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THE CANADIAN MANUFACTURER

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INDUSTRIAL WORLD.

Vol. 13.

TORONTO, SEPTEMBER 16, 1887.

No. 6.

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THE CANADIAN MANUFACTURER

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OF THE DOMINION. *
AND INDUSTRIAL WORLD.

VOL. XIII.

TORONTO, ONT., SEPTEMBER 16, 1887.

No. 6.

THE TORONTO EXHIBITION.

THE grand Dominion and Industrial Exhibition, of Toronto, opened according to programme on Tuesday of last week, and will close to-night.

To state that this exhibition has proven a grand and unqualified success, both as regards the attractions presented and also the financial results, is but a mild manner of asserting a most pronounced fact. During the ten days of its continuance more than \$52,000 were received for admissions to the grounds, an average of \$5,200 a day, the really "big" days being Monday and Wednesday of this week, when the gate receipts were \$11,107 and \$12,229 respectively. The receipts from admissions last year were \$40,897, and in 1885, \$34,134. Considering the number of persons who have access to the grounds without passing the turn stiles, and who do not pay for their admission—exhibitors and their assistants, employees, etc.—more than a quarter of a million of persons have visited the Exhibition grounds this year.

This success of the Exhibition is due, of course, to the management of it, and too much cannot be said in praise of those who have it in charge, specially of Mr. H. J. Hill, the manager, and secretary of the Association. The improvements made upon the grounds since last year involved the expenditure of a great deal of money, the large Annex to the Main Building, in which such extensive and valuable exhibits are made, and the Press Bureau building, which cost over \$4,000, being the most noticeable features. Besides these, other buildings were enlarged and modified, and the grounds beautified without regard to cost, and quite a number of new private exhibition buildings were also erected; and it is safe to say that there are no similar exhibition grounds and buildings, in either Canada or the United States, as thoroughly and completely finished and arranged as these. Mr. Hill is undoubtedly the right man in the right place, as manager of the most successful exhibition in the country.

The Dominion grant of \$10,000, in addition to the amount usually appropriated for the purpose, enabled the Exhibition Association to appropriate most generous sums for premiums, awards, medals, etc., and in this direction we are pleased to notice the fact that manufacturers were most generously dealt with, and many of our friends will carry away valuable trophies attesting the excellence of their products and their appreciation by the judges who passed upon their merits.

The Association in erecting the Press Bureau building conferred a favor upon the newspaper fraternity which they fully appreciate. Heretofore their habitation has been in tents, but the elegant and commodious structure built for their exclusive accommodation enables them to transact business in comfort,

and to entertain visiting newspaper men with hospitality. The entire building during the whole of the Exhibition has been illuminated at night by both arc and incandescent electric lights, furnished through the courtesy of the American Electric Construction Company. The CANADIAN MANUFACTURER was assigned one of the most eligible and pleasant offices in the building, which has been a rendezvous for the manufacturing fraternity and our friends generally.

The beneficial results arising from this exhibition are widespread, and not only Toronto, but Ontario and the whole Dominion will feel and enjoy them for a long time to come. We look forward with the most pleasant anticipations to the recurrence of the exhibition next year.

THE ETHICS OF TYRANNY.

IN a recent issue of this JOURNAL we mentioned the fact that a man in Hamilton, named Buscombe, an humble bricklayer, who earns an honest living in the construction of sewers, was in some danger of losing his job through the demands of the Labor Union there that he should be discharged, on the ground that he was a "black sheep" or something of the sort, the offence charged against him being that he had once belonged to the organization; had forfeited his membership therein; owed back dues which he would not pay, and would not return to his allegiance to the order. In answer to this, Buscombe says that the Labor Union has no claims upon him whatever; that he does not owe any back dues; that he does not wish to return to the organization, and that he has never done anything to deserve their censure.

There seems to be an issue of veracity involved in the matter, with which we have nothing to do. Admitting that all that is said against Buscombe is true, it does not affect the question. The issue is whether a mechanic who is doing good and efficient work for his employer, and giving a quid pro quo for his wages, shall be driven from his job on the demand of a labor organization, no matter what peculiar circumstances may exist as between the man and the organization, with which the employer—in this case the city of Hamilton—has no concern. We stigmatized the transaction alluded to as being cruel, unjustifiable and outrageous boycotting, and champions of the oppressors of this poor laboring man seek to defend their outrageous conduct by saying that it is contrary to the "ethics" of labor organizations "to work with or associate with a man who is in default to his union." These champions of tyranny claim that it is fair and justifiable to compel the payment of what they say this man Buscombe owes by the methods adopted. With the Labor Union it is a question of "ethics," but with the poor laboring man, Buscombe, it is a question of bread

"Ethics" may be a good thing in its place, but there are many circumstances in which the enforcement of the rules of ethics may prove to be most tyrannical, and the case here alluded to is such an one. Ethics is the science of human duty, and is applicable to any particular system of principles concerning duty. The "ethics" of this case is that Buscombe, being a defaulter to his union, is not a suitable or fit person for other bricklayers engaged in building sewers, to work alongside of in such occupation. No one denies the right of the Labor Unions when assembled as such in their lodge room to enforce their rules of "ethics," and exclude whom they please. Usually in such assemblages there are those who are not debarred entrance by the rules of ethics, all meeting and standing on one common platform, either socially or otherwise; but this fact does not prevail outside the lodge room, and no member is under any obligation to meet any other member on terms of social equality elsewhere if he does not desire to do so. When assembled in their lodge each member of a union is supposed to be on an equal footing with all other members; but "ethics" does not require this outside the lodge, where members resume their individuality, and are not expected to associate socially with other members if they desire not to do so. Business men are constantly thrown in contact with and have business intercourse with other men, all in the most free and friendly way imaginable, whom they do not consider their social equals, and with whom there is no social communion, but this is no bar to business, nor reason why business between them should not be transacted. Supposing a ship at sea with a valuable cargo and many precious lives on board, and the discovery made among the crew, who happen to be union men, that one of their number is a defaulter to his union. Would this be a case where the "ethics" of the union would justify the men in refusing to work with the defaulter? Such refusal would be mutiny; the mutineers could be compelled at the muzzle of the pistol to work the ship into port, and on arrival there they would be tried for a heinous offence, the punishment of which is death.

As we remark, "ethics" may be a good thing in its place, but the fastidiously ethical tyrants of the Labor Unions have no ethical, moral or legal right to deprive any man of his job whereby he may be earning his living, forcing him into pauperism, and making his wife and children beggars, even if he is in arrears of dues to his union and refuses to pay up.

The worst enemies the labor organizations have are those who profess to be its best friends. There are many leeches who cling to them, and while loud-mouthed and vulgar in preaching the "ethics" to be observed in driving objectionable workmen away from their jobs, loll in laziness in easy berths, jawsmiths by profession, and remarkably adept by practice, and foment discord that they may the longer retain their hold upon the dupes from whom they wring their living. Such ethical leeches should be shaken off.

WHAT PROTECTION HAS DONE.

SOME ten years ago Germany adopted a protective tariff system, and to-day that nation is one of the most formidable rivals that Great Britain has for the trade of the neutral markets of the world. And not only in the markets of non-manufacturing countries is Germany crowding England to the wall, but even in Great Britain is German manufactures supplanting those of domestic make. When France emerged from its recent struggle with Germany, in addition to paying its own expenses incident to one of the most fearful struggles of modern times, it was compelled to pay the cost on the other side also—an amount that it seemed too great ever to be met, but all this vast expense was paid, and to-day France is one of the wealthiest and most prosperous nations of the world. The treasure was realized through the operations chiefly of its protective tariff. When the recent war of the rebellion in the United States was about breaking out under Mr. Buchanan's administration, there was a deficit in the Federal treasury

which had to be made good by a loan, which was flouted on the market at a cost to the government of twelve per cent. This was under a "tariff for revenue only" policy. With the advent of the Republican party to power came what is known as the Morrill tariff—highly protective, and to-day the treasury of the United States is overburdened with wealth.

These facts are commended to the consideration of those who assert that any country having a protective tariff cannot reach the acme of prosperity. Ten years ago a prophecy that Germany would soon be a most dangerous competitor with Great Britain in selling their respective manufactured products in the open markets of the world, would have been laughed at, but now British manufacturers find even their own markets invaded by Germans, and even many supplies for the British Government are made in Germany. It is true that the United States are not as yet extensive exporters of their manufactured wares, but the recent depressions in business there, incident to over-production, warn them that they must find additional markets for the sale of their goods, and they are turning longing eyes towards Canada as their almost acquired dumping ground.

Canada should consider these facts. If protection makes Germany a strong competitor of Britain: if protection enabled France to pay off the debt of both sides engaged in the Franco-Prussian war and to be again prepared for another contest, as she is; and if protection has made the United States the richest nation on the face of the globe, now that Canada has protective tariff it will be well for her to adhere to it preserve it, and thereby derive similar benefits from it.

CARD BASKET.

THE following-named gentlemen have visited the office of the CANADIAN MANUFACTURER in the Press Bureau building at the Exhibition grounds during the past two weeks:

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MR. FREDERIC NICHOLLS is Secretary of
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 The Woolen Manufacturers' Association, and
 The Tanners' Association.
 His Office is at the Publication Office of
 THE CANADIAN MANUFACTURER,
 6 Wellington Street West, Toronto.

Any association of manufacturers who may desire to hold meetings for organization or other purposes, are invited to avail themselves of the meeting room adjoining the office of the CANADIAN MANUFACTURER.

Our readers will observe that instead of supplying them with our usual manufacturing notes in this issue, we have occupied the space with brief descriptions of some of the more important displays made by manufacturers at the Industrial and Dominion Exhibition in this city now just closing. These descriptions are very interesting reading, giving us they do some idea of the efforts manufacturers are making to bring their products more fully to the attention of the public, and of the wonderful and useful strides they are making in the mechanical arts and sciences.

The appeal for a new trial for the Chicago anarchists has been refused, and unless the Supreme Court of the United States intervenes these seven wretched men will expiate their offence upon the gallows in November. The entire press of the United States, and of Canada also, with the exception of those of Anarchial tendencies, express the opinion that the trial of these men in Chicago was fair, and the Supreme Court of the State of Illinois think so too.

HENRY DEAN, while in the employ of the Ontario Cotton Company at Hamilton, fell into a dye-vat and had one foot and leg scalded. He entered an action under the Employers' Liability Act, but was non-suited by the late Chief Justice Cameron. A new trial was ordered and Dean has now obtained a verdict for \$125 and costs. Though the suit was nominally against the cotton mills company, the real defendant is a Montreal insurance company with which the Hamilton company had taken risks on its employees, and which will have to pay the amount of the verdict.

AN anarchist paper published in Canada says that the execution of the condemned bomb throwing Chicago anarchists will be murder—merely the continuation of the series of murders which the associated monopolists have been committing for the purpose of terrorizing the wage slaves. Herr Most's paper cries out regarding the decision of the Court "Vive la Solidarity! You can prevent this judicial murder if you want to." Another anarchist paper says: "It is the spirit of the era that is to be strangled on the gallows." The misfortune is that the Chicago sheriff wont have hempen neckties enough for all who deserve them.

THE Permanent Exhibition of Manufactures, of Messrs Nicholls and Howland, in this city, will receive a large number of the displays of manufacturers which are made at the Toronto Exhibition. This new enterprise is meeting with much favor from many who manufacture goods for sale, and who

wish to keep them before the public in the most advantageous manner. We learn that quite a number of sales have already been made through the method here indicated, and the concern is yet but in its infancy. The utility of this Permanent Exhibition, and the benefits that are to be derived from its establishment are apparent and real. It is a success.

THE British Government have granted a subsidy of £45,000 annually to the Canadian Pacific Railway Company for the establishment of a monthly mail service between Vancouver, B.C., and certain Asiatic ports. A class of steamers is to be constructed under Admiralty supervision capable of steaming eighteen knots an hour, and adapted for conversion at short notice into armed cruisers. By the new service there will be a great saving of time in communicating by mail between Great Britain and the East. It will be next in order to establish a similar line of steamers between Vancouver and Australian ports.

THE Saturday half holiday recently made legal by the legislature of the State of New York is working much hardship to manufacturers and other employers of labor in that state. The complaint is that it imposes a severe tax upon the employers, as it deprives them of fifty-two half days, or twenty-six whole days, or just one month of time that might be devoted to productive labor. The expenses of most of the large establishments continue just the same during these holiday periods as on working days, and it reduces New York State to eleven months of money-earning time in each year as against twelve months in other States. It handicaps New York City against Philadelphia, Boston, Chicago, Baltimore and other competing points to the extent of 8½ per cent.

A wealthy syndicate has been formed at Sault Ste. Marie to construct a water-power canal 3 miles long, from the river above the city to the river below. Eastern and western capitalists have combined to construct this canal at a cost of \$3,000,000. The ground is ready for the engineers, who will commence work in a few days. The canal empties its waters into a number of flumes, from which the water is to be turned on to the water-wheels to run mills, factories, etc. The plan prepared by the water-power company is to give a free lease of the land to individuals or corporations who will build on their land, and to furnish whatever power is required at \$10 per horse power per annum. With the canal complete with 18 feet fall, and Lake Superior for a mill pond, an amount of power can be furnished almost beyond calculation.—*American Manufacturer.*

WHAT may be done on the American side may be quite as easily accomplished on the Canadian side. The source of the power is inexhaustible, and it would be interesting to observe a similar utilization of the advantages existing on this side of the river.

RECENTLY the Toronto Trades and Labor Council wrote to the Minister of Public Works protesting against the employment of convict labor in building the new dry dock at Kingston, Ont., and to which the following reply has been sent:

Ottawa, Sept. 10th, 1887.

SIR—I am directed by the Minister of Public Works to acknowledge the receipt of your letter of August 21st, stating that the Toronto Trades and Labor Council protests against the employment of convict labor on the proposed dry dock at Kingston, and to say that no decision has as yet been arrived

at by the Government with reference to the dock. The Minister wishes me to add, however, that inasmuch as there is a quarry in the Penitentiary grounds, and it would not be advisable to employ any amount of free labor inside of the Penitentiary enclosure, it is most probable that the stone for the dock will be taken from this quarry by convict labor, as it would be as inadvisable to employ convict labor outside of the Penitentiary as it would be to employ free labor inside. I am further directed to state that there is no intention of employing convict labor on any work connected with the proposed dry dock beyond the quarrying referred to.

A. GOBBIE, Secretary.

MANUFACTURERS' EXHIBITS.

A GREAT many of the displays made by manufacturers at the 1887 Exhibition in Toronto deserves more than a passing notice. The largest, most valuable and varied display at the happiest and most successful exhibition ever held in Canada, it would have been a tame affair if the manufacturers had not taken such hearty interest in it, and brought to the attention of the hundreds of thousands of visitors some of the results of their skill and ingenuity. Most of those whose exhibits are here noticed were rewarded with valuable medals and diplomas. In the following pages will be found descriptions of some of the more important of these displays.

HART EMERY WHEEL COMPANY.

