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AND INDUSTRIAL WORLD

DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

Vol. 16. TORONTO, FEBRUARY 1, 1889. No. 3.

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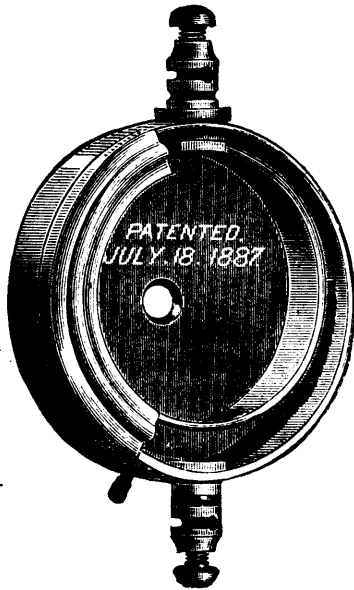
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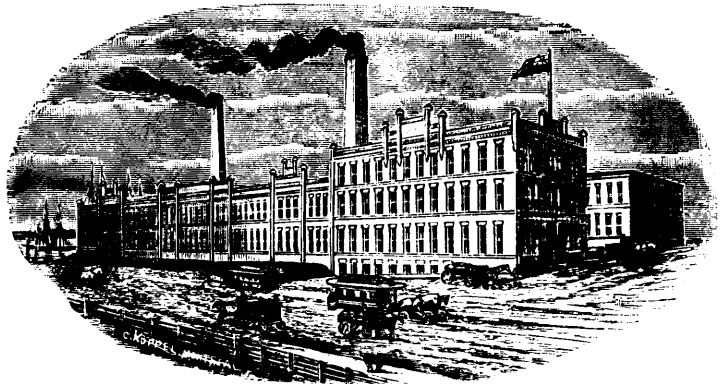
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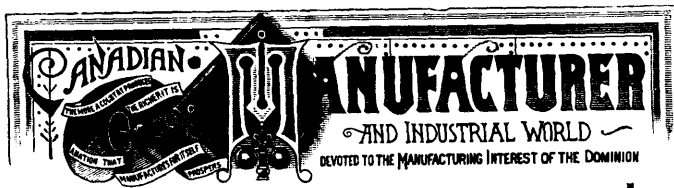
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MR. FREDERIC NICHOLLS is Secretary of
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PRISONS vs. COLLEGES.

THE Montreal *Witness* is about as badly daft regarding the employment of convicts as *The Week* and some other superwise journals. In arguing in favor of the profitable employment of convicts in mechanical industries, it cites the fact that in three state prisons in New York there are some twenty-six hundred convicts who, up to a year ago, by such employment made them "highly organized industrial institutions." It tells us that one hundred and fifty convicts can supply the whole number of convicts with clothing and other necessary articles, so that the effect of the law recently gone into effect in that state forbidding the sale of convict-made goods in competition with the products of free labor, is to condemn the convicts to idleness. It complains that instead of being taught to work at trades, these convicts are being taught to be idle; instead of being given an opportunity through their work at trades to become men, they are left with nothing to occupy their minds; and that as a result of this law the State has lost the productive labor of twenty-six hundred men.

This reasoning is specious. The argument is based upon the supposition that, in the case of convicts, the only benefit they can be to the State is as skilled workmen employed in productive industries. If the *Witness* would but open its eyes it would witness the fact that the State has invested very largely in lands and money for the establishing and support of educational institutions in which mechanical trades are not taught, and in which no industrial labor is performed at all from which the State derives any benefit whatever. Laboring men, however, are taxed to support these institutions, although from the nature of their circumstances, it is impossible that either themselves or their children can enjoy any of their privileges. In Montreal, as well as in Toronto, and indeed, in

many other cities and towns in Canada, large areas of valuable lands are occupied by elegant and expensive buildings, all bought and erected at the expense of the State, and richly endowed with money contributed by the State, used for the education of young men to enable them to become—mechanics? Oh, no! but lawyers, doctors, ministers, soldiers, etc. Will the *Witness* please observe that in this direction certainly the State recognizes the value of others than mechanics among its inhabitants; and that, strange as it may be, while other important walks in life are prepared for in colleges, seminaries and universities—the professorships in which are esteemed high honors, and the graduating exercises of which are attended with great *eclat*—the only instruction the *Witness* desires the State to bestow in the direction of mechanical trades is upon convicts and outcasts from society, while confined in penitentiaries, and as punishment, under the fear of the lash in the hands of prison task masters. Why should this be thus? If colleges and universities should be supported by the State for the benefit of embryo lawyers and doctors, but a very small percentage of whom ever become of any real value to the community, why should not those who wish to become mechanics be allowed to do so in these same institutions; and, *per contra*, if penitentiaries are the only institutions in which the State cares to afford practical instruction in productive mechanical labor, and this only to convicts and outcasts, why not add to the curriculum of these penal institutions a system by which the convicts may be instructed in law, medicine and divinity, and graduated accordingly? Either let those who desire to obtain professional educations get them without taxing the general public for the purpose, or extend the curriculum of our colleges so that the pupils so desiring may be graduated as carpenters, blacksmiths, machinists, bricklayers, etc. On the other hand, if the State thinks it necessary to impart instruction to convicts confined in penitentiaries, let that instruction be extended so as to include law, medicine and divinity, as well as the mechanical trades.

THE EDISON PATENTS.

THE Supreme Court of the United States have just rendered a decision which determines the relations of American and foreign patents, and clearly defines what certain rights of American inventors are. The case adjudicated was that of the Bate Refrigerator Company vs. Hammond, but the decision will be more far reaching in its effects than any other which the court has passed upon in many years. The point involved was the effect which a foreign patent has on the duration of an American patent subsequently issued to the same inventor. American patents are granted for the term of seventeen years. The Revised Statutes of the United States provide that the previous issue of a foreign patent for the same invention shall not invalidate the American patent, provided the subsequent American patent shall be so limited as to expire with the foreign patent, or if there are two or more foreign patents, with that one having the shortest term. In construing this statute a complication early arose from the fact that many foreign countries grant patents for short terms of one, five or six years, which terms may be extended on the payment of certain fees. The question was, whether the American patent should expire at the end of the shorter term for which a foreign patent for the same invention

was originally granted, or whether it should be extended with the possible extension of the foreign patent.

The Circuit Courts of the United States have uniformly held that the American patent lapsed with the expiration of the original term of the foreign patent, and was unaffected by any possible extension of the latter. Thus, if John Smith took out a Canadian patent for five years with the privilege of extending it to ten or fifteen years on payment of fees, and subsequently took out an American patent, these courts have held that the American patent must expire absolutely at the end of the first five years, whether the Canadian patent was extended or not. The Supreme Court has swung the pendulum to the other extreme, holding that the American patent shall run for fifteen years absolutely, whether the Canadian patent is kept alive for that term or is permitted to lapse.

Perhaps, of all those who will be benefited by the change, Edison is the greatest gainer. A large number of his patents of five or six years ago have been held invalid under the former construction of the law on account of prior patents granted him in foreign countries. Now some of them will be of fabulous value. One patent alone on what is known as the system of electrical distribution by multiple arc, covers, it is said, every incandescent electric light plant in the country. It is impossible to run an incandescent plant on any other principle. This patent was regarded as void from the beginning because of a previous Italian patent. Now it is good for a monopoly of the incandescent electric lighting business until 1895. Not only does it cover the future, but the past as well, for Edison can collect royalties from all rival companies for the plants operated during the last two years.

The Otto gas engine patents have been sustained in England after costly litigation, but overthrown in Germany after an equally hard fight. Their United States patents were reported void on examination, because of previous Italian patents. Now, if they are to be overthrown, it must be after a prolonged struggle on the merits of the case as was done in Germany. Hundreds of American investors, and investors in American patents, who have only put their money into the manufacture of patented articles after having been advised by their lawyers that they might safely do so without being compelled to pay ruinous tribute to the owners of prior patents with broad claims, because said prior patents were worthless in view of previous foreign patents granted for short terms, see ruin staring them in the face.

UNDERGROUND WIRES.

MENTION was recently made in these pages of the fact of the incorporation in this city of the Toronto Incandescent Electric Lighting Company, of which Mr. Frederic Nicholls, of this journal, was promoter, and a provisional director. In behalf of his company Mr. Nicholls, a few days ago, addressed a letter to the Mayor of Toronto anent the matter of awarding contracts for lighting the city by electricity, in which he stated that his company had secured from the Edison Electric Light Company the right to use all their valuable patents. It was stated in this letter :—

We have observed that the corporation is about to apply to the Legislature for power to compel all electric wires to be carried under-ground, and as we desire to recognize the neces-

sity for adopting such a course in the interest of the city generally, we are prepared, in the inception of this company, to conform to the requirements of the city in this respect. We therefore beg to apply for permission to lay our wires under-ground, with the necessary pipes and conduit boxes, along such streets as may be prescribed by the council, so that we may be enabled to supply light throughout the city without delay. You are, of course, aware that this will involve a much greater expense in establishing the system throughout the city, but if the city determines to impose this condition upon all companies, so that all will be treated alike, we will adopt the under-ground wires as part of our system.

Regarding the placing of their wires under-ground, Mr. Nicholls stated to a reporter :—

We have recognized the fact that the time will shortly arrive when the regulations of the city will require that all electric light and other wires shall be placed under-ground. We think it would be extremely unpopular to apply to the Council at this juncture for the right to erect poles, and string wires along our principal streets, and as we are anxious to engage in the business of electric lighting with the least possible delay, we have appealed to the City Council for the privilege of running our wires under-ground. Of course this will entail a very much greater expense than if we were to run them from pole to pole, and we do not think that the Consumers' Gas Company, which have applied for the privilege to erect poles and string wires, should be granted this privilege, as it would place them in such a position as would enable them to operate at a very much less expense. If, however, the Council agree to give them the right to erect poles we should be accorded the same privileges, in order to secure the benefit of competition to the citizens, and not perpetuate a monopoly. But in the event of our placing our wires under ground the Consumers' Gas Company should be compelled to adopt a similar course, with the wires which they propose to run, since they have determined to engage in the business of electric lighting. All we ask is to be placed upon the same footing as any other company, and we have taken the initiative by offering from the inception to bury our wires in the interests of citizens generally.

CANADIAN TEXTILE INDUSTRIES.

THE following is a list (compiled from Biggar's Textile Directory) of the cotton mills of Canada, giving the number in each province and the total capacity in spindles and looms :

	Mills.	Looms.	Spindles.
New Brunswick.....	5	2,161	89,000
Nova Scotia.....	3	768	35,500
Ontario.....	10	3,465	159,900
Quebec.....	7	4,888	235,300
Total.....	25	11,282	519,700

There are in Canada twelve factories manufacturing carpets, rugs and mats, their total capacity being 187 handlooms and 44 power looms. This does not include the handloom weavers, of whom there are 109 in Ontario and many in Quebec and the other provinces. There are three factories engaged in making haircloth, the total capacity being 65 looms.

The following are the statistics, partly estimated, of the woolen mills :

	Sets of Cards.	Looms.	Spindles.	Knitting Machines.
British Columbia..	1	5	400
Manitoba.....	2	5	480
New Brunswick...	64	134	5,500	50
Nova Scotia.....	76	222	9,520	49
Ontario.....	655	2,461	144,220	1,191
Prince Ewd Island.	27	70	3,300	12
Quebec.....	304	861	37,760	661
	1,129	3,758	201,240	1,963

In the foregoing table a custom carding machine is counted, for convenience, as a set of cards. Of these custom carding mills there are about 400, but there are many unreported in the Directory. Under the heading "Knitting Machines," are included both power and hand machines, but of the latter there are thousands used in private families, so that those here included are only an estimate of the hand machines used in factories.

ORDERS OF MERIT.

THE Provincial Government of Quebec have introduced a bill into their Legislative Assembly which provides for the decoration of farmers who make proficiency in the art of agriculture. Mr. Mercier, speaking of the proposition, says:—"A law will be passed to reward farmers who distinguish themselves most, without distinction of race or party, and this will create an agricultural aristocracy." The new aristocracy will be known as "l'Ordre de Mérite Agricole de la Province de Quebec." There will be three classes of agriculturists in the order. The highest will consist of active members, who will be known as the "très grand mérite" class. The next will be aspirants for fame, to be classified as of "grand mérite," and the third will be known as the "mérite" class. Each member will be supplied with a ribbon and a medal, the ribbon, of course, to distinguish by its color the classification of the owner, and the medal to show on one side the Goddess of Agriculture and on the reverse the legend, "Ordre Provincial de Mérite Agricole, fondée en 1889."

