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VOL. 15. TORONTO, AUGUST 3, 1888. No. 3.

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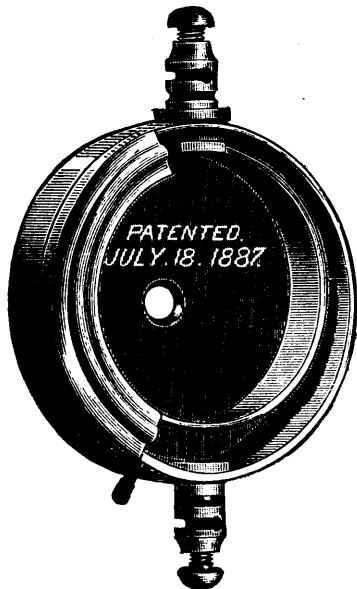
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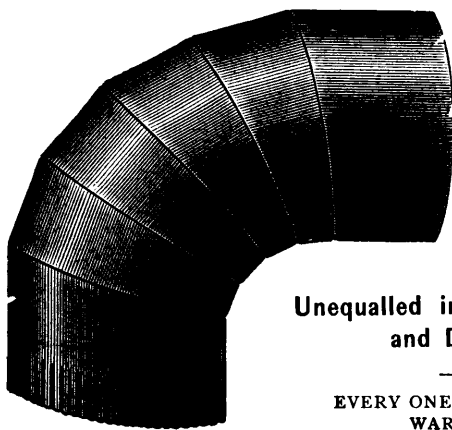
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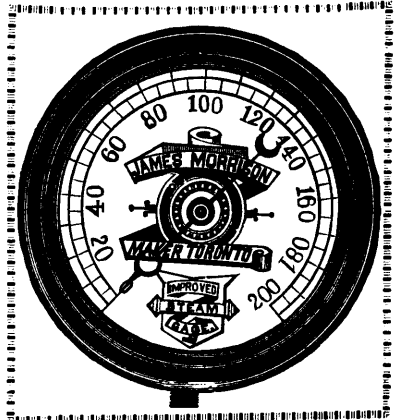
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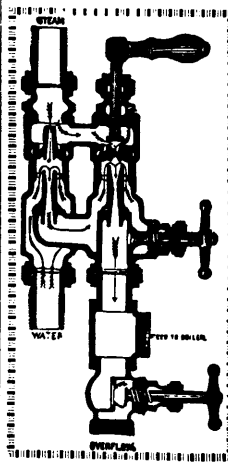


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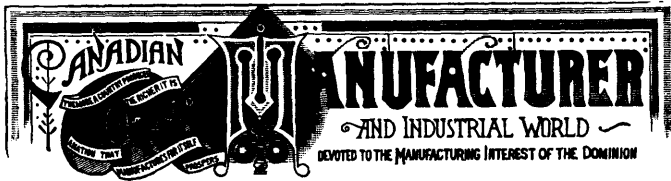
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6 Wellington Street West, Toronto.

## Captains of Canadian Industry.

### WILLIAM CHRISTIE.

THERE is probably no man in active business life in Canada to-day who owes his success to his own exertions in any greater degree than William Christie, biscuit manufacturer, of Toronto. He was born in Huntley, Aberdeenshire, Scotland, January 6, 1829; and neighbouring schools afforded the only education he obtained away from the domestic fireside. He was fifteen years of age when he was apprenticed to a baker doing business at Turriff, near the place of his nativity. The emolument he received while an apprentice was not very munificent—one pound sterling per annum with board; and when he went to work as a journeyman in the city of Toronto, his pay was only four dollars per month and board. A desire to better his fortunes brought him to Canada in 1848, where he soon found occupation at his trade in Toronto; and although a thoroughly efficient workman, the best pay he received was only twelve dollars per month and board, which was at that time the very highest wages paid for such services, and for which he labored fourteen hours for four nights in the week, commencing work at ten o'clock in the evening; and sixteen hours two nights in the week, beginning work at eight o'clock. And these wages were the highest that Mr. Christie ever received for his services as a journeyman baker.

His first venture in business on his own account was in 1851. At that time the product of the bakeries was chiefly bread in loaves; and Mr. Christie, remembering his experiences in the "land o' cakes" and the large demand existing there for toothsome confections, soon began to manufacture such goods, which

are known to the trade as "biscuit;" and the manufacture of "biscuit" in Toronto, as a distinct branch of his business, dates from 1858 when Mr. Christie turned particular attention to it; going exclusively into it in 1860. From this latter date this business has been remarkably successful; and at this time Mr. Christie's is the largest concern of the kind in Ontario—probably in Canada.

In 1868 Mr. Christie became associated with Mr. Alex. Brown, under the firm name of Christie, Brown & Co.; and then it was that steam machinery was introduced into their works, which were then located at 626 Yonge street. Finding their premises too contracted for their rapidly growing business, in 1872 the firm removed to Francis street, where they still further enlarged their plant, introducing what is known as a thirty barrel reel; but two years later—in 1874—they purchased the land at the south-west intersection of Duke and Frederick streets, where they built their present extensive works, which are of brick, three stories high and cover an area one hundred and thirty feet square. They are specially designed for the business, and are well equipped throughout with every appliance necessary in the manufacture of large quantities of goods, and give constant employment to about two hundred persons.

Philosophy teaches that a man cannot lift himself by his bootstraps; but William Christie has demonstrated the fact that a fixed purpose unwaveringly adhered to can elevate a man from a very humble position in life to become loved and respected by the whole community for his integrity and sterling worth, and to attain an enviable prominence as a most valuable member of society, entirely through his own exertions. It is said of Mr. Christie that his acute sense of smelling has always been so discriminating that he could tell without any other inspection whether any of the great variety of goods being prepared in his establishment were or were not up to his required standard.

Of pleasing personal appearance, and kind and genial in his manner, Mr. Christie is a favorite with all who are admitted to his friendship; and none love and respect him more than those who are in his employ. His generousities are proverbial, but they are unheralded to the world; for even his left hand knoweth not what his right hand doeth. He is actively alive to all that concerns the welfare of Toronto and Canada. He takes great pride and special interest in the success of the Toronto Industrial Exhibition; and he is an active member of the Toronto Board of Trade. Of course he is a member of the Canadian Manufacturer's Association, and has been one of the executive committee of that association for years.

### ROBERT MITCHELL.

ROBERT MITCHELL, the head of the firm of Robert Mitchell & Co., brass founders, Montreal, and proprietors of the Montreal Brass Works, was born at Prestonpans, Scotland, about eight miles from Edinburgh, in 1821. He learned the trade of a brass founder and steam-fitter in Edinburgh, afterwards removing to Glasgow, where he worked about eight years in the Globe foundry. While working in this foundry Mr. Mitchell accepted an offer of a three years' engagement to come to Canada to conduct the business of the old-established house of



1888



# — Captains — of — Canadian — Industry. —

(SUPPLEMENT TO THE "CANADIAN MANUFACTURER.")

Messrs. Bryson & Ferrin, in Montreal. Before this engagement expired, however, the firm decided to go out of business, and they procured a situation for him in the works of the Montreal Gas Company. Having served his time there, the company transferred the gas-fitting part of their business to Mr. Mitchell, and he thus embarked on a fine and lucrative business on his own account.

Commencing this business in 1851, its increase was steady and rapid, necessitating at different times his removal into larger and more commodious quarters, until at this time he owns what is said to be the largest business of the kind in the Dominion. The leading lines of goods manufactured by this concern include all manner of brass castings; copper-smiths', steam-fitters' and gas-fitters' supplies; automatic sprinklers for fire protection in mills and factories; gas meters, etc. His works give employment to about three hundred skilled workmen.

Mr. Mitchell is one of the solid men of Montreal. Loved and respected by all who know him, his energy and perseverance has been awarded with a large share of the good things of life; and he prefers to continue along the old and familiar paths rather than to venture into the field of politics or to seek civic honors and emoluments. He is a member of the Executive Committee of the Canadian Manufacturers' Association, always taking great interest in that body as the exponent of the ideas that have lifted Canada to the high plane it occupies as a self-contained manufacturing nation. It is just such men as Robert Mitchell, of Montreal, who have made the Dominion of Canada what it is to-day.

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#### HENRY BICKFORD.

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HENRY BICKFORD, of the firm of Messrs. S. Lennard, Sons & Bickford, proprietors of the Dundas Knitting Mills, Dundas, Ont., was born in the City of London, England, March 2, 1842, and at an early age was taken by his parents to the town of Newton Abbot in the County of Devon, where he received his scholastic preparation for after-life under the tuition of the Rev. John N. Lightfoot, M.A., the present rector of Moreton-Hampstead, in that county. Having tried farming for some time he thought to improve his fortunes by removing to London, but not being satisfied with intra-mural life, determined to visit the Great Lakes region of Canada, and sailed for this country in 1867.

Arriving in Canada Mr. Bickford soon found employment as "a white-winged angel of commerce," and for a couple of years was a commercial traveller for a large wholesale grocery concern of Toronto. In 1869 he became head book-keeper and manager for the firm of Messrs. N. & F. Rooney, of Toronto, where he continued until the dissolution of that concern in 1879. At this time a fine business opportunity was presented to him in the town of Dundas, Ont., and to that place he went, and became a partner in the firm of Messrs. S. Lennard & Sons, now so familiarly known to the wholesale dry goods trade of the whole Dominion, as Messrs. S. Lennard, Sons & Bickford, probably the oldest and largest manufacturers of hosiery in Canada, the firm being the patentees of what is known to the trade as "Elysian" seamless hosiery.

Soon after his removal to Dundas Mr. Bickford was elected a member of the Board of Education of that town, on which he has served seven years, one year as chairman. He has also been a member of the Town Council as councillor; has been deputy-reeve and reeve; and at this time is mayor. In 1886 he received the nomination of the Liberal-Conservative party of North Wentworth for the Legislative Assembly, but considering that active participation in politics interfered injuriously with his business interests retired from the contest.

By education and natural instincts Mr. Bickford is a gentleman well fitted to perform any and all civic and social duties that may devolve upon him, his experience in successfully conducting a large and important manufacturing industry, and his natural force of character making him a most valuable citizen. For years a member of the Canadian Manufacturers' Association, his presence at all the important meetings thereof is signalized by his expressions of strong common-sense arguments and reasoning, and a comprehensive grasp of such important questions as may be presented. He is a member of the Executive Committee of the Association, and a member of the Textile Fabrics section of the Association's Tariff Committee.

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#### JAMES KENDREY.

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JAMES KENDREY, manager of the Auburn Woolen Company's Mills at Peterborough, Ont., was born at Oshawa, Ont., in March, 1845, and during his boyhood and until thirteen years of age received such schooling as the public schools afforded. In 1858 he commenced working in the woolen mills of Messrs. Barber Brothers, at Streetsville, Ont., where he remained until that establishment was destroyed by fire in 1860. He then obtained a situation in the woolen mills of Messrs. Robinson & Howell, in Galt, Ont., going from there to the Hunt & Elliot woolen mills, in Preston, Ont. After remaining in these places for a short time he left Canada, going to New England, where he worked for about five years in one of the largest woolen mills in the Nangatuck Valley, Connecticut. He returned to Canada, and being then proficient in his business, in 1874 was entrusted with the management of the Clyde Woolen Mills at Lanark, Ont. In 1876 he left Lanark and took charge of the Glen Tay Woolen Mills, at Glen Tay, near Perth, Ont., where he remained until 1879, when he accepted the management of the Auburn Woolen Mills at Peterborough, which position he now holds, being one of the stockholders and general manager of the Auburn Woolen Company.

Mr. Kendrey is emphatically and in all respects a self-made man, who has turned to good advantage all the favorable opportunities of his life. Left at an early age to depend upon his own efforts for his welfare, he devoted his energies to acquire a thorough practical knowledge of all the details of the business of manufacturing woolen cloths; and it may be truthfully said that his adaptability to the business, and his mechanical skill and artistic tastes, have enabled him to absorb and appropriate to his own use and advantage about all that was to be learned in the very best woolen-mill practice in Canada and the United States. Being now but in the very prime of life, his active mind is quick to seize upon any new ideas advanced by which the styles and quality of the products of his mills may be im-

proved, or the cost of production lessened, and the high favor in which the goods manufactured by him is held throughout the Dominion attests this fact.

Modest and retiring in disposition his ambition has always led him more along the lines of his business than to seek political or civic honors, although the citizens of Peterborough have kept him occupying a seat in their town council continuously for the past six years, and a member of their Board of Education for the same length of time.

Mr. Kendrey has always been a vigorous supporter of Canada's National Policy, and he is always keenly alive to all that affects the welfare and prosperity of the Dominion. These impulses naturally led him to become an active and interested member of the Canadian Manufacturer's Association; and he has been such for years; and a member of its executive committee; and a member of the Textile Fabrics section of the association's tariff committee.

MANUFACTURING PATRONAGE TO RAILROADS.