THE Hart Emery Wheel Co., Hamilton, Ont., are to the fore as usual, and occupy their old location in the south-west corner of Machinery Hall. Their exhibit is much larger and more varied than any they have heretofore made, and besides a very large assortment of specimens of the celebrated Hart emery wheels, they are showing the Wray paper wheel, for polishing—a solid looking guide carrying two twenty-four inch wheels, and an assortment of smaller frames carrying wheels down to eight inches in diameter. They also show a machine for grinding iron hollow ware, two belt polishing machines, a planing machine knife grinder, etc. A special machine which this company are manufacturing and which is being most favorably received is the Rodger's patent adjustable saw filer. This tool though introduced only two years ago has achieved a splendid record, more than one hundred and fifty of them having already been sold, shipments having been made not only to parties in Canada, but also in the United States, England, Australia and India. The company inform us that they are in daily receipt of orders for this tool from large lumber manufacturing concerns who already have them in use and are desirous of having more of them. The fact that they are comparatively inexpensive is a strong inducement to mill men to have several of them in their mills, so that there may be as little delay as possible in sharpening saws. They are exceedingly simple in their construction and operation, and do as good and satisfactory work, and as quickly as machines costing four times as much money, and they save the whole cost of files wherever they are used.

It is almost needless to discuss the merits of the Hart emery wheel. All who have occasion to know the uses to which such tools are put, know and appreciate its merits, and they all buy it. No speciality manufactured in Canada has obtained a stronger hold.

In the company's catalogue a number of valuable hints are given to consumers concerning economy in the use of emery wheels, and as the true interests of both manufacturers and consumers are identical, they should be observed. These hints suggest (1st) that heavy and substantial grinders or machines be provided so that the wheels will not overtax them in running; (2nd) that curve pulleys be used so graduated that as the wheels wear down the number of revolutions of the mandrel can be properly increased; (3rd) that iron collars be invariably used on both sides of the wheel, and that rubber washers be used with thin wheels; (4th) that constant supervision over the grinder be exercised, so that the mandrel will not run out of true; (5th) that before putting a new wheel on the mandrel it be tested to see if it is perfect; (6th) before starting a new wheel to be sure and have the belt on the proper step of the cone; (7th) to see that the motion of the wheel is true and even before allowing it to go into work; (8th) that no wheel be allowed to get perceptibly out of true—there being both danger and undue waste when such is the case; (9th) that heavy pressure on the wheel be avoided in grinding, and, (10th) that the rests be kept

close up to the wheels. If all emery wheel users would act on these hints they would save money, time and vexation.

A peculiar feature of the Hart emery wheel is the enclosed brass wire web, the value of which consists in its being a safeguard in cases of accidental ill-usage. It does not affect the cut, as the wire, if the wheel be run at the proper speed, wears in advance of the emery. This web is inserted in all wheels unless orders are given to dispense with it.

Regarding the Wray paper wheel, for polishing and buffing, above spoken of, manufactured by the Hart Emery Wheel Co. They are described as being made of cast board pressed together and cemented, their flexible and absorbent qualities specially adapting them for the purposes for which they are intended. They are made to run in any kind of mandrel, straight or taper, or on centers, some of the advantages of their use being that they are economical—the emery being glued directly on the wheel, thus saving the constant expense of renewing the leather covering of wooden wheels; are perfectly safe—as they can be run at any speed; their face can be turned to suit any work; can be easily and quickly cleaned without removal from the spindle; the rapidity with which they can be cleaned and recovered makes fewer wheels necessary; are superior for grease and coloring purposes, and because an application of emery to them will last longer, owing to their flexible and absorbing nature. It costs but a trifle to try them and when once in use they will be found to be indispensable.

This company invite correspondence regarding the manufacture of any article of emery, or machines intended for grinding or polishing, and they will at all times be glad to assist in developing any device connected with the business of emery manufacture.

Specimens of goods manufactured by the Hart Emery Wheel Co. are displayed at Messrs. Nichols & Howland's Permanent Exhibition, Front Street, Toronto.

ROBIN & SADLER.

MESSRS. ROBIN & SADLER, 2518 to 2522 Notre Dame Street, Montreal, and 129 Bay Street, Toronto, make a fine display in the Annex of the Main Building of leather belting, fire engine hose, lace leather, etc., manufactured by them.

The character of the goods manufactured by this firm is well established, a very large number of machinery users and industrial establishments throughout the Dominion having been using these goods for a number of years. As a further evidence of this the firm exhibit quite a large number of gold and silver medals and diplomas which have been awarded them at various exhibitions at which they have shown their products, among them being those at Toronto, Montreal, Ottawa and St. John, N.B.

All of the standard leather belting manufactured by Messrs. Robin & Sadler is taken from the middle portions of the hide, and none of the belly, shoulders, neck or tail portions are used for this purpose; and in making these belts they always cut the leather lengthwise of the hide, thus avoiding long laps. They recommend to consumers that light double belts are to be preferred instead of ribbed belts, and such will be found to work to advantage on cone pulleys and places where belts have to be shifted on to loose pulleys. The firm always keep belting in stock up to sixteen inches wide, both in single and heavy and light double, and their facilities are such that when greater widths are required they can be manufactured to order on very short notice. They also keep in stock a full supply of rubber and solid cotton belting, and manufacture to order endless belts, loom strapping, etc.

J. & J. TAYLOR.

MESSRS. J. & J. TAYLOR, proprietors of the Toronto Safe Works, Toronto, make a fine display of their fire and burglar proof safes, safe locks, etc., in the Annex of the Main Building, and for which they have been awarded a special gold medal for "General Excellence." There were no awards or diplomas offered by the Exposition Association this year for this class of exhibits, and therefore the unanimous and spontaneous award of the judges to Messrs. Taylor is all the more valuable and gratifying to them. They have nine safes on exhibition, in which are embodied all the latest improvements made in the construction of such goods, the most notable of which is the double tongue and groove doors which render them absolutely safe against fire. The patent for this device was issued to this firm only last year, and it is not used in safes of any other make. All their safes are fitted with dry air chambers by which freedom from dampness and mildew is assured. The safe which secured the gold medal is a burglar proof bank safe, which in addition to its two combination locks, is also fitted with a double chronometer time lock, with safety devices against dynamite, and

electrical attachment, by which the opening can be delayed seventy-five or eighty hours without injury to the safe. A jeweler's safe is shown which has a combination fire and burglar proof door of novel construction. This safe embodies all the improvements introduced into bank safes, including patent built-in spindles, lever bars and rubber tube packing, which renders the safe absolutely air-tight, and prevents the introduction of gunpowder or other explosive. The door is so arranged as to admit any packages which the safe has capacity to receive, and admits of more space inside than by the old style double doors. All these safes are highly finished and reflect great credit upon the artists who ornament and beautify them.

Messrs. R. D. Robbins and Chas. E. Smythe are in charge of the exhibit, and the pleasure and courtesy with which they explain the workings and mechanism of the safes make hosts of friends both for themselves and the manufacturers.

Messrs. J. & J. Taylor rank in the front class of Canadian manufacturers, and the owner of a safe made by them can rest assured that nothing has been spared in its construction to render it all that might be desired.

DUNBAR, McMASTER & CO.

MR. S. DAVIDSON, 14 Colborne Street, Toronto, has a fine display on the ground floor of the Main Building of the products of Messrs. Dunbar, McMaster & Co, Gilford, Ireland, manufacturers of all kinds of linen threads. The varieties shown include tailors, carpet, lace, gilling, sole sewing, machine, floss, book binders, netting and shoe threads, all of which are well known and celebrated for their superior excellence in quality and color, and for which medals were awarded them at the Cork, Ireland, Industrial Exhibition in 1883, at the Dublin Exhibition in 1865; the London, England, Exhibition in 1862; the Philadelphia Centennial Exhibition in 1876, and a special gold medal at the Toronto Industrial Exhibition in 1884. In their case is also seen specimens of Irish, Russian, Italian and German flax, in its raw state and during the various stages of its manufacture, and in every grade and quality from the coarsest threads to such as is used in the manufacture of the finest and most costly laces and fabrics. Mr. McMaster, of this concern, who was recently in this country, is largely interested in a patent for flax scutching machinery which is claimed to be very valuable, and which is to be introduced into Canada.

Messrs. Dunbar, McMaster and Co., employ about 2,000 hands in their works at Gilford, which are said to be the largest and most complete of any in the world.

THE BARBER & ELLIS COMPANY.

THE Barber & Ellis Co., Toronto, have on exhibition what is probably the largest assortment and finest collection of specimens of blank books ever shown in the Dominion, a peculiarity about it being that each and every article shown was manufactured to order by them, and made up in the usual style and excellence of the concern—not for this occasion for display, but for use in business offices. Among the most noticeable specimens shown are the complete outfit of books made for the Manufacturers' Life Insurance Company, of Toronto, of which Sir John Macdonald, the Canadian Premier, is president, and Mr. J. B. Carliile, managing director—one of the most important insurance concerns in the country; and that made for the Imperial Bank, also of Toronto, both sets of which are to be delivered immediately at the close of the exhibition. The books shown made for the Imperial Bank amount to more than one hundred volumes. Other specimens on view are books made to order for the Bank of Commerce, of Toronto; the Dominion Bank, of Toronto; the Northern and North-Western Railway; the Morse Soap Company, of Toronto; the Queen's Hotel, Toronto, and other concerns. The Barber & Ellis Co., besides manufacturing every variety of blank books are also extensive manufacturers of envelopes and office supplies generally, and do all manner of book-binding and similar work, and are jobbers in and manufacturers' agents for every description of paper. The display here alluded to was awarded a silver medal by the Exhibition judges.

For many years this concern have been located at the corner of Jordan and Melinda Streets, this city, but their large and rapidly increasing business requires more space than they can control there, and they will soon remove to and occupy the large five-story brick buildings at Nos. 43, 45, 47 and 49 Bay Street, near Front, which were erected specially for them, and which they will occupy next month, a fine view of which will soon appear in the pages of the CANADIAN MANUFACTURER.

Specimens of blank books manufactured by the Barber & Ellis Co., are displayed in the Permanent Exhibition of Manufactures of Messrs. Nichols & Howland, on Front Street, Toronto.

T. McAVITY & SONS.

Messrs. T. McAVITY & Sons, St. John, N.B., make a fine exhibit of their McAvity patent improved boiler feeder, McShane sight feed lubricator, and McShane straightway swing check valve, all of which are shown in active operation on the grounds. Regarding the boiler feeder, they say of it that it is automatic and positive in action, being actuated by merely moving one simple handle or lever. There is no regulation of water or steam, works at any pressure, lifts as well as a pump, and can be operated by any intelligent boy. It is applicable to all kinds of boilers, and the automatic valve is so simple as to be readily taken out for regrinding or repairs under any circumstances. It is provided with an improved strainer which prevents gravel or other substance large enough to interfere with the working from passing into the feeder, this feature being of special advantage, as it obviates the often inconvenience and sometimes serious delay in removing the feeder from the boiler to ascertain and remove the obstruction. Following is the testimony of some well-known parties who have this feeder in use: Messrs. E. Leonard & Sons, London, Ont.—“We find that your injector, with one lever, which we are selling, takes well, and we push them. They are well made and reliable;” Messrs. A. Murchey & Co., Guelph, Ont., Malleable Iron Works—“It does all that is claimed for it;” Messrs. G. C. & W. C. King, Chipman, N.B.—“It surpasses anything of the kind we have ever used;” Mr. Herbert C. Cowans, mechanical superintendent Cumberland Railway and Coal Company, Springhill, N.S.—“We have four McAvity boiler feeders, all working to our entire satisfaction. They are the best I have ever used;” The Polson Iron Works Company, Toronto—“It is a great improvement on the ordinary Hancock feeder. Its simplicity commends it for general use, especially where unskilled help is employed;” Mr. Graham Fraser, manager Nova Scotia Steel Company, New Glasgow, N.S.—“Your boiler feeders have given us every satisfaction, and we are well pleased with them.” The sight feed lubricator, both single and double, is suitable for any kind of oil; works as well in winter as in summer, and in any climate, and is a great economizer of oil. The straightway swing check valve is simple, strong, can be repaired by simply removing the cap, and is always ready for inspection. Messrs. Rice Lewis & Son handle these goods in Toronto.

MOORE & MCGARVIN.

Messrs. MOORE & MCGARVIN, Acton, Ont., manufacturers of trunks, valises, satchels, traveling bags, etc., make a remarkably fine display of their goods on the ground floor in the Main Building of the Exhibition, near the fountain. The trunks they show include all usual sizes and styles of packers, both imitation and crystallized, mansard crystal, alligator crystal, duck, patent French top leather, etc. The trunks are all secured with cross slats, extra heavy tinned malleable iron trimmings and ornaments, heavy patent hinges and corner sets, full finished inside, and according to style, those for ladies' use with falling tray in lid, hat box, parasol case, glove case and extra tray, all nicely covered and finely trimmed, patent tray lifter, substantial locks, etc. All the barrel top trunks manufactured by Messrs. Moore & McGarvin have their patent one-piece hardwood veneer tops, which make the most durable goods, and are practically non-breakable. As there are no joints or seams in this top the lining cannot break as is the case with other tops in use. The best quality of basswood is used in the construction of all trunks manufactured by this concern, and they use all the latest improvements in locks, corners, clamps, bolts, rollers, etc.

The lines of smaller goods manufactured by this concern—valises, satchels, traveling bags, etc.—seem to embrace about everything that could be desired. Their railroad bags include some ten sizes and styles, and are finished in black, brown or orange grain leather, double lock and nickel trimmings, linen lining, and inside and outside pockets. Their Gladstone bags are made in even greater variety of sizes and more elaborate finish, and are shown in black, brown and orange grain leather, full leather lined, heavy covered frame and nickel trimmings, double nickel lock, patent spring catches, inside pocket and outside straps—all extra well finished, making this one of the most desirable articles of the kind in the market. They also show a full line of club bags for both ladies and gentlemen, all of which are made in the usual popular colors of grain leather, having heavy covered frame, full leather lined, nickel locks and patent spring catches, outside pocket and fancy silk stitched, both very handsome and very showy. And the same facts apply to their line of satchels. Other goods shown are the practitioners' obstetric bag, essential to every physician, containing inside pocket and adjustable loops for bottles, etc.; telescope cases of drab duck, heavily bound with leather, for samples; shoulder straps in

desirable colors, double, silk stitched, nickel snap swivel and buckles, for ladies and gentlemen; ring straps; collar, cuff and handkerchief boxes in fancy leathers, etc.

Only about two years ago, Messrs. Moore & McGarvin began the manufacture of valises, satchels, and similar small wares, at Acton, and the general uniform excellence of all the goods that they turned out achieved for them a reputation of which they are justly proud, and which soon led to their enlarging their works and extending their business so as to include the manufacture of trunks. To meet the increasing demand for their goods they have established a branch house in Toronto at 65-67 Yonge street—Commercial Building—of which Mr. J. D. O'Brien has the charge.

Messrs. Moore & McGarvin have been awarded a silver medal—the highest given for this class of displays. They have sold their entire exhibit to Mr. Thos. Hoskins, dealer in boots and shoes, 112 Queen street east, Toronto.

