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THE CANADIAN MANUFACTURER

DEVOTED TO *
 → THE MANUFACTURING & MINING INDUSTRIES, OF THE *
 → DOMINION.

AND INDUSTRIAL WORLD.

Vol. 6.

TORONTO, APRIL 1, 1887.

No. 7.

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ASBESTOS GOODS,
 OF ALL KINDS.

Files and Hoes, finest quality;
 Fire Hose, cotton rubber-lined, for
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"Old Dyewood Warehouse"
 Established 1838.

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Rubber Belting from 1 to 72 inches wide.

Hose for conducting suction and steam.

Packing, Cloth Insertion and pure.

Tubing, of all kinds.

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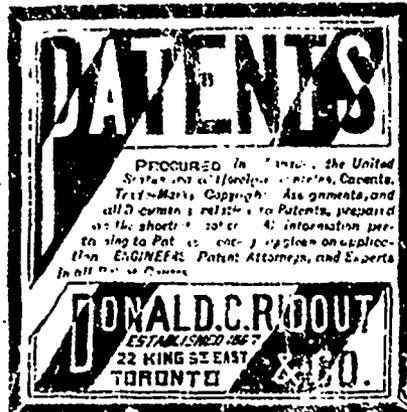
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Dundas, Ont.

SEE ADVERTISEMENT, PAGE 158.

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MANUFACTURERS OF
 FINGERING, KNITTING,
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 WORSTED YARNS.



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 Sterling and American Exchange bought and sold.
 Collections made on the most favorable terms.
 Interest allowed on deposits.

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New York—The American Exchange National Bank.
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CORNEILLE & CO.,
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 310 to 316 St. Paul Street,
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offer at closest prices
PURE OLIVE OIL,
WINTER-PRESSED LARD OIL,
EXTRA FINE SPINDLE OIL,
 and a full assortment of other
LUBRICATING OILS.
 Also
CHEMICALS,
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 MANUFACTURERS OF
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New York Dyewood, Extract and Chemical Co.
55 BEEKMAN ST., N.Y.
 All kinds of
DYE STUFFS.
 Dye Woods, Extracts, Cutch, Indigo, Gambier, Cudbear, Cochineal, Sumac, and Liquid Extracts of Dyewoods.

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FRITCHARD & MERRITT
ENGRAVERS
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 STEEL, BRASS, AND RUBBER STAMPS.
 STENCIL PLATES, SEALS, &c. &c.

MONTREAL.
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 Are Sole Agents in Canada for
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CHEMICALS AND DYE STUFFS,
 Sal Soda, Soda Ash, Bleaching Powder, Caustic Soda, Bi-Carb. Soda, Chlorate of Potash, etc., etc.
 Extracts Indigo, Sumac, Fustic, etc., Gambier, Cutch, Sumac, etc., Acids,
ANILINE DYES,
 Brooke, Simpson & Spiller's. Full Assortment on hand.
 PHOSPHOR BRONZE, SILICATE CLOTH.

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 SOLE MANUFACTURERS OF
 The Celebrated Yorkshire Scouring and Fulling Soaps,
 Neutral Cotton Seed Oil Soaps,
 Pure Lard Oils specially adapted for the Woolen Trade.

IMPORTERS OF
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 Dyewood Extracts and all Dyeing Drugs,
ANILINE DYES, ALL COLORS.

SPECIALTIES ARE
 Imperial Blue, Fast Seal Brown,
 Fast Acid Brown, Brilliant Scarlets,
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 Manufacturers of
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PILLOW, HERSEY & CO.,
 Manufacturers of every description of
 Cut Nails, Tacks, Brads, Railway and Pinned Spikes, Horse Shoes, Carriage, Truss and other Bolts, Coach Screws, Hot Pressed and Forged Nuts, Felloe Plates, Lining and Saddle Nails, Tutting Buttons, &c., &c.
 The Hardware Trade, Shoe and Leather Finding Dealers, and Boot and Shoe Manufacturers, will find the Largest and Best Assortment and Greatest Variety of above Goods always in stock, and can rely on orders being rapidly executed, our facilities for doing so being unequalled.
 Office, 31 St. Peter St. Montreal.

Prize Medal, London Universal Exhibition, 1862.
 Gold Medal, Paris Universal Exhibition, 1867.
 Grand Diploma of Honor, Vienna Universal Exhibition, 1873.
 Medal and Diploma, with Highest Commendations, Philadelphia Centennial Exhibition, 1876.

DOMINION Card Clothing Works,
York St., Dundas.
W. R. GRAY & SONS,
 PROPRIETORS,
 MANUFACTURERS EVERY DESCRIPTION OF
Card Clothing and
Woolen Mill Supplies.

Maintain large stock, replete with all the new and improved colors. Will be pleased to furnish quotations with samples and directions for use.

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AND INDUSTRIAL WORLD.

DEVOTED TO *
 THE
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 OF THE
 DOMINION. *

VOL. VI.

TORONTO, ONT., APRIL 1, 1887.

No. 7.

THE CANADIAN MANUFACTURERS' ASSOCIATION.

A WELL attended meeting of the executive committee of the Canadian Manufacturers' Association was held in their office in this city on Tuesday, the 22nd March. A number of questions occupied the attention of the meeting, such as proposed custom reforms, commercial union, undervaluations, etc., which were intelligently discussed, although lack of space prevents our giving any detailed report at this time. We are pleased to note that the Association has decided to continue the praiseworthy policy of encouraging industrial designs in our art schools, by again offering four silver medals for competition. The designs that were offered in competition for the Association's medals last year were very meritorious and elicited commendation from all who saw them. They were sent by the Department of Education to be exhibited at the Colonial and Indian Exhibition, and the *Canadian Gazette*, published at London, England, made mention of them as follows:—

“The work of these Art Schools of Ontario is such as would do credit to many older countries. The origin of some of the exhibits is interesting. In view of the Exhibition, the Ontario Manufacturers' Association offered medals for the best designs for various manufacturing purposes, and Dr. May, as Superintendent of Art Schools, at once issued circulars to the schools, notifying them to prepare forthwith various designs. The Toronto School designs were prepared for paper-hangings; in Ottawa for iron work, such as railings, fences, etc.; in London, designs for sideboards, etc.; and in the Kingston School for mantelpieces and over mantels. Considering, then, the fact that no selection is made in the exhibits in this class, all the competitive designs being shown, and that but a fortnight was allowed for the work, Ontario has reason to be proud of the result. It unquestionably forms a most important part of the Court. From the Toronto School of Art there also comes excellent work in electro-metallurgy taken from plaster casts and electrotypes from nature, as well as models in clay, and plaster casts from clay. Good industrial designs are also shown. The Art School of London comes out strongly in painting on china. Even the baking is done at the school and the product is excellent, illustrating a frequent means of livelihood for young ladies. By the Kingston exhibits mechanical work is illustrated in such a way as to call forth the admiration of the principal of the South Kensington Art Schools.”