A BESSEMER steel rail manufacturing company in Pennsylvania, which is but one of quite a large number of similar concerns in the United States engaged in that business, dispenses a large patronage to the railroads. The company make their steel from the raw materials, which includes iron and mangani-ferous ores, limestone, coke, etc.; and during the year 1887 the transportation of these supplies to the company's works amounted to the equivalent of 117,164,977 tons moved one mile on a railroad; the delivering of 200,000 tons of finished product 564 miles amounting to the equivalent of 109,200,000 tons moved one mile; the transportation of supplies to the works and the distribution of the finished product during the year being equivalent to moving 226,364,977 tons one mile.

Do our readers comprehend the vastness of this railroad traffic originating in only one of a large number of similar manufacturing establishments? To give a better idea of the immensity of this traffic, we present a table showing the number of tons of freight moved one mile in certain states in 1886, according to *Poor's Manual*.

Texas .....	539,407,578	North Carolina.....	72,828,927
Alabama.....	365,625,026	Arkansas.....	89,463,502
Georgia.....	345,339,393	Oregon.....	87,838,013
Iowa.....	322,416,911	Florida.....	49,735,047
Louisiana.....	262,206,081	West Virginia.....	47,791,962
Vermont.....	226,958,239	Mississippi.....	28,867,722
Connecticut.....	225,276,508	New Hampshire.....	81,565,584
Maine.....	176,108,517	Rhode Island.....	18,688,314
South Carolina.....	126,140,374	Delaware.....	20,856,082
Colorado.....	225,380,399		

In contrasting the tonnage thus furnished to railroad companies by one steel works with the number of tons of freight moved one mile in certain selected States, as shown by the table, it would appear that the railroad tonnage of this single company nearly equalled that of the State of Louisiana, and was equal to 42 per cent. of the railroad traffic of the State of Texas, so that two-and-a-half of such companies would have supplied all the railroad tonnage of that State. It was nearly twice the tonnage of the State of South Carolina; more than three times the tonnage of the State of North Carolina; two-and-a-half times the railroad tonnage of the State of Arkansas; nearly five times the tonnage of the State of Florida or the State of West

Virginia; almost eight times the railroad tonnage of the State of Mississippi, and was in excess of the tonnage of a number of other States.

Dependent upon this company in its various operations there are six mining towns and a manufacturing city, containing a population of about thirty thousand souls; and all their supplies which have a railroad haul, and the traffic and travel which go along with their prosperity, should be added to the statement above made, and would swell it very greatly. Multiply the figures given by the large number of like works distributed through the country and the magnitude of the railroad traffic which they create can be partially estimated.

There are those who speak slightly of the importance of manufacturing industries to a country, but they certainly cannot fully estimate or comprehend their value. There are no such immense steel works in Canada as that here alluded to, but the facts regarding it are given to show the volume of traffic originating with such establishments as compared with all other business in certain sections.

SPECIAL ADVERTISEMENTS.

To BE SOLD.—The complete plant of a small woolen mill, including Knowles' broad and narrow looms. Apply to Montreal Cotton Company, Valleyfield, P. Q.

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

FOR SALE.—Drop Presses, suitable for heavy or light drop forging. Foot Presses and Power Presses, also one or two Lathes. Particulars can be had on application to McClary Manufacturing Company, London, Ont.

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

EDITORIAL NOTES.

THIS journal is never depreciated in the opinion of its friends and patrons by the idiotic vituperation of blatherskites and blackguards. Buzzards return home to roost.

MR. D. M. RENNIE, formerly of Toronto, but now residing in Buenos Ayres, South America, is prepared to accept agencies for the Argentine Republic and Uruguay from the manufacturers and shippers of Canada. Nichol Kingsmill, Esq., Toronto, who is Consul for the Argentine Republic, will give particulars as to customs, tariff, etc.

THE anti-protection papers of the United States, and of Canada also, are constantly saying that if it were not for the duty imposed upon raw materials manufacturers could enter foreign markets, competing on equal terms with British manufacturers. They seem to forget the fact that United States laws already grant a drawback of ninety per cent. of all duties paid on imported merchandise manufactured for export; and no doubt Congress would readily extend the drawback to the full amount paid if so requested. To do this would not sacrifice any home industry.



THE London, England, *Daily Telegraph* speaking of the agricultural depression in that country, which has reduced the value of landed property very considerably, cites the fact that a farm near Martock, Somerset, which had recently been sold for £4,000, was worth £5,500 twenty years ago. And now we want some of the Free Trade papers to tell us what's the matter with farming lands in Free Trade England that values should decrease so remarkably; and also to tell us why the value of Canadian farming lands should be made liable to similar depression by destroying the N. P.

Some idea of the power to be derived from the water power canal about being cut at Sault Ste. Marie, on the Canadian side, may be conceived when it is known that the official statement of the United States Engineer is that the flow of water over the rapids is 90,783 cubic feet per second, which is equal to about 300,000 horse power. The rivers at Holyoke, Lowell, Lawrence and Minneapolis combined, have a capacity of only 70,000 horse power, while the lay of the land at the Sault allows of utilization far more fully than at any of these places. This power draws directly from its reservoir, Lake Superior, which has an area of 3,000 square miles.

THE Western Fair, Industrial and Arts Exhibition, at London, Ont., will open Sept. 20, and continue nine days. The event is looked forward to as one that will be exceedingly interesting, and the management have left nothing undone to make it such. Twenty-five thousand dollars have been appropriated for prizes, attractions, etc. and the Indian tribes of Ontario are preparing an immense exhibit of manufactured articles, agricultural products and curiosities of their old hunting days. There will also be a grand international bench show of dogs. Mr. George McBroom, the secretary, will send prize lists and all other information to any who may apply.

IMPORTERS are beginning to look upon their business very much as a game of chance. "Heads!" they win. "Tails!" one-third to the Crown, one-third to the seizing officers and one-third to the informer.—*Montreal Star*.

Just so. Importers of certain lines of goods, such as pickles, sauces, etc., bring them in in bottles that are notoriously smaller than what they are pretended to be. Thus they import and sell for "quarts" bottles that can contain but little more than a pint, and they object to paying duty on quarts, because quarts under those circumstances are not quarts. But the retail grocer and the consumer has to pay for quarts all the same. The government is right; and its methods will not be changed. The fraud would also work grievous harm to our own manufacturers if it were allowed.

THE Central Canada Exhibition Association will hold their regular annual fair at Ottawa, under the distinguished patronage of His Excellency, the Governor-General of Canada, Lord Stanley of Preston, September 24 to 29 next. Ten thousand dollars are offered in premiums, competition being open to the world. The class in which is embraced agricultural implements, engines and machinery, etc., by the request of numerous manufacturers, will be open for exhibition only, but the judges are instructed that where evidence of great skill is apparent, or

articles are exhibited of extra merit, or displays are made bearing evidence of great ingenuity, prizes, diplomas or medals may be recommended. The officers of the Association are leaving nothing undone to render this fair a grand success; and the Secretary, Mr. R. C. W. McCuaig is said to sleep with both eyes open in the interests of his forthcoming exhibition.

THE following testimonials as to the value of the CANADIAN MANUFACTURER as an advertising medium have come to us unsolicited:

ROCK ISLAND, QUE., July 13, 1888.

Editor CANADIAN MANUFACTURER:—Our concern believe that advertising pays; therefore please continue our card in your paper, to occupy same space as heretofore.

BUTTERFIELD & Co.

WINDSOR, ONT., July 24, 1888.

Editor CANADIAN MANUFACTURER:—The John Doty Engine Company, Toronto, should give you credit for the sale of the Otto gas engine which we bought of them to place in our new works. It was our intention to buy such an engine in the United States, not knowing that any such were made in Canada until we saw their card in the CANADIAN MANUFACTURER, announcing themselves as builders of such engines.

S. J. BOWLING, *Manager*.

Ever Ready Dress Stay Co.

Messrs. Butterfield & Co. are manufacturers of machinists', gasfitters' and blacksmiths' tools, and the John Doty Engine Company, as the name implies, are builders of engines, boilers, machinery, etc. Both these concerns have advertised their business in this journal for years.

WE are in receipt of a letter from Messrs. Swift & Stambach, Buffalo, N. Y., in which they inform us that at a meeting of the Buffalo Board of Fire Underwriters, held July 18, it was decided to remove the extra charge they had previously been making on gasoline permits. This firm have been engaged in the sale of vapor stoves and gasoline for a number of years, during all of which time they have been battling against the stand taken by the insurance companies in Western New York in imposing an extra premium where gasoline stoves were used. They prepared and sent out a circular broadcast, showing the fallacy of the charge of the insurance companies that gasoline is extra hazardous, and giving statistical tables to that effect. The firm has spent a great deal of both time and money in this direction, and it is safe to say that about every person in Western New York who can read has studied the facts and appreciate the advantages arising in the use of gasoline stoves. The fact that there are three thousand of these stoves in use in Buffalo to-day proves that the people will have them; and the action of the insurance companies there proves that they are willing to recede from their unreasonable opposition to their use. We are pleased to be able to state that the use of gasoline stoves is increasing in Canada, particularly in Toronto, although the insurance companies place a ban upon them. When the companies find that it is a question of allowing the use of them or no insurance, they will do as the Buffalo Underwriters have done—remove the ban.

F. E. DIXON & CO.

MANUFACTURERS OF

PURE OAK-TANNED

STAR-RIVET

LEATHER



BELTING

(QUALITY UNSURPASSED).

---

SEND FOR PRICE LISTS AND LATEST DISCOUNTS.

---

RUBBER AND COTTON BELTING.

LACE LEATHER.

PHENIX BELT OIL, ETC., ETC.

---

70 KING STREET EAST,

TORONTO.

**HOYT'S PURE AMERICAN OAK-TANNED**

**LEATHER**

**BELTING**

**Known the world over to be superior to any  
other Leather Belting made.**

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**GEO. F. HAWORTH & CO.**

**11 JORDAN STREET,**

**TORONTO.**

### THE TORONTO INDUSTRIAL EXHIBITION.

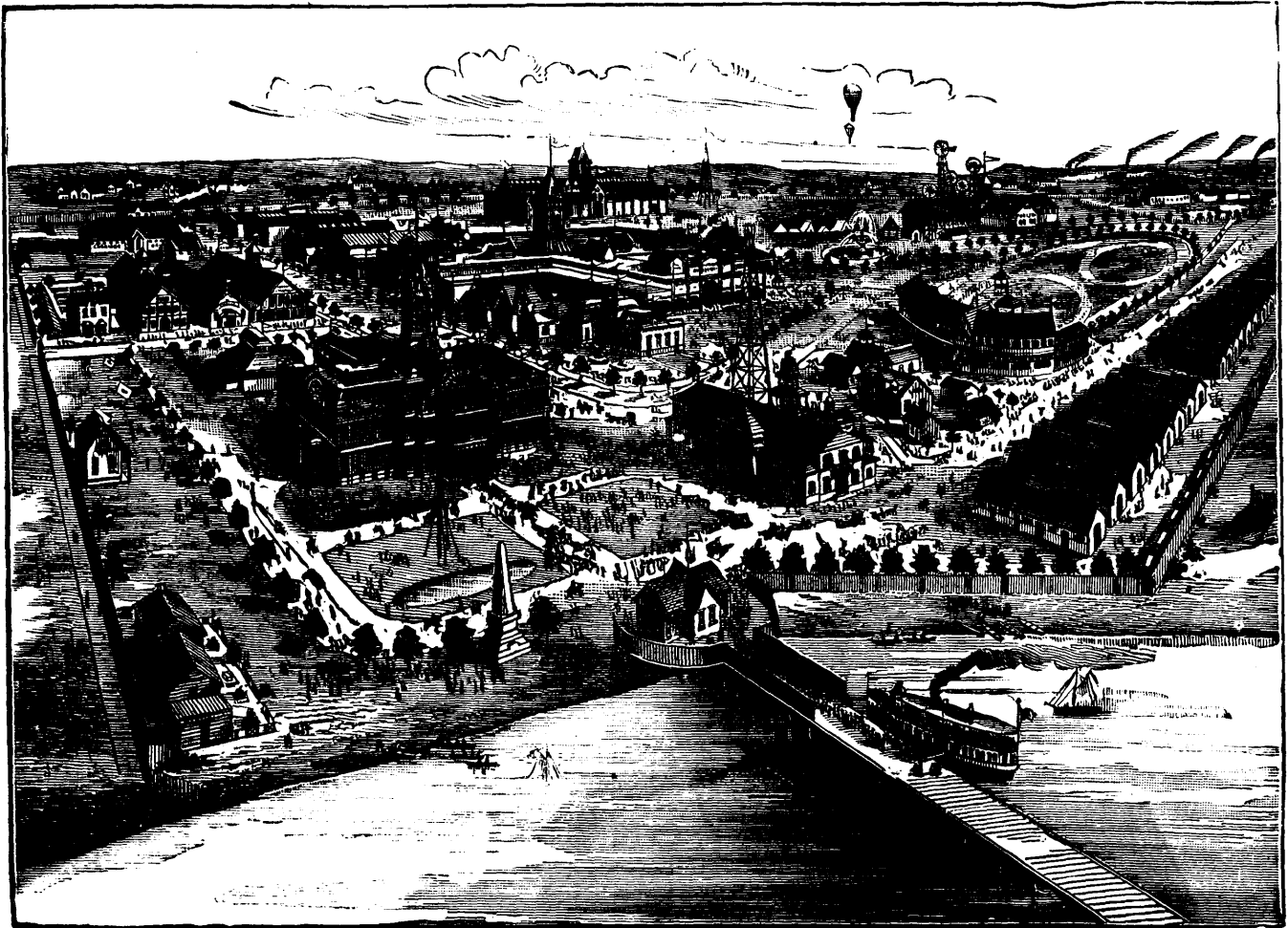
THE accompanying picture is a view of the grounds and buildings of Canada's Great Industrial Fair and Agricultural Exhibition, the tenth annual opening of which will occur on Monday, September 10 next, closing on Saturday of the following week.