Of course if the farmers of Quebec desire to have their Government institute this "ordre," so that they may become "agricultural aristocrats," they should certainly have it; but it is to be hoped that Mr. Mercier will not draw the line at agriculture, but extend his scheme so as to embrace the mechanic arts also. He might arrange it so as to bestow ribbons and medals upon carpenters, masons and machinists; and even hod-carriers and cab-drivers. Dressmakers and sewing girls should not be overlooked; and if the proposed recipients could not agree among themselves as to how the honors were to be divided, the adjudication might be left to the Knights of Labor and the Trades and Labor Councils, with the understanding that the "scab" question should not influence the awards.

We commend the matter to the attention of Mr. Moylan, Superintendent of Penitentiaries and Dr. Lavall, of the Kingston Penitentiary, in case it should be found advisable to adopt the views urged upon them by this journal to include law, medicine, and divinity in the curriculum of the prisons of the country. If it is all right to institute an "ordre" for the benefit of farmers, it would also be right to have an "ordre" for the benefit of mechanics; and if for these, it would be in order to institute an "ordre" for the lawyers, doctors and clergy who might be graduated from our penal institutions.

The whole country will wait with anxious impatience for the denouement of Mr. Mercier's "Ordre Provincial de Mérite Agricole," with a view to the enlargement of the system, so as to include mechanics and the professional gentlemen who might be graduated from our penitentiaries.

EDITORIAL NOTES.

RECENTLY a broom factory in St. Thomas, Ont., was despoiled by thieves of the lighter parts of the machinery, which rendered impossible the starting up of the work until duplicates of the stolen articles could be obtained from the manufacturers of the machinery in New York. Broom-making machinery equal to the best manufactured in Yankeeland, can be had in Canada.

MESSRS. NICHOLS & HOWLAND, of the Permanent Exhibition of Manufactures, of this city, seem to have preempted the Hungarian Gipsy Band, who have been giving an extended series of delightful concerts at the Exhibition building. No other company of artists who have ever before visited Toronto ever found their welcome to extend through so long a period, and whose music never seemed to pall on the public taste.

ONE of the important enterprises for the coming year is the Duluth & Winnipeg railway, upon which twenty miles of track were laid from Duluth north during December. The road is intended to reach Winnipeg, a distance of 381 miles, and furnish another connection between the wheat-growing regions of Manitoba and the rail and waterway system of the United States. The accomplishment of this scheme, however, will depend upon the action which the Manitoba government may take.—*Railway Age.*

THE Minnesota State Waterways Commission have made their report to the Governor in which it is recommended that steps be taken toward investigating the practicability of establishing a waterway from Lake Superior through Rainy Lake River, Rainy Lake and Lake of the Woods, thus giving the Red River region on both sides of the International line direct connection with the waterways of the world. The Commissioners' idea is to have the scheme investigated by a joint commission from the Federal and Canadian Governments. The Minnesota Legislature is asked to memorialize Congress on the subject.

THE Lansdowne challenge cup, won by the New Brunswick team, at the last Dominion Rifle Association matches, has arrived at Ottawa. There are one hundred and thirty-three ounces of solid silver in it, and it cost four hundred and twenty dollars. The duty on it would be over eighty dollars, but an order-in-council will probably be passed admitting it free, as is customary in such cases. But why should an order be passed admitting this cup free of duty? There are factories in Canada where just such articles are made, and that quite as cheaply, too, as those made abroad. Why is it that the Dominion Rifle Association send abroad for their prizes when they could just as well be made in the Dominion?

THE manufacturing world is greatly interested in the scheme so much talked of for the annexation of Canada to the United States. We have no doubt but sooner or later the work of unification will be consummated. There is no doubt that if Uncle Sam really desires the hand of Miss Canada he can secure it by the asking.—*Reifsinder's Farm Machinery.*

It is surprising what nonsense our otherwise sensible contemporary is guilty of. Canada "aint built that way." "The

manufacturing world" of the United States will not soon be permitted to invade Canada. Our glorious N. P. reserves Canada for Canadians. Put our Yankee manufacturing friends will be welcomed heartily if they come over and bring their kits of tools along.

MR. JAMES McMILLAN, of Detroit, who has recently been chosen United States Senator from Michigan, is of Scottish parentage and a native of Hamilton, Ontario. He went to Detroit when twenty years old and engaged, first, in the hardware business on a small scale, afterwards in the manufacture of railway cars, the construction of railroads, and in other lines of business, in all of which he has been very successful, and is now rated as one of the wealthiest men in the State. Mr. McMillan is represented as being a man of remarkable energy and business sagacity, a shrewd judge of men, a thorough-going man of affairs, whose advice is sought on all sorts of financial enterprises, and withal a man of unquestioned integrity.

DISTRICT ASSEMBLY No. 2, of Quebec, representing the English Assemblies, Knights of Labor in Montreal, recently issued the following circular to the assemblies under its jurisdiction:

To the Order wherever found, greeting:

As the time is approaching when saloon keepers will require your signatures for the purpose of securing their licenses, so that they may deal out the deadly poison of intoxicating drink to the victims of intemperance for another year, your District Assembly, speaking for the welfare of the members under its jurisdiction, and in the interests of their wives and families, recommends that you do all that lies in your power to assist and advance the cause of temperance, and to refuse—point blank—to attach your signature to any document that would perpetuate a business which is a curse to society.

BINDER Twine is the conundrum of the hour. But one responsible factory in the land will make an open quotation, and that is a new one seeking experience and trade at the same time. Few of the factories are running, or care to run unless conditions change, and the market shows some signs of profit during the season. The facts are, that there is little raw material, either Manila or Sisal in the country, and it can only be had at such prices as will not warrant its purchase for twine. Manila at seaboard is worth nearly thirteen cents per pound, while Sisal is held at about ten cents. It is yet too early to discuss the facts that lead to this condition. It is hoped that they will change before the active work of the season opens, and that twine, will be offered at what it is actually worth.—*Farm Machinery.*

On the 15th of October, 1888, the last act in the complete unity of the German Empire was consummated. Although the Constitution dates back to 1871, it was not until the date above that all of the twenty-six states forming the Empire became members of the Customs Union. Heretofore, Hamburg and Bremen have been outside of this Union, and have levied no duties on imports. But in 1881 they voted to enter the Union, and October, 1888, was fixed as the time to consummate the act. It is hard to over-estimate the importance of this event. In this, England sees another step taken toward narrowing the boundaries of free trade. Hamburg has been

heretofore a good purchaser of exports. She will not be so good hereafter. Instead of sending \$100,000,000 annually to England, for her wares, the greater part of that amount will be distributed, no doubt, throughout the German States. Thus the work goes on. Nearly all new legislation upon the subject of a tariff is in the direction of protection to the producers of the country making it.

THERE is in operation upon the coast of California a machine which utilizes the power of the ocean surf to pump water to a height of 150 feet. It is probably not an exaggeration to assert that the power in the surf-beat along the Atlantic coast is in excess of all the power used for the mechanical purposes of man throughout the world; and, so far as human uses are concerned, every atom of this power is wasted. Possibly the California experiment is significant of the rapid approach of a time when this stupendous waste will be reduced in dimensions. Possibly, also, the advance that has been made, of late, in knowledge of methods of handling electricity may be of service in this matter. If, in fact, it is practicable to store electricity so that the batteries may be carried over any distance to points where their energy is required, and if illimitable power may be obtained from the ocean, there would appear hardly to be a limit to the possibilities in this direction. The surf power is there, and it may be had without cost. If it can be transmitted by electrical agencies, coal mines would appear to be likely to lose some of their value.

THE Farmers' Cordage Company is the name of a stock company being formed at Brantford, Ont., for the purpose of engaging in the manufacture of binding twine. The scheme is being exploited by the Wentworth Farmers' Institute, the idea being to have the farmers of that part of the country become stockholders in the concern, so that they may obtain their binding twine at ten cents per pound where it now costs them fourteen cents. The names of Hon. Charles Drury, Provincial Minister of Agriculture; Mr. Thomas Shaw, Professor of Agriculture in the Provincial Agricultural College, at Guelph, Ont., and Mr. U. R. Copeland, Master of the Dominion Grange, appear in the prospectus as patrons. The shares are fixed at a par value of twenty dollars each, and it seems to be the understanding that farmers who hold stock can convert it into binding twine when the factory gets into operation. The promoter of the scheme seems to be the only person connected with it who has any practical knowledge of manufacturing binding twine. The "influential provisional board of directors" who have been selected to boost the company, may be good farmers or "professors," but the country has never been startled by any phenomenal successes that they may have heretofore met with as manufacturers.

WHAT to do with criminals has become an exceedingly difficult problem. There is a strong feeling in the community against their being employed in occupations in which honest men are engaged; and when the products of their labor are put on the market, the competition is declared unfair. The bread should not be taken out of the mouths of law-abiding men's children in order that employment should be found for ruffians. This argument is so strong in the estimation of many that there is no use in attempting to answer it. * * The question is a troublesome one, and the convicts must be a burden, no matter how

they are treated. If they are taught trades their competition is a hardship. If they are kept in idleness they are a burden. If they are not constantly employed their health is impaired and their chances of reform are lessened. If they are sent out upon the world after years of idleness and without a trade, the chances are that the great majority of them will not even attempt to earn an honest livelihood, but will go back to their old ways and will again, before long, become members of the prison population. The people in this matter have a choice of evils, and it is for them to decide which is the least. It is for them, also, to consider whether or not society is in duty bound to endeavor to reclaim offenders against the laws; and if so, what is the best way of performing that duty.—VICTORIA, B.C. *Colonist*.

We suggest a solution of the question:—Give them proper instruction while in confinement, and graduate them as lawyers, doctors, and clergymen. These professions are not overcrowded.

A WRITER in *Harper's Magazine* calls attention to the large falling off in the supply of clergymen, which the educational institutions of the country are turning out of late years. The demand far exceeds the supply, according to this authority. This recalls the advice which the president of a college not a thousand miles from Boston gave to a young man who asked for some advice as to the choice of a profession after his graduation. "Well," said the president, "that is largely a matter of special aptitude, but I think there is a better opening and more money in the ministry than in any of the other professions." We beg to call the attention of Inspector Moylan and Superintendent Laval to this statement. An important question with these gentlemen is, what occupation the convicts in our penitentiaries shall be engaged in. Public sentiment, or at any rate the sentiment of both employers of free labor and of free workmen themselves, is decidedly against the employment of convicts in productive mechanical labor. Humanitarians seem to have lost sight of the fact, however, that the professions are available in this direction, although this journal has frequently suggested that classes of full-fledged lawyers, doctors and clergymen might be graduated from our penal institutions at frequent intervals; and now our argument is reinforced, particularly as to clergymen, by the writer in *Harper's* above alluded to.

In the 212 days of navigation, in 1888, there passed through the Sault Ste. Marie Canal an aggregate tonnage of over 6,200,000. This, for seven months of navigation, would average 900,000 tons per month, or nearly double the usual monthly tonnage of the Suez Canal. In other words, as heretofore shown in these columns, St. Mary's Canal does as much in six or seven months as the Suez Canal does in an entire year. Immense is the traffic of the Great Lakes. An equally noteworthy fact is the steady increase in the size of vessels. Thus, while there was a decrease of 1,552 vessels, there was an increase of thirty-seven per cent. in the registered tonnage, and an increase in the average cargo of forty per cent. The average cargo of registered vessels in 1887 was 644 tons, and in 1888, 8,766 tons. The total valuation of commerce in 1888 was \$82,156,020, an increase of \$3,000,000 over 1887; and this is the more remarkable when the short wheat crop and the increasing rail competition are considered.—Cleveland, Ohio, *Iron Trade Review*.

Of course a large portion of this immense trade was carried in Canadian bottoms, and the number of these is increasing very rapidly. The canal above alluded to is the only thing

which Canada has not got under her control in all the artificial water communication between Lake Superior and the Atlantic Ocean, except the passage through the Lake St. Clair flats, and this, there is good reason for believing, is entirely in Canadian territory. The Dominion Government have recently awarded the contracts for the construction of a ship canal at Sault Ste. Marie, on the Canadian side of course, and parallel with the American canal through which such a large traffic passes. This canal will be pushed to completion as rapidly as the nature of the work will permit.

