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AND INDUSTRIAL WORLD

DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

Vol. 15. TORONTO, SEPTEMBER 7, 1888. No. 5.

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SEE ADVERTISEMENT, PAGE 181.

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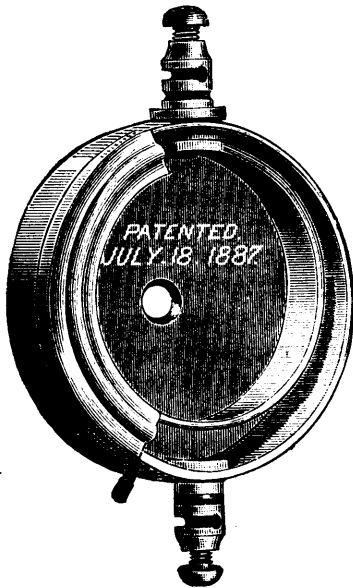
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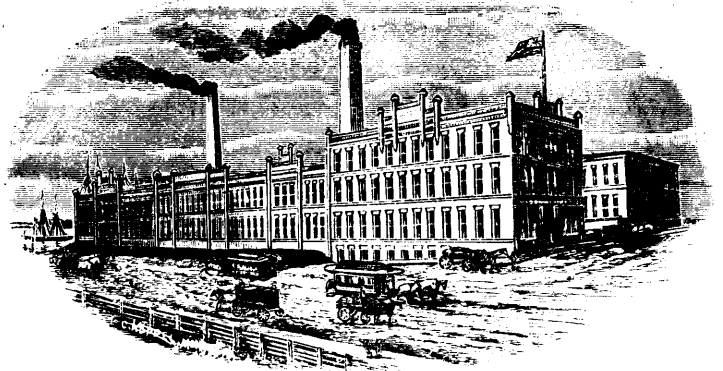
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MR. FREDERIC NICHOLLS is Secretary of
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6 Wellington Street West, Toronto.

Captains of Canadian Industry.

"The nation that manufactures for itself, prospers." In the CANADIAN MANUFACTURER of June 1 we began the publication of a series of illustrated biographical sketches of "Captains of Canadian Industry." It was an entirely new departure in journalism, either in this or in any other country; and the very excellent artotype portraits of leading Canadian manufacturers which have been displayed in each successive issue of this journal have made it valuable as a pictorial album which must of necessity become a part of the history of the Dominion. The publication of these portraits and the biographical sketches of their originals will be continued indefinitely; the object being that when the publication in this journal is finally discontinued, to assemble and reproduce them in book form, which arrangement will be all the more valuable in that the matter which is now being extended through many months in the CANADIAN MANUFACTURER will all be brought into the compass of one attractive and convenient volume. To assist our readers in keeping in mind the names of the "captains" of this grand army whose portraits have already been published, we reproduce them here. They are as follows:—

PLATE I.—June 1.

W. H. Storey, Acton, Ont. Bennett Rosamond, Almonte, Ont.
Samuel May, Toronto. George Booth, Toronto.

PLATE II.—June 15.

Thomas Cowan, Galt, Ont. James Watson, Hamilton, Ont.
R. W. Elliot, Toronto. John F. Ellis, Toronto.

PLATE III.—July 6.

William Bell, Guelph, Ont. John R. Barber, Georgetown, Ont.
John Bertram, Dundas, Ont. Wm. Chaplin, St. Catherines, Ont.

PLATE IV.—July 20.

William Doherty, Clinton, Ont. Alex. Gartshore, Hamilton, Ont.
John Fensom, Toronto. Charles Raymond, Guelph, Ont.

PLATE V.—August 3.

William Christie, Toronto. Henry Bickford, Dundas, Ont.
Robert Mitchell, Montreal. James Hendrey, Peterboro, Ont.

PLATE VI.—August 17.

John Abell, Toronto. George W. Sadler, Montreal.
H. A. Massey, Toronto. John Taylor, Toronto.

PLATE VII.—September 7.

James Crossen, Cobourg, Ont. Thomas G. Mason, Toronto.
Vincent M. Risch, Toronto. Wellington Boulter, Picton, Ont.

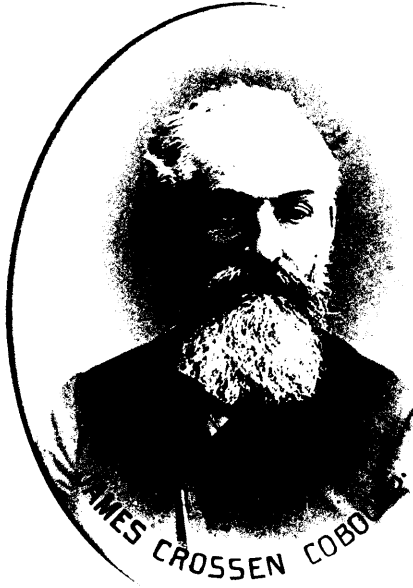
JAMES CROSSEN.

JAMES CROSSEN, proprietor of the Cobourg Car Works, Cobourg, Ont., was born in Comber, Ireland, about ten miles from the city of Belfast, on March 9, 1826. At an early age he came to Canada, and while yet a young man was a partner in a firm who operated a foundry in Cobourg. He was engaged in this business but about three years, and in 1870 he embarked in the enterprise which he now controls.

The Cobourg Car Works are the most extensive and complete works of the sort in Canada, and cover some fourteen acres of ground. The main building is an immense structure, but it contains only a very few of the departments represented in the enterprise, there being numerous other buildings, including foundry, shops, etc., in various parts of the grounds. These works are most completely equipped with the latest and most efficient tools, machinery, and labor-saving devices; and they give employment to over four hundred hands. In them are manufactured all kinds of railway cars, including sleepers, parlor, dining, passenger, post office, baggage, box, platform, and hand cars. The output is an average of six passenger coaches and one hundred and fifty freight cars per month, and every detail of their construction is done there.

The industry represented in the manufacture of railway passenger coaches has reached what might be claimed as the culminating point, nothing further seeming to remain for the suggestive ingenuity of the car-builder. The enterprise and skill represented by Mr. Crossen in these works, however, and in which all Canadians and all who travel in such conveyances feel a natural and proper pride, are to be traced and found in only a comparatively few and well known similar concerns; and ranking among the most prominent of these important industrial establishments is that of Mr. Crossen. The excellence of workmanship and finish, and the superior quality of the materials used in constructing the cars made in these works, make them first class in every particular; and this system has been studiously adhered to by Mr. Crossen during all his business life. He would prefer to lose money on a contract rather than to allow any inferior work to go out of his establishment. The value of this golden rule is appreciated by all reputable manufacturers.

Mr. Crossen has always devoted his entire time and attention to the details of his business, and has never sought or accepted either political or civic honors. Gentle and unassuming in manner, he is a man of unbounded energy and force of character, and his friendship is sought and valued by all who know him. Canada is fortunate in the possession of such men as James Crossen.



JAMES CROSSEN COBURN



T.G. MASON, TORONTO



V.M. RISCH, TORONTO



W. BOULTER, PICTON

— Captains * of * Canadian * Industry. —

(SUPPLEMENT TO THE "CANADIAN MANUFACTURER.")

THOMAS G. MASON.

THOMAS G. MASON, senior member of the firm of Mason & Risch, manufacturers of pianos, Toronto, was born in Ivy-bridge, a romantic and lovely little village in Devonshire, England. When but a little over seven years of age he was brought to Canada, his parents settling in Toronto, where his boyhood was passed, and where he has ever since resided. His education was of a thoroughly practical character, and fitted him for the business career which has since signalized his life. In 1849 he left school, his first employment being as mailing clerk in the *Globe* office, where he evinced that determination of purpose and unswerving integrity of character which have marked him through life. As long as he retained that position he was always promptly at his post, which he never left until his work was thoroughly done. In 1854 he accepted a situation as assistant book-keeper in the establishment of Messrs. A. & S. Nordheimer, Toronto, where his integrity and abilities were recognized, and where he was rapidly advanced until he held the head position in the office. As the years rolled by the confidence of the firm increased, and Mr. Mason became their trusted confidant and the manager of their extensive business. After seventeen years' service with Messrs. Nordheimer, Mr. Mason severed his business connection with them in 1871, and associated himself with Mr. Vincent M. Risch, establishing the firm of Mason & Risch, which has ever since been identified with the mercantile and manufacturing prosperity of Toronto; and who, by their knowledge, enterprise and devotion to their business, have succeeded in building up one of the largest and most successful pianoforte manufacturing industries in Canada. Their motto, "We build the ladder on which we climb—fame waiteth at the top," is the index as well as the key-note to their success; and as their enterprise and perseverance are what pleases Canadians, and in which the Dominion of Canada is intensely interested, this brief sketch is given.

VINCENT M. RISCH.

VINCENT M. RISCH was born in Freiburg, Baden, and was one of four children. His early life was uneventful, and his education was acquired at the grammar school in his native town. His oldest brother, Leo Risch, was a builder of pipe organs, and young Vincent served an apprenticeship with him, thereby gaining a practical and thorough knowledge of the business. The manufacture of musical instruments was not carried on in Germany at that time as it is at the present. Labor-saving machinery was not then in extensive use, and the apprentice was necessarily thoroughly instructed in the various details which embraced every part and portion of the business, consequently young Risch acquired a complete knowledge of all that could be learned about the construction of such instruments. Having completed his term of apprenticeship, young Risch struck out for himself, and for a time worked at his profession in Durlach, Baden, from whence he came to America in 1855. For six years his fortune led him to different parts of the United States, where he directed his attention to the manufacture of pianos, in which he accomplished remarkable success. In 1861 he came to Toronto and

entered the establishment of Messrs. A. & S. Nordheimer, who were then as now largely engaged in the sale of pianos. His connection with this firm extended over a period of ten years, and until 1871, when he and Mr. Thomas G. Mason, who had for years been managing the Nordheimer business, formed their present co-partnership and embarked in a similar business for themselves, which is more particularly alluded to in the sketch having reference to Mr. Mason.

WELLINGTON BOULTER.

On the farm of the late George Boulter, Esq., in Sophiasburg, Prince Edward County, Ontario, Wellington Boulter, his son, the subject of this sketch, was born in February, 1838. His education was obtained at the neighborhood schools during the winter months, and from the time he was large enough to render assistance on the farm, until he attained his majority, his time was spent chiefly in agricultural pursuits. In 1882 Mr. Boulter formed a co-partnership with Mr. George Dunning for the purpose of establishing a factory in the town of Picton, Ont., for canning fruit, vegetables, etc., under the firm name of Bay of Quinte Canning Factory. At that time there were very few such factories in successful operation in Canada, but Mr. Boulter entertained an abiding faith that such an establishment could be made to pay, and that such Canadian made goods could be manufactured equal to the best made anywhere else in the world. The Canadian market was being supplied chiefly from factories in the United States, and Mr. Boulter's object was to win a large and paying portion of this business for his firm. A suggestive trade mark was adopted in which a lion is the central figure, and all the goods manufactured by the concern have this distinctive label attached, which is known to the trade as the "Lion" brand, and under which nothing but the very best and choicest fruits and vegetables are packed. In 1885 Mr. Boulter purchased the entire interest of his partner, Mr. Dunning, in this business, and has, until quite recently, been the sole proprietor of it. In 1886 the works were destroyed by fire, but larger and more commodious works were immediately erected, which were equipped with every appliance and apparatus suitable for the business, and now there is no other similar factory in the country or out of it that excels it in the completeness of its equipment or the excellence of its products. Mr. Boulter also has large canning works on his farm at Demorestville, in Prince Edward County.

In 1883 the Association of Canadian Packers was formed at Hamilton, all the leading fruit and vegetable packers of Canada being included in the membership; and Mr. Boulter was unanimously chosen first President thereof. He continued to hold this position for five successive years, and until the late and respected T. M. Nairn, M.P.P., of Aylmer, succeeded him. At the annual meeting of the Western Packers' Association of the United States, held in St. Louis in February last, Mr. Boulter was present by invitation. He made a speech before the convention in which the importance of the industry in Canada was set forth, and Mr. Boulter's popularity with the Association was so great that he was made an honorary member of it, and presented with a beautiful gold badge. To Mr. Boulter is largely due the credit of having procured the enactment of the Dominion law now in force relating to canned-

goods; and he was a constant visitor at Ottawa during the time the matter was pending.

Until the organization of the Association of Canadian Packers in 1883, very few persons outside the trade had any correct ideas of the value of the industry to Canada; but Canada's National Policy, which protected it, made it possible for it to be developed to amazingly large proportions; and such men as Wellington Boulter were the ones to bring it to its maturity.

Mr. Boulter has recently taken into co-partnership with him two of his sons, who are fully acquainted with the practical details of the business, and whose ambition is to maintain the present high reputation of the Lion brand of goods.

In private and social life Mr. Boulter is pleasant and agreeable, and entertains his friends with delightful hospitality. He is highly respected in his town and county; is a clever platform speaker, and an active and efficient worker in politics; an ardent admirer of Canada's great statesman, Sir John A. Macdonald, and a close adherent to the National Policy, which has made this Canada of ours what it is to-day. He is a Mason, an Oddfellow, the commander of Picton Legion, A. O. U. W.; an elder in the Presbyterian Church, and a Sunday School Superintendent. In 1887 he was a Commissioner to the Presbyterian General Assembly, which held its Congress in Winnipeg, Man.; and he held a similar commission to the same body which assembled this year at Halifax, N. S. He made the very clever report recently published in the *Empire*, of the Ontario Farmers' excursion to Moose Jaw, N.W.T., in August. Of course Mr. Boulter is a member of the Canadian Manufacturers' Association.

THE NEW EXCITEMENT.

THE United States Senate has refused to ratify the treaty which was expected to settle all differences between that country and Canada relating to the fisheries matter, and President Cleveland has requested Congress to enlarge the powers already granted him to enter upon a system of retaliation as against Canada, in defence of American "rights." But recently, when Mr. Cleveland submitted it to the Senate for ratification, in his message to that body he spoke of the treaty as settling all the points in dispute, saying that the proposed arrangement was fair, just and honorable to all concerned. The Canadian Parliament at its recent session took prompt action and expressed its satisfaction with the action of the Treaty Commission; and the conclusion was foregone that the Imperial Government would fully accept the situation. Therefore, as far as Canada and Great Britain were concerned, the question was as good as settled, and all that remained to be done was for the United States to give its indorsement to the treaty. Canada and Great Britain had conceded to the United States all that was demanded, and the ratification of the treaty by that country was all that was necessary to quiet all dissensions and put that country and this on the most enduring and friendly terms.

It is true that the United States Senate, as a body, is politically opposed to President Cleveland, and in view of the pending presidential election in that country it was a foregone conclusion from the first that the Senate would not ratify the treaty;

but the action of President Cleveland in sending to Congress on the day after the rejection of the treaty, a message, the tone of which was exceedingly hostile to Canada, is surprising. No doubt the Republicans of the Senate hoped to solidify the Irish vote by pursuing the course they did; for it seems to be considered the correct thing with some politicians in that country to twist the tail of the British lion as excruciatingly as possible; but Mr. Cleveland, forgetting his exalted dignity as the President of a great nation, and evidently with a view to out-herod them in political trickery, did not hesitate to clutch the lion by the snout, hoping thereby to counterbalance the operations at the other end, and effect the capture of the Irish vote for the Democratic party, even at the risk of plunging the English-speaking nations of the world into destructive and useless war.

The Dominion of Canada of itself is small as compared with the United States. We have five millions of population against over sixty millions there; but both countries are populated with people who have a common origin, and the Anglo-Saxon race are not of the material of which cowards and cravens are made. Canada, according to the testimony of Mr. Cleveland himself, acceded all that had been requested of her—all that it was right, just and proper for her to yield—and if the treaty was not acceptable to the dominant party in the United States Senate, for political reasons only, it certainly had the endorsement of the President of the United States and of the Democratic party which put him in office; and now if political exigency demands that both the Republican and Democratic parties of the United States, and the Congress of that country, should inaugurate measures that look strongly towards hostilities toward Canada, it would be well if they bore in mind the fact that Canada is not to be browbeaten, intimidated, nor driven into surrendering one iota of her rights. Peace with honor is desirable—peace with dishonor—never.

It is to be most sincerely hoped that the excitement from which the United States is now suffering a condition of frenzy, may disappear as soon as the political necessities that induced it have disappeared. This will be when the forthcoming presidential election is over. Meantime the peace of the world depends largely upon that sober second thought which ought to prevent the President and the Congress of the United States from doing criminally foolish things.