The exhibition this year promises to be even more gigantic in all its proportions than any previous fair, and to meet the requirements of the increased number of exhibitors the management are now busily at work erecting new buildings, enlarging and altering many of those already there, and preparing for many new and pleasing features. The grounds embrace over sixty acres, and the cost of the buildings already erected amounts to over \$300,000.

The Toronto Exhibition has become one of the most important institutions in Canada—certainly the most important of the kind; and a brief sketch of its history may be interesting. In 1877 a successful effort was made to induce the management of the Provincial Exhibition to hold its annual fair in Toronto. At that time there were no grounds in this city specially adapted for the purpose, no such fair ever having been held here, and application for a

portion of the garrison common was refused. A second application was also refused; whereupon the City Council appointed a deputation of influential citizens to go to Ottawa and lay the matter before the Government. They went, and their request was granted, and the land now occupied by the association was appropriated for the purpose. The sum of \$150,000 was needed for the purpose of preparing the grounds and erecting suitable buildings and conveniences; and a by-law authorizing the issue of debentures for the amount by the city was submitted to the voters and unfortunately lost. Another by-law voting \$75,000 was then submitted and lost, whereupon the City Council included \$100,000 in the estimates for that year (1878), and the exhibition became an assured success. This action was taken only about three months before the proposed opening of the exhibition, and during that time the grounds had to be fenced, graded, drained and ornamented, and the buildings erected; and it is enough to say that at the appointed time the opening was duly performed by the then Governor-General, Lord Dufferin, in September, 1878.

Under the circumstances, this exposition was gratifyingly successful; and after its close the gentlemen having the matter in



TORONTO INDUSTRIAL EXHIBITION GROUNDS.

charge conceived the idea of trying to have the Provincial Exhibition authorities locate their fair permanently in Toronto. This proposition was not complied with, and then it was that the idea of organizing the Toronto Industrial Exhibition Association and the holding of annual fairs presented itself. To suggest was to act, and under the generalship of Mr. John J. Withrow, the president, assisted by a host of able lieutenants consisting of some of the best business men of the city, included among whom was Mr. H. J. Hill, the secretary, the necessary work was undertaken, an act of incorporation secured, and everything was ready at the opening of the first exhibition of the association on September 2, 1879. The opening was performed by His Excellency the Governor-General, the Marquis of Lorne, who was accompanied by Her Royal Highness the Princess Louise, his wife, who was then making her first visit to Toronto. The success that attended the affair was more complete than its most sanguine friends had hoped for, the cash receipts for admission exceeding the estimates by more than \$7,000.

As encouraging as the success of this the first exhibition of the association was, each succeeding year has witnessed improvements over the preceding years; and from the comparatively small beginning of ten years ago the Toronto Industrial Exhibition has achieved a renown that is not confined to Ontario, or to Canada, but it is well known in the United States and Great Britain, and exhibitors from those countries come there every year to display their merchandise.

One of the most pleasing and instructive features in the management of this exhibition is the displays made of Canadian manufactured products; and no better idea can be had of the great diversity of our manufacturing industries than by the exhibitions of moving machinery in Machinery Hall and in other buildings and on the open grounds. The processes of manufacture of many lines of goods are shown by machines and machinery in active and practical operation; and it is this feature that induces so many Canadian manufacturers to patronize the enterprise and display their products there.

## "ELECTRICITY IS LIFE."

A few days ago Mr. W. R. Kimball of Montreal, electrician of the Royal Electric Company, of that city, delivered a most interesting scientific lecture on "Electricity" in Sherbrooke Que. On the platform was exhibited a 1½ horse power Thomson-Houston electric motor working a printing press, on which programmes for the evening were printed before the audience.

The speaker gave a practical demonstration of the two methods of lighting by electricity illuminating the hall with incandescent light. The conversion of electricity into heat was shown by a cooking apparatus, upon which eggs were fried and bread toasted, to the great amusement of the audience. One of the experiments was the plunging of a lighted incandescent lamp into a jar of water, showing that it may be burned in explosive gases. A very interesting specimen of electric welding was passed among the audience, and the mechanism of the single and double arc lamp exhibited and explained.

The lecturer referred to the early experiments and discoveries of Franklin, Volta, Galvani, Oersted, Faraday and others and followed their development in the electric battery, storage battery, electrolytic bell telegraph, telephone, microphone, and apparatus for the conversion of mechanical into electrical energy by a series of progressive pictures, dissolving rapidly from one into the other. Faraday was spoken of as the founder of the science of electromagnetism by his discovery of the laws of induction. The systems of electric lighting were shown as in actual use by the Brush, Weston, Edison, Craig, Ball and Thomson-Houston system. The hand regulating devices necessary for each system were explained, showing the automatic regulation enabling arc and incandescent lamps to be run successfully from the same circuit.

The dangers from electric lighting were said to be less than any other mode of artificial lighting, and it was stated that in some places the rates for insurance had been reduced a small per cent. for buildings lighted by electricity. A representation was given of exploring the internal cavities of the human body by means of small incandescent lamps.

The greatest discovery of the 19th century was claimed to be that the dynamo machine is reversible. Views were shown of a motor operating a printing press, ventilating fan, blowing a large organ, and applied to street railways. A motor was represented attached to the truck of a car, enabling it to climb hills of ten per cent. grade and turn corners of less than fifty feet radius, and, by this system of propulsion, saving at least 40 per cent. over the use of horses.

The analogy was described existing between the lever and the induction coil, by which a tremendous volume of electricity at a low pressure may be produced, capable of heating metals, forming a part of an electric circuit and welding two pieces together; not only of wrought iron, copper, steel and others, but also metals which have been heretofore considered impossible to weld, such as zinc, brass and cast iron. By the same process of transformation a method was shown of distributing electricity at a high pressure and small current, and converting it by means of the induction coil, or converted into a mild and harmless current to be taken into the store or residence and used for lighting. It was explained that this system required a much smaller wire than other methods of incandescent lighting and could therefore be carried a distance of several miles, enabling lighting stations to be located in the outskirts of cities and also render it possible to use water power at some distance from where it was decided to have the light.

The United States Lighthouse Board has perfected arrangements for the illumination of Gedney's Channel, New York Harbor by means of electricity. Experiments conducted during the winter with the McKenzie-Mills system have demonstrated its utility as an aid to navigation to the satisfaction of the Board, and it will be employed in this instance. Six electric light buoys will be used, six on each side of the channel. They will be placed about 1,100 feet apart, and are expected to light the channel so that vessels can enter the harbor at night as safely as in the day time. The battery will be located at the Sandy Hook Light Station, and the lights will be controlled from that point. The establishment of these lights will cost \$26,000, and they can be maintained at a cost of \$3,000 a year.

By the amendment of the town charter, the corporation has a right to grant bonuses to the extent of \$250,000. We hope the members of the council will keep their eyes open and bring to the town some good manufacturing establishments—*St. Johns, Que., News.*

## 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.*

THE foundry of the Jenckes Machine Company, Sherbrooke, Que., was destroyed by fire July 30.

MR. S. T. TREBLE, Crystal city, Man., is building a new carriage works, 60 x 48 feet, two stories high.

MESSRS. A. E. DUNNING and W. D. FOX have started a new canning factory at Parkdale, near Toronto.

MR. GEORGE THOMPSON'S lumber mill near Wingham, Ont., was destroyed by fire July 24; loss, about \$3,000.

THE saw and grist mill of Mr. Wm. Carrier, at Brompton, Que., were destroyed by fire last week; loss, \$2,500.

THE roller mill of Messrs. Eildt & Schmidt, Mildmay, Ont., was destroyed by fire July 26; loss, about \$20,000.

MR. J. H. BRICKS' grist and lumber mills at Formosa, Ont., were destroyed by fire July 18; loss about \$10,000.

THE Canadian Pacific Railway Company will erect a large round-house, car wheel foundry and repair shops at Fort William, Ont.

THE Osborne-Killey Manufacturing Company, Hamilton, Ont., have been awarded the contract for building the water-works for the town of Paisley, Ont.

THE McClary Manufacturing Company of London, Ont., have purchased the plant and machinery of the Burn & Robinson tin stamping works, Hamilton.

THE grist, carding and saw mill, with all lumber, at Oak Point, N.B., owned by George T. Seely, was totally destroyed by fire July 10; loss, about \$3,000.

THE foundry and machine shop of Mr. William Smith, at Beaverton, Ont., were destroyed by fire July 25; loss, about \$30,000. The works will probably be rebuilt.

MR. DUNCAN BELL, Montreal, will hereafter represent Messrs. S. Lennard, Sons & Bickford, Dundas, Ont., in that city in the sale of "Elysian" seamless hosiery, etc.

MESSRS. GEORGE FLEMING & SON, St. John, N.B., have recently built two more steam boilers for the Dominion Government to be placed in the lighthouse at Cape Race.

MR. H. W. PETRIE, Brantford, Ont., recently shipped a large quantity of wood-working machinery to Liverpool N.S., to be used in a large ship-building establishment there.

THE grist and flouring mills and elevator of Messrs. Moir, Son & Co., Halifax, N.S., located at Bedford, near that city, were destroyed by fire, July 29; loss, about \$40,000.

A JOINT stock company is being organized at Renfrew, Ont., to build and conduct a machine shop and foundry in that place. Messrs. Imlach & Munro can give information.

THE John Doty Engine Company, Toronto, built the four-horse-power Otto silent gas engine recently placed in the new works of the Ever Ready Dress Stay Company, Windsor, Ont.

THE Dominion Safety Boiler Company, Montreal, are constructing a 250-horse power Field-Stirling patent high-pressure boiler for the Berthier Beet Root Sugar Company, Berthier, Que.

THE shoe last and shoe peg factory of Messrs. John Lewis & Son, at Truro, N.S., which was destroyed by fire July 2, is being rebuilt. It is said that this is the only industry of the kind in Canada.

THE Gale Sulky Harrow Manufacturing Company, Windsor, Ont., have over one hundred salaried salesmen on the road. Their sales in Western Ontario during the past season were very large.

AN asbestos mine has been discovered on the property of Mr. W. A. Allan, in Ottawa county. Mr. Allan says the deposits have the appearance of being extensive, and the quality is of the best found in Canada.

THE extensive box shoo factory of Messrs. Barnes & Co., at the Chaudiere, near Ottawa, which was destroyed by fire May 31 last, occasioning a loss of about \$100,000, has been rebuilt, and is again in full operation.

MR LARTIE, formerly of the city of Quebec, is putting a \$50,000 boot and shoe factory in operation at Fraserville, Que. Samples of goods made in the new factory are now ready, and an extensive trade is anticipated.

MR. ROBT. ALBAUGH of the Willimantic, Conn., Silk Mills has been appointed superintendent of the Nonotuck Silk Co.'s new mill at St. Johns, Que. The Canadian branch will hereafter be known as the Corticelli Silk Co.

MESSRS. WILLIAM JOHNSON & Co., Montreal, are offering for rent an exceptionally favorably located manufacturing premises in that city on the Lachine Canal, near Black's bridge. The building is 60x60 feet, ten flights high.

THE Canada Jute Company, Montreal, call the attention of the trade to the fact, that they are manufacturers of cotton and jute bags, made in all sizes and qualities, for all purposes. Messrs. Stark Bros. are their Toronto agents.

MESSRS. WM BELL & Co., Guelph manufacturers of the Bell organs and pianos, are placing their new pianos on the market. Specimens shown indicate that these beautiful instruments are fully up to all that was promised for them.

MESSRS. MCGREGOR, GOURLAY & Co., Galt Ont, have recently built a planing and matching machine for Mr. J. D. Baptie's lumber mills at Peterborough, which has capacity to manufacture 20,000 feet of flooring per day of ten hours.

MCCCLARY MANUFACTURING COMPANY, London, Ont., are offering for sale a number of drop presses, suitable for heavy or light drop forging; foot presses and power presses; also one or two lathes. They will send particulars on application.

MESSRS. HALE & BOOTH, Ottawa, a few days ago sold a raft of remarkably fine white pine timber at thirty-eight cents per cubic foot, the total amount of the sale being \$53,000. This is said to be the highest price ever obtained for such timber.

A COMPANY is being formed in Meaford, Ont., with \$30,000 capital to purchase the patent right and manufacture the Lamont road machine, the understanding being that the authorities of Meaford will bonus the company to the extent of \$10,000.

