and I sot down in a seat beside a slick-looking gentleman who looked as though he was a Methodist preacher from the States somewheres. There were two other chaps on the seat facing us, both of 'em pretty smart looking fellers, but they didn't appear to be acquainted with the preachery looking one. Pretty soon after we got started the man along side of me said it was a fine day, and I said so it was. Then he asked me where I was from and if I was going to the fair. This led to a nice friendly chat, and after a while he said it was sort of lonesome, and we'd ought to have some amusement. With that he pulled out some cards, and asked me if I could play euchre. I told him I couldn't as I hadn't never learned. Then he says, "that's too bad, but if you can't play any game, maybe you're pretty good on the guess." I said I guessed I was. So he took three little cards and shuffled 'em round and laid 'em face down on a book he had there and said he would bet me five dollars I couldn't pick up the one he called the ace. I asked him which was the ace and so he showed it to me. Then he shuffled 'em over again, and



one of the chaps in front said he would take the bet. The preachery feller said all right, and the other one picked up the ace first thing and got his five dollars. Then he offered to give me a chance and I took it. I picked up the ace too, and got my five. He asked me if I would try it again and I said course I would. Well, to cut it short, we went on with this game all the way to Parkdale and I won every time, and we only stopped playing because the preacher chap had no more money left. I kept count of what I won, and it mounted to \$1,255 which wasn't so bad, was it? I always was pretty good on the guess. When I got to Toronto I felt pretty spry with my pocket full of money and the feller that started the game felt just the other way I should think, judging by his looks. But I tell you he looked a sight more surprised when a policemen came up and nabbed him as soon as he had stepped on the platform. "What has he arrested him for?" says I, to another policeman who was standing by. "Don't you know who that is?" says he. I said I didn't. "Well, sir," says the policeman, "that's Canada Bill, the smartest three-card monte sharper in the world." "Oh, is that so?" says I; and I passed on. Just as I was leaving the station, I met a nice looking man, who asked me if I could show him the way to Howland & Company's. I said I couldn't as I was a stranger. "That's too bad" says he, "I'm in a heap of trouble." "What's up?" says I. Before he could tell me another man—a very respectable looking person—came up. "Now look here," says he to the troubled young man, "if you don't get that freight out of bond right away, you'll lose the whole thing." "Just what I was afraid of," says the young feller to me. "I've got some freight to remove, and I haven't got anything in the shape of money except this cheque. Could you oblige me with the amount, and I'll leave the cheque with you as security." "How much money do you need?" says I. "Twenty dollars," says the elderly man. "And how much is the cheque good for?" says I. "Thirty-five dollars" says the young man, showing it to me. "Why," says I, "you must be queer sort of business men. Why don't you go up to the bank and cash the cheque and save the difference? It would be a mean trick of me to take thirty-five dollars in exchange for twenty, and I won't stoop to do such a thing." With that I walked off to look for a hotel. There's a lot of men in Toronto who don't know anything about business. The landlord of the hotel I went to must have been one of that kind, too, as he wanted to charge me \$5 a day to stop at his place. I says, no sircce, and I walks out. But I found it was just the same everywhere else,—it always is high you know in show time. Well what do you 'spose I did? I went and rented a house for sixteen dollars a month, and then sub-let part of it for twelve, and so I got all the sleeping 'commodation I wanted all the while I was

there for jist \$4. You don't fool me very much when I'm away from home. But I ain't got to the fair yet, have I? Well, I was jist comin' to that. The fust day I went up the grounds I took the boat for it. There was a big crowd on board and the sea was very rough, but we got there all right. Nothing happened worth mentioning on the trip except that a fat woman with a baby fell overboard and I jumped in after 'em and saved 'em."

"But you can't swim," interrupted one of the party.

"I know I can't and I didn't have to. The woman was so fat she couldn't sink, so I just sot the baby on her and then I took hold of her dress and we floated along like that till they picked us up with a boat. They raised a subscription of a thousand dollars and offered it to me as a reward for my bravery, but I wouldn't take it. I had my pockets full of apples and peanuts and didn't have room to carry it. Besides it was mostly in silver and I hate going around with such heavy stuff about me on a warm day.

The fust thing I did when I got to the grounds, I went to the main building, but I can't begin to remember all the sights there. The organ was playing up stairs and sixteen pianos were going ahead with different tunes on the ground floor, the big fountain was splashing away in the centre, and a tremendous gang of people were shuffling past each other in every direction and all talking as loud as they could. I tell you it looked like business. As I was pushing my way through, I saw a lot of fine silverware on exhibition, and near by there was a card with "please take one" printed on it. Of course I did it. I picked out a first-class silver pitcher and was walking off with it, when the man behind the counter shouted for the police, and pretty soon I was grabbed and fetched back. I had to give up the pitcher, as the feller explained to me that the "Take one" referred to the small bills that were hanging there. I told him it was all right, as I didn't want the pitcher and only took it to oblige him. But talking about bills, I never saw so many cards and bills and circ'lars in my life as there was all over that place. Every turn I gave somebody handed me a card or a bill, and I took 'em, every time. I noticed most of the folks threwed 'em down, but I ain't a fool where I see money in a thing. I kept all that was given to me and along toward evening I went and sold out the whole stock to a rag-warehouse man for \$15 cash.

I tell you there was some awful fine pianos there. They've got 'em down so fine now that anybody can play 'em. I know it, 'cause one feller asked me to try it, and though I never touched a piano before, I knocked off "Sweet Violets" the prettiest you ever heard. After I got through down stairs I thought I'd go and take a look at the stuff on the upper flats, but the stairs and passage ways was all so crowded that I couldn't squeeze my way through no how. But I got there all the same."

"How?" queried the postmaster.

"Why, I jest clumb up a big feller who happened to be nigh me, and then I stepped from his shoulders onto another feller's head, and then walked from head to head right along. In this way I travelled all around the room and saw all there was to see."

"Didn't the folks object?" enquired somebody.

"O, they didn't know anything about it. I stepped awful light. I pretty nigh got hurt, just after this. I



went to see the machine that runs the light all over the place—what they call the electric machine. There was a card on it sayin, "hands off," and I says to the man says I, "What do you 'spose would happen if I shouldn't keep my hands off?" Well, says he, you'd jist better try it. I didn't wait for another invitation, but took right hold of a sort of handle that was there. Well, sir, I never felt anything like it 'cepting a glass of 'Pollyanna water I once had. It was jist like your foot's asleep, but more so—and I tell you it sent me flyin'. When I woke up I found myself in the hoas ring, and the folks told me they had been scared half to death seem' me a-flyin' through the air over the top of the electric tower like a crow. It was a fearful yank, you'd best believe. Well, bein' in the hoas ring, I thought I'd stay there and see



the fun. There was races and circus business of all kinds—pretty good it was too. One boss trotted a mile 2:05—I know it, 'cause I went by my own watch. Well I seen everything there was to be seen at the fair, but I got home without payin' a cent and I didn't come by the cars, neither."

"Why, how did you come—walk?" suggested Mr. Jimpkins.

"No; baloon. There was a baloon ascension at the fair, and the Professor dared anybody to go up with him. I took the stump right straight, and clum into the basket. They let go the ropes and away we shied. The hull fair grounds and crowd sunk right into the earth—that's what it looked like. We went so high I could hear the folks talkin' on one of the highest stars, and then the wind struck us and we went kitln in another direction—'bout west the Professor said it was. We'd been sailing long most an hour, when the gas bag of the machine busted, and the Professor said we were goin down to the ground likety brindle. Well, we did. And where do you 'spose we lighted? right in our barnyard! Yes, sir, there was the house and all—no mistake about it. I thanked the Professor for fetchin me safe home, and bid him good-day. Then I went in the house and laid down."

"Yes," commented the postmaster, "and you're lyin' yet."

**A NOVEL CUT-OFF SAW.**

By E. B. CHKSTER.

As many of the readers of the MECHANICAL AND MILLING NEWS are engaged in the manufacture of boxes, either for the boxing of their own goods or supplying others as a business, they doubtless will be interested in a novel cross-cut saw for cutting up their lumber. It is quite possible that some of your readers have seen this same outfit before, and are so familiar with the principle that its uniqueness has become trite. Others, we dare say, have not, and it is for the benefit of these that we enter into a detailed description of this novel cut-off saw. It is home-made and requires no expert workman in its construction. Nearly the entire outfit is of wood. The writer is not engaged in selling machinery of any kind, neither has he a commission, but he simply desires to give the reader the benefit of a time-proved novelty that has been demonstrated to him as a saving over the ordinary cross-cut saw used for this purpose. If many of the readers of the MECHANICAL AND MILLING NEWS would bring before the wood fraternity some of their little "kinks" and "wrinkles" from time to time, as they can find the opportunity to describe them, it would be of incalculable service to them. There never was a more erroneous and foolish idea than that advanced by the few of to-day, that in exchanging ideas, "kinks," or "wrinkles," that they have invented or blundered into, they are losing a part of their capital or stock in trade. Their principle seems to be to "get all I can and keep all I've got." It is the exchange of ideas, of practical experiences, that enlarges our views, sets us thinking and increases our own knowledge. It's a poor mechanic who can not be benefitted by exchanging ideas as much as, or more than, he may damage his own personal interests temporarily by this dissemination.

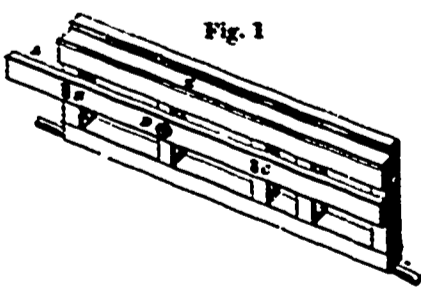
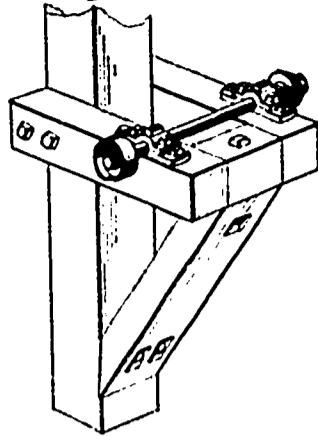


Fig. 1 represents the frame of the cross-cut. It is an upright or perpendicular frame, made of 4x5 inch timber, secured at the bottom with a rod running the entire length, upon which the frame or carriage swings to and fro upon the bearings. Our illustration shows the front side of the carriage. It is desirable to build this frame 10 feet long if room can be spared for it. A represents an inch and a half piece six or eight inches wide, with a slot cut at B and C so that it can readily be adjusted to cut the board with any angle or bevel, by raising or lowering this piece above or below the level line, it being bolted or lagged at D, thus forming a pivot at or near the center. It can be seen that if the frame is built just 10 feet long and it is desired to give the pieces a certain bevel, it can be adjusted with much less trouble, it being much easier calculated. The board is held edgewise upon this piece A and shoved against a stop of some kind secured to the table or frame. The saw is independent of the frame. It need not have a frame of its own, as the mandrel or yoke can be fastened to the side of

any solid frame or lathe so that it is not in the way. A very good and cheap way is to secure it to a post if con-

Fig. 2



venient, as seen in Fig. 2, so that the belt is drawn from the back side or a perpendicular, that is not in the way of the board as it rests upon the piece A of the carriage. It requires two to operate this saw to any advantage. One stands in front of the carriage, holds the board and shoves it endwise, while the other stands back of the carriage nearly opposite the saw, shoves or swings the carriage forward, pulling it back with the same hand while with the other removes the piece sawed off.

The principal advantage of this method is that it cuts the board from the side, or edgewise, making a much cleaner, smoother cut, avoiding the feather edge that is so often left when sawed in the ordinary manner through the thin way of the board. The time saved by cutting off a board can be better appreciated by taking a 16-inch board for illustration. The carriage need not swing over 4-inch to cut the board in two, just enough to allow for the circle of the saw, while with the other style of cross-cut the carriage must be pushed at least 18 inches to do the same work. Still another advantage of this method or style of cut-off is the ease with which the board is moved to and from the saw, and especially in the case of the return movement of the carriage, which does not require over one quarter the strength or time of the slide table. Two men, or one man and a boy, can cut at least six times the amount of lumber into lengths of 12 to 30 inches that one man could saw in the same length of time with the ordinary cross-cut, using a carriage with rollers working horizontally. With this outfit it is but a moment of time and the carriage is removed so as to clear the saw after sawing the board off, and the man in front of the carriage moves the board endwise, so that by the time the second man really gets the carriage back into position, it is ready for him to repeat the operation. There is no small amount of time saved in this way of cutting the lumber edgewise.

For narrow lumber, or for heavy, thick and square material, there is a suited place provided upon the top, E, of the carriage, which makes it more convenient than to handle it as thin lumber is handled. The saw should be put so that the under side of the saw projects but two or three inches below the piece marked A. For this purpose a 22-inch or 24-inch saw is preferable. With a 24-inch saw, 20-inch and even 22-inch boards can be cut off with ease. There is no need of any great expense in putting up a rig of this kind. It requires just one piece of 4-inch by 5-inch for the bottom sill, and about five uprights, one piece of hard wood 1-inch by 6-inch, and on top of that a piece 1 inch or 1 1/2 inch; then on a piece perpendicular 3/4 inch by 6-inch or 8-inch, together with the 1 1/2-inch piece A will complete the whole outfit. The rod can be screwed on or secured with several small staples. The ends are held in wooden boxes of sufficient height from the floor to allow the carriage to vibrate and clear itself. There should be one or two uprights to keep the carriage from falling backwards. It can only go so far forward by resting upon the saw frame or whatever the saw may be attached to. For a wooden frame and one entailing but little expense, we know of nothing that equals this outfit. It could be built of iron, or the frame at least, if desired, at an expense not far from that which the ordinary iron saw frame costs.

**A CASE OF SPONTANEOUS COMBUSTION.**

Shavings from the oiled wood used in the manufacture of planes at the Gage Tool Company's Works were put into a barrel on Thursday afternoon and twenty-four hours later were found to be almost on fire, their temperature being over three hundred degrees Fahrenheit. Before six o'clock the shavings were charred and smoking a few inches beneath the surface. This is a practical demonstration of spontaneous combustion, and illustrates how many mysterious and destructive fires may have originated in this way. Oiled rags and waste will operate in the same manner.—Vancouver Evening Journal.

**BAND SAW TEETH.**

In an article on the band saw in an English journal, M. Powis Bale, M. E., an eminent authority on wood-working tools, says the proper shape and pitch of the teeth is a matter of great moment in the successful working of band saws. Should teeth be used unsuited to the wood being cut, a largely increased friction on the blade is set up, the teeth are rapidly dulled or broken, and the work turned out is inferior. For sawing all ordinary woods of the Pinus family, ordinary hand-saw teeth are suitable, except for pitch pine; for working this wood coarsely spaced and set teeth are suitable. We can recommend for durability, saws with gullet teeth, that is, rounded at the root, as they are less liable to fracture than saws with the roots running at an angle, as the fracture in the blade is found almost invariably to commence at the point of this angle. Owing, however, to small gullet teeth being more troublesome to sharpen, the hand-saw teeth are now largely employed. For sawing oak, ash, elm, and hardwoods generally, more teeth, or points, say five or six to the inch, should be used, and these filed further back. For heavy sawing peg teeth with round gullets are to be preferred. For woods of woolly fiber, such as English poplar, saws with deep teeth should be used, with coarse space, and set to allow an easy clearance for the sawdust and overcome its clinging properties. Saws of a width suited to the work should be employed, and wide saws should never be twisted around sharp curves, or they will rapidly buckle and run out of truth. For straight work a wider saw may be used with advantage.

Care must be taken that the saw teeth are uniformly set and sharpened. Uneven and improper setting causes a considerable amount of tension to the saw blade, increased friction crystallizing the steel, and consequent breakage. The teeth of band saws should by preference be set by light, carefully given blows, instead of bending, which, unless very carefully performed, is more liable to buckle the blades and prevent them running true. Several little machines are now made by which saws can be accurately set to any desired coarseness by a blow similar to that given by a bending pressure. A band saw sharpening machine has also been constructed, which automatically sharpens all the teeth alike. By improving the quality of the work, and reducing the friction on and consequent breakage of the saw blades, these machines should very rapidly earn their first cost.

The speed at which the saw blade travels has much to do with its cutting efficiency. Saws running on small wheels, say below three feet diameter, can not be run with safety so fast as on larger wheels. Speaking generally, saw blades working on wheels up to three feet diameter, can be run up to 4,500 feet per minute, for soft and medium woods, that is, presupposing a well constructed machine to be used. For sawing hardwoods up to 3,500 feet per minute, with saw wheels above three feet diameter, these speeds may be increased.

We need hardly say a bad workman will break any amount of saws by forcing them, bending them edgewise, using dull saws, or saws too wide or stout for the work. If in working, a properly sharpened and set blade should have a tendency to bind, it probably arises from insufficiency of throat room in the teeth. It would be well, therefore, to try a saw with the teeth set a little further apart; this will not cut quite so fast, but the sawdust will have time to escape, and the binding should be done away with.

In concluding our remarks on working band saws, there is little doubt that—given in the first instances a well-constructed machine, a careful operator, and a saw-blade uniform in gauge, width, toothing, sharpening, setting and temper—a band-sawing machine is one of the most money-earning and valuable of all wood-working machines, not only for the ordinary curved work, for which it is generally used, but for breaking down heavy logs, upon which we may have something to say at a future time.

**REVERSE MOTION WITHOUT CROSSED BELTS.**

Machinery users, who wish to obtain a reverse motion without crossing belts, will note with interest the following diagram offering a solution of the problem. It is the work of a mechanic and the diagram explains itself so well that no explanation is necessary. Doubtless the plan would answer in many cases. Crossed belts of course wear out rapidly, and the arrangement shown does away with the crossing and leaves the belt always straight. The author of the diagram claims that by it means the reverse motion may be economically and satisfactorily utilized.



PUBLISHED MONTHLY,

BY

CHAS. H. MORTIMER,

Office, 31 King Street West,

TORONTO, - - ONTARIO.

#### ADVERTISEMENTS.

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

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

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

#### SUBSCRIPTIONS.

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

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

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

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

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

#### EDITOR'S ANNOUNCEMENTS.

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

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

A COMMUNICATION from Mr. W. D. Cook, of the Wolseley Mill and Elevator Co., Wolseley, N. W. T., reached us too late for insertion in this number. It will appear next month. Several other interesting articles are unavoidably held over for want of space.

THE Factories' Act which was passed two sessions ago by the Ontario Legislature, has been little more than a dead letter, since there was no effort made to enforce it. At last, however, Mr. Rocque, of Ottawa, Mr. Brown, of Oshawa, and Mr. Barber, of Toronto, have been appointed for that purpose.

A ROMAN CATHOLIC priest named Father Paradis, is charged by Gilmour & Co., the well-known Ottawa lumbermen, with having effaced the brands from their logs, and after substituting the brand of another party, sold them. The priest is also charged with forgery by an employee of Gilmour & Co. Both charges will be investigated in the Courts, shortly.

THE Dominion Government, by imposing an export duty on elm logs of \$1 per 1,000 feet, has greatly inconvenienced the stave and barrel manufacturers in Detroit and the United States generally, who are chiefly dependant on Canada for their timber. The removal of some of these manufacturers to Canada will probably be the result of the change of tariff.

WE have lately seen a card distributed by the publishers of the Toronto *Mail*, one side of which contains an earnest solicitation to heads of families to insert all notices of births, marriages and deaths in the *Mail* at 50 cents apiece, while on the other side is set forth the new platform which the journal in question lately erected for itself. There are two things about this card which, in view of the *Mail's* present position on the Commercial Union question, strike us as being peculiarly inconsistent. One is the plank in its platform of principles entitled "Protection to Native Industry," and the other its expectation of an increased revenue from the publication of births, marriages and deaths. It seems to us that the *Mail's* pet hobby—Commercial Union—if carried out,

would be certain to remove all protection from native industry, while the flow of population out of Canada and into the United States resulting from the closing up of many of our manufactories would lessen the number of births, marriages and deaths in the Dominion, and to that extent would lessen the number of 50 cent pieces which the *Mail* is seeking to direct into the pockets of its owners. If it desires to protect native industry and reap a harvest of half-dollars, it must pitch over its Wiman-Butterworth notions.

PREPARATIONS are being made to illuminate the principal streets of Toronto at night while the Dominion and Industrial Exhibition is in progress, and otherwise to make the city as attractive and interesting as possible to visitors. The Exhibition will certainly be far in advance of anything of the kind heretofore seen in Canada. Accommodation is being provided by the City Council for all who wish to come.

MESSRS. William Kennedy & Sons, whose advertisement appears in our columns for the first time this issue, in a letter to us say: "We like your paper very much, it appears to deal with things in a moderate and practical manner. We wish you every success in your enterprise." Frequently letters of this kind come to us full of commendation and encouragement for us in our effort to make the DOMINION MECHANICAL AND MILLING NEWS one of the best journals of its class on the continent.

IN the interest of the general public our legislators will have to grapple with the question of providing means for the adjustment of disputes between employers and employees. The carpenters' strike, which has been existing for many weeks in this city, and seems as far from being settled as ever, serves to illustrate the hardships which such disputes bring upon the strikers and their families as well as upon the business community. It is stated that not less than \$4,000,000 has been withdrawn from circulation as the result of this strike. We want a law that shall compel the settlement of such disputes by arbitration.

IN presenting this Special Number of the MECHANICAL AND MILLING NEWS to the public, we do so with the full consciousness that it is not free from defects. On the other hand, we trust the readers of it may find something in its pages to interest, instruct, and perhaps to admire. To the friends who have contributed so largely to its success, we extend our hearty thanks. Those to whom this paper may come who are no regular subscribers, are invited to become such. The investment of one dollar a year in reading matter pertaining to the practical details of your business, cannot well prove unremunerative.

THE manufacturer who makes it a point to read everything bearing upon his business that comes under his notice, and who appropriates and puts into practice new and improved appliances and methods that the experience of one and another is constantly giving to the public, is the man who is least affected by the waves of depression which periodically seem to overtake almost every branch of industry. Few manufacturers have been working at so great disadvantage in Canada lately as the millers. On every side the statement is made: "There's no money in the business!" And yet, the other day we came across a young firm who told us that last year they doubled their capital and are making money rapidly. They sell their flour faster than they can make it. How is the difference between their experience and that of so many others in the same line of manufacture to be accounted for? Not by any advantages in the way of location. True, they run by water power, but so also do hundreds of millers who complain that they can't make any money. In our opinion the difference in results is largely due to the fact that the manager of the firm alluded to is thoroughly master of the situation—watches closely the operation of his mill and sees that his profits are not leaking away through defective machinery, wrong methods or want of attention on the part of employees in operating the same; knows something about millwrighting as well as about milling; is not too conservative or too indifferent to test the economical value of new ideas; and last but not least, watches with vigilant eye the rise and fall and probable tendency of the markets. In times of depression in any line of manufacture, the difference between making money and losing money frequently consists in the amount of intelligence and careful persistent attention which men are willing to bestow upon their business.