CANADA'S GREAT FAIR.

TORONTO'S Great Industrial Exhibition will open on Monday, Sept. 10, and continue through two weeks. This is evidently to be the greatest event of the kind that has ever occurred in Canada, and all who could possibly attend and fail to do so will certainly regret it. The programme of the Fair is a beautifully illuminated book containing pictures of Lord Stanley of Preston, Sir John Macdonald, Hon. Oliver Mowat, and other distinguished persons. Among the special and extraordinary attractions are the following:—

The Viennese lady fencers, the latest European attraction; nine young ladies, who will give daily exhibitions of their expertness with foils and daggers.

Displays of fireworks every evening, followed by a pyrotechnic representation of the siege of Sebastopol.

Archduke Joseph's Hungarian Gypsy band.

Parachute descents from a balloon.

An international lady bicycle contest.

The national dances of the world in costume.

Morris' Temple of Illusions and Mysteries will be on the grounds.

Other special attractions will be:—Ajeeb, the wonderful chess and checker automaton; Prof. Morse's dog, cat and monkey circus; exhibit from the Government experimental farm, Ottawa; collective displays of the agricultural, mineral and other products of British Columbia, by Vancouver City, Manitoba, Algoma, Parry Sound, Muskoka, the North West Territories and other districts.

The following military and other bands will give concerts every day and evening:—Waterloo Musical Society; Oddfellows' Band, St. Thomas; Toronto Citizens' Band; Royal Grenadiers'; Governor-General's Body Guard; Doherty Organ Co., Clinton; 31st Battalion, County Grey; C Company Infantry School; Gananoque Carriage Co.; Thomas Organ Co., Woodstock; Massey Manufacturing Co., Toronto; Dominion Organ Co., Bowmanville; Herr Piano Co., Toronto; Prof. Toulmin's Exhibition Band.

Monday, September 10, will be preparation day, and then only exhibitors and their assistants will be admitted. On Tuesday the grand opening ceremonies will take place. From 8 a.m. the grounds and buildings will be opened to the public, and at 2 p.m. His Excellency the Governor-General, Lord Stanley, will formally open the exhibition.

Wednesday will be bicycle and athletic day. All the special industrial, fishery, art exhibits, etc., will be open from 8 a.m. There will be trotting, bicycle races, etc., and band concerts will be given by "C" Company Infantry School band and Prof. Toulmin's Exhibition Band.

On Thursday, amongst other attractions, will be the first balloon ascension and parachute descent, 5,000 feet, by Messrs. Williams and Young. There will be fireworks in the evening.

Friday will be school-children's day, the special attractions being the drill competitions by the cadet corps of the city schools, and calisthenic exercises by the young ladies. Illumination of the grounds from 8 to 10 p.m. Display of fireworks by Messrs. Pain & Sons, and the "Siege of Sebastopol."

On Saturday it will be societies' day, under the auspices and patronage of the various societies of the city. Races will take place, and the first appearance of the Archduke Joseph's Hungarian Gypsy band in special concerts afternoon and evening.

Monday, the 17th, will be citizens' day, when all departments will be open from 8 a.m. to 10 p.m.

Tuesday will be German day, and will be under the patronage of the German citizens of Canada.

Wednesday will be the farmers' great day, under the patronage of the Hon. John Carling, Minister of Agriculture, and Hon. C. Drury, Commissioner of Agriculture for Ontario, the Dominion and Provincial Granges P. of H., and the Farmers' Institutes of the Province.

Thursday of this week will be termed the American visitors' day. In the evening there will be the last display of fireworks and "Siege of Sebastopol."

Friday will be the review day, when a grand review of prize live stock will take place in the ring, and in the evening a farewell concert by the Hungarian Band will be given.

On Saturday, September 22, at 7 a.m., the Exhibition will be declared closed, and exhibitors will remove their property.

RETALIATION.

WITH braggadocio that closely resembles cowardice, members of the United States Congress, and many newspapers in that country, are loudly proclaiming their anxiety and readiness to invade and punish Canada because the United States Senate refused to ratify the treaty recently negotiated for the purpose

of quieting all difficulties and misunderstandings between the two countries. The circumstance recalls the fable of the wolf seeking cause of quarrel with the lamb for muddying the water of the brook. With a strange misconception of the temper and character of Canadians and of their views regarding their political connections, and of the ability of Canada and her natural allies to preserve the integrity of the Dominion, these blusterers seem to think that there are two ways of settling the questions in dispute, both methods leading to but one result—the annexation of Canada to the United States. The evolution of one of these views has been under discussion for quite a time, the object being to peaceably bring about annexation, through unrestricted reciprocity and commercial union. In this the blusterers have been encouraged by inconsiderate persons and papers in Canada, but the fad received its death blow when President Cleveland sent his recent "retaliation" message to Congress. They are, however, trying to galvanize some life into it by offering peaceable annexation, plain, simple, instantaneous and complete, as the better alternative as against the same result from a bloody contest. The other view looks to war and conquest; and the air is heavy with threats of invading armies; towns and cities garrisoned with hostile troops, destroyed commerce and debasing subjugation.

Perhaps some may say that these are but idle threats, begotten in the emergencies of political excitement, never intended to be put into execution, and to be forgotten as soon as the pending presidential election has passed. While not suggestive of good sense, this may be a favorable view to take of the situation; but it should be remembered that just such intemperate talk and braggadocio has heretofore led to very deplorable results, and that it may do so in this instance. Yankee politicians may kindle a popular desire for a war with Canada which nothing but such a war can satisfy; and it would be well if sensible people would consider the probable events that would occur if such a dreadful thing as war should happen. It is true that Canada single handed and alone might not be able to successfully contend against such a mighty nation as the United States; but Canada would not be alone in resenting the aggression of the Yankee people. For all practical purposes Canada would be quite as much a part of the British Empire as Scotland; and British blood and British valor, wherever they may be found, would spring with alacrity to the defense of British honor, and the maintenance of Canada's rights. This is a fact that our friends across the border would do well to consider. "The flag that through a thousand years has braved the battle and the breeze" still floats quite numerous, and over—not "walls of oak" as of yore—but fleets of armored cruisers with guns, and trained men behind the guns. The entire Atlantic and Pacific coasts of the United States are accessible and vulnerable to iron clad ships carrying guns that have power to throw shells nine miles; Canada commands the approach from the ocean to the great lakes, and Britain has fleets of gunboats that could make it decidedly unhealthy to live in American lake cities.

"Let us have peace."

SPECIAL ADVERTISEMENTS.

TISDALE'S BRANTFORD IRON STABLE FITTINGS.—We lose no job we can figure upon. Catalogue sent free. The B. G. Tisdale Co., Brantford, Canada.

SITUATION WANTED.—An Englishman 37 years of age wants situation as first class wool dyer. Is a good engineer, and competent to assist in office duties. Strictly sober and reliable. Address "Clinton," care CANADIAN MANUFACTURER.

MESSRS. NICHOLLS & HOWLAND invite all visitors to Toronto's Great Exhibition to visit their Permanent Exhibition of Manufactures, 63 to 69 Front Street West, opposite the Queen's Hotel. It is open free to the public during all business hours, and no visitor should leave Toronto without viewing the remarkable display of machinery and manufactured products on exhibition there.

KNITTING **LMAN BROS.,** **MACHINES.**
Georgetown, Ont.

EDITORIAL NOTES.

THE CANADIAN MANUFACTURER has been assigned one of the best and most convenient rooms in the Press Bureau Building on the Exposition grounds, and during the continuance of the exhibition will maintain its office and headquarters there. The door of the office is arranged to open automatically and quickly to all friends, and exhibiting and all other manufacturers attending the exposition are invited to report at this office and avail themselves of its comforts and conveniences. This office will also be the headquarters of the Canadian Manufacturers' Association.

Alia tentanda via est.

"LET us have peace."—*U. S. Grant.*

PRESIDENT CLEVELAND is afflicted with flatulency.

THIS is a good time for common sense to prevail in the councils of a great nation.

MR. CLEVELAND wants to do by violence what the United States Senate would not allow to be done by diplomacy.

IN these days, and on this side of the Atlantic, the sword is not a suitable arbiter in settling international questions.

A FEATURE of the existing cigarmakers' strike in this city is the introduction into some of the factories where the men are out, of machinery for doing work heretofore done by hand. The logic of events unvaryingly points in this direction.

LAUNDRESSES in the State of New York complain of the competition in their business from contractors who employ the female convicts of the State prisons. It is stated that recently as many as three thousand convicts and ex-convicts were in the employ of one concern. Of course honest free labor cannot compete with such opposition, the tendency of which is to demoralization and degradation.

MR. CLEVELAND's recent fulmination against Canada calls to mind one of Æsop's most pithy fables. An ass arrayed itself

in the skin of a lion, and when it walked abroad all the other beasts stood in awe of it. When it essayed, however, to roar like a lion, the voice was only the bray of an ass, and the beasts of the forest treated it with contempt. In essaying the role of the lion the ass is not a success.

THE annual report of the Insurance Commissioner of the State of Wisconsin for the year 1887 shows that on fire insurance risks placed in that State, amounting to nearly two hundred millions of dollars, the percentage of losses paid to premiums received was less than sixty-two and a half per cent. Gasoline stoves are used in a very large proportion of the residences embraced in this insurance, probably ten times as many such stoves being in use there as in Ontario, and still the insurance companies are making big money out of their business.

REGARDING President Cleveland's "retaliation" policy toward Canada, it is to be observed that whatever differences of opinion may exist in this country regarding the fisheries or canals questions, or of Commercial Union, there is not the least shade of difference among Canadians when the integrity and honor of the Dominion are sought to be invaded. Blood is thicker than water. Any movement on the part of the United States in any degree hostile to Canada, would immediately banish all internal differences, and Canadians would have but one heart, one mind and one impulse—to defend Canadian rights.

MR. CLEVELAND thought that the proposed treaty was a good thing, and said so in his message submitting it to the Senate. The Senate, however, does not think as Mr. Cleveland does. Canada agreed with Mr. Cleveland, and has already expressed satisfaction with the treaty, and desires to see it ratified. Canada has done all that could be done to make Mr. Cleveland's treaty the law in both countries. Mr. Cleveland and the Democratic party have heretofore denounced the Republican majority in the Senate as "tail twisters" of the British lion; but now his Excellency takes a firm grip on the lion's tail and gives it a twist on his own account for the purpose of disconcerting Canada, and all for spite because the United States Senate refused to ratify his treaty. This is supposed to be the acme of American statesmanship.

SPEAKING of intercolonial free trade, the *Australasian Ironmonger*, published at Melbourne, Australia, alluding to the recent sitting of the Intercolonial Free Trade Conference at Sydney, says:

"From the speeches delivered (28 in number), it was evident that the intercolonial free trade desired was on the lines of protection; the members of the Melbourne Chamber of Manufactures did not disguise the fact that they were present solely in the interests of protection; the Sydney members were all protectionists. The Melbourne Chamber of Commerce and the delegates from Tasmania were in the opposition. The Sydney Chamber of Commerce was not represented. Resolutions were carried to the effect that the question be immediately pressed upon the governments of the various colonies that immediate action should be taken to establish the principle of reciprocity by treaty in such articles as might be agreed upon amongst the various governments, and that the Australian Federal Union should receive the support of the Conference."

F. E. DIXON & CO.

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A NEW HOT WATER HEATER.

The relative amount of cold weather in Canada, as compared with the whole year, being so great, the method of heating places of residence is one of the prime factors of life, and new devices, having in view the economical and healthy adjustment of the interior temperature to exterior conditions, is a matter of the greatest interest to every one. Perhaps no greater mistake could be made than in giving undue consideration to the first cost in providing apparatus for heating dwellings.

Hot water is claimed by scientific students to be an unequalled medium for this purpose; and they point to the fact that in both the United States and England it is being almost universally used for heating hospitals and other sanitary institutions; and in view of this fact the important declaration is made that Canada is well in advance of the countries named, and of the world, in this branch of art.

The CANADIAN MANUFACTURER takes pleasure in directing attention to the very interesting invention of Mr. Edward Gurney, of this city, which is now about to be placed on the market by the E. & C. Gurney Company. During the past four years this company have been manufacturing a hot water heater which has been received with a great deal of favour and approbation; but concurrently with its manufacture they have been experimenting extensively and

most thoroughly to ascertain the value of certain improvements which they have embodied in their new apparatus, and which we here describe.

The success of hot water heating apparatus depends almost entirely on the well known laws of gravitation to effect the circulation. Cold water is much denser and heavier—probably to the extent of about five per cent.—than hot water. In the Gurney system the heater here alluded to is placed at the lowest convenient point in the building to be heated, and suitable outflow and return pipes are connected with radiators wherever the heat

is to be delivered, even on to the highest floors. The heater and all the pipes and radiators having been filled with water, when fire is kindled in the heater, circulation of the water begins; and this is caused by the heavier cold water in the return pipes descending, replacing the lighter hot water, which goes up through the outflow pipes. Of course it is of great importance that throughout the entire system there should exist but the minimum of friction to retard or obstruct the circulation, and Mr. Gurney has given this feature a great deal of careful consideration. In the arrangement of this system the return pipes are introduced into the heater very close to the lowest level, and at a point where there is the least chance of repulsion. In other heaters the water is returned at the level of the fire pot and thrown against the most highly heated surfaces. In this heater the water rises from the inlet in the base on perpendicular lines directly to the fire pot section, and is passed very quickly over the hottest surfaces. Another advantage is that the heat from the bottom of the fire pot is completely economized, being radiated against the sides and bottom of the ash pit section; and the fact that this section is constantly supplied with the inflow of cold water admits of the heater being placed immediately upon a wood floor without the least possible danger of its taking fire. Great care has been taken in ascertaining the correct size and capacity of the combustion chamber of the heater, and the experiments in this direction

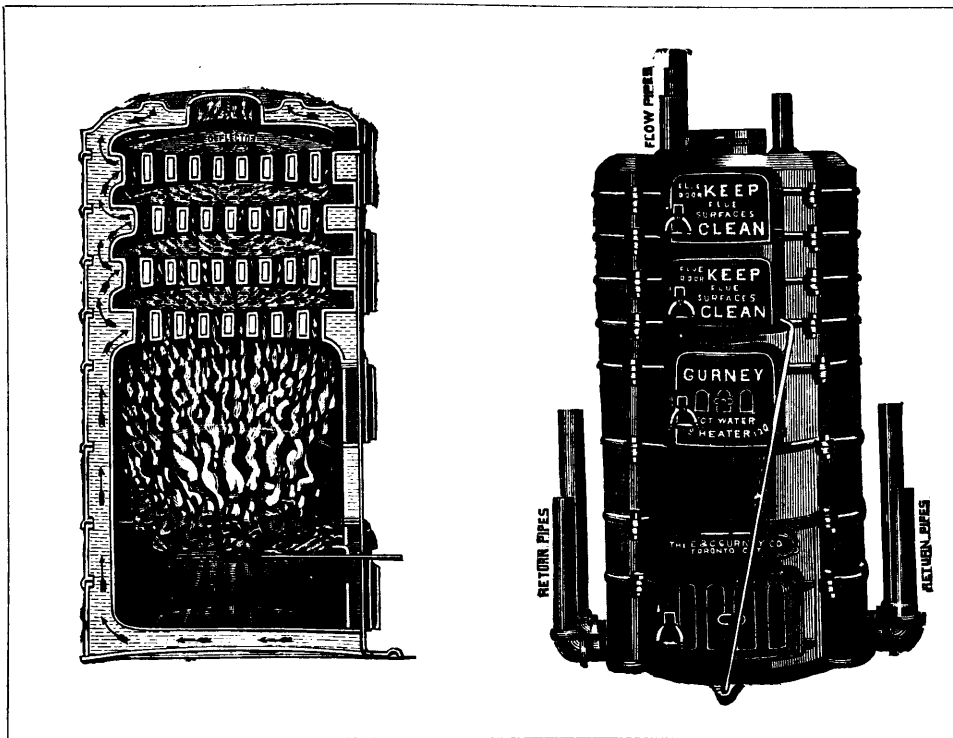
have extended over a year of actual trials, the memoranda of results filling many pages of manuscript. In its construction this combustion chamber is entirely unique. Curves are substituted for angles, thus avoiding unnecessary friction. It will be recognized that the surface immediately surrounding the fire is the most valuable in economizing the heat, and it is desirable that the water in the heater should closely surround the fire; but it has been found that the rapid passage of water over the heated surfaces of the combustion chamber causes imperfect combustion, the heat necessary for the perfect combustion of the fuel lying in the outer edge of the fire pot being absorbed by the circulating water. This being the case, it was found necessary to interpose fire brick non-conducting lining between the fire and the water surfaces; and this is now done by the best makers everywhere.