[Since the above was written the Industrial Art and Design Committee of the Association has met and decided to offer medals for each of the following designs:—Design for a medal suitable for the Canadian Manufacturers' Association; design for diploma for the Dominion Exhibition; design for carved panel for sideboard, and design for summer cottage, not to cost over \$500 to erect. The die for these medals, which will be a very expensive one, will be gratuitously contributed by Messrs. P. W. Ellis & Co., manufacturing jewelers of this city, who are members of the Association.—EDITOR.]

OUR AUSTRALASIAN EDITION.

THE completion and full equipment of the Canadian Pacific Railway through to the Pacific Ocean at Vancouver, British Columbia, and the establishing of a line of fast steamers from that port to Melbourne and other Australasian ports, opens up a number of new and most valuable markets to Canadian Manufacturers, of which they will no doubt be quick to avail themselves. The industries in the countries in the southern hemisphere thus being connected with Canada are almost entirely agricultural, and there are no extensive manufactories there of any description. They are consequently importers of every variety of manufactured goods, wares and merchandise, and all the machinery used there is imported from abroad.

The geographical position of Canada, and our lines of connection and communication, render it possible for Canadian manufacturers to supply the Australasian demand on quite as favorable terms as those offered by European or American competitors, and there is now no reason why such requirements should not be met from here to a very considerable and gratifying extent. A strong and vigorous effort to secure this trade should certainly be made, and the publishers of THE CANADIAN MANUFACTURER have made arrangements to send a large edition of a special export number to our agents, Messrs. A. S. Manders & Co., of Melbourne, Sydney and Adelaide, who will, on its arrival, have the papers addressed, and a copy mailed to every reputable business firm in the colonies of Victoria, New South Wales, South and Western Australia, Queensland, Tasmania, and New Zealand.

Canadian manufacturers who desire to extend their business in this direction cannot but be benefitted by having their trade announcements inserted in the Australasian edition of THE CANADIAN MANUFACTURER, and we cordially invite all manufacturers and others interested to avail themselves of this opportunity, and co-operate with us in endeavoring to extend our commercial relations abroad. Those who are earliest in the field will certainly reap the greatest benefits, and the harvest is awaiting the reapers.

Our advertising rates for this special Australasian edition are:—

One page.....	\$50.00
Half page.....	25.00
Quarter page.....	15.00
Eighth page.....	8.00

Manufacturers proposing to avail themselves of this opportunity would do well to send in their advertisements without delay.

THE ARGENTINE REPUBLIC.

This journal has always made a special feature of presenting to its readers facts and figures in reference to the trade of foreign countries, and of pointing out particular instances which seemed to be well worth the attention of Canadians looking for export markets. Our reason for devoting so much attention to the foreign trade question is because the manufacturers of other countries are kept well informed as to the requirements of possible foreign customers by means of their Consular reports, but Canada having no Consular system, it has almost entirely devolved upon this journal to meet this want, as far as possible, by compiling and publishing such digests of information as would be of interest to our own manufacturers. Having recently devoted considerable space to the prospects of trade with Australia, China, Japan and the West Indies, we now present some much needed information concerning the Argentine Republic.

The Argentine Republic comprises the greater part of what was formerly the Spanish viceroyalty of Buenos Ayres. On the separation of that country from Spain the remainder of the viceroyalty seceded from the authority of the Government established at Buenos Ayres and formed the three important republics of Bolivia, Paraguay and Uruguay. The constitution of the Argentine Republic is modelled closely after that of the United States; the President is elected by the people and the President of the Senate elected by his fellow senators, becomes *ex officio* Vice-President. The most remarkable feature of the country is its vast plains which comprise nearly three-fourths of the whole territory, and which for the most part are covered with a rich alluvial soil from three to six feet in thickness, caused by the constant decaying of the luxuriant vegetation which grows upon it.

The total area of the republic is 1,619,500 sq. miles, and in 1882 the population was officially estimated to be 3,026,000. The principal cities are Buenos Ayres with a population of 300,000; Cordova, 49,600; Rosario, 42,000; Tucuman, 26,300; Mendora, 18,200; Corrientes, 15,500; and eight other towns having a population of over 10,000 each.

As it is almost an entirely agricultural country, as may be judged from the fact that its people own eighteen millions of horned cattle and one hundred and forty millions of sheep; nearly everything in the way of manufactures has to be imported, and as Canada should secure some modicum of this large trade we give a few statistical facts:

The total imports in 1883 were \$81,246,163, and the exports \$60,389,052; the latter being mostly of wool, hides and tallow. This trade was mainly with the following countries:—

	IMPORTS.	EXPORTS.
Great Britain.....	\$30,727,694	\$ 7,211,437
France.....	16,785,590	22,518,371
Belgium.....	7,249,787	14,879,945
Germany.....	8,868,930	6,813,713
United States.....	7,454,832	4,064,848
Uruguay.....	5,683,343	2,110,849
Spain.....	4,701,790	1,517,678
Italy.....	3,996,644	1,803,484

The American export trade with the Argentine Republic has steadily increased, and the following comparison of their share of this market as against Canada is interesting.

ANNUAL EXPORTS FROM UNITED STATES AND CANADA.

UNITED STATES.		CANADA.	
1881.....	4,268,110	1882.....	181,988
1882.....	5,094,764	1883.....	215,475
1883.....	4,935,054	1884.....	301,245
1884.....	7,454,832	1885.....	702,183

A noticeable feature of the above comparison is that whilst the exports from the United States are largely manufactured goods, the exports from Canada were, last year, as follows:— Products of the mine, \$432; of the fisheries, \$2,030; manufactures, \$38,951, and forest products, \$660,686. An idea of the principal manufactured goods that the republic requires may be learned from the following partial statement of the imports for 1884.

Woven goods.....	\$16,793,043
Lumber.....	4,863,956
Clothing.....	2,814,836
Iron and its manufactures.....	9,186,802
Metals and other manufactures.....	1,626,608
Miscellaneous manufactures.....	5,194,180

All of the above goes to show that there is a trade to be done, and the question is whether our manufacturers are going to make an effort to secure part of it. Of course, in Canada, we are at the disadvantage of having no direct lines of communication, whereas there are twelve regular lines of steamers plying between the Argentine Republic and European ports, but it should be remembered that it is simply a question of supply and demand, and where there is commerce there will always be tonnage at command. We have taken the trouble to secure a mass of information, which space forbids us to publish in this article, but should any manufacturer require additional particulars we will be glad to have him correspond with us.

THE AMERICAN-BRAZILIAN FLOUR TRADE.

