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DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

VOL. 15. TORONTO, JULY 20, 1888. No. 2.

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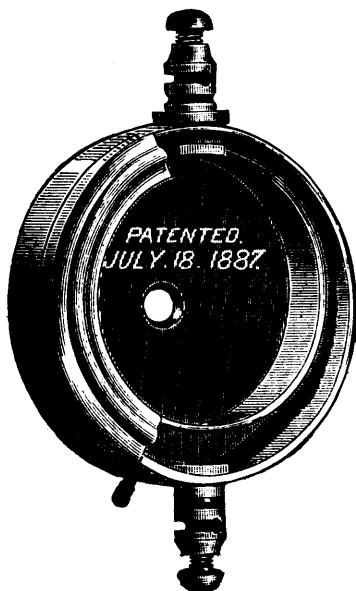
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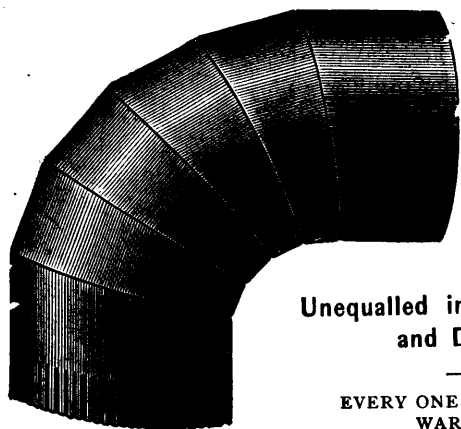
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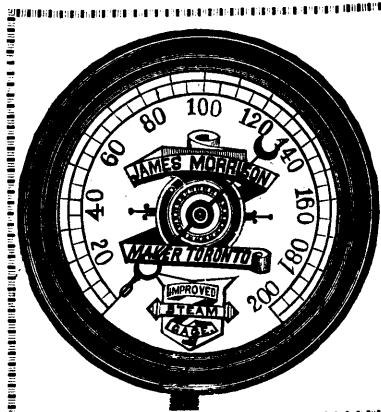
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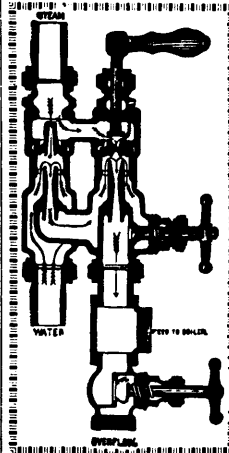


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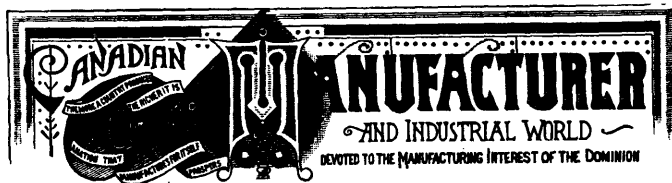
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6 Wellington Street West, Toronto.

## Captains of Canadian Industry.

### WILLIAM DOHERTY.

THE accompanying portrait is a good likeness of Mr. William Doherty, head of the Doherty Organ Manufacturing Company, Clinton, Ont. He was born near Bradford, Simcoe County, Ont., in 1841, his father, John T. Doherty, being Irish and his mother Scotch. While yet a child his parents settled at St. Vincent, in the County of Grey, that particular part of the country being celebrated for its wealth of rocks and poverty of soil. His education was first under the superintendence of the (now) Rev. W. Dwyer, a Methodist minister, who aided largely in laying the foundations of Mr. Doherty's successful career. While but a youth he was thrown upon his own resources—in fact it devolved upon him to do much towards the support of his mother and a large family of younger children. At this time, and while living at Claude, in the County of Peel, he received instructions from Professor Standing in the science of music which was to form so important a factor in his future career. Under this tuition he soon acquired a local reputation as a good musician, and he frequently assisted his tutor in giving musical instruction to his classes. In 1864 young Doherty obtained employment at Petrolea, Ont., which place was then alive with excitement over the discovery of petroleum oil. In 1868 he removed from Petrolea to Bay City, Michigan, and from there to Clinton, Ont., where he has since resided. It was then he commenced business as a cabinet maker, in which he was fairly prosperous. At this time Mr. J. N. Depew was conducting an agency in Clinton for the sale of musical instruments, and the two interests were consolidated, Mr. Doherty soon becoming the sole owner by purchase; the sales

department of the musical instrument portion of the business being transferred to Mr. T. C. Doherty, a brother. In 1873 Mr. William Doherty and Mr. D. R. Menzies formed a co partnership under the firm name of Doherty & Menzies, for the manufacture of organs, which continued until 1886, when Mr. Menzies retired.

In the handling of the various styles and makes of Canadian and American organs, Mr. Doherty discovered where valuable improvements could be made, and he utilized his musical education and inventive genius in this direction—with what success the now well-known Doherty organ, with world-wide reputation, attests. His inventions and improvements proving to be eminently successful, Mr. Doherty embarked very extensively in the manufacture of these instruments; and the history and growth of the business from that time on is to a great extent the history of Clinton. From a very small and unpretentious beginning, the increase has been such as to require the erection of three immense factory buildings, which are all equipped with the best and most approved machinery and appliances, all of which is taxed to the utmost capacity in the manufacture of these excellent instruments. It was in 1882, in the earlier days of this successful business, that Mr. John Gibbings, a gentleman of financial ability and artistic skill, was associated with Mr. Doherty in the manufacture of these organs, and then it was that agencies for their sale were successfully established in London and Glasgow, and in the Maritime Provinces; and later in Australia and New Zealand. Without entering into details, the output of organs now being manufactured by the Doherty Organ Manufacturing Company averages from eight to ten instruments per day, from eighty to one hundred hands being employed.

In 1870 Mr. Doherty married Miss Depew, of Seaforth, Ont., and they are now the parents of a most interesting family—three sons and three daughters, his residence in Clinton being surrounded by beautiful and well arranged grounds that are probably the finest in that part of the country. Mr. Doherty takes a lively interest in both church and municipal affairs, his fine musical talent making him a great acquisition to society; his tastes leading him to active participation in church, Sunday school and choir work. Having amassed a comfortable fortune, he is now in the prime of life with a future of great usefulness before him. In politics he has always been a Conservative and a firm believer in Canada's National Policy; and as a member of the Canadian Manufacturer's Association his influence in supporting that policy is widened and solidified.

### JOHN FENSOM.

JOHN FENSOM, proprietor of the Fensom Elevator Works Toronto, was born in England. When but a child he was carried to Pawtucket, Rhode Island, at which place he received his education. His father, being mechanically inclined, placed young Fensom in a large machine works in Massachusetts where he became master of the machinist trade. He came to Canada about thirty-five years ago, and has resided chiefly in Toronto ever since. For many years he conducted a general machinist, millwright, and engineering business in this city but about twelve years ago he began the manufacture of elevators, establishing the Fensom Elevator Works, and has confined



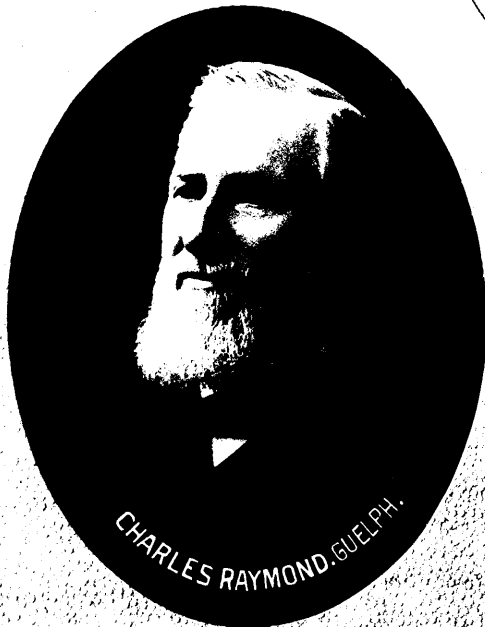
W. DOHERTY. CLINTON.



JOHN FENSOM. TORONTO.



A. GARTSHORE HAMILTON.



CHARLES RAYMOND. GUELPH.

• Captains • of • Canadian • Industry •

(SUPPLEMENT TO THE CANADIAN MANUFACTURER)

himself to this line of business ever since. His specialities are passenger and freight elevators, and guard gates for elevators, store doors, etc; and there are now hundreds of these appliances, manufactured by Mr. Fensom in use throughout the Dominion, some of the more prominent buildings in which they have been placed being the Custom House, Government House, Quebec Bank, York Chambers, Manning Arcade and Rossin House, Toronto; Citizen's Insurance Company's Building, Montreal; Parliament Buildings, City of Quebec; Dominion Parliament Buildings, Ottawa; Post Office Buildings, St. John's, N.B.; Whitla's Buildings, Halifax, N.S.; Hamilton Provident and Loan Society Building, Hamilton, Ont.; Tecumseh House, London, Ont.; Post Office Building, and Hudson Bay Company's Building, Winnipeg, Man., and Niagara Falls Park Tower and Elevator, Niagara Falls; many of which contain two or more of these elevators.

Mr. Fensom has always been a consistent supporter of Canada's National Policy and to its benignant influence he attributes that success of our manufacturing industries which has lifted this country to the high plane it now occupies among the nations. In enumerating the upholders of that policy Mr. Fensom's name deserves to be always mentioned among the first. He has also been identified with the Canadian Manufacturers' Association, and has been a member of its Executive Committee for years; and because of his high attainments as a thoroughly skilled and competent scientific mechanic, he has held the position of Chairman, of the Committee on Industrial Arts and Designs of that association, ever since its inception.

#### ALEXANDER GARTSHORE.

ALEXANDER GARTSHORE, proprietor of the Canada Pipe Foundry, Hamilton, Ont, was born in Dundas, Ont., December 18, 1839, and obtained his scholastic education at Ancaster and Hamilton, making his home the while with the late Mr. Elmslie, at Hamilton. Subsequently he attended Mr. Regan's school in Dundas, and in 1854 he went to the West Point Foundry, Cold Spring, N. Y., one of the most important establishments of the kind in the country, where he remained two years working at pattern making. In 1857 he again went to the West Point Foundry, where, under instructions, he made the drawings for the Hamilton Water Works.

In 1865 Mr. Gartshore went into partnership with his father, Mr. John Gartshore, in the iron foundry and engine building business in Dundas. This was at the time when great excitement existed over the finding of petroleum oil at Petrolia and Bothwell, Ont.; and the concern built a large number of engines and pumping machinery for this work. In 1870 Mr. Gartshore started a foundry at Hamilton, engaging in the business with Mr. Thomas Cowie, since which time the enterprise has been very successful. Additions both to the buildings and plant, and the general character of the products manufactured, have been made from time to time, special attention being given to the manufacture of cast-iron gas and water pipe, the output of the works now being about twenty tons of castings per day; and other additions are now being made, soon to be completed, which will increase the capacity to thirty-five tons per day. The waterworks of Hamilton, Toronto, London, Ottawa—in

fact of about all the principal cities of Ontario—are supplied with pipes manufactured at Gartshore's Canada Pipe Foundry of Hamilton.

Mr. Gartshore has always been identified with the National Policy of Canada, and a strong supporter of it; for his keen business perception taught him that it was through such a policy alone could Canadian manufacturers hope to reap the pecuniary reward that should follow their efforts to establish important industrial works in this country, and to give to it a reputation as a manufacturing community; and it was with a desire to give tangible shape to these views that he became one of the promoters of what is now the Canadian Manufacturers' Association. In fact, Mr. Gartshore might be said to have been one of the "charter members" of that association; and ever since it came into existence he has been an active and influential member of it, having been, as he is now, a member of its executive committee.

#### CHARLES RAYMOND.

CHARLES RAYMOND, sewing machine manufacturer, of Guelph, Ont., was born in Ashburnham, Mass., January 6, 1826. His primary education was had in the village schools of his native town, supplemented later by terms in higher schools in Fitchbury, and at Dracut (now Lowell) Academy.

When seventeen years old young Raymond was apprenticed to the Massachusetts Cotton Mills Company to learn the machinist trade, and in that capacity he worked at that trade in that company's shops for three years; and another three years as a journeyman. In 1849 he removed to Bristol, Conn., where, after a few years, he engaged in business on his own account. While thus employed his attention was directed to the efforts others were making to perfect a practical sewing machine. His inventiveness prompted him to experiment in this field, his knowledge of mechanics being of great value to him, and in 1852 he constructed a machine according to his own ideas, which he believed was nigher perfection than any other extant. While endeavoring to perfect some essential improvements, however, Mr. Singer, experimenting with the same object in view, patented his now celebrated sewing machine, and Mr. Raymond's hopes were subjected to a terrible disappointment. Abandoning this idea for a time, Mr. Raymond turned his attention to the manufacture of clock-making machinery, the manufacture of clocks being at that time the principal industry of the place. After four years, however, he again turned his attention to the sewing machine, in connection with which he invented and introduced several new devices; and his first patent was granted to him in 1857. Since then his inventive genius has been actively at work in this direction, and he has been granted patents in the United States, Canada and Great Britain on valuable sewing machine improvements.

In 1858 Mr. Raymond commenced the manufacture of sewing machines at Brattleboro', Vt.; and in 1860 he made an effort to establish the business in Montreal, but the difficulties to be overcome were too great to admit of its being made a success, and he was forced to yield, sacrificing a large portion of the capital he had thus invested. Nothing daunted, he determined to try another point in Canada at which to establish a factory for the manufacture of sewing machines; and in 1862



he located in Guelph, where he began to make his well-known little hand machine, now in general use and high favor all over the world. This enterprise proved to be remarkably successful; and as the business increased the works were enlarged, new and improved machinery added, and different styles and patterns of machines and cases adopted and included in the catalogue; and now a very gratifying share of all the business done in this line in the Dominion is transacted by this enterprising gentleman. The large sums of money which Mr. Raymond is constantly paying out in wages to his employees is a very important factor in the prosperity of the city of Guelph.