A great disadvantage arising in this practice, however, is that in a short time the expansion and contraction of the fire brick, from the action of the heat, and the inevitable accumulation of clinker upon them, caused by fusion, causes them to become broken and disintegrated, so that sooner or later it becomes necessary to reline the furnace. By a very simple and ingenious device in this heater the water is projected between the several fire brick composing the lining, so that each individual brick is surrounded on three sides by water, thus presenting alternate surfaces of brick and iron to the

fire, the maximum of surface being thus preserved. The arrangement renders the fire brick practically indestructible, the surrounding water maintaining the temperature at so low a standard that it is impossible for fusion to occur. This arrangement has been observed for the past four years in heaters manufactured by this company, and in no instance have they ever learned that the fire bricks had become destroyed, or that it was necessary to replace them. Standing in front of this heater one cannot but be impressed with the fact that the fire is almost entirely

surrounded by water, the only exception being the furnace and ashpit doors, and the openings through which the scoria of the fire is removed from the grate, and in which the shaker bar is operated.

In a general way the design of this heater embraces every feature necessary to efficiency and economy. The details are grouped and combined in a graceful and mechanical manner, giving the entire structure a pleasing exterior; notwithstanding which, no artistic consideration in the direction of external effect has been allowed any weight when opposed to the attainment of all that the apparatus was intended to accomplish. The curves on the top and sides are in accord with the best hydrostatic and hydraulic practice. Every part is well guarded, and the multiplication of dissimilar parts has been avoided. The construction of the sections composing the heater is such that each section has a projection on its under side, and on which it stands, not very unlike the legs of a marine boiler. The discs forming the upper and lower surfaces of the sections are out of plane,—dished by being made concave, or depressed in the middle, somewhat after the style of the head of a cylinder boiler, the depressions approaching each other, a device which provides for the expansion and contraction of the metal, guaranteeing almost perfect immunity from injury by the application of heat or internal pressure. At proper distances apart on the periphery of the sections, suitable



lugs are cast by which each section is securely bolted to its adjoining section, the bolts securing each pair of sections being susceptible of being tightened up for the purpose of making the joint between the sections absolutely water and gas tight. This is a decided improvement over the previous method of having the bolts securing the sections together extend continuously from top to bottom of the heater, through the lugs. The packing and joint fillings are practically indestructible. The ingress and egress openings, and all the water passages, are so formed, proportioned and located as to reduce resistance to the motion of the water to a minimum. The flue openings permit of either very rapid or very slow combustion, and of any condition between these extremes; and there is a very simply arranged and easily operated damper on the top section which greatly facilitates the control of the draught. The surfaces of the sections are presented in the most favorable manner for the absorption of the passing heat, the free passage of gases, and facility for cleaning. The location, form and size of flue doors, also the legend cast upon them, "Keep the flue surfaces clean," furnish ample opportunity for the examination and cleaning of the flues, and call attention to the necessity of so doing. The degree of attention given to the legend will be manifested in the coal bill. The door permitting access to the shaker bar, and to remove scoria from the fire pot, is made to drop and is so arranged that a metal chain may be attached and led to the room above, by which the draught may be increased or diminished at pleasure of operator without visiting the heater. The incline given to the furnace mouth, and the rounding of the top ends of the fire brick and cast iron projections between them, prevent the lodgment of fuel upon them. The perforated lining to the fire door prevents radiation through the door, and it also admits heated air to the top of the furnace in proper proportions for the combustion of the gases. The ample capacity of the fire pot renders frequent firing unnecessary, applications of fuel at intervals of about twelve hours being sufficient even in the coldest weather. By removing the ash pit front the grates and grate rests may be removed from the heater with great facility, and without disturbing the upper structure.

If there is no leakage in the pipes or radiators, there can be no waste or diminution of water in the system after it has been once supplied. The water can never exceed a boiling temperature even in the heater, and the heat given off from it in its passage through the pipes and radiators lowers that temperature continuously, until, completing the entire circuit of the system, it is returned to the heater at its minimum temperature. A simply arranged tank, of a few gallons capacity only, placed at the highest point in the system, is sufficient to meet any possible exigency that may arise by any leakage. Actual tests show that the water leaving this heater at a temperature of about 200 degrees, after circulating through a system embracing about three thousand feet of pipes and radiators, is returned to the heater at a temperature of about 175 degrees, the loss in heat in making the circuit being only about 25 degrees.

THE attention of mill and factory owners is called to the fact that the cost of a metallic roof is not much, and that it is a good protection against fires.

Light Heat and Power, Philadelphia, the only journal in America devoted to the gas industries, will hereafter be published weekly instead of twice a month, as heretofore. This excellent journal is accepted as authority on the matters to which it gives special attention.

THE *American People* is a weekly pictorial journal published in Pittsburgh, Pa., specially in the interests of American manufacturers. The cartoons all bear upon the now all-absorbing tariff question, and show the benefits to be derived from "Protection" as against the adverse influences of "Free Trade." It is doing good work.

SHIPMENTS of coal for July from the Nanaimo district were the largest yet attained in the history of coal mining in B.C. Total shipments amounted to 40,158 tons, loaded into twenty-six vessels. This does not include supplies to the local steamers and home consumption. The value of the exports of coal for the month is placed at \$140,553.

THE *London Evening Times* is another new bark just launched upon the sea of Canadian journalistic enterprise, by Messrs. Paul & Harris, London, Ont., and which finds hearty welcome to our editorial table. It is a valuable acquisition to our exchange list, as it appreciates the importance of publishing whatever may be transpiring in London and vicinity in manufacturing and industrial circles.

THE *Enterprise*, New Glasgow, N.S., is a new and welcome visitor to our exchange table. It is published weekly by Messrs. Dennis Bros., and started out with a guaranteed circulation of

2,000 copies. New Glasgow is the centre of what is already a great manufacturing and mining region, and although these industries are in their infancy, the unbounded faith of those interested in them, including the *Enterprise*, will push them to a development that will bring employment to all classes, and the largest prosperity. The name of the paper is characteristic of the people and the province, and we wish it every imaginable success.

Wide Awake for September shows up on our table as bright and cheerful as ever, and brimming over with a profusion of delightful reading that produces a feeling of restfulness while pursuing it, and of regret when it is finished. Why don't the publishers send it to us every week instead of only once a month? We are sure there is not an intelligent person in all Canada who is fortunate enough to receive it who does not feel happier and better for having read it. Intended as it is specially for the delectation of the young, it brings pleasure to older people also. *Wide Awake* is \$2.40 a year. D. Lothrop Company, publishers, Boston, Mass.

THE *Cleveland Iron Trade Review*, of August 16, was a Centennial edition, commemorative of the great Centennial Exposition of the Ohio Valley and Central States, recently held in Cincinnati. Among the more interesting features of it are concise and condensed descriptions of a number of the more enterprising manufacturing centers of Ohio, from which fair ideas may be obtained of the greatness of that great manufacturing state. Careful work, fine paper, and good printing and press-work are characteristics of the edition to which we allude, and there are just fifty-two equally good and interesting *Trade Reviews* published each year.

THE *Pump Catechism*, a practical help to runners, owners and makers of pumps of any kind; covering the theory and practise of designing, constructing, erecting, connecting and adjusting pumps, by Robert Grimshaw, M.E. Fourth improved edition. New York: Practical Publishing Company, 21 Park Row. Price, \$1, post paid to any address. If there is any practical question concerning any application or any adjustment of any kind of a pump, which is not answered in this book, the publishers would like to have it for answer in the next edition. The author will answer any such question free by mail, if addressed in care of the publishers enclosing stamp. This offer is good only to those who have ordered the book.

THE *Dominion Illustrated*, which is published every week in Montreal, by Messrs. G. E. Desbarats & Son, is a journal of which every Canadian should be proud. They should be proud of it because it is a distinctively Canadian publication, which seeks in all ways within its scope to magnify and exalt Canada, and to make the excellence of the country and the people living in it well-known and appreciated abroad, and at home also. Unlike some other journals published in Canada, it does not pander to any disloyal element, nor seek to depreciate Canada by ridicule and false insinuations. The illustrations, whether of persons, things or places, are all of the highest order of merit and very artistic and beautiful. Messrs. Alex. S. Macrae & Son, 127 Wellington Street, West, are in charge of the Toronto office of the concern.

THE Rathbun Company of Deseronto, Ont., are now manufacturing and have for sale all kinds of fireproof building material. Their porous earthenware, or terra cotta, is recommended by architects and insurance companies as unexcelled for protection against fire. It weighs one-third that of brick; mortar adheres to it without the use of lath; it may be nailed, sawed and worked with carpenters' tools; it takes the place of wood or brick for outer or inner walls and floors at about the same cost; insures immunity from fire, dampness and vermin; gives warmth in winter and coolness in summer; lowers insurance and decreases the cost of the building. Persons rebuilding old structures or erecting new ones are solicited to consult their architects or write the company direct in reference to this new material.

THE manufacture of various articles from compressed paper is by no means a novelty, the art of producing papier-mache goods having been known for centuries to oriental nations. The employment of this light and durable substance for everyday purposes, is of more recent date, and has only been made possible by modern science and invention, backed by the results of mechanical skill. This business is fast acquiring large proportions both in Canada and the United States, where paper pulp, or wood pulp is converted into a large variety of domestic utensils. In the manufacture of these goods the material is placed under a press capable of developing a pressure of 250 tons, provided with dies that are kept at a proper temperature. The goods thus formed are subjected to a water-proofing process, and baked at a high temperature, enamelled and baked again, rendering them smooth, of handsome appearance and perfectly non-porous. They are ornamented to taste and after another coat of varnish, they are again baked and are then ready for use.

Manufacturing.

This department of the "Canadian Manufacturer" is considered of special value to our readers because of the information contained therein. With a view to sustaining its interesting features, friends are invited to contribute any items of information coming to their knowledge regarding any Canadian manufacturing enterprises. Be concise and explicit. State facts clearly, giving correct name and address of person or firm alluded to, and nature of business.

- MR. CHRISTIE, of Brandon, Man., will build a new sawmill.
- THE Berlin Elevator Company, Berlin, Ont., will build an elevator.
- MESSRS. COOMBS & STEWART will build a grain elevator at Neepawa, Man.
- MESSRS. ROGERS & MITCHELL, Clearwater, Man., are building a large elevator.
- MR. W. G. NELSON, Windsor, Ont., will build a large addition to his planing mill.
- MESSRS. CHALMERS BROS. & BETHUNE will build a grain elevator at Pilot Mound, Man.
- PICTON, Ont., has passed a by-law voting \$30,000 for the erection of water-works there.
- HATTON & CARE's flour mill, at Hamilton, Ont., was destroyed by fire Aug. 9. Loss, \$35,000.
- THE Renfrew Mfg. Company, Renfrew, Ont., will build and operate a foundry and machine shop.
- THE capital stock of the Empress Sewing Machine Company has been increased from \$100,000 to \$200,000.
- MR. R. IRONSIDE is building a 40,000 bushel elevator at Manitou, Man. It will include chopping machinery.
- THE Ormstown Brick and Terra Cotta Company, of Ottawa, has been incorporated with a capital of \$50,000.
- THE foundry of Mr Thomas Hendrie, at Seaforth, Ont., was destroyed by fire August 30, loss about \$7,000.
- MR. ERNEST HOUGH, Regina, N. W. T., will engage in the manufacture of carriages and other wheeled vehicles.
- MESSRS. DOWLING & LEIGHTON, furniture manufacturers, Harrison, Ont., will open a branch at Emerson, Man.
- A FLOURING mill, to cost \$40,000, is to be built at Deloraine, Man., on the line of the Canadian Pacific Railroad.
- THE Rathbun Company will erect a locomotive repair shop in connection with their extensive works at Deseronto, Ont.
- WHAT was known as the Dominion Oatmeal Mill at London, Ont., was destroyed by fire August 20. Loss, about \$15,000.
- THE R. Forbes Manufacturing Company, Hespeler, Ont., have been placing considerable new machinery in their woolen mills.
- CARRIER, LANE & Co., Quebec, have supplied the Marine Department with two steam fog horns for Gray Dock Island, Lake Huron.
- THE sawmill of Mr. Wm. Flater, at Chatham Centre, near Chatham, Ont., was destroyed by fire August 29. Loss about \$10,000.
- It is understood that the Jenckes Machine Works at Sherbrooke, Que., which were recently destroyed by fire, will be rebuilt immediately.
- Two new elevators will be built at Cypress River, Man., this season. The local authorities of the town can probably give fuller information.
- MESSRS. SLINGSBY & SONS, Brantford, Ont., who operate a two-set woolen mill, will put in cotton machinery to make yarns for blanket warps.
- A LARGE knitting factory for the manufacture of underwear, cardigans, shawls, etc., at Berlin, Ont., is one of the probabilities of the near future.

ESTABLISHED - - 1828.

J. HARRIS & CO.

(Formerly HARRIS & ALLAN),

NEW BRUNSWICK FOUNDRY.

RAILWAY CAR WORKS, | PORTLAND ROLLING MILLS,
PARADISE ROW. | STRAIT SHORE.
PORTLAND, ST. JOHN, N.B.

Railway Cars of all descriptions. Chilled Car Wheels, "Washburn Peerless" Steel Car Wheels. Car, Machine, Mill, Ship, and all kinds of Castings. Steam Engines, Mill and other Machinery. Nail-Plate, Bar Iron, Street and Mine Rails, Ships' Iron Knees, Hammered Car Axles, Shafting and Shapes.

BRUSHES

Paint, Whitewash, Kalsomine, Household Brushes.
Horse, Factory, Machine Brushes, etc., etc.
Corn Brooms and Whisks.

MANUFACTURED BY

T. S. SIMMS & CO., - ST. JOHN, N.B.



SEALED TENDERS addressed to the undersigned, and endorsed "Tender for Elevators, &c., New Departmental Building, Ottawa," will be received until Monday, 17th September, next.

All necessary information can be obtained at this Department on and after Monday, 20th instant.

Each tender must be accompanied by an accepted bank cheque made payable to the order of the Honorable the Minister of Public Works, equal to five per cent. of the amount of the tender, which will be forfeited if the party decline to enter into a contract when called upon to do so, or if he fail to complete the work contracted for. If the tender be not accepted the cheque will be returned.

The Department will not be bound to accept the lowest or any tender.

By order,
A. GOBEL, Secretary.

Department of Public Works,
Ottawa, August 14th, 1888.

TO MANUFACTURERS! FOR SALE

A fine Manufacturing Premises within easy reach of Toronto, in one of the most pleasant towns in Canada. No cash money required.

Will take mortgage for whole amount at five per cent. per annum interest. Buildings all new, and aggregate over 16,000 square feet of floor surface. New boiler and engine. Shafting will be sold if required.

Excellent shipping facilities. Free of all municipal taxes for ten years. Other substantial privileges go with the property.

For further particulars apply to

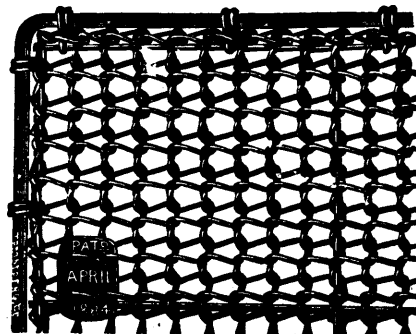
THE CANADIAN MANUFACTURER,
6 Wellington St. W., Toronto.

VICTORIA WIRE MILLS

ESTABLISHED 1859.

PATENT

Reversible Steel Mat.



Having purchased from the Toronto Steel Wire Mat Co. their plant, stock and sole right to manufacture their celebrated mat in Canada, we offer the same for sale at the new reduced price list.

B. GREENING & CO.
HAMILTON, ONT.

KINCARDINE, Ont., wants a first-class roller mill, and is willing to offer strong inducements to get it. Write the local authorities.

MESSRS. JAMES PENDER & Co., St. John, N.B., manufacturers of horse nails, etc., recently made a large shipment of their goods to Buenos Ayres, S.A.