W. STAHLSCHMIDT & CO.

Messrs. W. STAHLSCHMIDT & Co., Preston, Ont., the manufacturers, have on display at the Exposition a large and varied assortment of specimens of office, school, church and lodge furniture that does not fail to arrest the attention of all passers by. These articles, although made for common use, are exceedingly artistic in design and appearance, and are of superior workmanship and finish, specially adapted to the purposes for which they were made. Such furniture as was in use a few years ago does not serve the requirements of to-day, and business men demand that such as they constantly use shall embody every convenience and labor-saving device known. The office desks manufactured by this firm are made in great variety, and specially adapted to the different tastes and requirements of those who do office work. The superiority of the Stahlschmidt rotary desk over the ordinary kind is readily comprehended, the revolving cases attached to the desks being a valuable feature. The arrangement secures just double space underneath that is ordinarily presented, the face of the desk when spread being equivalent to the whole depth of the desk. When the cases are open the whole interior of the desk is accessible to the operator as seated, without change of position, and the annoyance incident to opening and closing drawers and cupboards, common to other desks, is entirely avoided. One style of furnishing this desk is with filing cases, and certain facilities for the classification of books and papers, which will be appreciated, and which cannot be accomplished in desks of other styles. These rotary cases are so nicely adjusted that they immediately respond to any slight touch in opening and closing. These desks are presented in a variety of styles to meet the requirements of various business classes, and at such a range in prices that a selection is within the reach of all desiring to purchase. Other styles of desks shown embrace the Cabinet Office Secretary—Standard and Queen Anne patterns—Office Queen, Office King, mercantile flat top, bankers' cylinder, teachers', etc. They also show a pleasing variety of ladies' beautiful writing desks and cabinets, secretary book-cases, office and library chairs, etc. Other furniture includes church and office railing, pulpits, pews and pew ends, church chairs, etc. The lines of school desks shown are especially noticeable, and include the Marvel, Favorite and Model styles, embodying adjustable folding seats and tops and a box in which books, etc., may be stored and locked. Mr. Geo. F. Bostwick represents this concern in Toronto at 56 King street west.

A fine display of these goods is to be seen at Messrs. Nicholls & Howland's Permanent Exhibition of Manufactures, Front street west, Toronto.

THE NOVA SCOTIA STEEL COMPANY.

ONE of the most interesting exhibits shown is that of the Nova Scotia Steel Company, New Glasgow, N.S., displayed in Machinery Hall, and consists of specimens embracing ingots weighing about a ton each, shafting of various sizes, merchant steel of all descriptions, angles, special shapes, etc. The steel produced by this company is by the Siemens-Martin open hearth process, and every heat of it is subjected to chemical analysis, that made for structural purposes, where strength is required, being tested in a 25-ton testing machine. The manufacture of agricultural springs and rake teeth is now almost universally carried on at the works where the steel is made, and this company have during the past year fitted up a complete spring department, where every tooth or spring made by them is tested and inspected, and regarding the excellence of which a large number of testimonials are exhibited, from many of the largest and best known manufacturers in Canada. Among these are the Massey Manufacturing Co. and Messrs. J. & J. Taylor, Toronto;

F. E. DIXON & Co.

MANUFACTURERS OF

Patent Lap-Joint, Star Rivet

Leather Belting

SOLE AGENTS FOR

PHOENIX BELT OIL

The Only Perfect Belt Dressing.



IT will make the leather more durable.
 It will effectually prevent the slipping of the belt.
 It does not affect the cement which holds the laps together.
 It does not increase the stretching of the belt and thus render it narrower.
 It makes the leather perfectly water-proof. Belts dressed with this oil can be and are run in places where the temperature reaches 160 to 175 degrees, while in the other extreme, we have endorsements from owners who run their belts in ice houses. Indoors or out, in any kind of weather, wet or dry, hot or cold; belts thoroughly dressed with Phoenix Oil will always run satisfactorily.

SEND FOR PRICE LIST AND CIRCULARS,
 And our Latest Pamphlet on Belting.

F. E. DIXON & CO.

70 KING STREET EAST,
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TO MANUFACTURERS!

A splendid opportunity to lease, with the privilege of purchasing on very favorable terms, one of the

BEST EQUIPPED FACTORY BUILDINGS IN CANADA,



Having 33,000 feet of floor surface; well lighted; heated by direct steam; has highly economical steam plant, consisting of 150 horse-power Brown Automatic Cut-off Engine with two Horizontal Tubular Boilers of 80 horse-power each, with Heaters, Pumps, Injectors, etc., situated in one of the best manufacturing towns in Canada, and possessing valuable privileges from the town that can be transferred to the lessee or purchaser.

37 We solicit correspondence and inspection of the property, possession of which can be given by 1st November. Address

THE CANADA SCREW CO.
DUNDAS, ONT.

Messrs. G. M. Cossitt & Bro., and the J. W. Mann Manufacturing Co., Brockville, Ont.; the Wilkinson Plow Co., Aurora, Ont.; Messrs. John Elliott & Sons, London, Ont.; Mr. Peter Hamilton, Peterborough, Ont.; Mr. L. McLaughlin, Messrs. Coulthard, Scott & Co., the Masson Manufacturing Co. and Mr. John Livingstone, trustee of the Joseph Hall Machine Co., Oshawa, Ont.; Messrs. Frost & Wood and Mr. Jas. H. Gould, Smith's Falls, Ont.; Messrs. T. Pepper & Co., Guelph, Ont.; Messrs. Warnock & Co. and Linton, Lake & Co., Galt, Ont.

JOHN DOTY ENGINE COMPANY.

The exhibit of the John Doty Engine Company, shown in Machinery Hall, attracts a great deal of interest, steam engines, dynamos and electric appliances, and other machinery manufactured by them being displayed in great variety, and much of it in active operation.

This company manufacture the new "Otto" silent gas engine, and they justly claim for it that among its points of excellence are that it is safe, convenient and economical. It requires no boiler, coal, steam, gauges, fires nor pumps; there is no ashes, no unpleasant heat, and no danger from explosions; it requires no engineer, and involves no extra fire insurance; can be started instantly with a match; is always ready to give out its full power at once, and the expense of operating it ceases entirely when the engine is stopped. Wherever power is required at intervals and connection can be made with the gas mains, its convenience and economy are apparent. The quantity of gas required in the "Otto" engine, averages for the different sizes, eighteen cubic feet of gas per indicated horse power per hour, which, at the varying cost of gas from \$1 to \$2 per 1,000 cubic feet, a cost of from two to four cents per hour. Their constant readiness for work and perfect safety render gas engines remarkably cheap and convenient in stores and warehouses, and they have been widely adopted in school houses, hospitals, hotels and public buildings for pumping and ventilating purposes, and they are specially adapted for blowing organs, driving coffee and spice mills, sewing machines, boot and shoe making, etc. Messrs. Bingham & Webber, Toronto, who operated one of these "Otto" engines of four horse power, state that for a space covering fourteen months they worked an average of 9½ hours per day, and that, paying \$1.25 per thousand feet for gas, the average cost for gas for the time indicated was \$10.93 per month. These engines are made in sizes indicating one, two, four, seven and ten horse power, and over 25,000 of them are in use in Canada, England and the United States.

Another specialty of the John Doty Engine Company is the manufacture of the Armington & Sims automatic cut-off engine. An automatic engine is one in which the steam is admitted to the cylinder at full boiler pressure and allowed to follow as far as may be necessary for the work required, and then cut off by a mechanical action embodied in the engine itself, the steam being allowed to follow at full boiler pressure for a portion of the stroke, and working expansively for the balance. The regulation of the speed of the engine for varying loads is obtained by varying the point at which the steam is cut off. Certain economical limits of cut-off are established, and the governor controls the admission valve in such a manner as to cut off the steam according to the load, thus maintaining regular speed. These engines are specially adapted to work where great regularity of motion is essential, and they have been selected by a great many users of electricity for driving dynamos. Regarding its use for electrical purposes Mr. Thomas A. Edison states that after having tried various types of engines he had found the Armington & Sims the best, for simplicity of construction, excellence of workmanship, durability and economy; and that he could not see any possible fault to be found with it, or what improvement in its mechanism could be suggested.

This company also manufacture variable cut off, plain slide valve, vertical, hoisting and other engines, boilers of all descriptions, saw mill machinery, iron and brass castings, etc.

A fine display of machinery, engines, etc., manufactured by this company is to be seen at the Permanent Exhibition of Manufactures of Messrs. Nicholls & Howland, Front street west, Toronto.

THE TORONTO RUBBER COMPANY OF CANADA.

Messrs. T. McIlroy, Jr. & Co. 28 King street west, Toronto, representing the Toronto Rubber Company of Canada, make a very comprehensive exhibit in the Main Building of the Exhibition of many of the lines of rubber goods manufactured by them. This includes belting, steam and piston packing, gum valves, gaskets, tubing, fire, steam, garden, oil, brewers' suction and other hose; large suction hose for wrecking, mining and similar purposes; carriage

cloths, wagon and car springs; foot and table mats; matting; printers' and lithographers' blankets; wringer rolls and rubber covered rollers; rubber clothing of all descriptions, both lustre and dull finished; aprons, pouches, sportsmen's outfits, ladies' waterproof garments, gloves and mittens; druggists articles—syringes, atomizers, breast pumps, shields and nipples, nursery goods, surgeon's bandages, and bottle stoppers; air beds and pillows; bath tubs; carriage and hospital cushions; round and oval bed pans; invalid chair cushions, water bottles and bags; life preservers, gas bags, hardware, saddlery and stable goods; spittoons, elastic foreo cups for instantly cleaning the discharge pipes of wash bowls, bath tubs, etc.; piano and billiard table covers; window cleaners, combs and other fancy goods of all descriptions; dress shields, stationers' goods—bands, rings, erasers, rulers, etc.; balls, dolls in endless variety and sizes, etc. They also furnish submarine outfits for divers, including 3-cylinder air pumps, helmets, diving dresses, hose, etc.

A special feature of the business of Messrs. McIlroy & Co.'s is the manufacture of cotton and linen hose of every description, for fire department service and similar purposes; couplings, pipes, connections, etc., being furnished therewith when requested. This hose includes the celebrated brands "Eureka," a triple or three ply; "Paragon," a double, or two ply; and "Red Cross," a single ply; also "Eureka Mill Hose," a single cotton hose, rubber lined; "Eureka Garden Hose," single, rubber lined; "Seamless Linen Hose," rubber lined and also plain, and sewed mining and tank hose.

An assortment of specimens of the products of this company are displayed at Messrs. Nicholls & Howland's Permanent Exhibition of Manufactures, on Front street, Toronto.

HEINTZMAN & CO.

Messrs. HEINTZMAN & Co., 117 King street west, Toronto, have a magnificent display of pianos, manufactured by them, near the eastern entrance of the Main Building of the Exhibition, which attracts the attention of all visitors. Their space is adorned and fitted up with elegant taste, and presents the appearance of a lady's boudoir with a plethora of pianos. The instruments which they show are Concert Grand, Parlor Grand, Upright Grand, Square Grand and smaller uprights. The cases of these instruments are particularly noticeable for their richness and elegance, and the value of the woods of which they are made—rosewood, mahogany, burl walnut, blister walnut, ebony, etc., some of them being very effectively trimmed with bird-eye maple and other similar valuable woods. These cases are built up of several thicknesses of wood, the grain of which runs transversely to each other, all securely glued together, which gives great strength and rigidity, and makes any checking, warping or splitting of the veneering impossible. The iron frames of these pianos, which sustain the enormous strain incident to the tightening of the strings, are not only sufficiently heavy and strong for the purpose for which they are intended, but display a great deal of artistic taste in their moulded ornamentation as well as in their painting and gilding. A special feature introduced exclusively into these pianos is the Heintzman patent duplex bridge, which is used in all this firm's grand and square instruments, and which secures to them that very clear and distinctly singing quality which musicians deem so desirable. The improvements here alluded to, and other peculiar arrangements embodied in the Heintzman pianos, have elicited the admiration and approval of the very best musical critics, as will be seen by reports from the recent Colonial and Indian Exhibition in London, at which a commemorative bronze medal was awarded to Messrs. Heintzman & Co. Regarding the duplex bridge here alluded to, it is described as having a down pressure-bar between the two bearings of the strings on the bridge, so that when the pressure-bar screws are tightened down the strings bear hard upon the bearings. The bridge is let into the wrest-plank about a quarter of an inch, which adds much to its solidity and strength, and effecting the peculiar sparkling tone spoken of. Other special features embodied in the Heintzman pianos include a patent ring bridge applied to the sounding board, which causes the production of a very full, clear, rich bass; an improved action in the upright instruments which renders them less complicated and less liable to derangement; a new metallic flange for the hammer butt to work in—a decided improvement over the old style wooden butt, and a new and novel arrangement of the music rack for uprights, by which the music is brought lower and more conveniently within the range of vision of the player—a feature that all musicians will appreciate.

The display of Messrs. Heintzman is crowded at all times with delighted auditors, irresistibly attracted by the harmonious tones of their instruments—a tribute to their excellence which manufacturers appreciate, and which leads to many sales.

DODGE WOOD SPLIT PULLEY COMPANY.

THE Dodge Wood Split Pulley Company, Toronto, have on exhibition in the east end of Machinery Hall, a practical illustration of their method of transmission of power by means of an ordinary manilla rope in connection with the Dodge wood split pulleys, the arrangement shown being identical with that constructed by the company for and now in use in Central Prison, Toronto, of which Mr. James Massie is Warden.

Regarding the introduction of this system into Central Prison, under date of June 23 last, Warden Massie wrote to the company as follows:—"You desire me to report upon the set of pulleys put in one of the workshops to transmit power by a rope to a counter shaft at right angles, and I have pleasure in doing so. Prior to their having been put in by you I had first used a two-ply leather belt, 12 inches wide, of the best quality, which only lasted a few weeks; then I got a six-ply rubber belt, same width, made specially, and it also gave out in about a month, the trouble being the quarter twist on short distance between centres—ten feet—and the high rate of speed called for. Your pulleys have now been in use over six months, and with a $\frac{3}{4}$ -inch manilla rope the full power required is transmitted steadily and with great regularity, since it does not slip as the leather and rubber belts did, while very considerable power is saved. They have realized to the full all that was promised from them, to my entire satisfaction."

The great advantage claimed for wood over iron as a material for belt pulleys, or drums, for the economical transmission of power was the inducement to the Dodge Wood Split Pulley Company to introduce grooved hardwood pulleys for the special purpose of transmitting power by manilla fallow-laid ropes; and the system is particularly recommended as being superior to belts in many cases, such as where the driven shaft is at right angles with the driver (as is the case in Central Prison above alluded to), and also where the drive is perpendicular, particularly where it is quarter twist and perpendicular; where the driver and driven are close together; for long distances, such as across a street or a stream, etc. In transmitting power from an engine to the line shaft there is no slipping or jerking, the engine running smoothly, and there can be no flapping, jerking, stretching, slipping and loss of power as is frequently the case with heavy belts. It is claimed that an engine hitched up by the Dodge rope system will do 25 per cent. more work on the same consumption of fuel than it could do with a belt.

This system as illustrated by the display made in Machinery Hall is one of great interest to all consumers of power, inasmuch as it is intended to take the place of expensive gearing and broad belts. To transmit the same power with a rope versus a like power with a wide belt requires much narrower-faced and less expensive pulleys; the interest on the money invested in a belt will more than supply the rope, to say nothing of the wear and tear, and better power, from the fact that all sliding of the belt is overcome, and the rope gear becomes as positive as the cog gear.

The transmission of power here alluded to consists simply of a series of wood split pulleys and an ordinary manilla rope. The driver and the driven pulleys have their faces grooved, in which the rope is wound, the multiplicity of wraps being used to gain surface in contact for adhesion of the rope. The winder is simply used to convey the rope to the slack carriage to prevent obstruction. This carriage embodies a pulley carrying a single rope supported on a conveniently arranged railway, with a counter-balancing weight, the device giving and maintaining a proper tension to the rope. The slack side of the rope is paid directly from the driver to the carriage, which takes in and pays out slack as it occurs, also acting as a tension on the rope. There are five pulling wraps of rope in the exhibit shown, hence the strain on it amounts to only $3\frac{1}{3}$ per cent. of its breaking strain—or 321 pounds, the breaking strain of a one-inch manilla rope being 9,000 pounds. By increasing or diminishing the counter-balancing weight on the slack carriage the power obtained may be correspondingly increased or diminished.