We recently mentioned the fact that considerable interest was being felt among wheat growers and flour millers in the United States over the report that a company was being organized in England, with a capital of £500,000, to establish flouring mills in Rio Janeiro, Brazil. The United Kingdom is the greatest consumer of American wheat and wheat products, the exportations thither in 1885 being the equivalent of 6,807,538 barrels, valued at \$34,309,802, while the total exports from the United States in that year were the equivalent of 10,618,145 barrels, valued at \$52,146,336. But while the United Kingdom is such a large consumer of American flour, Brazil comes next in importance, and requires a larger quantity than any other country, possibly excepting British North America. If this English scheme is put into execution, and if it proves as successful as its promoters claim it will be, it will have a very disastrous effect on the American interest alluded to. If American flour thus becomes shut out from the Brazilian market and 674,230 barrels, valued at \$3,369,074, were sent there in 1885—the effect would be to depress the price of the article at home to an alarming extent; and the event would be most sensibly felt by Canadian wheat growers and millers. To this extent, therefore, is Canada interested in the matter. It is stated that a committee composed of members of the Boards of Trade of New York, Baltimore and Richmond, recently visited Washington to see Secretary of State Bayard.

and the Brazilian minister, in regard to the subject, with the object of getting the Brazilian Government to remove the duty of 75 cents per barrel now imposed on imported flour. What the result of these efforts will be has not yet been determined.

But there seems to be another side to this question which, if rightly viewed, induces the belief that even if the proposed flouring mills are erected in Rio, it does not follow that the venture would prove a success. Freights from American to Brazilian ports are very low, the heavy shipments of American flour rendering possible good return cargoes of coffee, nuts, hides, rubber and other Brazilian products; and even in the face of the duty on flour, it is to be supposed that the American shippers could successfully contend with the new enterprise there. Wheat is not raised in merchantable quantities in Brazil, and such wheat as might be milled in Rio would be carried thither from Chili and the Argentine Republic, there being no duty imposed on that article in Brazil. An inducement of dividends of 25 to 30 per cent. is promised to investors to take stock in this English Rio Janeiro milling company, but there are many obstacles to the success of the venture. Some of these are:—the wheat would have to be imported; fuel is high and scarce in Rio, and coal would also have to be imported; as there is no skilled labor there, the mill employees would have to be carried there from England or elsewhere; there are no machinery manufacturing establishments there, and all machinery and heavy repairs would necessarily have to be carried there from abroad, and the by-products of the industry, such as bran and middlings, could not find a good market there. These and other obstacles which might be pointed out suggest that the venture might not be as profitable as its projectors hope for, and that the promise of 25 or 30 per cent. dividends would not be realized.

Possibly success may attend the enterprise, but it will probably be many years before the existing channels of trade in the direction indicated will become diverted or cease to exist.

STRIKERS AND THEIR METHODS.

The public is indebted to Mr. Geo. T. Beales, a walking delegate for the Toronto District Assembly of the Knights of Labor, for an insight into the peculiar methods adopted by that order when a strike is in progress. At present a number of former employees of Heintzman & Co., piano manufacturers, of this city, are on strike, and the *Toronto News*, which poses as a mouthpiece of the workingmen, recently published an interview with Mr. Walking Delegate Beales, part of which reads as follows:—

“Is it true that the company are importing hands?”
 “Yes, they have succeeded in bringing a number of work men here, but it is one thing to get them here and another thing to keep them.”
 “Do you mean that they have gone away again?”
 “Well, the majority of them have wandered on. Some men could not be coaxed away, but there are only a few of that stamp.”
 “Am I to understand that the strikers offered these men inducements to leave town?”
 “You are asking too many questions. Some of these men came here without knowing there was a strike on, and explanations had to be made to them. And in more than one case they had spent their last dollar to get here, and a slight advance to pay their railroad fare was necessary. I have here

the receipts I took from them for these amounts,” and he produced a well-filled receipt book in proof of his statement.

“You need to have considerable money to carry on a struggle of this kind?”

“Well, I always keep a little on hand to be ready for emergencies.” The roll of bills with which he backed up this assertion looked as if quite a number of emergencies would have to occur before it would disappear. “That will provide for contingencies in the way of railroad fares, etc., for some time to come, and when it is exhausted I have the means of replenishing it in this bank book. There is no danger of our running out of funds just yet.”

We have a dim suspicion that the powers that be amongst the Knights of Labor will consider the remarks of Mr. Beales as refreshingly indiscreet, and will question the policy of his indulging in such “boodle” braggadocio. All the same it is well that some light has been thrown on the internal economy of the strikers’ association, and in this connection manufacturers might read and re-read with profit a paper which appeared in our last issue entitled “organization.”

CANADIAN TRADE WITH CHINA AND JAPAN.

The British Columbia Legislature has sent a memorial to the Canadian Government requesting the appointment of an experienced and reliable person to act as public service commissioner, with a suitable assistant, to proceed to China and Japan, to observe the courses and requirements of trade there and collect statistics thereof, and ascertain what manufactures and commercial and agricultural products of Canada are suitable to them, and to report as fully as possible to the proper department at Ottawa, the reports to be printed by the Government and distributed for general information.

The initiative in this matter was taken by the Canadian Manufacturers’ Association some time ago, which action was fully discussed in these pages at the time. The importance of it to Canada and Canadian manufacturing and mercantile interests cannot be overestimated. One of the strongest evidences of the thrift of a nation is seen in the volume and character of its commerce with other nations; and Canada can never attain to the full glory to which she is entitled until the products of her workshops are found in all the marts of the world, vying for commercial favor with those of other and older nations.

It will be remembered that the efforts of the Canadian Manufacturers’ Association secured the sending of Commercial Agents to Australasia and the West Indies, and it is to be hoped that there will be no unnecessary delay in dispatching commissioners to the Asian countries indicated for similar purposes. It is probable that this will be done when the Canadian Pacific Railway steamers commence plying between Vancouver and Asiatic and Australian ports.

ENGLISH DEMANDS FOR PROTECTION.

RECENTLY a meeting was held in Leicester, England, to consider the existing depression in agriculture and trades, and the best methods of bringing about a remedy. The attendance was large and influential, the Duke of Rutland, Mr. Ellis, M.P., Mr. Moreton-Frewen, and other gentlemen explaining their views on the question of protection and free trade; and it is evident from the reports of the meeting which have reached us

that the sentiment of those present was almost unanimous in recommending protection as a cure for the depressed condition of affairs now existing in that country. Resolutions in this sense were passed, and also one which affirmed that the depression could only be met by a federation and free interchange of commodities with the Colonial and Indian Empire. The importance of this meeting lies in the fact that there is a large and rapidly growing minority in Great Britain who desire a return to protective measures, and who are very loud and outspoken in declaring their views. The sentiment that the remedy for the evils complained of lies in "federation," and by "the imposition of protective duties against those trade rivals who will not deal on the principles of free trade," is suggestive.