A MOVEMENT is on foot looking to the construction of a railroad from some convenient point on the Ottawa river direct to the City of Quebec, and also to the completion of the line extending from that city to Gaspé Bay, at the extreme eastern end of the Province. The movement is attributed to a desire on the part of the Northern Pacific Railway Company to control an independent line of railway from the West to the port of Quebec, and this, in view of the recent decision of the federal authorities to establish a rapid line of steamships from Quebec to Liverpool. The additional line to Gaspé is supposed to be for the purpose of using that port in winter. What lends additional color to the scheme is the report that the same parties are to apply to the Legislature of Ontario for power to complete a line of railway from Sault Ste. Marie to a point on the Ottawa River, and that a charter obtained some years ago for bridging that river, by a local company, has lately been acquired by promoters of the new enterprise. The importance of the route to Europe, in which the Northern Pacific would thus seem anxious to compete with the Canadian Pacific, does not alone consist in the shortness of the line from Sault Ste. Marie to Quebec, but in the shortness of the ocean passage from Quebec to Liverpool, the distance between the two ports being 450 miles less than between Liverpool and New York. With vessels similar to those of the White Star, Cunard and Inman lines, the ocean passage from Quebec would be completed in at least twenty-four hours less time than that from New York, and when the new Canadian steamships are put upon the route, and railway communication perfected between Quebec and New York, it is expected that six to ten hours would be saved by sending American mail matter from New York to Quebec by rail, to connect with steamships for Liverpool or Queenstown. Transatlantic passengers, who object to sea voyages, would probably prefer Quebec to New York as a port of embarkation, not only because of a saving in distance of 450 miles, but because 700 miles of the St. Lawrence route is river instead of ocean navigation.

SPECIAL ADVERTISEMENTS.

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

KNITTING GREENLMAN BROS., MACHINES. Georgetown, Ont

In the forthcoming number of *Good Housekeeping* to be issued on February 2nd, will be begun a new series of papers on "Home Furnishing and Decoration." The literary features of this excellent magazine are well maintained; and as an aid to good house-keeping it is of great value. It is published fortnightly at Springfield, Mass., by Messrs. C. W. Bryan & Co.

F. E. DIXON & CO.

MANUFACTURERS OF

TO MILL OWNERS

And Manufacturers.

We do not profess to make the **VERY BEST BELTING IN THE WHOLE WORLD**, but we claim that we can make as good as any one else, whether English or American or Canadian. Here is one instance. We made a 14 inch Double Driving Belt for Messrs. Hastings & Peterkin's Planing Mill and Sash Factory on Bay Street, Toronto (now occupied by Mr. C. R. Peterkin), in July, 1873. This belt has been in constant use driving the machinery of the whole factory ever since, and is still good.

If you want a really good Driving Belt, or any other Belt, send to us and we will give you one which will give you thorough satisfaction. You will find both our prices and the quality of our goods all right.

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BARK
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LEATHER
BELTING.



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PURE
OAK
TANNED
AMERICAN
LEATHER
BELTING.

WRITE TO US FOR PRICES BEFORE BUYING
ELSEWHERE.

11 JORDAN STREET, - TORONTO.

SECOND ANNUAL REPORT OF THE DIRECTORS OF THE MANUFACTURERS' ACCIDENT INSURANCE CO.

To be presented at the Annual Meeting, to be held in the Board of Trade Council Room, Leader Lane, Toronto, on Tuesday, the 15th day of January, 1889, at the hour of 2.45 p.m. precisely.

The Directors have pleasure in announcing, at this their second Annual Meeting, that the operations of the Company during the year have been of a most satisfactory character, having far exceeded in importance their most sanguine expectations.

The Company has issued 2,344 policies on the various plans of insurance, such as ordinary accident policies, collective, instalment, and employer's liability. The aggregate amount being \$3,575,525.00, and the premiums thereon, \$30,025.75.

This is the first instance in the history of Accident Insurance in which the instalment principle has been applied in a way to meet the requirements of the working men of this country.

Arrangements have been made, whereby the employers of labor, while protecting themselves against liability under the Employers' Liability Act, also protect their employees. The collective and instalment premiums are payable at times most convenient for the insurers, and in sums of such comparative insignificance that the payment is not felt to be a burden.

We have reason to congratulate ourselves at the success which has already crowned our efforts, and we are hopeful that this Company will be in time a magnificent success.

Already our business shows a handsome surplus, although we have only been in operation since November 5th, 1887.

All the Directors retire, but are eligible for re-election.

GEO. GOODERHAM, WILLIAM BELL,	} <i>Vice-Presidents.</i>	JOHN A. MACDONALD, J. B. CARLILE,	} <i>President.</i> } <i>Managing Director.</i>
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MANUFACTURERS' ACCIDENT INSURANCE COMPANY

CAPITAL

Authorized Capital, - - -	\$1,000,000 00	Subscribed Capital, - - -	\$118,700 00
Amount Paid-up, - - -			\$23,440 00

REVENUE ACCOUNT.

1888. To Cash on hand, January 1st.....\$ 3,140 93 " Cash for Premiums..... 24,499 50 " Cash for Interest..... 842 39 <hr/> Total.....\$28,482 82	1888. By Expenses and Indemnity Claims.....\$17,634 84 " Furniture..... 78 25 " Cash on Hand and in Bank... 4,351 85 <hr/> INVESTMENTS. " Mortgages..... 6,031 75 " Advances to Travelling Agents..... 376 30 " Suspense Account..... 9 83 <hr/> Total.....\$28,482 82
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BALANCE SHEET.

1888. ASSETS. By Cash on Hand and in Bank.....\$ 4,351 85 " Dominion Government Bonds and Premium paid thereon..... 20,900 00 " Mortgages..... 6,031 75 " Advances to Agents..... 406 30 " Office Furniture..... 78 25 " Interest Accrued..... 409 08 " Outstanding Premiums..... 4,393 15 <hr/> Total.....\$36,570 38	1888. LIABILITIES. To Capital Stock.....\$23,440 00 " Reserve of Unearned Premium..... 7,721 00 " Indemnity Claims not adjusted..... 432 63 " All other Liabilities..... 137 94 " Surplus..... 4,838 81 <hr/> Total.....\$36,570 38
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We have examined the Books, Documents and Vouchers representing the foregoing revenue account, and also of each of the securities in the above balance sheet, and certify to their correctness.

We, the undersigned, hereby certify that we have examined the securities held by said Company, and find the same correct.

Sgd. H. J. HILL, Sgd. EDGAR A. WILLS,	} <i>Auditors.</i>	
Sgd. T. G. BLACKSTOCK, Sgd. FREDERIC NICHOLLS,	} <i>Auditing Com. of the Board.</i>	

OVER \$3,000 has been subscribed in aid of the erection of a flour mill at Glenboro, Man.

Light Heat and Power, of Philadelphia, Pa., comes to us containing four photographic plates, on separate sheets, illustrating the recent gas holder explosions at the works of the Citizens' Gas Light Company, Brooklyn, N. Y. They present a most interesting study.

MR. J. THEO. ROBINSON, publisher, Montreal, has sent us "The Battle of the Swash, or, The Capture of Canada," by Samuel Barton. It is similar in character to "The Battle of Dorking," which excited much interest some years ago. It is supposed to have been written in 1930, and describes the political events which led to the war between Great Britain and the United States forty years before, and the capture of Canada by the neighboring Republic. The style is pleasant, and the reader will no doubt be interested in reading it. The book also contains the patriotic speech recently made by Dr. George W. Beers, of Montreal, in reply to a toast on "Professional Annexation."

In *Outing* for February, in the article "Sleighting," by Will H. Whyte, the author talks in a most entertaining manner regarding that fascinating winter pastime, illustrating which, the artist Beard furnishes three excellent drawings. The delights of that companion sport, skating, are told of in the same number by R. Boulton Herald, in an article entitled "Blades of Steel." "On a Canadian Farm in Mid-winter," by W. Blackburn Harte, is a capital sketch of the Winter life of a Northern farmer. Several excellent poems, among which we note "A Night Paddle," by M. E. Corinne; "An Outing," by Jay Gee; and "Three Day's Grace," by Sarah J. Burke, greatly enrich the contents of *Outing* for February. The editorial departments are bright and attractive, while the Records present with brevity and authority the latest achievements of athletes in the different sports and pastimes.

PARIS, Ont., is not the largest town in Canada, but it would require early rising long and persistently persevered in on the part of any other town, big or little, to keep up with Paris as regards that vim, energy and go-ahead-itiveness which makes it one of the most important manufacturing towns in the Dominion. It is situated on the Grand Trunk Railway in what the Parisians call "The Garden of Ontario," and is noted for the romantic scenery of its neighborhood, its valuable mineral waters, its extensive beds of gypsum, and a remarkably fine water-power, obtained from the Grand river, which flows past it. In its Christmas holiday number the *Review* of that town, gives a mass of interesting information regarding this representative Canadian town, in which it mentions its leading manufacturing industries, but its modesty did not allow it to make much mention of itself, one of the most enterprising newspapers published in Canada.

TORONTO "CALLED BACK." Mr. Conyngham C. Taylor, of Her Majesty's Customs, has sent us an elegant copy of the third edition of "Toronto 'Called Back' from 1847 to 1888," which is just from the press. It contains 518 pages and 53 illustrations, and comprises, in addition to the many agreeable features of the previous editions, portraits of our new Governor-General, Lord Stanley of Preston; E. F. Clarke, M.P.P. Mayor of Toronto and other notable persons; and views of many of the more important public and semi-public buildings in this city. This book is valuable not only in a local sense, and peculiar to Toronto, but generally and to the whole of Canada; for all Canadians are interested in the growing greatness of this the "Queen City" of the Dominion, and the progress of this greatness, from the modest and unpretentious situation of forty years ago to the splendor and importance of it to-day. Mr. Taylor writes from a personal knowledge of much of what is related in his book, and whatever is written of which he did not have such knowledge was obtained from the most reliable sources—from old residents who, like himself, had lived in and seen Toronto grow up from a small and inconsequential town. Therefore, all the statements in the book may be relied upon with the greatest confidence as to their correctness. Mr. Taylor is an accomplished writer; his narrative is couched in choice and pure language; and there is a fascination about the book that compels the reader to keep it before his eyes until every page of it has been carefully read. Previous editions of this book have been circulated extensively across the water, and copies of it are to be found in all the more important libraries in Great Britain. This is well, for the advantage to Toronto of its circulation among the best class of intending emigrants to Canada cannot be over-estimated. And in this connection we think it would be well if the Ontario Government would liberally supply their emigration agents with copies of it for distribution abroad among the smaller manufacturers and capitalists, who might thus be induced to settle in Toronto and help to increase her greatness.

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.

FIRE in the Dominion Baby Carriage Works at London, Ont., a few days ago did \$1,000 damage.

MESSRS. A. W. BRODIE & Co., are putting some new machinery in their woolen mills at Hespeler, Ont.

THE grist mill of Mrs. Bonfield, at Eganville, Ont., was destroyed by fire January 20th; loss about \$30,000.

A CHAIR factory will be started at an early day at R. Robinson's mills, at Freeport, near Cowansville, Que.

FIRE in Robertson's saw and lead works in Montreal, a few days ago, did damage to the extent of about \$6,000.

MR. L. C. GLEASON's handle factory at Fenton, Ont., was destroyed by fire a few days ago, loss about \$3,000.

THE roller flour mill of Messrs. May Bros., at St. Thomas, Ont., were destroyed by fire Jan. 12, loss about \$10,000.

AMONG the exports from this city over the Canadian Pacific Railway a few days ago was a windmill for Bangkok, Siam.

THE town of Alvinston, Ont., has subscribed \$1,000 towards rebuilding the Glenelg flour-mill recently destroyed by fire.

IT is understood that Mr. S. S. Clutton will rebuild the woolen mill in Aylmer, Ont., at an early date, to take the place of the one destroyed by fire.

MR. GEORGE LANG, of Messrs. R. Lang & Son, harness leather tanners, Berlin, Ont., has been elected president of the Berlin Board of Trade for 1889.

MR. JOHN LITTLE of Banff, N.W.T., has purchased the machinery and plant of Sparrow's brickyard, at Calgary, and will begin the manufacture of brick.

THE Port Elgin Furniture and Manufacturing Company, of Port Elgin, N. B., has been organized with \$12,000 capital stock, for the purposes indicated by the name.

A VERY rich silver strike has been made in the Badger mine near Port Arthur, Ont. The company have opened an eight inch vein of silver ore, assaying \$14,000 to the ton.