Mr. Raymond's manufacturing plant consists of a foundry 108x45 feet, of brick; a factory building, also of brick, 130x40 feet, three stories high, with a wing 108 feet long, in which the finishing work is done and the sewing machines built ready for the table; a third building, of stone, two and three stories high, in which all the tables are built and all wood work done; and a fourth building, also of stone 210x30 feet, two stories high, which contains the varnishing rooms, and setting up, inspecting, storing and shipping departments. These works are all thoroughly furnished and equipped with the latest improved machinery, and have a capacity to produce from 15,000 to 20,000 sewing machines per year. The present annual output, however, is about 10,000 machines, 7,000 of which are sold in Canada, the balance finding markets in England, France, Spain, West Indies and South America.

Mr. Raymond has been an active member of the Canadian Manufacturers' Association for years, and is one of its executive committee; and is a strong supporter of the National Policy.

#### TWO EDGED ANALOGY.

The Toronto *Mail* "arguing from analogy," trying to show that Free Trade between Canada and the United States would be a good thing for Canada, goes back a couple of hundred years to show that "the restrictions which at that time severed Ireland from England commercially had reduced the smaller country to bankruptcy"—that "Ireland suffered most severely from the exclusion of her products from the English market." It also cites the case as related to Scotland prior to the union with England, and declares that "the Scottish Parliament fell a victim to the prevalent superstition of the age, that prosperity was to be promoted by taxation." It goes on to show that "from this notion which the growing experience of mankind has discredited, spring the balance of trade theory and the protectionist system at large;" making the discovery that "the Scotch, like everybody else, discovered before long that restriction and tariff wars brought not prosperity, but stagnation." It quotes from Leckie the statement that after the union had been effected the results "reconciled the most intelligent Scotchmen to the partial sacrifice of their nationality." "What," asks the *Mail*, "must the people of Britain, looking back upon their own experience, think in their hearts of those who assert that Canada and the United States are benefitted by maintaining the barbarous policy which England and Scotland abandoned two centuries ago?"

In deducting its conclusions it asks its "restrictionist contemporaries" to bear in mind that, even if Free Trade between two contiguous nations had never before been tried, it is rapidly being forced upon Canada by the march of events in the United States; and it wants to know if there is a "restrictionist" outside the Manufacturers' Association, or even inside that body, capable of persuading himself that we can afford to maintain a higher rate of taxation than that prevailing across the line.

Canadian statesmanship does not need to cross the ocean and go back two hundred years to discover a situation that bears no analogy whatever to that which exists to day as between Canada and the neighboring republic; and, therefore, it ought not and will not adopt or imitate it. Whatever may have been the woes of Scotland, which condition, the *Mail* says, is "more to the point than that of Ireland," it is certain that that country gave a forced and unwilling assent to its political union with England, and the drift of the *Mail's* argument is to show that Scotland was never prosperous until the union was effected, its prosperity coming through that union and the removal of the international tariff barriers. But it fails to state the fact that while Free Trade thereupon existed as between Scotland and England, even as Free Trade now exists between all of the states of the American union, England then maintained what the *Mail* stigmatizes as a "restrictionist" policy, levying protective duties on nearly every article imported from foreign countries.

If, then, "arguing from analogy," Scotland, although a part of the British Kingdom, became so prosperous under the high protective tariff that England then enforced, why should not Canada similarly prosper under a similar system? The *Mail's* argument is that Scotland, abandoning "a prevalent superstition," i.e., protection as against England, by unwillingly becoming a part of the British Kingdom, suddenly found itself lifted from abject poverty to wealth and affluence under a kingdom-wide protective policy that operated against all the rest of the world; following its analogical reasoning concludes that Canada should also abandon its "prevalent superstition," i.e., its National Policy of protection as against the United States, by effecting a similar union with that country, and as an integral part of the United States find itself lifted from out of the situation in which it now is, and a sharer of the wealth and affluence of the Yankee nation. The *Mail's* "argument from analogy" seems to possess the nature of a boomerang or a two-edged sword.

According to Leckie, the results of the annexation of Scotland to England two hundred years ago "reconciled the most intelligent Scotchmen to the sacrifice of their nationality." Could the same be said of Canadians to day? Would the results of the union of Canada to the United States, as suggested by the *Mail*, "reconcile any intelligent Canadian to the sacrifice of Canadian nationality?"

The *Mail* seems to think that the geographical fact that the territories of Canada and the United States are contiguous even as the territories of Scotland and England were contiguous, therefore no member of the Manufacturers' Association, or any other Protectionist Canadian, "could persuade himself that we can afford to maintain a higher rate of taxation than that prevailing across the line." It says, "The



re-election of Mr. Cleveland in November will be followed by a large reduction of the American tariff, since he is asking the American people to give him a mandate to that effect." Mr. Cleveland and his Free Trade party may ask a "mandate," but it does not necessarily follow that the people to whom he appeals will grant it; and it is begging the question for the *Mail* to base an argument on that assumption. The United States is even more strongly "protective" than Canada, but the idea that the "contiguity" of the two countries should exert any physical influence in Canada's fiscal policy is preposterous. In many respects Canada holds a similar position towards the United States as that country bears towards England, the separating line being the St. Lawrence River and the Great Lakes instead of the Atlantic Ocean. If the "contiguity" of the United States should have the effect of bringing Canada under the domination of that country, why should not, by the "argument of analogy," the "contiguity" of England make her Free Trade ideas dominate in the Republic? In so important a matter the elements of time and space, in these days of fast steamers and electric cables, should be of small consideration. It might be possible for the United States to successfully use the "arguments" to induce Canada to enter into such a "union" that England used two hundred years ago to influence Scotland in a similar direction. We do not think, however, that such an issue will be presented, and we are very certain that under no other circumstances could such a union be brought about. The contiguity of territory "argument from analogy" is worthless. Canada can and will take care of herself.

#### GIVE THE BOYS A CHANCE.

At the recent meeting in Cincinnati of the American Medical Association, it was proposed to adopt strong measures for reducing the number of medical graduates and the number of medical colleges. This scheme is a nearly exact reproduction of that of the trades unions to restrict the number of apprentices. It may be conceded that there is an over-production of doctors—for all the professions, so-called, are over-crowded; and there seems to be a surfeit of lawyers and clergymen, as well as of physicians. The labor unions claim that there are too many skilled mechanics; and with all these walks of life over-crowded, there is but little wonder that those who are specially interested in them should discuss the methods of how best to thin them out. The community suffers from an excess of doctors, many of whom are nothing but licensed butchers; of lawyers, many of whom are shysters who know less of law than of doubtful methods of obtaining fees from verdant clients; of clergymen, many of whom are ignorant of theology, and whose ideas of religion are to consign to Hades all who do not accept their dogmas; and of unskilled mechanics who know but little about how good jobs of work should be done. Of course there are good men in all trades and professions, and those who are not good reflect more or less discredit upon them; but it is clearly unfair and unjust that these good men should strive to prevent others from becoming their competitors in business. That is, they have no right to employ forcible means to prevent such competition. Every man, or youth, has an inherent and inalienable right to select his own path in life, and when that right is interfered with, it

is a blow at personal liberty which all should resent. Those who offer any obstacle to any person entering or pursuing any particular employment declare, in effect, that the business in which they may be engaged was entered by them because they chose to enter it, but they will not allow others to engage in such business if they have the power to prevent it. This is preposterous, impudent and indefensible. Shut a youth out from a profession and he will naturally gravitate toward a trade; deprive him of the opportunity to learn a trade, and his ambition will lead him towards a profession; shut him out from both and he inevitably becomes a useless idler. Give the boys a chance. In whatever direction their preferences may be, encourage them. They will eventually make a spoon or spoil a horn. Those who have abilities will develop them—some will become eminent physicians; some learned lawyers and judges; some earnest and useful ministers; some master mechanics, and others will sink out of sight and be forgotten. But don't keep them back. All good lawyers, doctors, ministers and mechanics are producers of wealth, and the world is all the better because such men live in it. The requirements of the law of supply and demand are imperative. The way to restrict over-production in these professions—but then we are not Malthusians.

#### 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.

**WANTED.**—One set 36-inch Buhr Stones. Mr. Jackes, 342 Berkeley Street, Toronto.

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

**LOCOMOTIVES FOR SALE.**—Three second-hand locomotives for sale—standard gauge, suitable for construction purposes. John J. Gartshore, 49 Front street west, Toronto.

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

#### EDITORIAL NOTES.

THE CANADIAN MANUFACTURER is the brightest and best Dominion exchange that comes to our round-table. The evidences of its prosperity, and power for the promotion of Canadian Industries are many and pleasing. *Farm Machinery, St. Louis, Mo.*

OUR valued contemporary, *Stoves and Hardware, St. Louis, Mo.*, is now published every week instead of twice a month as heretofore. Although the number of issues is more than doubled, yet the size and number of pages remain the same, indicating that a permanent demand exists for just such a journal. Yankee manufacturers evidently know a good thing when they see it. Congratulations.

"It is not generally known that boiling tar will set wood on fire. On Friday afternoon a kettle full of it upsetting on the roof of a rear building belonging to Mr. Griffiths, butcher, Spadina Avenue, fired the boards along its entire course."—*Toronto Globe*. There is no more truth in the story that "boiling tar will set wood on fire," than there is in that which declares that gasoline stoves will explode. Boiling tar, as well as gasoline, will take fire on the touch of flame, and so will coal oil, illuminating gas, and many other substances.

THE CANADIAN MANUFACTURER is publishing very fine and elegantly got up plates of what it calls the "Captains of Canadian Industry." The third plate contains the very familiar faces of Wm. Bell, of Guelph; John R. Barber, of Georgetown; John Bertram, of Dundas; and William Chaplin, of St. Catharines. All these men are great because of the N. P., and to make the work complete, the father of the N. P. shouldn't be left out in the cold.—*Berlin, Ont., Daily News*.

Don't crowd us, brother Moyer; our quadruplication of "Captains" goes on regularly twice a month. The procession proceeds in good order, and the "father" will appear in good time. He will not be left to shiver alone.

THE CANADIAN MANUFACTURER.—The last issue of this excellent manufacturing journal contains photographs of four of the leading "Captains of Canadian Industry."—Messrs. William Bell, organ and piano manufacturer of Guelph; John Bertram, machine manufacturer, of Dundas; John R. Barber, paper manufacturer, of Cornwall; and William Chaplin, axe manufacturer, of St. Catharines. Strange to say, three out of the four are Scotchmen, and Protectionists too, going to prove that auld Scotia's sons are making their mark in Canada. Accompanying are brief sketches of these gentlemen, which form interesting matter. The MANUFACTURER is to be complimented on its enterprise, and it deserves well at the hands of the important interests it serves.—*Pembroke, Ont., Standard*.

THE disintegration of the Knights of Labour in and about Chicago, is going on at a rapid rate. The *Chicago Times* says that ever since the great rebellion was started, after the annual convention last October, the desertions have been many. The "rebels" have not succeeded in getting a great many Knights to join the new provisional organization. The whole number of persons now paying taxes to the Provisional Committee is about 30,000. It is a pretty large number, but nothing to compare to the number of those who have been induced by the rebellion more than anything else to leave the Knights of Labor altogether, and either give up labor organization or join the trade unions, distinct assemblies based simply on geographical location collapsing. District Assembly No. 24 has fallen in membership from 24,000 in 1886 to about 6,000 now, and but very few of the local assemblies are able to keep up their regular meetings.

THE *Montreal Star* makes the suggestion that that city should have an industrial school for her waifs and strays, and thus give useful trades and callings to boys and girls who would otherwise swell the criminal classes. Industrial schools for the same purpose have succeeded elsewhere and there is no reason why a successful one should not be founded in Montreal.

A move was recently set on foot in Toronto to introduce a system into some of the public schools here by which the boys might be initiated into the mysteries of handling the hammer, hand-saw and jack plane, but a vigorous and effective kick from the labor organizations killed the scheme while it was a bornin'. No matter how much a mechanic, being a member of a labor organization, may love his children, and desire to see them in position to get along in the world when they become grown, he cannot take even his own son into his shop with him to teach him his trade, without the consent of his organization, which he may be very sure will not be given. It would increase the number of workmen, and that cannot be allowed, unless it be by the incoming of strange mechanics, who are quickly absorbed into the organizations.

The annual statistical report of the American Iron & Steel Association for 1887 presents some interesting comparative figures in the iron and steel industries of the United States and Great Britain since 1878. The pig-iron product of the United States for 1887 was 6,417,148 tons, against, 5,683,339 tons in 1886, an increase of thirteen per cent. The Southern States, not including Mississippi, yielded 829,854 tons, an increase of six per cent. over their product in 1886, and 134 per cent. over that of 1880. Sixty per cent. of the whole American product was made by bituminous coal and coke, and twenty-six per cent. by coke and anthracite. In 1880 the United States produced only 2,301,215 tons against, 6,300,000 tons of British. The highest British annual product since 1878 was 8,493,287 tons in 1882, against 4,623,323 American. In each of the years referred to the United States gained rapidly on the percentage of the total product, and last year's figures were: British, 7,441,927 tons; American, 6,518,184 tons, or 46.3 per cent. of the whole. The production of steel rails was 2,049,638 gross tons, against 1,526,410 tons in 1886, and 959,471 tons in 1885.

THE last issue of the CANADIAN MANUFACTURER is embellished with a page of photographs of four of our leading manufacturers, reproduced by the artotype process. The likenesses of these "Captains of Industry" are splendid specimens of artistic work, and reflect the highest credit upon the Canadian company that executed them. Accompanying these photographic reproductions is a biographical letter-press account of the gentlemen illustrated, which will be found most interesting reading, inasmuch as they conclusively show that Canada is indeed a country where merit has a fair chance to reach the top of the ladder. We heartily commend the enterprise of our talented contemporary, not only on account of the expensive and beautiful illustrations it is furnishing of prominent citizens, but also for the educating influence that the publication of their career must have upon an ambitious and thinking class of readers, such as the MANUFACTURER undoubtedly possesses. The lesson from the commercial success of the prominent gentlemen illustrated, is, that in this country every sober, industrious man has a chance, and that the workman and employee of to-day may be and often is the capitalist and employer to-morrow.—*The Trader*.