MESSRS. ROUSSEAU & MATHER, Montreal, have been awarded the contract for the construction of an iron bridge across the Rideau river in that city.

THE St. Hyacinthe Oil and Paint Company have been organized at St. Hyacinthe, Que., with a capital stock of \$25,000, and will manufacture paints, etc.

A COMPANY has been formed for the manufacture of the Chaine railway frog, and works in Woodstock, Ont., will be erected at once.—*Chatham Planet*.

MESSRS. LEITCH BROS., Oak Lake, Man., have completed their new flouring mill and put it in operation. It replaces the one destroyed by fire last winter.

THE McLaren Manufacturing Company, Montreal, will be incorporated with \$100,000 capital stock. The company will manufacture brushes of all kinds, woodenware, etc.

THE North American Chemical, Mining and Manufacturing Company, of Owen Sound, Ont., will engage in the manufacture of Portland cement at Shallow Lake, Ont.

A BRANCH of the Port Hope Knitting Works, Port Hope, Ont., will be established in Peterborough, Ont., for the manufacture of underclothing, hosiery, mitts, gloves, etc.

THE Lake of the Woods Milling Company are building an elevator at Deloraine, Man. Mr. C. A. Young and Mr. McMillan will also each build elevators at that place.

MESSRS. DESORMEAUX & Co., of Montreal, have purchased water power at St. Jerome, and will establish a glove and mitt factory there, giving employment to about fifty people.

THE Oswego Thermometer Works, Oswego, N.Y., want to start a branch concern in Canada, and are looking for special inducements. They would employ about eighty hands.

MR. M. J. HERBERT, Orillia, Ont., has recently made a brick addition to his brewery 80x30 feet, to be used as a malt house. He will go quite extensively into the bottling business.

MR. M. A. PIGOTT, the contractor who is building the new city hall at Hamilton, Ont., has about sixty hands employed, the expectation being to have the roof on before the snow flies.

HALLEY BROS. & Co., box manufacturers, St. John, N.B., are having a large addition built to their factory. It will be 80x30 feet, and when it is completed a lot of new machinery will be put in.

THE Canadian Pacific Railway Company have given Messrs. Miller Bros. & Mitchell, of this city, the contract for a great new elevator at Fort William, with 1,000 horse power.—*Montreal Herald*.

THE Albion Iron Works, Victoria, B.C., have recently completed a fine little steamer, called the *Princess*, for the Dominion Public Works Department. She is 76 feet long, 14 feet wide and 7 feet deep.

THE works of the A. ChristieWood Working Company, St. John, N.B. were destroyed by fire August 20. The machinery destroyed was valued at \$15,000, the factory being one of the best equipped in the Maritime Provinces.

THE Virden Flouring Mill, Virden, Man., of which Mr. Squair is proprietor, is being enlarged by the addition of another story. New machinery will be added, and a grain elevator will be built to be used in connection with the mill.

THE Erie Iron Works, St. Thomas, Ont., is, according to the *Paris, Ont., Review*, open for an offer for a bonus of enticing proportions as an inducement to remove to any suitable town that wants it bad enough to make the offer.

MESSRS. E. H. BARNES & Co., box shoo manufacturers, of Ottawa, are negotiating with petroleum oil manufacturers at Batoum, Russia, for the shipment of several million feet pine lumber annually, to be used in the manufacture of oil packages.

MESSRS. M. BIXEL & SON, who have an extensive brewing and malting works at Strathroy, Ont., will erect a large brewery at Brantford, Ont. The proposed building will be three stories high, and equipped with all the latest improvements and conveniences.

Galt Brass Foundry and Novelty Works.

H. & G. DAKIN,
PLUMBERS,

Steam and Gas Fitters.

HOT WATER ENGINEERS,

MANUFACTURERS OF

Engineers', Steam and Gas Fitters' Brass Goods.

BRASS CASTINGS A SPECIALTY.

Every description of Brass Work made to order. Estimates given for heating private dwellings and public buildings with Steam or Hot Water.

GALT, - - - ONTARIO.

FOR

Cylinder, Machinery

& Wool Oils

WRITE TO

ROYAL OIL COMPANY,
1, 3 & 5 Sherbourne Street,
TORONTO.

OUR MOTTO: "High Class Oils at Low Prices."

"BRIGHT LIGHT"

(WATER WHITE)



THE BEST ILLUMINATING

OIL

MANUFACTURED IN CANADA. SAMPLE ORDER SOLICITED.

Address McMILLAN, KITTREDGE & CO.
Head Office, PETROLEA, ONT.

MESSRS. I. MATHESON & Co., New Glasgow, N.S., shipped a few days ago the iron work, fittings and a 120-horse-power steam engine for the 20-stamp mill of the Minneapolis & Malaga Mining Company. The mill will be in operation about the latter part of September.

MESSRS. ROSS & CEPERLEY, Vancouver, B.C., will display at the Toronto Industrial Exhibition a magnificent specimen of Douglas fir, recently cut at the Moodyville sawmill, B.C. The block is ninety-three inches long, sixty-eight inches wide, and twenty-four inches thick.

THE Beaver Drain Pipe Company, of Montreal, have been incorporated with \$100,000 capital, for the manufacture of drain-pipe and fire-clay goods generally. Works on a large scale are being erected near Montreal, which will be equipped with the best machinery built in Scotland.

THE Pillow & Hersey Manufacturing Company, Montreal, call attention to the fact that they are manufacturers of horseshoes, spikes, nails, tacks and brads of every variety, carriage tires, plow and other bolts, hot pressed and forged nuts, etc. Their business office is at 105 Mill street, Montreal.

It is reported that the estate of the Magog, Que., Hosiery Company has been purchased by Mr. Claxton, of Montreal, and that business will be resumed at the old stand. The price was \$3,300. It is also understood that Mr. E. A. Brown will operate the concern for the new proprietor.—*St. John's, Que., News.*

MR. T. H. KIRK, of North Troy, Vt., has formed a company for the purpose and will engage in the manufacture of carpet linings and stair pads at Dundas, Ont. Some of the machinery is on the ground and the balance is being built, it being expected to have the factory in operation during the current month.

MESSRS. A. ROBB & SONS, Amherst, N.S., a few days ago sent out of their works two of their Hercules steam engines with Monarch steam boilers, etc., complete, to parties in King's County, N. B.; also one of their shingle machines to Newfoundland. This is the fourth shingle machine shipped by this firm within a month.

MESSRS. GEO. F. HAWORTH & Co., Toronto, call attention to their business in a new and beautiful registered trade-mark in which the great divisions of the earth are shown, across the face of which is the legend "Hoyt's Pure Oak Leather Belting," and encircling which is the inscription "Known the world over to be superior to any other made."

MR. H. W. PETRIE, Brantford, Ont., dealer in new and second hand machinery, has established a branch of his business in Toronto opposite the Union Station. Mr. Petrie is probably the largest dealer in this line in Canada, and any who may be in want of anything whatever in the way of machinery should write to him for his catalogue.

THE Boiler Inspection & Insurance Company of Canada, whose head office is in Toronto, call the attention of steam users to the necessity of insuring their boilers. They say that explosions and other accidents to boilers are avoided by frequent inspection, which should always be conducted by those who know what conditions should prevail.

ARRANGEMENTS, it is said, have been completed by the J. T. Donald Chemical Company, of Montreal, with the British American Starch Company, of Brantford, to transfer its works from Montreal to the Starch Company's premises at Brantford. The capital of the new company is \$20,000, and several prominent Montreal parties are interested in the concern. It will be entirely distinct from the Starch Company.

MR. W. H. LAW, proprietor of the Central Iron and Bridge Works, Peterboro', Ont., is making considerable enlargement to his works and adding new machinery. Mr. Law has secured the contract for roofing the new depot sheds of the Canadian Pacific Railway, at Montreal. He will soon double the number of his hands and operate his works day and night.

Two first-class passenger coaches were brought here last night from Crossen's Car Works, at Cobourg, and will be used on the Canadian Pacific line between Toronto and Montreal. The coaches are furnished with patent revolving seats, and are upholstered with peacock blue plush. At each end there is a neat smoking apartment. They are elegantly finished and will be a handsome addition to the rolling stock.—*Empire.*

THE Mendelssohn Piano Company, Toronto, the organization of which was recently announced in these pages, inform us that they are meeting with much success in their business, and are selling

Fenwick & Sclater,

43 and 44 Foundling St., Montreal.

MANUFACTURERS OF

Cast Steel Files and Rasps, Anchor Brand.

Cotton Waste, white and colored.

Asbestos Cement for covering Steam Pipes and Boilers.

Asbestos Piston and Joint Packing. Asbestos and Rubber Piston and Joint Packing. Plumbago Packing.

HOSE—Rubber, Canvas and Linen.

HOSE—Cotton, Rubber-Lined for Fire Brigades.

SELLING AGENTS FOR

Asbestos Packing Co., Boston; Boston and Lockport Block Co., Boston; American Cotton Waste Co.; Montreal Tent and Awning Co.; "Household" Fire Extinguisher Co.

A. C. LESLIE & CO.

MONTREAL and TORONTO,

MANUFACTURERS' AGENTS FOR

Iron, Steel, Wire, Tin, Plate,

GALVANIZED IRON.

Special value in STEEL BARS, ANGLES, SHEETS, PLATES.

BUYERS ARE INVITED TO OBTAIN PRICES.

"JESSOP'S" STANDARD TOOL STEEL IN STORE.

1835 - 1888

Phoenix Foundry and Locomotive Works,

POND ST., ST. JOHN, N.B.

JAMES FLEMING

(Successor to GEO. FLEMING & SONS),

MANUFACTURER OF

LOCOMOTIVES, Marine and Stationary Steam Engines, Steam Boilers, Ship Tanks, and

MACHINERY OF EVERY DESCRIPTION.

The Wm. Hamilton M'g Co.

PETERBOROUGH, ONT.

MANUFACTURERS OF THE MOST MODERN

SAW MILL MACHINERY

ALLINGTON'S PATENT DOUBLE COLUMN BAND MILL, WITH ROLLER GUIDES.

SINGLE COLUMN BAND MILLS. WILKINS' PATENT COMPENSATING BALANCE GANG, NO FOUNDATIONS REQUIRED.

Circular Saw Mill, and everything required in first-class Saw Mills. Send for Circular.

large numbers of instruments. They occupy the factory recently occupied by the Herr Piano Company, and have a full force of experienced workmen employed.

Work on the Brantford Carriage Works Company's building is being delayed, the contractor finding great difficulty in getting square timbers. The big chimney has been erected and the first story of the factory is about completed. The building is under contract to be finished this August, but an extension of time will have to be secured. It will, however, be in running order by the fall.—*Brantford, Ont., Courier.*

MESSESS. W. STAHLSCHMIDT & Co., Preston, Ont., notify their friends and customers that they will make a comprehensive exhibit of the office, church, lodge, school and other furniture manufactured by them, at the forthcoming Toronto Industrial Exhibition. Everybody knows the high reputation of the articles manufactured by this firm, and their exhibit will, no doubt, attract much admiring attention.

MR. W. F. WILEY is desirous of establishing a wincey factory in Paris, Ont., and a by-law is to be voted on in that town on September 13th inst., to decide if a bonus of \$5,000 shall be granted him as an inducement. The proposed buildings, with shafting and power, will cost \$14,000, and the machinery for manufacturing the goods \$16,000, the establishment to give employment to not less than forty hands.

THE Dominion Safety Boiler Co., informs us that the president and general manager of the Canada Paper Company recently inspected their Field-Stirling boilers now in use in the works of Messrs. A. W. Morris & Bro. and the Canada Sugar Refining Company's works, Montreal, which was promptly followed by an order for two of these safety boilers for their works at Windsor Mills, Que.

MESSESS. THOMAS McDONALD & Co., Toronto, proprietors of the Queen City Galvanizing Works, are calling attention to the Shipes' patent perfect fitting stove pipe manufactured by them, an illustration of which can be seen in their business card on page 147. Regarding

it they say that twenty-five lengths can be packed in a crate 18x8 inches. The stove pipe question will soon be a warm subject for discussion throughout Canada, and one in which every person is interested.

It is probable that the Cleveland Nail Works, Cleveland, Ohio, will remove their plant from that city and establish it in Toronto. Mr. T. D. Graham, the proprietor, who is a native Canadian, having been born in Hamilton, Ont., has been looking over the ground and has, we understand, met with such encouragement as will induce him to make the change. His special lines will be small finishing, casing and barrel nails. This means another "tall chimney" in Canada.

MESSESS. H. & G. DAKIN, Galt, Ont., proprietors of the Galt Brass Foundry and Novelty Works, present an attractive card in another part of this paper, in which they call attention to their business. They make a specialty of engineers' and steam and gas fitters' brass goods and brass castings generally. They are experienced hot water engineers and plumbers, and are prepared to give estimates for heating private dwellings, public buildings, etc., with either steam or hot water.

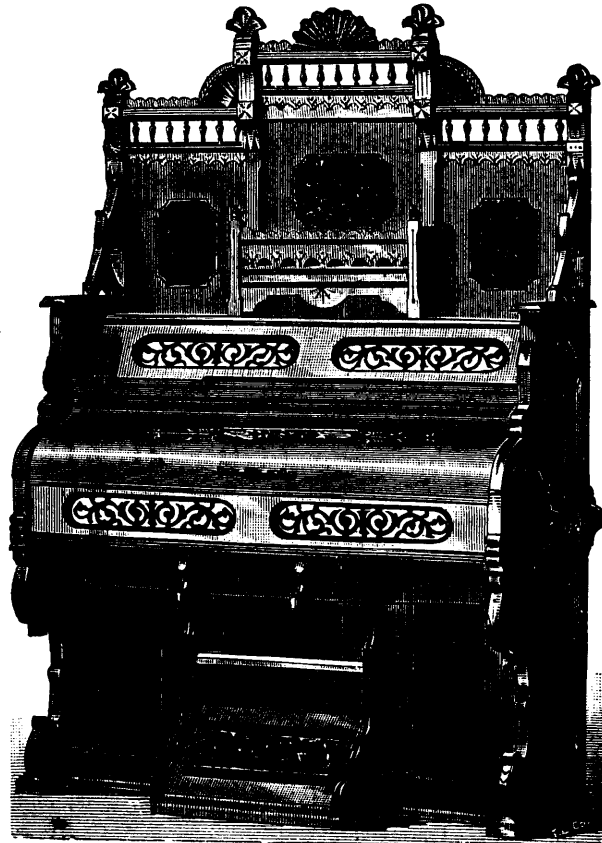
MESSESS. CAMPBELL & KAY, Georgetown, Ont., who have but recently started in business, inform us that they are working over time manufacturing their "Standard" knitting machine. They also manufacture fulling mills, steam hosiery presses, etc.; and they are prepared to equip hosiery factories throughout. These gentlemen are both practical and skilled mechanics and understand all the details of their business. The tools that they use in their works are all of special designs made by themselves.

THE addition to the factory of the American Watch Case Company has just been completed, and the shafting and machinery will be placed in position before the present month is out. The flats of the new building used by the company will give them nearly 3,000 feet of additional floor space, and add materially to their already large capacity. The company have at the present time over 100 employees on their pay-roll, and are in a position to increase their output just as fast as the needs of the trade demand it.—*The Trader.*

"DOMINION"

PIANOS

ORGANS



Hold more Gold
Medals from the
World's Fairs than
all other Cana-
dian makes put
together.

Large stock now on
hand at very low
prices at the

TORONTO

Temple of Music

J. S. POWLEY & CO.

68 King St. West.

At the recent annual meeting of the Dominion Lime Company at Sherbrooke, Que., and whose works are at Dudswell, Que., the capital stock of the company was increased \$50,000, and the construction of two additional kilns ordered. It is expected that by next season ten kilns will be in operation. It is hoped that the expectation of the company largely to control the lime trade in the New England States will be realized. Certainly the unrivalled quality of the lime both for building purposes and for pulp and paper mill uses, should enable them to push the business to large proportions.

Mr. E. E. ABBOTT, proprietor of the Leeds Foundry and Machine Works, Gananoque, Ont., is calling attention of iron workers to an improved iron shaper manufactured by him, an illustration of which is shown in his advertisement in another page. This tool is particularly adapted to planing small surfaces, having capacity to plane surfaces 12x18 inches. The smallest work, such as dies and other specially particular work done in a vice, can be turned out rapidly; the stroke can be adjusted to any point from twelve inches to zero, and the ram can be set at any point of the stroke while the machine is in motion.