THE saw mill of Mr. Robert Carter at Dawn, near Florence, Ont., was destroyed by the explosion of the steam boiler attached to the same on January 19th; loss about \$2,500.

THE Cordovan Tannery, at Milton, Ont., owned by Mr. Charles Knees, of Toronto, is one of the largest of the kind in the Province. It gives employment to over thirty hands.

A NUMBER of gentlemen with capital intend starting a foundry on a large scale to manufacture mining machinery and do general casting in the town of Port Arthur.—*Port Arthur Sentinel*.

THE Wm. Hamilton Manufacturing Company, Peterboro', Ont., have recently shipped a 125 h.p. steam engine to the Vancouver Milling Company, for their flouring mill at Vancouver, B.C.

MESSRS. HASTINGS & MCGAW will erect a flour mill at Port Arthur, Ont., the municipality of that town having voted them a bonus of \$15,000 and exemption from taxation for fifteen years.

MESSRS. MASON & RISCH, Toronto, manufacturers of pianos, have bought out the interests of the New York Church Organ Company, and will manufacture vocalions in both Worcester, Mass., and Toronto.

THE Todd Milling Company's flour mills at Galt, Ont., are equipped with apparatus for burning petroleum for fuel, and it is in this way that steam is generated for the 150 h.p. engine that drives the works.

MESSRS. DAVIS, LAWRENCE & Co., Montreal, propose to organize a company with \$30,000 capital to manufacture certain lines of rubber goods usually handled by the drug trade, not now manufactured in Canada.

THE Polson's Iron Works Company, whose ship yards are at Owen Sound, Ont., are making estimates for the construction of two steel ferry steamers to run in connection with the Windsor extension of the Canadian Pacific Railway.

MESSRS. THOMPSON & Co., Sherbrooke, Que., manufacturers of bobbins, spools, etc., have sent us a handsome office calendar for the current year. It embodies a beautiful and fine engraving representing a number of pet dogs.

GREAT progress is being made in the fitting up of the Cortland Carriage Works at Brantford, Ontario, which are expected to be in full blast in a few days. The firm already have orders on hand for a large number of their wagons and carriages.

MR. LAINS WERTHEIM, Frankfort, Germany, the asbestos factor who recently purchased asbestos property in Megantic county, Que., in order to supply German dealers direct, intends in the spring to employ 150 men to erect extensive machinery on the estate for their development.

MR. L. P. TROTTIER, Three Rivers, Que., manufacturer of axes, hammers, etc., who began business only a few months ago, is meeting with the most gratifying success. His works give employment to about sixteen skilled workmen, and his output of axes is about twelve dozen per day.

THE Canada Screw Company, of Hamilton, Ont., will extend its undertaking to the manufacture of wood and other screws, rivets, wire and bolts of all descriptions, and machinery and tools for providing the same. The capital stock of the company will be increased from \$100,000 to \$500,000.

THE Grand Trunk Railway Company have declined to accept the bonus of \$100,000 offered by the authorities of London, Ont., for the establishment of car works in that city. The works will be built at Stratford and operated in connection with the machine shops recently erected there by the company.

It is more than probable that Messrs. Howland, Jones & Co., will erect a large flour mill here in the spring. They require considerable room, as the building they intend erecting will be a massive structure. The company owns a large stone flour mill in Thorold Ont.—Fort William, Ont., *Journal*.

MR. S. SIGGINS, Woodstock, Ont., occupies a commodious new brick factory, and manufactures carriages, buggies, drays, cutters, and is also preparing to manufacture road carts. He employs ten first-class mechanics, and using only the best material his products are durable as well as artistically finished.

A FALL RIVER cotton mill has put in a loom, imported from England, for the manufacture of corduroy goods, which have not heretofore been made in the States or Canada. If the experiment is a success the mill will go into making corduroy on a large scale, as there is an increasing consumption of such goods.

FIRE broke out in one of the departments of the furniture factory of Messrs. James Hay & Co., at Woodstock, Ont., on Jan. 11, but as the whole factory is equipped with automatic fire extinguishers, connected with the company's own water works system, the flames were extinguished before the town fire department arrived.

MESSRS. J. & T. GRANT, Woodstock, Ont., are among the largest tanners of harness and upper leather in the Dominion. They employ 50 hands, and have unrivalled facilities for producing leather. They also own and run the Woodstock Felt Works with 30 hands, and make a full line of all the latest styles of socks and felt goods.

THE Doherty Organ Company, of Clinton, is still dickering with the town of Brockville about removing their works there. At the firemen's supper lately, Mayor Weatherhead, of Brockville, stated that the company is willing to accept a bonus of \$35,000, and he urged that the new council submit a by-law to the people.—Guelph, Ont., *Herald*.

THE new works of the Osborne-Killey Manufacturing Company, Hamilton, Ont., were occupied by the concern a few days ago. It will be remembered that some of the buildings of these works were recently destroyed by fire; and the new ones, here alluded to, were occupied within five weeks after the contracts were let for their re-construction.

THE Farmers' Cordage Company, of Brantford, Ont., have applied for incorporation for the purpose of manufacturing binding twine. The proposed capital will be \$250,000, and suitable buildings will be erected and equipped with necessary machinery when \$70,000 has been subscribed. It is thought that the new works will be in operation by November next.

MESSRS. JAMES HAY & Co., Woodstock, Ont., are among the largest manufacturers of furniture, chairs and rattan goods in the

Dominion. Their buildings are brick, three stories in height and cover about two acres of land. The works have the most improved machinery and every facility for successfully carrying on an immense manufacturing business.

MESSRS. JOHN DAVIS & SON, Davisville, Que., who are manufacturers of enameled earthenware, milk pans, crocks, flower pots, hanging baskets, etc., will at an early day supply this journal with a brief descriptive history of this important industry in Canada. This is one of the most ancient trades, and the important facts concerning it should be kept before the public.

A NEW process has been devised for cleaning lubricating oil that has once been used, so that it can be used again. The oil is poured gently over a bed of iron which is strongly magnetized. The heaps of iron fragments constitute a magnetic sponge which stops all the particles of metal, especially those of iron. The oil is then passed through two hair filters, and comes out perfectly clean.

CANADIAN phosphate deposits are receiving much attention among the agricultural classes in Great Britain, in view of the threatened exhaustion of the guano beds of Peru and Chili. London papers are drawing special attention to Ottawa county phosphates, declaring that the phosphate industry is only in its infancy in Canada, and urging British capitalists to promote their further development.

MR. MCLEOD STEWART, late Mayor of Ottawa, has succeeded in floating a company in England with a million dollars capital to develop the coal mines at Anthracite, N. W. T. The mines were examined in November by an engineer sent from England and his report was so favorable that the necessary capital was at once raised. Work at the mines will probably be resumed very shortly.

MR. CHARLES KNEES, whose office and salesroom are in Toronto, is the proprietor of the Dominion Cordovan Tannery, at Milton, Ont. Mr. Knees is a manufacturer of all kinds of cordovan leather, and he makes a speciality of lace and mitten leather also. His products received highest awards for superiority at Vienna in 1873; Philadelphia, in 1876, Montreal, in 1881, and Toronto in 1881-2-3.

THE furniture manufacturers of Ontario held a meeting in Guelph on January 11, to talk over matters connected with their business, and to form an Association. A committee consisting of Messrs. R. Dowling, Harriston; M. W. Burr, Guelph, and J. Hay, Woodstock, were appointed to get the Association in shape, and to call a meeting at an early date, to be held in Galt, when officers will be elected.

It is expected the Dominion Government will see its way clear to grant the application of the Eau Claire Milling Company for a water lease at Calgary, as it is always the policy of the Government to encourage the development of every industry in the North-west. This will probably lead to the establishment of a roller flour mill at Calgary, by the Eau Claire Company, who now own a saw mill at the place named.

MR. JAMES WILSON's oatmeal mill, at Fergus, Ont., was destroyed by fire Jan. 18, loss about \$15,000. Two years ago last October this same mill was destroyed by fire. Mr. Wilson rebuilt it, and ever since has been expending a large amount of money in putting in the most improved machinery, and it was considered the most modern mill in Ontario. A very extensive business was done; the mill being run to its full capacity.

TWENTY flat cars are now under construction for the Island railway at the shops at Russell Station. They will cost \$12,000. The coaches were all repainted a short time ago at a cost of \$3,000. As soon as the reserve question is definitely settled, it is understood that extensive workshops and bunkers will be erected on the reserve, besides large coal bunkers for supplying the city and steamer trade.—Victoria, B. C., *Colonist*.

THE Nordyke & Marmon Company, of Indianapolis, Ind., are filling an order for a small flour mill, ordered by an Englishman. It is to be located at the gold fields near Natal, South Africa. It will be driven by an immense American windmill, that being the only available power in that far-away clime, and will be shipped via New York, Liverpool and Cape Horn to Natal, and then by wagon for about 300 miles to destination.

A PRESS telegram from Eau Claire Wis. a few days ago, stated that the Eau Claire and Bow River Lumber Company, of that place and Calgary N. W. T., would build several new lumber mills on their timber leases in the North West Territory. This grows out of the recent decision of the Canadian courts relative to the ownership of the land and the additional duty imposed by the Dominion Government on the exportation of saw logs.

THE Ames Holden Co., operating a shoe factory at Montreal, and branch wholesale stores at Winnipeg and Victoria, has recently purchased the shoe factory at Victoria, B.C., owned by W. Heathorn. This is quite a large establishment, giving employment to about 75 men. It is understood the Ames Holden Co. will greatly increase the capacity of the Victoria factory. Mr. Heathorn owns a tannery at Victoria, which he will continue to operate.

THE St. Catharines Saw Works, at St. Catharines, Ont., of which the R. H. Smith Company are proprietors, under the new management, have increased its output fully fifty per cent., and its working force over one-third. They claim that their sales of cross-cut saws—despite the mild weather—have been largely in excess of any former year, and their export trade has largely increased, while their Canadian customers have, in many instances, lately duplicated their orders.

MESSRS. S. R. FOSTER & SON, St. John, N.B., manufacturers of tacks, shoe nails, cut nails, etc., claim that they were the first manufacturers in Canada to introduce polishing machines into their works. Their works are embraced in a four-story high brick building, 100x88 feet, in which are employed an average of fifty hands. Their products cover a range of over 300 varieties of goods, and their annual consumption of iron, brass, zinc, copper, etc., is about 100 tons per month.

THE Victoria Wheel Works, Galt, Ont., Mr. R. Scott, proprietor, was established in 1860, and is one of the oldest in its special line in Canada. Carriage wheels and all kinds of carriage woodwork are turned out at the rate of from 250 to 300 car loads annually. The factory is a large stone building, equipped with the best and most improved American machines in use, is driven by steam power, and gives employment to 50 hands. The goods are mostly all absorbed in the Dominion.

MR. J. L. MUDGE, travelling agent for the Anthracite mines, Banff, Alberta, have recently visited San Francisco, in the interests of the company. The capital stock of the company has been increased to \$500,000 (formerly \$250,000), and arrangements are being made to work the mines on a more extensive scale than previously. The bulk of the coal will go to San Francisco. Dockage accommodation has been arranged for at Port Moody, where the coal will be transhipped to vessels.

TWENTY tons of saw-mill machinery arrived from the Hamilton Manufacturing Company, of Peterborough, Ont., imported by Messrs. F. G. Strickland & Co., of this city, for A. J. Bovill, who is building a new saw-mill at Langley. This consignment is the complete machinery for a saw-mill—not a bolt, nut or screw being absent, and it is the first complete mill ever brought into the province. Mr. Bovill's mill will have a capacity of about 30,000 feet per day.—*Victoria British Columbian.*

THE Grand Trunk Railway Company are preparing to make a practical experiment with the electric car heating apparatus invented by Mr. Roe Fuller, an employe in the Grand Trunk shops at Portland, Me. It consists of a dynamo placed in the baggage car, power being taken from the moving axles. A metal bar is placed in a tank of water in each car. Pipes from the tank extend all round the car. The metal bar is to be heated by an electric current, thus heating the water in the tank and pipes.

TWENTY flat cars are now under construction for the Island railway at the shops at Russell's station. They will cost \$12,000. The coaches were all repainted a short time ago at a cost of \$3,000. As soon as the reserve question is definitely settled, it is understood that extensive workshops and bunkers will be erected on the reserve, besides large coal bunkers for supplying the city and steamer trade.—*Victoria, B. C., Colonist.* This is the railway on Vancouver Island, connecting Victoria and Nanaimo.