## COMBUSTION OF FUEL.

(Written for the CANADIAN MANUFACTURER.)

WITHOUT going into an analysis of the different constituents of coal, or a mineral scientific enquiry regarding the chemical changes which are effected to bring about its combustion perfectly, I purpose to state a few outstanding commonsense facts, sufficient to show what combustion really is, and what conditions are necessary to effect it. Coal has for its main constituents carbon and hydrogen, the former in the proportion of about 80 per cent; the latter 5 $\frac{1}{2}$ . In the natural state of the coal these two elements are united and solid, and so long as they remain so neither can be consumed. On the one hand the carbonaceous portion is combustible in the solid state only, while the bituminous portion is converted to the purpose of heat in the gaseous state alone. These three distinctions are important, and to be essentially kept in mind, and since, after a charge of coal is thrown on a fire, we have no control as to the quantity of the generation of gas, but can regulate the supply of air to any degree. We reason that, for practical purposes, effective combustion comes to be a question more of the air than the gas. Combustion is not a quality of the combustible taken by itself, but is strictly chemical union—the union of that combustible with oxygen which is therefore termed the “supporter” of combustion. Neither the combustible nor the supporter of combustion, taken separately and alone, can be consumed. If a lighted candle be inserted into a jar of coal gas it is instantly extinguished, rather than causing the gas to inflame, showing that the gas is really not inflammable itself. When a fresh charge of coal is thrown on the furnace, what effect does it produce on the furnace? what becomes of the coal? The immediate result is that the coal instantly absorbs heat, which is the source of the volatilization of its bituminous portion, or, in short, causes the generation and disengagement of gas from which alone flame is derived. From this we learn two points: First (and this is a point too often lost sight of by present day firemen) the importance of always keeping a sufficient body and regular distribution of incandescent fuel on the bars, especially when a fresh charge is about to be thrown in, since the heat necessary to effect the gas generating process is derived from the remaining portion of the previous charge, then, of course, in an incandescent state; in other words, to avoid allowing the fires to burn too low. Second, we learn that the immediate effect of throwing a fresh charge of fuel into an active fire is not, as might be supposed, to raise the temperature of the furnace, but tends rather to reverse it, by reason of the quantity of heat which is directly converted from the sensible to the latent state. Until the whole of the bituminous constituents have been liberated from every atom of the coal, its solid portion is quite inoperative as a heating body; it must wait its turn of that heat essential to its own combustion. First, then, we will consider the gaseous portion. Coal gas is composed of hydrogen and carbon; and the first point to be ascertained towards effecting its combustion is the quantity of oxygen with which it will chemically combine, and the quantity of atmospheric air necessary to supply such oxygen. The natural law pervading the reciprocal saturation is—that bodies combine in certain fixed proportions only, both in volume and weight. When heat is applied to the coal gas (hydrogen and carbon) as when it is lighted, if duly mixed with air the hydrogen on the one hand separates itself from its fellow constituent, the carbon, and forms a union with oxygen, the product of which is water. The carbon, on the other hand, unites with its equivalent of oxygen, the product of which is carbonic acid gas. Next, as to the relative proportions in which these gases unite. In the formation of carbonic acid gas, one atom of carbon vapor and two atoms of oxygen unite, the value of oxygen being double that of carbon. We have thus arrived at the quantity of oxygen necessary for the combustion and saturation of two constituents of the coal gas. What remains to be ascertained is the quantity of atmospheric air necessary for the supply of such quantity of oxygen, and since we know exactly the proportion in volume which oxygen bears to that of the air, we can do so without difficulty. Atmospheric air is composed of 20 per cent. oxygen and 80 per cent. nitrogen—that is, the oxygen is one fifth of the bulk of the air. Such being so, five volumes of atmospheric air will be found necessary to supply one volume of oxygen; and since we want two volumes of oxygen for each volume of coal gas, it follows that to provide these two volumes we must provide ten volumes of air. We have thus arrived at one important result, and found the necessary quantity of atmospheric air for the combustion of the gaseous portion of the coal. I shall now endeavor to answer a similar question concerning the carbonaceous part, which, after the gaseous matter has been evolved, rests in a solid state on the bars. Carbon is susceptible of uniting with

oxygen in two proportions, first, carbonic acid; second, carbonic oxide; which are two distinct bodies possessing distinct chemical properties.

(To be Continued.)

MR. WILLIAM BRYCE, publisher, Toronto, has sent us Bryce's New Indexed Map of Toronto, which, being carefully corrected, shows the street car routes, distances and all points of interest, including public buildings, banks, hotels, etc., and every street in the city, and how to find it. Pocket edition, 25 and 50 cents, and for wall, 50 cents and \$1.00 each.

MISS HELEN BLANCHARD is a Maine girl who has made her mark in the world. Now a resident of Philadelphia, she is a Portland girl who has made a fortune through the invention of a simple “over and under” attachment for sewing machines. When she discovered the device she had to borrow money to pay the first patent office fees. She now owns large estates, a manufactory and many patent rights that yield her a large income in royalties.

“MANUAL OF ENGINEERS' CALCULATIONS” is the title of a book recently published by Mr. D. McL. Smith, by Messrs. Barnes & Co., St. John, N.B. It is full of the kind of information necessary to a correct understanding of the management of the steam engine, which is set forth in a clear and concise manner; and there are numerous drawings, tables, rules, etc., which enable the reader to understand the methods adopted by the author, who has had a long and practical experience as an engineer.

The Berlin, Ont., *News*, comes to us arrayed in a new dress that is exceedingly becoming. The new type with which it is printed was manufactured in Canada, by Mr. J. T. Johnson of the Toronto Type Foundry. We hope that the *News* will now find time for its enterprising reporters to investigate the manufacturing industries which abound in Berlin, and make the world acquainted with what they are doing. It promises to use greater exertions than ever “to serve the public and advance the interests of Canada,” and we suggest that much may be done in this direction by the method indicated.

SCIENCE AND POETRY, and other essays, by Andrew Wilson, M. D., F. R. S. E. Published by J. Fitzgerald, 24 East 4th St., New York, post-free Fifteen cents. “Does Science necessarily destroy Poetry?” is the question the author considers in the very luminous essay which leads in this interesting little volume. It means, in effect, does science tend to extinguish the poetic faculty? Our author says, No: the true mission of poetry is to lead us to see fairer aspects of things, to cultivate the beauty-sense, and to lead us to see nature in her thousand moods, even if the thoughts it evokes are oftentimes “too deep for tears.” As the expressions of the deepest emotions of the human soul, poetry can never fade. The other essays comprised in this collection are “Biology in Education;” “Science Culture for the Masses;” and “The Law of Likeness and its working.”

The D. Lothrop Company, Boston Mass., publishers of that beautiful magazine for children—*Wide Awake*, are offering ninety-four prizes aggregating two thousand dollars in value, for excellent writing—the best thoughts most happily expressed, suitable for publication in *Wide Awake*. It may be an essay, story, anecdote, poem, verse, a bright and pithy saying, a happy hit—any such things stand a good chance to obtain a prize. The offer is made to all in any way connected with American or Canadian schools—college presidents, primary scholars, poets, boys and girls, teachers,—all are on a level. Those who wish to compete must do so before December first. The manuscript will be submitted to a committee of disinterested judges who will award the prizes in time to announce the result in the holiday number of *Wide Awake*. Further information can be had from the D. Lothrop Company.

MR. GEORGE JOHNSON, statistician of the Dominion Department of Agriculture, Ottawa, has sent us “Johnson's Graphic Statistics,” having reference to the development of trade in Canada from the creation of Canadian Confederation, in 1867, to and including the year 1887. In the preface of the book it is mentioned that 1887 is a marked year in the history of Canada, notable as being the twentieth of our national confederation, and one whose statistics will form the standard of comparison with the past as well as of the future. These statistics are suggestive of the changes in and illustrative of the development of the trade of Canada during the period of confederation. The book consists of a series of eighty diagrams, printed in colors, which explain at a glance the features under discussion. It is a most valuable addition to the standard statistical works on Canadian history.

THE Board of Customs rendered the following decisions during the month of June:—Acid phosphate powder, for making baking powder; starch being usually one of the largest component parts, is subject to duty as such, except it can be shown that it contains no starch in any particular case, 2c. lb.; bronze wire, as copper or brass, free; building plans, 20 p.c.; clinical thermometers in hard rubber cases, 25p. c.; French capers in vinegar, free; granulated silver, not further manufactured, free; imitation leather gimp, 30 p.c.; inside sliding window blinds, 35 p.c.; land plaster, ground, 10c. per 100 lbs.; patent turpentine, a compound containing petroleum spirit, 7½c. per gall.; porcelain opaque ware, 35 p.c.; rosin oil 20 p.c.; rugs, lap or railway, wholly or part wool, as they come from the loom, 7½c. lb. and 20 p.c.; the same cut to shape, bound, sewn or otherwise manufactured, as clothing, 10c. lb. and 25 p.c.; wire window screens, 35. p.c.

THAT Protection does not always increase the cost of the manufactured article to the consumer is practically illustrated in the case of drain pipes. Before the N.P. came into operation, all the drain pipes used in Canada were imported. They came chiefly from Scotland. But within the past few years two drain pipe factories have been started up in the Dominion—one in Hamilton, the other in St. Johns. The importers of the Scotch pipe, who had up to this time a monopoly of the business, fought hard against the domestic article, and particularly struggled against the St. Johns pottery. But it was of no avail. In various tests and trials the superiority of the Standard Company's pipes was proved beyond a doubt, besides they were offered to the public at from forty to fifty per cent. less than the Scotch pipes had ever been sold for. Montreal is now getting its drain pipes for one-half what it previously paid besides securing a better article. A more striking illustration of the importance of encouraging infant industries could not be well furnished. Had it not been for Protection the drain pipe potteries would not have been started here.—*St. Johns (Que.) News.*

INVITATIONS have been extended to all nations to participate in the proposed "Exhibition for the Prevention of Accidents," which is to be opened at Berlin, Germany, in April, 1889. The articles to be exhibited will consist of machinery and all other appliances to guard against accidents. Photographs, drawings and specifications regarding the same subject will be admitted, as will also all rules, regulations and other printed matter relating to protection against accident. All users of protective devices, whether manufacturers or constructors thereof or not, are invited to send exhibits. The exhibition will be divided into three departments, subdivided into groups. Two departments will be devoted to the exhibition of the various devices used by all trades or interests, while the third department will embrace all literature in relation to those subjects. Objects for exhibition must be forwarded free of cost between the 1st and 15th of March, 1889. Applications to enter, or for space for exhibits, must be made before July 1, 1888. If made after that date they will be considered only if any vacant space remains. Cheap transportation, freight, and custom house facilities will be secured by the committee having charge of the exhibition. The German Government gives the place of exhibition to the committee free of charge. Communications should be directed to Max Schlesinger, secretary of the exhibition, 3 Koch street, Berlin.

THE oil-producing territory of Canada, now being worked, is of a limited area. It lies in Lambton county, Ont. The largest number of wells is in the vicinity of Petrolea, where the refineries are situated. The territory is divided into two districts, Petrolea and Oil Springs. Of these the Petrolea field is the largest, producing annually 350,000 to 450,000 barrels of crude oil. The Oil Springs district output is 150,000 to 200,000 barrels yearly. The paying wells are confined to a belt of land two miles wide and sixteen miles long, situated about sixteen miles east of Port Sarnia. There are nine refineries at Petrolea, producing 250,000 barrels of refined oil annually. The oil industry in the Petrolea district employs 3,000 men, and a population of 8,000 is dependent upon it. The capital invested in the business is \$2,750,000, of which the cost of the wells is \$1,500,000, and the cost of the refineries is \$500,000. There is in the district a pipe line sixty miles in length, costing with its machinery \$150,000. Economy in the cost of drilling the wells and refining the oil is imperatively necessary in the Canadian industry, owing to American competition, from which a duty of 7½c. a gallon does not protect. As it is, about 200,000 barrels of American oil are used annually in Canada, retailing at 30 and 35 cents per gallon, against 15 and 20 cents for the Canadian product. Canadian wells are small, the majority producing three to ten barrels daily. There are 3,200 wells in the oil territory, and the total value of the production in 1887 is placed at \$2,000,000.—*Bradstreets.*

## 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.

A FINE bed of lithographic stone has been discovered near Lakefield, Ont.

MR. JACKES, 342 Berkeley Street, Toronto, desires to purchase a set of 36-inch Buhr millstones.

THE Dominion Fire Escape Company, Montreal, has been incorporated with a capital stock of \$2,000.

THE shingle and heading factory of Mr. D. Tennant, Hepworth, Ont., was destroyed by fire July 11. Loss, \$2,000.

THE carding mill of Mr. William B. Bradley, at Huntley, Ont., was destroyed by fire July 6. Loss, about \$10,000.

THE immense saw mills of Messrs. Lafrencere, at Louiseville, Que., were destroyed by fire July 12; loss, about \$100,000.

THE Chaudiere Electric Light and Power Company, Montreal, will increase their capital stock from \$40,000 to \$100,000.

FIRE in the chemical works of the Rathbun Company at Deseronto, Ont., on July 8, destroyed \$30,000 worth of property.

MESSRS. DAVIDSON & HAY, Toronto, will build a large steam sawmill on their newly acquired lands on Lake Nipissing, Ont.

MR. JAMES WALLACE, confectioner, Belleville, Ont., has procured machinery for a new biscuit factory, which he will shortly put in operation.

THE woolen and carding mills of Messrs. Taylor & Davidson, near Antigonish, N.S., were destroyed by fire June 23rd. Loss, about \$7,000.

MR. W. J. ROBINSON, manufacturer of wool mats, etc., will remove from Toronto to Newmarket, Ont. He will give employment to ten hands.

MR. J. M. SCHRIEBER, Sunderland, Ont., is exhibiting a new stove, invented and patented by him in several countries, for which he claims great merit.