THE Toronto Rubber Company, of which Messrs. Thos. Mellroy, Jr. & Co., are proprietors, have recently closed contracts for supplying Eureka fire hose to the towns of Guelph, Milton, New Hamburg, Baden, Pembroke, Deseronto, and East Toronto.

THE Waterous Engine Works Company, Brantford, Ont., have been awarded the contract by the City Council, for the construction of the machinery, etc., for the water-works system of that city, at \$106,278, which includes a high service Gaskill pump.

MESSRS. GEO. F. HAWORTH & Co., Toronto, display in their advertisement in another page a fine illustration of the main driving belts manufactured by them. These belts are made from Hoyt's pure oak-tanned leather, cut from the solid part only.

MESSRS. BINGHAM & WEBBER, Toronto, as they announce in their card in another part of this paper, "are the premier catalogue printers of Canada," and there is no doubt but that they stand at the very head of their profession. Their work speaks their worth.

WORK goes on nicely at the works of the Cochrane Roller Mill Supply Company. The walls of the shop are up to the level of the second story and the floor timbers are partly in place, and the work on the other buildings is equally well advanced.—*Escahaha (Mich.) Iron Post.*

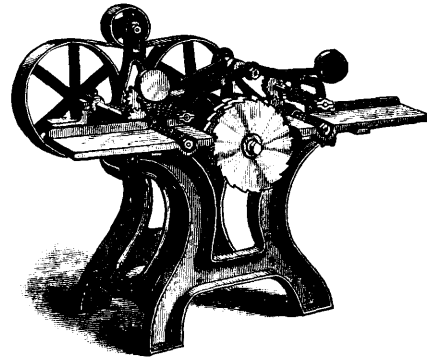
BEDCLOTHING is now made of paper. There are doubled sheets of manilla paper, strengthened with twine, and valuable by reason of the peculiar properties of paper as a non-conductor of heat. They have a warmth-preserving power far out of proportion to their thickness and weight.

ASSISTANT Water Superintendent McConnell, of Montreal, says that the Londonderry Iron Works will not be able to supply his department will all the pipes they need, as the company have too many other orders on hand, and that the remainder will have to be got from the old country.

MR. MCHONACHIE, traveler for Mr. Rumpel's, Berlin Felt Boot Works, has just returned from a business trip to the Pacific coast. He reports having had a very successful trip, and feels no doubt but that the Felt Boot Works will be kept humming for the next six months at least.—*Berlin (Ont.) News.*

## IMPROVED LATH MILL

Cuts 50,000 Laths or Pickets per day.



Made entirely of Iron and Steel.

PAXTON, TATE & CO., Port Perry, Ont.



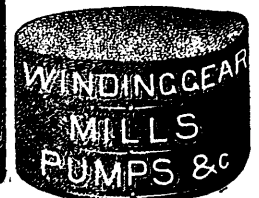
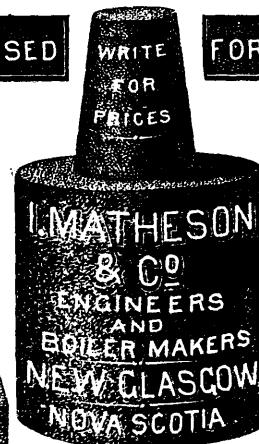
SEALED TENDERS addressed to the undersigned, and endorsed "Tender for Heating Apparatus, New Departmental Building, Wellington Street, Ottawa," will be received at this office until Monday, 6th August, next, for the several works required in the fitting up, etc., of a Hot Water Heating Apparatus at the New Departmental Building, Wellington Street, Ottawa, Ont.  
Specifications and drawings can be seen at the Department of Public Works, Ottawa, on and after Monday, 23rd instant, and tenders will not be considered unless made on the form supplied and signed with actual signatures of tenderers.  
An accepted Bank Cheque, payable to the order of the Minister of Public Works, equal to fifteen per cent. of amount of tender, must accompany each tender. This cheque will be forfeited if the party decline the contract, or fail to complete the work contracted for, and will be returned in case of non-acceptance of tender.  
The Department does not bind itself to accept the lowest or any tender.

By order, A. GOBEIL, Secretary.  
Department of Public Works, }  
Ottawa, 19th July, 1888. }

SPECIAL MIXTURE USED

WRITE FOR PRICES

FOR SHOES & DIES



MESSRS. PRITCHARD & ANDREWS, Ottawa, manufacturers of rubber stamps, stencils, seals, etc., inform us that they are well prepared to execute orders for anything in their line with great promptness, guaranteeing to give satisfaction. They claim to be the largest manufacturers of steel and brass stamps in Canada.

The milling firm of Ogilvie & Co., Winnipeg, have secured a site for an elevator at Glenboro', Man., and work will be commenced immediately. The capacity of the elevator will be about 37,000 bushels. Two more elevators will be erected by this company on the branch lines, but sites have not yet been selected.

MESSRS. A. HARRIS, SON & Co., Brantford Ont., manufacturers of agricultural implements, are reported to have sold some eight hundred of their binders this year, and an order from Manitoba for forty mowers could not be filled, as all were sold. Such enormous sales indicate that farmers are having big crops this year.

The Albion Iron Works, Victoria, B.C., of which Mr. W. F. Bullen is manager, is reported as being very full of work. Besides general repairing work on marine and other steam engines and machinery, the company are manufacturing nine miles in length of iron water pipe for the city waterworks. They employ 180 hands.

The heavy sales of agricultural implements and machinery reported from different parts of the country speak well for the crop outlook and the prosperous condition of our farming population generally. One agent at Neepawa, Man., expected to deliver about \$18 000 worth of implements on July 18th.—*Winnipeg Commercial.*

The Grand River Plaster Co., Paris, Ont., will establish calcine works in connection with their business at Gypsum Mines, and a large kettle is being constructed at Toronto capable of turning out from seventy-five to one hundred barrels of calcined plaster per day. Work is being pushed rapidly forward on necessary buildings.

MR. B. D. RHODES, of Ottawa, was in Pittsburg, Pa., a few days ago on business connected with boring wells for natural gas in the vicinity of Ottawa. Professor Ashburner, of Pittsburg, the well-known natural gas expert, has been all over the territory, and declares that the prospects for the gas are excellent. A well will be down by fall.

The Montreal Car Wheel Company, of Montreal, has been incorporated with \$25,000, for the purpose of manufacturing car wheels. The incorporators are George Edward Drummond, James Tod McCall, Thomas Joseph Drummond and William Frederick Ritchie, of Montreal, and Richard Schott, steel manufacturer, of Sheffield, England.

The third annual exhibition of the Central Saskatchewan Agricultural Society will be held at Saskatoon, N.W.T., in the Temperance Colony, on October 3 next. Manufacturers of agricultural and farm implements will no doubt take notice of this fact and govern themselves accordingly. Mr. H. W. Goodwin, secretary, Saskatoon, will give full information.

The Jenckes Machine Company, Sherbrooke, Que., have just built an immense pulp boiler, or digester, for James Thompson's Camden Paper Mills, Newburg, Ont. It is twenty feet long and seven feet diameter, constructed of  $\frac{3}{8}$  inch Dalzell steel, the heads of the same metal being  $\frac{3}{4}$  inch thick. This is the third boiler of this kind recently manufactured by this company.

MESSRS. WM. JOHNSON & Co., Montreal, are offering for sale a number of engines and boilers, among which they enumerate a Goldie 12x22 steam engine; a 75-horse power locomotive steel boiler; a 75-horse power Babcock-Wilcox boiler, and a 75-horse power tubular steel boiler, all of which are in perfect condition. Those in want of any such machinery should investigate.

MESSRS. F. E. DIXON & Co., Toronto, whose full page card appears in another place, are manufacturers of pure oak-tanned "Star Rivet" leather belting, the quality of which is unsurpassed. They also handle rubber and cotton belting, lace leather, Phoenix belt oil, etc. They request that those contemplating purchasing any such goods send to them for price list and latest discounts.

The Dominion Safety Boiler Company, Montreal, of which Mr. J. F. Torrance M.E., is manager, have added the name of the Acadia Coal Company, Stellarton, N.S., to the list of those who are using their Field-Stirling patent high-pressure boiler. The rapid increase in number of those in Canada who are adopting this style of steam boiler is exceedingly gratifying to the manufacturers of it.

## 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,  
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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.

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## Engines and Boilers FOR SALE,

- 2 "Goldie" Engine, 12 by 22 Cylinder.
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All in Perfect Condition. Good as New.

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## 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.



Mr. J. F. Ross, Toronto, is manufacturing the Ross patent self-sealing can for honey, fruit, mixed paints, white lead, drugs, etc., his works at this time being run to their full capacity filling orders. These goods are made from the best brands of charcoal tin plates, in all sizes. In view of the large quantities of fruits, honey, etc., now being put up the demand for these self-sealing cans is very large.

THE WHITON MANUFACTURING CO., Toronto, have sent us one of their Stephenson's patent adding machines, for adding up columns of figures. It is exceedingly simple in construction, the mechanism not being at all likely to become deranged and its simplicity is such that a child can operate it. It is not a toy, but a practical article, and cannot but be of great service to those who may be slow at figures.

MESSRS. GLASSFORD & Co., practical organ builders, have started the manufacture of organs on a small scale and expect to do a profitable business, and to develop it into one of the important industries of the town. Their organs have the American Hammond action, and are claimed to be equal in tone, finish and otherwise to any organ manufactured in Canada.—*Chatham, Ont., Planet*

MESSRS. CHARLES FARRAR AND GEORGE SUTHERLAND, Meaford, Ont., will build in time for next season's traffic a fine passenger steamer which will be 120 feet long, twenty-four feet beam and nine feet depth of hold. She will be fitted with all modern conveniences for the comfort of the travelling public. She will have compound engines, which will drive her at the rate of fourteen miles an hour.

THE NOVA SCOTIA STEEL COMPANY, New Glasgow, N.S., are applying for supplementary letters patent increasing their capital stock from \$300,000 to \$1,000,000, and extending their power so as to enable the company to manufacture steel and iron in all their branches, and articles consisting of iron or steel, in whole or part; and changing the name to Nova Scotia Steel and Forge Company (Limited).

ON Saturday, before Mr. V. E. Fuller and a number of other shareholders, an improved flour mill was tested at the Cochrane Roller Mill Supply Company's works here. This is the first mill built by the company in Canada under Mr. Cochrane's patent, and was shipped after the test to Ingersoll, where it will be erected in the mill of Mr. W. Partlo. The test was a thorough success.—*Dundas, Ont., Standard*.

THE new Robertson timber raft which has been under construction at Joggins, N.S., for several months past, was successfully launched last week, and an effort is being made to tow it to New York. This raft is 592 feet long, 36 feet deep and 54 feet wide, and contains 21,300 pieces of timber, with an estimated contents of 3,000,000 feet. In the construction of the raft forty-one tons of chains, and four miles in length of wire rope were used.

MESSRS. COLIN MCARTHUR & Co., Montreal, proprietors of the Montreal Wall Paper Factory, have introduced for the coming season several novelties into the manufacture of wall papers, among which are included lustres imitating a silk appearance; micas of a more brilliant effect than any hitherto produced; laces lined to represent real lace; ingrains of a soft damask appearance with friezes to match, etc. The new styles are remarkably rich and varied.

THE Anchor Manufacturing Company, of Chatham, Ont., has already constructed over two miles of its narrow gauge road from Lake Erie northward, besides quite a number of switches and branches into the woods, and have ordered a dozen cars from the Ontario Car Works, of London. The company at present have a large force engaged in getting timber to Lake Erie, where it is rafted and taken to Detroit. During the present season 9,000 logs will be rafted in that manner.

THE Canadian Pacific Railway Company are having six immense rotary steam snow shovels built at their works in Montreal, for use during the coming winter. The machine, which is the invention of Mr. J. H. Leslie, a Canadian, was in operation on the Western roads during last winter, and it is claimed they will completely revolutionize the old system, and effect a saving of over fifty per cent. The Canadian Pacific railway has bought the exclusive right to build the machines in Canada.

MESSRS. GEORGE F. HAWORTH & Co., Toronto, manufacturers of leather belting and patent lace leather, and of Hoyt's pure American oak-tanned leather belting, which, they say, is well and favorably

## Notice to Shippers to South America.

### D. M. RENNIE,

Formerly of this City, now in Buenos Ayres, South America.

Is prepared to accept Agencies for the Argentine Republic and Uruguay from the Manufacturers and Shippers of Canada. Particulars as to Customs Tariff, Shipment of Samples, etc., may be obtained at the office of **NICHOL KINGSMILL, ESQ.,** Toronto, Consul for the Argentine Republic.

REFERENCES BY PERMISSION.—Simeon Jones, Dominion Commissioner to the Argentine Republic, St. John, N.B.; Nichol Kingsmill Consul to the Argentine Republic, Toronto; W. B. Hamilton (of W. B. Hamilton, Son & Co.); Hon. Frank Smith (of Frank Smith & Co.); W. R. Brock & Co.; Wyld, Grasett & Darling; Smith & Keighley; Eby, Blain & Co., Toronto; Hon. James Turner (of James Turner & Co.); Lieut.-Col. J. M. Gibson, M.P.P., Hamilton; Wm Darling & Co., Montreal.