THE stove founders of the Maritime Provinces held a conference in Amherst, N. S., Jan. 13, to agree upon living prices. They represented an output of \$300,000. It appears that many Nova Scotia foundries have been doing business at a loss, though New Brunswick foundries, which have more generally maintained prices, have made fair profits. In view of the increase in the cost of iron, an advance in the present prices will be necessary, and an adjourned meeting will be held in Halifax to consider a price list.

MR. A. PUGH, manager of the anthracite coal mines at Banff, Alberta, states that at present coal is being taken out at the rate of 100 tons a day; but the mining gang will be increased to such an extent that the output will be 500 tons a day. He says even this will likely be increased, as the company have ready sale for all they can turn out. It is being shipped to the Pacific coast, where the demand is good.

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.

CANADIAN TEAZELS.

PATRONIZE HOME INDUSTRY

Every user of Teazels should purchase those of
Canadian Growth in preference to Foreign
Importations.

ORDERS FILLED BY

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THE DOMINION DYEWOOD & CHEMICAL CO
TORONTO, ONT.

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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.

Instead of the company shipping the coal, they just mine the coal
and lay it down at the track for \$5 a ton. The purchaser does the
shipping and attends to the rates.

SEVERAL practical tests at Golden have shown that the slate from
the Walter Hogg quarry is a first-class roofing slate. The men who
are expending large sums of money in business blocks and residences
at Victoria, Vancouver and Westminster, would add another industry
to those of our province if they aided in opening up this quarry.
At present, roofing slate has to be brought from Quebec, and is too
expensive to be generally used. The quarry is distant but six-and-
a-half miles from Golden, and is within a few yards of the C.P.R.
track.—Donald, B.C., *Truth.*

MR. KEELY now explains, in speaking of the action of his motor,
that "By means of negatized axial centres of atomic envelopes, the
projecting rays of neutral ozone may be collected and caused to osci-
late, as it were, in reciprocal sympathy with the automatic envelopes

themselves, till they become fully sensitised and a reaction occurs, when, in an instant, the seventh cord of the mass, as associated with the luminous flow, unites with the pulsatory condition of the diatomic register, and a complete sympathetic equation is established." This seems to be a clear and perfectly reasonable explanation.

MESSRS. PATTERSON & BRO. COMPANY, Woodstock, Ont., manufacturers of agricultural implements, established their works in 1850, and became an incorporated company in 1887. They manufacture mowers, reapers, binders, horse rakes, seed drills, spring tooth harrows, cultivators, grinding mills, gang and sulky plows, etc. The popularity of their machines is based on their accuracy of construction, good quality, convenience in operating, elegance, finish and adaptation to the requirements of the farming community. They have extensive brick premises three stories high, and employ 250 men.

THE Paris, Ont., *Review* reproduces an item which first appeared in these columns regarding the organization of the Standard Needle Company, of that town, and says:—"This illustrates the adage that you have to go away from home to get news. Some one has given this item to THE MANUFACTURER before letting the *Review* get seized of it. It is all right, however. Its appearance in Canada's leading trade journal cannot fail to be of benefit both to the town and to the industry. Inquiry by the *Review* proves the correctness, substantially, of the paragraph quoted. Next week the works will be in operation, with every prospect of a large and prosperous business."

THE new Grand Trunk railway bridge over the Trent River at Hastings, for which Mr. W. H. Law has the contract, is to be completed by the 1st of May. It will consist of three deck girder bridges, of eighty feet span each, and one swing span 130 feet long. It will be entirely constructed of iron. Other contracts which Mr. Law has on hand are a bridge for Fullerton township, Perth county, of 100 feet span; a bridge for the counties of Elgin and Middlesex of two spans, 180 and 64 feet respectively, with wrought iron abutments; and a contract for rods for a bridge for the Canadian Pacific on the Credit Valley road. Over 250 tons of iron will be required for this work.—Peterborough, Ont., *Review*.

At the last meeting of the Winnipeg city council, a motion was passed unanimously, offering Messrs. Hastings Bros. & McGaw, exemption from taxation for fifteen years upon all buildings and machinery erected by them in building and operating a flour mill and elevator in the city; the mill to be of a capacity of at least 600 barrels per day, the exemption to be conditional on the carrying of a by-law to that effect by popular vote. Ald. Riley explained that Messrs. Hastings and McGaw proposed investing \$100,000 in buildings, etc., and would pay from \$20,000 to \$25,000 annually in wages. This places the proposed mill on the same footing as the Ogilvie mill, which received a like exemption.—*Winnipeg Commercial*.

At the recent annual supper and ball of the Canada Jute Company, of Montreal, in that city, Mr. A. H. Wood referred to the fact that six years ago, all bags for grain, etc., had to be imported from the old country, when Mr. (now Senator) G. A. Drummond, thought they might as well be manufactured in Montreal, and accordingly a new industry was started. Mr. Drummond imported machinery and men from Dundee, and a start was made on College street. The business so progressed that they had to remove to their present fine premises on St. Martin street. Formerly they had ten machines, turning out 10,000 bags per day and employed 30 hands; now they have 24 machines turning out 30,000 bags per day and employing over sixty hands.

THE Nova Scotia Glass Works, at New Glasgow, N.S., began operations at that place in 1881, and have since then been fairly prosperous, paying an annual dividend of seven per cent. on capital stock, and having now on hand a reserve fund of twenty per cent. They have sold in the seven years over \$600,000 worth of goods and paid in wages, \$260,000. About four-fifths of the goods have gone to the upper provinces, some going as far west as British Columbia. The company employ almost entirely Nova Scotia born labor, the exception being a few foreign expert mechanics. About 135 men and boys are employed, and the annual pay roll is about \$35,000. The company contemplate enlarging their business and hope within the next year to double their output.

MESSRS. AHEARN & SOPER, of Ottawa, have received a contract from the Commercial Cable Company, of New York, better known as the Mackay-Bennett Cable Company, to form a connection through Canadian territory with the company's ocean cables. At present the Mackay-Bennett Company's cables land at Cape Canso, the extreme eastern point of Nova Scotia, and thence are connected by shorter cables with Coney Island, N. Y. The Canadian lines will

HENRY PORTER,

MANUFACTURER OF

LEATHER BELTING

432 to 442 Visitation Street, Montreal, Que.

AND

36 FRONT STREET EAST, TORONTO.

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

Standard Drain Pipe

I am prepared to supply in any desired quantities first-class **CANADIAN SALT GLAZED VITRIFIED FIRE CLAY DRAIN PIPE**, manufactured by the Standard Drain Pipe Company, of St. John's, Que.

ROBT. CARROLL, 66 Adelaide St. West,

Telephone No. 208.

TORONTO.

G. & J. BROWN M'FG CO.

(LIMITED).

BELLEVILLE, ONT.

Engineers, Machinists, Boiler Makers,

Foundrymen and Bridge Builders.

RAILWAY and CONTRACTORS' SUPPLIES A SPECIALTY.

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

begin at Cape Canso and pass through Nova Scotia and New Brunswick, forming a connection with the extensive system of telegraph of the Canadian Pacific Railway. The lines are to be specially heavy to secure permanence and steady service, the electric conductors to be used being larger than any hitherto erected in this country.

THE Dumfries Roller Mills, at Galt, Ont., of which Mr. John Cherry is proprietor, is a full roller mill with 12 pairs of rolls, with a capacity of 100 barrels a day. Everything is new inside, from the foundation up, and the transformation from a stone to a roller mill cost some \$10,000. The machinery was all prepared and put in by Goldie & McCulloch, and the mill is run by one of their Little Giant water wheels. Among the machines are a cockle and separator combined machine, a brush machine, a smutting machine, four double jumpers, short and bran dusters, an improved aspirator, eight Galt universal flour dressing machines, eight round reels and an improved dust collector. Two run of stones are still retained for chopping. There is also in connection a 30,000 bushel store house.

MESSRS. JAMES WARNOCK & Co., edge tool and carriage spring works at Galt, Ont., were considerably damaged by fire Jan. 12,

loss about \$20,000. These works gave employment to between 70 and 80 hands, and extensive orders for goods from different Ontario and Manitoba points had been lately received, which would have taxed the capacity of the works for some time to fill. With commendable energy Mr. Warnock quickly largely arranged for the prompt filling of these orders, and it is almost a certainty that with but very little delay, the entire works will again be in full operation. The firm have fitted up other premises for their carriage gear department, and are again able to execute all orders; and the edge tool department will soon be in full running order, when all orders will be promptly attended to.

THE Dominion Cartridge Co., of Montreal, is one of the most successful of Canada's industries, and is managed by wide-awake, experienced experts in the manufacture of ammunition. Their inspected cartridges are superior in accuracy and velocity to either of the American makes. Tests made on an electric chronograph with these cartridges, and those of the Winchester make, show that the Dominion bullets were grouped together on the target, while the Winchester were more scattered, and the Dominion had over a hundred feet per second greater velocity, at a test held in Regina, under Government inspectors. The Dominion beat the Winchester by 30 per cent in accuracy, and 12½ per cent in penetration. In the face of 45 per cent. duty, this company are placing their cartridges by the car load into the American market. They also have a large foreign trade, and are deserving of their success.

MESSRS. CHARLES BOECKH & SONS, Toronto, have sent us their circular, just issued to the trade, having reference to the Boeckh's Standard brushes manufactured by them. They call particular attention to their new line of solid back brushes, which, they say, are the strongest and most durable on the market, and which are specially adapted for use for scrubbing, shoe, horse, dandy, cloth, etc. Other lines of brushes alluded to include painters', varnishers', kalsominers', artists', household, stable, toilet and machine brushes. Regarding their business they say that they are now in a better position than ever before to turn out first-class goods at lowest prices, and that they have recently added a large variety of new lines. The circular, which is exceedingly tasty and artistic, bears the legend: "There is no article more thoroughly useless than a poor brush; and the best will be found the cheapest in the end."

THE organ factory of Messrs. D. W. Karn & Co., Woodstock, Ont., was established in 1865. The factory is a brick structure four stories high, with a frontage of 400 feet, fitted up with the most improved machinery, and with a capacity of 500 to 600 organs per month, giving employment to 200 men. The goods are shipped to all parts of the known world. At the exhibition just closed at Barcelona, Spain, they received the highest medal of award, and the fact that the instruments find a ready sale in such countries as Switzerland and Germany, where they come in contact with the best known musicians of the world, is a sufficient guarantee of their superior qualities. So great has been the demand that it has been impossible to fill all orders, and the company have purchased additional ground on which to erect buildings. When these extensions are made, the manufacture of pianos will also be commenced.

THE cotton goods industry is extending very rapidly in Canada, and the quality and finish of the goods have improved considerably during the last three years, so much so that the quality, style, and durability are now said to compare favorably with similar manufactures in the United States. According to recent reports, grey cottons are sold at lower prices than they are in the States, by about five per cent. White cottons are at about the same price in the two markets, but coarse goods are cheaper in the Dominion. In colored goods, experts say that Canada compares favorably with Manchester or the United States in variety, style, quality and price. Indeed, the prices of some lines of goods are even less than those purchased in Manchester to-day. The total production remains about the same as last year, being about 8,000,000 yards. The mills are working full time, but prices are not very remunerative, being somewhat lower upon the whole than those of last year.—Yorkshire, Eng., *Post*.

THE shareholders of the Pictou Coal and Iron Company, of Montreal, who own such extensive and valuable deposits of iron ore in the county of Pictou, N.S., are to be congratulated. Mr. J. H. Bartlett, of Montreal, has obtained from the Pictou county council a cash subsidy of \$20,000, as well as remission of all taxes for twenty years. Mr. Bartlett has made a contract with Mr. R. G. Reid, of Montreal, for the construction of a branch railway, ten miles long, leading to the iron mines, and the Dominion Government have arranged to operate the branch as a part of the Intercolonial, and to provide all the rolling stock. It is estimated that over ten million tons of iron ore can be easily and cheaply mined from the Pictou

COWAN & BRITTON,

GANANOQUE, ONT.

MANUFACTURERS OF

**Strap and T. Hinges, Screw Hooks and Hinges,
Wrought Steel Butts for Builders and Cabinet
Makers, Washers, Staples, Hooks, Hasps, Hay
Carrier Hooks, Patent Hasp Locks, Bed
Fasteners, Steel and Iron Cut Nails,
Clout, Truck and Finishing Nails,
Brads, Tacks and Shoe Nails.**

We are also prepared to make special Nails or Hinges, or other articles made from iron from samples. The quality of our goods is always A. 1, and our facilities for making them are unequalled.