MR. A. KENNEDY, who has recently purchased the woolen mill at Earnestown, Ont., has added new machinery, and placed the mill in first-class order.

THE lumber mill of Mr. D. J. McLaughlin, at Pollett River, N.B., which was destroyed by fire in April last, has been rebuilt, and is in successful operation.

THE Halifax Iron and Steel Mfg. Co., Halifax, N.S., has been incorporated, with \$700,000 capital stock, for the purpose of manufacturing iron and steel.

THE Star Paper Box Company, Montreal, of which Messrs. Mace & Baillie are principal proprietors, had their works gutted by fire July 14; loss, about \$12,000.

GRAHAM'S carpet factory, Guelph, Ont., was partly destroyed by fire June 27th, in which nine looms and considerable material were consumed. Loss about \$1,000.

MESSRS. J. HARRIS & Co., St. John, N.B., have been awarded a contract for the construction of a large number of box cars by the Canadian Pacific Railway Company.

MESSRS. PORTER BROS., Peterboro', Ont., manufacturers of wheel vehicles, etc., have recently been making a shipment of their celebrated road carts to Glasgow, Scotland.

MESSRS. CLARE BROS., Preston, Ont., manufacturers of stoves, furnaces, etc., are making a 195x67 foot addition to their works, the building being of stone, three stories high.

MESSRS. J. & J. KERR, of Petrolea, Ont., who so successfully exploited the gas wells at Collingwood, Ont., have been awarded a contract to sink a gas well at Whitby, Ont.

# To Mill Owners and Manufacturers.

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**USE ONLY**  
**DIXON'S**  
**STAR-RIVET**  
**LEATHER**  
**BELTING**

IT WILL GIVE YOU  
*Thorough Satisfaction.*

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We can shew certificates from parties who have had Belts of our  
make in constant use for

**OVER FOURTEEN YEARS**  
AND STILL GOOD.

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**F. E. DIXON & CO.**

*MAKERS,*

**70 KING STREET EAST, TORONTO.**

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

MANUFACTURERS OF

**PURE OAK-TANNED**

**LEATHER BELTING**

**11 JORDAN STREET,**

**TORONTO.**

THE Algoma Mining and Lumber Syndicate will shortly commence work on some of their valuable properties at Goulias Bay and Garden River.—*Sault Ste. Marie (Ont.) Pioneer.*

THE Rathbun Company, Deseronto, Ont., as they announce in our advertising pages, are offering cedar oil of their own manufacture for cleaning boilers. It is "unexcelled."

THE Canada Screw Company, of Hamilton, Ont., will increase their capital stock from \$100,000 to \$500,000, to be vested in the American Screw Company, of Providence, R.I.

MESSRS. CHRISTIE BROS. & Co., Amherst, N.S., employ some twenty-five hands in the manufacture of coffins, burial caskets, etc. There output in 1887 was valued at about \$30,000.

THE new pulp mills of the Buckingham Pulp Company, of Montreal, now in course of construction at Grand Mere, Que., on the St. Maurice River, is rapidly approaching completion.

THE B. G. Tisdale Co., Brantford, Ont., call the attention of the trade to the iron stable fittings manufactured by them. Their card is in another page. Catalogues sent on application.

THE Enterprise Foundry Company, St. John, N.B., has been organized with a capital of \$40,000, and have acquired the foundry and business of Messrs. E. Cogswell & Co., Sackville, N.B.

MR. HENRY PORTER, Montreal, manufacturer of leather belting, etc., presents his business card in another page, and requests those who may be in want of any goods in his line to correspond with him.

MR. F. M. WILSON, Hamilton, Ont., is offering for sale a well established engine and boiler works and general machine shops in that city. This is a desirable opportunity for any wishing to acquire such a plant.

MR. E. G. ANDERSON, Victoria, B.C., will hereafter represent Messrs. S. Lennard, Sons & Bickford, Dundas, Ont., in British Columbia, for the sale of their "Elysian" seamless hosiery and other products.

THE Ashley Carriage Co., Belleville, Ont., who employ about sixty-five hands, have recently been making some shipments of goods to a transfer company at Banff Hot Springs, National Park, in the Rocky Mountains.

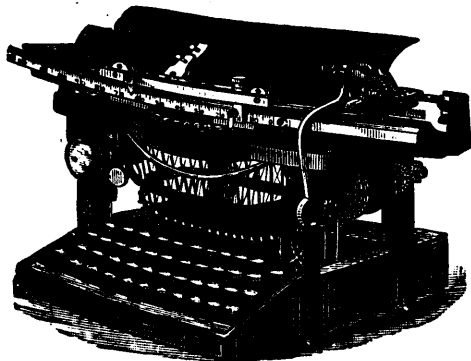
MESSRS. F. E. DIXON & Co., Toronto, manufacturers of Dixon's star-rivet leather belting, inform us that they hold certificates from parties who have had belts of their make in constant use for over fourteen years, and still good.

MR. L. C. MARSHALL, representing a Toronto concern engaged in the manufacture of paints, has applied to the Board of Alderman of Victoria, B.C., for a bonus as an inducement to his firm to establish a paint and color factory in Victoria.

MESSRS. ROSS & McLAREN, of Ottawa, will build a new lumber mill on their lately acquired lands near Westminster, B.C. It will have a capacity of 300,000 feet per day, and the lumber manufactured will be exclusively for the foreign trade.

MESSRS. C. HARRISON & Co., Cambridge, N.S., manufacturers of package dyes, ink powders, laundry blueing, etc., are said to have the only works of the sort in the Maritime Provinces. The goods are prepared for easy and immediate use.

## Remington Standard Typewriter



NOTE.—Our unqualified challenge for a test of all Writing Machines remains unaccepted.

Send for copy if interested.

Geo. Bengough,  
General Agent,  
36 KING ST. EAST,  
TORONTO.

# CANADA JUTE COMPANY, MONTREAL.

MANUFACTURERS OF

## Cotton and Jute Bags

IN ALL SIZES AND QUALITIES.

STARK BROS., AGENTS,  
TORONTO.

# HENRY PORTER, MANUFACTURER OF LEATHER BELTING

Visitation Street, Montreal, Que.

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

# MUNDERLOH & CO. MONTREAL, SOLE AGENTS FOR THE DOMINION OF Meyer's Watchman Control Clock.

REDUCED PREMIUMS ON FIRE INSURANCE  
SECURED BY USING THIS CLOCK.

Description and particulars on application.

# CANADA BANK NOTE CO. (Ltd.) MONTREAL.

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

**BANK NOTE PRINTERS,**  
**LITHOGRAPHERS,**  
**ARTISTIC PRINTERS.**

RAILWAY MAPS. GLOSSED LABELS.  
ARTOTYPE (PHOTO) PRINTING.



THE Mowat Manufacturing Company, Whitby, Ont., a new concern recently gone into the manufacture of agricultural implements, are well pleased with the success of their new centre-cut mower, the invention of Mr. Clokey, manager of the works.

MESSRS. PATERSON & HALL have just completed, at Midland, Ont., what is said to be the best laid out and equipped planing mill in the Dominion. The mill is furnished with all the latest and best designs of planing-mill machinery manufactured.

THE Anthes Manufacturing Company, Berlin, Ont., who recently suffered the loss of their factory by fire, have rebuilt the same and equipped it with the most approved machinery, and are prepared to turn out as many baby carriages and similar goods as ever.

THE Bay of Quinte Canning Factory, Picton, Ont., of which Mr. W. Boulter is proprietor, last season shipped twenty-three carloads of canned goods to Winnipeg and five to British Columbia. The prospect for a much larger trade this season is very good.

THE Montreal Cotton Company, Valleyfield, Que., are offering for sale the complete plant of a small woolen mill, including Knowles' broad and narrow looms. Any one desiring such a plant should bear this fact in mind. See their card in another page.

MESSRS. A. & W. OGIIVIE & Co., of Montreal, now have four new grain elevators under construction in Southern Manitoba along the line of the Manitoba and Southwestern Railway. They have each a capacity of 50,000 bushels, and will cost \$15,000 each.

THE Ogilvie Milling Company have selected Pilot Mound and Plum Coulee, Man., on the South-western Railway, as the points where they will erect the two elevators, in addition to the one at Glenboro'. The elevators will have a capacity of about 37,000 bushels each.

MESSRS. CLARRY & Co., Toronto, are commission merchants who handle wool, cotton, etc., and who are sole agents for the Hamilton Cotton Company's cotton warps. Their office is at "Manufacturers' Headquarters, 63 Front Street West, in Permanent Exhibition building.

THE strike of the nail-feeders of the American Nail Works, Hamilton, Ont., involves the nailers, shippers, shearers and assistants, etc., in all from fifty to sixty men and boys. Self-feeding machines, similar to those in use in the United States, will be placed in the works.

THE Victoria Rice Mills, Victoria, B.C., is a branch of the Royal Milling and Manufacturing Company of Montreal. They have capacity to prepare fifteen tons of rice a day, a large portion of which is put up specially for the consumption of Chinese living on the Pacific Coast.

MR. W. H. PETRIE, Brantford, Ont., who has one of the largest machinery depots in the province, calls attention to the fine assortment of second-hand engines, boilers, machinery, etc., he is offering for sale by catalogue. Any in need of such machinery would do well to consult him.

THE Canadian Pacific Railway Company propose to erect another large grain elevator at Owen Sound, Ont., and make all necessary improvements to enable large steamers to load and unload at them, provided the town vote a bonus of \$15,000 as an inducement, which it will undoubtedly do.

## CLARRY & CO.

### Wool and Cotton Dealers,

AND

### COMMISSION MERCHANTS.

ALSO SOLE AGENTS FOR

### HAMILTON COTTON CO'S COTTON WARPS,

WHICH HAVE NO EQUAL.

Don't forget the place, "Manufacturers' Headquarters,"

### No. 63 FRONT ST. WEST, - TORONTO.

In Permanent Exhibition Building.

Our motto shall be "Small Profits and Quick Returns."

## Fenwick & Sclater,

### 43 and 44 Foundling St., Montreal.

MANUFACTURERS OF

### Cast Steel Files and Rasps, Anchor Brand.

### Cotton Waste, white and colored.

### Asbestos Cement for covering Steam Pipes and Boilers-

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

### HOSE-Rubber, Canvas and Linen.

### HOSE-Cotton, Rubber-Lined for Fire Brigades.

SELLING AGENTS FOR

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

## A. C. LESLIE & CO.

### MONTREAL and TORONTO,

MANUFACTURERS' AGENTS FOR

### Iron, Steel, Wire, Tin, Plate,

### GALVANIZED IRON.

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

### BUYERS ARE INVITED TO OBTAIN PRICES.

### "JESSOP'S" STANDARD TOOL STEEL IN STORE.

### 1835 - 1888

## Phoenix Foundry and Locomotive Works,

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

## JAMES FLEMING

(Successor to GEO. FLEMING &amp; SONS),

MANUFACTURER OF

### LUCOMOTIVES, Marine and Stationary Steam Engines, Steam Boilers, Ship Tanks, and

### MACHINERY OF EVERY DESCRIPTION.

## The Wm. Hamilton M'g Co.

### PETERBOROUGH, ONT.

MANUFACTURERS OF THE MOST MODERN

### SAW MILL MACHINERY

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

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

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

THE *Colonist*, Victoria, B.C., is the oldest and best equipped newspaper in that province. It embraces complete printing, engraving and lithographing works; lithograph cards, labels, etc., being printed in several colors. A contract for 8,000,000 lithograph labels, in colors, for a salmon canning factory, was recently executed in the *Colonist* office.

THE McClary Mfg. Co., London, Ont., who recently bought out the estate of the Burn & Robinson Mfg. Co., of Hamilton, Ont., insolvents, are offering for sale in the latter city the goods so bought. These consist of bird cages, Rochester lamps, lamp goods, sash locks, sheet brass and copper, tin plates, dies, tools, etc. Great bargains are being offered.

MESSRS. McARTHUR, CORNEILLE & Co., Montreal, announce that they are offering, at closest prices, prime olive oil, winter-pressed lard oil, extra fine spindle oil, and a full assortment of other lubricating oils. They are sole agents in Canada for Societe Anonyme des Matieres Colorantes, et produits chimiques, de St. Denis—late Messrs. A. Pourrier and G. D'Alsace, Paris.

MESSRS. McMILLAN, KITTREDGE & Co., Petrolea, Ont., are offering to the trade stove gasoline of seventy-two degrees gravity, of their own make, which is of as fine and desirable quality as any manufactured by the Standard Oil Company. They also manufacture lubricating oils of the highest quality, for cylinders, engines, screw cutting, rolls, wool, harness, belts, etc.

THE old established firm of Messrs. Geo. Fleming & Sons, St. John, N.B., has been succeeded by Mr. James Fleming, who will continue the business in all its branches. In addition to the manufacture of engines, boilers, etc., this firm have made a specialty of locomotives, and have built a number which are now running on the Intercolonial and other railways in the Maritime Provinces.

REGARDING the additions to the buildings of the Williams' Piano Factory at Oshawa, Ont., recently begun, the new wing will be 195x50 feet, three stories high, making the total length of the building 336 feet. The present buildings will be thoroughly renovated and enlarged, while some of the smaller buildings will be torn down. The whole improvements will cost between \$26,000 and \$30,000.

THE Napanee Cement Company, Napanee Mills, Ont., call the attention of the trade to the fact that they are manufacturers of "Roach" lime hydraulic cement, which they warrant equal to any hydraulic cement manufactured in this country. It is particularly adapted for dams, smoke stacks, foundations, culverts, cisterns, cellars, etc. The capacity of the company's works is 400 barrels per day.

MR. GEO. BENGOUGH, Toronto, general agent for the Remington Standard typewriter, illustrates the general appearance of that essential article of office furniture in his card in another column. In these days of rush and hurry the busy business man avails himself of all time-saving devices to expedite his work, and the instrument here alluded to seems to fill the bill entirely in the direction indicated.