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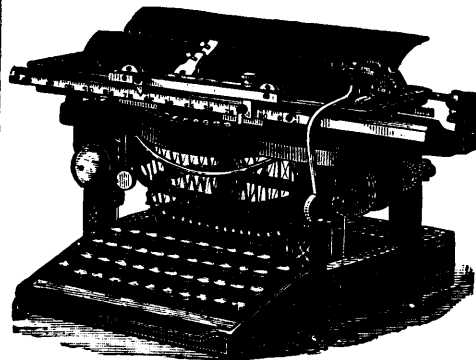
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SOLE AGENTS FOR CANADA.

BRANCH OFFICE—BUFFALO, N.Y.



known the world over, inform us that their works are being operated to their fullest capacity, and that they now have booked orders for over 15,000 feet of belting. This is one of the industries which has been established through the effects of the N.P. and by the energy and perseverance of a native Canadian.

The Canadian Pacific Railway Company are making extensive preparations for handling the immense surplus of grain grown in Manitoba this summer. In addition to the elevator already in operation at Thunder Bay, Ont., which has a capacity of 1,250,000 bushels, another is being constructed there which will have a capacity of 1,400,000 bushels. This latter will be the largest grain elevator on the American continent, the capacity being about 100,000 bushels greater than the largest elevator in Minneapolis.

Messrs. I. MATHESON & Co., New Glasgow, N.S., engineers and boiler makers, are also manufacturers of gold-mining machinery, winding gear, mills, pumps, etc. This concern have been a long time in this particular line of business, and have manufactured a great deal of the machinery now being used in the gold mines in the Maritime Provinces. As there is a great deal of interest now being manifested in the development of precious metal mines in Ontario, those who may be interested would do well to correspond with Messrs. Matheson & Co.

The Polson Iron Works Company's new ship-yards works at Owen Sound, Ont., will be on an extensive scale. The machine shop, which will be the main building, will be 260 x 60 feet; the wood-working shop 240 x 40 feet, and building for forges, blacksmith shops, offices, etc., 160 x 60 feet. 150 hands are at work erecting these buildings. The materials for the steamer they are to build for the Canadian Pacific Railway Company is being prepared, a large portion of which was to have been in hand August 1. About 300 hands will be employed on this steamer.

Messrs. JOHN C. SPENCE & SONS, Montreal, have recently placed a remarkably fine and artistic stained-glass window in the Windsor Hotel, of that city, manufactured by them. It has a centre-piece representation of Windsor Castle, surrounded with appropriate scroll work. Above is a portrait of Her Majesty, and beneath one of the Prince of Wales. Side panels will represent men and events commemorative of American as well as Canadian history. A noticeable feature of the window is the coloring, the blending of which is very artistic, reflecting great credit on the firm.

The Dominion Dyewood and Chemical Company, Toronto, of which Messrs. John Taylor & Co. are proprietors, announce that they are sole agents in Canada for the following leading manufacturers:—Farbenfabriken vormals Friedr Bayer & Co., Elberfeld, Germany—aniline dyes and alizarines, patentees of the one dip benzidine colors; Read, Holliday & Sons, Huddersfield, England—aniline dyes, patentees of acid magenta, gambine and indigo compounds; Mucklow & Co., Bury, England—dyewoods, cut and ground, extracts logwood, fustic, hyperine and sumac.

Messrs. HALE & BOOTH's raft, manufactured on the Amable du Fond, arrived here early on Friday morning, and was safely over the slides by noon the following day. The raft contains ninety cribs of white pine, of exceptionally good quality, being large and well made. Forty per cent. of the raft is board timber, of eighty-one feet average; the remainder—sixty per cent.—gives an average of 66-09 feet, or an average all round of seventy-two feet. Competent judges say that this raft is the finest that has gone down the Ottawa River for twenty years past.—*Bryson, Que., Equity.*

SOME of the saw-mills at the Chaudiere are being supplied with a new patent fire alarm apparatus, which will locate a fire in a few seconds after it starts. In various parts of the buildings thermometers are attached to electric wires. When the heat in the vicinity of a thermometer rises above 110° the glass breaks. This starts a bell ringing in the watchman's room. The watchman can tell by a number exactly the location of the fire.—*Ottawa Journal.* This is probably the automatic fire alarm, manufactured by Mr W. C. Hibbard, Montreal, advertised in these pages, and heretofore fully described in this journal.

A COPPER smelter, to cost \$1,200,000, is to be erected at Sudbury, Ont. Men are at work getting out material for the building, some of which is now on the ground, and the gentleman who is to have charge of the smelting works has arrived. There are three copper mines:—the Copper Cliff, Stobie, and the Evans. The former is most actively in operation, the ore obtained there being very rich indeed. There are hundreds of tons of this ore waiting for the erection of the smelter, which will be situated about three-quarters of a mile from the Copper Cliff. These three mines are owned and operated by gentlemen of Ohio, mostly from Cleveland.

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

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REDUCED PREMIUMS ON FIRE INSURANCE  
SECURED BY USING THIS CLOCK.

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RAILWAY MAPS.

GLOSSED LABELS.

ARTOTYPE (PHOTO) PRINTING.

THE Ontario Industrial Loan and Investment Company, Toronto, of which Mr. Edmund T. Lightbourn is manager, have now in course of erection in this city a large building which, when completed, they propose to rent with or without steam power, in flats or portions to suit. The proximity of the location to the business portion of the city and to all the railroad depots makes it particularly suitable for light manufacturing purposes. By making early application alterations in the plans of the building can be made to suit the convenience of lessees. This opportunity to secure a desirable location should command the attention of manufacturers.

MESSRS. PAXTON, TATE & CO., Port Perry, Ont., call attention to the trade to an improved lath mill manufactured by them, an illustration of which is displayed in our advertising columns. It is made entirely of iron and steel, and has six "12" saws on heavy patent steel arbor, with hollow end and perforated collar, affording a circulation of cold air around the saws, which can be adjusted to cut either laths or pickets, or both at the same time. It has four steel feed rollers, two front and two back of saws, making an extra strong feed. Pulley on arbor is 8x10 inches, and should make 3,000 revolutions per minute. The capacity of the machine is to cut from 30,000 to 50,000 pieces per day.

THE Ever Ready Dress Stay Company, Windsor, Ont., inform us that they have moved into their new premises in that city, and that they are in full working order. Their factory is a brick building 65x30 feet, two stories high, with wing 30x12 feet. At present they give employment to some thirty-five hands, nearly all of whom are girls; and it is intended to considerably increase this number by September 1. Their power is obtained from an Otto silent gas engine built for them by the John Doty Engine Company, of Toronto. The products of the factory average from 100 to 150 gross of stays per day, and the company have a ready market for all the goods they can produce.

MESSRS. H. BROAD & SON have now got their edge tool works fairly started. They have had considerable difficulty of late in getting water, but the recent rains have now filled that want. They intend manufacturing axes, hatchets, nail and striking hammers, railroad mauls, crowbars, draw knives, chisels, adzes, timber axes, French axes, hunting axes, etc. They expect to employ some ten or twelve hands this year, and if successful, will enlarge next year. They are the only edge tool workers in Western Ontario, and will fill a long felt want amongst hardware men. They have already orders in from Toronto and Montreal. They will make any tool required if the pattern is sent them.—*Welland, Ont., Telegraph.*

MR. A. W. BRODIE, woolen manufacturer, Peterboro', Ont., under date of August 1, writes us that he has bought from the Bank of Montreal the cotton and woolen mill in Hespeler, Ont., known as the Harvey & McQuesten property, and that he intends making alterations, and will remove his plant from Peterboro' and start up the Hespeler mills next spring. He will push the cotton warp and yarn trade, as well as his usual lines of woolen goods. Mr. Brodie informs us that no person is interested in these mills beside himself, and that all his products will be sold by Messrs. Lockhart, Millichamp & Co., Toronto, as usual. This authoritative statement regarding the Hespeler mills puts at rest some erroneous reports that have recently got abroad concerning them.

MESSRS. JAMES McLAREN & Co., of Ottawa, who operate very extensive saw mills, the power for which is taken from the Chaudiere Falls, at that place, are considering the advisability of changing their motive power from water to steam, and it is said that other lumbermen about the Chaudiere are debating the same question. The idea with them is that the waste and sawdust that is now discharged into the river would supply the necessary fuel for making steam, and therefore that expense would be inconsiderable, while the change would settle the sawdust nuisance while the water power could be advantageously used for factories of different descriptions which do not afford their own fuel. If this change is made it would create a large demand for steam machinery.

WORK has been commenced at Bradt's canning factory. Peas were the first thing handled, and they are being canned at a lively rate. A new pea huller, with a shelling capacity of from 1,000 to 1,200 bushels per day, has been put in. which shells so rapidly that it can't be supplied fast enough to keep it steadily at work. On Wednesday 7,800 cans were put up complete. Mr. Bradt expects to put up from 100,000 to 150,000 cans of peas, for which the cans are already made, and the peas contracted for. Can makers are now engaged getting cans ready for the corn crop, of which they expect to use 100,000. Later in the season it is intended to can poultry and meat. If cans can be made quick enough, Mr. Bradt also intends putting up peaches, pears, plums and other fruits.—*Welland, Ont., Telegraph.*

## Fenwick & Sclater,

43 and 44 Foundling St., Montreal.

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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.

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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.

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Steam Boilers, Ship Tanks, and

MACHINERY OF EVERY DESCRIPTION.

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## 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.

MESSRS. PAXTON, TATE & Co., Port Perry, Ont., have sent us their descriptive catalogue of the double turbine water wheels and other mill machinery manufactured by them. The book contains fresh and accurate representations of the different articles of machinery alluded to, and the descriptions of them are so full and accurate as to give the reader a good idea of them. Besides matter referring directly to the products of this firm, the book contains articles and tables which are of value to lumbermen, sawyers, millwrights and operators of wood-working machinery; and as a whole it cannot but prove an interesting and useful hand-book for that large class for which it is specially intended. The names of the parties are given who have nearly four hundred of the Paxton, Tate & Co.'s turbine wheels in use in Canada.

The Hespeler correspondent of the *Guelph Mercury*, speaking of the Hespeler Woolen Mills: "It is a pity to see this, one of the finest properties in the Dominion, with over \$300,000 invested in it, lying idle, the machinery rusting and everything going to pieces. The promoters of the \$6,000 bonus to the industry feel pretty sick over their bargain. No bonus hunter need ever apply here again." But since then he changes his note, upon finding that the mills have been sold, and are shortly to be re-opened, declares that since the glad news has come a "boom" has struck the village, property has risen in value, and there are applicants for many of the vacant dwellings. The purchasers of the mill it appears are Messrs. Brodie & Co., of Peterboro'; Mr Long, of the firm of Long & Bisby, wool dealers, Hamilton, and a Montreal man.

VALUABLE discoveries of iron have been made by Duluth explorers on the north branch of the Vermillion range, on the Canadian side of the line, a considerable distance east of Tower and Ely, and closely adjoining the international boundary. Samples broken from the surface of the ledge show about fifty per cent. metallic iron. Whether this ore contains much phosphorus has not yet been determined, but it has shown itself good enough to induce the Duluth discoverers to purchase 400 acres or more land along the vein. The exploration done shows up a wide and long vein, which will undoubtedly grow richer as shafts are sunk into it. The continuance eastward of the northerly branch of the Vermillion vein into Canada has long been known by explorers, though previous to this find but little work has been done there.

A CONNECTICUT Yankee claims to have invented a neat thing in the way of a steam heater to carry about on the person. It is called "the portable body steam heater." The apparatus is a small affair, consisting of a copper boiler, under which is a diminutive lamp, all encased in a nickel box, and balanced something like a compass, so that no matter what position the outside box is in, the boiler and lamp will always remain in the required vertical position. The entire apparatus is so small that it can be carried in the pocket. After the lamp is lighted, the water in the boiler is heated and circulated through rubber tubes, which run down the legs, around the ankles, up around the back, and back to the boiler. The circulation of the water keeps the body warm on the coldest day. A safety valve and escape for a higher pressure of steam than the affair is allowed to carry flows off at the back of the wearer's neck. Elaborate heaters are being constructed for ladies' wear. They can be worn inside the bustle, and entirely obscured. Before going out of the house the lady's maid can light the lamp which, by the way is gauged to run six, eight, or ten hours.

The Hamilton Bridge Company, Hamilton, Ont., are engaged in constructing the iron tubing for the tunnel under the St. Clair river, which the Grand Trunk is to construct at Point Edward. The tunnel, which will be  $1\frac{1}{4}$  miles in length, will contain a cast-iron water-tight tube twenty feet in diameter and two inches thick, through which the trains will run. In excavating the tunnel a new system is to be adopted, one which has never been tried in this country, and has only been tested in England on small tunnels. The Bridge Company have constructed a steel shield twenty-one feet in diameter, one foot larger than the tunnel, and about ten feet long. This steel circle will be forced into the ground ahead of the excavators by powerful hydraulic rams, and the earth within its circle will be rapidly dug away without any danger of a cave-in. The twenty-foot iron tubing will be built along behind it as the excavation progresses, and the space between the tube and the size of the hole made by the shield will be filled in with cement. One of these shields will start from each side of the river and meet in the middle, where they will be rivetted together. Already the shafts at each end of the tunnel have been excavated, and they are 100 feet deep and twenty-four feet wide. All the iron work for the tunnel will be built by the Hamilton Bridge Company.