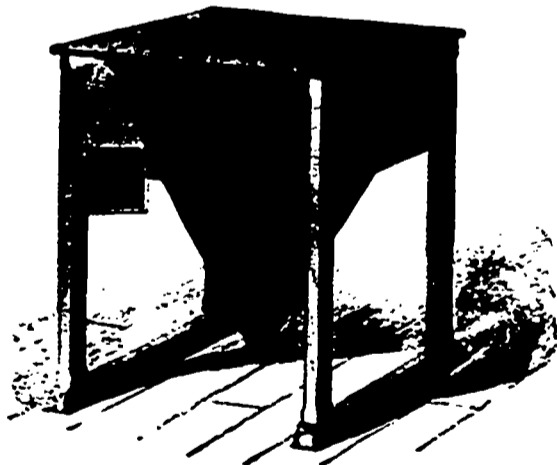
MANY manufacturing firms whose advertisements will hereafter appear regularly in the columns of the

MECHANICAL AND MILLING NEWS, make their first announcements in this issue. Among such are Messrs. Paxton, Tate & Co., manufacturers of grinding mills, water wheels, etc., Port Perry, Ont.; Dobson & Campbell, makers of the Dobson patent flour bolt, Beaverton, Ont.; J. W. Herman, manufacturer of patent boiler water purifiers, Toronto; Wm. Kennedy & Sons, water wheel manufacturers, Owen Sound, Ont.; R. H. Smith & Co., saw manufacturers, St. Catharines, Ont.; H. Barnard, manufacturer of stencils, rubber stamps, etc., Hamilton, Ont.; D. L. Barclay, engraver, Toronto; Samuel Rogers & Co., oil manufacturers, Toronto; J. F. Walmsley, manufacturer of improved lathe chucks, Woodstock, Ontario. In addition to the above, the following new advertisers occupy space in this special number: Messrs. John Bertram & Sons, manufacturers of machine tools, Dundas, Ont.; the Gutta Percha and Rubber Mfg. Co., manufacturers of rubber belting, packing, etc., Toronto; L. B. Montgomery, dealer in mill, engineers' and steamfitters' supplies, Toronto; the Canadian Rubber Company, manufacturers of rubber belting and rubber goods of all kinds, Toronto; James Morrison, agent for the Safford extension boiler and manufacturer of plumbers' engineers' and steamfitters' supplies, Toronto; McLaughlin & Moore, manufacturers of fine brands of bakers' and family flour, Toronto; W. P. Howland & Co., Pennee & Peer and J. F. McLaughlin & Bro., flour and grain commission merchants, Toronto. Among the firms well known to readers of this journal who occupy enlarged spaces in this number, are the Geo. T. Smith Co., Stratford, and Wm. & J. G. Greey, Toronto, manufacturers of flour mill machinery; the London Machine Tool Co., London, Ont.; W. Stahlschmidt & Co., manufacturers of office and school furniture, Preston, Ont. Mr. James Jones, of Thorold, in a new advertisement calls attention to his "short system" mill machinery. One and all of the above announcements will repay perusal, and our readers are invited to correspond with the firms mentioned for particulars and prices of their goods.

#### THE CYCLONE DUST COLLECTOR.

IN view of the fact that the Cyclone Dust Collector is now to be manufactured in Canada by Messrs. Inglis & Hunter, of this city, a brief description of the machine which is new to most Canadian mill men, may prove of interest. The "Cyclone" which has attained wide popularity in the United States, is intended to get rid of the dust in flour mills, planing mills, and such like manufactories, where dust is a natural result of the operation of the machinery.

No cloth is used on this machine which is not designed to strain the air, but allow it a free, unobstructed passage from the purifier, sand-papery or other machine



as the case may be, and collect the dust as it passes through the machine. The dust-laden air enters the machine through the inlet spout, and being driven by the purifier or other fan, is forced against the surface of the cone. As the particles of dust all tend to move in straight lines, they at once seek the surface, and then by the action of the air currents, are swept around the cone, gradually reaching the opening at the bottom, and then pass out into any receptacle. The air after being relieved of the dust, escapes at the top of the machine. There are no moving parts to this collector, and it is only necessary to spout it from the machine of which it is to take the dust.

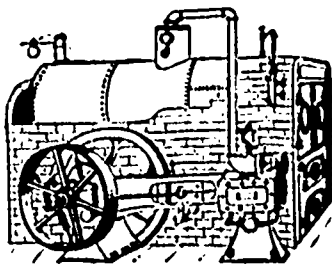
Any further particulars concerning this machine may be obtained by addressing the Canadian manufacturers Messrs. Inglis & Hunter, Toronto.

THE Excelsior Boiler Purger Co., whose advertisement appears on another page, show very flattering testimonials to the excellence of their compound. Persons desiring to keep their boilers free from scale would do well to communicate with them.



### E. LEONARD & SONS

EXCLUSIVELY MANUFACTURING



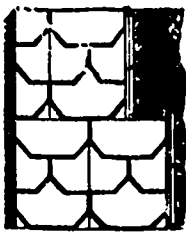
### ENGINES AND BOILERS

Leonard-Bull 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.

...MONTROSS PATENT...

### Metallic Shingles and Siding



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

METALLIC ROOFING CO. 82 1/2 YONGE ST., TORONTO.



### WM. LANE, Steel Letter Cutter, Die Sinker and Engraver.

STEEL, BRASS AND RUBBER STAMPS, BURNING BRANDS, SEALS, HAT-TIP DIES, BOOKBINDERS HAND AND PRESS STAMPS, THE BEST IN THE DOMINION. 443 Craig St., Cor. Murray, MONTREAL.

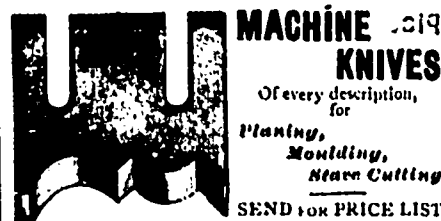
### B. GREENING & CO. Wire Manufacturers

Metal Perforators, VICTORIA WIRE MILLS, HAMILTON, ONT.

Send for Catalogue, mentioning your requirements.

### ELEVATORS

SHAVINGS AND SAWDUST PRACTICAL FOR PRACTICAL BY A PRACTICAL. Book FOR MEN BY A MAN. Treats 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, Steam Cutting SEND FOR PRICE LIST

### COX & CO., STOCK BROKERS.

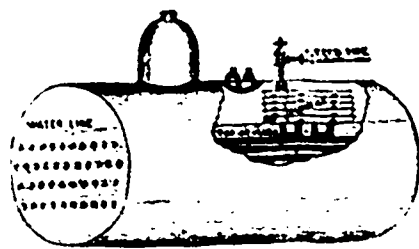
Members Toronto Stock Exchange Have the only Independent Direct Wire giving continuous New York Stock Quotations and which are received QUICKER THAN BY ANY OTHER LINE.

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.

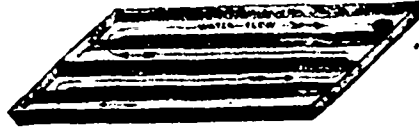
26 TORONTO ST., TORONTO.

### PATENT BOILER WATER PURIFIER.

No Purger Used! Heat alone does it!



SHOWING POSITION OF PURIFIER IN BOILER.



SHOWING ONE OF THE PANS OF PURIFIER. FOR CIRCULARS WITH REFERENCES, PARTICULARS AND PRICES, ADDRESS

THIS PURIFIER ENTIRELY PREVENTS THE FORMATION OF SCALE UPON SHELL AND FLUES OF ANY BOILER IN WHICH IT IS USED. ALL IMPURITIES ARE EXTRACTED FROM THE WATER BEFORE IT REACHES THE WATER LINE, AND ARE DEPOSITED IN THE PANS OF THE PURIFIER.

THESE PANS CAN BE REMOVED, CLEANED AND REPLACED WITH VERY LITTLE TROUBLE, AND IN A VERY SHORT TIME, WITHOUT EMPTYING THE BOILER OF HOT WATER, WHICH MEANS A SAVING OF TIME, LABOR AND FUEL.

J. W. HERMAN, 114 1/2 KING ST. WEST, TORONTO, ONT.

### FINE WOOD ENGRAVING

VIEWS, MACHINERY, PORTRAITS.

Star Engraving Co. 17 ADELAIDE ST. E. TORONTO.



### Montreal Saw Works,

CHAS. M. WHITLAW, Manager, COMPLETE STOCK OF Leather Belting, Lace Leather, Gummers, Cutters, Saw Sets, Rubber Belting, Emery Wheels, Swages and Files. General Mill Supplies, ALWAYS ON HAND. MANUFACTURERS OF CIRCULAR, GANG, PIT, ICE, CROSS-CUT, ONE-MAN CROSS-CUT AND BILLETT WHEEL

SAWS TAPER CROWN SHINGLE SAWS A SPECIALTY. No. 452 St. Paul St. - Montreal.

### W. STAHLSCHMIDT & CO.



MANUFACTURERS OF OFFICE, SCHOOL, CHURCH AND LODGE

FURNITURE PRESTON, - ONT.

SEND FOR DESCRIPTIVE CATALOGUE AND PRICE LIST.



ROTARY OFFICE DESK—No. 51.

To Mill Owners and Manufacturers.

USE

### Phoenix :- Belt :- Oil,

THE ONLY PERFECT BELT DRESSING.

TO BE HAD ONLY OF

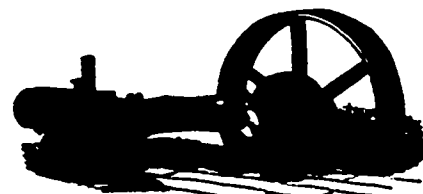
F. E. DIXON & CO, MANUFACTURERS OF

### 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. WHITELAW,

Oxford Foundry - Woodstock, Ont.

[For the MECHANICAL AND MILLING NEWS.]

**ENGINEERING REMINISCENCES.**

By GEO. C. ROBB, TORONTO.

**M**ISTAKES have much to do with our education, and the chief advantage of indulging in reminiscences of any kind is that we may see where mistakes were made, and so be able to avoid them in the future. The man who never makes mistakes is not likely to grow in wisdom, and he who made no mistakes when young will be very apt to make them when he is old. Experience is the great teacher of wise men as well as of fools, with this difference, however, that the wise man learns from the experience of others, while the fool can only be taught by his own. If the reminiscences of mill engineering here recorded be read and appreciated by the wise readers, who learn from the mistakes of others, the writer will be quite willing to be classed among those who learned by their own.

In all branches of engineering, experience is essential to success, and yet in no other calling or profession has there been so much of stepping out into the unknown, and going beyond, not merely the experience, but the very dreams of former days. This would never have been done had it not been for the solid foundations laid by past experience upon which new projects and new ideas have been built into solid practical realities.

Every one who would succeed as an engineer should endeavor to become master of the foundation principles of his calling, and should test every new project or proposal by those established natural laws which form the basis of engineering science. If the project involve a contradiction of any one of these, as well try to make a river flow up hill as to make it succeed. Many mistakes have been made from ignorance of first principles, and machines have been constructed to try to do things just as foolish as to make water run up hill without pumping it. In all our operations and manufactures, it is impossible to annihilate anything that already exists. We can change, alter or amend the form, condition or components of the materials we operate upon, and can make new compounds having entirely different qualities from any of the component parts, but we can neither create nor utterly destroy. We can change a solid into a fluid, and the fluid into a gas, and the gas may go off into space, we know not where, but though lost to us, it is not annihilated, but merely started in a new round of ever-changing existence.

It is also a fact, but not one so generally understood, that what we call *power* is as indistructible and as impossible to create as is matter. From not clearly grasping this truth, mechanics and others have not yet ceased to strive after a machine which will move forever, and "perpetual motion" is still the hope and dream of some minds, who, if this one little difficulty were overcome, see fame and fortune following close behind the ever turning wheels of their new machine.

These men make the mistake of supposing or imagining that power can be produced from nothing, that is, can be created. Many others, while believing that power must have something to produce it, and that continuously produced power means a continuous expense of something else, yet have little or no idea of the relation that really exists between the amount expended and the power produced. Hence mistakes are often made, resulting in serious embarrassment and pecuniary loss from not understanding the conditions under which power can be produced.

A man of considerable genius and ability for some kinds of work, imagined he had invented a wonderful improvement in the steam engine, whereby an immense saving in fuel could be effected, so much so as to make a small non-condensing engine quite as economical as the most skilfully designed "compound marine engine." His experiments were made with what was called a 10 horse-power engine, and his assumption was that being a 10 h. p. engine, so called by the maker, it was therefore doing 10 h. p. of work. The coal was carefully weighed, and the amount consumed per hour, divided by 10, certainly showed a wonderful performance, as indicated by the amount of coal used per horse power per hour. However, when the water evaporated from the boiler was weighed, and the power developed by the engine actually measured, and not guessed, a very different showing was made. The power was really only 1½ h. p., instead of 10 h. p., and the supposed improvement, instead of making a large saving, was a positive loss. A great deal of money had been spent in experiments, and great expectations raised, without any foundations. The inventor was ignorant of the first principles of the steam engine, and did not know the difference between pressure and power.

It is perhaps more common, however, to find mistakes made in regard to power and strength of materials, from not considering properly all the conditions of the partic-

ular case, than from ignorance of first principles. In how many instances have mills or factories been put in positions where a water fall was depended upon as the source of the power, only to find that a mistake had been made as to the amount of water to be relied upon! As the factory is erected and machinery in place, and business started, some other additional power has to be got, and a steam engine is added to aid the water wheel. In a certain case where this had occurred, indicator diagrams taken from the engine revealed the fact that the engine was driving all the machinery and the water wheel as well. The flow of water was there, but there was so little of it and it was so slow, that the engine ran away with the wheel. In this case money was saved by giving up the use of the water power, which was found to be too small to be of much service.

A large condensing engine was fitted up in a mill on the banks of the St. Lawrence river, by an English firm of great experience. The engine room was placed high enough up the river bank to prevent the usual spring floods from reaching it. The engine worked very successfully for a time, but at length the condenser failed to produce the proper vacuum, and the engine would not work. A steam pump was connected and an additional supply of water forced into the condenser, and the engine again worked all right. Investigation showed that while the possible rise of the river had been taken into account in placing the engine, the possible fall had been forgotten, and the only thing wrong was that the source of water supply for the condenser, which depended on the river, was, owing to unusually low water, so far down from the level of the condenser that the injection pipe was too small in diameter to supply enough water at the slow speed at which it flowed through the pipe when the river was so very low. An additional injection pipe overcame all the difficulty.

A mistake of this same kind in not taking all the conditions into account led to one of the most dreadful railway accidents that ever happened—the fall of part of the Tay Bridge, where over half a mile of the bridge fell while a passenger train was on it, and every one in the train perished.

Personal experience is about the only teacher which can train a man to avoid making such mistakes, but much may be done by cultivating a habit of carefully considering all the probable and possible contingencies of each case. Sometimes costly mistakes are made simply from errors of judgment, caused partly from ignorance and partly from want of thought and observation.

A certain mill in this country used a large amount of steam for boiling water, which was required in the processes of manufacture, and a number of large vats were fitted up with steam supply to them. The machinery of the mill was driven by a non-condensing steam engine. Under the engine room floor a stream of water flowed from what had been built as the race for a water wheel, and this stream furnished an ample supply of water for the factory purposes. It had been considered by some one that the exhaust steam would make a convenient and economical supply for the boiling vats. A safety-valve loaded to about 10 lbs. pressure per square inch was put in the end of the exhaust pipe, and connections made to the vats. This was done for economy! It was hardly a success, but was used till an engineer who knew a little more suggested putting a condenser in the engine, using the discharge water from the air pump in the vats, and boiling it by means of live steam from the boilers. On these changes being made, there was a saving of fully 50% of the fuel.

Exhaust steam from engines contains a large amount of heat which may be profitably made use of in many cases, but if not properly arranged, the attempt to utilize the waste heat may lead to serious loss.

A large automatic cut-off engine in a planing mill was for a time used to drive an electric dynamo. The exhaust steam was used to heat a dry kiln, but a portion of it was allowed to escape directly from the engine. So long as the planing mill could supply sufficient waste material for fuel, it made but little matter whether the arrangement was a good one or not. When the dynamo was run at night, fuel had to be bought, and suddenly an alarming increase in the amount required took place. Indicator diagrams were taken which showed that the engine was working at about a total of 160 h. p., of which 60 h. p. drove the dynamo, and 100 h. p. was required to force the exhaust steam out of the cylinder. An examination of the dry kiln pipes revealed an escape valve shut that should have been open. Of course, no one knew either how long the valve had been closed or why it had been shut. A short time after opening it, the hundred horse-power ceased to strain the engine and the amount of fuel required fell to the former quantity.

Mistakes have often been made in the effort to carry

steam to do service at a long distance from the boilers. Many do not realize that the heat of the steam is the real source of its power, and every possible means should be used to prevent the escape of heat.

In one case a steam pipe was laid under ground, and with a good fall down hill all the way. It was only a few hundreds of feet in length, but so little precaution was taken to prevent loss of heat that 100 lbs. pressure at the boilers only gave 40 lbs. at the end of the pipe.

In one of the attempts made to convey steam under the streets for heating purposes, the condensation was so great that on opening a 3-inch valve at the side of a steam main, a stream of cold water the full force of the pipe rushed out. It is hardly necessary to say that the company running the apparatus died of rapid consumption after a few months' illness.

The principal lessons to be drawn from the illustrations given are that while there is at least one right way of doing things, there may be many wrong ways, and that it will pay to follow the successful experience of others instead of finding out by trial how little you know of the matter you have undertaken to manage.

**CONVENIENT MULTIPLIERS.**

- Diameter of a circle × 3.1414 = the circumference.
- Circumference of a circle × .31831 = the diameter.
- Diameter of a circle × .8862 = the side of an equal square.
- Side of a square × 1.128 = the diameter of an equal circle.
- Square of diameter × .7854 = the area of a circle.
- Square root of area × 1.12837 = the diameter of equal circle.
- Square of the diameter of a sphere × 3.1416 = convex surface.
- Cube of ditto × .5236 = solidity.
- Diameter of a sphere × .806 = dimensions of equal cube.
- Diameter of a sphere × .6667 = length of equal cylinder.
- Square inches × .00695 = square feet.
- Cubic inches × .00058 = cubic feet.
- Cylindrical inches × .0004546 = cubic feet.
- Cylindrical feet × .0290946 = cubic yards.
- 183.346 circular inches = 1 square foot.
- 2200 cylindrical inches = 1 cubic foot.

**WEIGHT OF WATER.**

- 1 cubic inch = .03617 pound.
- 12 cubic inches = .434 pound.
- 1 cubic foot = 7.48052 U. S. gallons.
- 1.8 cubic feet = 2240 pounds.
- 1 U. S. gallon = 8.355 pounds.
- 13.44 U. S. gallons = 112.0 pounds.
- 268.8 U. S. gallons = 2240 pounds.

**SIZES OF BOLTING CLOTH.**

The following table shows the comparative sizes of wire and silk bolting cloth:

Silk bolting cloth No. 0000 equals No. 18 st'l mesh wire cloth					
"	"	000	"	22	"
"	"	00	"	28	"
"	"	0	"	30	"
"	"	1	"	36	"
"	"	2	"	50	"
"	"	3	"	54	"
"	"	4	"	60	"
"	"	5	"	64	"
"	"	6	"	70	"
"	"	7	"	80	"
"	"	8	"	90	"
"	"	9	"	100	"
"	"	10	"	110	"
"	"	11	"	120	"
"	"	12	"	125	"
"	"	13	"	130	"
"	"	14	"	150	"

**THE CONDENSER.**

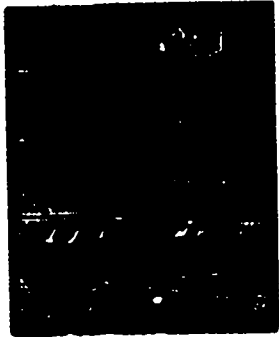
While a condenser does require a great outlay of money, the saving effected by it is great—from 18 to 25 per cent. Of this there can be no question. There is still another addition to the apparatus of an engine room which is the means of compounding the engine. This is an additional cylinder into which the steam passes after being used in the first cylinder. This second cylinder is somewhat larger in diameter than the first and to it the condenser connection is made. There is a condensing engine made furnishing a horse power with the evaporation of 19 pounds of water. The compound condensing engine will probably reduce the necessary evaporation to 16 pounds. In some English mills a third cylinder has sometimes been added, but we have not heard of anything of this kind being attempted in this country.

**BUHRSTONE DRESS AND WORK.**

NUMEROUS inquiries concerning the dressing and working of buhrs have suggested the propriety of the following article: It is absolutely necessary that the faces of buhr-stones should be perfectly true planes, and certainly when they are thus perfectly true and the runner is properly balanced, it is not possible to kill the



flour while making broad bran. As shown in Fig. 1, the eye of the runner should be smaller at the back and expand to a larger diameter at the face, especially for middlings and other materials which do not feed so freely as wheat berries. The swallow or bosom may be of various shapes, as shown in Fig. 2, to roll the wheat



over repeatedly with light pressure, to reduce all the grains to a uniform size, or, as in the case of gradual reduction, to bring the whole feed gradually from wheat to flour or to any intermediate stage. Whatever the shape, it should be as true as possible, or there will be an irregular reduction of the grain. It is well to have the bed-stone a plane or staff right up to the eye, unless it may be shown to be advantageous to have a different gradient in one of the stones. It is probably better to have all the necessary swallow in the runner, as it is easier to keep one swallow true than two. The depth may be regulated by circumstances, but where the wheat is to be touched, one-eighth of an inch at the eye is generally sufficient. The furrows also, whatever their shape may be, should be true. The greater the accuracy with which they are made and the care with which they are



kept, the less depth they will need. Fig. 3 shows some of the many shapes of furrows advocated by different millers in various localities. Of these four shapes, the first offers no advantage; the second is difficult to make; the third houses dead feed and in making the square back edge the face is very liable to be chipped and make greys in the flour; the fourth is the shape generally made and recommended. The drift, or eccentricity of the furrows, the direction in which they lie, is reckoned by the distance of the fore-edge before the centre of the stone. In the usual dress the stone is



FIG. 4.

equally divided into "harps" or "quarters." Fig. 4 shows one "quarter" of a 4-foot stone with 3 1/2 inch drift, 10 "quarters," four 1 1/2-inch furrows, 1 1/2-inch lands and 2 1/2 inch fly, to run "right-handed" or "with the sun." All the furrows are parallel and parallel to one another. The drift regulates the sweeping action of the furrows. The next four figures represent a master furrow of runner and bed-stone crossing each other, and a grain of wheat traveling down the furrows. The arrows show the direction in which the stones travel and the way the wheat is swept. The first of these four has 6-inch drift, the second 3-inch, the third none, and the fourth is 3 inches behind. In this sort of dress the

master furrows have least drift, and the other furrows have more drift as they grow shorter.

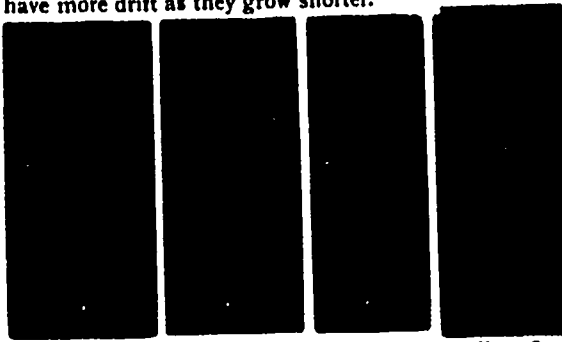


FIG. 5. FIG. 6. FIG. 7. FIG. 8.