This method of transmitting power is not new and untried, and the company exhibit diagrams showing its use in a large number of industrial establishments both in Canada and the United States where the circumstances rendered it impracticable, if not impossible, to transmit the power in any other way. One shows where the drive pulley is about fifteen feet lower than the driver, and, being a perpendicular shaft, makes a quarter turn. The machinery driven is a centrifugal quarry pump distant from the engine about 85 feet. Another shows the transmission of the power of a 50 horse power engine across a street. To avoid obstructing the street it was necessary to go back from the power end and up through the upper stories of the main building, over idlers, thence across the street into the upper story of the building where the power was to be used,

then down again into the lower story where the driven shaft was located.

The company exhibit a number of testimonials from parties in Canada who are using this system of rope transmission, and among those doing business in Toronto, where the system may be seen in daily operation, we observe the names of Messrs. A. R. Clarke & Co., Standard Woolen Mills Company, Mr. W. H. Banfield, American Rattan Company, Messrs. R. & T. Watson, Morse Soap Company, Messrs. J. B. McKay & Co., and the E. & C. Gurney Company.

CANADA TOOL WORKS.

MESSRS. JOHN BERTRAM & SONS, proprietors of the Canada Tool Works, Dundas, Ont., make what is perhaps the most important and extensive display of heavy iron and wood working machinery at the Exhibition, and every visitor who is at all interested in such displays does not fail to see that of Messrs. Bertram & Sons in Machinery Hall. Specimens shown include axle lathes, boring machines for wood and iron, bolt cutters, band saws, bending rolls, timber dressers, gaining machines, horizontal and upright tenoning machines, dimension planers, moulding machines, planing and matching machines, horizontal, radial and universal boring machines, rip, cross-cut and swing saws, wheel boring machines, hydraulic wheel presses, multiple spindle drills, cutting off and centering machines, drilling machines, engine and other lathes, hydraulic presses, gear cutting machines, grinding machines, morticing machines, mulling machines, punching and shearing machines—combined, single, bar and angle, iron planers, pneumatic riveting machines, rotary planers, special iron working machinery, saws for cutting hot or cold, steam hammers, slotting machines, shapers, etc.

Regarding the manufacture of these tools, Messrs. Bertram & Sons say that they have been engaged in the production of machine tools and wood working machinery for more than twenty-five years, and that with this long experience and their practical personal knowledge of the business, together with the fact that they have in their employ the very best mechanical talent to be obtained from any source, they can, with confidence, recommend their goods as complete in every respect, and unsurpassed either in improvements or workmanship. This statement is sustained by the testimony of many of the most practical men in the country.

They say further that every machine built in their works is really just what it is represented to be. Each machine is put together and tested on the work it is designed to do before leaving their shops, thus affording the best evidence that it is perfect. None but the very best materials are used in the construction of this machinery, the castings being made of Scotch and Canadian pig iron, which insures strength and durability, and all fast running spindles are made of the best English steel.

The firm take great pleasure in drawing attention to the fact that they were awarded a diploma and bronze medal at the recent Philadelphia International Exhibition for their wood working machinery and machinists' tools, and also a Canadian diploma and silver medal by the British judges for engineers' tools.

The late improvements this firm have made in all their new machinery have placed them at the very top of the list as regards excellence, and therefore they are confident in recommending them to their customers and the machinery using public generally, for finish, durability, and the quality of work produced with them, and as practice is the true and best test of every machine, those who are desirous of purchasing any machine or machinery put in operation at the factory. The advantage of this is obvious.

The firm desire to draw special attention to the locomotive and car machinery which they manufacture. This is all of new and improved patterns, specially adapted to the purposes for which it is intended, and of which photographs with accurate descriptions will be sent to interested parties on application. In their comprehensive and well arranged catalogue all of their more important wood and iron working machinery is accurately and fully illustrated and described. Regarding their wood working machines, Messrs. Bertram & Sons call attention to the fact that in this line they have made many valuable and important improvements, and are constantly remodelling, designing and adding to its general utility. All of their wood planing machines are fitted with solid steel forged cylinders having four slots, thereby allowing special sets of knives to be attached for making mouldings, etc., which is a noteworthy feature of itself. They therefore have every confidence and great pleasure in recommending to the general public their wood working machinery, which has earned for itself a world-wide reputation, having been awarded medals and diplomas both at home and abroad. All their iron planing machines have quick return motion, automatic and independent cross, down and angular feeds, when required, and are double-belted, being provided with an automatic belt shifter.

which, in reversing, shifts one belt before the other, thereby insuring a positive and easy change from back to forward motion. A radial drill on exhibition has a motion that can be changed from single to double gear instantaneously, the arm swinging on a heavy column, and with which holes may be drilled in a radius of five feet. Their iron drilling machines combine many excellent qualities which specially adapt them to the requirements of either large or small shops. The tool consists of a heavy column and foundation plate which extends to the back to carry the frame containing the counter shaft, cones and gear. The headstock carrying the drill-bar can be raised and lowered to suit any work.

Besides the many different machines here alluded to, this concern also manufacture and supply complete outfits for railway machine shops, locomotive and car builders, implement manufacturers, etc.

Quite a collection of tools manufactured by Messrs. Bertram & Sons are to be seen in Messrs. Nicholls & Howland's Permanent Exhibition of Manufactures in this city.

THE CROMPTON CORSET COMPANY.

Of the numerous exhibits displayed in the Main Building, that of the Crompton Corset Company demands special mention, their exhibit attracting a great deal of attention from all, and particularly from the lady visitors to the Exhibition, who continually throng around the magnificent line of goods displayed by this company. It is eleven years since the Crompton Corset Company first started, and since then they have worked up a wonderful and deservedly good reputation. As a further indication of the progress of this enterprise, it might be mentioned that they have employed at their factory, at 82 York street, Toronto, over three hundred hands constantly engaged in the manufacture of corsets. Fifteen different kinds of corsets are made, ranging in price from fifty cents to one dollar and seventy-five cents. This seems a large range, but the fifty-cent line receives just as much attention in their manufacture as the most expensive corset made by them, and the difference in price made is in the quality of material used. All are guaranteed perfect fitting, giving both ease and comfort. Special mention must be made of the "Yatishi" corset, which the firm has recently introduced to the public, and which is rapidly gaining an enviable popularity, solely attained on its merits as a first-class article. The "Coraline" is another special line manufactured by them, and which now has a world wide reputation for elegance of finish, easy and comfortable fit, etc. Much more might be said in reference to the goods manufactured by the Crompton Corset Company, but limited space defers us. Suffice it to say that the firm and their excellent goods are well known from ocean to ocean throughout Canada, and have made rapid strides towards the perfection of the corset.

THE BATTEN FIRE ESCAPE.

MR. JOHN BATTEN, the patentee, of Pittsburg, Pa., has an exhibit in Machinery Hall which commands a great deal of attention from manufacturers and all who occupy high buildings and give employment to large numbers of hands. The exhibit is the Batten improved fire escape. In its construction and attachment to buildings the wrought iron brackets are fastened through the wall with nut and washer on the inside. The top bar of railing of balcony extends through the wall and fastens in the same manner. The arrangement is such that the ladders can be released at a moment's notice, and when not in use can be thrown up out of the way. The balconies can be made of any length, and will hold as many as can stand upon them. The ladders are always ready for use, affording a certain, safe and easy method of escape from burning buildings. It furnishes the fire department convenient access to all parts of the building, and by means of the stand pipes water can be quickly conveyed to any story or the roof. Mr. Batten exhibits a letter from Mr. Samuel Evans, chief engineer of the Pittsburg Fire Department, in which, testifying to the advantages of the Batten escape, he says that its advantages are superior to any he had any knowledge of and that during the great fire near the Seventh Avenue Hotel, in that city, the fire department were very materially aided by using the Batten arrangement, which was tested to the utmost.

A number of theatres, public schools and similar buildings in the United States are equipped with this escape, and the Ontario Government contemplate supplying all the public buildings in the Province with it.

Mr. Batten will establish an agency in Toronto for the manufacture and sale of this escape, of which due notice will be made.

A working model of the Batten fire escape is to be seen at the Permanent Exhibition of Manufactures of Messrs. Nicholls & Howland, Front Street, Toronto.

AMERICAN WATCH CASE COMPANY.

The American Watch Case Company, 57 Adelaide street west, Toronto, have a very handsome display in the west nave of the Main Building.

Regarding the quality of the goods manufactured by the American Watch Case Company, it should be borne in mind that they are always just as represented; that is to say, if an article is marked "18k." or any other mark is shown indicating its fineness, such mark represents the true and correct quality, and there is no "stamping up" or misrepresentation whatever. Further, all goods manufactured by the company bear their registered trade mark—a Maltese cross—and a full guarantee goes with every article that its quality is as represented. In this connection those who purchase any article bearing the trade mark of the American Watch Case Company, no matter where or from whom it may have been bought, have the satisfaction of knowing that it is covered by the company's guarantee. Some manufacturers of similar goods "stamp up" their cases—that is, mark them to represent a greater than their intrinsic value, for the purpose of deceiving purchasers, but this is a thing that this company will not do under any circumstances.

Another important fact to be remembered is that this company sell their goods at precisely the same prices that respectable competitors in the United States, England or elsewhere, charge, and no more, although they are protected by a tariff duty of 25 per cent., and for this reason the general purchaser can buy these goods from any retail establishment in Canada as cheaply as from any similar store any where in the world.

W. BELL & CO.

MESSRS. W. BELL & Co., Guelph, Ont., show in the Main Building, at its eastern entrance, what is perhaps the largest and most interesting exhibit of organs on the Exhibition grounds. Large as their space is, and large as their exhibit is, they can show but comparatively few of the many styles of their organs, but those that are shown elicit a great deal of admiration, and throngs of visitors swarm around the place all the time. Mr. J. W. Scott has charge of the exhibit, and is the Toronto representative of Messrs. Bell & Co., his place of business being at 12 King street west, where large numbers of the celebrated Bell organ, and in every variety of style, are always on exhibition.

Messrs. Bell & Co. are the pioneers in Canada in the manufacture of this class of musical instruments, having established themselves in the business in Guelph nearly a quarter of a century ago. In its infancy the business was precarious and uncertain, but a thorough knowledge of its requirements and close application to it has brought it out of its swaddling clothes to be, as it is to-day, one of the most important industries in Canada.

Regarding the demand for organs, it is no longer considered a luxury in a home to have an organ in it, but a necessity at almost every fireside; and in the selection of an instrument the most important points to be considered are the merits it embodies as an artistic and correct producer of harmonious sounds—music—and the artistic and correct taste displayed in the case which encloses the action. That these desiderata are embodied in the Bell organ is shown first by the large numbers of them which the firm are constantly producing, and second, by the favor with which they are received, not only by the music-loving public generally, but also by musicians and masters of music. They have received the highest honors wherever exhibited, and gold medals have been awarded them at all exhibitions where they have been shown. Everything that skill, experience, and the largest facilities can yield, has been and is utilized to keep the Bell organ up to the high standard to which it has attained.

Messrs. Bell & Co. call special attention to the fact that they are the original owners for Canada of Scribner's tubes, by which the volume of tone is largely increased, and the quality rendered similar to that of the best pipe organs. By means of this invention, an organ containing two sets of reeds becomes equal in volume and quality to a much larger instrument. This invention consists in the construction and application of tubes of wood, placed so as to operate in connection with the reeds, each tube having an opening on the upper side at the rear end, through which the air, subsequently passing through the rear end, enters, and through which the sound produced by the vibration of the reed escapes.

The catalogue of organs manufactured by Messrs. Bell & Co. includes ten different styles of cases, varying from the small modest affair suitable for cottage use to the most elaborate double manual and full pedals with beautiful pipe top; a large number of styles as regards finish, decoration, number of stops, etc., being shown and described as enclosed in each style of case. One style illustrated—

a double manual concert grand, with pipe top, has Scribner's tubes, blow lever, eighteen stops, seven sets of reeds, and pedal of thirty notes. The India model is an instrument especially adapted to withstand the effects of extreme climatic changes. No glue is used, but brass pins and screws throughout.

Messrs. W. Bell & Co. occupy two factories in Guelph, Ont., in the manufacture of their organs, their combined frontage being 437 feet, with an average depth of 50 feet, one of which is four stories high and the other five. In addition to these the firm have now in course of erection an additional factory building four stories high, covering a space 108 by 42 feet, which they expect to occupy during the current month, when they will have a floor space of nearly 220,000 square feet. Their machinery is driven by two engines with a combined power of 225 horses. They carry a million feet of lumber in stock, and their kilns are capable of drying 5,000 feet of lumber a day. They have capacity to manufacture twenty-five organs a day. When their new addition is completed they will give employment to about 450 hands.

A band of twenty-eight musicians, composed entirely of operatives employed by Messrs. Bell & Co., have been in attendance at the Exhibition and delighted the thousands of visitors with their excellent music.

THE BRANDON MANUFACTURING COMPANY.

THE Brandon Manufacturing Company, of Toronto, manufacturers of wooden goods, etc., present a most attractive display of their products in annex of the Main Building of the Exhibition. Among the goods included in this exhibit is noticeable a large line of wood and iron axle express wagons, in the construction of which particular attention is paid to the selection of all materials, and to the workmanship, style and finish. Prices of these wagons vary from 40 cents to \$40 each. The Diamond mop and brush holder is adjustable to brushes of all sizes, and holds equally as well as a mop cloth when used as an ordinary mop. One of the most important features of this holder consists in the trough-shaped stationary portion of the head, into which the toothed movable jaw clamps the mop cloth, thus effectually preventing it from working out when in use. The company manufacture some fifty dozen of the Diamond holders a day. Step ladders are shown in great variety—the Challenge with detachable shelf attachment which will fit any size ladder, and can be readily applied to any lengths; the Automatic has self-acting stay legs which fall into position when the ladder is opened for use, and a shelf ladder of different lengths is shown, an article much needed in every store. A folding steps is exhibited which is a great departure from the ordinary clumsy article, and of which the company are making very large sales. A piano stool is shown in both square and round top, the pillar and legs of which are made of hard wood, covered with best haircloth, seats framed together with heavy serpentine moulded edges, which is equal to any known to the trade, and which are sold at remarkably low prices. A commode, well made and beautifully finished and ornamented, is a specialty. It has a hinged top covered with carpet, which, when closed, makes a convenient seat, and when open discloses a finished whitewood seat and an improved English white earthenware pan, movable at pleasure. A boot-blackening cabinet presents the same general appearance when closed, and is very convenient for storing blacking brushes, slippers, etc. The World washboard, "the best washboard of the age," is made with solid back in one piece, of best materials strongly put together. The company have erected special machinery for the manufacture of this line of goods at a cost of \$1,000, and a capacity of 150 dozen a day. The Improved Union churn, manufactured exclusively by the Brandon Company, is a stave-bottom box churn which unites the durability of the barrel with the convenient appliances of the most approved open top box churns. No fewer than seventeen medals have been awarded the manufacturers for this churn, and its use extends throughout the Dominion. Other goods shown are children's sleighs of all kinds, sorts and sizes, snow shovels, broom racks, broom handles of hardwood and basswood of which 50,000 are made every week, the Ideal hose reel for lawn hose, etc. The facilities of this company are such that they are in a position to undertake and execute with great dispatch contracts of any magnitude for the manufacture of all kinds of articles made wholly of wood, or a combination of wood and light iron work.