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HIGHEST  
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THE**OILS**CYLINDERS, ENGINES, SCREW CUTTING, ROLLS, WOOL,  
HARNES, BELTS, SEWING MACHINES, ETC., ETC.Black Oil (Summer and Winter), Pure Surface Oil, Paraffine Oils,  
Red Oil 22° and 25°, and Benzine 62° Gravity.**STOVE GASOLINE, 72° GRAVITY.**

IF YOUR DEALER DOES NOT KEEP OUR BRANDS, ORDER DIRECT.

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**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

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**ENGINE WORKS FOR SALE**

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*A well established ENGINE and BOILER WORKS*

**And General Machine Shop,**

Furnished with heavy Lathes, Drills, Punches, Plate Rollers, etc., and every appliance  
necessary for doing a general machinery business. These works now manufacture a  
Superior Threshing Engine, in which there is an established business of some years  
standing, as also in Boilers and Engines of all kinds, and general repairs.

Price low and terms easy.

The premises can be had on lease for term of years, or will be sold with the  
machinery.The proprietor being engaged in other business finds it impossible to give the  
necessary attention to this.

For particulars apply to

**F. M. WILLSON, Accountant,**  
22 JOHN STREET, HAMILTON.

THE Hynes Terra Cotta and Brick Company, Toronto, recently incorporated, was formerly Messrs. M. J. Hynes & Bro., but the demand for their lines of manufacture was so great that, in order to keep pace with the demand, the joint stock company was formed. This company make a specialty of architectural and horticultural terra cotta, fine pressed brick, sewer pipe, roof tile, floor tile, plaster ornaments, etc. These goods are pronounced by experts to be equal to the best English or American makes. The land from which the clay is taken comprises one hundred acres. Their works are convenient to both railroad and water transportation, and afford ample facilities for shipping to all parts of the country. The offices and warerooms are at 88 York street, where samples of the different kinds of their work are on exhibition. Terra cotta has rapidly grown in favor, and orders are coming in quickly to this company, and business is brisk. The company contemplate enlarging their premises and increasing their capital, in order to still more satisfactorily supply the demand. Among contracts recently secured by them are one from the new Toronto Club, whose elegant building is now in course of construction; for work on the Custom House and Post Office at Woodstock, Ont., and a large building front to be erected in Montreal.

THE Toronto Radiator Manufacturing Company, Toronto, is a new concern recently organized in this city, which fact was alluded to in these pages at the time. The company have now got fairly into operations and are full of business. Their works have a frontage of 95 feet on Niagara street, with a depth of 160 feet, the building being of a very substantial character. There are two cupolas for melting iron, of eleven tons capacity, and about eighty tons of iron are melted per month, giving employment to twenty moulders and fourteen general hands; and arrangements are being made to largely increase this force. A convenient and well-arranged machine shop is operated in connection with the works, in which are some remarkably fine and novel new tools, a description of which will be given in these pages at another time. The company have already booked orders which will require at least three months to fill, among them being one for forty-eight radiators of the largest size for the new building of the Alma Ladies' College at St. Thomas, Ont. The specialty of this company is the manufacture of the Safford extension radiators and boilers, and they are the only manufacturers of these goods in Canada. The gentlemen composing this company are all well known business men of Toronto, the personnel being F. W. Doty, president; Joseph Wright, vice-president; P. T. Dunn, treasurer; Charles Sellers, superintendent, and John M. Taylor, secretary and manager.

THE Windsor Foundry Company, whose works are at Windsor, N.S., with branch house in Toronto, have sent us their new illustrated priced catalogue (seventh series), having reference to the stoves, ranges, hollow ware, general castings, etc., manufactured by them. The leading attraction illustrated in the book is the Windsor "Empress" range, which is described as being an entirely new affair, introduced for the first time this season. It is built in the latest and most beautiful style, perfectly fitted, made from new iron by skilled mechanics, fully nickel trimmed, oven door with tile centre. Full-sized flues and ovens are provided, the special appliance for ventilating the oven with fresh heated air supplying a great desideratum. This hot air is taken into the oven under the fire box and circuits through, carrying off all odors arising from the cooking food. This is claimed as an entirely new application of this valuable principle; and by it is saved more than half the usual shrinkage in meat cooked in a close oven. There are foot levers for opening oven doors, the famous dock-ash grate, very large reservoir with the company's special flue system, by which water is raised to the boiling point in a very short time, ventilated covers and centre pieces, outside shelf, high base, etc. It is made in all the usual sizes and styles, and in it is embodied all the accessories that could possibly be desired. Other goods illustrated and described are the "New Hub," "Delmonico," "Prince," "Iron Acorn," "Coal Acorn," "Victoria," "Princess," "Silver Acorn," "Royal Acorn," "Waterloo," and "Niagara" stoves and ranges in which are embraced varieties and styles to please all users. And there are caboose stoves and ranges ranging in capacity from the necessities of a stone hooker or a fishing smack to those of a large passenger-carrying ship or steamer. Full lines of heating stoves are also illustrated, the principal one of which is the Windsor "Monarch," a square art parlor double heater base burner, which is very beautiful indeed. Mr. Thomas A. Hindmarsh, manager of the western branch of this concern, has his offices and show and warerooms at 36 Melinda Street, Toronto, where those interested can obtain catalogues and further information.

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Paint, Whitewash, Kalsomine, Household Brushes.  
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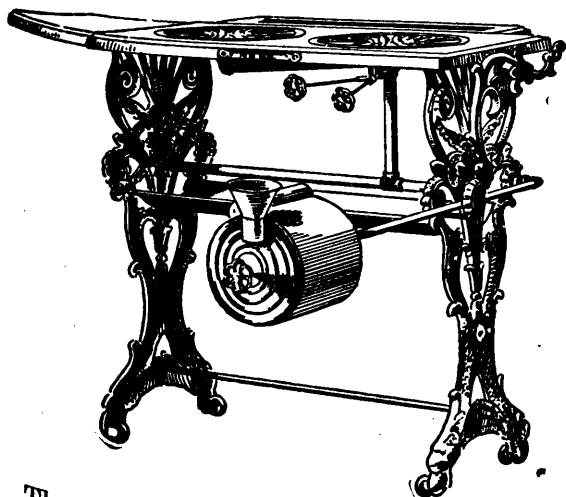
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The manufacturers feel safe in saying that no means of summer cooking ever introduced has gained such a marvellous hold on the public favor. Though only a few years since first introduced, to-day they are felt to be a part of the family economy. So widespread has become the demand for these Stoves that it is claimed that over

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These Stoves are very simple in operation and no more dangerous than an ordinary Lamp.

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

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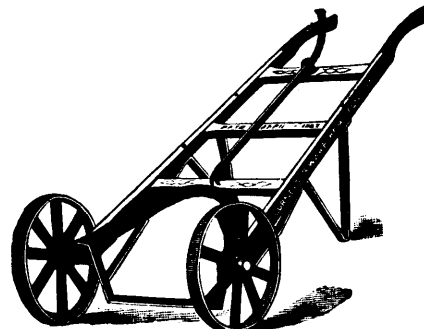
JOHN TAYLOR & Co., Proprietors.

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,

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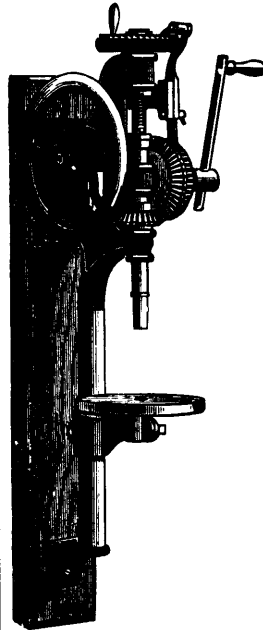
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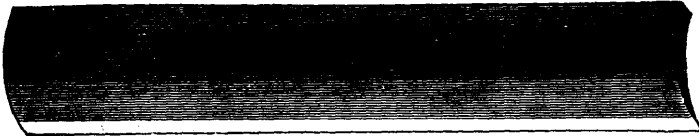


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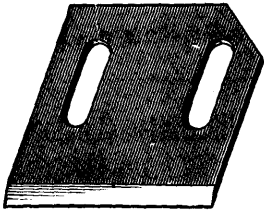
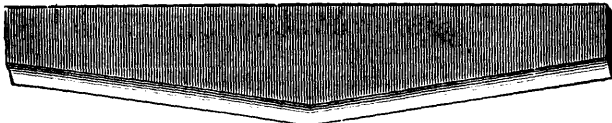
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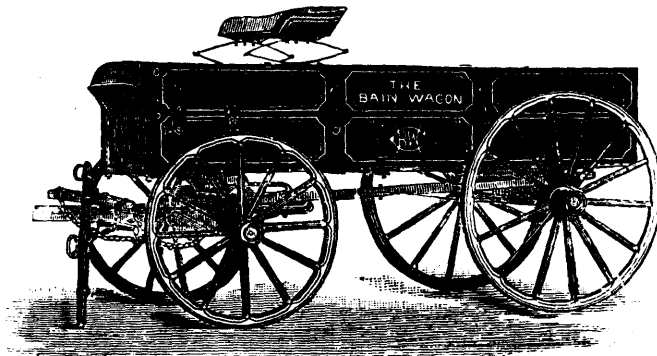
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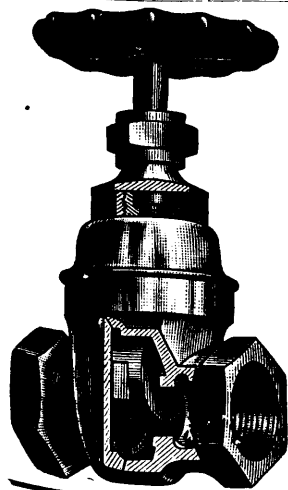
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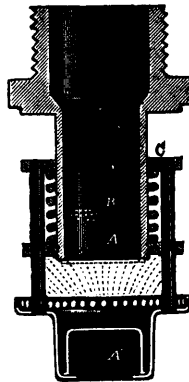
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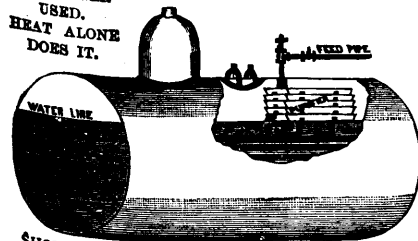
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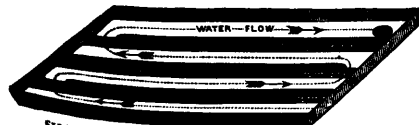
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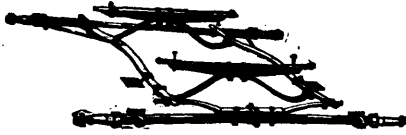
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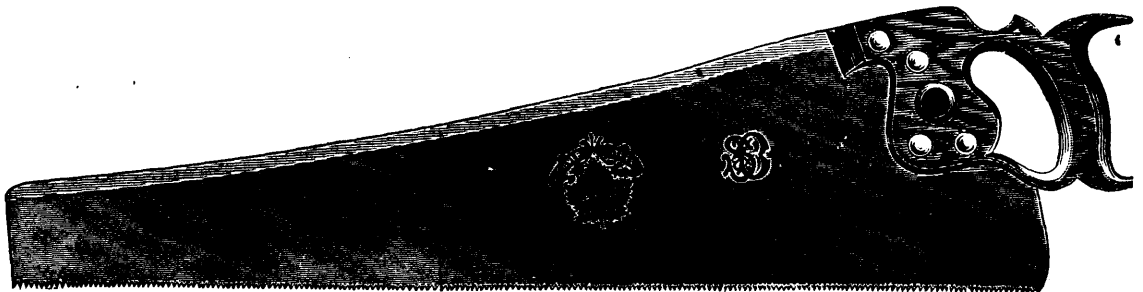
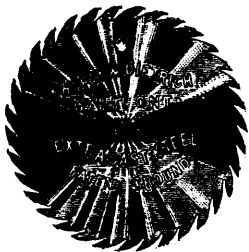
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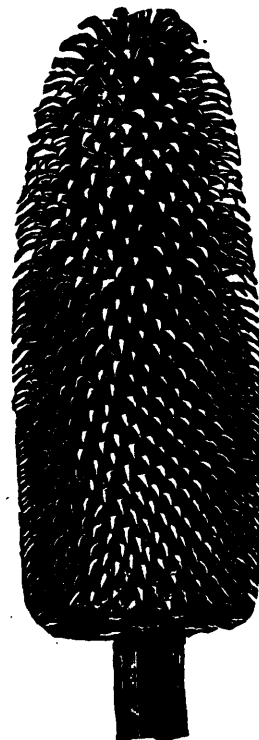
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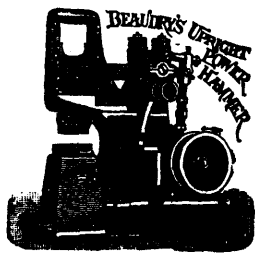
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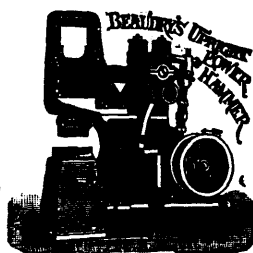
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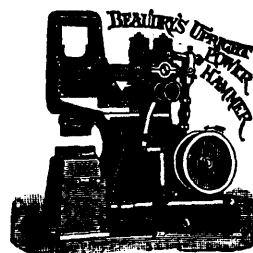
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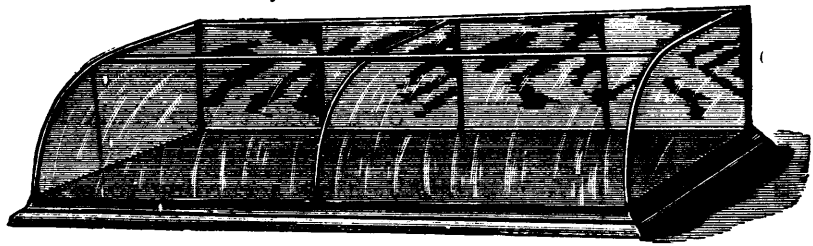
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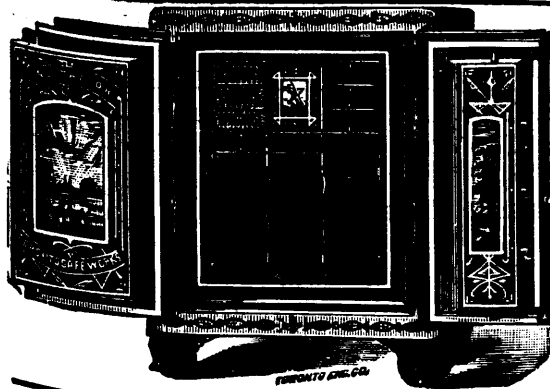
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Showcases, Store-Fittings, Tables, Office Cabinets, Desks Mantles, &c.