FOR

Cylinder, Machinery & Wool Oils

WRITE TO

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

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

MACHINE BRUSHES

All kinds, Made to Order.

HIGHEST QUALITY OF WORK GUARANTEED

SEND FULL PARTICULARS OF DIMENSIONS AND
QUALITY WHEN ORDERING.

Old Rollers or Blocks Re-filled with special care.

CHAS. BOECKH & SONS,

MANUFACTURERS,

Office and Warerooms: 80 York Street.

Factory: 142 to 150 Adelaide Street West,
TORONTO, CANADA.

Coal and Iron Company's mines, which are only seven miles from the Pictou coal mines and ten miles from the Atlantic tide water. The location of the blast furnaces has not yet been definitely settled.

THE mills of the Blythe Woolen Company, at Peterborough, Ont. are to be enlarged and new machinery added which will largely increase their capacity. These mills are under the management of Mr. J. M. Masson, whose picture was recently produced in *Baldwin's Textile Designer*, allusion to which was made in these pages. Mr. Masson learned his trade with Messrs. J. & J. Crombie, of Aberdeenshire, Scotland, near which place he was born, and came to America on the invitation of the Rosamond Woolen Company, of Almonte, Ont., in whose employ he was designer. Since then he has been superintendent and designer to the Hespeler Manufacturing Company, at Hespeler, Ont., and designer to the Auburn Woolen Company, at Peterborough, Ont., which latter position he quit about four years ago to connect himself with the Blythe Woolen Company, above alluded to, in which concern he has a large financial interest.

THERE is on exhibition at Worcester a portable house, to be used by the Harvard astronomical party in their South American expedition. The building is made of heavy paper and canvas, the sheets being stretched upon a frame of pine scantling three-quarters of an inch wide and half an inch thick. It is built in small sections, so that it can be easily and cheaply transported. The building, when ready for occupancy, will be 18x22 feet, with eight-foot posts, and covered with a third pitch hip roof, thus raising the centre of the roof about fourteen feet above the floor. The top is surmounted by a handsome galvanized iron cupola, in the centre of which is a large pipe, which can be used as a stove funnel in cold weather. The cupola is made in movable sections for the purpose of affording ventilation. The sections are worked with chains, and can be regulated as the occupant wishes. The building is divided into three rooms, and is lighted by six large windows, and has two entrances, one on either side. The building will be taken down, packed, and sent to New York, where it will be shipped to Peru, South America.—*Boston Transcript*.

MESSRS. DAVID MAXWELL & SONS, manufacturers of Maxwell's harvesting machinery, binders, reapers, mowers, rakes, etc., whose factory was until recently at Paris, Ont., and who recently removed to St. Mary's, Ont., inform us that their works at the latter place were started up January 1, all of the machinery, office staff, etc., being in full working order in their new quarters. Their St. Mary's buildings are very complete, and they think their arrangements superior to any of the kind elsewhere in Canada for the manufacture of agricultural implements. The name of the concern was, on January 1, changed from David Maxwell to David Maxwell & Sons, Mr. Maxwell's three sons becoming partners in the concern. The main building of the new works is 230x50 feet, two stories and basement, and includes machine and paint shop; the carpenter shop is 130x45 feet; the blacksmith shop is the same in size; the foundry is 120x60 feet, and the storehouse, situated on the firm's own switch connecting with the London branch of the Grand Trunk Railroad, is 200x50 feet, two stories high. All these buildings are detached, as is also the engine and boiler house, and coal house and offices.

The J. B. Armstrong Mufg. Co., of Guelph, Canada, inform us

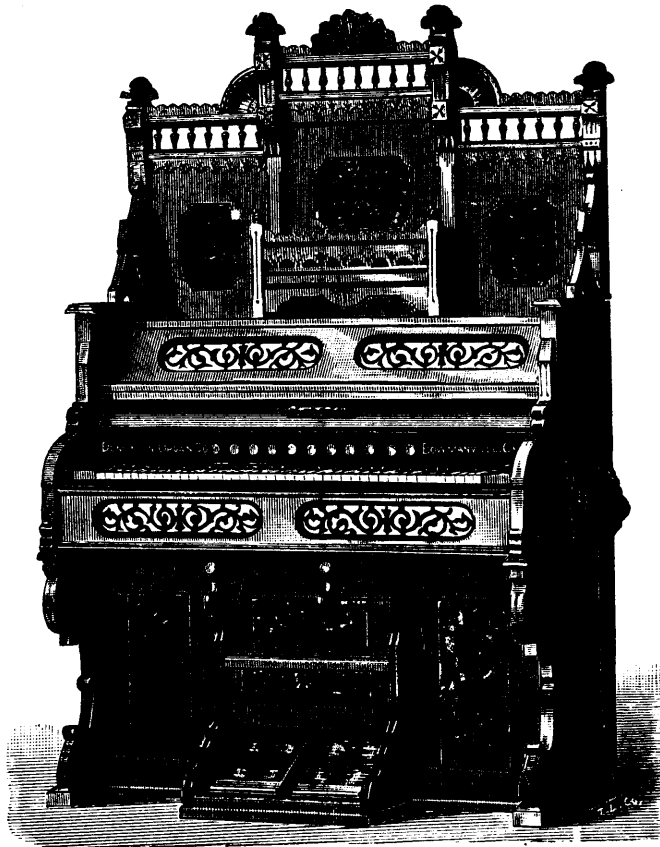
that they have just been advised of a most gratifying success, in the award on their exhibit at the Melbourne International Exhibition, Australia, of two gold medals and a diploma of merit, the highest honors in the hands of the Commissioners, and secured by this firm in the face of the strongest competition with the leading prominent manufacturers in their lines from England and the United States. The manner in which this hard-headed people have recognized the many advantages of this firm's improvements in their new perfect single and perfect plate carriage springs, steel gears for buggies, carriages, carts and gigs; jump-seat steels, seats, steel-heeled poles, shafts, etc., is certainly flattering to Canada as a manufacturing country, and to Mr. Armstrong as the originator and patentee of these specialties, now so well known on the American and European markets. The prospects for considerable and increasing Australian demand for them are good. Our readers should be familiar with the Armstrong Company's advertisement which appears regularly in our columns, and in its changes, by which they keep the public posted on their standard specialties and improvements in their line, as produced from time to time.

OIL has been burned in lamps for many centuries, but no real improvement in oil lamps was made till about 100 years ago, or about 1783, when M. Argand, a Swiss who lived at London, invented the cylindrical wick and burner, which has since borne his name. Soon after the glass chimney was introduced, and lighting by oil was fully revolutionized. These two improvements multiplied the light to be obtained from a lamp, and by producing a perfect combustion of the oil, obviated the smoke and bad odors previously inseparable from the use of oil lamps. Other improvements followed, one of the most notable being the placing of the reservoir of oil below the burner instead of above, making the lamp much more convenient. This was a discovery of Philippe Girard, a Frenchman, about 1807. Another Frenchman, named Carcel, contrived a mechanism to regulate the supply of oil, but his contrivance was superseded by the modern lamp, introduced about sixty years ago. Some further modifications of lamps followed the discovery of petroleum, but these are the principal features included in the lamps of the present day, the Argand principle being substantially unchanged.—*Good Housekeeping*.

"DOMINION"

PIANOS

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



ORGANS

Large stock now on
hand at very low
prices at the

TORONTO
Temple & Music

J. S. POWLEY & CO.
68 King St. W.

MR. W. H. LAW, of the Central Bridge Works, Peterborough, has a couple of views of the engine shed being built in Montreal for the Canadian Pacific. They show the appearance of the building and of the steel frame of the roof. Mr. Law has the contract for the steel work on the roof. The building is 500 feet long by 90 feet, and each truss for the roof weighs six and a half tons. The trusses and girders were made and put together, ready to be put in position, at the works here, and were taken to Montreal on cars, two cars being required on which to place the trusses. The photographs show the large derricks, 45 feet high with timbers 8x8, with which the trusses are raised to their positions, and show the workmen making the connections. It is a fact satisfactory alike to Mr. Law and the company, and very creditable to the Bridge Works, that not a hitch has occurred in the work, all the sections going together accurately. From the floor to the top of the ventilator is 50 feet, and from the street which runs under the building to the top is 70 feet, so that this is an immense structure. The roof will be boarded and covered with slate and glass. Mr. Law has nearly finished his contract and will probably complete it this week. The Chief Engineer is well pleased with the work, and has complimented Mr. Law on the manner in which it has been carried out.—*Peterborough Review*.

ABOUT fifty well-known railroad men, capitalists, and mechanical engineers witnessed yesterday, at the invitation of the Lehigh Valley Railroad Company, tests of the new Widdifield and Bowman electric and automatic brake system. A train of fifteen cars had been equipped, which made a trip from Perth Junction to Three Rivers and return, a distance of 70 miles. Tests of different kinds were made at frequent intervals. An emergency stop, with a speed of thirty-four miles an hour, brought the train to a standstill in twenty-eight seconds, or 680 feet. A service stop, with a speed of twenty-nine miles an hour, was made in 680 feet. The train was broken under a speed of thirty-two miles an hour, and the detached portion stopped in twenty-seven seconds. The essential features of this new system consists of a composite sleeve, cast on to the car axle, upon which two friction pulleys, properly geared, are thrown into action by an impulse of electric current, by which a chain gear is wound and the brake applied. The electricity is stored in the engine and rear car and carried by insulated cable along the train with proper couplings between cars. Each car is acted upon independently and instantly, and the train stopped without bumping

or any vibration.—*New York Times*. The inventor of this important brake system is Mr. W. P. Widdifield, of Uxbridge, Ont. The owners of the different patents for the world are all Canadians, of whom are Anson T. Button and W. Playter Widdifield, of Uxbridge; Samuel Street Fuller, of Stratford; T. Richard Fuller and J. B. Perry, of Toronto. Mr. Perry, who has been successful in disposing of several valuable patents, is engaged forming a strong corporation in New York to exploit the invention for America, and has secured some of the best known capitalists in different parts of the States to head the company.

In many factories the want of a little intelligence as to the proper method of fixing belts leads, in the aggregate, to a serious item of loss in the course of a year. Some experiments, made by an engineer in the cotton mill in the States, showed that the power used to drive the shafting alone amounted to between 22 and 39 per cent. of the whole power used in the mill, and we have little doubt that if similar experiments were undertaken in some of the establishments in this country, results showing an equal loss would be apparent. An allowance of 15 per cent. is, or should be, a fair average to make for the loss through friction of bearings and belts. If, therefore, we reckon an expenditure of $3\frac{1}{2}$ lbs of coal per horse power per hour, at say, 35 lbs a day of ten hours, it is a simple matter to calculate how much fuel is wasted. A mistake which we have had occasion before to refer to in our columns, and which is often made, consists in putting on new belts too tight. There is, perhaps, no one specially in charge of the belting, and as each man is allowed to put it on in his own way he makes the belt very tight, knowing that, being a new one, it will stretch, and soon require "taking up." The effect of this excessive tension, besides the loss of power, is to pull the belt into short "crooks," destroying its elasticity, and straining the machine upon which it is fixed. A new belt should be as loose as is possible without slipping; and it ought only to be tightened up when it is found really necessary to take it up. The running of the belting, too, is often blamed, when the real fault is that the machine itself is out of order, for the ordinary workman, if he is not a skilled mechanic, does not take the trouble to think. Another hint which may be given is to see that the pulleys are large enough to get the right speed out of the belting, and this is a matter where much depends upon having things in proper proportion.—*The Machinery Market*.