The Brandon Manufacturing Company sell their goods to the wholesale trade exclusively. Mr. J. Grover, the efficient manager of the outside business of the concern, has been connected with it for the past fifteen years, and has proven himself by his thorough executive management to be the right man in the right place. When the Exposition closes Mr. Grover purposes to visit all the cities and more important towns in the Dominion in the interests of his house.

CHRISTIE BROWN & CO.

Messrs. CHRISTIE, BROWN & Co., biscuit manufacturers, corner Duke and Frederick streets, Toronto, occupy a very large space at the west end of the Main Building, on the ground floor, in which is shown the same exhibit of products of this firm that excited so much admiration at the Colonial and Indian Exhibition in London last year, and which was awarded a diploma and a commemorative bronze medal. The exhibit reaches from the floor to the ceiling, and is most tastefully arranged, the cases displaying their contents to the best advantage and in perfect condition. From the appearance of this exhibit, bearing in mind the fact that the goods have been in the cases for nearly two years, and that they have twice crossed the Atlantic ocean, it is evident that the goods in the first place must have been of the very best quality to remain in a perfect state of preservation and retain their fresh appearance for so long a time, not the least sign of decay or mould being seen on them, and that the method adopted by the manufacturers for putting up such goods is the correct one. There are but few if any visitors to the Exhibition who do not admire this display of nice things, and their mouths do not water in vain, for all who come have the opportunity of tasting and testing their merits. The generous distribution of these toothsome morsels was not confined, however, to the crowd which gathered about their exhibit, for Messrs. Christie, Brown & Co., mindful that newspaper men are fond of such things, and that they are always too busy to do anything else than attend to business, have on each and every day of the Exhibition very kindly remembered the craft by sending a large tin of their most delicious confections to the Press Bureau, where "the boys" enjoyed them exceedingly. And in this connection the CANADIAN MANUFACTURER acknowledges the courtesy of Messrs. Christie, Brown & Co.

The names of the different confections manufactured by this firm begin with A, B, C, and, extending down and embracing every letter of the alphabet end with X, Y, Z, and number over four hundred different varieties. These goods are all made from the finest materials, selected especially for purity and delicacy of flavor. Generally they are put up in boxes containing from fifteen to twenty-five pound, but some of them are packed in two-pound tins, which are packed in cases containing six, twelve, twenty-five and fifty two-pound tins each. The factory where these goods are manufactured is probably the largest and most thoroughly equipped bakery in Canada, and the goods are well known and fully appreciated throughout the Dominion. Consumers and dealers are reminded that all that is necessary to preserve their flavor and crispness is that they be kept in a perfectly dry place, and the air and sunlight excluded.

GRAND & TOY.

Messrs. GRAND & TOY, stationers, Leader Lane and Colborne Street, Toronto, make a remarkably fine and interesting exhibit of their celebrated Tucker filing cabinets in the west gallery of the Main Building of the Exhibition. This essential article of furniture in every business office is made in sizes and styles to suit the requirements of any possible variety and volume of business, and is now in universal use in all the banking and insurance offices in the country, as well as in those of merchants and jobbers, both wholesale and retail, and in all manufacturing establishments.

Under old methods of caring for office papers whatever arrangements were had for the purpose they held the papers but loosely, and consequently they were too bulky and unwieldy, and where any thorough system was adopted, it involved a complicated, slow and laborious task. In the Tucker file these objections are all surmounted. Letters of the index are in plain sight, and furnish complete classification. The entire contents of the file are uniformly compressed into the smallest possible space by means of the lever clamp. No parts of the papers filed are mutilated in any way. The upright position of the file when in immediate use renders it always most convenient when hung up where its weight is supported. Any paper may be instantaneously placed within or removed from the file without disturbing other papers. Papers may be read and examined without removal. The clamping device is strong and cannot get out of order; and the operation of it is easy and simple. This clamping device is adapted to use not only in the larger cabinets, but also in automatic suspension cabinets, and in small cabinets which lock, and by which absolute privacy is afforded for every man's business, large or small.

This display of cabinets excited so much admiration among business men that before the closing day of the Exhibition each and every one of them, was we believe, marked "sold." A fine array of these goods are placed in the Permanent Exhibition of Manufactures of Messrs. Nicholls & Howland, Front Street, opposite the Queen's Hotel, Toronto.

F. E. DIXON & CO.

Messrs. F. E. Dixon & Co., 70 King street east, Toronto, manufacturers of Star-Rivet belting, make a fine exhibit of their goods in Machinery Hall. Noticeable in this display are three double leather belts made for the Toronto Electric Light Company for their new plant on the Esplanade at the foot of Scott street, this city. The largest of these belts is 36 inches wide and over 100 feet long, and is to be used on the big engine on exhibition near by; the second belt is 24 inches wide and about 90 feet long, and the third 16 inches wide and 70 feet long. In August, 1885—more than two years ago—Messrs. F. E. Dixon & Co. made a 36-inch double leather belt for the present works of the Toronto Electric Light Company, on Sherbourne street, this city, where it has been in constant service ever since, and the testimony of Mr. John Wright, the well known manager of the electric plant regarding it is that "there is not the slightest sign or wear to be seen on it yet."

The belts manufactured by Messrs. Dixon & Co. are remarkable for their durability, as the testimony shows. A 15-inch double belt made by them in 1873 for the lumber and planing mill of Messrs. Hastings & Peterkin, on Bay street, this city, has been driving all the machinery of that factory ever since, and looks now as if capable of performing that service for a considerable time yet. They also made an 18-inch double belt in 1879 for Messrs. Langley & Bruker, for their factory on Richmond street, this city, which looks as though there was yet ten years or more of good service in it. A number of similar instances of the longevity and durability of the belts manufactured by Messrs. Dixon & Co. could be recited if necessary, but these here enumerated will suffice.

In their exhibit are also seen some splendid samples of belting leather, both in their own and American make, both in whole hides and in strips, also tanned and raw hide lace leather. They are agents in Canada for the celebrated Phoenix belt oil, which is coming into use very extensively, and which is claimed to be the best belt dressing known.

GEO. F. BLAKE MANUFACTURING COMPANY.

The Geo. F. Blake Manufacturing Company, Boston, Mass., proprietors and builders of Blake's improved steam pumps and pumping engines, make a fine display in the east end of Machinery Hall, one of their compound duplex pumps of capacity sufficient to supply water to a town of 3,000 inhabitants being in operation, furnishing water to a fine mountain stream that is shown in the building, and that goes rushing in cascades over the rocks and precipices.

The Blake patent steam pump is absolutely positive in its action, that is to say, the operation at the slowest speed, under any pressure, is perfectly continuous, and the pump is never liable to stop as the main valve passes the centre, a simple automatic arrangement being used to overcome that point. In the plunger pump for feeding boilers, pumping gritty water, etc., under the higher range of steam pressures, the work is very efficient. They are extensively used in rolling mills, blast furnaces, etc., and are fast superseding the expensive, cumbersome and complicated "doctors" once so commonly used on Western steamboats for feeding boilers. Their improved tank pump for light service, such as elevating water and other liquids short distances and to limited heights, are both economical and effective. They combine large pumping capacity with small expenditure of steam, and are specially adapted for use at railway water stations, reservoirs, gas and oil works, tanneries, chemical works, etc., etc. The valves of these pumps are made in great variety, adapted to pumping hot or cold, thin or thick, alkaline or acidulous liquids, etc., varying in gravity from alcohol to white lead. They show a combined boiler and pump which is light, portable and strong, and can be placed at the point of supply and the water forced to any height or distance required. It does not need a skilled mechanic in setting up or operating, and a person of ordinary intelligence can be taught its management in a few hours' time. The Blake fire pump combines simplicity, positive action, compactness and strength. It starts promptly as soon as steam is admitted, and can be driven at the highest speed without thumping or danger of striking the cylinder heads. The improved duplex steam pump and water-works pumping engine, for cities and towns, etc., are efficient, simple and serviceable, and are eminently adapted for water-works service. They combine ease of management, effective work, and little or no liability to derangement. Many of these engines are in operation in town and village water-works, where they also form a complete and effective system of fire protection, throwing any number of powerful streams of water over the highest buildings. Regarding the Blake compound duplex condensing and non-condensing pumping engine for water-works service, etc., we are informed that there are more than one hundred of them in oper-

ation in the United States, as also in several cities of Europe. The air pump and condenser have no mechanical connection, and being self-contained can be operated independently and a vacuum formed for the engine before it is started. The Blake Company have recently completed an entirely new set of patterns for all sizes of their improved power pumps, of duplex and single design, arranged for gear or pulley connection. In the duplex form the cranks are set at right angles, which brings one pump to the middle while the other is at the end of the stroke. Other lines of machinery made by this company include blowing engines for agitating oils, acids and chemical preparations, also for blast and ventilating purposes, air compressors for elevating acids by air pressure, and for operating pneumatic machinery, also for operating rock drills, pumps and similar forms of mining machinery, for supplying air to submarine apparatus, for refrigerating machinery, etc. They are compact, very efficient and economical. A special feature of the Blake removable cylinder mining pump is that the cylinder or pump barrel can be easily renewed, and replaced by a new one when necessary. In use this cylinder can be partially turned in the pump, so that as the bottom part is cut or worn, a new surface can be brought into position. It would involve the printing of a book to enumerate and describe all the different styles and peculiarities of pumps manufactured by this concern. Some of these, however, may be briefly alluded to as being vertical sinking pumps for mines and well shafts, Cornish pumps, deep well and artesian well pumps, brewery and tannery pumps, independent air pump and condenser for marine engines, combined air and circulating pumps, vacuum pumps, hydraulic pressure pumps, etc.

Messrs. Nicholls & Howland have a fine line of specimens of these Blake pumps on view at their Permanent Exhibition of Manufactures on Front street, opposite the Queen's Hotel, Toronto.

CLARE BROS. & CO.

Messrs. CLARE BROS. & Co., Preston, Ont., make a remarkably fine exhibit in the Stove Department of the hot-air furnaces, etc., manufactured by them. The most noticeable of these is the Pleasant Home steel plate tubular furnace, for burning either wood or coal, made in several sizes, with capacity to properly heat from 9,000 to 50,000 cubic feet of air. Special features of the Pleasant Home heater are large ash pan with sifter and automatic dust flue attachments, extra heavy fire pot, heavy steel plate dome with heavy corrugated top, and cast iron tubes. In the construction of these furnaces the old method of forming joints by using bolts, rivets, cement, etc., is discarded, and a new method of fused joints adopted, which the firm guarantee to be absolutely gas tight. Other heaters shown are the Waterloo self-feeding coal furnace, the Preston steel dome furnace, a sanitary school-room heater, and the Hilborn hot-air wood burning furnace.

Vast strides have recently been made in the scientific method of heating buildings, and the use of furnaces for that purpose has become general. The low price at which a house can now be heated, the economy in the use of fuel, the absence of dust and dirt, and the ease of management, all appeal to the good sense of people, and few houses are now built without this important feature being included. Clumsy, ugly stoves, emitting noxious gases and prolific of dirt and discomfort are disappearing, and furnaces, with their warm, pure air, are taking their places, heating all the rooms equally, and, as it were, moderating the rigors of winter into the delightful temperature of summer. Hot-air heating has come to abide with us, and its only rivals—steam and hot water—involve too much expense in the way of plumbers' bills, and are too costly in all ways to be within the reach of any but the most wealthy and extravagant. The cost of putting in hot-air furnaces is but very little in excess of that of stoves, while the cost of fuel—a most important point—is greatly diminished.

Messrs. Clare Bros. & Co., in the construction of their furnaces, aim to do away with all impurities from the cellar, dust, coal-gas and smoke, and their success in this direction is seen in the numerous testimonials from parties who have given their furnaces practical tests.

Besides the hot-air furnaces above alluded to Messrs. Clare Bros. & Co. manufacture large and important lines of cook stoves and ranges for coal and wood fuel, embraced in which are all the usual sizes and embodying all the latest and most desirable improvements; also heating stoves, agricultural furnaces, hollow-ware, etc. They have recently made large and important additions to their works at Preston, rendering their facilities for manufacturing unsurpassed, and being favorably situated as a shipping point, and their stocks of goods large, they can fill all orders with great promptness. Messrs. Brown & Burns, 46 and 48 Queen street, Parkdale, are the city representatives of Messrs. Clare Bros. & Co.

THE LAMB KNITTING MACHINE MANUFACTURING COMPANY.

As usual the Lamb Knitting Machine Manufacturing Company are on hand with something new in the line of knitting machines, their specialty this year being a Lamb shirt machine in practical operation, making two bodies at once, the capacity of the machine being six dozen bodies per day. This unique machine occupies but a very small space, and can be operated by either hand or power. It is provided with an automatic "take up," and any one making full fashioned garments—shirts or drawers—will appreciate the arrangement. A long-felt want with all small manufacturers has been for a good, effective hand-power widener, and the Lamb Company show in working order and actual operation what they claim to be the very best widener ever made, and which fills the bill completely. This company have obtained a deservedly high reputation for the style and finish of the knitting and other machines made by them, and it is safe to say that they are the most extensive makers of such machines and knitting machinery generally in the United States.

The claim is made for the Lamb machine that it is the only knitting machine made that knits hosiery of all sizes; narrows and widens in such work; knits a regular right-angled heel; narrows off the toe; knits a stocking complete, and mittens and gloves without a seam; forms genuine ribbed work; makes double, flat and fancy webs; knits suspenders with button-holes, and makes all kinds of fancy stitches for all kinds of work.

Mr. J. M. Statten, 141 Church street, Toronto, is the agent for Canada of the Lamb Company.

MORSE SOAP COMPANY.

ONE of the most ingenious and attractive displays in the Main Building of the Exhibition is that of the Morse Soap Company of Toronto. On what appears to be a well arranged breakfast table is seen all the paraphernalia appertaining to such an occasion—plates, dishes, cups and saucers, knives and forks, spoons, napkins and napkin rings, fruit stands loaded down with a great variety of fruits,—peaches, pears, apples, grapes, bananas, oranges, lemons; jellies, candies, confections, flowers, etc., and copies of Toronto daily newspapers, as natural and real as life. In fact luxuries and delicacies abound in all directions. In front of the exhibit is an immense block of mottled soap weighing 800 pounds, in the centre of which, in raised white letters is the word "Morse." At the sides of this are two large jars made of Morse's mottled soap. Around the base of the display are specimens of the 68 different kinds of toilet soap and 40 different kinds of laundry soap manufactured by the company. The ingenuity displayed in making up the various articles and in the arrangement of them shows artistic taste, and attracts much notice.

Some time since the Morse Soap Company advertised that if those who bought Morse's mottled soap would send the wrappers to any charitable institutions they would redeem them at a valuation of one cent for each wrapper, the money to be paid to the institution presenting them. A few days ago the sum of \$1,000 was paid over by the company, representing 100,000 cakes of soap that had been sold between January 1 and August 1 of this year, the wrappers of which had been disposed of as indicated. The recipients of this money were: Hospital for Sick Children, \$232.33; Orphan's Home, \$168.78; House of Providence, \$156.30; Boys' Home, \$95.10; Girls' Home, \$76.30; Home for Incurables, \$48.90; St. Nicholas Boys' Home, \$57.68; Infants' Home, \$155.94; House of Industry, \$8.67. These wrappers were sent in by friends of these institutions from all over the country. The firm deserve great credit for this practical advertisement, and the whole country is talking about the good qualities of Morse's soaps.

NOAH L. PIPER & SON.