MESSRS. T. McAVITY & SONS, brass founders, St. John, N.B., are again increasing their facilities by the addition of a lot of new machinery and the erection of an extensive new wing to their factory. Messrs. McAvity & Sons do a considerable trade in Ontario, and certain of their specialties are well known to visitors to the Toronto Exhibition, who have there had an opportunity of seeing their inspirators, etc., in practical use.

THE rope works of Messrs. Thos. Connors & Sons, St. John, N.B., are working to their full capacity, and a large percentage of the output is for the Upper Canadian trade. The senior member, Mr. John Connors, finding everything progressing very smoothly, thought it a good time to take a well-earned holiday, and on June 27th started on a trip to the States, accompanied by his bride and the congratulations of a host of friends.

THE Wm. Hamilton Manufacturing Company, Peterboro', Ont., are using our advertising space to present their business card. They are manufacturers of the most modern saw mill machinery, including Allington's patent double column band mill with roller guides; single column band mills; Wilkin's patent compensating balance gang mills, in which no foundations are required; circular saw mills, and everything required in first class saw mills.

THE new iron steamer to be built for the Canadian Pacific Railway Company by the Polson Iron Works Company, of Toronto, at their new shipbuilding yards at Owen Sound, Ont., will be 300 feet long, 38 feet beam and 23 feet 3 inches depth of hold. The engines and boilers to be put into her will be those of the Algoma, which are in perfectly sound condition and ready for service. These boilers weigh thirty-five tons each, and were made in Scotland.

FOR  
**Cylinder, Machinery**  
& **Wool Oils**

WRITE TO

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

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

**McMillan, Kittredge & Co.**

HEAD OFFICE:  
Petrolea, - Ont.

BRANCH:  
Stratford, Ont.

MANUFACTURERS  
OF HIGHEST  
QUALITY



OF THE **OILS** FOR  
CYLINDERS, ENGINES, SCREW CUTTING, ROLLS, WOOL,  
HARNESS, 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.

**TO MANUFACTURERS!**  
**FOR SALE**

A fine Manufacturing Premises within easy reach of Toronto, in one of the most pleasant towns in Canada. No cash money required. Will take mortgage for whole amount at five per cent. per annum interest. Buildings all new, and aggregate over 16,000 square feet of floor surface. New boiler and engine. Shafting will be sold if required. Excellent shipping facilities. Free of all municipal taxes for ten years. Other substantial privileges go with the property.

For further particulars apply to

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

**ENGINE WORKS FOR SALE**  
IN THE CITY OF HAMILTON.

**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 Stratford Gas Company, Stratford, Ont., are putting in a fifty horse-power Otto silent gas engine, made by Crossley Bros., Manchester, England, as an auxiliary to the water wheel in their electric light station. The company claim that this is the largest gas engine this side of the Atlantic. It weighs  $8\frac{1}{2}$  tons, runs 160 revolutions per minute, and is said to be very economical on fuel. The fuel used is ordinary illuminating gas, no boiler being required.

THE shingle makers over in Michigan are reported to be engaged in cutting up every scrap of timber they can get hold of, not even the stumps escaping them. A machine has recently come into use which is moved into the woods and which slices shingle-length bolts off every decent stump within a radius of 100 feet. In this way, in the language of a Michigan man, the shingle mills are becoming the scavengers of the lumber region.—*Mississippi Valley Lumberman.*

MESSRS. BUTTERFIELD & Co., Rock Island, Que., and Derby Line, Vt., inform us that the partnership previously existing between F. D. Butterfield and H. S. Haskell, constituting that firm, was dissolved July 2nd. Messrs. F. D. Butterfield and F. G. Butterfield will continue the business under the same firm name. They manufacture stocks, dies and taps for blacksmiths, machinists, steam and gas fitters, etc. They will send illustrated catalogue on application.

THE work of constructing the projected Canada Atlantic Railway bridge across the St. Lawrence, connecting Coteau and Valleyfield, Que., has been commenced. The entire structure will be completed in a year. The work is in charge of Mr. George Mountain, chief engineer of the road. The bridge will be a steel structure, and is to cross two islands. It will have a drawbridge in the north channel to enable steamboats to pass through. The cost will be between \$1,000,000 and \$1,200,000.

THE Dominion Safety Boiler Co., Montreal, inform us that the "Field-Stirling" patent steam boilers manufactured by them for the Canada Sugar Refining Company's works in that city was fully tested on July 5th, and proved entirely satisfactory. This company have recently booked an order for one of their 200 horse power boilers for the works of the Pillow-Hersey Mfg. Co., Montreal. These works include the biggest chimney and the most extensive nail works in Canada.

THE silver and bronze medals to be granted this year by the Dominion Rifle Association to the different provincial associations, and the successful competitors at the September meeting at Ottawa, have been received by the secretary of the Association. They are supplied for the first time by a Canadian firm, Messrs. P. W. Ellis & Co., manufacturing jewelers, of Toronto, and, although fully equal to the medals obtained in England in past years, actually cost less than the English make.

MESSRS. A. C. LESLIE & Co., Manufacturers' Agents, who have offices in both Montreal and Toronto, present their business card in another page of this journal, and call the attention of the trade to some of the lines which they carry, included in which are enumerated iron, steel, wire, tin plate, galvanized iron, etc. They offer special values in steel bars, angles, sheets and plates. They carry full assortments of "Jessop's" standard tool steel in store. Buyers are invited to obtain prices.

THE Bell Telephone Co., Montreal, manufacturers of electric motors of every description for the operation of all classes of machinery, declared a dividend recently of one-and-a-half per cent. on the operations of the company for the first quarter of the current year; and it is understood that a dividend of two per cent. will be declared for the second quarter. Their works are in full working order, and the business of the concern is in the hands of skilful and experienced men.

THE British steamer, *Alaska*, recently arrived at Boston, Mass., from Chaleur Bay, N.B., had a cargo of 32,000 railway ties, which is said to be the largest cargo of the kind ever taken to Boston, and the *Alaska* is the first steamer to engage in the business. The shipment of railway ties from Chaleur Bay to Boston commenced about seven years ago, at which time small vessels were engaged as carriers, but since that time the business has yearly increased, and vessels of all sizes are now employed.

MESSRS. MILLER BROS. & MITCHELL, Montreal, sole makers for Canada, call attention to the Beaudry upright cushioned power hammer manufactured by them. This hammer is described as being the most handy, compact, and efficient tool ever invented, and is specially adapted for use of steel and machine forgers; file and vise

# BRUSHES

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

MANUFACTURED BY

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

ESTABLISHED - 1828.

## J. HARRIS & CO.

(Formerly HARRIS & ALLAN),

### NEW BRUNSWICK FOUNDRY.

RAILWAY CAR WORKS, | PORTLAND ROLLING MILLS,  
PARADISE ROW. | STRAIT SHORE.

PORTLAND, ST. JOHN, N.B.

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

## YOUNGER'S COUNTING-HOUSE GUIDE

Price 75 cts. at Book Stores, or from R. R. Younger, Gananoque, Ont.

"... The true system of bookkeeping outlined with singular clearness and brevity, the most simple and practical presentation of systematic bookkeeping we know of."—*The Merchant.*

THE

# Dartmouth Ropework Co.

*Halifax, Nova Scotia.*

MANUFACTURERS OF

## MANILLA, SISAL and

### Tarred Russia Cordage,

MARLINE, HOUSELINE,

### HAMBROLINE, SPUN YARN AND OAKUM.

SPECIAL ATTENTION GIVEN TO

## BINDER TWINE.

makers ; knife and cutlery makers ; axle, edge tool and agricultural implement manufacturers ; carriage builders, and all who need a first class tool of extraordinary capacity and adaptability.

THE Toronto Pressed Brick & Terra Cotta Co., Toronto, who have a capital stock of \$200,000, have bought 100 acres of land near Milton, Ont., sixty acres of which contains what is said to be a remarkably valuable deposit of clay, suitable for manufacturing the best quality of red pressed-brick, and for terra cotta work. The Company, of which Mr. Huson W. M. Murray, of this city, is president, and Mr. R. C. Dancey, manager, are now putting in a full output of the best brick-making and terra-cotta machinery.

MR. A. H. GALE, of Messrs. Geo. Gale & Sons, Waterville, Que., has gone to Melbourne, Australia, where he will represent his firm at the International Exhibition that opens there in August. Messrs. Gale & Sons are largely engaged in the manufacture of woven wire mattresses, large quantities of which are sold not only in the Dominion but in Europe also ; and now a strong effort will be made to include the Australian market. During his absence Mr. Gale will visit Japan, New Zealand, Tasmania, Sandwich Islands, and other countries of the far east, in order to establish trade connections with Canada.

MESSRS. E. COGSWELL & Co., Sackville, N.B., have merged their business into the Enterprise Foundry Company, with a capital of \$40,000, Mr. E. Cogswell being the president and manager thereof. Messrs. Cogswell & Co. control the Canadian patents on the Filley gauze over-door as applied to cooking stoves, and have been manufacturing the Filley Charter Oak stoves for a number of years, which business the new company will continue on a largely increased scale. This gauze over-door, which admits of the circulation of fresh air through the oven while food is being cooked, was a discovery rather than an invention.

MESSRS. FENWICK & SCLATER, Montreal, present an attractive card in another page in which they announce that they are manufacturers of "Anchor" brand cast steel files and rasps ; asbestos cement for covering steam pipes and boilers ; asbestos piston and joint packing ; asbestos and rubber piston and joint packing ; plum-bago packing ; rubber, canvas and linen hose ; cotton rubber-lined hose for fire brigades, etc. They are also selling agents for Asbestos Packing Co., Boston ; Boston and Lockport Block Co., Boston ; American Cotton Waste Co. ; Montreal Tent and Awning Co., and "Household" Fire Extinguisher Co.

SINCE the death of Mr. James Harris, the firm of James Harris & Co., St. John, N.B., is being conducted by Mr. Robertson, who for some years past has been the active managing partner of the firm, which controls one of the largest manufacturing enterprises and is one of the most progressive in the Maritime Provinces. In addition to building freight and passenger cars, which branch of industry they pursue very extensively, the firm own and operate a splendidly equipped rolling mill—in fact, their bar-iron mill is one of the best of its size in the country, having been recently built in accordance with the most modern practice.

MR. R. J. QUIGLEY, manager of the American Watch Case Company, of Toronto, and inventor of the new patent screw dust-proof case his company are now manufacturing in Canada, last month disposed of the United States patent for that invention to the Essex Watch Case Company, of Newark, N.J. The price paid is said to have been a large one, but as the company have an order for all they can make of them for the next two years, and have every facility for their manufacture, it is certain that they will make a good thing out of their purchase. If the jewelers of the United States are not slow to appreciate a good thing, the success of their venture is assured.—*The Trader*.

MR. J. J. GARTSHORE, Toronto, is offering for sale the Zebra spiral steel fencing wire which combines all that is desirable in a fence wire—strength, elasticity, endurance, and conspicuousness. It is not a barb wire, and will therefore turn animals without danger of injury, and from its peculiar construction gives ample facility for expansion and contraction. A fence constructed with five strands of this wire, "No. 8," costs only thirty cents per rod, against from 36½ to 40½ cents per rod for barb wire. Mr. Gartshore shows a large number of testimonials regarding the advantages in using this Zebra wire from farmers, merchants and others, including the Grand Trunk Railway Company.

MESSRS. MUNDERLOH & Co., Montreal, who are the sole agents for the Dominion for Meyer's Watchman Control Clock, publish a circular letter, written by Mr. Alf. W. Hadrill, secretary of the Montreal branch of the Canadian Fire Underwriter's Association, in which it is stated that the Meyer's clock fulfils the requirements

# Corliss Engines

## STATIONARY and MARINE ENGINES and BOILERS

High Economy and Superior Work Guaranteed.

## FLOUR MILL MACHINERY, CASE'S IMPROVED SYSTEM.

## CYCLONE DUST & SHAVINGS COLLECTORS.

## INCLIS & HUNTER, TORONTO.

## TORONTO MILL STOCK & METAL CO.

Wholesale Dealers in and Graders of

## Scrap Iron, Old Metals

PAPER STOCK, WOOLEN RAGS,

## COTTON AND WOOLEN WASTE,

ETC., ETC.

ESPLANADE, NEAR BAY ST.,

Telephone 1319. **TORONTO, ONT.**

## Engines and Boilers

NEW DESIGN OF PLAIN SLIDE VALVE

## SAW MILL ENGINES

Leonard-Ball Automatic Cut-Off Engines

## AND STEEL BOILERS

A SPECIALTY.

WE HAVE A QUANTITY OF SECOND-HAND COMMON ENGINES AND BOILERS FOR SALE CHEAP.

**E. LEONARD & SONS, London, Can.**

## Barnum Wire & Iron Works,

WINDSOR, ONT.

Bank and Office Railing, in Brass, Iron, Steel, Bronze or Plated.  
Church Metal Work, Altar and Pulpit Rails, Lecterns, etc.  
Architectural Iron Work of all kinds. Stairs, Gates,  
Fences, Stable Fixtures, Elevator Cabs and Enclosures, Grates, Fire Places, Andirons,  
Fenders, Fire Screens, Hall and Newel  
Lights. Fine Brass Castings, Fine  
Forging, Nickle, Brass and Copper  
Plating, Spinning, Artistic  
Metal Work.

DESIGNS AND ESTIMATES SUBMITTED. SEND FOR CATALOGUES.

TORONTO AGENT :

**H. W. BOOTH, - 65 Front St. West.**

For Specimen of Work, see Bank of Montreal, Toronto.

of the Association; and that, if it is regularly and systematically used in accordance with the rules of the Association, it will secure the reduction in rate of insurance provided for in the schedule for rating adopted by the Association. The attention of mill and factory owners is directed to this matter. Full information can be had from Messrs. Munderloh & Co.