MR. R. M. WANZER, of Messrs. R. M. Wanzer & Co., Hamilton, Ont., has recently established a company in London, Eng., with £90,000 capital, called the Wanzer Company (Ltd.) The directors are E. C. Warren, N.A., chief constructor Royal Navy, London, Eng.; Sir George Baden Powell, M.P., Liverpool; T. Drew Bear, London, Eng., and R. M. Wanzer. This company is to be a selling agency abroad for the celebrated "Wanzer" lamp and cooker, the goods being manufactured in Hamilton and shipped to London for distribution. They have already been given a guaranteed order for 100,000 lamps.

THE SMITH CARRIAGE WHEEL COMPANY, Batavia, N. Y., inform us that they are organizing a company to carry on the business of manufacturing the Smith's patent hub and felloe clip carriage wheel at Niagara, Ont. A joint stock company is being formed with \$30,000 capital, the distribution of which is, \$20,000 to the owners of the now unused steel works at Niagara, and to the Canadian owners of the Smith patent, the remaining \$10,000 to be raised by cash subscriptions for stock for the purpose of carrying on the business. It is expected that the new works will soon be in operation, and give employment to about 100 hands.

THE Dominion Organ & Piano Company, of Bowmanville, Ont., occupy prominent space in our advertising pages in calling attention to the instruments manufactured by them. Their organs embrace cabinet, combination, chapel and Villa Gem; and their pianos are made both square and upright. This company were awarded medals at Philadelphia in 1876 and at Paris in 1878. They have branch offices at London and Manchester, England; Hamburg, Germany; Adelaide and Sydney, Australia, and Auckland, New Zealand. A branch of this establishment, including factory and offices, is maintained at Detroit, Mich.

THE Metallic Roofing Company of Canada has evidences of its success scattered all over the city of Toronto. The office and factory are at 82½ Yonge street. Of late years much attention has been drawn to roofing materials, and this firm has well come to the front in the matter of superiority. Some of its roofing and siding can be seen all along the Esplanade from Brock street to Gooderham & Worts', and in all the late buildings erected on the Exhibition grounds. The Argonaut's club house, the Cyclorama and the new building recently erected west of the Union station may be pointed to for the benefit of visitors to the city.—*World*.

MESSRS PAXTON, TATE & Co. Port Perry, Ont., are offering a Segment bark mill, for grinding hard substances, for which they claim exceptional advantages. They mention it as being specially adapted to grinding cement, plaster, bones, ores, paint, etc., and it is also used to grind liquorice and sarsaparilla roots; while for grinding bark for tanners' use, it is unexcelled. The segments will retain their cutting edges longer than those of other mills, and when dulled can be quickly and cheaply renewed. The mill is easily erected, and but small power is required to drive it. It works with ease in damp or frozen bark, and safety-coupling prevents breakages.

THE Longford Manufacturing Company, Orillia, Ont., inform us that they have now got their new pail factory in operation and are turning out large quantities of pails, tubs, candy pails, etc. The most of these goods are manufactured from small, sound logs, cut in the vicinity of the works, and consequently the material is first class. The company now have about fifty hands employed in the manufacture of wooden ware of various sorts, and Mr. George Thompson, the manager, informs us that when the works are in full running order he will give employment to about seventy-five hands. A description of these works was given in these pages several weeks ago, when they were first projected.

Central Canada Exhibition Association ANNUAL FAIR

Under the Distinguished Patronage of His Excellency
Lord Stanley of Preston.

- - OTTAWA - -
September 24th to 29th, 1888

For Prize Lists and Posters address,

Chas. Magee,
President.

R. C. N. MacCuaig,
Secretary, Ottawa.

WESTERN FAIR

Industrial and Arts Exhibition,

LONDON, CANADA,
20th to 29th Sept., '88

NINE DAYS.

\$25,000 Appropriated for Prizes, Attractions, etc. \$132,000 Value of New Grounds and Buildings. \$200,000 Display of Agricultural and other Machinery. \$500,000 Live Stock Exhibit.

Grand International Bench Show of Dogs.

THE INDIAN TRIBES OF ONTARIO are preparing an immense exhibit of manufactured articles, agricultural productions and curiosities of the old hunting days. There will be LARGER PRIZES, GRANDER ATTRACTIONS, more to see and more to learn than at any previous Exhibitions.

Prize Lists and all other information may be had on application to the Secretary.

CAPT. A. W. PORTE,
President.

GEO. MCBROOM,
Secretary.

Engines and Boilers FOR SALE,

- 2 "Goldie" Engine, 12 by 22 Cylinder.
- 1 75-Horse Power Locomotive Steel Boiler.
- 1 75-Horse Power Babcock-Wilcox Boiler.
- 1 75-Horse Power Tubular Steel Boiler.

All in Perfect Condition. Good as New.

WM. JOHNSON & CO.

St. John St., Montreal.

To Manufacturers and Others

THE ONTARIO INDUSTRIAL LOAN
AND INVESTMENT CO.

Having now in course of erection a Large Building on the north side of Lombard Street, between Church and Victoria, are prepared to receive offers for the renting of the same, with or without steam power, in flats or portions to suit lessees.

The proximity of the location to the wholesale houses and all the railroads entering the city, makes it particularly suitable for light manufacturing purposes.

By applying at once alterations in the plans can be made to suit convenience of lessees.

For full particulars apply at office of the Company, 32 TORONTO ARCADE, TORONTO.

E. T. LIGHTBOURN,

Manager.

THE Masson Works are at the present time very busy getting out their machines for this fall and next year's trade. They expect to manufacture not less than 800 seeders to fill the demand. The seeders, rakes and other implements manufactured by the Masson Manufacturing Company are among the best in the Dominion, and we are pleased to see the prosperity this firm is meeting with.—*Oshawa, Ont., Vindicator.*

THE McClary Manufacturing Company, London, Ont., inform us that they will display full lines of their gasoline stoves in practical operation, at both the Toronto and London Exhibitions, and show their adaptability to the necessities of the every day life of house-keepers. They will also make exhibits of their oil stoves, regarding which they tell us that they enjoy a large demand for them in London, Eng., and Glasgow, Scotland—a direct result of the exhibition made of them at the recent Colonial and Indian Exhibition.

SPEAKING of the business in Canada, the chairman of the Bell's Asbestos Company, at the meeting recently held in London, Eng., said: "The trade is expanding day by day, and I look forward to the time when the use of this fibre that we possess, which is a fibre unique in every part of the world, unconsumable and incorruptible, will extend to a variety of purposes that are unknown now; and whatever may be the good or evil fortune of our ordinary trade as manufacturers, we are rapidly approaching the time when the produce of these mines will themselves constitute a permanent and splendid dividend on the capital of our company."

MANUFACTURERS who may be looking about for a desirable location for starting business are directed to an advertisement in another page of this paper in which a most desirable plant is offered for sale. The premises are in easy reach of Toronto, in one of the most pleasant towns in Canada. The buildings are all new and possess an aggregate floor space of over 16,000 square feet. A new boiler and engine are in position, also lines of shafting, which will be sold if desired. The place has excellent shipping facilities; the plant is free of all municipal taxes for ten years, and other substantial privileges go with the property. Further particulars may be had by application to the office of the CANADIAN MANUFACTURER.

Six new postal cars, for the service between Montreal, Toronto and Vancouver, are being built by the Canadian Pacific Railway Company. When finished they will be very handsome. One has been completed and is now doing service, while the five others are soon to receive their finishing touches. There will be sixteen postal cars altogether, ten of which are being reconstructed out of old coaches. It is expected that all the cars will be in running order early in the autumn. In addition to these postal cars, the Canadian Pacific Railway are building five new refrigerator cars and twenty conductors' cabooses or vans, commonly used at the rear end of the freight car.

In a recent issue of this journal reference was made to the catalogue of Messrs. Paxton, Tate & Co., Port Perry, Ont., descriptive of the double turbine water-wheels and other mill machinery manufactured by them. The Cowansville Que, *Observer* reproduces our remarks and adds, "We can say from experience that the Vulcan Leffel water-wheel made by this firm is one of the most economical, durable, powerful, and perfect wheels made. We believe there can be no better gate than the one they use on their wheels. Were we to again engage in mill business and required water-wheels for power we should get no other, and we recommend any one in want of a perfect and durable wheel to try the Vulcan as manufactured by Messrs. Paxton, Tate & Co., Port Perry, Ont."

THE Pillow-Hersey Manufacturing Company, Montreal, have removed their general offices from St. Peter street to their Mill street works. Their new office arrangements are admirable in every way, and comprise a suite which includes a commodious board room, private offices for the president and vice-president, another for Mr. Bryden, the secretary of the company, and a spacious general office for the occupation of the staff of clerks. Both the Mill street and St. Patrick street works are veritable hives of industry, employing about 450 hands in the manufacture of the diversified products for which the company have achieved an enviable reputation. The St. Patrick street works can be located at a long distance, as the handsome brick chimney, towering upwards of 200 feet skywards, is not only the highest in Montreal, but possibly the highest in Canada.

IN our issue of August 3 the fact was noticed that Mr. A. W. Brodie, of Peterborough, Ont., had purchased the Hespeler Woolen Mills, at Hespeler Ont. lately known as the Harvey & McQuesten Mills, and that he would put them into operation immediately. We learn that in addition to the seven sets of English cards already in these mills, Mr. Brodie will remove to them the three sets of similar cards which he has had in operation in his Peterborough mills. He

G. & J. BROWN M'FG CO.

(LIMITED),

BELLEVILLE, ONT.

Engineers, Machinists, Boiler Makers,

Foundrymen and Bridge Builders.

RAILWAY and CONTRACTORS' SUPPLIES A SPECIALTY.

Frogs, Diamond Crossings, Switches, Hand Cars, Lorries, Velocipede Cars, Jim Crows, Track Drills, Semaphores, Rail Cars, Double and Single Drum Hoists, etc., etc.

BINGHAM & WEBBER



"Their Work Speaks Their Worth."

Their Telephone No. is 50

Their Office is in the Lake-side Court.

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- OF CANADA -

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Toronto

Remington Standard Typewriter

AWARDED FIRST AND SECOND PRIZES

Gold & Silver Medal

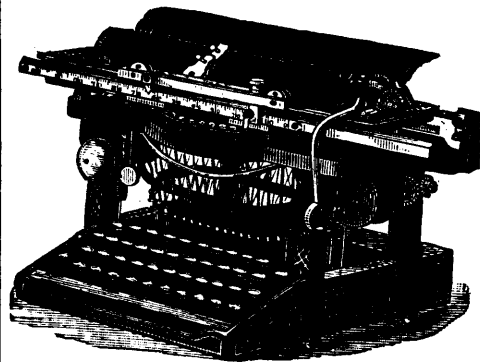
BY

CANADIAN Shorthand Society,

Aug. 13, '88.

Geo. Bengough, A.GENT.

36 KING ST. EAST TORONTO.



PATENT ADDING MACHINE

A MATHEMATICAL MARVEL

Is not a toy but a practical article. Thousands in use. HUNDREDS OF TESTIMONIALS. By mail (charges prepaid) on receipt of price—ONE DOLLAR. Money returned if not satisfactory. Circular, testimonials, etc., for stamp. Agents wanted.

WHITON MAN'G CO., - TORONTO,

SOLE AGENTS FOR CANADA.

BRANCH OFFICE—BUFFALO, N.Y.

will manufacture fine flannels, serges and Halifax tweeds as heretofore. In addition to these he has machinery for the manufacture of winceys of various grades, about one-third of all the machinery in his mills being for the manufacture of these special lines. In the cotton department of his works he will manufacture cotton knitting yarns, beam and chain warps, etc. It is expected that these Hespeler mills will be in full operation in October. Messrs. Lockhart, Millichamp & Co., Toronto, will handle the products of these mills

We call attention to the J. B. Armstrong Manufacturing Company's advertisement of their steel cutter and sleigh gears. They have had three years' trial now in Canada, and the firm are making a larger number this season than in any previous year. They have the best reports regarding satisfaction in use. They have made it a point to study thoroughly the advantages they give the public in this running gear, and facts are as stated in advertisement. Construction is also such that any ordinary buggy body can be attached very conveniently; parties with limited storage accommodation using same box winter and summer. The firm have also this season made arrangements to make their own bolts, used throughout, to prevent the possibly of any complaints. All parts entering into construction of these gears, including bolts, are made from high grade steel, and subject to their patent tempering process. They solicit trial from those who have not had samples, and orders placed early as possible from regular customers.

The new terra cotta works being built at Deseronto by the Rathbun Company will be the largest in Canada. The main building is 262 feet in length and 77 feet wide. The south-east extension is 180x40 feet, with three stories, and is chiefly used for drying purposes. The south wing is 170x96 feet, three stories high. Part of its ground floor is fitted up with hot-air tunnels for drying red brick; the other floors are used for drying terra cotta ware. In the south wing the different floors give an area of 38,760 feet for drying purposes, and this, added to the 21,600 feet in the main building, gives a total area for drying purposes of 60,360 feet. A large trestle runs through the entire length of the main building, on which run the railway cars carrying in clay and fuel for the works. The new burning kiln has been finished, and will contain about 80,000 bricks. A track runs south of the large burning kiln for convenience in loading cars for shipment of material.—*Kingston, Ont., News.*

MESSRS. B. GREENING & Co., proprietors of the Victoria Wire Mills, Hamilton, Ont., inform us that they have taken over the business of the Toronto Steel Wire Mat Company; that they are now manufacturing these mats in large quantities, and that they now have a large stock of them on hand which they are selling at greatly reduced prices. These mats are made of galvanized steel wire, with japanned, galvanized or nicked frame. They are wear and weather proof, and snow, ice, mud, clay and water are wiped off by the slightest scrape. They are self-cleaning, require no shaking, and are adapted for any place where a mat is needed, being specially serviceable for churches, schools, hotels, offices, stores, residences, railway and street cars, steamboats, etc. They are made in standard sizes ranging from 16½x24 inches to 36x48 inches, and special sizes and shapes are made to order. Messrs. Greening & Co. possess the sole right in the Dominion to manufacture these mats. They will take pleasure in sending descriptive circulars and giving information on application.

THE Toronto Pressed Brick and Terra Cotta Company, whose head office is in Toronto, is a new concern which was formed to develop the property bought by them and manufacture the specialties indicated by the name of the company. This property consists of a tract of 100 acres of land near the town of Milton, Ont., and directly on the line of the Canadian Pacific railroad, about three-fourths of which is a deposit of fine red clay well adapted for the purposes of the business. Under the superintendence of Mr. E. W. Wyatt, suitable buildings have been erected, the machinery including two dry brick presses driven by steam, capable of turning out 24,000 bricks each every ten hours. There is also a machine of equal capacity used for manufacturing brick for ornamental purposes. A kiln is being built the capacity of which will be to burn 250,000 brick at a heat. It will have four compartments and will be so arranged that either or all of these compartments can be used at once or as occasion may require. The company will also manufacture terra cotta ornaments, for which the clay is well suited.

MESSRS. MEAKINS & SONS, Hamilton, Ont., and Meakins & Co., Montreal, have sent us their illustrated descriptive price list of brushes, etc., manufactured by them. The list refers to about every variety and style of brushes known to the trade, and includes a number of special articles which, they say, are not made by any but themselves. The concern have a new and very commodious factory in Hamilton, which is fitted up with the best and most im-

Leeds Foundry and Machine Works.

E. E. ABBOTT,

MANUFACTURER OF

Vertical Drills, Shears,

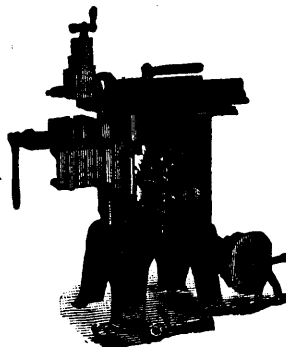
IRON PLANERS,

Punching Presses, Rolls,

BOLT CUTTERS

AND

SPECIAL TOOLS FOR WORKING IRON AND WOOD.



GANANOQUE, - ONTARIO.

HENRY PORTER,

MANUFACTURER OF

LEATHER

BELTING

Visitation Street, Montreal, Que.

Mill Owners will do well to write for estimates before placing their orders.

MUNDERLOH & CO.

MONTREAL,

SOLE AGENTS FOR THE DOMINION

OF

Meyer's Watchman Control Clock.

REDUCED PREMIUMS ON FIRE INSURANCE
SECURED BY USING THIS CLOCK.