THE display of Piper's patent railway semaphores and signal lamps, shown in the annex of the Main Building of the Exhibition by Messrs. Noah L. Piper & Son, the manufacturers, 90 York street, Toronto, was awarded a gold medal by the Exhibition Association, this being the latest trophy won by them, they having previously been awarded three gold, two silver and a large number of other medals at various exhibitions at which they had made displays, including a diploma and commemorative medal awarded by the Colonial and Indian Exhibition in London last year. Sir Charles Tupper, the Canadian Commissioner to the London Exhibition, in his report concerning the exhibits there shown, makes special mention of the railway appliances shown by Messrs. Piper & Son, and mentions

the fact that Sir William Watkins, the London representative of the Grand Trunk Railroad, took special interest therein.

These Piper inventions have been patented in England, Austria, Belgium, France, Russia, India, the United States and Canada. Their semaphores and order signal is remarkably simple in construction, entirely reliable and effective, and quite inexpensive. In its management there is no chance of accidents resulting to attendants from climbing ladders covered with ice or snow to care for the lamps, for in this system the lamps are raised and lowered on the inside of the box, thus enabling the attendant to take it away for attention and replace it with ease. The pull to raise the target and change the light is only three inches for any distance. The new Piper diamond crossing semaphores is a most valuable signal, as with it it is impossible to open one road without blocking the other. One most valuable feature of the Piper semaphores is an arrangement by which, if any accident or derangement occurs to interfere with its operation, the danger signal is instantly and automatically displayed.

Nearly, or quite all, of the leading railroad officials of Canada, and many from the United States, have been in attendance at the Exhibition, and they have all visited the display of semaphores and other railway appliances of Messrs. Piper & Son, and the unanimously expressed opinion by them regarding the award of the gold medal is: "Served them right—they deserved it."

BOOTH & SON.

MESSRS. BOOTH & SON, 155 and 157 York street, Toronto, copper-smiths, brass founders, metal spinners and nickel platers, have a very attractive display of some of their products, that elicits much favorable comment. Embraced in these are highly polished brass and copper tea, coffee and hot water urns, hot water carving table with furniture, copper sauce pans, Bain-Marie pans, copper and hammered brass tea and hot water kettles, cuspadores, confectioners' revolving copper steam pans, and confectioners' kettles, ladles, stoves, etc.; copper tea kettle trimmings, plumbers' copper work of all descriptions, including bath tubs of New York and French patterns, Booth's patent planished bath, with and without Booth's patent combined bath and wash basin attachment, etc. They say of this latter that, in many houses for want of space in the bath room, it is not convenient to have a stationary or other washstand but that by this improvement this desideratum is supplied, fitted to supply hot and cold water, with waste and overflow. Using their improved bath cock, water is admitted at the bottom of the bath, thus securing a silent feed, and an absence of the volume of vapor caused by the agitation of the hot water when fed from the top. By closing the downward feed, hot or cold water as desired is diverted upward for the purpose of shower, or to supply the wash basin. They also manufacture all kinds of brass work for fire service, including couplings, cut-offs, Y's, suction baskets, etc., brewers', sugar refiners' and distillers' copper work, and gun metal castings, etc. Messrs. Booth & Son are now erecting for Mr. Joseph Seagram, of Waterloo, 24 copper tanks of 6,500 gallons capacity each. They recently entirely refitted the refinery works of the Toronto Syrup Company, including a copper vacuum pan, with converter, which weighed over 12,000 pounds, and which has been pronounced by experts to be in first-class very respect.

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PERMANENT EXHIBITION

Of Manufactures, and Commercial Exchange,

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NICHOLLS & HOWLAND, TORONTO.

We invite attention to the following particulars :

Under the pressure of keen competition, economy in the manufacture of goods has been a constant source of study, and in most establishments every avenue of waste has been closed, and every perfected method of production has been adopted.

It is far different with the *distribution of goods*, and it is the very necessary economy in this direction that we have in view, as it matters not how cheaply goods may be manufactured if the expense of selling them is so great as to swallow up most of the margin of estimated profit.

A number of outside firms now have, and many more are finding out the necessity of having, a branch office in this city. In many cases such offices are located on a side street, and are visited only by those who go there purposely on business bent. In maintaining such offices expense has to be incurred for salaries, rent, light, heat, carttaking, telephone, etc., etc., and no matter how the expense of each item is curtailed, the annual cost is bound to be a large one.

It is our object to afford a practical arrangement whereby this unavoidable expenditure may be largely reduced, while at the same time the benefits sought to be attained will be very much greater. For a moderate rental we offer every advantage of a private branch office, with the additional advantage of being represented in a trade centre or "commercial exchange," where an exhibitor's goods will be seen by thousands of business men throughout the year. To an appreciable extent our Exhibition will change the existing order of things, as in many instances the customer will visit the agent instead of the agent having to hunt up the customer.

The Permanent Exhibition will be open, free to the public, every week day.

Extensive advertising will keep the exhibition and its advantages fresh in the minds of the people.

Power and shafting is provided for exhibitors who may wish to show machinery in operation.

Instructed attendants will be in charge for the purpose of explaining the merits of each exhibit to interested visitors.

It is designed to supply the long-felt want of a central exchange, wherein goods can be kept on show for the inspection of the thousands who come up month after month to this commercial metropolis.

It is also in contemplation to provide, for the convenience of outside manufacturers, and for city merchants and brokers, suitable accommodation for meeting and transacting business, and which may be designated as a "CHAMBER OF COMMERCE," or "TRADE EXCHANGE." For example, a manufacturer whose works are located in an outside town, but who makes periodical business trips to Toronto, can advertise on his office stationery that either himself or representative may always be found, between stated hours on certain days, at the Permanent Exhibition. Other particulars, such as accommodation for trade sales, etc., will be made public at a later date.

DIRECTORY OF EXHIBITORS :

The following firms are already represented in the Permanent Exhibition. Their manufactures have a deservedly high reputation, and are recommended to the notice of intending purchasers of any of the respective lines in the following list. Prices, terms, discounts, etc., may be obtained from the several firms direct, or from Messrs. Nicholls & Howland, Permanent Exhibition of Manufactures :

Armstrong, J. B., Manufacturing Co., Guelph, Carriage Materials.
 Armstrong, J. A. & Co., Guelph, Ont., Carpets.
 Automatic Refrigerator Co., Ottawa, Ont., Haurahan's Patent Automatic Refrigerators.
 Barnum, The Wire and Iron Works, Windsor, Ont., Wire Goods of all descriptions, Railing, Cresting, Fencing, etc., etc.
 Barber & Ellis Co., The, Toronto, Ont., Manufacturing and Wholesale Stationers, Account Books, Office Sundries, etc.
 Bertram, John & Sons, Dundas, Ont., Iron and Wood Working Machinery.
 Blake George F., Manufacturing Co., Boston, Mass., Steam Power Pumping Machinery.
 Boehk, Charles & Sons, Toronto, Ont., Brooms, Brushes, Woodware, etc.
 Brethaupt & Co., Berlin, Ont., Leather.
 Brush, George, Eagle Foundry, Montreal, P.Q., Blake Stone Crusher.
 Care Bros. & Co., Preston, Ont., Stoves and Furnaces.
 Cowan & Co., Galt, Ont., Wood Working Machinery, Engines and Boilers.
 Creelman Bros., Georgetown, Ont., World's Star Knitting Machinery.
 Crompton Corset Co., Toronto and Berlin, Ont., Corsets.
 Canadian Harness Co., Toronto, Harness.
 Valley, F. F. & Co., Hamilton, Ont., Extracts, Essences, Blacking, and Grocers' Sundries.
 Dominion Baby Carriage Co., London, Ont., Baby Carriages and Rattan Furniture.
 Donald Produce Co., Norwich, Ont., Evaporated Fruits.
 Doby Engine Co., Toronto, Ont., Engines, Boilers, etc.
 Dominion Barb Wire Co., Montreal, P.Q., Barb Wire.
 Dorecourt Twine Mills, Toronto, Ont., Twines and Cordage.
 Dominion Starch Works, Walkerville, Ont., Corn Starch and Laundry Starch.
 Dominion Show Case Co., Toronto, Show Cases.
 Ellis & Feighley, Toronto, Ont., Coffees, Spices.
 Elliot & Co., Toronto, Ont., Manufacturing and Wholesale Chemists and Druggists.
 Ellis, P. W. & Co., Toronto, Manufacturing and Wholesale Jewellers.
 Fenwick & Selater, Montreal, Que., Files and Mill Supplies.
 Finch, W. S., Toronto, Wood Preservative.
 Gate City Stone Filter Co., New York, Water Filters.
 Globe Tobacco Co., Windsor, Ont., and Detroit, Mich., Tobaccos.
 Goodhue & Co., Danville, Que., Leather Belting and Lace Leather.
 Grand & Toy, Toronto, Ont., Tucker Automatic Letter and Document Files.
 Grand River Knitting Mills Co., Paris, Ont., Smyrna Rugs and Knit Goods.
 Grape Sugar Refining Co., Walkerville, Ont., Syrups and Glucose.
 Gray & Sons, Chatham, Carriages and Sleighs.
 Gillett, E. W., Toronto, Chicago, Yeast and Baking Powder.
 Hamilton Industrial Works Co., Hamilton, Ont., Wringers, Mangles, etc.
 Hart Emery Wheel Co., Hamilton, Ont., Emery Wheels and Emery Wheel Machinery.
 Hay, Peter, Galt, Ont., Machine Knives.
 Hearle, J. G., Montreal, Que., Toilet Soaps and Perfumery.
 Howland, H. S. Sons & Co., Toronto, Ont., Hardware Specialties.
 Howland, H. S., Kleinburg, Ont., Flour.
 Hemming Bros., Toronto, Ont., Fancy Plush Goods and Jewellers' Cases.
 Herman, J. W., Toronto, Boiler Water Purifier.
 Ingersoll Door Guard Co., Ingersoll, Ont., Patent Door Guards.
 Ireland, F. C. & Sons, Lachine, Que., Breakfast Cereals.
 Ives, H. R. & Co., Montreal P.Q., Fencing, Cresting, Stoves and Hardware Novelties.
 Jardine, A. & Co., Toronto, Ont., Coffee, Spices, and Pure Gold Baking Powder.
 John Batten, Pittsburg, Pa., Automatic Fire Escape.
 Kerr Bros., Walkerville, Ont., Water, Steam and Gas Valves of Improved Pattern.
 King, B. W. & Co., Georgetown, Ont., Power Knitting Machinery.
 Leslie, James, Montreal, Que., Woollen and Cotton Mill Supplies.
 McCaskill, D. A. & Co., Montreal, Que., Varnishes and Japans.
 Miller Bros. & Mitchell, Montreal, Que., Beauty's Steam Power Hammer.
 Munderloh & Co., Montreal, Que., Watchmen's Clocks.
 Morris, A. W. & Bro., Montreal, Que., Cordage and Binder Twine.
 Morrison James, Toronto, Steamfitters' and Plumbers' Supplies.
 McLaren, The J. C. Bolting Co., Montreal, Mill Supplies.
 Northey & Co., Toronto, Ont., Steam Pumping Machinery.
 Northumberland Paper Co., Campbellford, Ont., Straw Board and Tarred Paper.
 Ontario Bolt Co., Toronto, Ont., Bolts, Nuts, Spikes, etc.
 Oshawa Stove Co., Oshawa, Ont., Cooking and Heating Stoves.
 Rejzer, T. & Co., Guelph, Ont., Carriage and Wagon Axles.
 Pitlow, Hersey & Co., Montreal, Que. (Geo. A. MacAzy, Western representative), Nails, Tacks, Bolts, etc.
 Ramsay & Son, Montreal, Que., Plate and Stained Glass, Paints, Oils, etc.
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 Simpson & Co., Berlin, Ont., Furniture.
 Smith, R. H. & Co., St. Catharines, Ont., every description of Saws.
 Stahlachmidt & Co., Preston, Ont., Office Desks, Chairs, School Furniture, etc.
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 Toronto Rubber Co., Toronto, Belting, Fire Hose, Etc.
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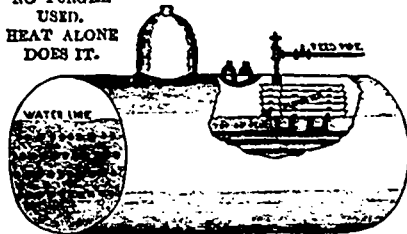
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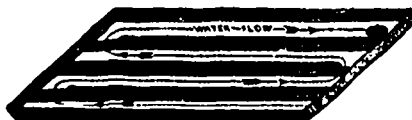
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LAKE SUPERIOR	Capt. Wm. Stewart	5,000
LAKE HURON	Capt. H. Campbell	4,100
LAKE WINNIPEG	Capt. M. L. Trammar	3,300
LAKE NEPIGON	Capt. P. D. Murray	2,300

SUMMER SAILINGS, 1887, WILL BE AS FOLLOWS:

FROM LIVERPOOL:

Ship Name	Day	Month	Day
Lake Nepigon	Friday	Aug.	26
*Thanemore	Thursday	Sept.	1
Lake Winnipeg	Friday	"	9
Lake Superior	"	"	16
Lake Ontario	"	"	23

FROM MONTREAL:

Ship Name	Day	Month	Day
Lake Superior	Tuesday	Aug.	10
Lake Ontario	"	Sept.	6
Lake Huron	Wednesday	"	7
Lake Nepigon	Tuesday	Sept.	13
*Thanemore	Saturday	"	17
Lake Winnipeg	Tuesday	"	27
Lake Superior	"	Oct.	4

*SS. Thanemore does not carry passengers.

The steamers connect at Montreal by direct rail for all points in Canada, Manitoba, North-West Territories and United States, to which through tickets are issued. These steamers are built in water-tight compartments, and of special strength for the North Atlantic trade.

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General Manager,
1 Custom House Square, Montreal.

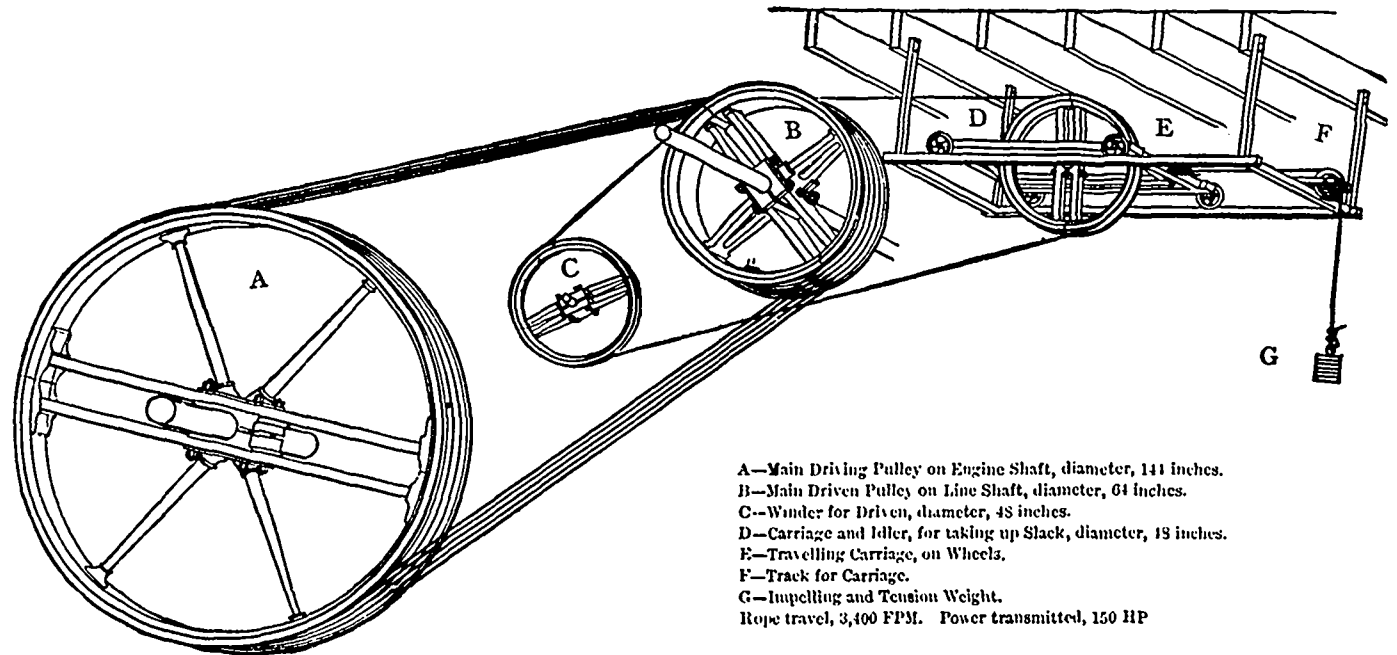
THE TRANSMISSION OF POWER BY ROPES AND THE DODGE PATENT WOOD PULLEYS.