The discussion of a return to a protective policy is not confined to desultory meetings, but is engaged in also by the newspapers and the more ponderous reviews. In a review of Mr. Andrew Carnegie's book, "Triumphant Democracy," the *St. Stephens' Review* makes some caustic comments on England's disadvantage under Free Trade as compared with the advantages to the United States under Protection. It speaks of the Carnegie policy as existing both in England and the United States. In England the policy is to subsidize newspapers to preach up Cobdenism, and in America it is to write books displaying the glorious results of Protection. It says:—

"It will astonish some of Mr. Andrew Carnegie's English Radical Cobdenite friends to hear of him writing that under Protection America is rapidly leaving all the other nations behind. In the first paragraph of his book he says that 'the old nations of the earth creep on at a snail's pace; the Republic thunders past with the rush of the express. The United States, the growth of a single century, has already reached the foremost rank among nations, and is destined soon to out-distance all others in the race. In population, in wealth, in annual savings, and in public credit; in freedom from debt, in agriculture, and in manufactures America already leads the civilized world.' We do not dispute these assertions, but Mr. Carnegie would have given a little more satisfaction had he informed his English friends that when America lowered her tariffs, with a desire to approach Free Trade, she suffered tremendous losses. It is an historical fact that if the purpose had been deliberate to drive gold out of America it could not have been more effectively carried out than by the reduced tariffs of 1846 and 1857. The importations became unhealthy in magnitude, and the balance of trade was continually against the United States. The consequence was that when the Rebellion became flagrant the nation was poor in its coffers and the people were lacking in gold. The financial tasks were greatly magnified when the great struggle was forced upon the Government. If the policy of high tariffs had not been changed in 1846 no one can now question that the United States would have been in much better condition to meet the strain for preserving the Union. The experience of a low tariff has been beneficial to America. It has taught her the folly of buying foreign goods instead of employing her own people to make what she requires. The war brought out rigidly Protective duties, and the commerce of America from that time has prospered so wonderfully as to warrant the glowing description of it by Mr. Carnegie which we have above quoted. Protection having achieved so much good in America how comes it that Mr. Carnegie can sneer at the paralysis of British industry and yet advocate the continuance of a system here which is doing all the mischief?"

The same influence which has enabled the United States to rival Great Britain in so many of her industries, and outstrip her in some—that of Protection—would operate similarly

to the aggrandizement of Canada if it were observed to the same extent as is done in the United States, and as persistently adhered to.

OUR CARD BASKET.

THE following named manufacturers and business men have favored this office with their presence since the date of our last issue:—

W. K. McNaught, Sec. American Watch Case Co., Toronto; Wm. Bell, organ manufacturer, Guelph; E. J. Davis, tanner, King; James Worthington, Pres. Ontario Bolt Co., Toronto; W. G. A. Hemming, of Hemming Bros., jewel case manufacturers, Toronto; P. W. Ellis, of P. W. Ellis & Co., manufacturing jewellers, Toronto; T. D. Craig, M.P.P., of Wm. Craig & Son, sheepskin tanners, Port Hope; James Watson, Pres. Strathroy Knitting Co., Hamilton; E. S. Piper railway supplies, Toronto; Joseph Simpson, knit goods manufacturer, Toronto; Geo. Booth, coppersmith, Toronto; R. MacGregor, of MacGregor, Gourlay & Co., wood working machinery, Galt; W. H. Storey, glove manufacturer, Acton; A. W. Wright, of the *Canadian Labor Reformer*, Toronto; J. S. Larke, Pres. Oshawa Stove Co., Oshawa; Daniel Lamb, blacking manufacturer, Toronto; H. Bickford and S. J. Lennard, of S. Lennard & Sons, hosiery manufacturers, Dundas; Cyrus A. Birge, of the Canada Screw Co., Dundas; R. W. Elliot, manufacturing druggist, Toronto; J. B. Armstrong, carriage goods manufacturer, Guelph; Geo. Lang, tanner, Berlin; John F. Ellis, of the Barber & Ellis Co., Toronto; Samuel Collinson, of the Whitman & Barnes Manufacturing Co., St. Catharines; A. Warnoch, of the Galt Edge Tool Co., Galt; John Fensom, of the Fensom Elevator Works, Toronto; Wm. Chaplin, Pres. Welland Vale Manufacturing Co., St. Catharines; J. Firstbrook, of Firstbrook Bros., box manufacturers, Toronto; Theodor and Henry Heintzman, of Heintzman & Co., piano manufacturers, Toronto; John Taylor, of John Taylor & Co., soap manufacturers, Toronto; James Kendry, Mgr. Auburn Woollen Mills Co., Peterborough; Frank J. Phillips, of the Cobban Manufacturing Co., manufacturers of picture frames, mouldings, &c., Toronto; — Thurston, Pres. of the American Screw Co., Providence, R.I.; Charles Knees, Dominion Cordovan Tannery, Milton; A. W. Morris, of A. W. Morris & Bro., cordage manufacturers, Montreal; Isaac Waterman, of the Imperial Oil Co., London; J. J. Withrow, Pres., and H. J. Hill, Sec., of the Industrial Exhibition Association, Toronto; Geo. Johnson, journalist, Ottawa; A. S. Manders, of A. S. Manders & Co., Melbourne, Australia; — Wyness, of the Wyness Silver Plate Co., Toronto; Carl Zeidler, of Wagner, Zeidler & Co., piano key manufacturers, Toronto; James Morrison, brass founder, Toronto; P. Freyseng, cork manufacturer, Toronto; Wm. Christie, of Christie, Brown & Co., biscuit manufacturers, Toronto; Wallace Millichamp, show case manufacturer, Toronto; J. R. Barber, of Wm. Barber & Brothers, paper manufacturers, Georgetown; Charles Riordan, paper manufacturer, Merriton; M. B. Perine, cordage and twine manufacturer, Doon; Thomas Cowan, of Cowan & Co., the Galt Foundry, Galt; Samuel May, billiard table manufacturer, Toronto; Emil Boeckh, of Boeckh & Sons, wooden ware manufacturers, Toronto; A. E. Kemp, of McDonald & Kemp, tinware manufacturers, Toronto; T. D. Beddoe, of the Hamilton Rolling Mills Co., Hamilton; J. B. Carlile, Manager Manufacturers' Life and Indemnity Insurance Co., Toronto; H. S. Strathy, Manager Traders' Bank, Toronto; Robt. Crean, of the Ontario Straw Goods Manufacturing Co., Toronto; R. L. Paterson, of the Miller and Richards Type Founding Co., Toronto; Chas. Warren, of Warren Bros. & Boomer, Toronto; Geo. Sadler, of Robin & Sadler, leather belting manufacturers, Toronto; E. J. Lennox, architect, Toronto; — Tunstead, of the Dominion Hat Co., Hamilton; A. R. Creelman, of McCarthy, Osler & Creelman, barristers, Toronto.

THE
Canadian Manufacturer
AND INDUSTRIAL WORLD.

Published on the first and third Friday of each month, by the
CANADIAN MANUFACTURER PUBLISHING CO., (Limited).
6 WELLINGTON STREET WEST, TORONTO.