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and Groove  
**FIRE-PROOF**

**SAFES**

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Established 33 years.

All our new style Fire-proof Safes are fitted with TWO COMPLETE TONGUES AND TWO GROOVES on both the door and door frames, which effectually prevent the heat from passing between the door and frame into the interior of the safe.

They are also fitted with CHILLED CHROME STEEL PLATES under the Lock and Bolt Spindles to prevent drilling; and have DRY AIR-CHAMBER inside to prevent dampness to papers.

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Direct Route between the West and all points on the  
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# TO USERS OF LEATHER BELTING

## SOME PERTINENT SUGGESTIONS.

**FIRST**

{ We tan our own Leather especially for Belting.  
 { We have increased our trade threefold during the last few years.  
 { We sell our Belting according to a list that is 25% to 30% lower than the American list, which some sell by in Canada.

**BUT**

{ We have heard some consumers who are N.P. manufacturers say that they cannot get good Belting made in Canada.

**NOW**

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 { **AMONG THE** { One firm alone buying from us last year to the amount of \$10,000 for their Mill.  
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**CAN YOU**

{ **HARMONIZE THESE FACTS WITH** { 1st. That our **PRICES** are **RIGHT**?  
 { **ANY OTHER THEORY THAN** { 2nd. That our **LEATHER** is **GOOD**?  
 { 3rd. That our **BELTS** are **WELL MADE**?

**IF NOT**

{ Send us a Sample Order and see if we cannot please you.

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MANUFACTURERS,

129 Bay St., TORONTO.

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## J. L. GOODHUE & CO.

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MANUFACTURERS OF

# LEATHER BELTING

Canadian Leather,  
 Canadian Made,  
 Canadian Price List.

Thoroughly Stretched,  
 Carefully Made,  
 Runs Straight.

— AND —

**LACE LEATHER,**  
**DANVILLE, - QUE.**

OUR BELTING IS MADE FROM

### CANADIAN TANNED LEATHER

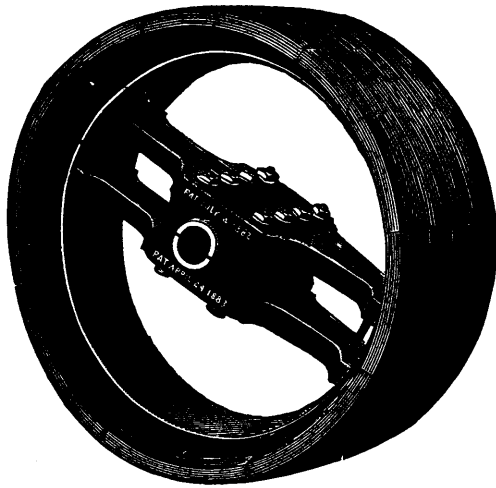
Tanned in the most careful manner expressly for Belting in our own Tannery. We warrant it equal to any imported, either American or English, or any made from imported American or English Oak Leather. All widths, single or double, for any duty Saw Mills, Cotton Mills, Woollen Mills, Electric Light, etc., etc.

### Canadian Manufacturers should use Canadian Belting.

Specimens of these goods are to be seen at the Permanent Exhibition of Manufactures, 63 to 69 Front Street West, Toronto.



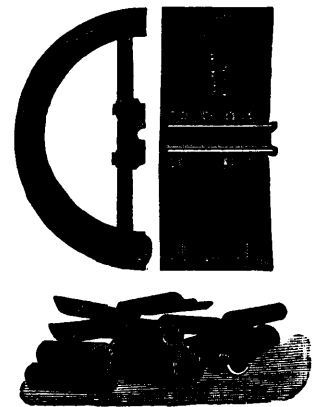
# Dodge Patent Wood Separable or Split Pulleys.



Best Belt Surface, Lightest, Strongest, Best  
Balanced and Most Convenient  
Pulley in the World.

## With our Patent Bushing System

Every pulley will fit 22 different sizes of shafting, and guaranteed to give from 30 to 60 per cent. more power from same belt and like tension than any iron or steel pulley. Every pulley a split pulley, 70 per cent. lighter than cast iron, and 50 per cent. lighter than wrought iron or steel. Strong enough for any power required. Made in any size from nine inches to sixteen feet diameter.



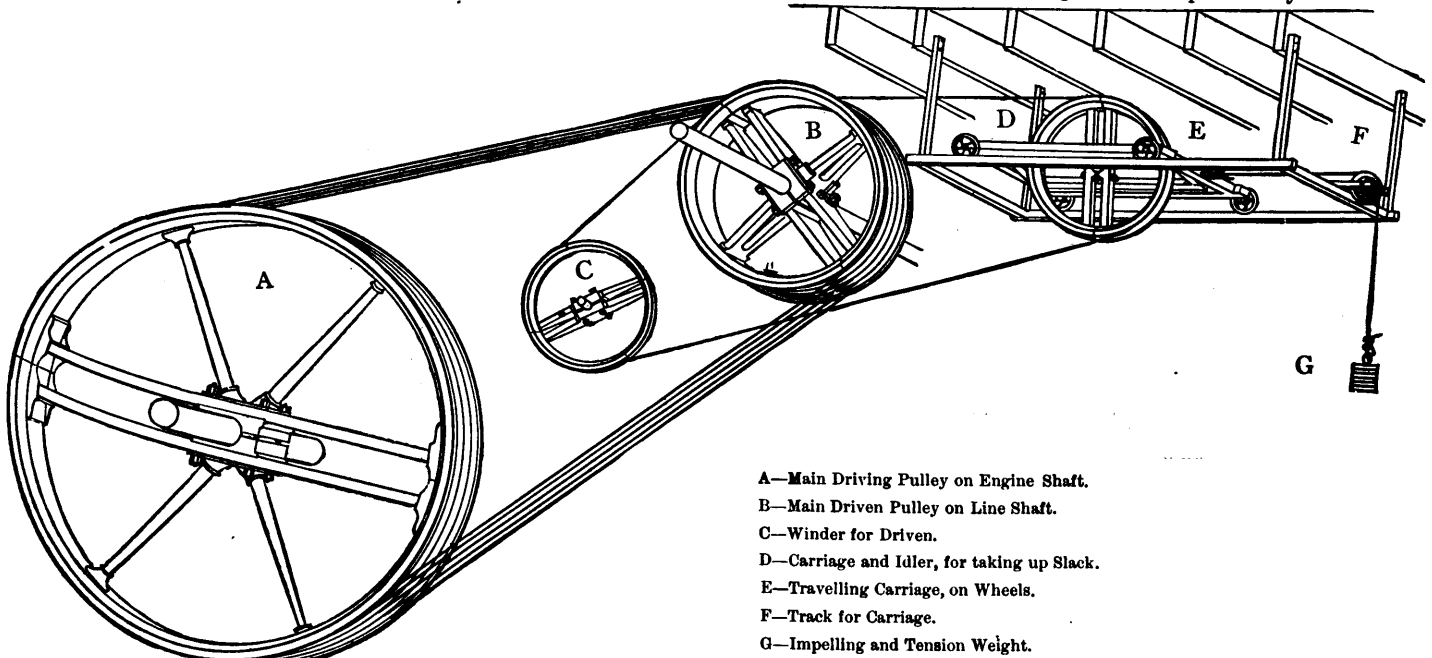
## THE TRANSMISSION OF POWER BY ROPES AND THE DODGE PATENT WOOD PULLEYS.

The great advantage of Wood over Iron as a material for belt pulleys (or drums) to transmit power economically, has induced the DODGE WOOD SPLIT PULLEY CO., of Toronto, to introduce grooved hardwood pulleys for the special purpose of transmitting power by ropes (manilla tallow laid), and in this connection Mr. Dodge has taken out Canadian Letters Patent for a system of applying the ropes, adjusting the pulleys, and taking up slack, that is giving the most unqualified satisfaction.

This 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 with 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. We have put up a number of the Dodge Patent Rope transmissions during the past year, all of which are in most successful and satisfactory operation, as certified by the testimonials published in our catalogue of well-known manufacturers who have them in use.

WITH OUR SYSTEM OF MANILLA ROPE TRANSMISSION is overcome the objection to Wire Rope (because of crystallizing) and gearing, (because of loss of friction) and shafting (because of the liability to get out of alignment, hence loss of power by friction), and a separate engine plant (because of its great expense); on the contrary, with the Manilla Rope System, under the Dodge patents, the power is transmitted with the same efficiency as though the shafts were close together, there being no loss of power by excessive tension, or bad alignment. but simply the friction of the journals to overcome at the carriers, which have a strain of weight of the rope to carry.



A—Main Driving Pulley on Engine Shaft.  
B—Main Driven Pulley on Line Shaft.  
C—Winder for Driven.  
D—Carriage and Idler, for taking up Slack.  
E—Travelling Carriage, on Wheels.  
F—Track for Carriage.  
G—Impelling and Tension Weight.

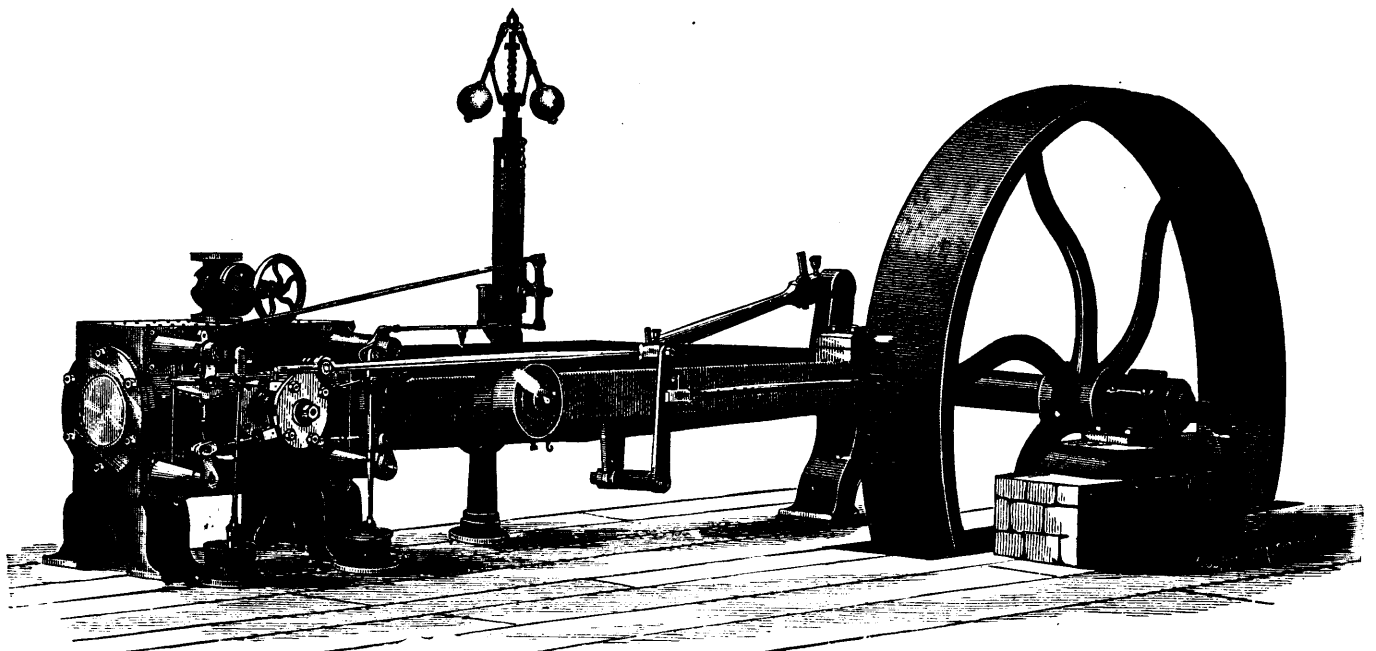
The illustration, as shown above, is one of peculiar construction, and represents an engine transmitting its power to the line shafting by the Dodge Patent System of manilla ropes and grooved hardwood pulleys. Transmissions similar to the above are now in use at the works of the following well-known manufacturers in Toronto:—