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

This system of transmitting power by ropes is cheaper and superior to belts in many cases, such as where the driven shaft is at right angles with the driver, also where the drive is perpendicular, particularly when it is quarter twist and perpendicular; also where the driver and driven are close together; also for long drives, such as across a street, or a stream, etc. For transmitting power from an engine to the line shaft this

system is unequalled; steady all the time, not like a heavy belt, which is always more or less flapping, jerking and stretching, then slipping and losing power. It is safe to say that an engine hitched up by the Dodge Rope System will do 25 per cent. more work on the same consumption of fuel than the same engine would do with a belt. We have put up a number of the Dodge Patent Rope transmissions during the past year, all of which are in most successful and satisfactory operation, as certified by the testimonials published in our catalogue of well-known manufacturers who have them in use. Parties who are in want of anything in this line, or who are interested in the efficient and economical transmission of power, are cordially invited to call at our works, 81-89 ADELAIDE STREET WEST, Toronto, and see the ropes and wood pulleys in operation, as we are driving our whole factory by this system.

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



A—Main Driving Pulley on Engine Shaft, diameter, 141 inches.
 B—Main Driven Pulley on Line Shaft, diameter, 64 inches.
 C—Winder for Driven, diameter, 48 inches.
 D—Carriage and Idler, for taking up Slack, diameter, 49 inches.
 E—Travelling Carriage, on Wheels.
 F—Track for Carriage.
 G—Impelling and Tension Weight.
 Rope travel, 3,400 FPM. Power transmitted, 150 HP

The illustration, as shown above, is one of peculiar construction, and represents an engine transmission of power by a manilla rope, under the Dodge system of patents, and is shown as in actual use at the works of the Dodge Mfg. Co., at Mishawaka, Ind.

The system herewith illustrated and described is one of great interest to all consumers of power. Inasmuch as it takes the place of expensive gearing and broad belts, the advantages to be thus derived may be thus summarized:

To transmit the same power with a rope *versus* a like power with a wide belt, first, requires much narrower faced pulleys; consequently, much less expensive; 2nd, the interest on the money invested in a belt will more than supply the rope, saying nothing about the wear and tear; 3rd, better power, from the fact that all sliding of the belt is overcome, and the rope gear becomes as positive as the cog gear.

The transmission consists of a series of wood split pulleys, and ordinary manilla rope (tallow laid).

The engine used is an automatic, and the size of the cylinder is 18x40, making 90 RPM, and transmits 150 HP., the driver, A, and driven, B, have each several grooves, in which are wound the ropes, the number of wraps being used, as in previous cases, to gain surface in contact, for adhesion of the rope. The winder, C, in this case, is simply used to convey the rope to the slack carriage, to prevent obstruction. This, together with the carriage pulley, D, are each single grooved. The

device for taking care of the slack, and giving the proper tension to the rope, is shown at E, with the impelling weight at G. The slack side of the rope is paid directly from the driver to the carriage, E, which, it will be seen, takes in and pays out slack as it occurs, and acts also for a tension on the rope. The weight at G may be increased or decreased with the power.

This apparatus was erected and started December 2, 1884, and has been running constantly since, with same splice, and transmitting an average of 150 HP.

The rope shows no signs of wear, and looks as though it would last for years to come.

The rope is an ordinary one-inch diameter manilla, and travels at a velocity of 3,420 FPM.

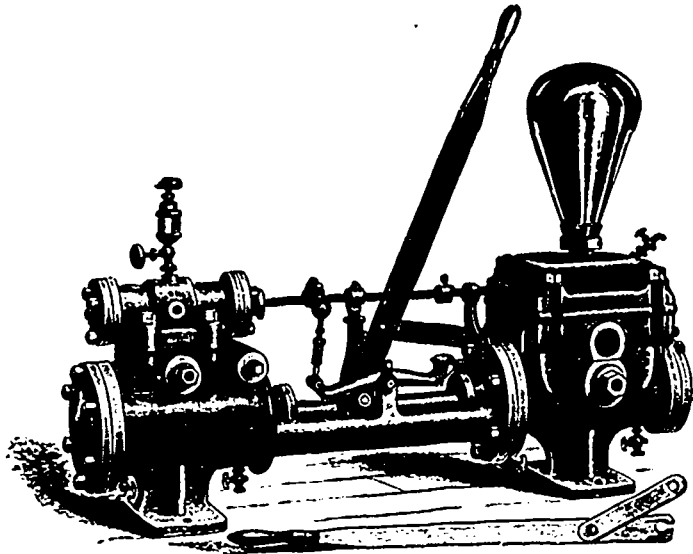
We make the following summary:

Velocity of rope, 3,420 FPM. Transmits, as above, 150 HP. (indicated). The tension on the rope is, therefore, $\frac{3300 \times 150}{3 \times 26} = 1,408 + 106$ pounds (one-half the weight in the weight-box) = 1,608 pounds; which is the strain on the rope. There being five pulling wraps of rope, hence the strain would be divided five times = $\frac{1,608}{5} = 321$ lbs. strain on the rope = 3 $\frac{3}{4}$ per cent. of the breaking strain of the rope; it being estimated as safe to use 10 per cent. of the breaking strain of the rope.

[The breaking strain of a one-inch manilla rope is 9,000 pounds.]—Power and Transmission Journal.

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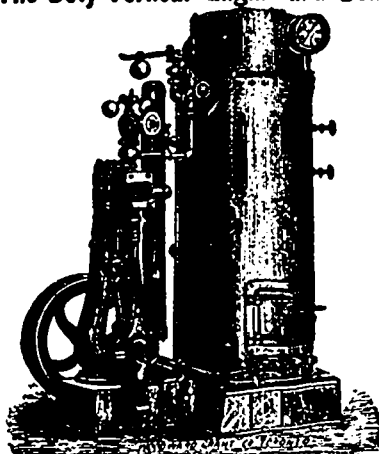
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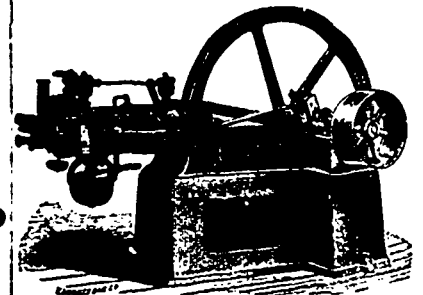
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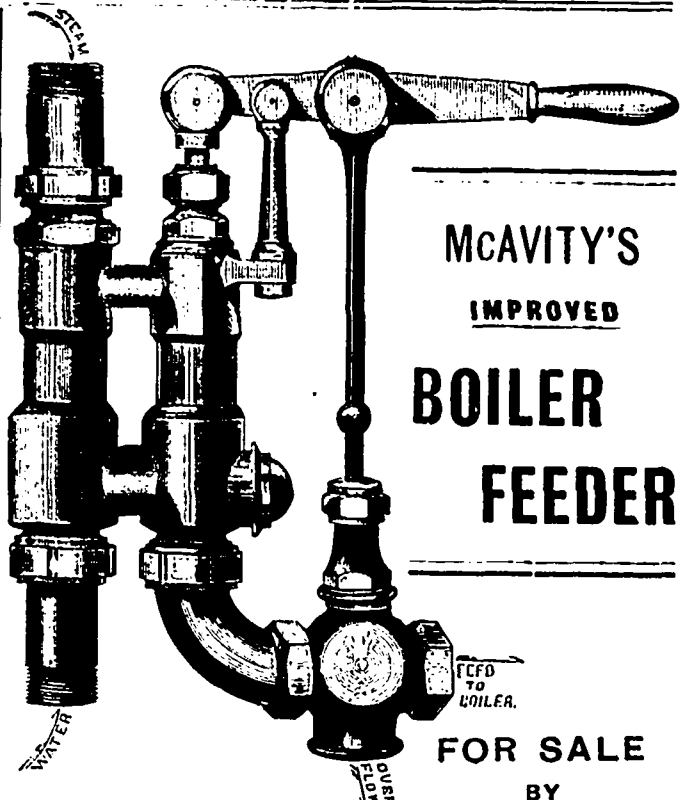
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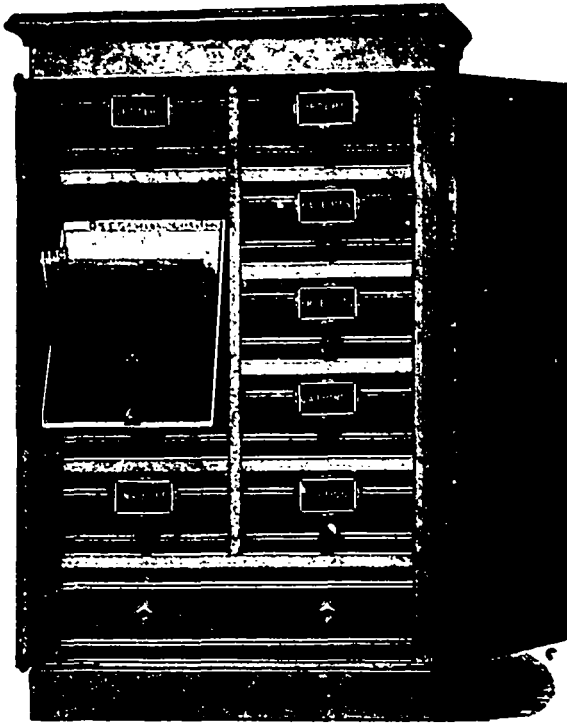
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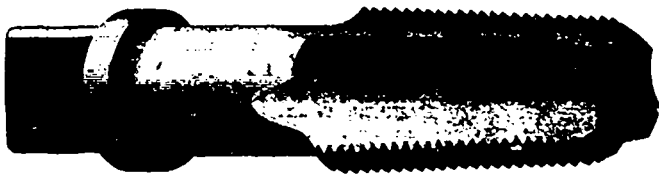
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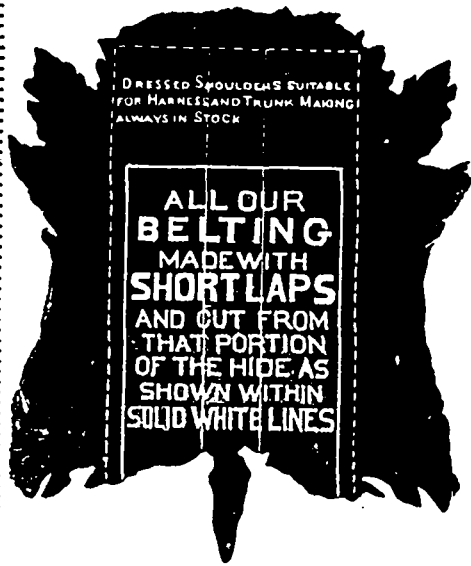
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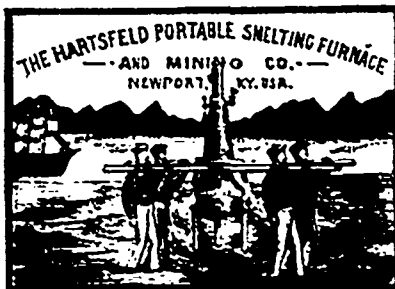
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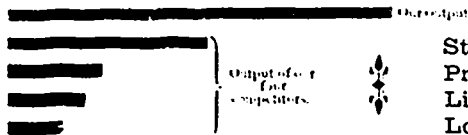
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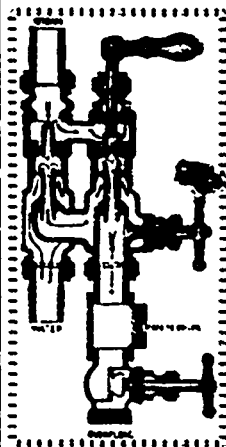
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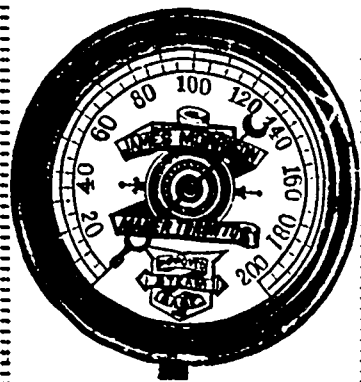
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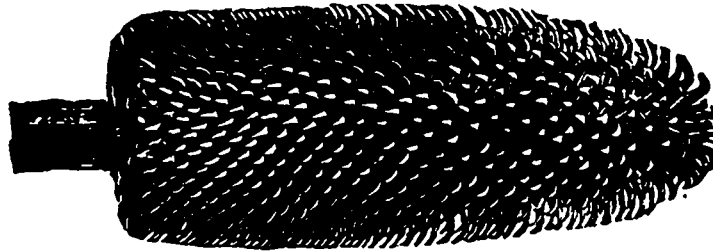
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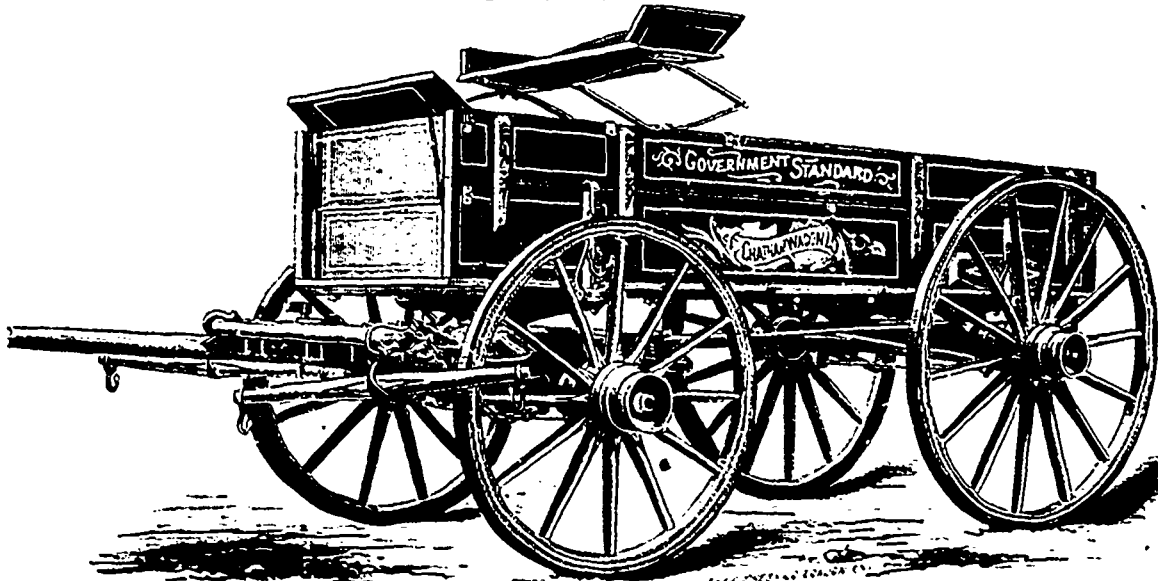
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HARDWOOD LUMBER,