ANNUAL SUBSCRIPTION, IN ADVANCE, \$2.00.
CARD OF ADVERTISING RATES SENT ON APPLICATION.

FREDERIC NICHOLLS, *Editor*,
Secretary Canadian Manufacturers' Association.
Vice-Consul for Liberia.

J. J. CASSIDEY, *Managing Editor.*

ED. D. McCORMICK, *Secretary.*

This Journal has won for itself an acknowledged position amongst Trade Journals and is recognized as the representative industrial paper of Canada. All the various industries of the country are represented in its columns, and it has been for years the fearless and consistent advocate of those reforms which were indispensable to the success of the Manufacturers. It now reaches nearly every mill and factory in the Dominion, and its influence is constantly increasing.

As a medium for advertisements of machinery, steam appliances, mill and factory supplies, etc., it is unequalled, and our rates will be furnished on application.

Communications from Manufacturers, Exporters, and others, are respectfully invited.

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Editorial Notes.

At a meeting of the executive committee of the Canadian Manufacturers' Association held recently, it was decided to send a circular letter to a number of manufacturers, requesting their opinion as to the effect Commercial Union, or Reciprocity in Manufactures with the United States, would have on Canadian Industries. In the event of this paragraph being noticed by any manufacturers who have not received a copy of the circular, they are requested to send their opinion, in brief, to the Secretary of the Association.

ENORMOUS quantities of fish are being shipped from Halifax, N.S., to the island of Cuba.

NOVA SCOTIA is making large shipments of apples to England. Already this season over 100,000 barrels have been sent, and there yet remains about 15,000 barrels to be forwarded.

MR. H. S. PELL, for some years draughtsman and office manager with Messrs. Northey & Co., steam pump manufacturers of this city, has been appointed Inspector of Schedule Risks by the Canadian Fire Underwriters' Association. Mr. Pell will make his services valuable to the Association.

MR. FRANCIS WILSON, a London architect and contractor of large experience, has gone to British Columbia as the representative of a syndicate of London capitalists, to examine into and report upon the practicability of establishing factories for manufacturing bricks, enamelled bricks, tiles, glassware, etc., on the Pacific coast.

THE Bowmanville *Statesman* points to the fact that live hogs are worth \$5.90 in Chicago, and dressed hogs, in car lots, are worth only \$5.80 in Toronto, "which does not look very well for the N.P. as a farmer's helper." We fail to see the point. The N.P. does not prevent the Canada farmer from taking his hogs to Chicago, but it does prevent the American farmer from bringing his hogs to Canada.

MR. JOHN J. WYLDE, Canadian Commissioner, is in the West Indies endeavoring to promote closer trade relations with the Dominion. He has made encouraging reports to the Department of Finance, the only opposition to the scheme to establish steam communication between the Dominion and the West India Colonies coming from some Halifax vessel owners whose trade in that direction would be interfered with.

NOTICE of a resolution has been given in the Ontario Parliament declaring it inexpedient that the labor of convicts in the Central Prison shall, after the expiration of the existing contracts, be let out upon hire. This is a move in the right direction. There is no shadow of justice in allowing convict labor to be brought in competition with free labor. Justice to both manufacturer and labor demands the reform.

Mr. J. M. Woods, a tea merchant from Japan, who was in Toronto a few days ago, stated that in his opinion the Canadian Pacific Railroad would soon become the popular route for the transshipment of teas not only to Canada but also to England. This route is much shorter and more expeditious than that via the Suez Canal, and the merchandise could be delivered in England in much better condition.

But 625 persons own property in the town of Oshawa, Ont., of whom 100 are non-resident and 81 women. At a recent election there to decide if a bonus of \$5,000 should be voted Pöcock & Haynes as an inducement for them to establish saw works in that town, 37% property owners voted for the award and 11 against, but 57 voters failing to appear at the polls. Such unanimity is remarkable and indicates that the people are in favor of home production for home consumption.

JUDGMENT has been rendered by the Court of Appeals in Montreal in the case of Joseph Pratt against Andrew Allan in an appeal from a judgment of the Superior Court awarding Pratt \$1,100 damages for an accident that befel him while assisting to unload a steamer, the property of Allan, his thigh having been crushed by an iron girder being moved along the wharf. Contributive negligence was pleaded in bar of recovery, but the Appellate Court sustained the judgment of the lower court.

A NUMBER of the leading paper manufacturers of the Dominion, representing the Paper Trades Association, visited Ottawa a few days ago, and conferred with Sir Charles Tupper, Minister of Finance, regarding proposed changes in the tariff. They asked that the Government re-arrange the classification of the different sorts of paper in order that Canadian manufacturers may not suffer from American competition. It was stated that want of knowledge on this subject on the part of Customs officials causes considerable loss of revenue to the Government. Sir Charles said he would take the matter into consideration.

Mr. A. Woods, Canadian Agent General to Australasia, requests us to call attention of those Canadian manufacturers who have heretofore expressed an intention to send samples of their products to him, but who have not yet done so, to the importance of doing so without further delay. Now that this agency is established and the way open for the successful introduction of Canadian manufactures into Australasian countries, manufacturers should not fail to avail themselves of it. Samples on which the freight via San Francisco, may be too heavy, should be sent via steamers to London, there to be transhipped by steamers to Sydney, N.S.W., where Mr. Woods is established; or via sailing vessels direct from Boston or New York. Samples on which the saving of freight is no object should go via San Francisco, thereby saving much delay. All communications for Mr. Woods should be addressed as above indicated.

THE Supreme Court of the United States has recently rendered a decision in which the right of a State or municipality to tax commercial travellers is denied on the ground that such

taxation is an interference with inter-State commerce, and is therefore unconstitutional. The decision was in a case carried up from the Supreme Court of the State of Tennessee. Robbins, a commercial traveller, representing a mercantile house in Cincinnati, being unlicensed, offered to sell and did sell goods by sample in Memphis, in which place a license thus to sell was required. He was arrested, convicted and fined, and his conviction affirmed by the Supreme Court of the State, and it is this judgment that the Supreme Court of the United States has reversed. In his opinion Justice Bradley holds that "in the matter of inter State commerce the United States are but one country, and are and must be subject to one system of regulations, and not to a multitude of systems."

While it is contended by some that the free trade policy which prevails in Great Britain is desirable, and while many of the trade journals there favor it, our esteemed contemporary, *The Machinery Market*, of London, wants to build a Chinese wall around the trade journals there for the purpose of excluding the business cards of Yankee and other competitors. It says, "English trade papers should be looked to as pillars of support of English manufacturers, rather than as means of assisting to divert business towards Yankee competitors who are well able to look after themselves. If the action of the *Board of Trade* in taking advertisements for the sake of saving expense in issuing its Journal, results in causing a British paper to act as advocate for America, there will be no gain to the country in the long run, but a distinct loss." To persons on this side the Atlantic it seems queer that any proper advertisement should be excluded from a trade journal only because the advertiser was a foreigner. Is it possible that under free trade British manufacturers are afraid of foreign competition in Great Britain, and that even the publication of foreign business cards there is considered not only no gain to that country, but a distinct loss?