THE Windsor Foundry Co., Windsor, N.S., are carrying the war into Africa by the establishment of a Toronto branch for the sale of their stoves and other manufactures. The managing head of the company is Mr. Clarence Dimock, who, although a young man, is possessed of a keen business instinct which, coupled with energy and perseverance, has led to the surprising development of an establishment which now ranks as probably the first of its class in the Maritime Provinces. Mr. Dimock has several times exhibited his products in Toronto, and his personal observations have enabled him to produce a line of stoves that can successfully compete in the western market both as regards design, finish and price.

A PROVIDENCE, R.I., manufacturer of oils, who is an expert, speaking of the value of petroleum as a wool oil, says "I can say that wool oils, composed in part of petroleum, have been brought to such a state of perfection in their manufacture, that in the hands of intelligent users the very best results are obtained from their use. I have no hesitation in saying that the use of such oils will continue to increase, for the reason that the experienced maker of wool oils knows that he can furnish an oil which shall be always of uniform quality, and so made as to meet all the requirements for a perfect wool oil. Very great attention has been given to the refining processes, and to the selection of such stocks as are best suited to this special manufacture; and further, very scientific methods are employed in uniting the compounded oils."

THE manufacture of brushes in the Lower Provinces is no new thing, a factory having been started in St. John, N.B., about the year 1870. In 1872 Mr. T. S. Simms came to St. John from the United States, buying an interest in the factory which has since come under his entire control, under the name of T. S. Simms & Co. Since that time the business has been trebled in its output, and from a small number the employees have increased to sixty, who have constant employment the year round. The firm have made a specialty of fine paint brushes, and although at first having to work against a strong prejudice in favor of goods from the United States, they have been enabled to overcome that altogether, so that now their brushes are in strong demand throughout the Dominion. They also manufacture all other kinds of brushes and brooms.

ARE we on the eve of a manufacturing boom? It is said that a number of concerns, attracted by our favorable situation, have an eye on St. Johns, and a possible bonanza in the way of a bonus. The latter, however, should not be calculated upon with too much certainty. To a good sound company, a firm with a well-established and paying business, no doubt our council and our ratepayers would be prepared to extend some assistance; but it might as well be understood at the outset that no adventurers need apply. There are few places in Canada that present as many natural advantages to the manufacturers as St. Johns. We have cheap labor, unrivalled railway facilities by great competing roads, water communication, and a healthy locality. We are so near Montreal as to be practically a suburb of the metropolis, and have ten passenger trains daily between that city and St. Johns. Under such circumstances it ought not to be necessary to hold out any very heavy pecuniary inducements to bring hither manufacturers.—*St. Johns (Que.) News.*

THE E. & C. Gurney Company, Toronto, have organized a fire brigade of their own composed of the workmen employed in their King street shops. There are two hose houses and two reels, each carrying 250 feet of hose. In addition to the city water supply there is a tank on the premises with a capacity of 60,000 gallons, from which water is pumped by an engine capable of forcing a stream 110 feet above the ground. There are alarm boxes throughout the building which indicate the location of a fire. When an alarm is sounded the engineer repeats it on a small steam whistle, the members of the brigade leave their work, rush to one of the hose houses, haul out the reel and connect the hose with the nearest private hydrant. Recently there was a satisfactory test of the system. An alarm was sounded, the men rushed from their work, and in 45 seconds they were playing on an imaginary fire. Water pumped by the city engines was first turned on, which went 85 feet into the air, but when the private pump was put in operation the stream shot up 110 feet.

## NEW BRUNSWICK CORDAGE WORKS, THOS. CONNOR & SONS,

MANUFACTURERS OF ALL KINDS OF

HEMP and MANILLA CORDAGE,

BINDER TWINE, ETC. ETC.

VESSELS' OUTFITS A SPECIALTY.

BINDER TWINE,

MANILLA CORDAGE,

CLOTHES LINES,

LATH AND PALING TIES,

LOBSTER MARLINE,

RATLINE,

LANYARD ROPE.

PORTLAND, N.B.

## To Manufacturers!

### THE LAND SECURITY COMPANY

OF TORONTO

Offer for sale or to lease a number of very desirable sites suitable for manufacturing purposes, among which they mention one lot containing 1½ acres, and one lot containing 1¾ acres on King Street west, on Subway, and on line of Grand Trunk, Toronto Grey & Bruce, and Canadian Pacific Railways. Also the contiguous property, containing about 3 acres, known as the Dominion Bridge Co's Works, having switches connecting with all the Railways entering Toronto. The Shops, Forges, Steam Power and Shafting are all in capital working order.

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

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

**WM. I. MACKENZIE,**

COMPANY'S OFFICES IN TORONTO,  
No. 7 VICTORIA STREET.

Manager.

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

A WEALTHY syndicate of Milwaukee and Chicago capitalists recently purchased over a thousand acres of mining lands near Goulais Bay, about fifteen miles west of Sault Ste. Marie, Ont., upon which they commenced exploratory work last fall. They encountered a vein of mineral, and have gone down on it for about ten feet, and an average sample of the rock taken from it at this depth assayed \$47 in gold to the ton. The rock is of such a soft character that it can be crushed with proper machinery, and the mineral separated, on a large scale, at from \$3 to \$4 a ton. Gold has also been found in a rich silver vein at Gros Cap, and in the copper ore of the Korah mountain mine, both near the Soo. Silver ore seems to be the predominant mineral of the district. At Gros Cap a very large vein can be traced for a mile or more, and carries an enormous percentage of silver, as shown by assays of the ore, which were made by Julius Ropes, of Ishpeming, a most thorough and reliable chemist. The natural and other advantages of Sault Ste. Marie as a great railway, commercial, and manufacturing centre are admitted superior to those of any other point on the upper lakes, but it would not be at all surprising if the future growth and prosperity of the city should be promoted in a very marked degree by the undoubtedly vast mineral resources of the district around it.

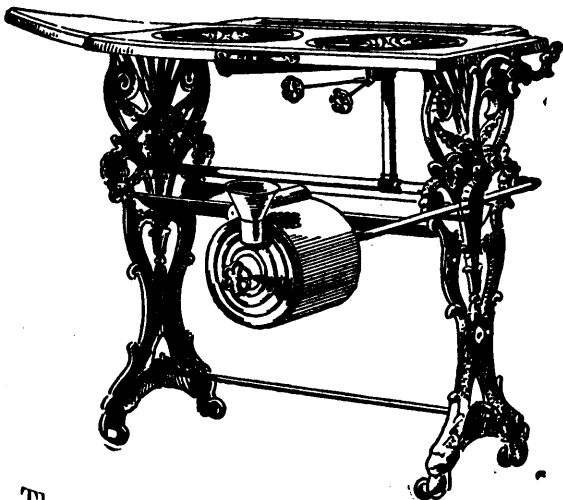
Messrs. KNOX & ELLIOTT, architects, Toronto, whose business card appears in another page, are gentlemen who have had large

experience in their business. Mr. Wilm Knox was in the business on his own account in Edinburgh, Scotland, for five years, during which time he was employed as architect on the Royal Edinburgh Asylum, and several other large and important buildings. Coming to Canada, he made the plans and superintended the erection of the Canada Screw Company's new factory at Hamilton, a detailed description of which was published in this journal in the issue of April 6 last, since which time, until recently, he was with the well known Chicago architects, Messrs Burnham & Root. Mr. Elliott is a native Torontonian. In 1879 he entered the office of Messrs. Ware & Van Brunt, architects, Boston, where his exceptional ability soon placed him at the head of the office, in which capacity he made the drawings and superintended the erection of several very important buildings in that city. From Boston he went to Chicago where he entered the office of Messrs. Burnham & Root as their principal designer, and with whom he remained until he and Mr. Knox determined to embark in the business together in Toronto. These enterprising and thoroughly skilled gentlemen are already being well patronized, having plans in hand for several large manufacturing establishments about being erected in Canada, detailed descriptions of some of which will appear later in these pages.

Work is being vigorously pushed on the Halifax dry dock, some one hundred and fifty men being now constantly employed. The excavation inside the dock is completed, over 78,000 cubic yards of earth and stone having been removed. The coffer-dam, which has proved one of the most successful structures of its kind ever constructed, has performed its office most satisfactorily. Outside the coffer-dam the rock excavation deepening the channel leading to the entrance of the dock, is being proceeded with. The boring and blasting of this rock, some sixteen feet below the surface, is conducted on the same principle as was employed in the blasting at Hell Gate, in New York harbor, and is a most interesting operation. The drilling is done on the surface, two powerful steam drills, each striking a blow of 1,500 pounds, being employed for the purpose. The drills are operated on a platform that will not rise and fall with the tide. An iron tube is first placed in position by a diver, and the drill works inside this. When the hole has been drilled the required depth, the drill is removed and dynamite cartridges lowered into position through the tube, and connected by wires to the firing

# Monarch Vapor Stoves.

(ALL SIZES.)



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

**ONE HUNDRED THOUSAND**

Were sold in the United States during the past year.

They are especially serviceable for summer use, doing the entire work of any ordinary cook stove, and with an absence of heat so desirable in hot weather.

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

**EVERY STOVE WARRANTED.**

**McCLARY MANF'G COMPANY**  
London, Toronto, Montreal and Winnipeg.



battery. Some fifteen or sixteen holes are fired at once, and the work proceeds apparently with as little difficulty as if in a dry cutting. There are over 8,000 cubic yards of this rock blasting to be done. The two powerful pumping engines, with a capacity of 50,000 gallons a minute, will be placed in position in the dock this summer, and the contractors hope, if nothing unforeseen occurs, to complete the dock this year. It will be one of the largest docks in the world, there being no other that will be able to accommodate a larger vessel. It will cost about \$1,200,000.—*Halifax, N.S., Critic.*

THE Barnum Wire & Iron Works, Windsor, Ont., inform us that their new factory buildings in Walkerville, Ont., are now about half completed, and that they expect to remove their entire works there about the 15th of August. The new buildings form three sides of a hollow square with an average width of forty feet. The frontage is 115 feet and the depth of each of the wings 171 feet, and there are accommodations for 250 workmen. They will manufacture all kinds of architectural metal work in brass, iron and steel. They will have in their new factory a large iron and brass foundry; machine shop; architectural wrought iron workshop; wire shop; weaving department; brass finishing shop; department for electro-plating in brass, bronze, nickel and silver; and they will be prepared to take contracts for all the metal work in a building, whether cast iron, wrought iron, brass or steel. This company is at present engaged in erecting the iron staircases and elevator inclosures for the British American Bank Note Co., at Ottawa, the interior iron work in the Departmental buildings now about completed, in Ottawa, and many other minor orders. In fact they have work enough on hand for six months ahead for almost their full capacity in the new factory. This company started business five years ago in a small building on Sandwich street, in Windsor, and two years later they moved into their present well-appointed quarters; but these have proven entirely too small for the demands of their trade, and they are now moving to where they think they can remain permanently. They have 200 feet square of ground, and will have a railroad siding connecting with the factory which will give them cars from the Michigan Central, Grand Trunk and Canadian Pacific Railways, which will render their shipping facilities unexcelled anywhere in Canada. Messrs. Goldie & McCulloch, of Galt, Ont., are furnishing the steam engine and boiler for the new works, which will be of their

latest design. The company are adding a large quantity of new machinery, and when they get started they expect to have as finely appointed a factory as the Dominion contains.

MESSRS. HUBBARD BROTHERS, Toronto, the inventors and patentees of the Hubbard improved portable baking oven, inform us that they are meeting with very gratifying success with this most excellent article. Being portable, the oven is readily moved to any desired place; constructed largely of sheet and malleable iron, it is practically indestructible, and not liable to damage in handling, and its simplicity is such that any person with ordinary intelligence, and a common screw-driver, can take it down or set it up in a half hour. It is provided with a non-conducting fire-proof lining, and while it is in full operation the naked hand may be placed on any of the exterior parts without inconvenience. Probably the most important feature of this oven is the amount of baking that can be accomplished with it. The shelves are stationary, but the system by which the heat is made to circulate through it, and by which it is thoroughly ventilated, causes all of the contents to be cooked uniformly throughout. In a revolving oven the arrangement is such that there is much loss of space in the centre, thus decreasing its capacity, which is not the case in the Hubbard oven. The front is provided with heavy plate-glass doors, enabling the operator to readily observe the process of cooking without opening the doors and chilling the contents until they are ready to be removed. These ovens are made in a variety of sizes and styles, some with drop doors, and specially designed for baking pastry and small goods, while the larger sizes, with single and double swing doors, and capable of containing from thirty-five to one hundred loaves of bread, are well adapted for bakers' use, where larger quantities are to be baked. They are provided with one or two fire-pots, according to size, which are constructed according to the best modern practice, and their economy of fuel is such, that a peck of coal is sufficient to cook 100 loaves of bread. They are easily managed, and the fires need not be lighted until an hour previous to the time it is desired to use them. Messrs. Hubbard Bros. have testimonials regarding the efficiency of this oven from a large number of bakers, confectioners and others who have them in use, among them being one from Mr. John Wright, manager of the Walker House, one of the largest hotels in Toronto, in which he says that the Hubbard oven gives him "entire satisfaction."

# BARREL • TRUCK

FOR MOVING BARRELS WITH HEADS IN OR OUT.

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



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

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

Office of THE MORSE SOAP CO'Y.

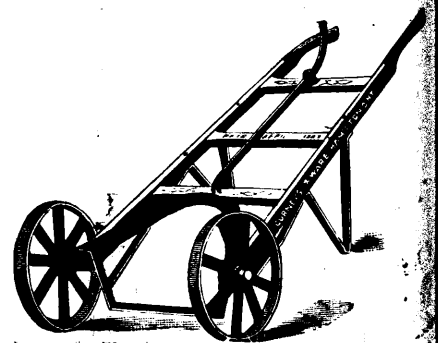
JOHN TAYLOR & Co., Proprietors.

TORONTO, April 25th, 1887.