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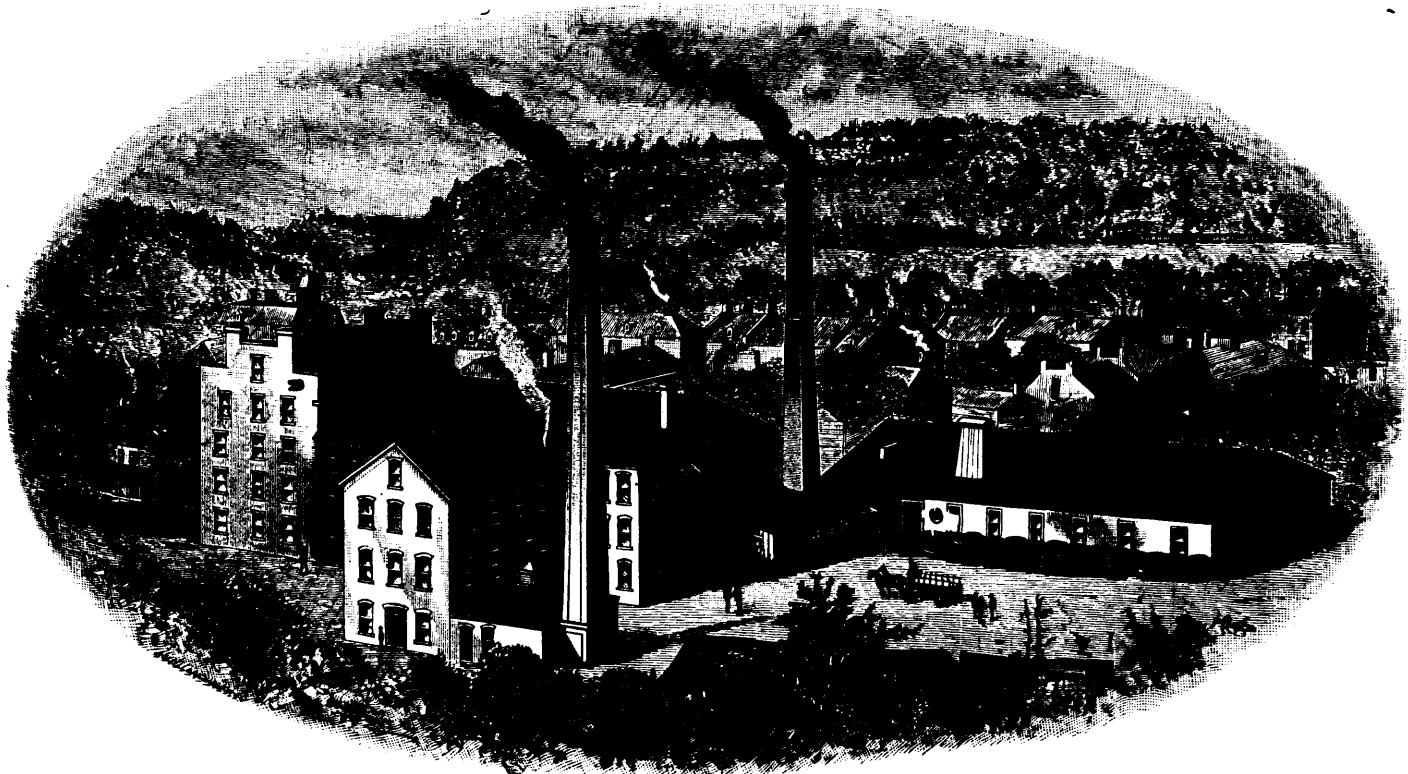
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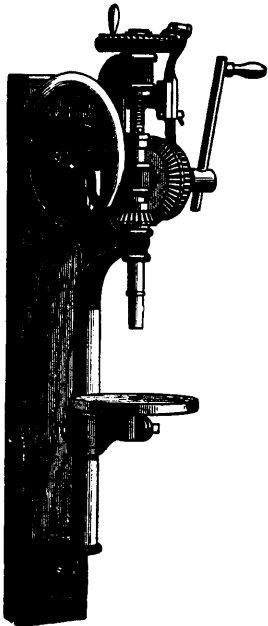
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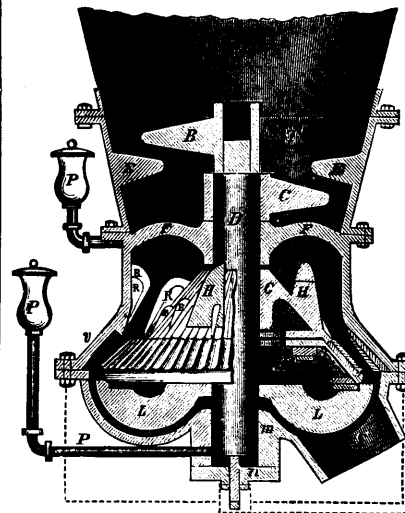
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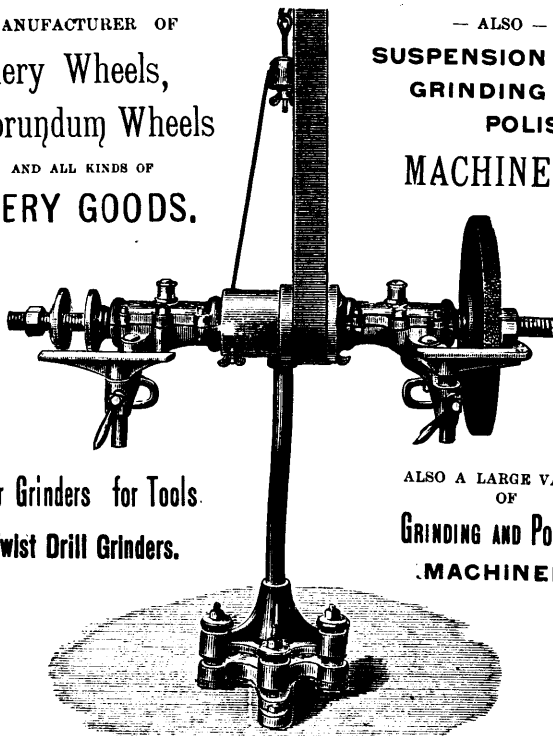
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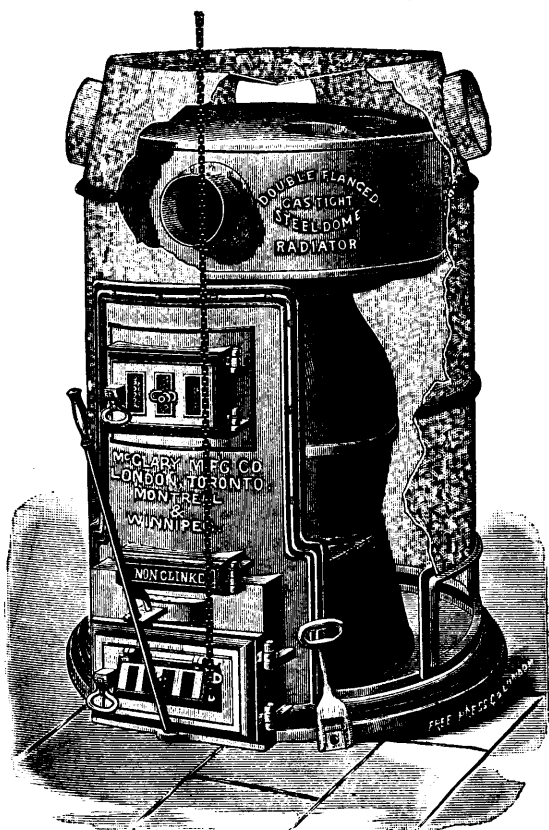
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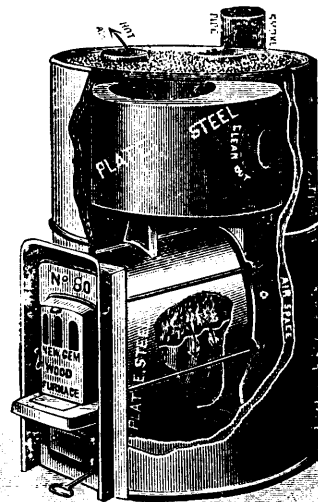
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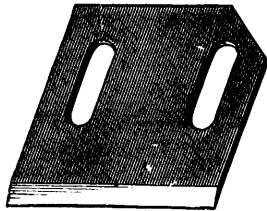
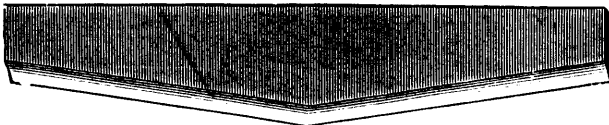
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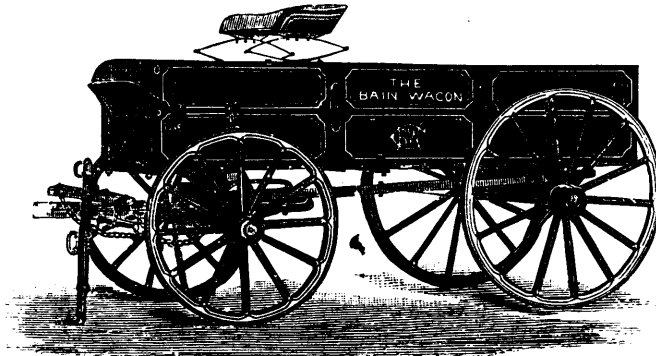
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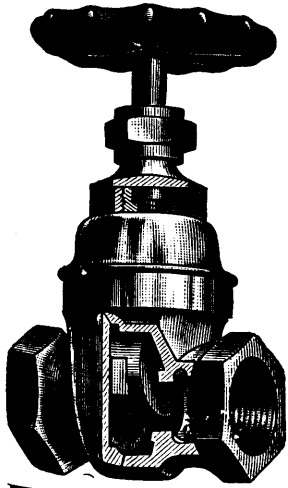
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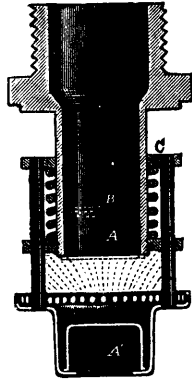
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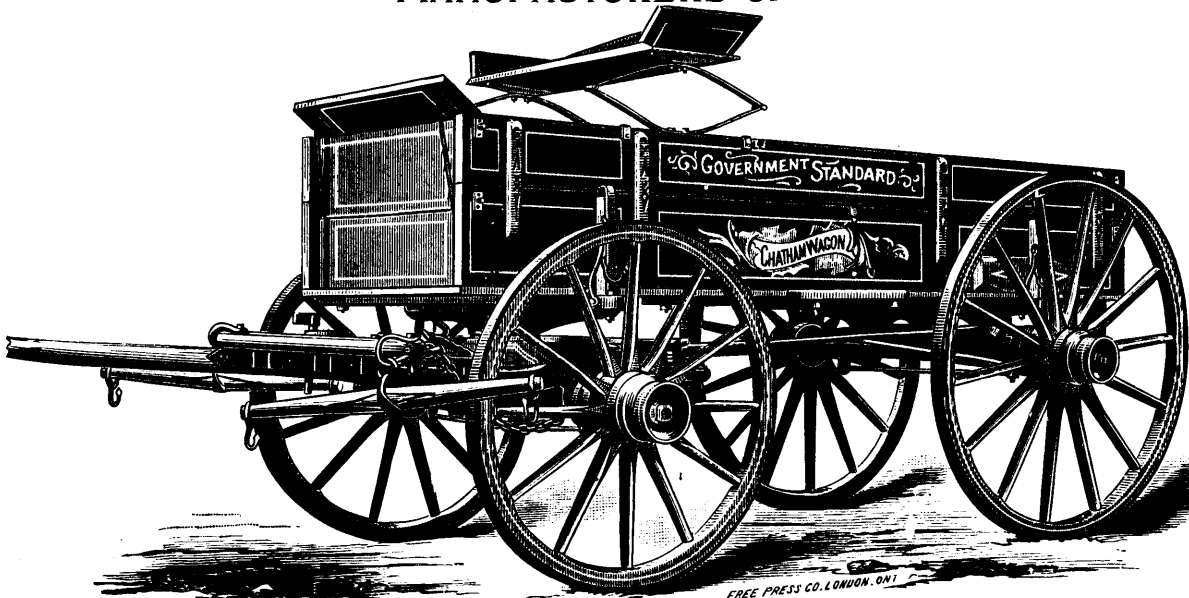
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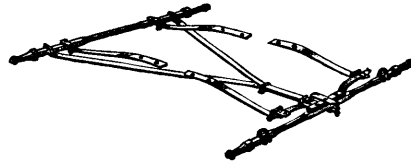
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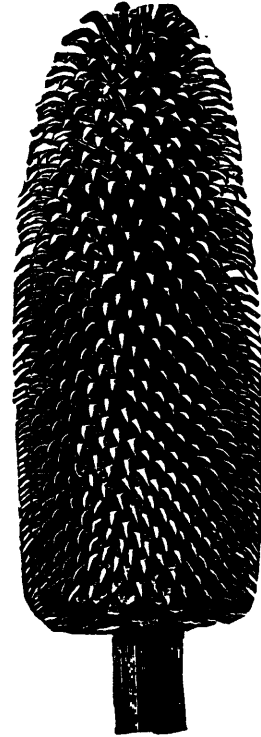
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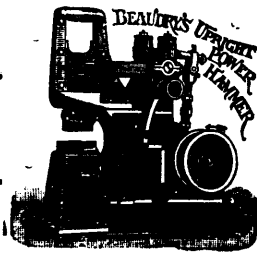
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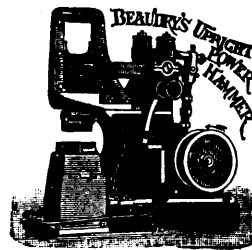
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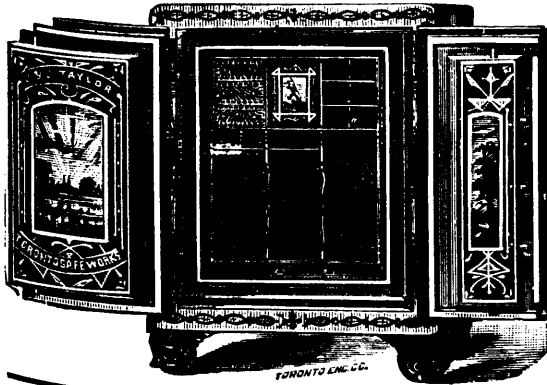