The speed of the surface varies greatly at different distances from the centre of the stone. Thus, in a 4-foot buhr revolving 120 times a minute the speed at a



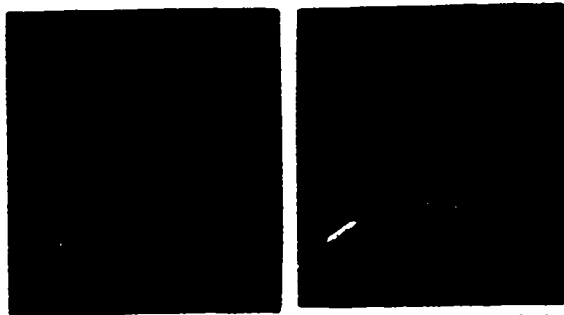
FIG. 9.

12-inch eye is 377 feet a minute, at twelve inches from the center at 754 feet a minute, at 18 inches from the center, 1,131 feet a minute, and at the skirt 1,508 feet a minute. The centrifugal action drives the stuff out, and that action of course increases with the speed of the buhr. Fig. 9 represents these distances marked on a stone of the dimensions referred to. Of course a grain of wheat does not really travel down the furrows as represented in Figs. 5, 6, 7 and 8. On entering the furrow the berry is caught and passed between the lands until



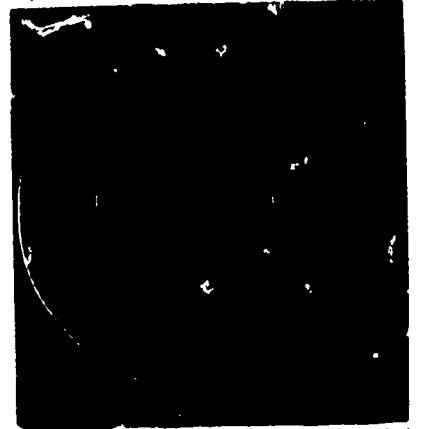
it is relieved by the next furrow. It is then caught by the next lands and carried to the next furrow, gaining impetus from the rotating runner to travel onward to the skirt, continuing its journey until it passes out in a state of reduction depending upon the setting and dress of the stones. Regularity of speed is essential to high-class work. The course of the berry between the faces of the stones can not be indicated by a clear line, because of the complication of conditions, such as the speed of the stones, the nature of the buhr, the amount of bosom, drift, dress, quantity of feed and the nature of the work to be done, but probably when once past the breast it flies out at once. Near the eye it may travel around some distance, but as it leaves the eye the increasing centrifugal speed sends it out like a flash. The furrows serve to distribute the feed and to ventilate the stones. When the furrows are deep and like the first section shown above, whole grains will escape. If the drift is too great, some portions will escape unfinished. The fewer quarters there are, the greater will be the drift of the small furrows.

In Figs. 11 and 12 are shown two 4-foot stones with 9 "fours" and 13 "threes" respectively. In all cases the



dress depends upon the quality of the stone and the character of the work required. Each part of the face should have its proper work and only its share. For ordinary work ten "fours" generally give satisfaction, wearing evenly and producing a broad bran. A large fly is generally thought to give clean bran. In 10 fours the furrows are 40, and in 14 threes 42, and though in the two cases the total numbers are so nearly alike, the different distribution over the face of the stone makes a noticeable difference in their work. In the 14 threes the smaller furrows can have less drift and cross one another at a more acute angle, and it is urged as an objection to so many furrows in the eye, that they cut the wheat up immediately on its entrance into the stone, making small bran and crowding the breast, so that the stuff is killed and the stones are worn in rings. This difficulty may be relieved by continuing the second furrows into the masters, as shown in the illustration. It is possible that the great drift in the small furrows is a safeguard in assisting the stuff to escape after passing the

preceding lands. Soft wheats require more land and should be cracked on a greater length of the skirt than dry hard wheats. For treating wheat the buhrs should be smooth, the breast closely dressed and the skirt fine-



ly softened. For granulating the face should be short. For softening and reducing to fine powder the face should be long. For the making of middlings the furrows at the skirt should have a uniform drift. Sometimes the middlings dress is made with numerous master furrows and one short furrow between. In Fig. 13 is shown a dress made by an English cutter. This shows the furrows in the eye, few in number, and a circular furrow to feed the skirt. Among the almost countless dresses used in

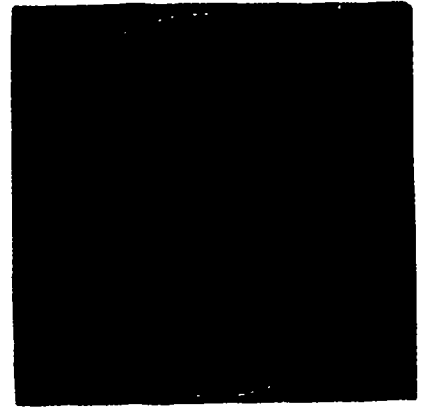


FIG. 14.

Europe are those shown in Fig. 14, in which several dresses are represented. In conclusion, where the object is to finish everything in one passage through the stones, that is, breaking and opening the wheat, disengaging and reducing the middlings, making all the flour possible and cleaning the bran, the quarter dress is the best, as it combines all these operations. When the stone is required to accomplish only one operation in the series, it is better to have the furrows of more nearly uniform drift, or, perhaps, divided into zones for the different operations.

**THE HORSE-POWER.**

The use of the "horse-power" as a measure of an engine's work came naturally from the fact that the first engines were built to do work which had formerly been performed by horses. John Smeaton, who built atmospheric engines before Bolton & Watt placed their more complete machine upon the market, had valued the work done by a strong horse as equal to lifting a weight of 22,000 pounds one foot high in a minute. When Bolton & Watt began to bid for public favor they agreed to place their engines for "the value of one-third part of the coals which are saved in its use." They also increased the value of the "horse-power" to 33,000 foot pounds, so that their engines were half again as powerful for their rated power as those of their competitors. In this way they established the value of the horse-power. The following are the various values of a horse-power: 33,000 foot pounds per minute; 550 pounds per second; 2,565 thermal units per hour; 42.75 thermal units per minute.

The horse-power of a boiler depends upon its capacity for evaporation. The evaporation of 30 pounds of water from 100 degrees F. into steam at 70 pounds gauge pressure equals 34 1/2 pounds from, and at 212 degrees F., is equivalent to a horse-power.

The amount of water which a boiler will evaporate at an economical rate in an hour, divided by the above quantities, is its commercial horse-power. A unit of evaporation is the heat required to evaporate a pound of water from and at 212 degrees = 966.1 thermal units.

A thermal unit is the amount of heat required to raise a pound of water one Fahrenheit degree in temperature at its point of maximum density.

One thermal unit is equivalent to 772 foot pounds. The horse-power of engines varies directly as the product of the piston area, piston speed and mean effective pressure. Hence, with the same M. E. P. the power of engines varies directly as their piston speed, and as the square of their diameter.—Exchange.

## Our Portrait Gallery.

### GEO. T. SMITH.

THE name which appears at the head of this article has become so well known in the Dominion and the United States that to-day none is so familiar in the milling world as that of Geo. T. Smith. It would probably be within the limit of truth to state that few, if any, men connected with the milling interests have a more world-wide reputation.

Mr. Smith was born at Leroy, N. Y., in 1841, so that he is now at his prime and able to make the most of a brilliant future. When very young he evinced a taste for mechanics, which gave evidence of the brilliant career that lay before him. Having become connected with a mill at an early age, he very soon invented a smut machine and a turbine. It was however, when he was stone dresser in the "Vermillion Mill" of Stephen Garder at Hastings, Minn., in 1869, that public attention was first directed to him. The excellent quality of flour produced by this mill attracted wide attention among millers and Mr. George H. Christian surmising that the stonedresser contributed principally to the success of the flour, secured Mr. Smith to take charge of the stones in his mill at Minneapolis. The point of Mr. Smith's success in stone dressing which was smooth surfaces, led to the invention which has placed his name at the top of the list of milling experts. By a very insignificant outlay, Mr. Smith reconstructed an old machine for cleaning middlings, which had been experimented with and thrown aside as useless. The experiment was eminently successful and in 1871 he built a second machine embracing all the main features of the machines now manufactured. From the time that Mr. Smith was successful in the construction of this second machine, he has had a continual fight to maintain his right to his own inventions, and has been put to no end of trouble and expense in litigation.

In 1877, a regular establishment was fitted up in Bennett & Knickerbocker's planing mill at Jackson, Mich., for the manufacture of Mr. Smith's Purifiers. In April of 1878, the Geo. T. Smith Middlings Purifier Co. was formed, and continued in the old planing mill until it was destroyed by fire in 1879, when a new and commodious establishment was at once erected.

In the first year of the business in a separate manufactory, 120 machines were sold, while in 1880, the number had increased to 1,000, on which number a large increase is made yearly. Mr. Smith's centrifugal reel has almost as extensive a reputation as his purifier.

In order that they might be in a position to place their machines in the Dominion to the very best advantage, the Geo. T. Smith Purifier Co., established a branch of their business at Stratford, Ont., in 1883. This Canadian branch has had, and continues to have, a flourishing trade in the Dominion.

It is not too much to expect that in the future as in the past, the name of Geo. T. Smith and the company of which he is the head, will be closely associated with every step in the progress taken by the milling industry.

### STOP THE NOISE.

The majority of millers admire the quiet running mill—the one at least which all day long sends forth no greater noise than enough to class it the "humming mill" associated in song and story, with the most pleasant industries of life.

While this, as an admiration and association, may partake of sentiment, it is a downright square business consideration, which causes us to dislike the banging, clanging, thumping, jumping, rickety mill which makes us feel like hunting a boiler shop in full blast as a quiet place to rest from an unpleasant industry of life. And yet the noisy mill, in the majority of instances, is noisy soley because the operatives permit to be so; at least they make no diligent and systematic effort to search out disturbing causes and remedy them. The disturbing factor may be a single thing or a combination of things, hence correction may require a short search and application of a cheap and easy remedy, or may demand a long and diligent search to find all disturbances, and hard work to right them. Any way, it pays to quiet down the mill, for, aside from comfort, economies come in. Mill noises indicate friction, and, of course, unnecessary noise indicates unnecessary friction. Un-

necessary friction causes unnecessary wear, consumes an unnecessary amount of power, and necessarily knocks profit higher than Haman was said to have been hung. The sound of wheat pouring down the descending legs of elevators, the howling gear-wheel, squealing shaft and screeching belt, all indicate that illegitimate wear is going on and power is being consumed to no advantageous purpose. —*Modern Miller.*

### MEANS OF DETECTING ADULTERATION OF FLOUR.

The substances with which flour is most frequently adulterated are: Plaster of Paris, the dust of burnt bones, pea or bean meal, and potato flour.

An easy general mode (writes an expert) of testing the purity of flour is to squeeze it in the hand. The cohesiveness of wheat flour is very great, and consequently the lump so squeezed in the hand will be a longer time before it breaks and falls if of wheaten flour than if the flour be adulterated. Plaster of Paris, dust of burnt bones, and potato flour are so much heavier than wheaten flour that adulteration by them may be easily detected. A sack which will contain two hundredweight of wheat flour will hold three of potato flour, so that should the flour be adulterated with any amount of



GEO. T. SMITH.

potato flour it may be detected by means of its weight.

Should pea or bean meal be mixed with the flour, it may be detected, if in any considerable quantity, by pouring boiling water upon a cupful of the flour, or by toasting a piece of bread made of it, the odor of the pea or bean being sure to rise while the meal or bread is hot.

Adulteration by means of the flour of inferior grains is more difficult of detection, but may be ascertained by pouring upon a spoonful of flour a little pure spirits of hartshorn. If the flour be wholly of wheat, the hartshorn will render it of a yellow color, but if it be adulterated with other wheat, the hartshorn will turn it to a pale brown, and if it be adulterated with pea or bean flour, it will become a darker brown.

Adulteration by means of potato flour may be detected by means of acids. Take a spoonful, and pour upon it a little nitric acid; if the flour be of wheat, it will be changed to an orange-yellow; if wholly of potato flour, the color would not be altered, but the flour formed into a tenacious jelly; if, therefore, the flour be adulterated with potato flour, it will not be difficult to decide. Again, take a spoonful of the flour, and pour upon it a little muriatic acid; if the flour be of pure wheat, it will be changed to a deep violet color, without odor; but if potato flour be mixed in it, it will then have an odor like that of rushes.

### STAHLSCHMIDT & CO.'S ESTABLISHMENT AT PRESTON, ONT.

A representative of the DOMINION MECHANICAL AND MILLING NEWS, while in Preston, Ont., a short time ago, was kindly shown through the large establishment of W. Stahlschmidt & Co. This business at first was carried on by W. Stahlschmidt alone, who justly earned for himself a great reputation as a manufacturer of office furniture. A year or two ago, however, a partnership was formed, when Mr. Jacob Kelso, a prominent business man of Preston, and at one time immigration agent for the Ontario government entered the firm, and operations were commenced on a larger scale. The old building was a one-storey stone structure 30x50. This was, at the time of the partnership raised to a 3 storey building and a main building of stone 80x44 was built with a 2 storey wing 40x20 to the old building.

On the first floor of the main building, is located the machinery of different kinds for use in the preparation of the lumber. On this floor all the work is cut out, sand papered, etc. Here the special machines used for the manufacture of school desks, for which this firm is noted, were seen in operation. The lumber after being cut to size, is carried to any part of the building by means of small cars on which it is piled and wheeled all over the building, even to the top flat. Formerly this machinery department was filled with dust from the great number of fast running machines. Now, however, by means of spouts from each machine and a suction fan, the dust is collected and conducted to the engine room, where it is deposited in an enclosed compartment made for the purpose. The machine department is now entirely free from dust.

On the second flat is the cabinet department. Here, by an ingenious arrangement, all the glue pots are heated by steam. The work benches in this department are all built up of glued inch stuff, which prevents any possibility of warping or getting out of level.

On the third flat the packing and shipping is done. At the time of our visit, several desks were being prepared for shipment, among others a fine rotary curtain desk of very fine design, which was destined for Hamburg, Germany. This flat also contains the flowing room and finishing departments.

The firm has one of the most perfect lumber drying apparatuses which we have ever seen. It was manufactured by the Boston Blower Co., and the principle on which it works consists in blowing hot air through the lumber, which evaporates and carries away all moisture. The drying is done with the exhaust steam from the engine, and a temperature of 155° Fahrenheit is obtained with an expenditure of only two horse power.

### WONDERFUL MECHANICAL FEATS.

I have often read of the wonderful feats performed by skilled workmen with tools, says "Rambler" of the Brooklyn Eagle, "such as engraving the Lord's Prayer on the back of a silver three cent piece, or making a steam engine that would stand on a silver quarter, but I saw some wonders performed the other night that surpassed them all. All the minute articles manufactured heretofore have been with small tools and in some cases with the aid of a microscope, but there is a man in the Sea Beach palace exposition on Coney Island who works out the most delicate articles with a band saw nineteen feet long and revolving at the rate of over a mile a minute. Upon this immense machine the skilled operator in my presence sawed out four chairs, all complete with legs and backs, but so small that the four were placed on the end of a lead pencil at one time. Then a dozen knives and forks of the most diminutive size were made and placed around the lead pencil. So small were they that although the entire dozen were placed round the pencil, not one of them touched the other. Then the operator trimmed his finger nails on the huge saw as cleverly and as easily as one could do it with a penknife. Wetting his thumb, he pressed the ball of it into some sawdust and then sawed the sawdust off the thumb without scratching the skin, yet a single nervous twitch of the arm would have cost him a hand. All sorts of curious puzzles are turned out with astonishing rapidity from all sorts of misshapen blocks of wood. Even articles of clothing, as thin and flexible as cloth, are worked out by this magician from little pieces of wood with his big saw. The cap he works in was sawed out of over 1000 pieces of wood, no two of which are the same size or shape."

PAGE

MISSING



PAGE

MISSING

# THE GEO. T. SMITH CENTRIFUGAL MILLS

Using either the Long or Short System.

NOTTAWA, July 16th, 1887.  
 G. T. SMITH M. P. CO.  
 Dear Sirs: Replying to yours of the 15th received to-day, we are pleased to say that the five double sets of Rolls, Purifiers, &c., purchased from you are working to our entire satisfaction. These machines have been running now four months nearly, and we have not had a hot bearing in any of the Rolls and the Purifiers are working grand. We would be pleased to show these machines to any one intending to purchase as we think we have a most complete mill here, the equal of which it would be hard to find in the Dominion. We are  
 Yours truly,  
 BRACKENRIDGE & HAWKE.

MAXVILLE, July 13th, 1887.  
 GEO. T. SMITH M. P. CO., OF CANADA.  
 Gents: Upon accepting the mill which you erected for us from your hands, we agreed to let you know of any defect which we as practical millers might have observed, and you agreed to have such defects, if any, remedied at once. We accepted the mill from you 18 hours after the wheat was turned on, and we are much gratified in being able to state that now, after over three weeks further trial, we have observed no defect—have not even had a hot box to contend with. We beg to thank you for exceeding your contract with us as regards the quality of the machinery and the finish given to your work—at least it has exceeded our expectations. We were somewhat surprised to find that we could exceed the number of barrels which the mill was guaranteed to turn out in 24 hours, if we choose to do so, and maintain at the same time the excellency of the quality of the flour. We believe we can now make with our mill as good flour as is made in the world, and our patrons we believe think the same, not only from the fact of their telling us so, but from the steady increase in the amount of wheat which the farming community is maintaining. You may be sure, gentlemen, that it affords us much pleasure in communicating the above facts to you. We are, gentlemen,  
 Very respectfully yours,  
 J. & P. McDOUGALL.

DUNDURN ROLLER MILLS, HAMILTON, Oct. 16th, 1886.  
 GEO. T. SMITH CO., Stratford.  
 Gentlemen: It gives me much pleasure to inform you that my mill is running very satisfactorily and has been from the start. The capacity is fully 60 barrels and the work is done as well as a small mill can do it, and there are but few mills that can compare results with me. I am receiving very great praise for my flour from all quarters, and as you know I have the flour from many mills to compete with in this city, and I have not yet had any compared with mine that has been any better, and only one flour that was equal to it. I am thoroughly satisfied with the way you carried out and completed the contract. It was done in a thorough mechanical and business manner without any nonsense or unpleasantness, and all went on merrily from first to last. Your machines are really first-class and the finest I have seen. They are handsome as well as strong and durable. While you treat your patrons as you have done me, I am sure you will receive a very liberal patronage, and I certainly must say to the millers of Ontario, give your orders to the Geo. T. Smith Co. and save all humbug and vexatious and expensive delays such as I know many have had to endure from other Ontario firms. No spouts to change and cloths to cut and alter, but every reduction and separation is made at the proper time and in the proper place, and consequently the results are clean offals and first-class flour without any muddling or mixing. Wishing you every success in your future business career, I am, gentlemen,  
 Yours respectfully,  
 W. B. ROBSON.  
 P.S.—My mill is open for inspection to any person you may send or desire to see it, and I shall be glad to give any further information that they may require.  
 Nine Months After.

DUNDURN STEAM ROLLER MILLS, HAMILTON, July 15th, 1887.  
 GEO. T. SMITH M. P. CO., Stratford, Ont.  
 Gentlemen: I am in receipt of yours of the 11th inst and have it duly noted. In regard to the running of my mill I would say that I have been running it steady for the last ten months. It has not caused me any delay or cost me anything for repairs or changes, and it is running equally as well to-day as when we started up. My flour has given excellent satisfaction; its reputation is equal to any made in this city or county and it is equal to any brought into this market, and many of the best mills in Ontario are sending flour here for sale and to compete for Hamilton trade. You did me an excellent job and I must say I am well pleased with your dealings throughout. Your actions have been honorable, upright and prompt business every time. Hoping you may have a continuance of great prosperity, I am, gentlemen,  
 Yours truly,  
 W. B. ROBSON.

MIDLAND, Feb. 16th, 1887.  
 GEO. T. SMITH CO., Stratford, Ont.  
 Gentlemen: We take pleasure in stating that our mill is doing splendid work on your system of milling. When completed and started by your miller, it was a success from the start, not a spout or a cloth had to be changed, and the flour is giving entire satisfaction to our customers, and we believe that you have the best system of milling in Canada. Wishing you every success, we remain,  
 MCKAY & FREEBORN.

Five Months After.  
 MIDLAND, July 15th, 1887.  
 Gentlemen: I write to let you know the machinery you put in our mill last spring is giving us entire satisfaction and doing first-class work. Have not had to stop our mill one hour on account of any of your machines. Our millers say that they would have no other machinery except the Geo. T. Smith Co.'s.  
 MCKAY & FREEBORN, P. T. McKay, Proprietor.

LONDESHORO, Sept. 25th, 1886.  
 THE GEO. T. SMITH M. P. CO., Stratford Ont.  
 Gentlemen: We have our mill which you built for us in operation on the full Roller and Centrifugal system, and we are very much pleased with the working of the same. The separations are good and the flour very nice, and the offal well cleaned. Our trade is picking up, our flour is giving good satisfaction, and my prospects for a good business are good. I believe that I have a mill that will do 10 or 15 barrels more than it was rated by you.  
 Oct. 17th, 1886.—We are getting along nicely. All going well On the whole I am better pleased every day so far.  
 Yours truly,  
 E. HUBER.

Nine Months Later.  
 JULY 16th, 1887.  
 S. S. HEYWOOD, Manager.  
 Dear Sir: In reply to yours of the 11th, I am highly pleased with the Centrifugal mill you put in for me. It is just the thing, especially this sultry weather. I cannot recommend it too highly.  
 Yours truly,  
 E. HUBER.

TAVISTOCK, Feby. 18, 1887.  
 S. S. HEYWOOD, Manager,  
 GEO. T. SMITH M. P. CO., Stratford, Ont.  
 Dear Sir: With my acceptance of the mill you built for me upon the Geo. T. Smith Centrifugal system, I take pleasure in saying it is in every particular a better mill than I expected to get when I made the contract with you. At that time I had no experience with Centrifugal mills, and acting on your advice I visited Jackson, Mich., for the purpose of examining the Eldred Mills. Mr. Smith invited me to assume the position of head miller during my stay, and every facility was afforded me for a complete and careful examination of its workings. I returned to Stratford a convert to the Centrifugal system, and without further delay placed my contract with you for a 125 barrel mill in 24 hours continuous run. The mill runs easily to 150 barrels without crowding any machine in it. The Brown Automatic Engine built at your shops has never given one minute's trouble since steam was first turned on it, and all the special machines are perfect in material and finish, and do their work better than any other machines I have ever handled. The arrangement of the machinery could not be improved, and must have been the work of an expert in his profession. The millwright work is in keeping with the balance of the mill, and all material used of the best. The quality of flour is everything I could wish, and when your miller left the mill he was finishing so close I was compelled to make richer feed, not being able to sell it so poor. I think in arrangement and finish of the machinery, quality of material and millwright work, grades of flour and closeness of finish, my mill is the equal of the Eldred. Wishing you every success,  
 Yours truly,  
 THE TAVISTOCK MILLING CO.,  
 Per John Knight, Manager.