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

Respectfully,

[Signed], MORSE SOAP CO



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



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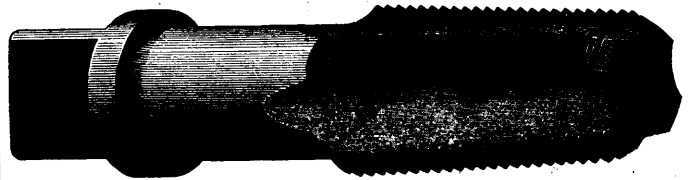
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AND OTHER ACCIDENTS TO STEAM BOILERS,  
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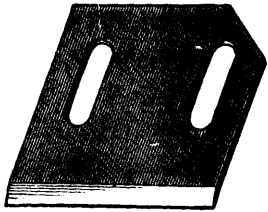
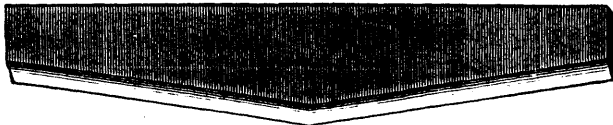
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KNIVES.



STAVE CUTTER KNIVES.



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MOULDING, TENONING,  
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Cheese-box and Veneer, Paper Cutting, Leather Splitting and any special knife made to order. SEND FOR PRICE LIST. ALL WORK WARRANTED.

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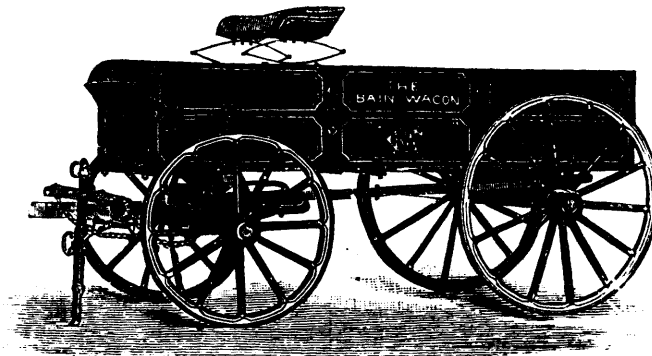
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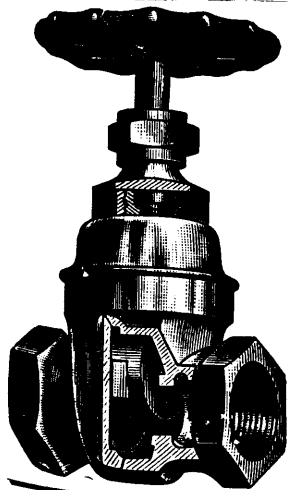
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Also Heavy Sleighs and Steel Skein Log Trucks.

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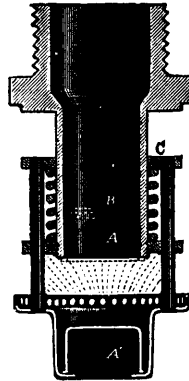
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Sole right to manufacture in the Dominion.  
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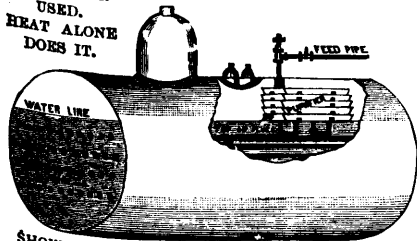
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Write for estimates. MONTREAL

**PATENT BOILER WATER PURIFIER.**

NO PURGER  
USED.  
HEAT ALONE  
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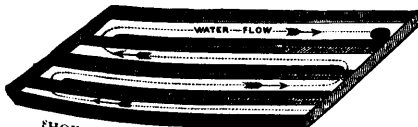


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THIS PURIFIER ENTIRELY PREVENTS THE FORMATION OF SCALE UPON SHELL AND FLUES OF ANY BOILER IN WHICH IT IS USED. ALL IMPURITIES ARE EXTRACTED FROM THE WATER BEFORE IT REACHES THE WATER LINE, AND ARE DEPOSITED IN THE PANS OF THE PURIFIER.

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

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**Mould Goods of Every Description.**

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Star Brand—BEAM WARP.

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First Prize, Silver Medals, for Beam Warps and Denims,  
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Saint John Cotton Mills,

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Cotton Spinners, Bleachers, Dyers and  
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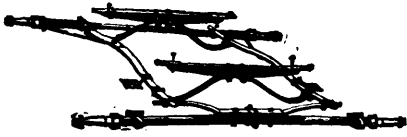
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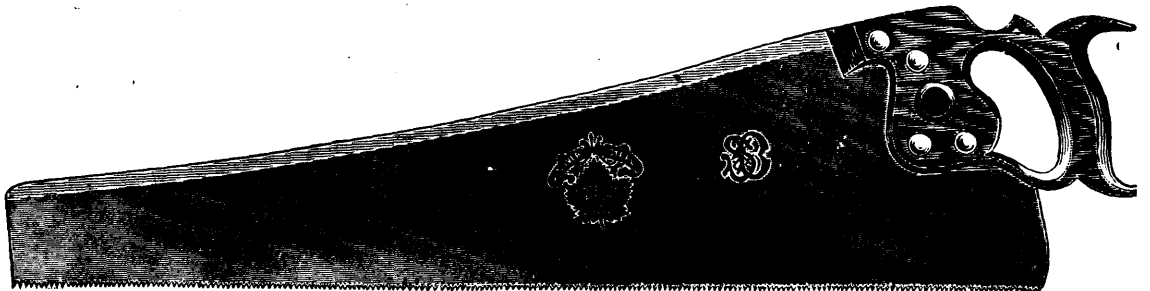
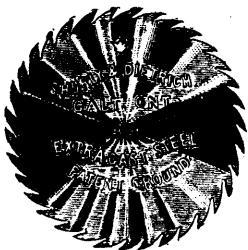
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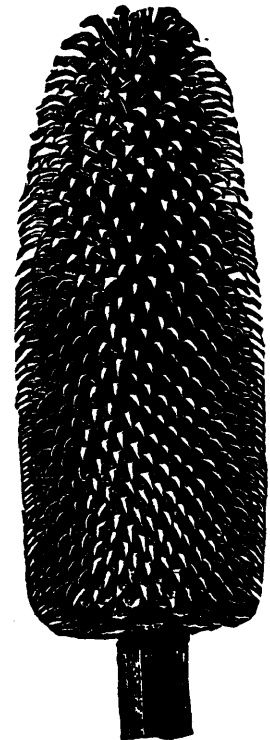
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BEAUDRY UPRIGHT CUSHIONED POWER HAMMER.**

Office of **FROTHINGHAM & WORKMAN**, Iron Merchants,

MONTREAL, February 3rd, 1888.

**MESSRS. MILLER BROS. & MITCHELL.**

GENTLEMEN,—Your enquiry of the 30th ult. as to my opinion of the **BEAUDRY UPRIGHT  
POWER HAMMER**, 125 lbs. Head, purchased from you about a year ago, to hand. Would say, it  
has given perfect satisfaction, and during my experience I have seen nothing to equal it for our work.

Yours truly,

**JOSEPH DUNN,**

Manager St. Paul Shovel Works.

Can be seen at Permanent Exhibition of Manufactures in Toronto.

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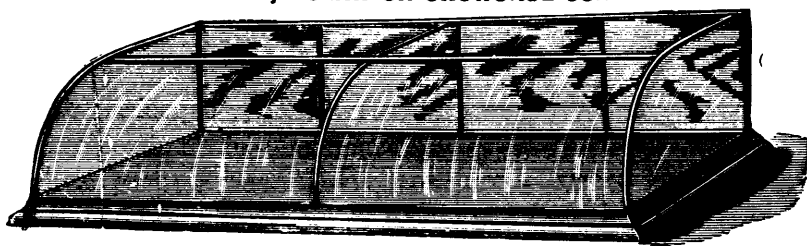
Electrical Gas Lighting Apparatus,  
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For further particulars apply to

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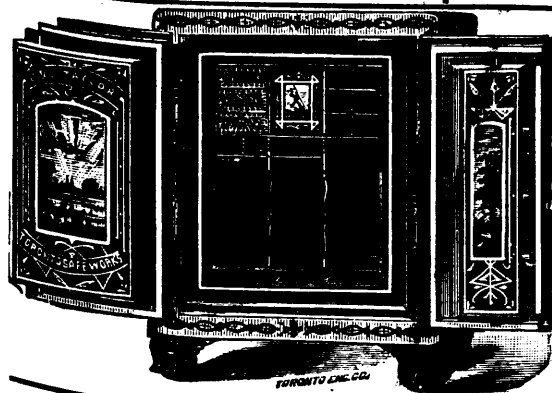
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Showcases, Store-Fittings, Tables, Office Cabinets, Desks Mantles, &c.

HIGHEST AWARDS WHEREVER EXHIBITED

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Send for Catalogue and Price List, and address all communications to Head Office.



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Double Tongue  
and Groove  
**FIRE-PROOF**

**SAFES**

(Patented  
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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.

See Catalogues and Prices on application.

**J. & J. TAYLOR, Toronto Safe Works.**

**The Intercolonial**  
RAILWAY OF CANADA.

The Royal Mail, Passenger and Freight  
Route between Canada and  
Great Britain,

AND

Direct Route between the West and all points on the  
Lower St. Lawrence and Bale de Chaleur; also  
New Brunswick, Nova Scotia, Prince Edward  
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Bermuda and Jamaica.

New and elegant Buffet Sleeping and Day Cars run on Through  
Express Trains.

Passengers for Great Britain or the Continent by leaving Toronto  
per 8.30 a.m. train Thursday, will join outward Mail Steamer at  
Halifax a.m. Saturday.

Superior Elevator, Warehouse and Dock accommodations at Halifax  
for shipment of grain and general merchandise.

Years of experience have proved the Intercolonial, in connection  
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COTTON  
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COTTON LOOM HARNESS AND REEDS

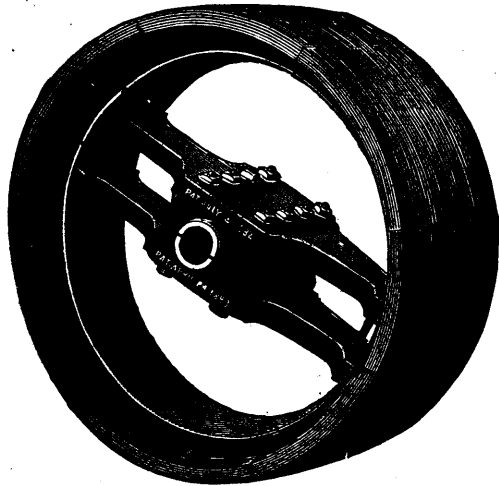
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JUNCTION OF CRAIG AND ST. ANTOINE STREETS.

**MONTREAL.**



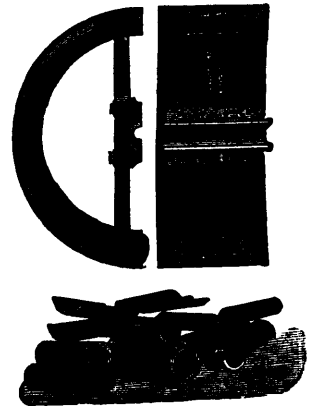
# Dodge Patent Wood Separable or Split Pulleys.



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.



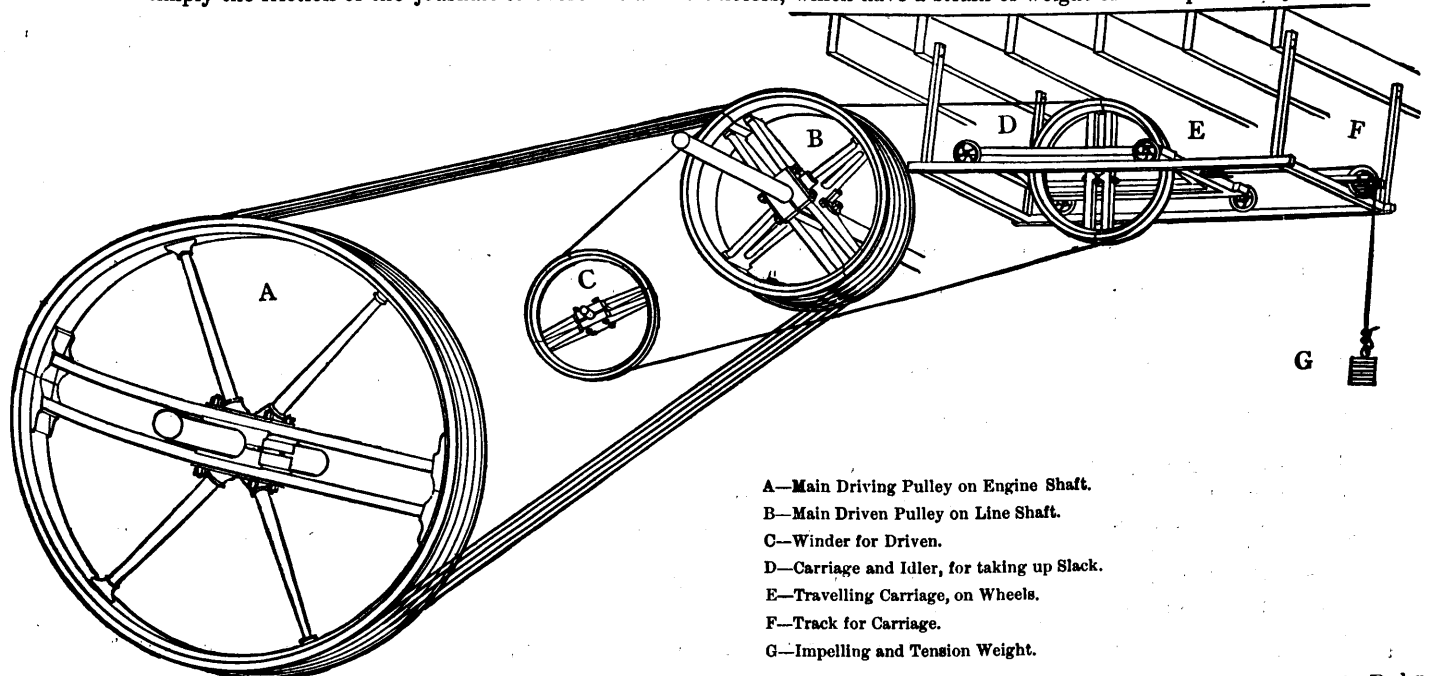
## THE TRANSMISSION OF POWER BY ROPES AND THE DODGE PATENT WOOD PULLEYS.