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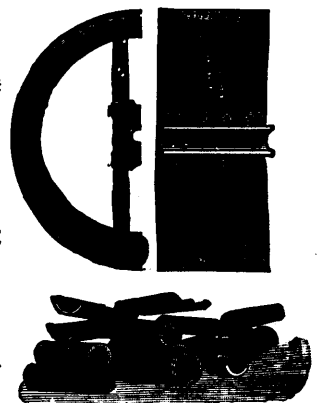
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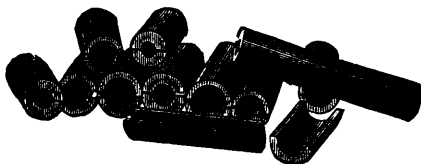
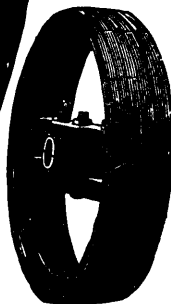
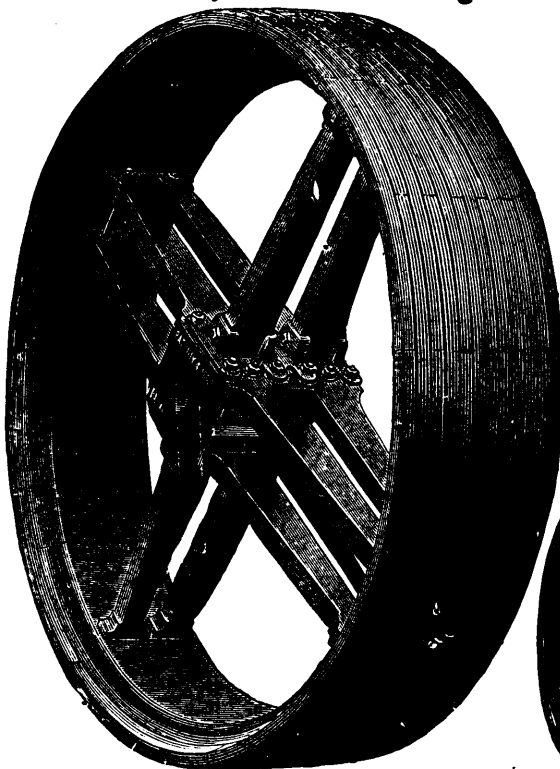
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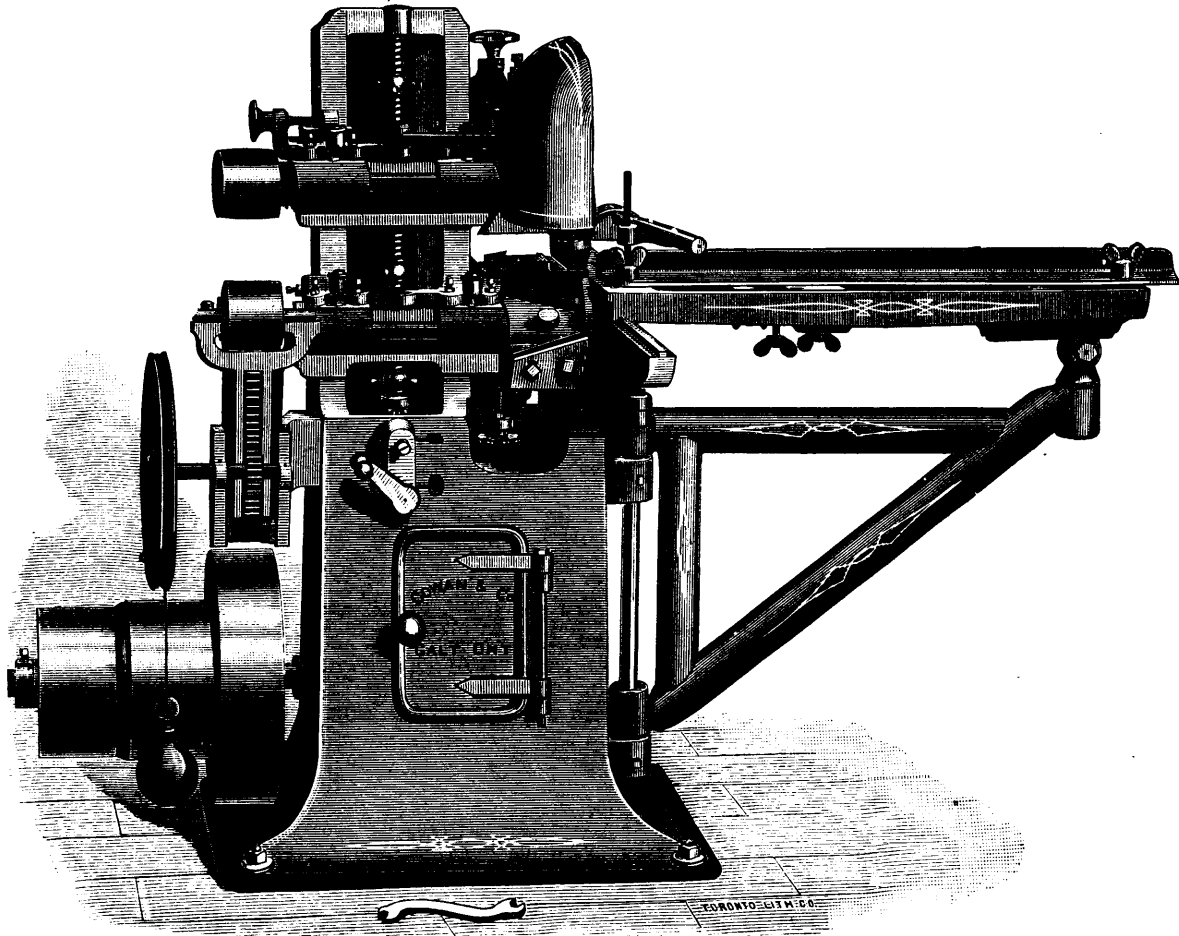
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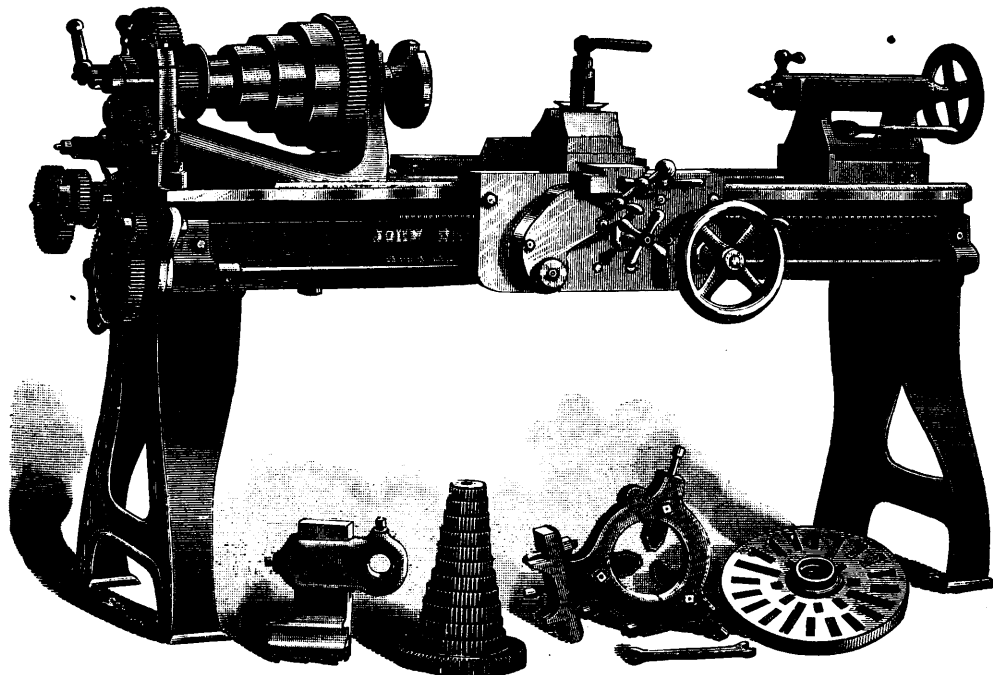
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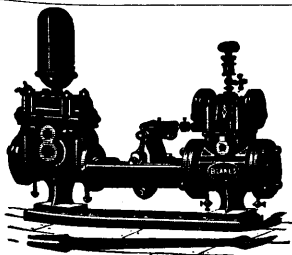
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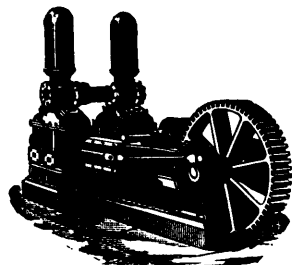
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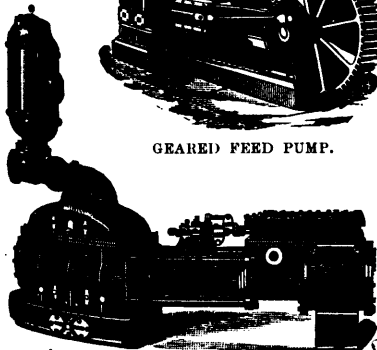
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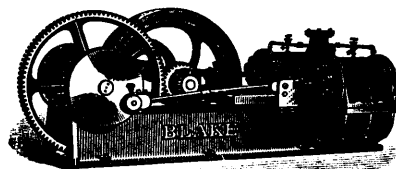
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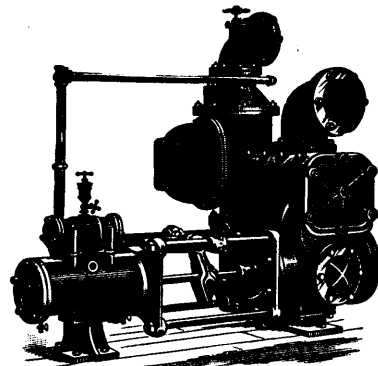


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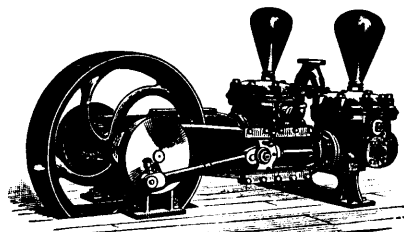
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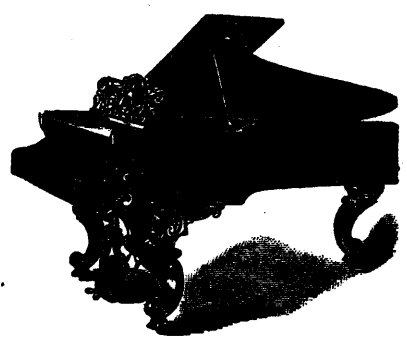
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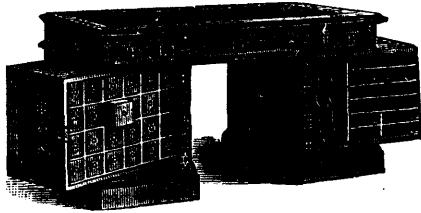
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