Five Months After.  
 TAVISTOCK, July 20th, 1887.  
 S. S. HEYWOOD, Esq., Manager,  
 GEO. T. SMITH M. P. CO., Stratford, Ont.  
 Dear Sir: After running our mill you built for us upon the Geo. T. Smith full Centrifugal system six months, we take great pleasure in stating we are highly pleased with the working of the same. We have never had occasion to shut down for anything. The different grades of flour have always given excellent satisfaction. The Brown Automatic Engine you built for us runs like a clock, and we believe it to be the best engine manufactured in Canada to-day. Any parties you send here to examine our mill, we will take great pleasure in showing them the working of same.  
 Yours truly,  
 THE TAVISTOCK MILLING CO.,  
 Per John Knight, Manager.

**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.

FOR THE DOMINION MECHANICAL AND MILLING NEWS

## CANADIAN WOODS.

EXTENT AND VALUE OF OUR FORESTS—NECESSITY FOR THEIR PRESERVATION—AMOUNT OF TIMBER CUT ANNUALLY, MANUFACTURED INTO LUMBER, ETC.

CANADA has long supplied lumber in large quantities to the markets of the world. The general impression has been that there is in Canada an inexhaustible supply of timber, and that the time will never come when she will be forced to look to other lands for her lumber. Since, however, the lumber woods of Michigan have been disappearing with such alarming rapidity, Canadians have been led to enquire into the extent and the rate of depletion of their own lumber resources. With this object it may be well to review as briefly as possible the state of the lumbering interests in Canada and find out as nearly as we may in what position they are. In treating of the extent of timber land in Canada, there is the great disadvantage of having few trustworthy statistics to refer to. The cause of this lack of statistics is the fact that many of the townships have never yet been surveyed, or if they have been surveyed, have never been entered by the lumbermen. No necessity is forced upon the government of estimating the lands of any township until settlers come in and take up the land. Other lands, which are occupied, are partly owned by private individuals, and no estimate of the timber lands has ever been made of these. In the face of these difficulties it is very hard to make a fair estimate of the extent of the forest lands in Canada. For instance, in a short sketch of the lumbering industry to be found in the Minister of Agriculture's books on the Colonial and Indian Exhibition, the forest land of Canada is estimated at 300,000 square miles, of which British Columbia furnishes 142,000 sq. miles, and Quebec 115,000 sq. miles. This estimate would leave for Ontario, Nova Scotia and New Brunswick only 43,000 sq. miles. This is, of course, leaving Manitoba and the Northwest out of the question, as it is well known that they possess very little timber land. Manifestly, Ontario alone has more than 43,000 sq. miles of timber land, and New Brunswick and Nova Scotia have still a great quantity of timber. One estimate is advanced that Ontario has 50,000 sq. miles of timber land, and if we admit that this is not too far from the probable, we have to throw the other figures overboard. If we review the forest lands of the provinces in order, starting with British Columbia, we may form some idea of the amount of timber in the whole Dominion. In British Columbia is found a great quantity of pine which differs somewhat from the eastern white pine, but which is equally valuable. This pine has not been cut and destroyed with such reckless rapidity as has characterized the slaughtering of the pine in some of the eastern provinces. This is chiefly owing to the fact that a market for it was not so easily provided. Then in the Northwest Territory there is some pine in the valleys of rivers flowing into the Arctic Ocean which has not yet been brought into the market on account of its great distance from civilization. Manitoba has no timber except the little that is found in the valley of the Red River and on the Lake of the Woods district. It has generally been considered that Ontario is well stocked with pine. It is true that Nature blessed her with forests well stocked with pine timber, but such large drafts have been made upon her resources that doubts have arisen in the minds of some as to whether the supply will long continue. There is in Ontario still a good quantity of timber land in the northern districts, though in some sections where a few years ago there was a great stretch of pine forests, nothing now remains but stumps. The valley of the Ottawa has still a good quantity of pine, which, however, is being taken off with alarming rapidity. The lumber in Quebec is more easily estimated, from the fact that a government survey was carefully made before Confederation—a thing that was not done in the other provinces. In Quebec, too, the timber is swiftly disappearing, and the time cannot be far distant when she will be without her once magnificent forests. New Brunswick and Nova Scotia have been stripped to a very large extent by the axe of the lumberman and the ravages of fire. The present extent of forest land in the entire Dominion is fairly estimated at about 180,000 sq. miles of licensed timber lands and 280,000 sq. miles of unlicensed lands. This 460,000 square miles, if it be near the correct figure, represents 293,400,000 acres of timber land, and if 2500 feet of lumber be accepted as the very lowest average that could be expected per acre, there is then represented by this 294,400,000 acres 736,000,000,000 ft. of lumber. Of this amount, by far the greater proportion is pine. Assuming this estimate to be as nearly as possible correct, it is desirable to know the amount

of lumber cut each year. In estimating this there is, of course, no notice taken of the amount cut by unlicensed plunderers who enter the woods and cut down regardless of either law or justice. The product of the forest according to the census of 1881 is given below, the provinces being classed separately.

	Cubic feet of white pine.	Cubic feet of red pine.	Cubic feet of oak.	Cubic feet of elm.	Cubic feet of other lumber.	Pine logs.	Other logs.	Nails, spars, etc.	Thousands of staves.	Cords of lath wood.	Cords of tanbark.	Cords of firewood.
Prince Edward Island	1324	342	180	290	907,804	3260	192,083	196	1177	814	629	159,619
Nova Scotia	124,451	35,756	22,876	1393	4,748,569	497,785	2,250,593	8703	13,147	5585	10,843	637,084
New Brunswick	130,762	31,954	3316	2400	2,975,861	657,400	5,001,659	54,406	955	3134	55,535	781,729
Quebec	4,540,462	654,721	59,587	163,049	19,440,748	5,400,273	182,434	104,248	3585	31,881	285,940	3,638,628
Ontario	12,262,570	1,848,927	5,448,263	2,925,382	29,447,420	14,945,670	7,621,610	23,721	22,857	50,265	45,621	5,435,414
Manitoba	2169		138,672	99,454	155,151	14,142	240,033		10	279		219,784
British Columbia	23,318,500	232,585		462,792	798,119	2,483,024	500		148	6053		82,277
The Territories	18,610	11,500		79,763		5,118	52,738	67	2			38,399
Total	40,729,047	2,815,755	5,670,894	3,191,958	59,225,198	22,324,407	26,023,584	192,241	41,881	98,311	400,418	10,993,234

From this table we find that the total cut of lumber of all kinds in Canada for the year given in the census of 1881 was 111,633,862 feet, besides 48,349,991 logs. Of this cut, 43,544,102 feet was pine, while 22,324,407 of the logs were pine. An idea of the amount of timber cut yearly cannot be arrived at from looking at these figures, but some impression can be formed of the vast amount of lumber taken from the Canadian forests yearly when it is stated that there are 8,094 lumbermen and raftsmen employed in the cutting and carriage of that timber. There were in Canada in the year 1881, 5,390 saw mills, which employed 52,088 hands in sawing and preparing the timber for the markets. There was also 501 shingle mills, employing 2,389 hands, besides a great number of planing mills. From these figures some idea can be formed of the draft that is being made upon our forests yearly. When it is found that there are 17,577 establishments throughout Canada which are engaged in the manufacture of articles from wood, and which employ 95,741 men, the importance of the wood land cannot be over-estimated.

No effort is made to compute the time when the forests shall be wiped off the land, but the figures given above are of a nature to awaken in the minds of the thoughtful a desire that steps should be taken to preserve as far as possible our timber lands. Though the amount cut yearly is very great, it is safe to say that at least an equal amount is destroyed by forest fires. It is gratifying to know that, as stated at the commencement, the feeling is gradually being awakened that means must be taken

to reduce the wholesale destruction of our forests. A proof of this is seen in the action of the Government of Ontario in passing an Act to preserve the forests from destruction by fire. According to the terms of this Act fire districts are proclaimed in which the Act is enforced. Heavy penalties are imposed upon any found guilty of negligence in the use of fire, and certain restrictions are placed upon the use of fire, conditions being placed upon the locomotives passing through these districts. The Government has also appointed fire rangers, who are on guard in the lumber limits, and whose duties are to prevent fires from occurring within their districts. Again, the use of band saws instead of circular saws in the mills is an evidence that the value of the timber is being realized. By means of band saws a great amount of timber is saved every year. The thin blade of the modern band saw is effecting a saving in valuable timber such as few people dream of. In woodworking factories, too, machinery is being put into use which greatly reduces the waste of lumber. The re-saw is one of the most noteworthy of the new machines employed to reduce the waste of material. Much of the lumber formerly wasted is re-sawed and put into use for the manufacture of articles which require thin material. Pieces of boards which at one time went up the smoke stack, are now carefully preserved and used. There is, however, still plenty of room for the exercise of economy.

The rapid disappearance of the pine woods of Michigan has made an extra demand upon Canada. The export duty placed upon logs going from the country has been a benefit to Canada, many mills having been erected here by American capitalists. These mills saw the logs and export the lumber to the American side, where it is sold for best Saginaw lumber, a fact which proves that the discrimination in favor of Saginaw pine is purely a matter of sentiment. The fact that in the Georgian Bay district uppers yield from 3 to 5 per cent. of the best lumber, while in Saginaw the yield is from 1 1/2 to 2 per cent., is another evidence of the superiority of Canadian pine.

If Canadians can but be aroused to an idea of the great value of their timber lands and the importance of preserving them, there is pine in the Dominion sufficient to supply the demands of many years. But if the wholesale destruction of former years is allowed to continue, while the demand becomes every year greater, it is, to say the least, very doubtful whether Canada, the great lumbering country of the world, may not eventually be forced to look to foreign countries for her timber supply.

## BEAVERTON ROLLER MILLS.

One of the finest mills in the Province of Ontario is situated at Beaverton, Ont., on the shores of the beautiful lake Simcoe. It is the property of Messrs. Dobson & Campbell. The building is of white brick, on a stone foundation. Its size is 60x40, and its height four stories and basement. It is run by water and steam power, the latter taking the place of the former during low water. A 13 foot head of water is obtained from the Beaver River, which flows past the mill and empties into the lake a few hundred yards below. Three water wheels supply the power when water is used. When water becomes scarce, a 50 h. p. Corliss engine, made by Messrs. Inghs & Hunter, lends its powerful aid.

The mill was built in 1873 by Mr. J. A. Proctor, on the site of an old saw mill. Mr. West, of Peterboro', did the millwrighting and placed the stones and other machinery in the building. In 1882 the mill was changed to the roller process by the Barter Co. In 1885 it was rented by Messrs. Dobson & Campbell, who purchased it one year later. About four months ago the firm again remodelled the mill, using Goldie & McCulloch's rolls and the Dobson patent flour dresser. The proprietors claim that their's is the only mill in Canada using an entire flour dressing system. The capacity of their mill is 100 bbls. per 24 hours. Their trade is almost entirely local.

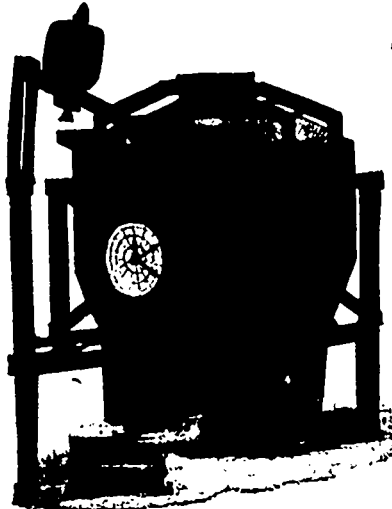
## CATARRH, CATARRHAL DEAFNESS, AND HAY FEVER.

[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

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

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



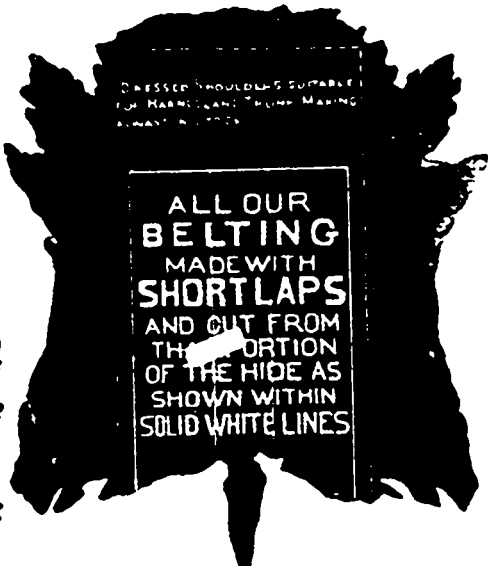
Machines are sent on 30 days trial, and guaranteed to work satisfactorily. Write for Circular and Prices.  
J. B. DUTTON MFG. CO., - 22 & 24 Woodward Ave., DETROIT, MICH.

**DICK, RIDOUT & CO.,**  
—MANUFACTURERS OF—

**JUTE AND LINEN BAGS,  
FACTORY COTTON BAGS,**  
In all sizes. Samples sent on application.  
**TORONTO BAG WORKS**  
FACTORY—Esplanade Street.  
Office and Warehouse: 11 to 13 FRONT ST. E., TORONTO.



**ROBIN & SABLER**  
Manufacturers of  
**Leather**  
**Belting**  
2518, 2520 and 2522  
Notre Dame St.  
**MONTREAL.**



**ROBIN & SABLER**  
Manufacturers of  
**Leather**  
**Belting**  
129 Bay St.  
**TORONTO.**

—All Sizes Kept in Stock, and Orders Filled Promptly.—  
DEALERS IN  
**COTTON AND RUBBER BELTING.**  
**LACE LEATHER, BELT HOOKS AND MILL SUPPLIES.**



**BOLTING CLOTHS**



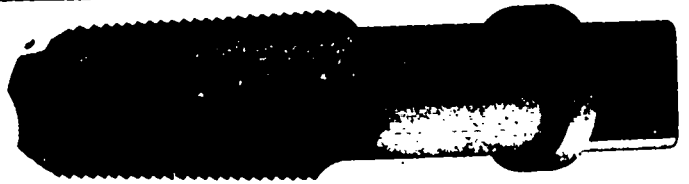
IMPORTANT TO MILLERS.—Agent for the Dominion for the Celebrated Bodmer *Het Anker* Bolting Cloths, furnished by the yard, or made up to order. Full stock of all numbers on hand.  
R. WHITELAW, Woodstock, Ont.

**RATCLIFFE & KENDELL,**  
**Bell & Brass Foundry**  
Factory Bells, School Bells,  
Steamboat Bells, Milkmen's Bells.  
And Gongs of all kinds made of best Bell Metal.

**COPPER CASTINGS.**  
Bronze and Fine Work our Specialties  
Orders for Brass Castings promptly attended to at reasonable prices.  
**DIAMOND ANTI-FRICTION METAL**  
50 YORK ST. - TORONTO

**IT=PAYS**

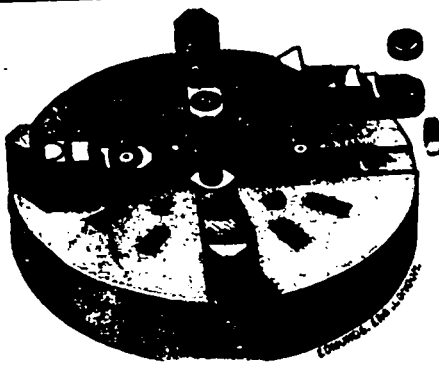
To advertise in first-class trade journals.



**BUTTERFIELD & CO.,**  
ROCK ISLAND, P. O.

**MANUFACTURERS OF TAPS AND DIES**

For every use. Send for new Illustrated Catalogue.



**THE DOMINION CHUCK AND TOOL WORKS**  
—MANUFACTURE—  
Combination, Universal and Independent  
**LATHE CHUCKS**

—AND—  
**Wood Boring Machines**  
Of New and Improved Design.

Trade liberally dealt with. Catalogue out shortly.  
Prices on application.

**J. F. WALMSLEY,**  
WOODSTOCK, - ONT.

**W. H. BANFIELD,**  
TORONTO - ONTARIO

**Machinist and Die Maker**

—MANUFACTURER OF—

Foot and Power Presses, Combination and Cutting Dies,  
Tinsmiths' Tools, Canners' appliances,  
**KNITTING MACHINES,**  
CAP SCREWS: ..... PLAIN BOLTS: ..... PLAIN SCREWS  
Cutting and Stamping to order for the trade.  
Railway, Hotel Checks and Dog Tags.  
**SPECIAL ATTENTION PAID TO REPAIRING FACTORY MACHINERY**  
**80 Wellington Street West.**

**J. L. JONES**  
10 KING ST. EAST  
**WOOD**  
**ENGRAVER**  
**TORONTO**

# MILLING FLOUR & GRAIN

The roller mill at Lynden, Ont., has commenced operations again.

Mr. J. W. Plowman's mill at Delhi, Ont., is undergoing repairs.

Mrs. W. Harrison, of Owen Sound, is having rolls put in her flouring mills.

Mr. S. A. Julien Wallaceburg, Ont., is completely re-fitting his mill with roller equipment.

Messrs. Ruby & Hilker, of Port Egan, handled about 115,000 bushels of grain last season.

Mr. W. Heise, Baldwin, Ont., will put a complete set of rollers in his mill during the summer.

Mr. George Fenson is building a new flour and grist mill at Elmwood, Ont., on the roller process.

May Bros., millers of St. Thomas, Ont., are now using crude oil for fuel instead of wood and coal.

Mr. B. M. Armitage, of Minnedosa, Man., purposes establishing a grist mill in the Lake Dauphin district.

Mr. A. Leitch, of Markham, Ont., has bought the large flouring mill at Oak Lake, Man., from Mr. D. Moore.

The Ogilvie Milling Co. are shipping all the grain in their warehouse at Neepawa and in the elevator at Minnedosa.

The erection of the new grain elevator in connection with the Rapid City, Man., roller mills will be commenced at once.

The town of Minnedosa, Man., passed the by-law mentioned in our last number, granting \$5,000 bonus to a new roller mill in that town.

Messrs. Harvey & McQueston's mill at Hespeler, Ont., is now under the management of Mr. Leman Miller, formerly of Woodstock, Ont.

Fraser & Co., of Winnipeg, have the contract for supplying 821 sacks of flour to the Edmonton and Victoria agencies of the Indian department.

The contract for supplying the machinery for the Farmers Elevator Co., at Portage la Prairie, has been awarded to Watson Bros., of that place.

Mr. John Wright of Owen Sound, Ont., is making extensive improvements in his Potawatamie mills, under the direction of Mr. D. McGilivray.

Mr. Henry Green, Lyndhurst, Ont., is erecting a large roller mill with a capacity of 50 barrels a day, and expects to begin operations in September.

Messrs. Edmondson, of Oshawa Roller Mills, recently shipped two car loads of flour to St. John, N. B., and several car loads are yet to be forwarded.

During a fire, which originated in Cosley & Campbell's planing mill at Port Huron lately, a large quantity of grain in the warehouses in the rear was destroyed.

At the beginning of June there were 8,755 master millers in the United States. During the year ended June 1, the United States exported 8,000,000 sacks of flour.

The municipality of High Bluff, Man., purpose voting again on the bonus to the new flour mill there, as the former bonus was set aside through some informality.

The milling firm of Meldrum, Davidson & Co., of Peterboro, Ont., are negotiating with the Grand Trunk Railway for the construction of a switch to run to their mill.

The new roller mills at London, Ont., will commence as soon as the large staff of men at work can put them in shape. Most of the machinery is on the ground, and the mill will soon be running full force.

The Pioneer Oatmeal Mills of Portage la Prairie, closed down recently and are now undergoing extensive repairs. New machinery will be put in and very general repairs made before the close of the harvesting season.

It is stated by a member of the firm of Ogilvie & Co., who has lately visited British Columbia, that Manitoba controls 80 per cent. of the flour trade of that province and the Oregon article has been almost completely driven from the British Columbia markets.

Some of the Winnipeg grain dealers show a disposition to cease for the present from extending their facilities throughout the province for handling grain, owing to the action of the C. P. R. in proposing to enter the field as a competitor for the grain and milling business of the country. *Winnipeg Commercial.*

The city of Port Huron purposes addressing a memorial to the Secretary of the Treasury, for the purpose of compelling the Grand Trunk Railway to locate its elevator, warehouse and stockyards at Port Huron instead of at Point Edward, so that Americans may have the benefits from handling American products, instead of Canadians, as at present.

Mr. H. S. Moore, Norwich, Jas. Muirhead, London, Thomas Martin, Mount Forest, I. D. Tilsen, Tilsonburg, J. D. Moore, St. Marys, D. Speers, Galt, Robert Thompson, Woodstock, C. Thompson, Mitchell, and James Wilson, Fergus, are seeking a charter as the Canada Oatmeal Milling Company. The capital is placed at \$300,000. The headquarters of the firm will be at Toronto.

Mr. Wm. Gibson, a well-known Ontario contractor, who has a contract on the big flouring mill at Rat Portage, says that the work of construction is being pushed rapidly and the mill will be ready for operation by the time the grain is ready in the fall. He says Mr. Mitchell will be up in a couple of weeks, when it is his intention to begin buying wheat in advance as he wants a million and a half bushels. *Winnipeg Sun.*

Mr. Wm. Lovering, of the firm of H. L. Lovering & Co., Coldwater, is in town looking at the new roller process in Meldrum, Davidson & Co.'s mill, which is very satisfactory to him. When Mr. Lovering returns to Coldwater he is going to shut down his mill and commence at once to fit it up with the latest style of machinery. The Wm. Hamilton Co. will start to build this mill shortly. *Peterboro Review.*

The contract for the Farmers Elevator at Portage la Prairie has been awarded to Albert Dightman, and the lumber has been supplied by the Keewatin Lumber Company. Mr. Thomas Wallace, President, and Mr. Paterson, secretary of the joint stock company had an interview with the Canadian Pacific Railway recently, and made arrangements for the building of a switch to the elevator.

The Halifax merchants are complaining of the high rates on flour from Ontario. Freight on flour from Chatham, Ont., to Boston is 30 cents per barrel, but from Chatham to Halifax it is 65 cents per barrel, a difference of 35 cents, in favour of Boston. Large importers of flour over the Intercolonial railroad get a rebate of 10 cents per barrel from the railway, when their importations exceed 2,000 barrels per month. This reduces the whole freight from Chatham to Halifax to 55 cents, still leaving a difference of 10 cents per barrel in favour of Boston. From Boston the flour is shipped by vessel to the smaller ports of Nova Scotia and New Brunswick and to Halifax itself. *Mail.*

The Oatmeal Millers' Association, of Ontario, met at the Walker House, on the 14th and 15th of July. The meeting was called to make arrangements for the season's trade which gives prospects of being very large. A great amount of meal will probably be shipped to England and Scotland and the main object of the meeting of the association was to control this trade, and secure low rates with the railway and steamboat companies. It was decided to form a gigantic stock company with a capital of \$50,000, composed of all the oatmeal millers in the Dominion, in order to control the trade and fix prices. This company will act in conjunction with the American association, and an agent will be sent to Europe to attend and control all shipments. It is thought that prices can be kept at a reasonable price by withholding shipments. A committee is appointed to canvass all the local millers to take stock in the company. A charter has been obtained and \$15,000 has been already subscribed, and there will be no difficulty in selling the full amount of stock.