Description and particulars on application.

CANADA BANK NOTE CO. (Ltd.)

MONTREAL.

W. C. SMILLIE, Pres't. HERMANN DRECHSEL, Vice-Pres't.
EDW. B. PARKER, Sec'y-Treas.

BANK NOTE PRINTERS,

LITHOGRAPHERS,

ARTISTIC PRINTERS.

RAILWAY MAPS. GLOSSED LABELS.

ARTOTYPE (PHOTO) PRINTING.

proved machinery, to which they are constantly making additions; and these facilities, together with those which they enjoy for the purchase of stock in foreign markets, and more than twenty years experience in the business, enable them to produce goods of the very best workmanship and quality. They also say that owing to the large increase of manufacturers throughout Canada their attention was drawn to the necessity of manufacturing brushes specially adapted to manufacturers' uses, and that for years they have made brushes for various departments of work, among which they name wheel brushes, straight and spiral rollers, brooms of various kinds, mill dusters, dabbing brushes, loom dusters, etc.

THE J. A. Converse Manufacturing Company, Montreal, of which Messrs. A. W. Morris & Bro. are proprietors, having made the necessary contracts for the erection of the buildings for their new cordage works at Port Hope, Ont., ground for the same has been broken, and the buildings will be pushed to completion with great rapidity, it being expected that the works will be in operation within the ensuing three months. We are informed by Messrs. A. W. Morris & Bro. that their intention is to build a model binder twine factory not equalled by any in America. They will employ at the start about one hundred hands, which number will be increased a little later on. They have already ordered the machinery for the works, including an electric light plant which will enable them to work at night when necessary. The fact of the establishment of this factory will ensure to the farmers of the Dominion an ample supply of twine without fear of shortage for years to come. The main factory is being built of solid brick with heavy stone foundations, cement floor and iron columns, making it fire proof. The dimensions of the buildings will be:—main building, 175x50 feet, three wings to the same, 50x40 feet each, and office 20x20 feet.

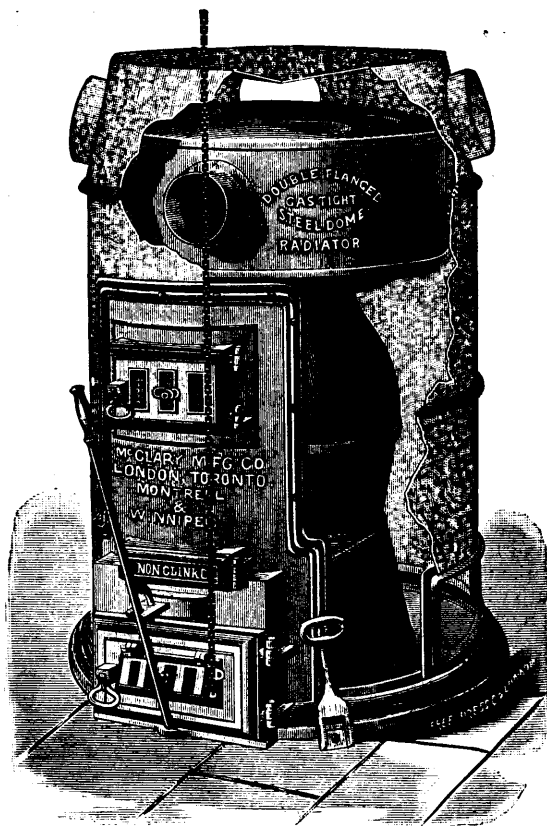
THE McClary Manufacturing Company, whose works are at London, Ont., and who have branch offices and warehouses at Toronto, Montreal, and Winnipeg, are illustrating and describing some of their specialties in this page. One of these is their "Famous" top return flue furnace, which they say is unequalled for economy of fuel, simplicity of construction, ease of management, and heating capacity. It is made in three sizes, for brick or portable setting, and is equipped with either cast iron or steel radiator. The other article shown is their new "Gem" wood furnace, which is entirely new and of novel design. It is a powerful and economical heater, has been thoroughly tested, and is specially adapted for medium sized dwellings. This company have a deservedly high reputation for constructing heating apparatus, and now that these goods are coming into brisk demand, those who are interested would do well to study what the company have to say on the subject, which is discussed in a publication which they will be pleased to send on application. They desire that any dealer who may not have already received their 1888 price list to advise them of the fact, when it will be immediately sent.

MESSRS. BRAYLEY & DEMPSTER, Hamilton, Ont., have sent us their illustrated catalogue and price list having reference to the builders' and saddlers' wrought iron hardware and miscellaneous goods manufactured by them. The illustrations and descriptions are of screw, hook and strap, and other hinges, hooks and staples; combination hasps and staples; machine bolts; coach, or lag screws; iron doors and shutters; marble and stone cutters' tools; saddlery hardware of every description, etc. This firm are sole manufacturers of the Jones patent iron and wire fencing, which is specially adapted to lawns, flower gardens, door yards, etc., some of the advantages claimed for it being its great durability and strength; will not cause snow to drift; cheaper than wooden fences; fire and wind proof, etc. They also manufacture cemetery fences and railings; crests, area and window grating; stable fittings, etc. They make light and heavy forgings to order, and every description of wrought iron work used by builders. Messrs. Brayley & Dempster have recently closed a contract with the Gale Sulky Harrow Manufacturing Company, of Windsor, Ont., of which Mr. O. F. Hall is manager, for a large quantity of wrought iron forgings.

MESSRS. COWAN & Co., Galt, Ont., proprietors of the Galt Foundry, Engine and Machine Works, inform us that they are full of business and working overtime. Embraced in jobs now in hand or recently completed and delivered, are a 100 horse-power Corliss steam engine for Mr. J. H. Still's new wood-bending works at St. Thomas, Ont., the fly wheel of which is twelve feet diameter and twenty-two inches face; a 70 horse-power Corliss engine with nine foot fly wheel with eighteen inch face, and an 80 horse-power steel steam boiler for Messrs. Duclos & Pagan, tanners, St. Hyacinthe, Que.; a 75 horse-power steel boiler for Mr. David Maxwell's new agricultural implement works at St. Mary's, Ont.; a large size planer and matcher for the lumber mills of Mr. Ed. A. Charest, Ste. Barnabé, Que.; a similar machine for the new lumber mills of

FAMOUS TOP RETURN FLUE FURNACE.

IN THREE SIZES. FOR BRICK OR PORTABLE SETTING.



WITH EITHER CAST IRON OR STEEL RADIATOR.

Unequalled for economy of fuel, simplicity of construction ease of management and heating capacity.

NEW GEM

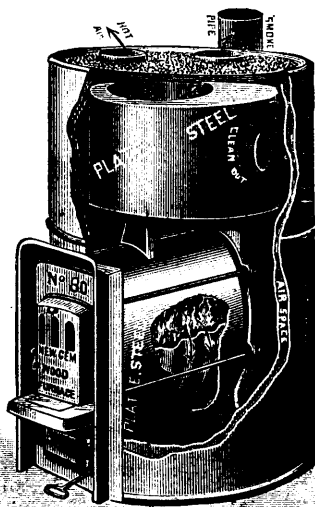
Wood Furnace

Entirely new and of novel design.

A Powerful and Economical Heater.

Thoroughly tested. Specially adapted for medium sized dwellings.

SURE TO SELL



Any dealer who has not received our price list for 1888 will please advise us.

McClary Mf'g Co.

London, Toronto, Montreal and Winnipeg.

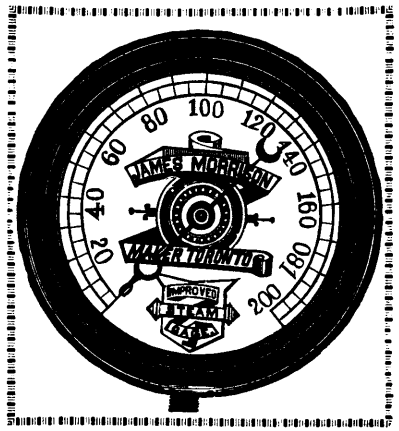
Messrs. Faber Bros., Vancouver, B.C.; an entire new outfit for Mr. A. Brinston, Brinston's Corners, Ont., consisting of engine, boilers, shafting, machinery, etc., for a new saw and lumber mill; for the Preston Carriage Company, Preston, Ont.,—a new concern—an outfit of engine, boiler and machinery; and to Mr. Lewis Hahn, New Hamburg, Ont., a full set of wood-working machinery, to replace that which was destroyed by fire with his mills last spring. This is one of the busiest industrial establishments in Canada.

The F. G. Beckett Engine Company, Hamilton, Ont., are manufacturers of marine engines, horizontal steam engines, patent automatic engines, portable engines, from three horse-power upwards; steam launches and yachts, tug boats, marine boilers, stationary and portable boilers, mining machinery for gold, silver, copper, iron and coal; saw mill machinery, etc. In the catalogue which they have sent us, among the engines and machinery which we find illustrated and described, are a compound marine engine, for yachts and tugs; plain slide valve engine, for general use, built in all sizes, of which there are at this time upwards of 1,300 in use in Canada; Beckett's patent automatic cut-off engine, with balanced rotary or balanced slide valves, specially adapted for flour mills and factories where a fuel-saving engine is required; a high speed engine, for running electric lights, etc., and a semi-portable engine and boiler, for laundries, tanneries, bakeries, etc. Among the large number of testimonials regarding the excellence of the engines, boilers, machinery, etc., manufactured by this company, from users thereof, we notice those of Mr. James Elliott, woolen mills, Chesterville, Ont.; Mr. W. S. Smith, miller, Clifford, Ont.; Messrs. McCredie & Sons, millers, Shawville, Que.; South American Trading Company, Montreal; Mr. N. Doray, flour and saw mills, Norton Creek, Que., and Messrs. Geo. Bradshaw & Co., Montreal.

The Dodge Wood Split Pulley Company, Toronto, of which Mr. Samuel May is president and manager, have just bought a most advantageously located piece of land, four acres in area, at West Toronto Junction, near this city, upon which they will build new works for the purposes of their business. The main factory building will be 250 feet long and 54 feet wide, three stories high, with an annex 80x60 feet, one story high, in which will be located the motive power, apparatus for heating the entire works, dry kilns, etc. There will also be a detached fire-proof building in which will be stored alcohol, paints, oils, and similar inflammable materials. All of these buildings are to be of brick and constructed in most substantial manner. In addition to the machinery, tools, etc., which are now in the Adelaide st. works, there will be large and important additions of machinery which will enable the company to more than double their present output, and to accumulate stocks of pulleys of different standard sizes, which they cannot now do for want of factory room. It is intended to make this establishment a model workshop in all respects, and equal in appointment to any to be found anywhere. The ground has been broken for these works, the contracts calling for their being under roof by December 1. The company expect to occupy these works by the beginning of the coming year. Mr. Charles Wagner, Toronto, is the designer and supervising architect of these works.

The Kemp Manufacturing Company, Toronto, in their illustrated catalogue and price list of the goods manufactured by them at their Dominion Tin and Stamping Works, located at the corner of Gerrard and River streets, this city, state that they give their entire attention to the manufacture of tinware of all descriptions, and of staple specialties. With their new and enlarged factory, which is fully equipped with improved machinery, and with the superior facilities they possess, they are enabled to produce probably the largest assortment of this class of goods made in Canada; and these advantages enable them to manufacture and market their products at the lowest possible prices. The lines of goods manufactured by them, and fully illustrated and described in their catalogue, include stamped ware, tinner's trimmings, japanned ware, toys, pieced tinware, heavy polished ware, galvanized iron ware, coal hods, stove shovels, stove boards, wire goods, copper ware, machine oilers, thimbles, lanterns, house furnishing goods, granite, or agate ware, etc. Each of these sections respectively include about every imaginable article embraced in it, the enumeration of which would extend over columns of these pages; but they include everything for which there is any demand in the trade. The size of the book is 7½x10½ inches, and contains about 120 pages, and was gotten up by the well-known catalogue printers, Messrs. Bingham & Webber, of this city. The Kemp Manufacturing Company are, we are informed, the largest and most extensive manufacturers in Canada of their special lines of goods; and an idea of the size of their works may be had from the view of them presented on page 147 of this paper. The main building, which faces 60 feet on River street and extends 400ft. along the line of Gerrard street is built of brick, and is two and four

Crown Water Closet.
Inodoro Water Closet.
Perfect Water Closet.
Denning's Valve Closet.
Demarest Valve Closet.
Alexander Valve Closet.
A full stock of Wash-basins, Urinals, etc.
Also, complete stock of Wrought Iron Pipe and Fittings.
Brass and Iron Valves.
Plumbers' and Steamfitters Brass Work.
Rubber Hose, Belting, Packing, etc.
Sole Canadian representative of the Celebrated Hancock Inspirator.

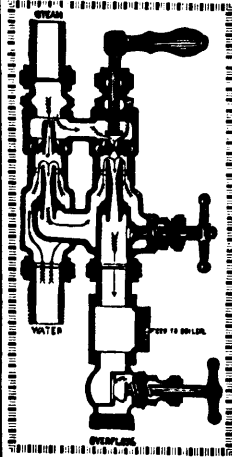


JAMES MORRISON,

IMPORTER AND MANUFACTURER
OF

Steamfitters' and
Plumbers' Supplies

75 & 77 ADELAIDE ST. WEST,
TORONTO.



SANITARY EARTHENWARE Now in Stock, Morrison's Washout Hoppe National Water Closet.

PRESCOTT EMERY WHEEL CO.

PRESCOTT, ONT.

MANUFACTURER OF
Emery Wheels,
Corundum Wheels
AND ALL KINDS OF
EMERY GOODS.

— ALSO —
SUSPENSION
GRINDING AND
POLISHING
MACHINERY



Water Grinders for Tools
Twist Drill Grinders.

ALSO A LARGE VARIETY
OF
GRINDING AND POLISHING
MACHINERY

Discounts and Price Lists on application.

stories high. Adjoining the main building, and connected with it by suitable bridges and passage-ways, are other similar buildings, in one of which is a large and pleasant assembly room specially devoted to the uses of the employees, where they hold frequent meetings, reunions, and social gatherings. The works embrace an aggregate floor space of about 95,000 square feet, and are equipped with a full and complete outfit of all machines and machinery necessary in the production of the different lines of goods, and include departments and apparatus for ornamenting, lithographing on tin, tinning, coppering, painting, varnishing, etc. In fact, each and every process necessary in the production of these lines of goods is embraced in these works, and is done on the premises, giving employment to about 200 hands.

Messrs. B. Greening & Co., proprietors of the Victoria Wire Mills, Hamilton, Ont., are the proprietors of a new wire substitute for wood laths, which was put to a practical and severe test a few days ago, in that city. A suitable furnace was erected, over the open top of which, and on one side, was built an ordinary ceiling of mortar on the wire substitute here alluded to. The furnace had no other top but this coat of plaster, and across the top of the imitation ceiling on the upper side were placed ordinary joists at a distance of one inch above the plaster and wire screen. The object of the test was to demonstrate that such a ceiling in a room would withstand intense heat without cracking or breaking off, or allowing the fire to communicate to the joists behind the plaster. The fire was fed with dry pine and kept going for nearly an hour, the furnace being packed with wood nearly to the roof, but, though the brick wall cracked in several directions under the intense heat, the thin ceiling did not show the slightest symptom of cracking, and the joist above it did not even char. This wire screen is fastened to strips of crimped iron an inch wide, which, when fastened to the joists edgewise, keep the screen and plaster an inch from the wood, rendering the walls fire-proof. A scheme somewhat similar to this is used in the government buildings in Hamilton, London, Orillia, Ottawa and Montreal; also in the Bank of Montreal, Toronto; Mechanics' Institute, Montreal, and other important public buildings. But in those buildings the screen is nailed to the joists, while in the Greening patent the inch wide crimped iron strips intervene and render it almost impossible for the fire to penetrate it. Wire lathing is coming more into use daily for the better class of buildings, because, as exemplified in the experiment, it is one of the best fire-proof agents known. Besides this the plaster takes to it more kindly than to laths, and is less apt to crack or shake loose by any sudden jar or vibration. It presents a perfectly level substance on which to plaster, and can easily be adapted to irregular forms and architectural designs. The cost over that of the old-time lath is so slight as to put it within the reach of all. The device is the invention of Mr. John Maw, formerly of Dundas, Ont., who has been superintendent of the Greening works ever since his return from the United States, where he was long connected with one of the largest wire weaving concerns in America. Messrs. Greening & Co. will exhibit specimens from this test, together with full lines of their other products, at the forthcoming Toronto Industrial Exhibition.