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 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.

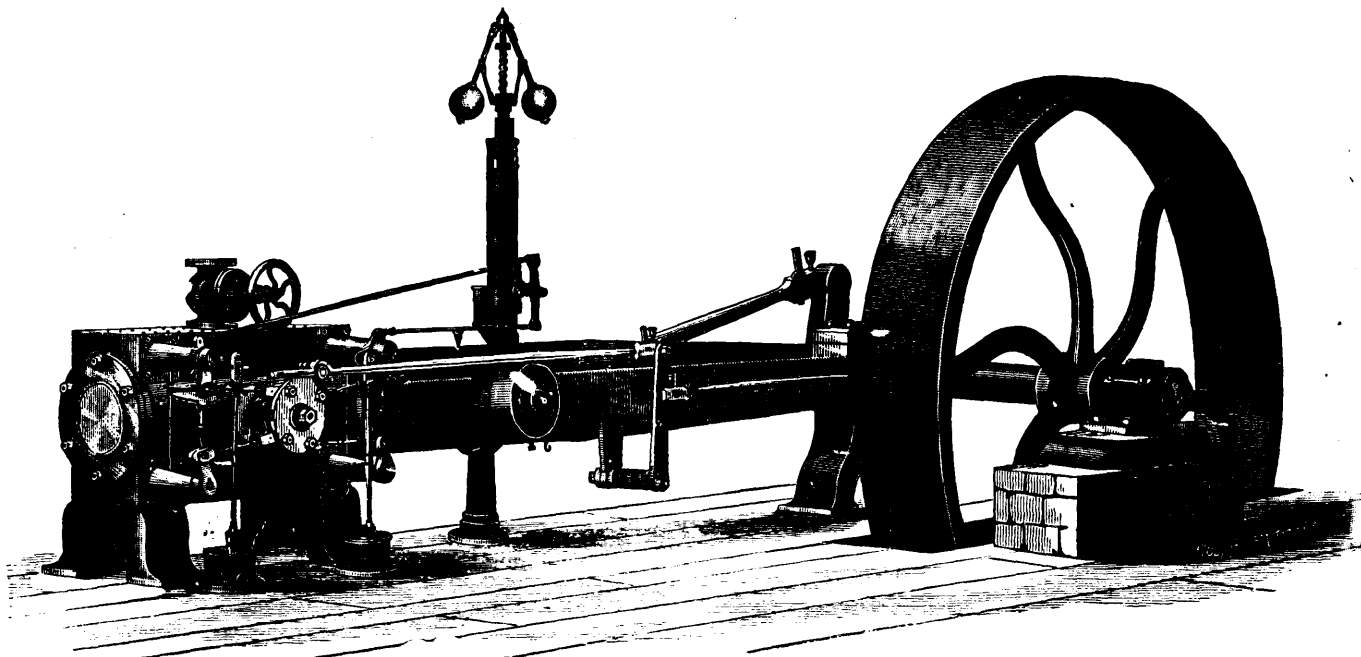
The illustration, as shown above, is one of peculiar construction, and represents an engine transmitting its power to the line shafting by the Dodge Patent System of manilla ropes and grooved hardwood pulleys. Transmissions similar to the above are now in use at the works of the following well-known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

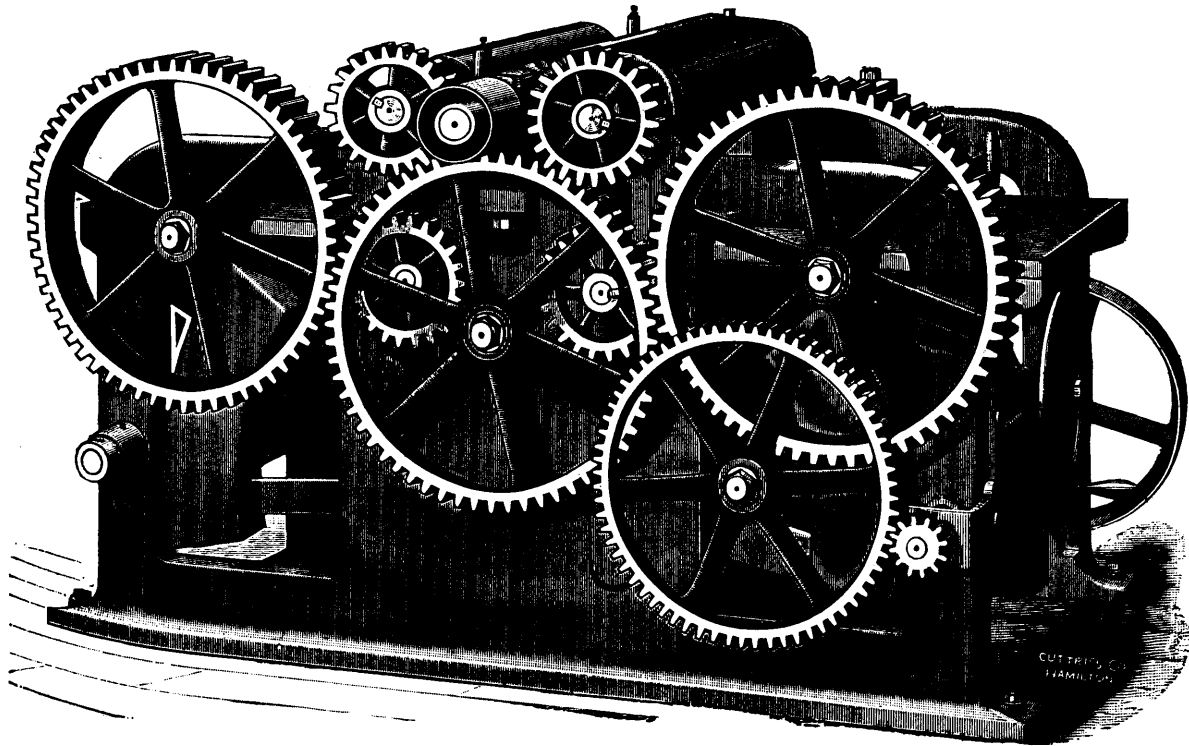
We would draw special attention to **our new and improved Adjustable Pillow Block**, which is pronounced by all practical men who have seen it to be the very best in Canada.

## 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.

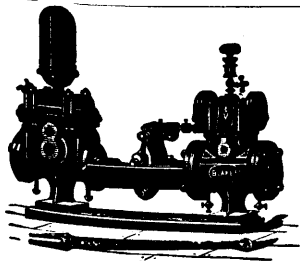
Manufacturers  
of  
**Machinists' Tools**  
and  
**Woodworking  
Machinery.**

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

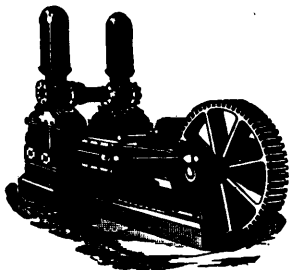
Locomotive and Car Machinery, Special Machinery, Price List and Photographs on application.

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

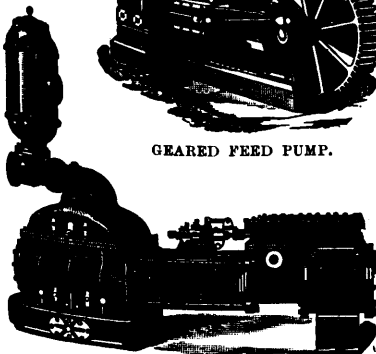
**Geo. F. Blake Manufacturing Co.,** ⚙️



BOILER FEED PUMP.



GEARED FEED PUMP.



DUPLEX COMPOUND ENGINE

BUILDERS OF

SINGLE AND DUPLEX

Steam and Power

**Pumping Machinery**



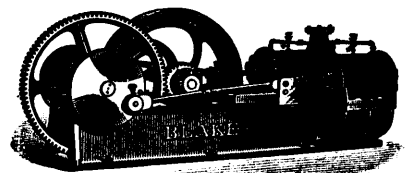
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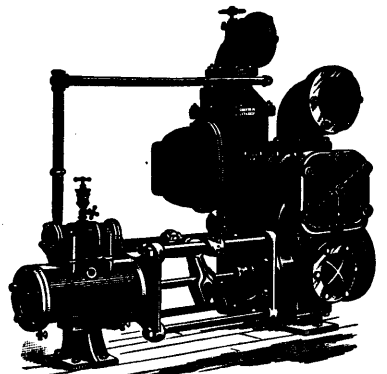
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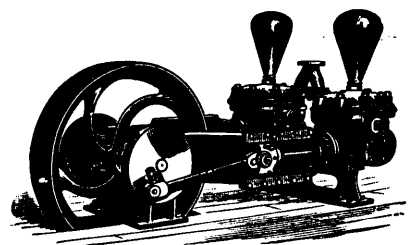
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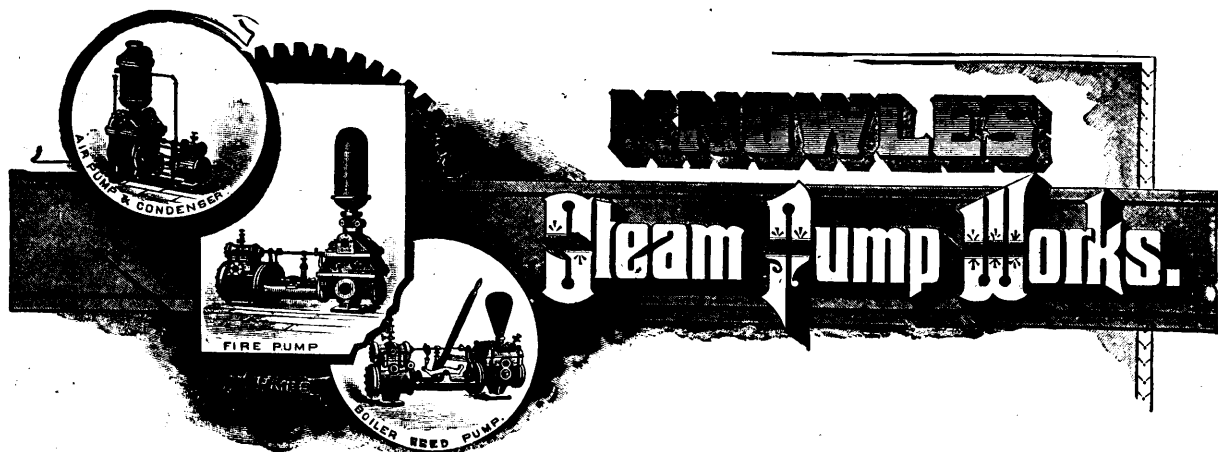
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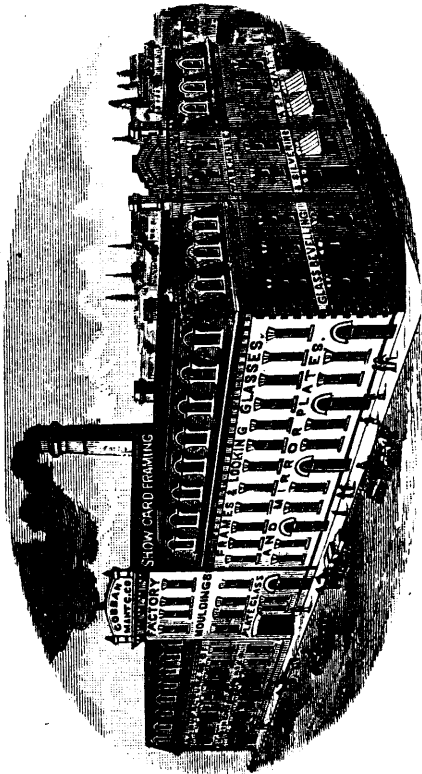
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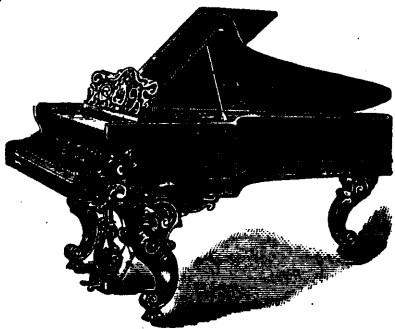
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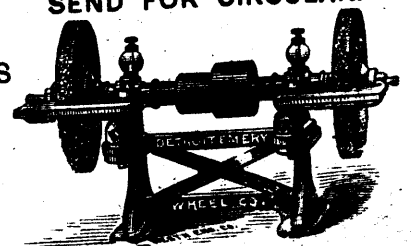
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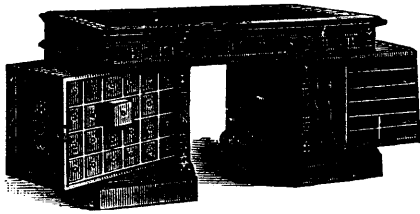
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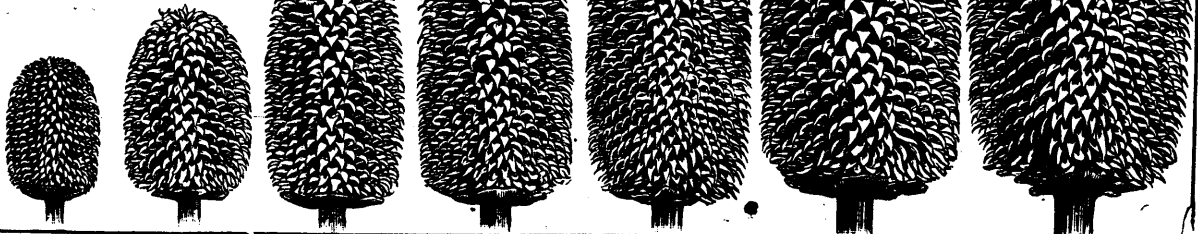
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