At a meeting of the Toronto Board of Trade on the 22nd of July, the following resolution concerning grain in elevators was passed on motion of Mr. Goodall: "Whereas, at this season of the year there is danger of grain stored in bulk becoming damaged by heating, and in order to protect buyers' and sellers' interests and to maintain the good reputation of Toronto inspected grain, *Resolved*, that owners of elevators and warehouses be requested to report promptly to the Secretary of the Board of Trade, if at any time grain shows indications of heating, also, that they keep strict watch of the condition, when necessary, handling or elevating such grain under the direction of the grain inspector, and that any expenses incurred in such handling be charged against the grain, to be paid by the owner of such when the said expenses were incurred, also that the grain inspector be requested to examine grain stored, and that the fees for watching the condition and inspection during the summer months be collected by the elevators for payment to him on all grain now in store and that received during July and August, the amount not to exceed 51 per thousand bushels."

## ADDITIONAL TRADE NOTES.

Port Hope is to have another roller mill, Mr. P. M. McCabe having decided on changing his mill, has contracted with Messrs. Wm. & J. G. Greey, of Toronto, to entirely refit his mill with the latest improved machinery for the manufacture of the highest grades of roller flour. The capacity of the remodeled structure is to be one hundred barrels per day. The building will be raised one storey, and a mansard roof put on so that the outward appearance will correspond with the internal improvements.

Mr. James Wilson, of Radford, P. Q., is busy at work on a new roller flour mill, the building for which is well under way. Mr. W. S. Lawrie, superintendent for Messrs. Wm. & J. G. Greey, was down that way and captured the order for the complete outfit of machinery, comprising a Little Giant water wheel, 8 sets of rolls, smutter, brush machine, cockle machine and separator, purifiers, flour dressers, scalpels, bran dusters, belting cups, shafting, etc. The Messrs. Greey will supply the plans of machinery and flow sheet for the mill on their new short system which has proved so successful in other small mills.

During the last few days the new full roller mill lately completed for Messrs. Gould Bros., of Uxbridge, was started in full working order. We are informed that the result from the start has been highly satisfactory, the grades of flour being of the best and the trash of the bran and shorts unexcelled. The contract was in the hands of Wm. & J. G. Greey, of Toronto. Work was commenced on the 15th of May, and the mill was ready to start on the 20th of July. Although the outward appearance of the mill is unchanged, such is not the case with the interior. On entering the door the eye rests on numerous sets of elevators in nicely varnished cases with black walnut and ash trimmings, located in the centre of the mill, while just back of them are seen the six double stands of rollers ranged in a row with their swiftly and silently revolving wheels and pulleys, quite a contrast to the old-fashioned millstone with its clattering shoe. The bolting system is what is known as the flour dresser system. The work throughout presents a very neat and compact appearance, and is very creditable to our Canadian manufacturers.

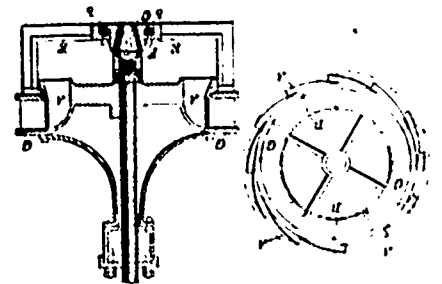
## Latest Canadian Patents.

### Turbine Wheel.

364,804. Ashley D. Cole, Toronto, Ontario, Canada. Filed Jan. 3, 1887. Serial No. 223,173. Dated June 14, 1887.

*Claim.* The combination, with the frame E, pivoted with a hole to receive a socket bracket, and a recess around hole, of the bracket C, having tapering socket and flange B, and inserted in said hole

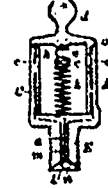
in the frame A, in said recess, the tapering step D in said socket,



and the screw-bolts F, engaging screwed holes in said frame and the flange of the bracket.

### Oil Cup.

305,547. John M. Smyth, Windsor, Ontario, Canada, assignor of one-half to Cornelius C. McGilgan, Detroit, Mich. Filed Nov. 4, 1886. Serial No. 217,962. Dated June 28, 1887.

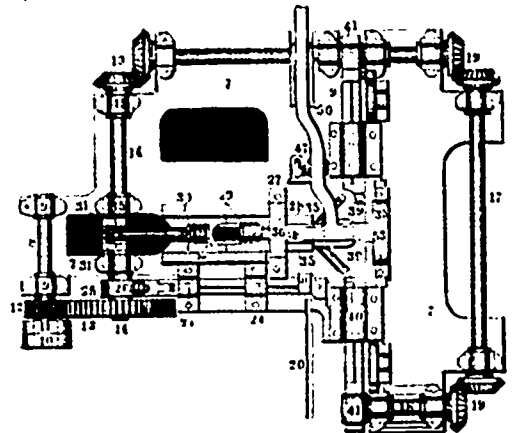


*Claim 1.* An oil cup consisting of two cylinders, the one closely fitting inside the other and forming a cap thereto, such two cylinders being secured together by a coil spring, one end of which is secured to one of the cylinders and the other to the fellow cylinder.

An oil cup consisting of the following elements: a cup, A, having a threaded stud, B, projecting from the bottom thereof, which stud is provided with a vertical orifice terminating in a cup-shaped enlargement, C, a perforated cylinder C, fitting closely within such cup, and provided with a knob, D, and a stud, E, and a coil spring, F, one end of which is secured to said stud E, and the other within the cup-shaped enlargement B in the stud B.

### Link-Bending Machine.

300,304. Stephen Collins, St. John, New Brunswick, Canada. Filed March 14, 1887. Serial No. 230,895. Dated July 12, 1887.



*Claim 1.* The combination of the frame 7, the shaft 14, journaled thereon and provided with an eccentric 25, and crank 31, the blade 21, fixed on the frame 7, the shaft 23, mounted to slide in bearings on the frame and connected with the eccentric 25, the shear-blade 22 on the shaft 23, the support 33, fixed to the frame, the former 38, depending from the support, the head 29, fitted to slide on the frame and connected with the crank 31, the fork 28, secured to the said head, and the rollers 35, journaled on the arms of the fork.

2. The combination of the shears 21, 22, the former 38, the sliding head 29, the bending fork 28, fitted to slide in the said head, and a spring, 37, between the head and bending fork, and mechanism operating the shears and sliding head in unison.

3. The combination of the former 38, the head 29, the bending fork 28, fitted to slide in the head, and a spring, 37, between the said head and fork.

4. The combination of the stationary former 38 and the fork 28, mounted slantingly to the former in slideways which are parallel with the former.

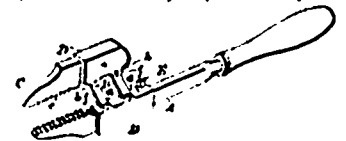
5. The combination of the frame 7, provided with the opening 34, the support 33, fixed upon the said frame, the former 38, depending from the said support, with its delivery end downward over the said opening, and means for bending links around the said former.

6. The combination of the frame 7, provided with the opening 34, the support 33, fixed upon the said frame, the former 38, depending from the said support, with its delivery end downward over the said opening, the pins 48, fitted through the support at the ends of the former, the springs 49, adapted to raise the pins, the lever 40, pivoted to the frame over the said pins, and means for operating the same.

7. The combination of the fixed former 38 and means, substantially as described, for bending a link around one end of it and along its sides, the end benders, 39, fitted to slide transversely past the opposite end of the said former, the tappets 41, engaging the benders 39, and the levers 42 and springs 45, acting upon said benders.

### Wrench.

306,246. Robert W. Philips, Guelph, Ontario, Canada. Filed Feb. 28, 1887. Serial No. 229,104. Dated July 12, 1887.



*Claim.* The combination, with the bar A and jaw C, of the sleeves D D on said bar and jaw, respectively, lugs F, formed on said sleeves, and the links B B, pivoted at their ends in said lugs substantially as described.



**PATENTS**

PROCESSED in Canada, the United States and all foreign countries, Caveats, Trade-Marks, Copyrights, Assignments, and all Documents relating to Patents, prepared on the shortest notice. All information pertaining to Patents cheerfully given on application. ENGINEERS, Patent Attorneys, and Experts in all Patent Causes.

**RONALD C. RIDOUT & CO.**  
ESTABLISHED 1857  
22 KING STREET  
TORONTO

**THE JOSEPH HALL MACHINE WORKS, OSHAWA,**  
have for sale:  
**IRON PULLEYS, HANGERS, SHAFTING, COUPLINGS,**  
A large assortment, almost every size and kind of pulley in stock, finished and ready for use.  
**JOHN LIVINGSTONE, Trustee.**

**THE JOSEPH HALL MACHINE WORKS, OSHAWA,**  
have now for sale:  
**15,000 Patterns**, in Wood, Iron and Brass, covering almost every requisite for the most extensive Foundries in the Dominion, for:  
**GENERAL MACHINERY, RAILWAY AND CAR WORK, MILL AND FANCY CASTINGS, AGRICULTURAL IMPLEMENT WORK, ENGINE AND BOILER WORK.**  
Enquirers will please send descriptions of what they may require, for prices and terms to  
**JOHN LIVINGSTONE, Trustee.**

**THE JOSEPH HALL MACHINE WORKS, OSHAWA,**  
have on hand and for sale the following:  
1 only Improved Leffel Water Wheel, 52 in., with sun.  
1 " " " " 48 in., against sun.  
1 " " " " 44 " " " with sun.  
1 " " " " 35 " " " against sun.  
1 " " " " 44 " " " with sun.  
1 " " " " 35 " " " against sun.  
1 " " " " 44 " " " with sun.  
1 " " " " 35 " " " against sun.  
1 " " " " 27 " " " with sun.  
1 " " " " 20 " " " against sun.  
1 " " " " 20 " " " with sun.  
1 " " " " 17 1/2 in., with sun.  
1 only Champion Water Wheel Governor.  
**JOHN LIVINGSTONE, Trustee**

**Common Engineering Co.**  
**WOOD ALL BRANCHES OF ENGRAVING**  
**FIRST-CLASS MECHANICAL WORK.**  
**17. KINGS' W. JORDAN**  
**F. BRIDEN. (COR.) H.B. SEALE.**

**T. CHAPMAN & Co.,**  
**Engravers, Lithographers, General Printers.**  
**CORRESPONDENCE INVITED.**  
**78 Wellington St. West**  
**TORONTO.**

**SMITH'S**  
**Mercantile and Land Reporting Agency.**  
**BANKERS--DOMINION BANK.**  
**General Solicitor, JNO. LEYS, Esq., Barrister, Toronto.**  
**Secretary--JOHN SMILKY, M.A.**  
**MANAGER--WILLIAM SMITH.**  
**General Offices--16 Court St., Toronto, Ont.**  
**Telegraph Address--Agency, Toronto.**

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

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

The Landed Enquiry Department of this Agency, the only institution of the kind known, is invaluable to Solicitors, Loan, Investment, and Insurance Companies, Estate Agents, and others, preventing fraudulent land transactions resulting from misrepresentations.

The Department for the collection of outstanding accounts is conducted on an entire change of the system usually followed by Collecting Agencies, viz:--Subscribers may have their collections paid either direct to themselves, or to the offices of the Agency, in which latter case remittances will be deposited to an account provided for that purpose, and immediately remitted to the parties to whom it is due, and will not be applied to any other purpose.

Another important feature in connection with this Department is, that subscribers depositing accounts for collection will, if requested, be furnished with a Form of Script, on which will be entered the name of each debtor, the amount owing, and a full report of the prospects of collection, and providing that the receipts thereof be paid to bearer only, thus enabling subscribers to realize on their outstanding accounts.

The Agency will forward at least once in three months, or oftener if desired, a report and statement of all accounts in hand.

NOTE--The offices of the Agency are open to the Solicitors and subscribers for reference to our numerous maps, atlases, directories, and correspondence, and for the transaction of business with their clients and customers when in Toronto.

**W. SMITH, Manager.**

**MILL AND MANUFACTURING PROPERTIES**  
**For Sale and to Rent.**

**FOR SALE.**--First-class roller flouring mill, elevator, storehouse and cooorage, 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.**--Grist mill, near Ridgetown, Ont. Three run of stone, steam power, two bolts, one smutter, one purifier, elevators and flour-packer, in good milling district and doing good business. Terms very moderate.

**FOR SALE.**--Grist mill and farm, in York county, near Toronto. Mill furnished with 7 pair of rolls, purifier, centrifugal reel, bran duster, smutter, separator and bolting reels. All in first-class repair. Farm 40 acres. Property only 10 miles from centre of Toronto. Terms moderate.

**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 1883, 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 mill, 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 Blenheim, Ont., 6 break-4 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, 9x24; 9 flour reels; 2 purifiers; 1 separator; 1 smutter; 1 bran duster; 1 packer, lags and barrels; hand packers, and full complement of elevators; 5 Leffel water wheels; 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 stones, 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 hbl. 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 set 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.

**For full particulars concerning any of the above properties, address**  
**MILLERS' & MANUFACTURERS' EXCHANGE**  
**31 King St. West, Toronto.**

THE INK USED IN THIS PUBLICATION  
**CANADA PRINTING INK CO.**  
TORONTO

**JR. COLLINS**  
**MILLERS BRANDS**  
**STENCILS**  
OF every description  
**TORONTO**

**PARKIN & CO.,**  
**GALT FILE WORKS**  
(Established 1870.)



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

**MILLERS**  
**AND**  
**MANUFACTURERS'**  
**INSURANCE COMPANY.**  
**STOCK AND MUTUAL**

**OBJECTS.**  
To prevent by all possible means the occurrence of unavoidable fires.  
To obviate heavy losses from the fires that are unavoidable by the nature of the work done in mills and factories.  
To reduce the cost of the insurance to the lowest point consistent with the safe conduct of the business.

**METHODS.**  
All risks will be inspected by a competent officer of the company, who will make such suggestions as to improvements required for safety against fire as may be for the mutual interests of all concerned.  
Much dependence will be placed upon the obligation of members to keep up such a system of discipline, order, and cleanliness in the premises insured as will conduce to safety.  
As no agents are employed and the company deals only with the principals of the establishments insured by it, conditions and exceptions which are so apt to mislead the insured and promote controversy and litigation the settlement of losses will thus be avoided.  
The most perfect method of insurance must, in the nature of things, be one in which the self-interest of the insured and the underwriters are identical, and this has been the object aimed at by the organizers of the company.  
**W. H. HOWLAND, Vice-President.**  
**JAMES GOLDIE, President.**  
**HUGH SCOTT, Managing Director.**  
Applicants for insurance and other information desired, please address **MILLERS AND MANUFACTURERS' INSURANCE COMPANY, No. 24 Church Street, Toronto**

**THE BOILER INSPECTION & INSURANCE CO. OF CANADA.**  
CONSULTING ENGINEERS AND SOLICITORS OF PATENTS  
Experts in patent cases. Assistance to inventors in making drawings and completing their inventions.  
22, King Street, Toronto.

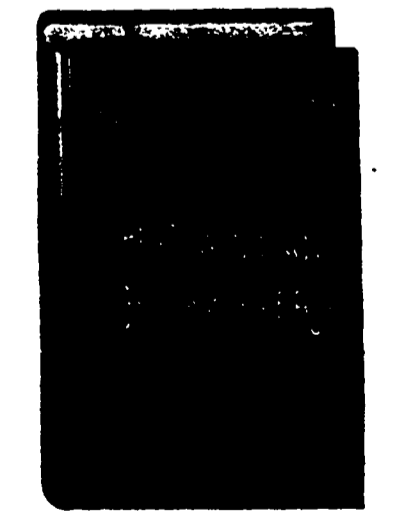
Established 1859.  
**REYNOLDS & KELLOND,**  
Solicitors of Patents, and Experts in Patent and Trade Mark Causes,  
**24 KING STREET EAST, TORONTO.**  
R. Y. KELLOND, RESIDENT PARTNER.  
M. A. REYNOLDS, RESIDENT PARTNER.  
Residence Office: 126 St. James St.; F. H. Reynolds, Resident Partner, Washington Office; Pacific Bldg., F. Street; Agencies in all foreign capitals.

**ROSCOE B. WHEELER**  
PROCESSES  
**PATENTS**  
**FINNEY & WHEELER**  
Prosecute and Defend Patent Cases in U.S. Courts.  
**PATENT BUSINESS EXCLUSIVELY.**  
Opinions given on Questions of Infringement.  
Fees reasonable. Hand Book Free.  
Rooms 9, 10, 11, No. 94 Griswold St., opp. P. O.  
**DETROIT, MICH.**

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

Best	Capacity
Best Stones	6 to 40
Full mill from 200 lbs. cases.	bus. pr. hour
2 in. wood	2 to 20
4 in. frames	horse power
	Send for new Circular.

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



A New Series on the  
**SCIENCE OF ACCOUNTS**  
PRICE, \$1.00.  
**CONNOR O'DEA,**  
TORONTO, ONT.

[For the MECHANICAL AND MILLING NEWS.]

## THE WOOD AND IRON-WORKING MACHINE BUSINESS OF CANADA.

By L. A. MORRISON, TORONTO.

It might be quite interesting to the readers of the DOMINION MECHANICAL AND MILLING NEWS, if it were not beyond the scope and space of this article, were I to trace and illustrate the development of the different and leading kinds of machines, from the crude constructions of forty or fifty years ago—some of which are yet to be found here and there over the country—to the latest improved machines, invented by modern mechanics, and which show in themselves the result of practical mechanism, gathered up and put into its most suitable form for usefulness and production. It would seem at first sight if such a comparison were made, and the reader were not aware of the progressive steps that led from one to the other, that the *genius of invention had not bestowed her presence and enlightenment upon man until in the latter days.* Viewed, however, in the light of the mechanical development that led from the one up to the other, step by step, it is at once seen that no great stride was made at any one time, nor any very radical or sweeping change of construction introduced anywhere. Only by slow, and sometimes very crude, processes of development, have any or all of our modern wood or iron working machinery reached their present standard of finish or ability to do the work for which they were designed. A very large proportion of the improvements have been brought about by the effort necessary on the part of the manufacturers to meet and satisfy the requirements of the customers. Of course, new machines have been introduced from time to time in the years past, suitable in construction for the performance of certain specific operations, and apparently of new design and radically different construction to anything that had appeared previous to them; nevertheless these machines as a rule have been quite imperfect, and have had to go through the same processes of mechanical development as the older and earlier productions.

American mechanics have always been in the van in the matter of invention and improvement in both these lines of machinery. A number of reasons have led or contributed to this result. The spirit of liberty and progress that permeated all the people at the inception of the National life; the competition of invention to begin with; the keener competition of commercial necessity of later years; the enthusiasm with which their intelligent and far-seeing mechanics adopt and seek after the very best in everything pertaining to machinery—these and a great many other reasons have contributed to keep the Americans ahead, not only of Canada, but the whole world. Canada, of course, is comparatively a new country, as compared with the Eastern and Middle States, and while the machine business of these States, (which are the centre of mechanical industry of that country) did not amount to anything scarcely at the beginning of this century, the machine business of Canada does not, even in its crudest beginnings, date back more than 50 years, and it is quite within the memory of a good many millers of the present day when the "Old Red Mill" at Holland Landing was considered quite a curiosity on account of having turned shafting in it. As might be expected, Canadian mechanics desiring to obtain machine tools or wood-working machinery for the purposes of their business in the years from 1830 to 1860, found it much more convenient to visit the New England States than England for what they required, and as a consequence of this, not only American machinery, but American habits and methods of work came into use over Canada. During this period machine shops began to spring up, started in the greater number of instances by English or Scotch mechanics, some of whom, however, had spent some time on their way into Canada in the New England shops, and so by slow degrees, and to supply the demand for a greater speed of production than hand work, machinery began to be manufactured in some of the principal centres of Canada, and a few of these shops started away back in the "forties," in a quiet small way, have continued to grow and expand, until the staff of their works at the present time, with the members of their households would almost make up a fair sized country village. It was not the writer's intention to mention any names in this article, but just here he cannot refrain from citing the present firm of Goldie & McCulloch as an example of the development of the wood working, milling and general machine business in Canada, and because that, from their shops, by their mechanics branching out on their own account, has sprung up nearly all the important machine shops occupied in building wood working machinery, now in

the province of Ontario—which is the chief manufacturing province of the Dominion.

In the later development of the wood working business, Canadian mechanics have kept pace very fairly with their American brethren, so that in quite a number of machines, Canadian skill has proved itself equal if not superior to American, until to-day, with shops fully equipped with the finest tools for producing accurate work, and with an abundance of home-trained skilled labour, the manufacturers of wood working machinery are ready and able to come into competition with the world in every important line, both as to style, workmanship, quality and price.

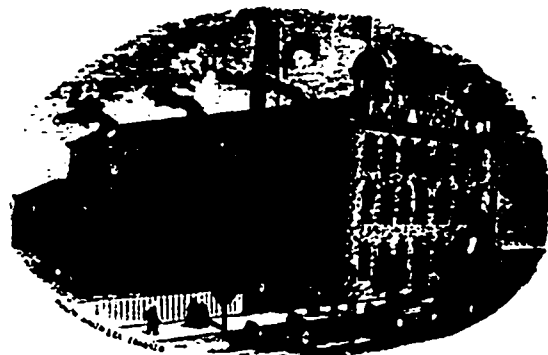
In the production of iron working machinery in Canada, the beginning, continuation and development of the trade has been somewhat different from that of wood working machinery. Beginning about the year 1840, a few lathes and planers, almost altogether designed after the English style of tools, were built here and there over Canada, but it was not until about 1860, that any firm began to make a specialty of building machine tools, and then the different firms who did start and continue to build, being composed of English and Scotch mechanics nearly altogether, designed their tools after the old country style and model—flat shears, narrow faced cones and light spindles in lathe building, and in almost the whole range of tools built, frames, that viewed in the light of modern "tool practice," were altogether too light for the capacity of the tool.

Here again the progress of New England mechanics both forced and helped our Canadian tool builders into a better style and method of production. With the development and competition that came about among the different machine shops over the country, and the diffusion of knowledge resulting from our young mechanics in their endeavor to improve themselves having visited the United States, there resulted a desire on the part of our machinists to introduce into their shops the improved class of iron tools, with automatic feeds, substantial and accurate workmanship and a suitable design to insure large production. The result was that quite a number of the larger shops were very fully equipped with American tools, during the years just preceding the National Policy. This served a useful purpose for the tool business of Canada, in educating our Canadian mechanics to the advantages of using first-class tools in their work, so that when, in 1878, the advanced tariff largely increased the price of imported machine tools, and gave a very considerable measure of protection to the Canadian manufacturers, it was found that a large number of our most progressive Canadian machinists would no longer be satisfied with the old style of English designed tools, and must either have modern-style tools built for them, or they would continue to import them notwithstanding the enhanced duty. Arrangements were at once begun for the manufacture of such a style of tools as the market required, and for the last eight years the concerns engaged in tool building have been in a state of preparation and development for business, until to-day there is no longer any need for any one going out of Canada for a modern-style machine tool of any description. One of the almost insurmountable difficulties that met the tool builders of Canada, in changing the style of their production, or in undertaking to build tools of fine design or finish, was the lack of practical skilled mechanics, who were conversant, to some extent, with the methods of construction and finish necessary to produce tools to suit the requirements of the market. No tool shops had existed in Canada, prior to 1880, large enough to educate the number of mechanics necessary, nor competent in their work of providing the right kind of technical instruction to make these mechanics tool builders. This difficulty, however, has been very fairly overcome, first, by importing from the New England States, competent heads of departments, and then, by educating our own young mechanics up to the necessities of the business, so that now all the tool shops of Canada are building tools of latest design and finish, and one at least under the supervision of skilled American mechanics in every department. The present almost prohibitory tariff on both wood and iron working machinery, if maintained for some years, will serve a very useful purpose in teaching our Canadian users of machinery, that Canadian manufacturers are capable of building and supplying such machinery as they require in every department of mechanical industry, and the writer hopes that when the DOMINION MECHANICAL AND MILLING NEWS issues its own "Jubilee Number" it may be able to say in connection with this line of industry which it represents, that "CANADA BELONGS TO THE CANADIANS."