THE Cobban Manufacturing Company, of Toronto, have long felt that their rapidly increasing business demanded a considerable enlargement of their works. They attribute their success in business to the protection from foreign competition afforded them by the existing tariff, and it was a foregone conclusion with them that if there was to be no meddling with the tariff they would make the additions required. On the other hand they had reasons to fear that if a change in the policy of the Government was made, the tariff might be so modified or changed as to render it impossible for them to continue business. If the recent election had resulted in a change of Government the proposed additions to their works would not have been built; but when it became a certainty that public sentiment was against any change, the company determined to proceed at once to the enlargement of their plant, which, when completed, will enable them to give employment to probably two hundred hands. Aside from the personal interests of this company, the issue involved in this instance was whether Toronto should have a couple of hundred busy artisans, contented and happy, and earning remunerative wages, or an equal number in idleness and a tax on the community. This is one of quite a number of similar circumstances which have been brought to our notice.

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,
 TORONTO.**

MILL OWNERS!

BUY

FAIRBROTHER'S

AMERICAN

LEATHER BELTING.

THE BEST BELTING MADE.

Orders executed same day as received
for any size of Single or
Double Belting.

GEO. F. HAWORTH,

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65 YONGE STREET,

TORONTO.

Manufacturing.

THE CANADIAN MANUFACTURER.

Send \$2.00 and receive it postage paid for one year.

THE COBBAN MANUFACTURING COMPANY,

It was Charles Knight, the author of "Knowledge is Power," who said: "If a particular result is satisfactory to a pecuniary degree, the sluggish mind is too apt to rest satisfied without caring to enquire as to the cause by which the result is produced, or whether it is capable of further improvement. The gunsmith may accurately fashion day by day, in continued routine, a particular portion of the musket, without knowing or caring to know the reason why he is required to shape the metal to a particular form, or the relation that such form sustains to the whole."

This quotation was brought to mind in connection with a recent visit a representative of this journal made to the splendidly equipped factory of the Cobban Manufacturing Company, in this city. A walk through this establishment will show that at the head of it is no "sluggish mind" ever apt to rest contented with any particular result even if satisfactory in a pecuniary degree. Mr. Frank J. Philips, who is now sole proprietor of these works, is a young man whose business education has inculcated in him the principles of modern progress, and as a result his factory is a model of industrial adaptability; and economy of production has been so carefully studied out, even in all the minor details, that not only does the consumer of these particular goods benefit thereby, but as cheap production gives increased employment, the number of workmen on the pay-roll is being constantly increased. And thus every commercial interest of the city is a gainer to a greater or less extent.

When Mr. Boulton, the partner of the great James Watt, waited upon George III. to explain one of the improvements which they had effected in the steam engine, the king said to him, "What do you sell, Mr. Boulton?" and the honest engineer answered, "What kings, sire, are all fond of—power." That was in the days when steam power was being experimented with: but could King George, with prophetic vision, have divined the future of the invention to which he had extended his royal patronage, he might well have been content to think himself the godfather of the power which would subsequently rule the commerce of the world.

In every department of the Cobban Company's factory there is to be seen an astonishing variety of labor-saving machinery for every service, some of which appears endowed with almost human intelligence; and the number of wood-working machines alone suggest a retrospect of less than half a century ago when the few planing machines then in use were operated by hand. An historical account of the building of the Crystal Palace, which was first erected in Hyde Park, London, makes particular mention of the improvements in machine carpentry, and cites as an evidence of the inventive skill of that period that no fewer than five wood-working machines were used in completing that structure, viz., a steam power mortising machine, a foot power mortising machine, a tenoning machine, a planing machine, and a moulding machine.

The Cobban Manufacturing Company, of this city, are making active preparations to enlarge their plant at the intersection of Hayter and Terauley streets, the addition to consist in a 60x30 ft. three story brick building. This will be their second considerable enlargement made within the last three years, the space occupied at present fronting 192 feet on Hayter street and 102 feet on Terauley street. The company also occupy a large lot on the opposite side of Hayter street used as a lumber yard, for stables, etc.

This company are manufacturers of moulding, picture and looking glass frames, etc.; a large variety of cabinet work in

which is included bracket and clock shelves, cornice poles and trimmings; a large variety of fancy goods, such as wall pockets, music racks, etc.; and mirror plates—plain, beveled, fancy mantel, etc., of best German and British plate, and shocks.

In the production of this large and varied line of goods, all the materials are brought into the works in a crude condition, and from the cutting up of the rough lumber into convenient shapes and sizes, all the operations necessary to produce the beautiful frames, mouldings and artistic cabinet work on exhibition in the company's show rooms, are performed on the premises. Some of the mantel, pier and dressing case mirrors displayed in these show rooms, and manufactured by the company, are equal to any similar articles produced anywhere in the world, and reflect the greatest credit upon the artistic taste and skill of Toronto workmen.

The processes by which the interesting and intricate work of manufacturing these goods is conducted, while simple in themselves, involve the use of a vast amount of fine and expensive machinery, and the employment of a large number of the very best and most skilled artisans. And this is particularly true regarding the beveling of heavy plate glass for mirrors and other purposes, and the manipulations incident to making the mirrors. The plate glass store-rooms are stocked with immense sheets of the finest and heaviest glass, such as is used for show windows, etc., and which in themselves represent a very large investment of money. In the manufacture of moulding the company have in their employ a special artist who is constantly engaged in originating new designs and transferring them to the machinery by which the extensive variety of moulding is made. By the process here employed it is possible to produce as much moulding in one day as could possibly have been produced in ten days under methods prevailing a few years ago, and with far greater accuracy. The machine on which this work is done, we are informed, is the only one of the kind in this country.

But a few years ago the works of this concern were quite small, and gave employment to but comparatively few workmen, but the excellence of the goods manufactured created a strong demand for them, and the additions which have been made from time to time were in response to the imperative requirements of trade. There are now employed in the establishment about 175 hands, each of the many departments being under the supervision of skilled expert foremen, and the whole under the personal management and control of Mr. Frank J. Philips, who is sole proprietor of the Cobban Manufacturing Company.

THE Canadian Shoe Company, of Quebec, has been incorporated with a capital of \$8,000.

THE Globe Woolen Mills Co., Montreal, is being organized with a capital stock of \$200,000.

MR. J. WARREN, Cobden, will erect an extensive sash, blind and door factory at that place.

SIMPSON & Co., Berlin, are making preparations for a large addition to their already extensive furniture factory.

SHURLY & DIETRICH, Galt, have recently filled orders from Western States for their lance tooth cross-cut saws.

POCOCK & HAYNES, sawmakers, recently of Hamilton, have been voted a bonus of \$5,000 to establish their works at Oshawa.