A. R. Clark & Co., Leather and Glove Manufacturers, 50 H.P.; T. Tushingham & Son, Builders, 35 H.P.; J. R. Black, Carriage Works, 50 H.P. Barber & Ellis Co., Stationers, 8 drives, 87 H.P.; Jas. Lochrie, Rope Manufacturer, 60 H.P.; J. P. Wagner & Co., Show Case and Keyboard Manufacturers, 50 H.P.; J. Taylor, Morse Soap Works, 60 H.P.; Joseph Simpson, Knitting Mills, 80 H.P.; and numerous others whose testimonials can be seen in our catalogue. Parties who are in want of anything in this line, or who are interested in the efficient and economical transmission of power, are cordially invited to call at our works and see the ropes and wood pulleys in operation, as we are driving our whole factory by this system. Send for Price List, Catalogue and Cypher Code, for ordering by telegraph, to

THE DODGE WOOD SPLIT PULLEY CO., 89 ADELAIDE ST. W., TORONTO.

# THE GALT FOUNDRY,

## Engine and Machine Works.



## THE HARRIS-CORLISS STEAM ENGINE

Is the most perfect Cut-off Engine made. For Economy of Fuel, Regulating of Speed, Accessibility of all its Parts, it has many Imitators, but no Equals, and is Unsurpassed.

While many Engines of the same class have been invented, built, tried and abandoned, the Harris-Corliss has steadily gained in public favor, and is now

**Without a Successful Rival.**

### PLEASE NOTICE SOME OF THE ADVANTAGES OF THE HARRIS-CORLISS ENGINE:

- 1st—**The Steam is admitted at Boiler pressure** to the piston by the main valve and is cut off at the same point, the load determining through the regulator, when the supply of steam shall be cut off. This is the only Engine that thus admits steam at full boiler pressure.
- 2nd—**The success of the Harris-Corliss Engine** lies in the simplicity and precise action of the governing elements; **the Governor** is an independent mechanism, with no extraneous load, and free to instantly respond to all variations in the angular velocity of rotating parts.
- 3rd—**No parts of the regulating medium enter the steam chest** and hereby be out of sight of the engineer, and subject to the corrosive action of steam and the oil used for lubricating the valves and piston.
- 4th—**Regularity of Speed** under varying loads of steam pressure
- 5th—**Recessed Valve Seats** which avoid the liability of wearing shoulders on them
- 6th—**Stop Motion on Regulator** of Engine which effectually stops the Engine whenever the regulator by any means fails to perform its work, thus preventing Engine from running away.
- 7th—**Having four Valves** either can be adjusted independently of the other with the greatest ease
- 8th—**The increased amount** of power it develops.

We would draw special attention to **our new and improved Adjustable Pillow Block**, which is pronounced by all practical men who have seen it to be the very best in Canada.

## COWAN & CO.,

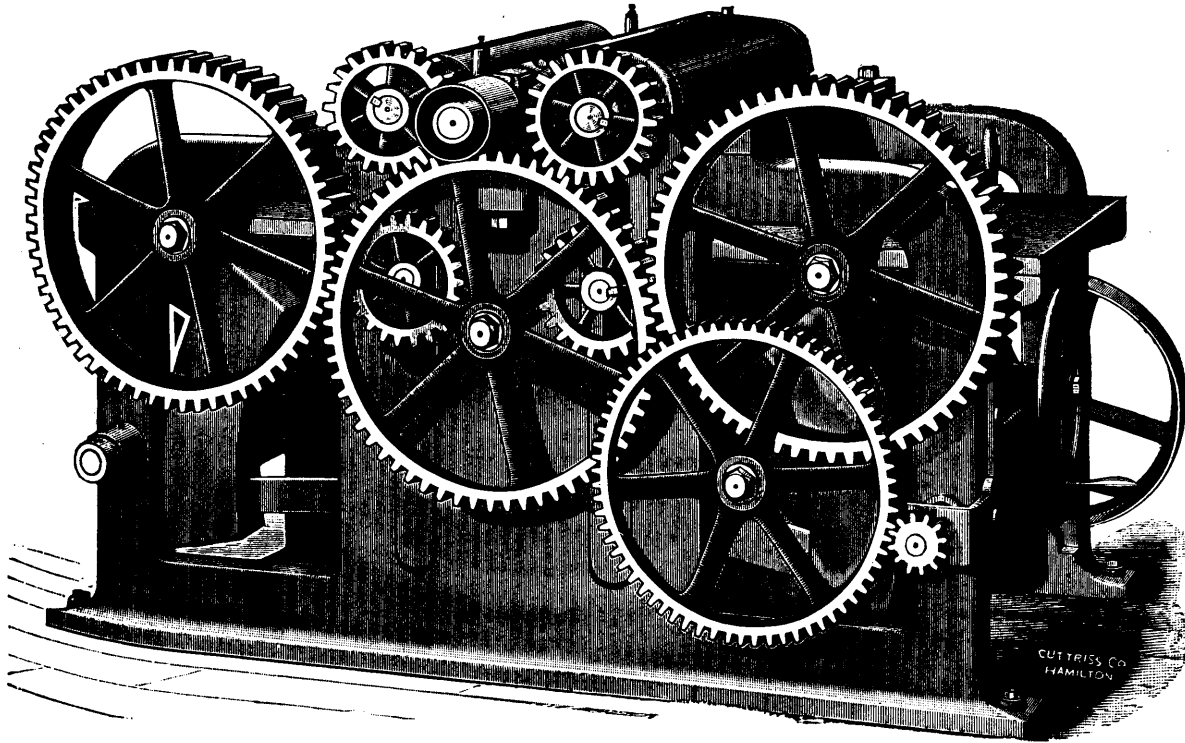
Galt, Ont., Canada.

Manufacturers of Engines, Boilers and Wood-Working Machinery—all kinds, new Patterns, highly finished.

Canada Tool Works,

# JOHN BERTRAM & SONS

DUNDAS, ONT.



WHITNEY SURFACER, 26 & 30 in. Weight, 4,500 lbs.

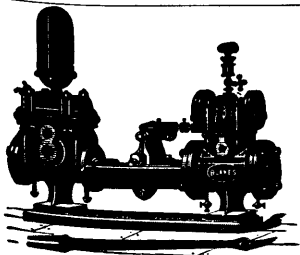
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**Machinists' Tools**  
and  
**Woodworking  
Machinery.**

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- PLANERS,
- DRILLS,
- MILLING  
MACHINES,
- PUNCHES,  
SHEARS,
- BOLT  
CUTTERS
- SLOTING  
MACHINES,
- MATCHERS  
MOULDERS,
- TENONERS,
- BAND SAWS,  
MORTICERS,  
SAW BENCHES

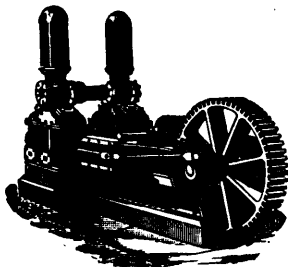
Locomotive and Car Machinery, Special Machinery, Price List and Photographs on application.

Warerooms: Permanent Exhibition, Toronto; Polson Engine Co, 38 Yonge St.; Machinery Supply Ass'n, Montreal.

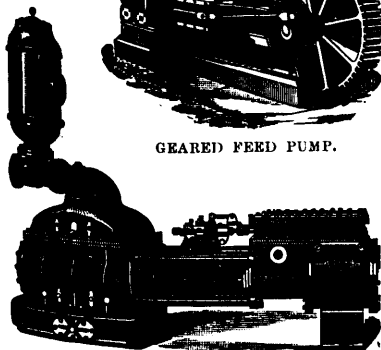
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BOILER FEED PUMP.



GEARED FEED PUMP.



DUPLEX COMPOUND ENGINE

BUILDERS OF

SINGLE AND DUPLEX

Steam and Power

### Pumping Machinery



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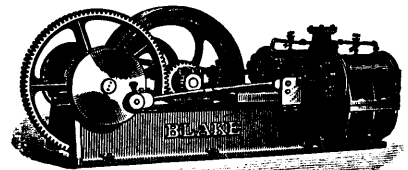


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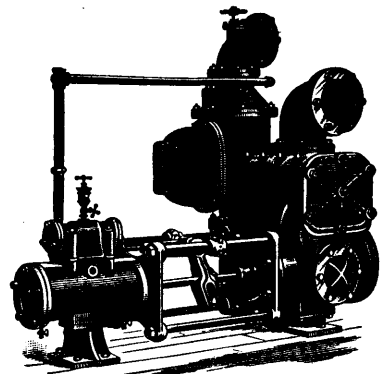
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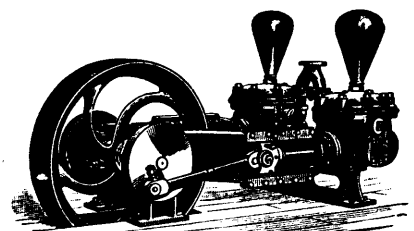
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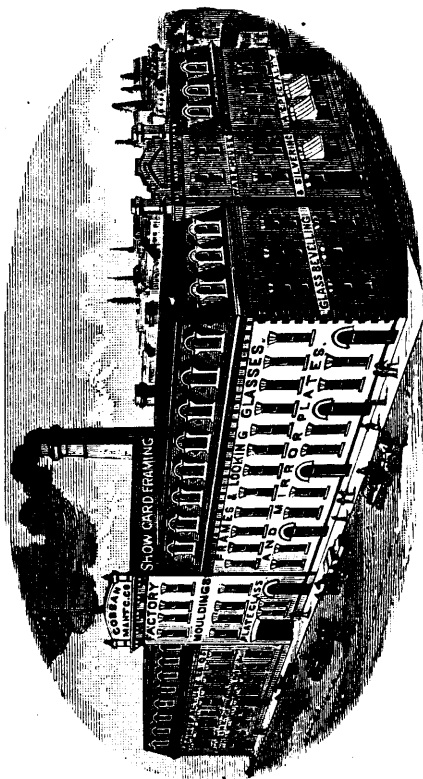
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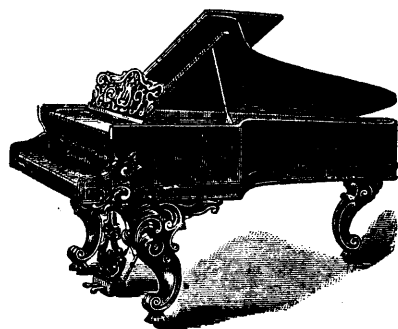
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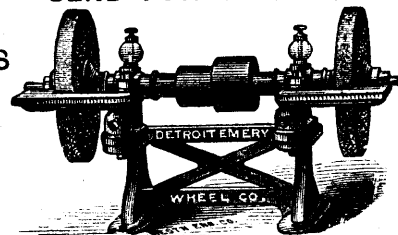
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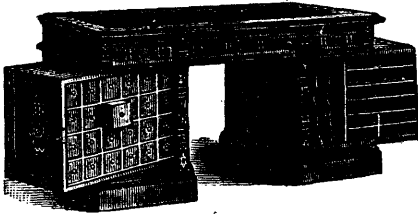
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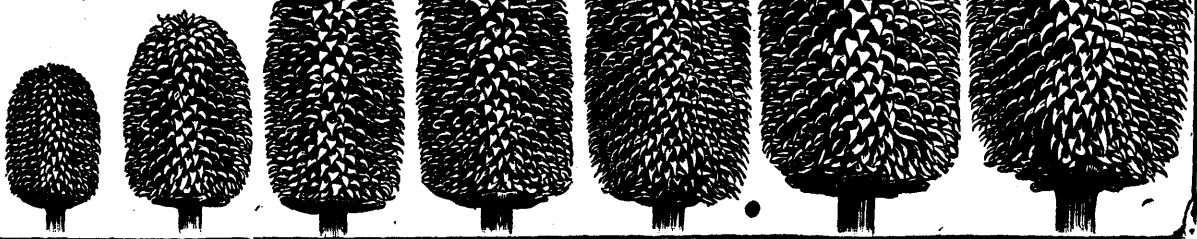
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