Mr. Kating, Riverview, Ont., had his left hand badly cut while working in Carlaw's mill in that village.

## ST. CATHARINES SAW WORKS.

The above works, an illustration of which appears below, are among the very first manufactories of the kind established in Canada. The present proprietors are Messrs. R. H. Smith & Co. These works were first started at Hamilton, Ont., by Mr. Joseph Flint, of Rochester, N. Y., in 1855. Mr. Flint, in company with Mr. R. H. Smith, of the present firm, owned and operated a saw manufactory in the city of Rochester. In 1859 the works at Hamilton were removed to St. Catharines, Ont., where advantage was taken of the excellent water power. In 1869 the partnership between Mr.



Flint and Mr. Smith was dissolved, and the following year Mr. Smith purchased the St. Catharines works. In 1873 the present handsome and commodious stone building was erected, business being commenced in it on the first of January, 1874.

The firm manufactures all kinds of saws, for which they find a market in all parts of Canada, as well as in England, Australia and the United States. They lay special stress upon their tempering process, known as the "Simond's process," which they claim to be absolutely uniform. Mr. Smith has two sons who assist him in his business.

## "CALLS," "PUTS," "STRADDLES," AND "SPREADS."

John Jones, merchant, mechanic, or whatever he may be, contracts with Russel Sage, broker, for Sage to deliver to Jones, at any time when Jones calls for them within a certain period—thirty days, ninety days, six months, etc.—1,000 shares of Delaware and Lackawanna stock, at a certain price, Jones paying a margin on the purchase. In this transaction Jones buys a "call."

Jones contracts with Sage, for Sage to buy from him within a stipulated time, and for a stipulated price, 1,000 shares of Delaware and Lackawanna, Jones, as in the other case, paying a certain margin on the purchase. Jones in this transaction, which is the reverse of the preceding one, buys a "put." The margin in calls and puts is usually about one per cent. of the purchase price.

Jones contracts with Sage, Sage agreeing within a certain specified time, to buy from Jones, or to sell to Jones, 1,000 shares of Delaware and Lackawanna, at the market price of the stock at the time the contract was made, say 102. If the price goes up to 103, Jones compels Sage to sell him the stock at 102, when he disposes of them at the market rate. If the price goes down to 101, Jones buys 1,000 shares for 101 in the market, and compels Sage to purchase them from him at the stipulated price, 102. In this transaction Jones buys a "straddle."

Jones contracts with Sage for 1,000 shares of Delaware and Lackawanna at 100 and 104, the market price at the time of the contract being 102, Jones having the privilege to compel Sage to sell him the stock at 102, if it should go above 104, and to compel him to buy the stock from him at 102, if it should go below 100. Jones in this case buys a "spread."

"Straddles" and "spreads" combine the features of "puts" and "calls" together. As the element of risk is assumed to be smaller in these transactions than in "puts" and "calls," the margin which the broker requires is correspondingly larger. Jones, it will be seen, makes, providing he holds a "straddle," if the market goes down or up, after his contract is made. If he holds a "spread," he makes if the market goes either above or below the contract.

These are illustrations of the principle in dealings in privileges in any speculative stocks or commodities. Jones, the hypothetical holder of the privilege, simply bets either that the market price will not go up, or go down, or that it will not go up or down beyond a certain point, as the case may be, Sage taking the bet. In fact, the element of chance is as distinctively and conspicuously present in these transactions, as it is in those of the pool room or the gambling table.



**ST. CATHARINES SAW WORKS.**

**R. H. SMITH & CO.**

ST. CATHARINES, ONT.,  
Sole Manufacturers in Canada of

**THE "SIMONDS" SAWS**

AT GREATLY REDUCED PRICES.  
All our Goods are manufactured by the "Simonds" process.  
Our Circular Saws are unequalled. We manufacture the  
Genuine HANLAN, LANCE TOOTH, DIAMOND, NEW  
IMPROVED CHAMPION, and all other kinds of cross-  
cut saws. Our Hand Saws are the best in the market, and  
as cheap as the cheapest.

**THE LARGEST SAW WORKS IN THE DOMINION.**

Established 1849. Incorporated 1884.  
**THE DETROIT SAW WORKS**



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

**FAVORITE  
MILL BUCKETS**



*Manufacturer and Dealer.*

**JOHN RADIGAN,**

68 Mary Street,

**HAMILTON, ONT.**

SEND FOR PRICES.

**THE FENSOM ELEVATOR WORKS,**

34 36 AND 38 DUKE STREET,  
**TORONTO,**

SOLE MANUFACTURERS OF THE

**Bostwick Steel Gates and Guards**

FOR BANKS, WAREHOUSES, PRISONS, VAULTS AND DWELLINGS.

**MACHINERY SUPPLY ASSOCIATION**

COR. CRAIG AND BLEURY STS., MONTREAL.

PUMPING MACHINERY.

MINING MACHINERY.

Iron and Wood-Working Machinery,

Steam Engines,

Boilers,

Shafting,

Hangers,

Pulleys,

Machinists' Tools, Etc.

**RAILWAY EQUIPMENT.**

**THE LONDON MACHINE TOOL CO.**

— OF —

**LONDON, - ONTARIO,**

— MANUFACTURERS OF —

**IRON WORKING MACHINERY,**

— INCLUDING —

Lathes,

Planers,

Shapers,

Bolt Cutters,

Milling Machines,

Drilling Machines,

Bradley Hammers,

Drop Hammers,

Punch and Shears,

Fox Lathes,

Hand Lathes,

Cock Grinding Lathes,

Turret Screwing Machines,

Turret Chucking Lathes,

Monitor Turret Lathes,

Fox Monitor Lathes,

Value Milling Machines,

And including a Full Line of Machinists' Tools.

For full particulars and prices apply to

**A. R. WILLIAMS, Soho Machine Works, TORONTO.**

(L. A. MORRISON, with A. R. WILLIAMS, Exclusive Agent.)

**GODERICH FOUNDRY AND MACHINE WORKS.**

**RUNCIMAN BROS. - PROPRIETORS.**



WE ARE MANUFACTURING AND SELLING ALL KINDS OF MACHINERY FOR

**GRADUAL REDUCTION ROLLER MILLS**

— WILL FURNISH PLANS AND SPECIFICATIONS FOR —

**FLOUR MILLS, SAW MILLS,**

**STEAM ENGINES AND BOILERS**

We make valuations of all kinds of Machinery when required; we also take contracts to furnish Gradual Reduction Roller Mills with all the Latest Improved Machinery, and hand them over in complete working order, guaranteeing good results. MESSRS. R. and JAMES S. RUNCIMAN will look after the mill work, and give their personal attention to all contracts, and from their long experience in mill work, parties trusting them with contracts may depend on having the work well done. We have a very complete stock of Patterns for mill work and other things, and parties in want of Castings can be supplied here by sending in their orders.

We are making Roller Frames and Cabinets for small or large Mills, using the Genuine American Ansonia Chilled Rollers, Corrugated and Smooth, as follows: 6x12, 7x14, 9x14, 9x18 and 9x24, neatly fitted up and belted at both ends. They run perfectly noiseless.

Centrifugal Boils for Bolting Flour, Bolting Mills with Double Conveyors, Scraping Boils, Purifiers to Clean Middlings, Flour Packers, Out and Cockle Separators, Smelters, Brush Machines, Dust Catchers, Bolting and Wire Cloth, and all kinds of Mill Furnishings.

**MILL AND OTHER REPAIRS ATTENDED TO ON SHORT NOTICE.**

Steam Engines and Boilers made, and set up to order. Some second hand Engines and Boilers for sale. SEND FOR PRICES.



## GRINDING MILLS.

**H**IGH grinding, low grinding, and gradual reduction or a system which will more or less completely embody the elements of any two systems, have engaged the attention of millers to a remarkable degree for some years past. With the efforts made for the advancement of this industry there have come remarkable improvements in all kinds of grinding mills. The dressing of burr millstones and the attention given to their running have also directed inventors to the making of improved forms of other grinding mills, where various designs of grinding and cutting disks of metal have been introduced for a greater variety of work, and for its performance in a much better way than was formerly possible.

We herewith illustrate some points of mills now being

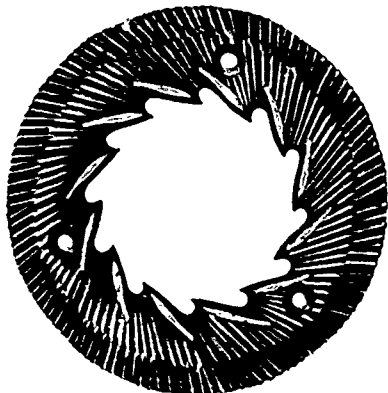


FIG. 1.

made, which are guaranteed to do a wide variety of work—to be fully equal to any pair of French burr millstones or any roller mill for the reduction of wheat to flour, either for the first breaks or regrinding the middlings and bran, also for fine corn to table meal, or corn and cobs to feed meal, as well as drugs, spices, and calcined bones to powder.

Fig. 1 represents the front side of the grinding disk. The first reduction is produced in the bossed part of the disk, where the furrows run sharp cutting edge front, to cut the grain fine with the least power possible. The second reduction is upon the flat outer circle of furrows running their inclined sides front, to mash and mellow the meal already cut fine. The saw toothed inner edge of the disks forms a natural crusher, to reduce pieces sheared from the cob, so they will pass through the mill by the aid of the conveyor flights arranged around the eye of the disks. These conveyor flights are arranged to act like a fan to draw cool air and grain into the mill at a low speed. The grain, first cut fine, is then rolled, mashed, and mellowed so perfectly that it enlarges in bulk. The grinding disks are cheaply renewed and easily interchangeable. A spring extending from the bridge tree down to the base gives sufficient elasticity to allow of nails and spikes passing through the mill without injury, while not crowding during the grinding.

This mill is adapted for either animal power or steam or water power, and it has acquired an enviable degree of popularity.

Its special construction is covered by patents, and the makers, Messrs. Paxton, Tate & Co., of Port Perry, Ont., endeavor to make the mills the best in the market.

Judging from the large number they have sold, and the very favorable testimonials given by prominent men, we should say it would be to the interest of lumbermen, millers and farmers to fully investigate the merits of this machine.

## PUBLICATIONS.

We have received during the month the first number of the *Milling Sphere*, a publication devoted to the milling interests in the United States. The *Milling Sphere* is published in St. Louis, Mo., under the supervision of E. M. Tatlaw as editor, and James H. Donan as publisher. We hope that the courage which the publisher has shown in entering a field already so fully occupied, may be appreciated by the men to whose interests the paper is devoted.

The Brunette Saw Mill Co., New Westminster, B. C., in forwarding their subscription to this paper write: "We see some very curious stories about our country sometimes and especially about our timber. We had a fir log in our boom last fall, 110 feet long and 22 inches in diameter at the small end, perfectly straight and without any visible knot till within a few feet of the top. That is not by any means an uncommon size here."

A Glasgow engineering firm have constructed what is said to be the largest planing machine in the world, specially intended and designed to be employed in connection with the preparation of steel plates for the girders of a railway bridge in New South Wales. The weight of this vast machine is stated to be some thirty-five tons, and it is capable of planing the edge of a plate thirty-eight feet in length by five feet wide.



The Bradford saw mill is in motion again.

A large furniture factory is to be erected at Burlington, Ont.

F. X. Wilson, lumber dealer, Plantaganet, Ont., has assigned in trust.

Mr. W. Hogg, who owned the sawmill at Flesherton, Ont., has assigned.

McDonald's saw and planing mill which was burned recently, is being rebuilt.

Gibson's planing mill at Halifax was destroyed by fire a few weeks ago.

Gillmore & McCallum's saw mill at Spring Hill, N. S., was burned recently.

Chas. Conrad, lumber operator, St. Thomas, has compromised at 25c. on the \$.

A saw mill is to be built on the Rainy River, Man., by Messrs. Hughes and Kennedy.

Van Allen & Son purpose moving their planing factory from Aurora to North Bay.

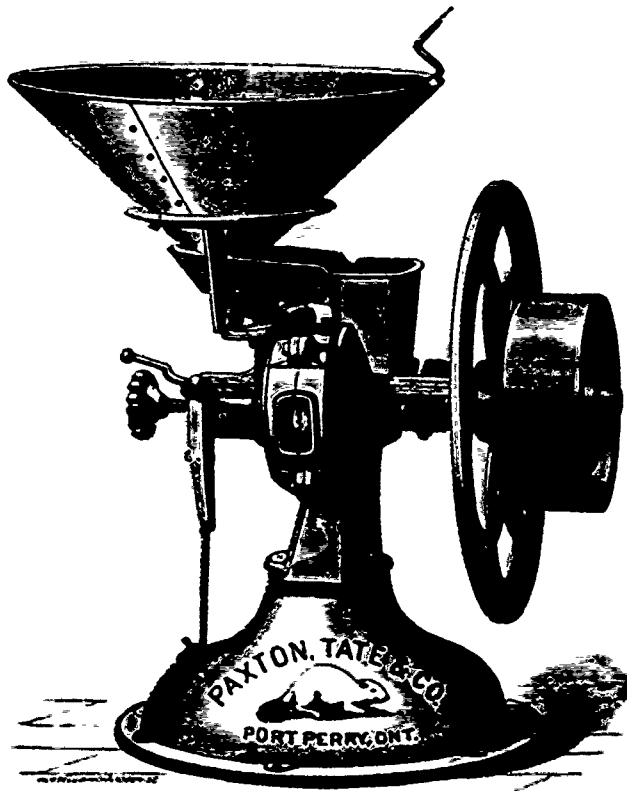
A lumber yard will be opened in Emerson, Man., by Messrs. Badgley & Hamilton.

The saw mill on Rainy Lake, at Rat Portage, Man., has run out of logs and closed down.

A young man named Chapman had his hand badly crushed while working in Mitchell's mill at Binscarth, Man.

British Columbia advices state that considerable valuable timber is being destroyed by fire in that province this season.

A lumber mill, with a quantity of lumber, owned by Hillyard Bros., St. John, N. B. was recently destroyed by fire.



PAXTON, TATE &amp; CO.'S GRINDING MILL.

The steam sawmill owned by L. G. McLean, Wallace, N. S., was burned a week or two ago, entailing a loss of \$7,000.

The Berlin, Ont., council, at a late meeting, decided to exempt Mr. Kaufman's planing factory from any higher taxes for ten years.

Lumbermen on the North Saskatchewan are said to be having considerable trouble in floating their rafts this season, owing to low water.

Davis & Co., wholesale and retail lumber merchants of Winnipeg, Man., has been succeeded by the Manitoba Lumber and Fuel Co.

The creditors of Charles Conrad, lumber merchant of St. Thomas, Ont., met recently and accepted an offer of 25 cents on the dollar.

Several piles of lumber at Ottawa belonging to Messrs. Grier and Messrs. Sheppard & Morse were burned recently. The loss was about \$10,000.

The probability is that not more than 110,000,000 feet of lumber will be cut on the St. John this year, instead of 150,000,000 feet as was expected.

The Cochrane Lumber Company of Portage la Prairie, have a railway track one mile and a half in length, and will soon have their whole line in running order.

An apprentice boy opened one of the valves of the steam pipes too fast on starting up in Dorman's mill at Mitchell, and in consequence a general smash-up occurred.

A few days ago a fire broke out in Cosley & Campbell's planing mill at Port Huron, Mich., and owing to the dry condition of everything around, soon reduced it to the ground.

The Royal City Planing Mills Co., of Vancouver, B. C., are sending samples of their windows, sashes, doors, blinds and lumber to Yokohama, Japan, in the hope of establishing a trade with that country.

Mr. John Paterson's saw mill at Hollin, Ont., was struck by lightning on the 5th ult., and was totally destroyed together with a large quantity of lumber.

Sullaby's steam joining and planing mills at Gravenhurst, Ont., were destroyed by fire on Sunday July 17th, together with a large quantity of lumber. The loss ranges from \$5,000 to \$8,000.

A. I. Wright & Co., Salisbury, N. B., are building a large steam power mill on the Coverdale River near that place. This mill is being fitted with the best machinery of Canadian manufacture.

Sparks from the engine was the cause of a fire in Hunter & Ezard's sash and door factory in West Milton, Ont., a few days ago. The factory was burned to the ground and entails a loss of about \$7,000.

It is stated that great quantities of telegraph poles, hoops and staves are being shipped this season to the United States from the vicinity of St. Thomas, the value of the exports of these articles this season exceeding \$62,000.

The tramway in connection with the Parry Sound Lumbering Co.'s mills, gave way a few days ago and injured three persons, one somewhat seriously. Mr. George Stevens, of Axehate, had one of his legs broken by the accident.

The shingle mill owned by Gordon & Graham, at Emily Cross Creeks, was totally destroyed by fire on the 6th of July. This mill has only been running a short time and the loss will be heavy as there was about 80,000 shingles destroyed at the same time.

During a very heavy thunder and lightning storm which swept over the Southern part of New Brunswick, Simmonds & Burpee's mills, near St. John, were completely destroyed. The loss is \$7,000, of which \$3,000 is covered by insurance.

Reports from St. John, N. B., state that the late rise in the water there, has brought down most of the lumber in the streams, except a jam of logs containing about 20,000,000 feet, at the Aroostook Falls. The Fredericton Boom Company rafted over 4,000,000 feet for the Douglas and Mitchell Company in one week.

A Washington despatch of the 21st of July says that the Treasury department has decided that sawed elm boards 6½ feet in length, 1½ inches in thickness, the edges of which follow the natural shape of the tree, used in the manufacture of hoops, are subject to a duty of \$2 per thousand feet board measure, under the tariff provision for sawed elm lumber.

The Vancouver *Venue* says: There appears to be good grounds for expecting that the next twelve months will witness the development of a large trade from Vancouver in the shipments of manufactured articles such as sashes and doors, and other goods of a like nature. One factory of this kind is already in operation here, and another one is now in course of construction.

The C. P. R. bridge over the Eau Claire river stopped the logs that were being floated down to the Eau Claire mills at Calgary, N. W. T. It is reported that the Eau Claire Co. will claim damages of the C. P. R. Co. for the detention of their logs, as they state they gave the railway company notice last fall that they would require sufficient passage to run their logs.

An East Saginaw despatch says that mill employees there are quietly working to exclude the French-Canadians from working in the mills there. These men came over during the winter in response to advertisements published by local lumbermen in Canadian papers. The American lumbermen now look upon this as a violation of the statute prohibiting the importation of foreign contract labor.

Two very severe accidents occurred recently in Booth's lumber mill at Ottawa. Mr. Charles Cosgrave had his hand caught in the rollers and it was so badly hurt that it was found necessary to amputate three fingers. This operation had no sooner been performed than the physician's services were required for Mr. Joseph Blooney, who had dislocated his shoulder and broken his arm in the mill.

Mr. McDowall, M. P. for the Eastern Saskatchewan district, and Mr. Moore have been incorporated into the firm Moore & McDowall (limited), to transact a lumber business in the Northwest. These men have long been connected in business, and are well known in the Northwest. Mr. McDowall's name has been mentioned in connection with the lieutenant-governorship of the territories.

A lumber transaction of large proportions is being negotiated in Ottawa. Mr. James Ross, of Quebec, and Mr. E. B. Eddy, of Hull, are negotiating with McLaughlin Bros. of Arnprior, Ont., for the purchase of the saw mills at Arnprior, and their timber limits on the Upper Ottawa. If Mr. Ross and Mr. Eddy succeed in their negotiations, they purpose building a new short line railway from Arnprior. The ill health of Mr. C. McLaughlin makes him anxious to retire from business.

It is quite common to fell trees in British Columbia, yielding 15,000 feet, board measure, or a log fifty feet long and four feet square at small end. These immense trees are sawed down, wedges being used to make them fall in the desired direction, and the sawyers become so expert that two of them will in one hour cut down a tree six feet in diameter. When downed, three men with single saws cut it up into lengths from 16 to 40 feet, or longer as required. A saw mill man from Columbia told me that trees six feet through showed an average of 175 rings or annual growths.—*Emigrant*.

The Ottawa *Free Press* says that as the St. Catharines Milling and Lumber Company have no hope of succeeding in the suit which they are carrying on at the expense of the Dominion Government against the Province of Ontario for the possession of timber limits granted to them in the disputed territory, the gentlemen forming the company, viz:—Messrs. P. H. Cabot, J. A. Gouin, Captain Murray, and others, have decided to insist that the Dominion Government shall give them Indian reserve timber lands in Ontario as compensation for breach of covenant on the part of the Government in failing to put them in possession of the timber limits granted to them three years ago in the Lake of the Woods region.

# L. B. MONTGOMERY,

127 Bay St. Toronto, Ont.

**MILL**  
**STEAMBOAT AND ENGINEERS'**  
**SUPPLIES**

**ASBESTOS,**

**Steam Pipe and Boiler Covering.**

*Material supplied, or covering done by measurement or contract.*

## The Port Perry Feed Mill

**BEST IN AMERICA.**



**G**RINDS all kinds of Grain equal to any pair of French Burr Mill stones, or any Roller Mill for the reduction of wheat to flour, or for fine corn to table meal, or corn and cobs to feed meal. Send for particulars.

**PAXTON TATE & CO.,** Founders and *Mechanists,* **PORT PERRY, ONT.**

M. McLAUGHLIN.

A. MOORE.

## Royal Dominion Mills

TORONTO.

Daily Capacity - - - 350 Barrels.

**FOR BAKERS' TRADE:**

Patent and Strong Bakers' from No. 1 Hard Manitoba Wheat.

**FOR FAMILY TRADE:**

Our "KING" brand is unequalled for making light and deliciously flavored Home-made Bread.

**McLAUGHLIN & MOORE,**  
PROPRIETORS.

## STOUT, MILLS & TEMPLE'S NEW AMERICAN WATER WHEEL

PATENTED IN CANADA, 1884.

**A FIRST-CLASS WHEEL,**  
Preferred by American Roller Mill Experts as the **Very Best Wheel Made for Milling Purposes,**

BECAUSE OF ITS  
*Gradually increasing speed in starting,*

*Strong steady power and economy*

*While running with full or part water.*  
*Easy Working, Tight and Durable Gates*

*That do not choke up.*

**WM. KENNEDY & SONS,**  
**OWEN SOUND, ONT.**

Sole Manufacturers and Vendors for Canada by agreement with Patentees.  
*Water Wheels and Main Driving Machinery our Specialties.*



## JONES'

# SHORT SYSTEM

OF MILLING FOR MERCHANT MILLS.