ADDITIONAL capital has been put into the Dakin pottery, at St. Johns, N.B., and the works will re-open under favorable circumstances at an early day.

THE Laurentides Pulp Co., Montreal, have made applications to be incorporated as a joint stock company for the purpose of manufacturing wood pulp, paper, etc.

A COMPANY is about being formed in Winnipeg with a capital of \$10,000 for the purpose of manufacturing salt from the waters of the salt springs existing near Lake Manitoba.

PATTERSON & BROTHERS, Limited, Woodstock, will become incorporated as a joint stock company with a capital of \$750,000 to make agricultural implements and machinery.

HUSTON, HOPKINS & STEVENSON, Glencoe, will rebuild the sash and door factory at that place. The new building will be of brick, and the equipment will be first-class throughout.

THE McGinnis Hoop Factory, at Athelstane, is executing orders for 400,000 hoops and 10 car loads of scale boards. They have materials on hand for the manufacture of 750,000 hoops.

THE Essex Centre Manufacturing Co., Windsor, are being pushed to fill orders for plows for immediate shipment. They have recently filled an order for these goods for New Westminster, B.C.

THE Ontario File Company, Toronto, are busy, and report an encouraging volume of business in sight. They manufacture all lines of files in usual demand from new metal, and also re-cut old files.

JOHN BERTRAM & SONS, Dundas, are making a very heavy steam hammer for the Central Bridge and iron works at Peterboro. The hammer head and piston weigh 2,000 pounds, with a drop of 26 inches.

JOHN BERTRAM & SONS, Dundas, have recently received a consignment of steel bullets used in the Nordenfeldt gun from Great Britain on which they are to make tests of their case-hardening process.

THE Amherst Boot and Shoe Manufacturing Co., Amherst, N.S., recently gave a supper to their employes, 137 in number. This company pay about \$46,000 a year in wages, and their sales will this year aggregate over \$275,000.

WM. GRAY & SON, Chatham, shipped a large consignment of buckboards to Winnipeg a few days ago. They are busily engaged on large orders for these vehicles for the Northwest. They are also engaged on orders for buggies etc. for Winnipeg.

EMERSON & FISHER, St. John, N.B., are rapidly increasing their marbleized slate mantle business. Their new place on Princess street, is 60 by 22 feet, three stories high. Mantles of every description are made, and the workmanship is of the very best.

NEGOTIATIONS are in progress looking to the removal of the works of the London Machine Screw Manufacturing Company from London to Igersoll. The Board of Trade of Igersoll offer a bonus of \$2,500 on condition that the company employ twenty men.

THE Ball Electric Light Company, Toronto, are very busy, the volume of work being done by them only being limited by the capacity of their plant. They are manufacturers of electric apparatus for lighting streets, stores, foundries, workshops, manufactories, etc.

A JOINT Stock Company is being organized at Windsor for the manufacture of carriage woodwork. Carriage makers in that vicinity alone consume more than \$50,000 worth of such woodwork, which is produced in Detroit from Canadian timber, and on which a heavy duty is paid.

THE Burland Lithographic Company, which formerly had its headquarters in Ottawa, but who have for some years past operated in Montreal, are about to return to the capital again. This company do all the printing of the one, two and four dollar notes for the Dominion Government.

MR. E. H. BRONSON, Chaudiere, proposes building mills at that place for the manufacture of paper pulp out of sawdust. It is intimated that Mr Bronson will form a stock company with large capital which will purchase a powerful water power privilege, and erect and operate the mills.

THE Canadian Packers' Association, of Canada, held their regular annual meeting in Toronto a few days ago. The pack of canned goods was reported as being fully up to the requirements of the trade, and it was agreed that any increase would prove detrimental to the interests of the packers.

MESSRS. CHARLES SMITH & Co., Toronto, manufacturers of steam engines, pumps, etc., report that the volume of work being done by them has increased so rapidly of late that they will find it necessary very soon to abandon their old location on Adelaide street and seek more commodious quarters elsewhere.

MESSRS. J. P. SWENEY & Co., St. Louis, Mo., U.S., have become general agents for the Grellner lock wedge. This is a simple and inexpensive device for preventing axes, hatchets, hammers, etc. from flying off the handle. It secures absolute safety. The device is patented in the United States, Great Britain and Canada.

THE Polson Iron Works Company, Toronto, have been awarded the contract for making all the new machinery to be placed in the works of the Toronto Electric Light Company, now being construct-

ed; and it is their intention to turn out work of such character as they will be able to point to with pride as specimens of what they do.

MESSRS. FOX & Co., Toronto, manufacturers and dealers in lumber, sash, doors, blinds, etc., inform us that an unusual amount of building in Toronto is in contemplation for the coming season, and that nothing short of an earthquake or a strike among the building trades, which terms are synonymous, can retard or prevent the boom.

THE Dodge wood Split Pulley Co., Toronto, have furnished rope transmission pulleys to the following named parties, who now have them in operation in their works: A. C. Clarke & Co.; The E. & C. Gurney Co.; W. W. Park & Co.; J. B. McKay & Co.; Gooderham & Worts; Brandon Manufacturing Co.; American Rattan Co. and R. & T. Watson.

MESSRS. NORTHEY & Co., Toronto, inform us that their works are fully employed on special work for parties in the Northwest and British Columbia, and on water works machinery for Ontario towns. They are just finishing a high class duplex rotative pumping engine of 1,000,000 gallons capacity each 24 hours for the town of Paris, Ont., which will be shipped this week.

THE *London Times* says that the Great Eastern is once more to be used for trading purposes, and she is expected to do good work in carrying produce between England and the antipodes. The intention is to have her newly engine by J. Elder & Co., and to have her paddles removed; and it is anticipated that when she has passed through the hands of the shipbuilders she will attain a speed of twenty knots.

MESSRS. HATTON, SONS & Co., Bradley, near Wolverhampton, Eng., are manufacturing a mild steel of much ductility and fibre. As an example of the ductile properties of the metal, and as evidencing what can be done in deep stamping, perfect cylinders are shown 6½ inches deep by 5 inches diameter, stamped out of single sheets; and splendid oval specimens 3½ inches by 2 inches by 7 inches deep are also shown.

THERE seems to be a very lively dispute going on in Oshawa over the question as to whether that town shall grant a bonus to enable the assignee of the defunct Jos. Hall Machine Works there to resume operations. The debate pro and con occupies a large portion of the space of the local newspapers, and the matter is being very thoroughly discussed. We would be glad to chronicle the resumption of work at this valuable establishment.

THE Danville Slate Company, which was incorporated a few months ago with a capital of \$50,000, have erected a large and commodious factory, thoroughly fitted up with all the latest improved machinery. They are running full time and are doing a first rate business, orders coming in very brisk. The company will double its present capacity this spring and will make other kinds of slate goods than school slates, such as billiard table tops, mantles, etc., for which this slate is peculiarly well adapted.