TIMBER SALE.

THERE will be offered for sale at Public Auction, at the Court House, in the Town of Port Arthur, on Wednesday, the 19th day of September, at the hour of two o'clock p.m., the Pine Timber of not less than eight inches in diameter at the butt, on the Eagle Lake Reserve in the Province of Ontario.

CONDITIONS OF SALE: Bonus cash at time of sale, and dues to be paid before removal of timber on all timber cut on the limit in accordance with tariff of dues of this Department, also an annual ground rent to be paid of \$3 per square mile, and a license fee of \$4. The purchaser to remove the timber within three years from date of sale. Also the purchaser to deliver free of charge to the Indians on the said Reserve, 30,000 feet of lumber suitable for building houses.

For further particulars please apply to John McIntyre, Esq., Indian Agent, Fort William, or to the Department of Indian Affairs, Ottawa.

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

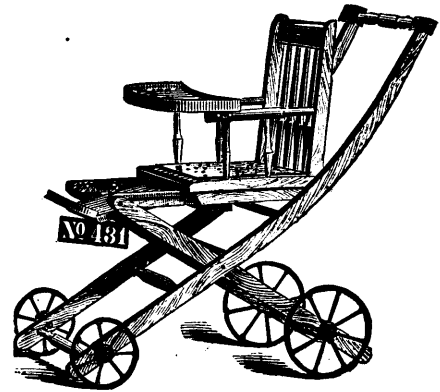
L. VANKOUGHNET,
Deputy of the Supt. Genl.
of Indian Affairs.

Dept. of Indian Affairs,
Ottawa, 22nd Aug., 1888.

The "Empire" Nursery Chair AND PARK CARRIAGE

THE MOST COMPLETE AND USEFUL CARRIAGE
CHAIR EVER INVENTED.

Useful in Winter and Summer.



Every Baby Should Have One.

The "Empire" in Carriage position.

Patented in Canada June 20th, 1887.

We have secured THE EXCLUSIVE RIGHT to manufacture and sell this Chair in the Dominion of Canada, and we are now prepared to fill orders. We will be pleased to send a sample order. They can be shipped K.D. in pairs.

UPPER CANADA FURNITURE CO'Y,
BOWMANVILLE, ONT.

THE
Dartmouth Ropework Co.

Halifax, Nova Scotia.

MANUFACTURERS OF

MANILLA, SISAL and

Tarred Russia Cordage,

MARLINE, HOUSELINE,

HAMBROLINE, SPUN YARN AND OAKUM.

SPECIAL ATTENTION GIVEN TO

BINDER TWINE.

BARREL TRUCK

FOR MOVING BARRELS WITH HEADS IN OR OUT.

WILL CARRY FROM 700 LB. BARRELS DOWN TO A NAIL KEG. (WILSON'S PATENT. 1887.)



These Trucks are now ready for the market. Nothing to equal them for the purpose designed. Send order early.

Read the following Testimonial for the first Truck purchased from the Inventor.

Office of THE MORSE SOAP Co'y.

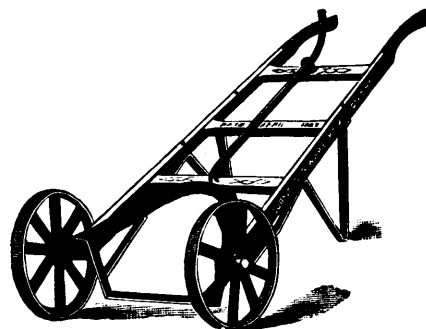
JOHN TAYLOR & Co., Proprietors.

TORONTO, April 25th, 1887.

We have pleasure in saying, that the Barrel Truck we bought from George Wilson, for moving liquids unheaded is quite a success, and has already saved us much labor and material, on account of its convenience.

Respectfully,

[Signed], MORSE SOAP Co.



Manufactured only by GURNEYS & WARE SCALE COMPANY, HAMILTON, ONT.



SAULT Ste. MARIE CANAL.

Notice to Contractors.

SEALED TENDERS addressed to the undersigned and endorsed "Tenders for the Sault Ste. Marie Canal," will be received at this office until the arrival of the eastern and western mails on TUESDAY, the 23rd day of October, next, for the formation and construction of a Canal on the Canadian side of the river, through the island of St. Mary.

The works will be let in two sections, one of which will embrace the formation of the canal through the island; the construction of locks, etc. The other, the deepening and widening of the channel-way at both ends of the canal, construction of piers, etc.

A map of the locality, together with plans and specifications of the works, can be seen at this office on and after TUESDAY, the 9th day of October, next, where printed forms of tender can also be obtained. A like class of information, relative to the works, can be seen at the office of the Local Officer in the Town of Sault Ste. Marie, Ont.

Intending contractors are requested to bear in mind that tenders will not be considered unless made strictly in accordance with the printed forms and be accompanied by a letter stating that the person or persons tendering have carefully examined the locality and the nature of the material found in the trial pits.

In the case of firms, there must be attached the actual signatures of the full name, the nature of the occupation and residence of each member of the same; and further, a bank deposit receipt for the sum of \$20,000 must accompany the tender for the canal and locks, and a bank deposit receipt for the sum of \$7,500 must accompany the tender for the deepening and widening of the channel way at both ends, piers, etc.

The respective deposit receipts—cheques will not be accepted—must be endorsed over to the Minister of Railways and Canals, and will be forfeited if the party tendering declines entering into contract for the works, at the rates and on the terms stated in the offer submitted.

The deposit receipt thus sent in will be returned to the respective parties whose tenders are not accepted.

This Department does not, however, bind itself to accept the lowest or any tenders.

By order,

A. P. BRADLEY,

Secretary.

Department of Railways and Canals, }
Ottawa, 8th August, 1888.



ST. LAWRENCE CANALS.

Notice to Contractors.

SEALED TENDERS, addressed to the undersigned and endorsed "Tender for the St. Lawrence Canals," will be received at this office until the arrival of the eastern and western mails on Tuesday, the 25th day of September next, for the construction of two locks and the deepening and enlargement of the upper entrance of the Galops Canal. And for the deepening and enlargement of the summit level of the Cornwall Canal. The construction of a new lock at each of the three interior lock stations on the Cornwall Canal between the Town of Cornwall and Maple Grove; the deepening and widening the channel way of the canal; construction of bridges, etc.

A map of each of the localities, together with plans and specifications of the respective works, can be seen on and after Tuesday, the 11th day of September next, at this office, for all the works, and for the respective works at the following mentioned places:—

For the works at Galops, at the Lock-keeper's House, Galops. For deepening the summit level of the Cornwall Canal, at Dickenson's Landing; and for the new locks, etc., at lock-stations Nos. 18, 19 and 20, at the town of Cornwall. Printed forms of tender can be obtained for the respective works at the places mentioned.

In the case of firms there must be attached the actual signatures of the full name, the nature of the occupation and residence of each member of the same, and further, a bank deposit receipt for the sum of \$6,000 must accompany the tender for the Galops Canal Works, and a bank deposit receipt for the sum of \$2,000 for each section of the works on the summit level of the Cornwall Canal; and for each of the lock sections on the Cornwall Canal a bank deposit receipt for the sum of \$4,000.

The respective deposit receipts—cheques will not be accepted—must be endorsed over to the Minister of Railways and Canals, and will be forfeited if the party tendering declines entering into contract for the works at the rates and on the terms stated in the offer submitted. The deposit receipts thus sent in will be returned to the respective parties whose tenders are not accepted.

This Department does not, however, bind itself to accept the lowest or any tender.

By order,

A. P. BRADLEY,

Secretary

Department of Railways and Canals, }
Ottawa, 8th August, 1888.

NEW BRUNSWICK CORDAGE WORKS,

THOS. CONNOR & SONS,

MANUFACTURERS OF ALL KINDS OF

HEMP and MANILLA CORDAGE,

BINDER TWINE, ETC. ETC.

VESSELS' OUTFITS A SPECIALTY.

BINDER TWINE,

MANILLA CORDAGE,

CLOTHES LINES,

LATH AND PALING TIES,

LOBSTER MARLINE,

RATLINE,

LANYARD ROPE

PORTLAND, N.B.

To Manufacturers!

THE LAND SECURITY COMPANY

OF TORONTO

Offer for sale or to lease a number of very desirable sites suitable for manufacturing purposes, among which they mention one lot containing $1\frac{1}{2}$ acres, and one lot containing $1\frac{3}{4}$ acres on King Street west, on Subway, and on line of Grand Trunk. Toronto Grey & Bruce, and Canadian Pacific Railways. Also the contiguous property, containing about 3 acres, known as the Dominion Bridge Co's Works, having switches connecting with all the Railways entering Toronto. The Shops, Forges, Steam Power and Shafting are all in capital working order.

The Company have also lands where the main lines of the Grand Trunk (Northern) and Canadian Pacific Railways cross at Davenport. Switches are obtainable from either or both roads, and abundant space can be afforded for very extensive works; and for the erection of all dwellings that may be required by workmen.

Portions of these lands are in York Township whence suburban and street car services will give frequent access to the city.

WM. I. MACKENZIE,

Manager.

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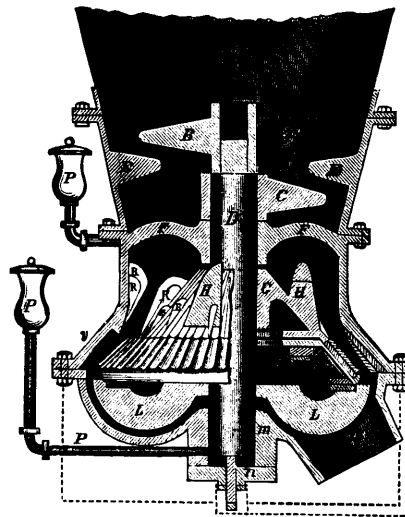
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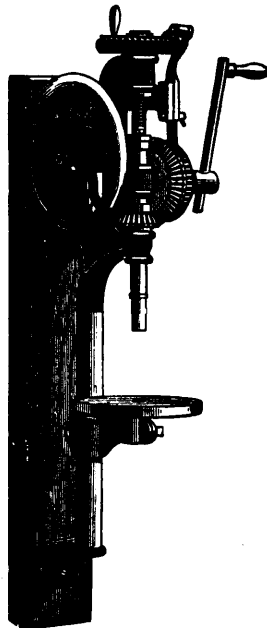
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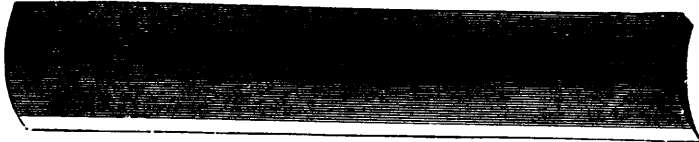
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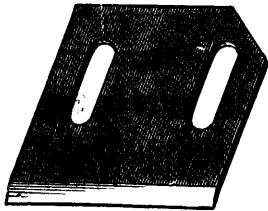
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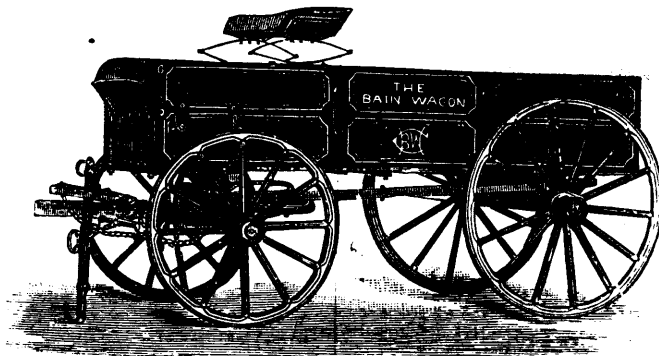
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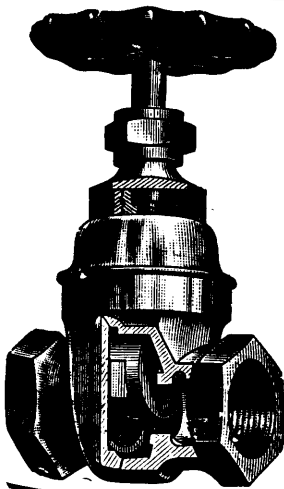
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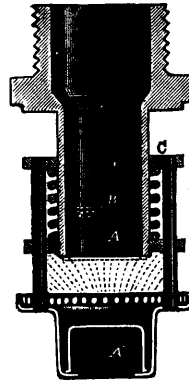
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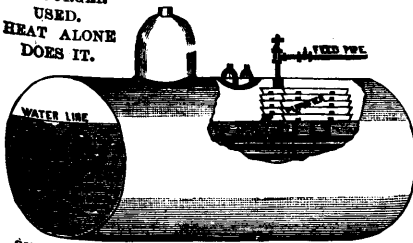
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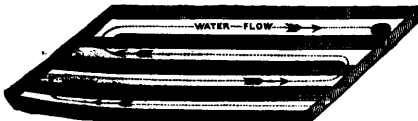
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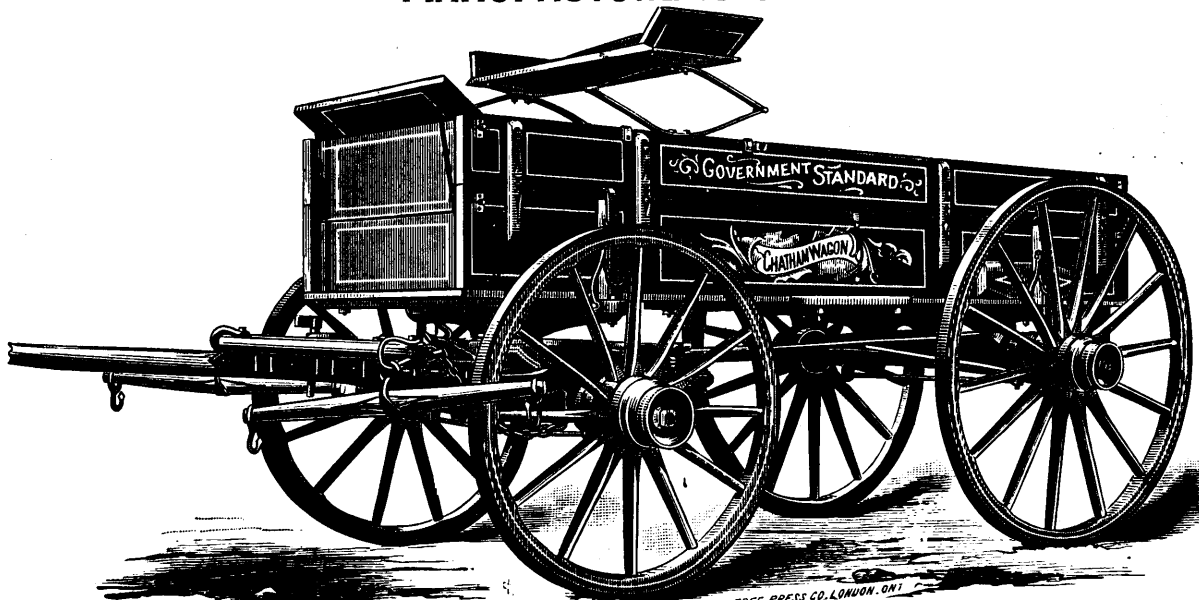
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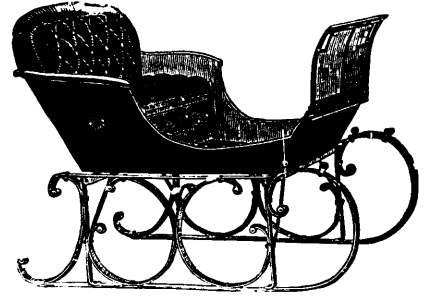
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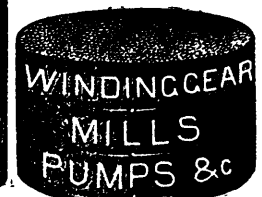
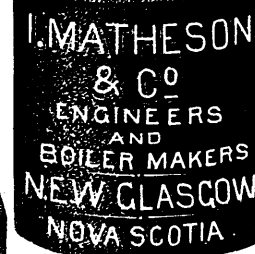
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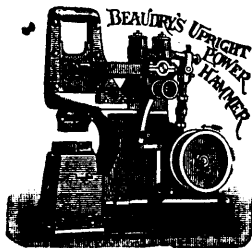
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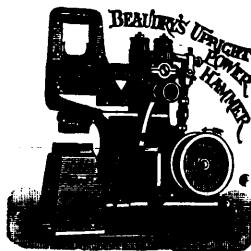
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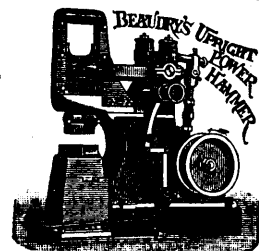
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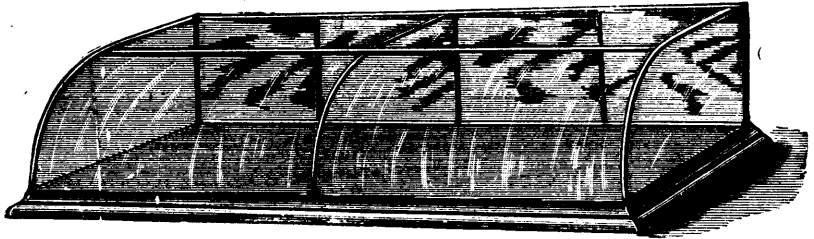
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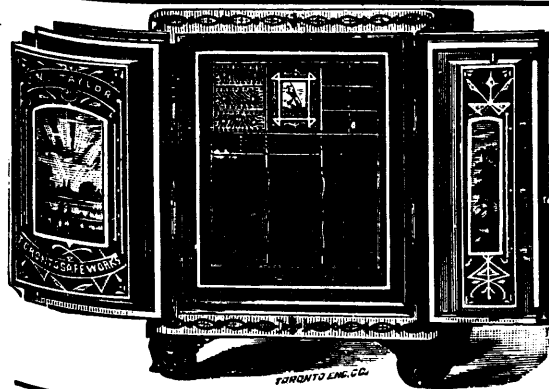
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The purpose of this cut is to illustrate the possibility of carrying power upwards to great heights by the patented **Dodge System of Power Transmission by Manilla Ropes and Grooved Wood Pulleys.** This system will make available many water powers now unutilized.