**Five Rolls Complete the Grinding System.**

## JONES' SHORT SYSTEM FOR CRIST MILLS

3 Rolls, 2 Bolts and a Purifier, with proper Cleaning Machinery, is all that is necessary to produce as good flour as most of the Roller Mills are now producing.

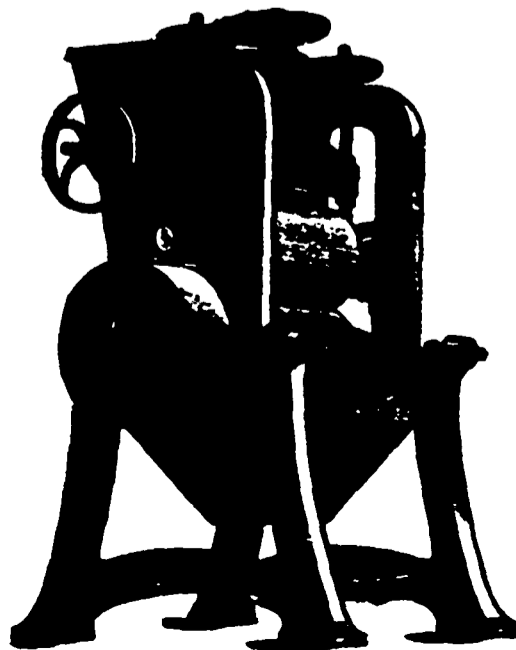
### JONES' NEW ROLL FOR WHEAT MIDDINGS OR BRAN.

It is the only Roll built on correct mechanical principles. Nothing Better.



### JONES' STONE ROLL FOR MIDDINGS.

This Roll will give Better Results in Purified Middings than any iron Roll. Nothing better for this purpose.



### JONES'

**IMPROVED ROLLER DISC MILL**

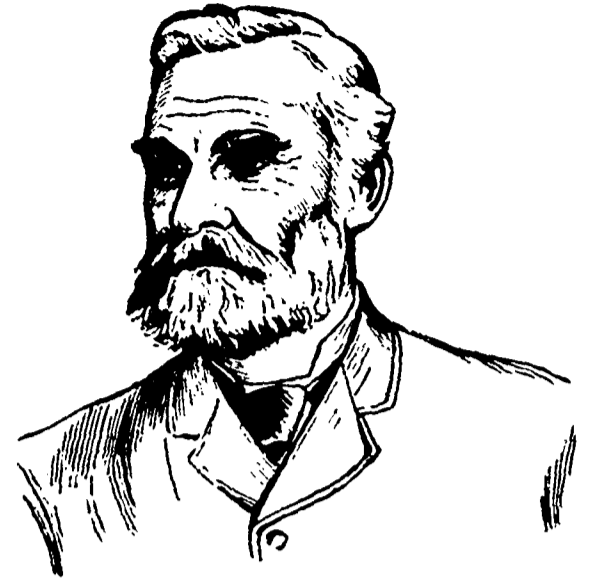
**For 1st Break.**

This is an improvement on all Roller Disc Machines. It will split the berry in the center, and by changing the concave, it will reduce the wheat to flour to be finished by one more operation.





WM. GREELY, TORONTO.



JOHN INGLIS, TORONTO.



THOMAS COWAN GALT, PRESIDENT CANADIAN MANUFACTURERS ASSOCIATION.



J. H. KELLY, HAMILTON.



ROBT. MCKEE, DUNDAS.

PROMINENT CANADIAN MANUFACTURERS

# CANADIAN RUBBER CO.

Cor. Front and Yonge Streets, Toronto.



Manufacturers of  
**RUBBER SHOES,**  
 FELT BOOTS,  
**Rubber Belting**  
 PACKING,  
 Engine,  
 Hydrant,  
 Suction,  
 Steam,  
 Brewers' and Fire  
**HOSE.**

**VALVES,**  
**GASKETS,**  
 Car Springs,  
 Wringer Rolls,  
 Carriage Cloths,  
 Rubber Blankets,  
 Stoppers, &c.  
**RUBBER HORSE CLOTHING**  
*Ladies and Gentlemen's Tweed and Gossamer Clothing.*  
**MOULD GOODS**  
 OF EVERY DESCRIPTION.

J. H. WALKER, MANAGER.

## GOLDIE AND McCULLOCH, GALT, ONTARIO

TO PARTIES WHO CONTEMPLATE

# BUILDING OR RE-BUILDING FLOUR MILLS,

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

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

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



**FIRE AND BURGLAR PROOF.**  
**SALTERS**  
**VAULT DOORS, & CO.**  
*First Prize Awarded, Toronto, 1883, 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.**

## Correspondents' Opinions.

This department is set apart for the purpose of publishing in answer to questions, expressions of opinion, or relating bits of news, of practical value to the miller. The editor hopes to see it liberally employed and promises to engage it to any necessary extent to accommodate contributors.

### THE SHORT SYSTEM OF MILLING.

Editor Mechanical and Milling News.

Perhaps there is no subject that affects the milling interest of to-day so much as how to produce the best results at the least expense. In the United States, where the different methods and systems are given practical tests, they have discovered that the goal has not yet been reached in milling. They are now beginning to see that millions of dollars have been expended that might have been saved. The change from stones to rolls was an essential one—the benefits were clear to all intelligent millers. Most of them thought seven breaks were necessary to produce the best results, and that no mill was complete without this number. To carry out a system of this kind required a large outlay in the varied machinery necessary to its adoption, and many millers have been financially ruined in trying to reach this goal.

The time has now come when competition in business will not allow of any defective system or defective machinery, and because of this the inventive energies of the world are turned in this direction. Some of the best mills in the United States are now running on what is known to them as the short system of milling, using three or four breaks in the reduction of the wheat where they had been using seven or more, and the results are much better.

Three breaks have been selected by some as producing better results than any other number, but some advocate but two. I have been carefully watching the results of some of the mills that have adopted the short system, and have given the results careful examination in comparison with mills working on the long system, and in every test made the short system showed superior results in the quality and color of the flour. These results led me to enquire for the cause. Why did the short system of grinding and bolting produce whiter flour than that made on the long system? After carefully considering the composition of the wheat berry, it was not difficult to find the reason. The starch and gluten which compose the flour in the wheat are pure in themselves. These two elements are by nature provided with three distinct coverings, which, in a dry condition, will pulverize as readily as the gluten and starch which we call bran. If this becomes mixed with the flour, it is impossible to remove it by any process now used. We may attempt to remove it by purifying and rebolting, and to some extent succeed, but the finest parts will remain in the flour. Ninety per cent. of the whole should be absolutely pure flour if the milling is properly done. Now let us see why this is not the case, and why it cannot be done in the long system of milling.

The first reason we give is that every time the wheat passes through the rolls, it is subject to a rasping process, which pulverizes the hair fiber more or less, and when once pulverized, it can never be properly separated. The purifier and bolts may help it some, but they do not take out the injurious material that has been put there by grinding. The same rule holds good in the reduction of middlings. Middlings should be well purified, then reduced at once. The idea of gradual reduction in middlings is out of date, and is fatal to the color of the flour as well as the gradual reduction of the wheat. Any miller who wishes to prove these statements can do so by carefully examining the product of each break. Make the examination thorough by sifting and grading the material, then apply the water test, which will show the color of each break.

To prove this theory correct, wet a given quantity of wheat, let it remain twenty-four hours, then grind it; grind also at the same time wheat without being wet, and you will discover that the flour is much whiter from the wet wheat than the other that was not wet. The reason is that the bran was not in a condition to pulverize. This is the reason why so many devices have been invented for steaming and heating wheat before grinding.

It is right here where the advantage of the short system of milling comes in, by reducing the wheat with one or two reductions. This, with the proper separations at the beginning, will prevent the pulverizing process (providing the proper machines are used to accomplish this). And it is this question of the best machine to do this work that will form the main feature of future discussions on this subject. Some have decided that a roller disc mill with proper corrugations is the best for the first operation, to be followed by a pair of corrugated rolls to finish. Others are seeking to accomplish the results by other means. Whatever means are used the

object should be to accomplish it in the quickest way possible.

Those millers who have not changed their mills will have the satisfaction of knowing that their mills can be changed for less than half the cost it required four years ago, and the results will be better.

PROGRESS.

TORONTO, 7th July, 1887.

Editor Mechanical and Milling News.

SIR, I have just had placed in my hands the May edition of your valuable paper, in which "Proctor" undertakes to criticize Bill 137, Ontario Legislature of 1887. He commences by making an assertion which is by no means true—the bill was not a "whited sepulchre," but was intended to protect life and property. He blames the member from Lincoln for introducing the Bill, and says that "it looks like a deliberate attempt on the part of the K. of L. to get their grasp both figuratively and literally on the throbbles of the manufacturing interests of this country." Now, sir, this Bill was framed by two mechanical engineers, who flatter themselves that they know as much about the use of steam and the wants of the manufacturers as does "Proctor." They do not now, nor have they ever had, any desire to handle any throbbles but those attached to their engines. We who are responsible for that Bill, and who framed it, are not now, nor have we ever been, Knights of Labor or members of any trades union whatever. Capt. Garson knew nothing of the Bill or its framers, until it was introduced to him by another member of the Assembly. No Knight of Labor or member of any trades union ever heard of the Bill before its being moved in the House. "Proctor" seems to think that if the Bill had passed small manufacturers would be paralyzed. If he will again read the bill, and do it carefully he will see that they are fully provided for in the special license clause. He again says: "What a pretty combination could be gotten up by the K. of L. with such a law as this to back them?" I ask him what did the engineers in the city of New York do when they were ordered by the Knights of Labor to strike work? If he does not know, I will tell him what they did. They stayed right in their engine rooms, and attended to their own business and that of their employers.

"Proctor" objects to the method of selecting the inspectors. Under our form of government, we know of no other. Let him suggest a better mode; while doing so let him keep in view the fact that the Bill ought to be self-sustaining. "Proctor" makes the mean assertion that if the Bill were put in force, the inspectors would collect fees from every person with whom they came in contact. *Honi soit qui mal y pense.* Are there not left in this country honorable mechanical engineers, who are above being bought by "Proctor" or any other man of his kind (I judge by his letter).

"Proctor" would like your readers to believe that he has a large supply of patriotism on hand. What will they think of his kind of patriotism, which, (as he says), he uses to cover up the actions of "some men who hold official positions in this Dominion of ours." If such a person be found, (and I doubt it,) let "Proctor" be a true patriot, relate his experience and drive that person out of his position. "Proctor" also says that the Bill would affect hot water heating. I cannot find that clause.

Let "Proctor" dispense with his *nom de plume* and write as I do over my own name, then the people of this country will be better able to judge of the merits of the Bill than they are now. I do not like this "stab in the dark" business.

Apologizing for having taken up so much of your valuable time and space, I subscribe myself,

Very respectfully,

ALF. M. WICKENS,

47 McGill St.

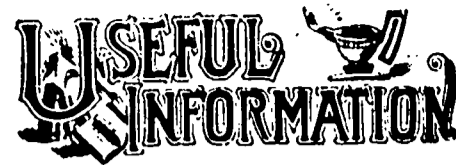
### ELECTRICAL SPARKS.

The St. Croix cotton mills, Milltown, N. B., are to be lighted by electricity, and after the system is in running order, an offer will be made to light the streets of St. Stephen and Calais.

The Calgary Electric Light Company are applying for incorporation for the purpose of lighting that town with electricity. Capital \$25,000.

St. Catharines proposes following the example of a number of the cities on the American side, by reconstructing its street railway system into an electric railway. It is said the cost will be reduced one-half by the change.

Ken Bros., founders and machinists, of Walkerville, Ont., are building a stationary engine to drive the cars of the electric railway between that place and Windsor.



Furrows in the lower bulrstone should never be deep enough to allow a grain of wheat to be covered. If any difference in the depths of the furrows in the two bulrs exists, the deeper furrows should be in the upper bulr.

**BROKEN GEAR TEETH.**—Gear teeth generally have one corner broken off first, after which they rapidly go to pieces. This may be avoided and the teeth made much stronger by thinning down the edges with a file, thereby bringing the whole strain along the centre of the tooth. Gear teeth fixed this way will not break unless the strain be sufficient to break off the whole tooth. —*Wood and Iron.*

**TO MAKE PAPER ADHERE TO METALS.**—M. Eiel gives the following formula for a mixture which can be used for metal, glass, or wood: Gum tragacanth, 30 grammes; acacia gum, 120 grammes; water, 500 c. c. Dissolve, filter, and add 2½ grammes of thymol suspended in 120 c. c. of glycerine; then add enough water to make up the bulk of one liter. This bath will keep a long time. —*Revue Photographique.*

**VENEERING.**—A new method of securing veneer to its base consists in spreading glue or other adhesive matter between the veneer and the base, passing the two secured parts under a heated roller to melt the glue and cause it to enter the pores of the wood, then finally passing the connected base and the veneer under chilled rollers to harden and set the glue, and prevent the warping or shrinking of the veneer consequent upon the gradual cooling or drying of the glue.

A fire extinguisher called the Lewis, is thus described by *Cassell's Magazine*: It is about the size of a policeman's truncheon. At the upper end is a wire loop by which it is hung from a nail or staple. A sudden pull (of about ten pounds) detaches the extinguisher from the cap, opens the tube and scatters the contents on the blazing fire. It contains a liquid which has the property of stifling a fire. Recent experiments with the device at the Crystal Palace on burning timbers soaked with petroleum were entirely successful.

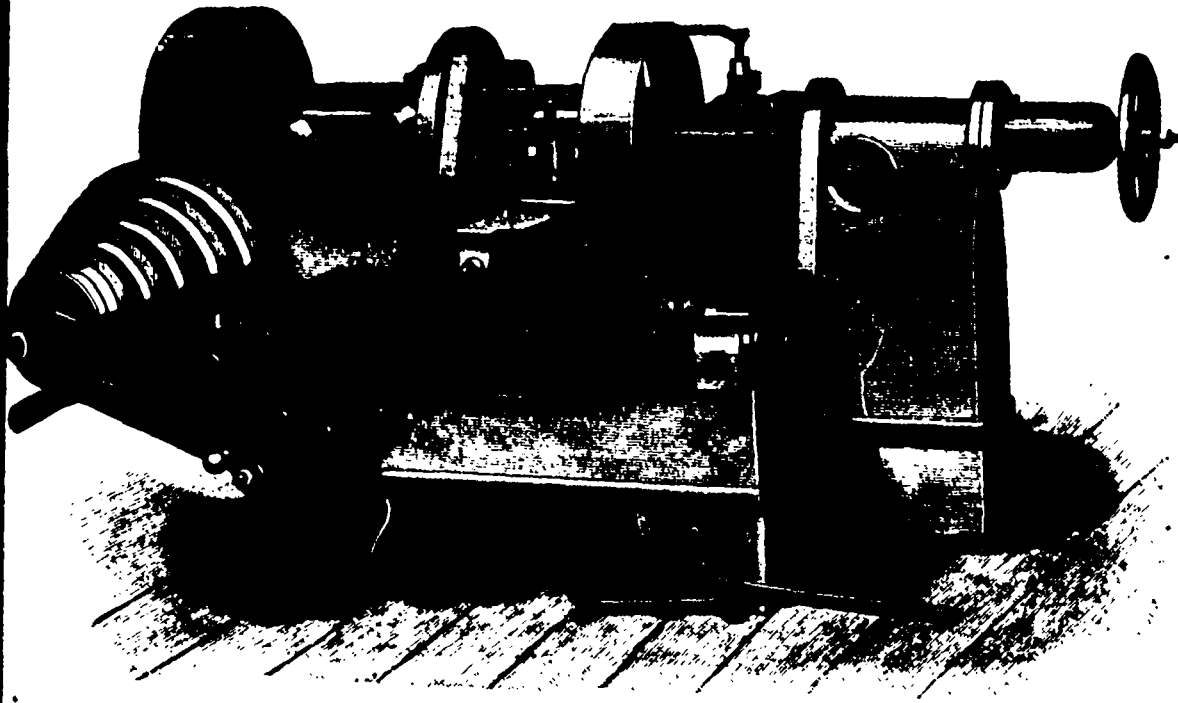
The way in which glass may best be cut with scissors is told in the *Pottery Gazette*, London: Glass may be cut under water with great ease, to almost any shape, with a pair of shears or strong scissors. Two things are necessary for success. First, the glass must be kept quite level in the water while the scissors are applied; and secondly, to avoid risk, it is better to perform the cutting by taking off small pieces at the corners and along the edges, and to reduce the shape gradually to that required. The softer glasses cut the best, and the scissors need not be very sharp.

**SOLDERING COPPER.**—When copper is to be soldered, and the solder is to be colored like the surrounding copper, the *Jewelers' Journal* says: This can be done by moistening the solder with a saturated solution of vitriol of copper, and then touching the solder with an iron or steel wire. A thin skin of copper is precipitated, which can be thickened by repeating the process several times. If a brass color is desired, a saturated solution of one part of vitriol of copper is used on the previously coppered solder, and the latter rubbed with a zinc wire. To gild the soldered spot, it is first coated with copper in the manner indicated above, and then with a gum or isinglass, and powdered with bronze powder. The surface is thus obtained, which after drying can be very brightly polished.

**DURABILITY OF RAFT TIMBER.**—Raft timber that has been floated down rivers has been ascertained to be no longer liable to the attack of dry-rot. So much so is this said to be the case that in Alsace it is customary to specify that only raft timber shall be employed. The water slowly dissolves out the albumen and salts, and thus deprives the fungus of the nutriment needful for its development. A French investigator, we are told, has found by experiment that, whereas fresh sawdust when buried rots away in a few years, sawdust from wood which has been soaked some time in water, and has thereby been deprived of soluble matters, will remain in the ground under similar circumstances wholly unchanged and only slightly tinged on the exterior with earthy matters dissolved from the soil.

**TABLE FOR THE USE OF NAILS.**—For 1,000 shingles allow 3½ to 5 pounds four-penny nails; or 3 to 3½ pounds three-penny nails. For 1,000 laths allow about 6 pounds three-penny fine nails. For 1,000 feet clapboards about 18 pounds six-penny box. For 1,000 feet boarding boards 20 pounds eight-penny common. For 1,000 feet boarding boards 25 pounds ten-penny common. For 1,000 feet top floors, square edges, 38 pounds ten-penny floor. For 2,000 feet top floors, square edge, 41 pounds twelve-penny floor. For 1,000 feet top floors matched, blind nailed, 35 pounds ten-penny floor. For 1,000 feet top floor matched, blind nailed, 42 pounds twelve-penny floor. For 1,000 feet furring, 1 x 3, 45 pounds ten-penny common. For 1,000 feet furring, 1 x 2, 65 pounds ten-penny common. For 1,000 feet pine finish, about 30 pounds eight-penny finish.

**BROWNING IRON AND STEEL.**—An exchange gives the following method of browning steel and iron, the invention having been recently patented in Germany: The goods to be browned form the anode of the bath, which consists of ordinary distilled water. The cathode is formed by the vessel which contains the water, if it is made of iron; otherwise a plate of iron, copper or carbon is placed in the bath. The water is kept at from 160° F. to 180° F., and the tension of the current must be sufficiently great to decompose the water. The oxygen which thus is given off at the anode forms in an hour or two a layer of the black oxide of iron (a combination of ferrous and ferric oxide) which is said to polish up very well. Steel is said to give the best results; in the case of cast and wrought iron, the oxide of iron formed separates as a powder, and it is necessary to use distilled water in order to obtain a layer which will adhere to the goods.



# JOHN BERTRAM & SONS, Canada Tool Works

DUNDAS, ONT.

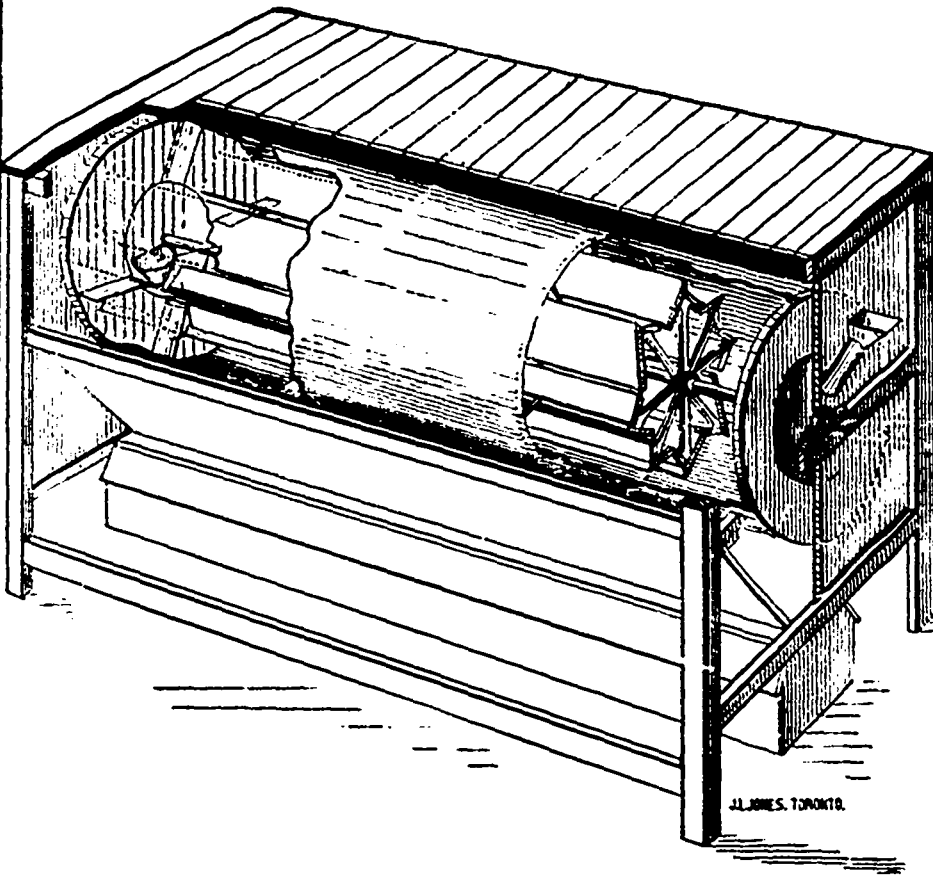
## MACHINISTS' TOOLS WOOD-WORKING MACHINERY

IRON LATHES, PLANERS, DRILLING MACHINES, BOLT CUTTERS,  
PUNCHING AND SHEARING MACHINES, MILLING MACHINES,  
SHAPERS, CUTTING-OFF AND CENTERING MACHINES,  
BOILER ROLLS, GEAR CUTTERS, ETC.  
PLANING, MATCHING, MOULDING, TENONING, BAND SAWING AND  
ALL KINDS OF MACHINERY FOR PLANING, SASH AND DOOR  
FACTORIES, CABINET FACTORIES, ETC.

Toronto Warerooms, 38 Yonge St.

GET CUTS AND PRICES OF OUR NEW PATTERNS  
OF LATHES, V SHEARS, NEW SHAPERS,  
CUTTING-OFF MACHINES AND  
PLAIN MILLING MACHINES.

Catalogues and Price Lists on Application



# DOBSON'S Patent Flour Dresser

Manufactured by WM. SMITH, Beaverton, Ont.