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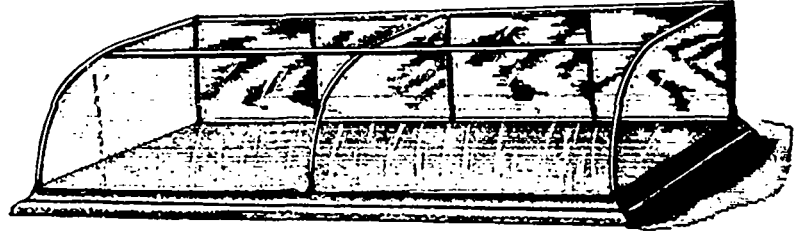
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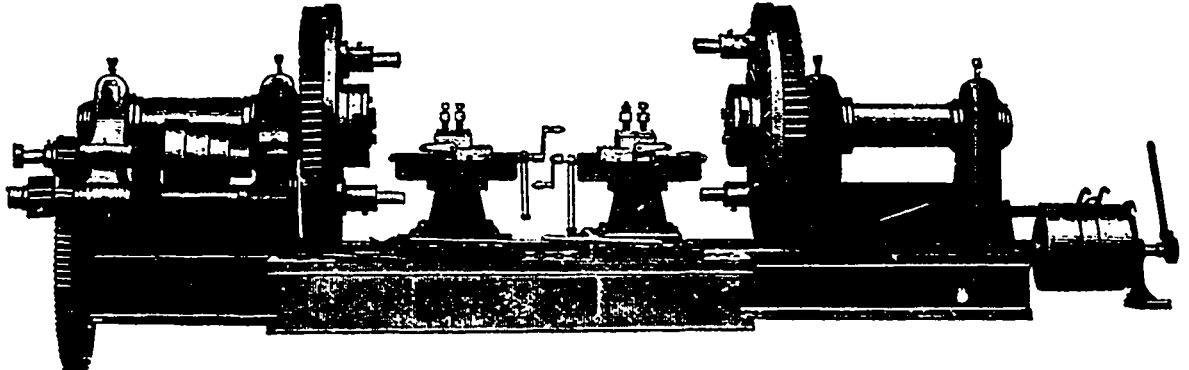
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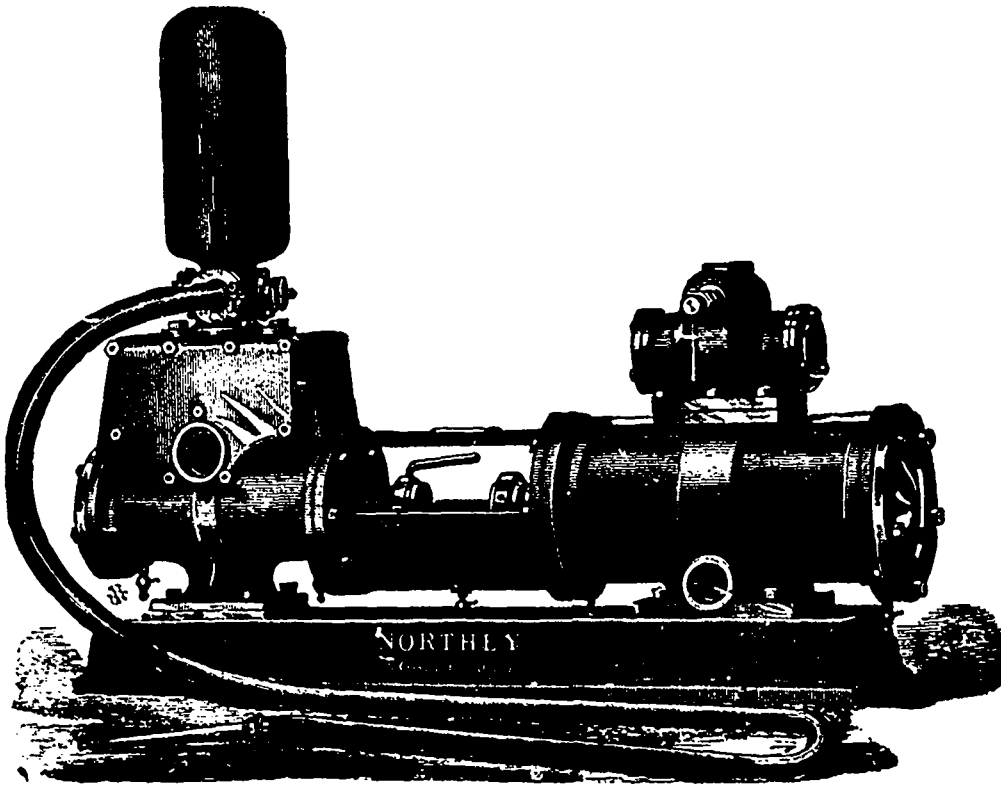
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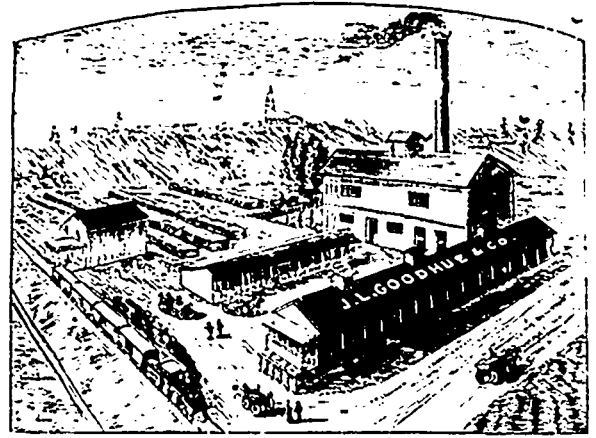
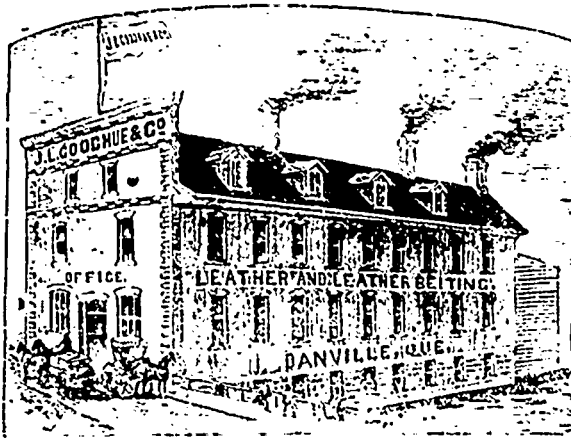
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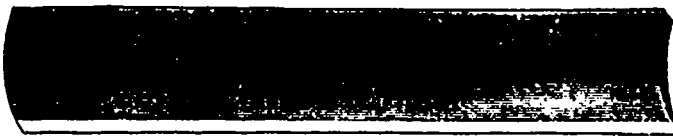
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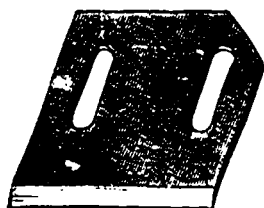
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3. To reduce the cost of insurance to the lowest point consistent with the safe conduct of the business.

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All risks will be inspected by a competent officer of the company, who will make such suggestions as to improvements required for safety against fires, as may be for the mutual interests of all concerned.

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As no agents are employed and the company deals only with the principals of the establishments insured by it, conditions and exceptions which are so apt to mislead the insured and promote controversy and litigation in the settlement of losses will thus be avoided.

The most perfect method of insurance must, in the nature of things, be one in which the self-interest of the insured and the underwriters are identical, and this has been the object aimed at by the organizers of this company.

W. H. HOWLAND, Vice-President.
JAMES GOLDIE, President.
HUGH SCOTT, Managing Director.

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BUILDERS OF
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Steam and Power

Pumping Machinery



BOSTON,

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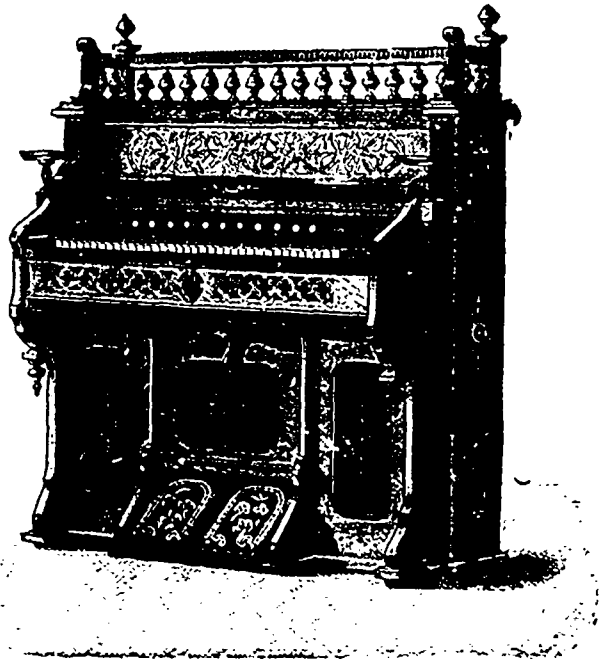


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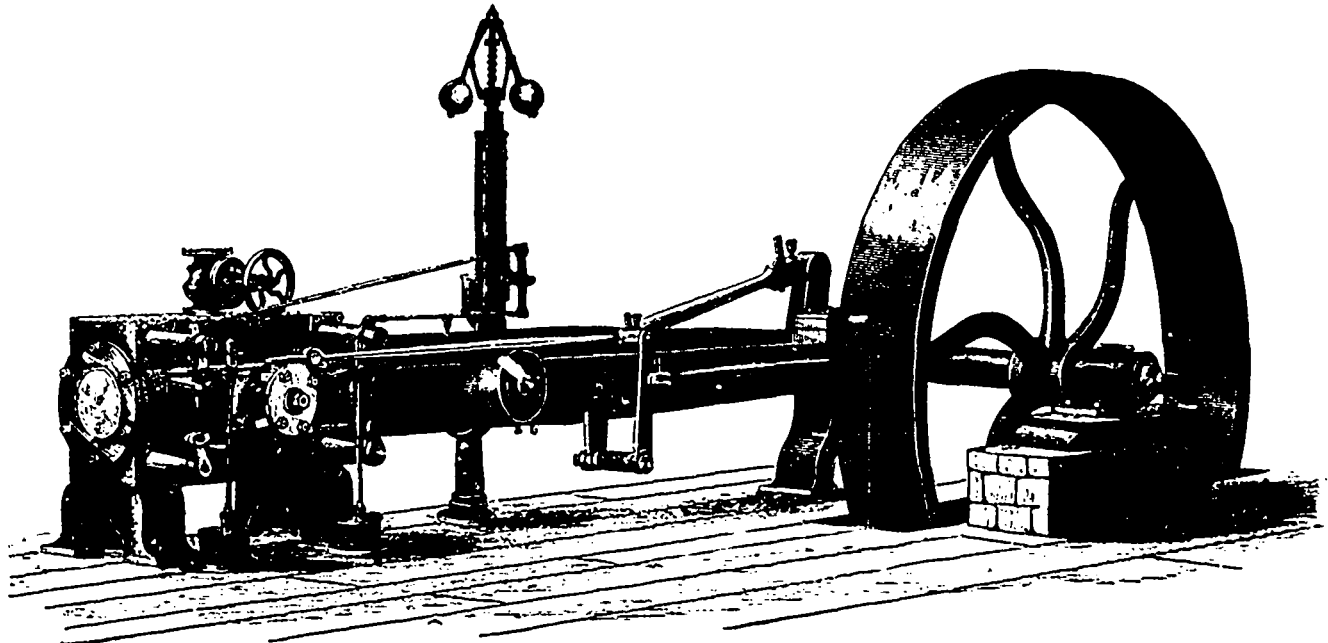
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First Prize, Silver Medals, for Beam Warps and Denims,
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22 & 24 COLBORNE ST., TORONTO.

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The Superb Carriage Bolt,
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97 " " " Silvering Quality.

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HEINTZMAN & CO.

MANUFACTURERS OF



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SQUARE,
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PIANOFORTES.

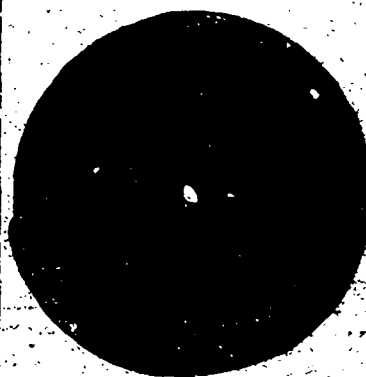
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Steam Engines,
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Lathes, **Planers,**
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Machinery Supply Association,
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(LIMITED),
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EMERY WHEELS

FOR
FOUNDRIES, **MACHINE SHOPS,**
SAW MILLS, **PLANING MILLS.**
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Also
MANUFACTURERS
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EMERY WHEEL
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PRESTON, ONT.

MANUFACTURERS OF
School, Office, Church and Lodge
Furniture.



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No. 50.

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S. Lennard, Sons, & Bickford,

DUNDAS, ONT.,

PATENTEES OF THE "ELYSIAN" SEAMLESS HOSIERY,

Manufacturers of Plain and Fancy
Hosiery, Caps, Ties, Sashes,
etc., etc., etc.,

To the Wholesale Trade only.

Represented in Eastern Ontario, Que-
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ESTABLISHED 1820.

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GEORGE BRUSH,

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Maker of

STEAM ENGINES,
STEAM BOILERS,
HOISTING ENGINES,
STEAM PUMPS,
CIRCULAR SAW MILLS,
BARK MILLS,
SHINGLE MILLS,
ORE CRUSHERS,
MILL GEARING,
SHAFTING,
HANGERS AND
PULLEYS,

HAND AND POWER HOISTS FOR
WAREHOUSES, &c., &c.,
and Agent for

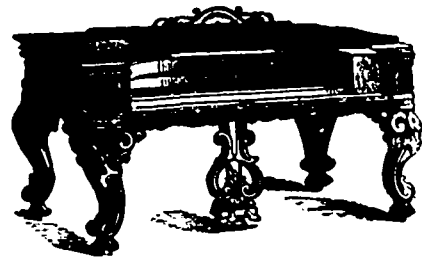
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LANSDOWNE PIANO CO.

UPRIGHTS

- AND -

SQUARES



The Leading Canadian Pianos

STRICTLY FIRST-CLASS. Correspondence Solicited.

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Established 1872.

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INSURANCE CO. OF NORTH AMERICA.

NEW FEATURE,

JOINT INSURANCE

FOR PARTNERSHIPS

IMPORTANT TO MANUFACTURING FIRMS.

MEDLAND & JONES,

GENERAL AGENTS,

Corner Adelaide and Victoria Streets,

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EVERY REPUTABLE DEALER KEEPS
THEM.

Insist on having the Genuine, and see
that they bear our name.

J. M. LAUGHLIN'S SONS,

GROWERS
MERCHANTS,
AND EXPORTERS OF

SPRINGFIELD FALLS
N.Y.

AMERICAN TEASELS.