Every railroad which crosses a mountain divide avails itself of the precipitous sides of streams to find practicable grades to and from the summit levels. These streams often have considerable volume and rapid fall. The railroad is frequently at an elevation of several hundred feet above the water, with mountains behind, capable of furnishing inexhaustible supplies of raw material, mineral or vegetable.

Heretofore the utilization of such material near the place of supply has generally been impracticable because of the impossibility to transmit the power of the stream up the mountain side to the neighborhood of the means for transportation. In such a case as that represented, however abundant may be the raw material, the cost of sending it down to the water level, and returning the manufactured article to the level of the rail road, might easily so handicap the product as to exclude it from the market.

The Dodge system, however, renders it possible to laugh at difficulties such as this. To this Transmission a few hundred feet more or less is of no moment. A rope suspended in the air will break near the upper support when the gross weight of the suspended portion exceeds the tensile strength of the rope. The tensile strength of Firmus rope, one inch in diameter, is 9000 lbs., i.e. it will break only when the suspended load amounts to 9000 lbs. The weight of 1000 feet Firmus rope having that diameter is 283 lbs., and therefore a vertical elevation of 1000 feet might be overcome without taxing the rope by its own weight more than a trifle over 3 per cent. of its strength, and as the general practice of Dodge Manufacturing Company is to limit the power transmitted to about 5 per cent. of the breaking strain, it is evident that even a thousand feet elevation would not raise the strain to the vicinity of the danger limit, and an elevation which would put *all other modes of transmission out of the question* would really not make a difference with *this transmission* worth noticing at all.

And while this rope transmission has the wonderful adaptability shown in the illustrations heretofore published, another powerful recommendation is its economy. Its first cost is a tithe of the cost of any other Transmission, and after being put to service there is no loss. By the patent system of Dodge Manufacturing Company, the rope runs *without slip*. This means a transmission of all the power of the motor, and from 20 to 50 per cent. more than can be secured by *any other system of Transmission*.

It is these qualities which impress every power user, and which have caused many large establishments to discard all other modes and adopt the Dodge system with Manilla Rope.

The Dodge Patent System of transmitting power by ropes is cheaper and superior to belts in many cases, such as where the driven shaft is at right angles to the driver, also where the drive is perpendicular, particularly when it is quarter twist and perpendicular; also where the driver and driven are close together; also for long drives, such as across a street, or a stream, etc.

For transmitting power from an engine to the line shaft this system is unequalled; steady all the time, not like a heavy belt, which is always more or less flapping, jerking and stretching, then slipping and losing power. It is safe to say that an engine hitched up by the Dodge Rope System will do 25 per cent. more work on the same consumption of fuel than the same engine would do with a belt. The advantages of connecting up large engines in this manner

cannot be too highly recommended. In the first place, the expense of leather is enormous—\$500 is no unusual sum for an engine of three or four hundred horse power, and the pulleys do not have to be very far between centres either; in the second place, the noise at high pressure is terrific, and is the worst feature about our otherwise best plants; thirdly, their weight is quite a factor; fourth, they require attention that a rope does not; fifth, it requires a man in the business to put one on right, and sometimes they don't always do it right; sixth, any deviation out of line of the shafting affects the belt, while it has no effect on a rope.

The above points, to say nothing of the first cost, which would be about one thirtieth part of leather, are enough to banish the leather belt for main driving into everlasting oblivion, especially in the minds of those that have had experience with large leather belts.

The fact alone that by raising the tension wheel the engine can be turned around by hand for repair or adjustment, is enough to endorse it in the minds of those who have had to do a little pulling on a fly wheel, with the entire shop hitched on.

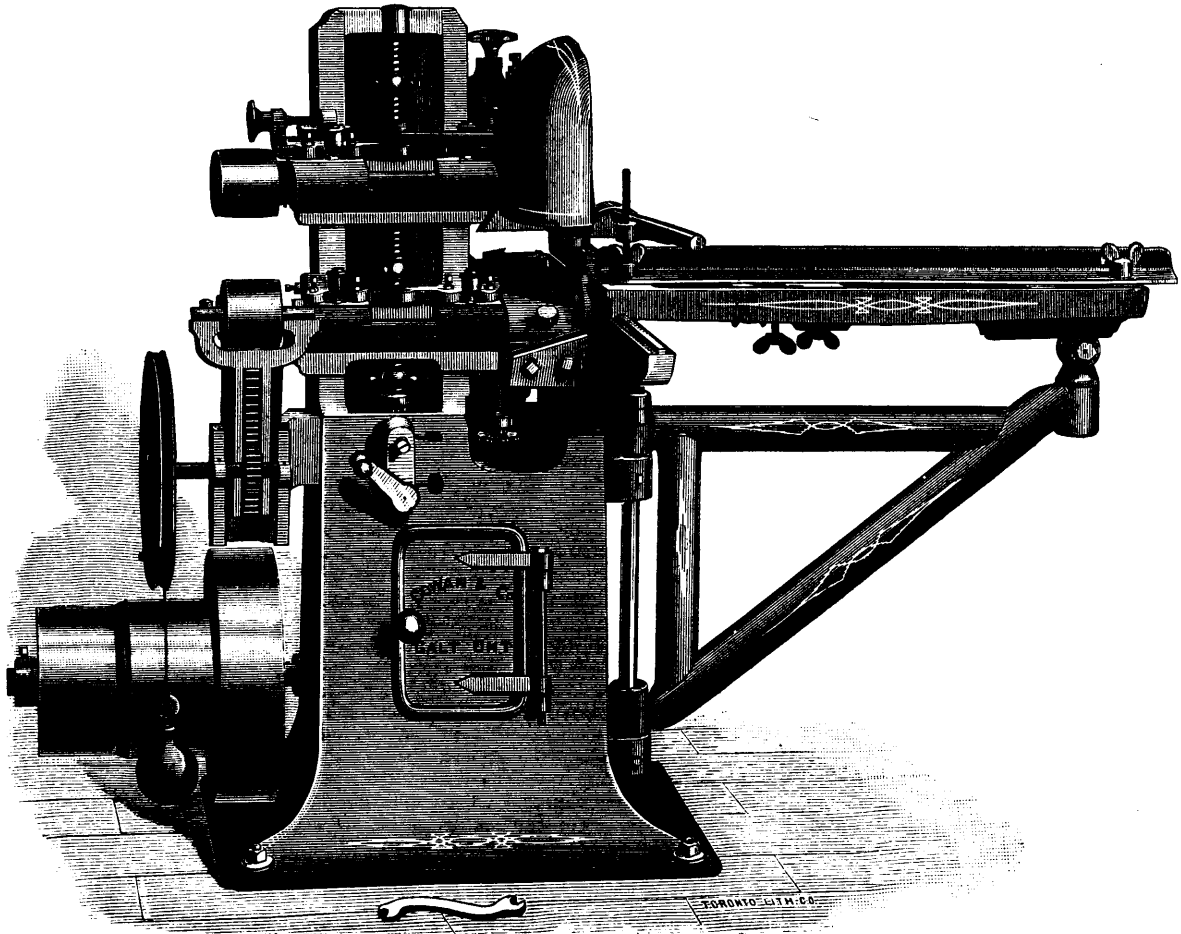
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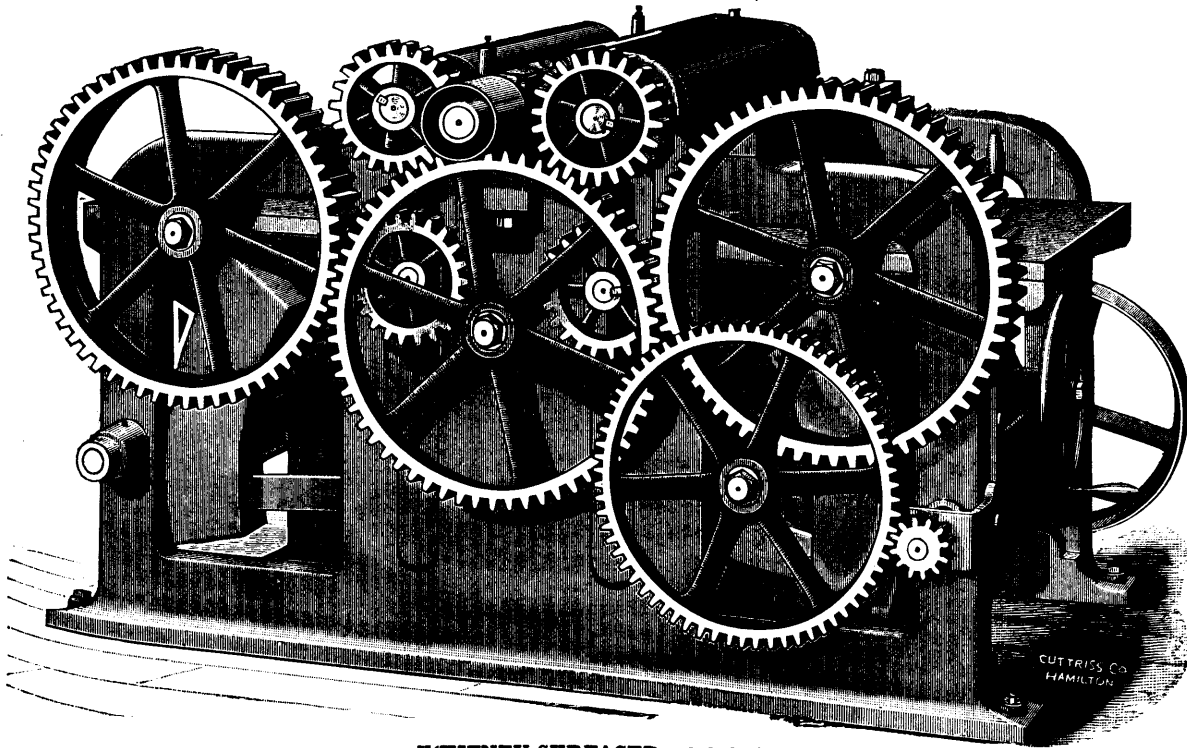
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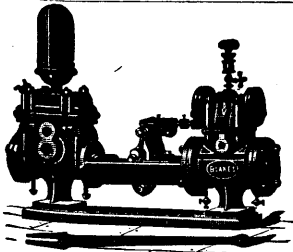
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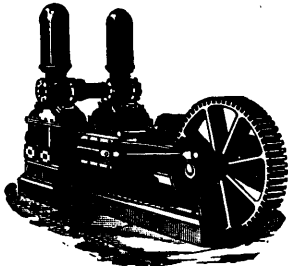
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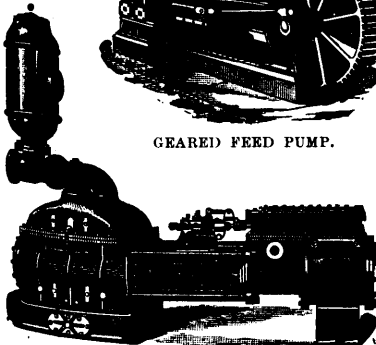
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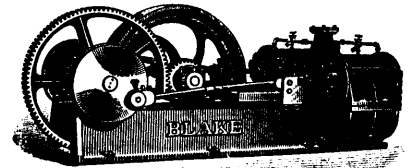
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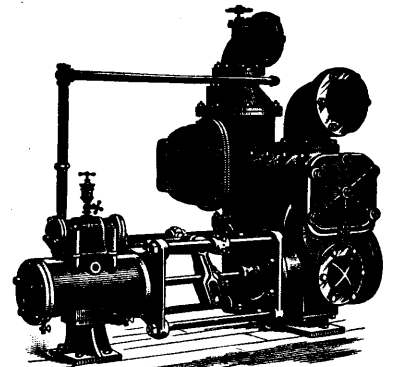
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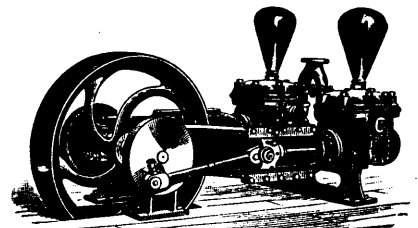
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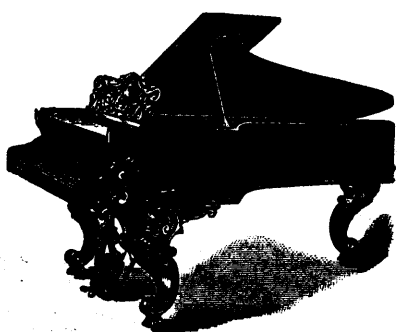
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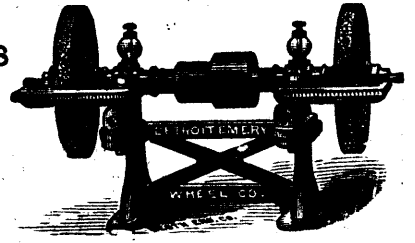


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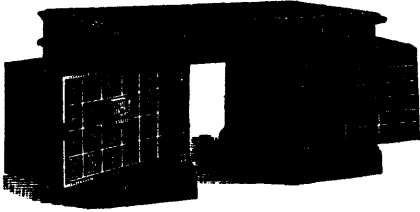
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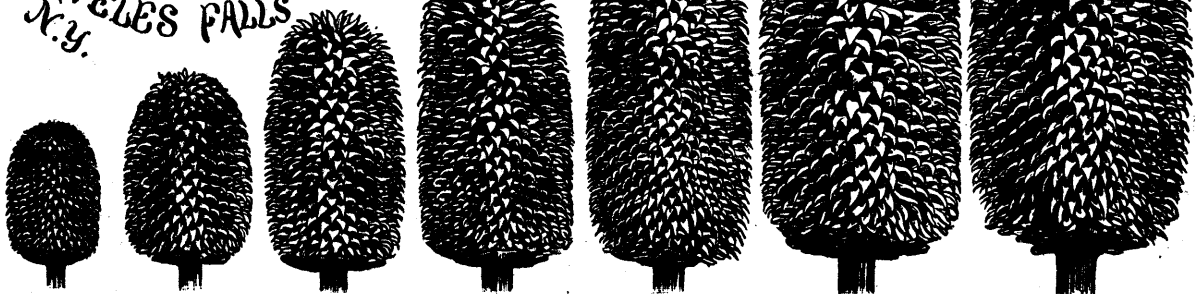
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