The cut illustrates our Patent Improved Flour Dresser, designed to take the place of all other bolts in the mill, being capable of handling all classes of stock. This machine as shown is a circular cylinder with a series of slats forming buckets, each one separate from the other, and so arranged as to distribute the stock over a large portion of the silk and when working to full capacity will carry a portion over the top and drop it on the going down side, and the air spaces between each bucket give the stock a much freer action on silk than can be found in any other bolt, thus giving this reel a very great capacity with the slow speed of the ordinary bolt, and doing away with the objectionable harsh treatment found in the use of other reels. There is also attached to the reel a revolving brush by means of which the silk is always free, relieving the miller from the annoyance of brushing, and as a rebolter this machine has no equal. Parties adopting this bolt will save at least one-third of space and one-third of power and one-third of money in building or remodelling mills.

To Responsible Parties and Intending Purchasers 30 days' trial will be given.

## MILLERS Give this Reel a Trial and Judge of its Merits.

For particulars apply to the undersigned,

**DOBSON & CAMPBELL,**  
Beaverton,

Or to **WM. SMITH,**

Agricultural Machine Works, Beaverton, Ont.

J. B. CLOUDSLEY,  
MANAGING DIRECTOR.

CHARLES SIMS,  
SUPERINTENDENT

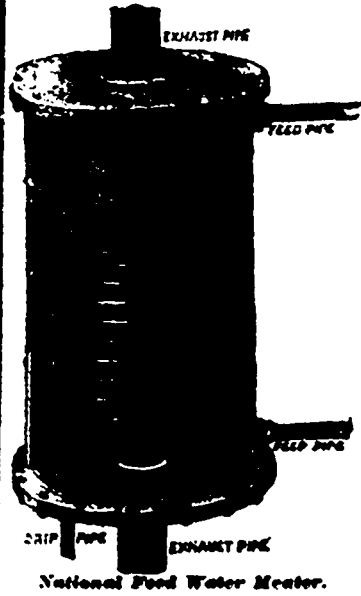
# TORONTO ENGINEERING SUPPLY CO.

ESPLANADE ST.

(Between Bay and Lorne Sts.)

Manufacturers of **TORONTO,**

## Engineers' AND Steam Users' SUPPLIES.



National Food Water Heater.

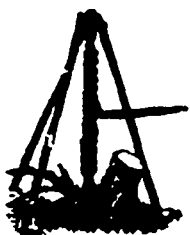
### CHAMPION FIRE & BURGLAR PROOF SAFES.

WARRANTED THE STRONGEST AND BEST.

Prices 30 per cent. lower than any safe made in the Dominion of as good finish. Send for circular and prices.

### CHAMPION STUMP AND STONE EXTRACTOR.

Over 2000 in use and 6 years' trial have proved this to be the machine for clearing land. Send for circular of the above to the inventor and manufacturer, S. S. KIMBALL, P.O. Box 945, Salesroom 377 Craig St., MONTREAL.



-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.

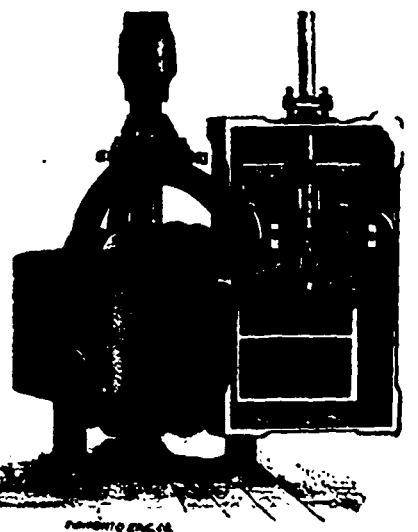


## LITTLE GIANT TURBINE WATER WHEEL.

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.





## THE IMPROVEMENTS IN MACHINE TOOLS.

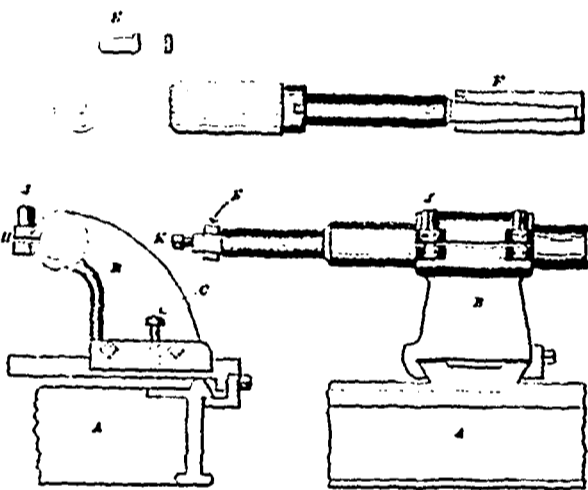
By "C. H. M."

**D**URING a recent inspection of a modern machine shop I was deeply impressed by the radical changes and improvements in the machinery and the methods of to-day as compared with those used in the shops twenty or more years ago. The progress in the system, organization and processes of manufacturing machinery has no doubt been as rapid as in any other branch of industry. And why not? To the mechanic, especially to the machinist and milling engineer, largely belongs the duty of inventing and developing the improvements of all classes of machinery, and surely they would not be consistent if they neglected those machines with which they come in daily contact and which are used in the production of all other machinery for every purpose. It has been said that lathes, planers and drills have not been changed or improved much in the last twenty years. They who make such statements have evidently not been close students or they did not have to do with the machine tools of the earlier days. About twenty-two years ago I started my apprenticeship in the largest and best machine shop in a city of 60,000 inhabitants, and I well remember the class of tools I served my time with; lathes of all descriptions with wood frames, light iron ways, chain feeds, cast-iron headstock and tailstock, spindles of small diameter, fine pitch, narrow face, back gears, narrow belted cones, skeleton tool posts and such. There were a few lathes in the shop built of "all iron and steel" that were not much better than their wood-frame neighbors, either in appearance, strength, utility, or accuracy of workmanship and production. Still fewer lathes we had that would cut threads and none that would cut a large square thread cider-press screw and nut that agreed. As for planers, they were not much better. There was one planer about 28 inches wide by 10 feet long, the first one ever used in the city, and I guess it weighed about 4,000 pounds. It would plane every way except parallel, straight and square. It had a pair of raising screws for the cross rail that, as I now recollect them, were about 4 and 3-7 threads per inch. One of them had worn the nut out and the new one was cut 4 and 3-8 per inch for lack of suitable gears to cut the proper, or rather improper, mongrel head. This necessitated the constant use of a surface-gauge every time the height of the cross rail was changed! The crank-planer was on a par with the times when it was made and might have had power to take a respectable cut on metal. If it had, no one ever demonstrated the fact. One large drill-press had its table drilled off and a substitute was made from a portion of a heavy oak plank, which warped to a beautiful dish pattern when the big cylinder stove was first fired up in the cold weather. Its spindle would drop nearly one-half an inch when going through the hole, and as a matter of course the blacksmith was kept busy redressing flat drills. Another small drill press was built to set on the ordinary machinist bench, but "the powers that were" set it up on a pair of (saw) horses in the middle of the floor to make it more accessible for work and other things. They succeeded beyond their most sanguine hopes, for it was the most accessible tool I ever saw for anything but work. The horses served for every large casting to be set up and braced against. Castings large and small were thrown under them. Old broken castings, scrap iron, pieces of so-called drills, chips, waste and all other kinds of dirt common to the general jobbing machine shop found shelter under and around the protecting wings or legs of this drill-press. Some readers may think this an exaggerated description, but I can assure them that I was considered fortunate in securing an opportunity of learning my trade in the best-equipped shop in town, and there were several of them.

The same general brief description of machine-tools will also serve for a large majority of shops throughout the country at that period. Now all these things are changed and such scenes as described are rare—in fact in the minority. Lathes are common that will cut accurate threads of all shapes, sizes and leads except fractional threads. They will bore straight, true holes and turn true cylindrical work. They have plenty of "all iron and steel" in their construction and are well proportioned, with large stiff steel spindles, strong back gears and generous cone belts. They show large ways for the carriage to travel on. The carriages have ample bearing surfaces. Lead screws are larger, stronger, and, as a rule, coarser in pitch. Reverse or frog-gearing is stronger and better arranged.

Planers have been subjected to the same improving process as well as drill-presses and other machines. In addition to all this they have been improved by having new features added to them for the convenience of operators, as well as for facilitating and perfecting work.

But it is in the field of special tools and appliances for the rapid production of better work that the machinist's plant has been most improved, and to which I at the outset intended to confine myself most particularly, but it would take more than one article to tell these things, even in a brief manner. One of the most trying jobs that the machinist of "ye olden time" had to do was to bore out holes with the ordinary hook tool. They had to be bored through short hubs, through long hubs, through soft hubs, through hard hubs, through babbitt, brass, cast and wrought iron, and still they had to be bored large and small, have heavy cuts and light cuts, and in and through all kinds of cored holes chuck full of sand fresh from the foundry. Generally there were about six hook-heading tools in the shop and five men were using the best of them as each came to select them in his turn. John had a large hole that he could get a good heavy tool m, and as large castings are generally softer than smaller ones from the same heat he had a soft thing. James had a large hole, but perhaps projections forbade the use of anything but a small-necked tool, and he did not do as well. George had a lot of small gears or hubs to bore and he found the last tool which was a large as he could use but still light, springy and long, and when he started to cut on the first hole he found it as hard as steel and full of core gravel. The trouble commenced. The tool would chatter, squeal and jump, bob up and down and hit the hole occasionally and sometimes succeed in leaving its mark, but as for good clean cutting under the scale, that was out of the question. Old-fashioned boring machines were not built right for good results, and an honest every-day mechanic could not possibly produce a fair day's work under such conditions, and it made him tired of the old, shaky lathe, wooden cross-bar chuck and slender boring tool.



All these things are changed now for those who want to have them changed. Nice new chucking machines, both horizontal and upright, can be had now with good chucks, self-feeds and turret, with four or more holes for cutters and reamers to bore and finish holes and even face hubs without taking out or changing a hole. They will make thousands of holes alike and will probably produce more work in one day with a smart boy than the old method aided by a good mechanic would in a week. One machine of this class would keep the whole force of an average shop of fifty men busy finishing up what is outside of the holes they bore. They cost less for tools, attendance and operation than the three or four lathes used for the same work. They cost less for tools which last infinitely longer, take less room and save the cost of the three men on the lathes. There are shops that think, whether rightly or wrongly, that their business or capacity would not warrant such an investment and they would naturally prefer to have something better than the ordinary boring tool.

For such places I would recommend the above attachment, which can be made and placed on any ordinary lathe and used on almost every job where the common boring tool is used, especially for cored holes. A represents a section of the ordinary lathe-carriage on which the bar-holder B is placed, gibbed and doweled with pin C into proper alignment with the centres of the lathe. The holder is bored for the cutter-bar D. After being bored, it is split on one side at H and holds the bar by compression bolts J. The cutter-bar is mortised near the end and carries the cutter E which is held against its seat by set-screw K and shouldered so that it bears on either side of the bar. Two cutters with the reamers usually suffice to make a good, true, smooth hole. These cutters cut on both edges and to a certain extent support and keep each other from springing from the work, also cutting twice as fast as a single-pointed tool. The first cutter is made one-sixteenth less in diameter than the reamer and the second tool from one-one-hundredth to one-sixty-fourth less than the reamer, allowing the

reamer to cut only enough to properly finish the hole. The reamer G is held in the socket F, which is held in B the same as the cutter-bar. The advantage of this rig besides its increased capacity is as follows: The cutters are cheaply and easily made, cut both ends, do not wear out fast and when the large one wears too small it can be reground to the next size. The reamer is assured of equal duty at all times because too little or too much stock cannot be left for it and cheaper help can be employed to turn out at least twice the quantity that a good workman can possibly do without it. It is also easier for the lathe, as the twist and strain are equally divided. If you have not all the reamers you need, make a finishing cutter and your hole will be its size without the use of calipers, rule or any other measurement. Cutters should be marked their size and number as follows: First cutter is marked No. 1, 1 11-16, second cutter No. 2, 1 11-16 and so with all of them.

It will be found in practice that four bars from five to ten inches long in the stem will be sufficient for all the holes from one to three inches bore. Besides all these well-founded claims for it, any ordinary shop can make it at a slight cost, which is quite a consideration, and while this attachment is not claimed to be as good as a regular full-grown turret chucking-lathe, it will be found infinitely superior to the average boring tool and may be classed as a medium between the turret attachment and the common lathe and hook tool. We have had two sets of these attachments in our shops in daily use for the past ten years and would not part with them until we can get the turret chucking-lathe. We use hook boring tools only for odds and ends that come in without any standard size.

## PUSH IN BUSINESS.

In no age of the world's history has push in business of every kind been as much needed as it is to-day, says the *Southern Publisher*. It is true all cannot get a front seat, but, according to an eminent Boston teacher of metaphysics, if you make up your mind that you will have one, you will attract the powers that carry you to the front seat. The confident, determined mood of mind, steadily kept up, brings to you other confident people; confidence in the business world means both cash and credit. What keeps thousands of noses on the grindstone of hard times is that they have no confidence or courage in themselves to take risks or responsibilities. They keep a poorhouse in their minds, and live in it. They aspire to be only screws in the business machine instead of striking out and making a machine of their own; they find fault with the monopolist, but the real slavery is in their own minds. They think there is no place for them at the head of the business; their first and great step toward staying permanently at the tail lies in thinking that they must remain there. Always aim high. A workingman ought never to look at a millionaire's palace without saying: "I am going to have a palace like that." His saying this in dead earnest is one thought among many others which pushes him forward. Your thought pushes you to do things.

Real business does not lie alone in being industrious. The goody-goody books and maxims have only told half the story about industry. A good deal depends upon what you are industrious about. If you spend all your time and strength in polishing pans or blacking boots, your industry won't carry you very high. The industrious mind plans in an hour what brings in more money than a tin-pan polisher could earn in a year. People who work only or mostly with their bodies have as good a right as the capitalist to work with their minds. The world always wants newer things, more curious things, more improved things, more amusing things. No workman in any trade, any art, any profession, should be content with doing what some one has done before him, even though he does it well. He should aim at doing something better than any one has done before him. When he can do this, he must next push it on the world's notice.

Push is a talent as much as skill in any art. Keep yourself before yourself in your mind as a pusher, and such frame of mind will at length make you push. There is a power in a continual imagination of yourself in any certain character which does make you more and more like such character. Success, like charity, must commence at home in the mind. If now you are compelled to live in a poor room and on poor fare, do so only under protest. Keep your mind on a better room and better fare. Don't say, "I s'pose I must always take up with this." Say instead, "I am going to have better things than these." You are then creating for yourself strength, not weakness; you are then ever strengthening this inexplicable mental attraction which will bring these things to you.

# THE GEO. T. SMITH CENTRIFUGAL MILLS

## Using either the Long or Short System.

KINGSTON, Nov. 16th, 1886.

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

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

Yours truly,  
**J. G. CAMPBELL & SON.**  
**Eight Months After.**

KINGSTON, 12th of July, 1887.

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

Gentlemen: Our mill built by your Company is and has been giving satisfaction. The quality of flour is good and the yields right. We have not been under any expense for repairs, and the machinery seems as good as when placed in position a year ago. The Centrifugal Reels cannot be beaten for all round work.

Yours truly,  
**J. G. CAMPBELL & SON.**

S. S. HEYWOOD, General Manager,

BOWMANVILLE, Oct. 18th, 1886.

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

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

Yours respectfully,  
**J. C. VANSTONE.**  
**Nine Months After.**

BOWMANVILLE, July 14th, '87.

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

Gents: At the time I accepted my mill from you last October, when you finished your contract by putting in the Roller system, I sent you a letter stating I was well pleased with my mill, not only in the quality of the machinery, millwright work and other material used in changing my mill, but also in the quality and quantity of the flour made by the mill when in operation. We have now been running nine months, and during that time have not been stopped one day except holidays and Sundays, and have averaged eighteen hours per day right through from the first start, and one only item for repairs cost seventy-five cents. We have ground 50,000 bushels of wheat besides a large quantity of chop. Our gristing trade averages over 2000 bushels per month, and at times we cannot make flour fast enough to supply our local trade. These figures may look small compared with those sent in by other mills, but you must please remember that south of us is Lake Ontario, from which we draw no custom, and on the other three sides we have thirteen flour mills within ten miles of us, two of them being roller mills. Our different brands of flour are well known in Quebec and the Lower Provinces,

and at the present time we have orders for six car-loads which we have yet to grind. The above facts speak for themselves and in a way that is satisfactory to most millers, and I am sure that any person giving you the contract for building or changing their mill will not regret it. I expect to give you another order shortly for Purifiers, Centrifugals and other machinery for my mill at Tyrone. Wishing you success in your future business, I remain,

Yours respectfully,  
**J. C. VANSTONE.**

S. S. HEYWOOD, Manager, LAKEFIELD, Ont., Nov. 16th, 1886.

GEO. T. SMITH MIDDINGS PURIFIER CO., Stratford, Ont.

Dear Sir: I commenced grinding wheat in my mill Thursday, Nov. 11th, and with my acceptance of it I take pleasure in testifying to the entirely satisfactory manner in which you executed your contract with me. The machinery was shipped promptly as agreed, and the diagram, plans and millwright work were in every detail everything that I could wish. As regards capacity, I find that the mill will run to 150 bbls. easily and make a perfect finish. 125 bbls. was all that you contracted to give me. I am very thankful that I adopted the full Centrifugal system instead of the old style of long reels, and although the mill has been running but four days, I am already convinced of its superiority, and I have never seen any bolting device that could equal your Centrifugal in quality and quantity of work done.

Yours truly,  
**JOHN HULL.**

S. S. HEYWOOD, Manager,

LAKEFIELD, Dec. 7th, 1886.

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

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

Yours truly,  
**JOS. L. SMITH, Head Miller for John Hull.**  
**Eight Months After.**

S. S. HEYWOOD, Manager,

LAKEFIELD, Ont., July 16th, 1887.

THE GEO. T. SMITH CO., Stratford, Ont.

Dear Sir: In my letter to you dated Nov. 16th, 1886, in which I accepted my mill from you, I expressed my pleasure at the manner in which you executed your contract with me, and my satisfaction with the Geo. T. Smith Centrifugal system. I am now pleased to say that after running the mill for eight months, I am convinced of its superiority over any other system I have ever seen. I have never had a complaint about my flour, and have never had a bag returned to be exchanged. The only complaint I have ever had about anything I manufacture in the mill is the shorts—they are so poor I am compelled to seal them at a reduced price. Every special machine you placed in my mill is doing its work as well today as when the mill started. I have had to make no changes and it has not cost me two dollars for repairs since I accepted it.

Yours truly,  
**JOHN HULL.**

I have been miller for many years and have had charge of Mr. Hull's mill for 8 or 9 months. Have never seen a mill that was as easily handled, gave as little trouble, and produced as good flour and clean offals as this.

**JOS. L. SMITH, Head Miller.**

**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 have now a very large number of 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 Co., of Canada, (Ltd.)

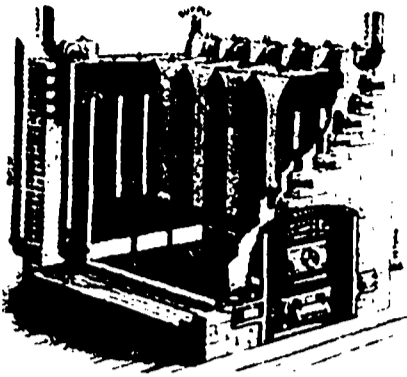
## STRATFORD, ONT.

United States Shops: **JACKSON, MICH.**

# THE SAFFORD EXTENSION BOILER

Suitable for Steam or Hot Water.

The Best and Most Economical Boiler in use.



IF YOU WANT A COMFORTABLE HOUSE,

IF YOU WANT TO SAVE COAL,

IF YOU WANT THE BEST BOILER MADE,

Buy the Safford Extension Boiler.

JAMES MORRISON,

Sole Manufacturer for the Dominion,

75 & 77 Adelaide St. W., Toronto.

Manufacturers and dealers in all kinds of Plumbers', Engineers' and Steamfitters' Supplies

## A. E. WILLIAMS & CO.,

Brokers, Real Estate, Loan and Business Chances.

LONDON ONT.

WE have for sale a very desirable Flour and Saw Mill in Oxford County, fitted up with first-class machinery; doing good trade; Price, \$7,500. We also have a Grist and Flour Mill 10 miles from London, good machinery; excellent shipping facilities; 30,000 bushels capacity; Price only \$6000.

CORRESPONDENCE SOLICITED.

## WIRE CLOTH AND PERFORATED SHEET METALS

Of every Description

### FOR MILL USE.

TIMOTHY GREENING & SONS, DUNDAS, ONT.

## W. P. Howland & Co., Grain and Flour,

COMMISSION.

TORONTO, CANADA.

J. F. McLAUGHLIN & BRO.,

— WHOLESALE —

## Flour, Feed and Grain Merchants

CORRESPONDENCE AND ORDERS SOLICITED.

Imperial Bank Buildings, 91 St. Peter Street,  
TORONTO, ONT. QUEBEC, QUE.

F. PENNEE. J. N. PEER. D. PLEWES.

PENNEE, PEER & PLEWES,

### MILLERS

## FLOUR AND GRAIN MERCHANTS.

BRANTFORD, TORONTO & QUEBEC,  
AND GLASGOW, SCOTLAND.

LIBERAL ADVANCEMENTS MADE ON CONSIGNMENTS.

**UNEXCELLED! UNEQUALED! UNRIVALED!**

# THE HERCULES Automatic Wheat Scourer and Separator

**THE ONLY WHEAT SCOURER** ••• **THE ONLY AUTOMATIC WHEAT SCOURER**  
**EVER AWARDED A GOLD MEDAL.** ••• **EVER INVENTED.**

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

THE HANDSOMEST AND MOST DURABLE MACHINE ON THE MARKET.

**DUSTLESS**

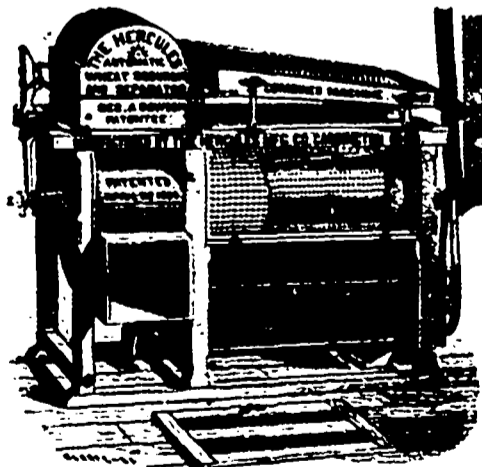
## THE HERCULES

HAS THE **MAGNETIC ATTACHMENT**

FOR REMOVING

**METALLIC SUBSTANCES.**

NO EXTRA CHARGE FOR SAME.



**FIREPROOF**

## THE HERCULES

— IS —

**WARRANTED**

To Improve the Color of the Flour in any Mill.

IT WILL REMOVE

**FOUR TIMES MORE FUZZ**

THAN

**ANY OTHER WHEAT SCOURER**

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.**

**T  
H  
E  
H  
E  
R  
C  
U  
L  
E  
S**