A WONDERFUL invention has been patented by the Victoria Printing Machine Company, of London, Eng., in a machine which can turn out, ready for the reader, 4,000 copies of a work containing twenty-four pages, bound together, without any manipulative aid. The machine has cost about £4,000, and requires no feeding, as it regulates its own supply taking in a sheet at one end, and, in less than a second, ejecting it at the other, printed, and with the pages stitched together, and ready for the bookseller.

PETER RYLANDS, M.P., who died recently at Cheshire, Eng., was one of the firm of Rylands Brothers, Warrington, manufacturers of wire on a very extensive scale, and at whose works a large part of the first Atlantic cable was made. In 1864 Messrs. Rylands established special works for the production of puddled iron suitable for their wire mills, to which industry they soon added the manufacture of sheets, hoops, etc. In 1874 these latter works were amalgamated with those of Pearson, Knowles & Co., at Wigan.

MESSRS. BRYANT, GIBSON & Co., Toronto, are manufacturers of a line of grocers supplies, for which they claim the highest excellence. Their specialities are John Bull pickles and sauce; Niagara tomato sauce and fruit syrups; pure fruit jams; mincemeat; horse-radish, etc. All these goods are manufactured in their works in this city, only the very best materials being used, and the most scrupulous attention given to cleanliness. They are put up in convenient and attractive packages, and are intended to reach the very best family trade.

THE Toronto Silver Plate Company, Toronto, inform us that the volume of business done by them in 1886 was 20 per cent. greater than in the previous year, and that the prospects for the current year are even much brighter. All the metals consumed in the manufacture of the products of this company are carried into their works in a crude or unworked condition, every process in the manufacture being conducted on the spot. These goods are the equal of any produced in Europe or America, and reflect great credit on the manufacturers.

A WIRE nail-making machine on a new principle, the invention of an American mechanic, is being introduced in Great Britain. It produces four nails at once, the output being at the rate of from 400 to 1,200 nails per minute, according to size. It is positive in its working and automatic in its action, drawing in the wire from the reel, straightening it, feeding it into the machine, cutting off the blanks, and carrying them to the dies, where they are pointed and headed and thrown out completed. It requires no skilled labour to tend it, as the machine tends itself until the coils are consumed by being made into nails, when fresh coils have to be supplied.

THE business of the Ashley Carriage Company and that of Mr. James St. Charles, both of Belleville, Ont., have been consolidated under the management of Mr. St. Charles, who has become the general manager of the Ashley company. Speaking of this consolidation the Belleville *Intelligencer* says that the business of this company is distinctively an N.P. product, as under the Cartwright tariff they could not compete with the slaughtering tactics of the large concerns in the United States. As it is, Canadians get a much better article at as low a rate as our neighbors could supply, at a business profit, and have the additional advantages attendant upon manufacturing at home.

THE St. Thomas Featherbone Company at St. Thomas, Ont., is a new concern who have instituted a new industry. They take goose quills, strip them of the feathers and split them into narrow strips, which are spun and woven so as to form soft, pliable, elastic and very durable ribs for corset and dressmaking purposes. It is claimed by the manufacturers that these ribs are unsurpassed for the purpose mentioned, and that, although the process of manufacture is comparatively new, they are coming into use very largely in the United States and Canada. In any case the goose quill, discarded on the invention of the steel pen, is again becoming a marketable article. This company also manufacture corsets with these featherbone ribs as the foundation.

ONE way to avoid the use of loose pulleys is to employ a good dead pulley on the driving shaft. This is simply two pulleys side by side, one of which is fast to the shaft and does the driving. When it is desired to stop the machine, shift the belt over on the dead or loose pulley, when the belt, overhead loose pulley and loose pulley on machine remain at rest, the loose pulleys only carrying the belt along during the stopping movement. A like reverse movement starts the machine in motion. This does away with the necessity of moving belts unnecessarily and live loose pulleys, and which is applicable is much better than any loose pulley. The difference in cost over the usual wide driving pulley is not a great deal, and it will pay for itself in the cost of belts and repairs in a comparatively short time.

THERE has been considerable rivalry in the matter of engines for electric lighting in Canada. High speed engines were largely used until the Toronto Electric Light Company made a bold departure from the rule. They took out all their high speed engines but one and substituted a pair of coupled automatic engines of 350 h.p. The result of the trial appears in the contract recently closed with the Polson Iron Works Company for similar engines for their new station. The Royal Electric Light Company of Montreal then made a similar change putting in a pair of the same size. The Halifax Electric Light Company have also come in line, and the Polson Iron Works Company are now just completing the third pair for them. The Owen Sound Electric Light Company are also running their station with a single automatic engine of the "Brown" design, 125 horse power, with condenser.

TORONTO Electric Light Co., of which Mr. J. J. Wright is manager and electrician, have commenced the construction of a new station on the water front, at the foot of Yonge street. It is intended to meet the growing demand for light and power and will be fitted with all the most improved appliances. The foundations are being laid on piles driven to the rock. The dynamo room will be 160 by 60 feet, and the motive power will consist of four "Brown" automatic cut off engines of 1,500 h.p. each coupled in pairs, and one 50 h.p. Armington & Sims. An independent condenser and air-pump will be driven by separate direct acting engines. The

main shaft will be 55 feet long and 5 inches in diameter, carrying 60-inch pulleys. The second line shaft will be 4½ inches diameter with 48-inch pulleys. The dynamos originally owned by this company were of several systems, and produced currents of from 8 to 20 amperes. These have all been remodelled and supplied with new armatures, giving a current of ten amperes, which is now adopted as a standard on all their arc light circuits. The company have also built in their own shop and have in operation four new dynamos, besides the forty horse power motor used by them on the electric railroad at last year's exhibition, and have now nearly completed two of the largest arc light machines in existence. These have a capacity of over 100 lights each, but will be arranged to supply two circuits of fifty lights each, or the entire number on one circuit. The armatures are 36 inches in diameter by 24 inches long, the coils being interchangeable and removable. The company expect to occupy their new works by next August.

MESSRS. J. J. TAYLOR, proprietors of the Toronto Safe Works, Toronto, have secured quite a number of large orders from foreign markets for their fire and burglar proof safes. Some three weeks ago they made a shipment of over two car loads of these safes to Adelaide, Australia, and since then a large shipment to Bombay, India. They have already made two shipments to Dublin, Ireland, the last having been ordered by cable, and they are this week making a shipment of over two car loads to Melbourne, Australia, and a second shipment to Adelaide. They have also orders in hand for a large number of these safes for Sydney, N.S.W. This concern sold quite a large number of their safes in Great Britain last year, as a result of their display at the Colonial and Indian Exhibition. Their home trade is increasing very rapidly, and they now have branches in Montreal, Winnipeg and Victoria, B.C. One of the peculiarities of the construction of these safes, and to which they owe much of their popularity, is the double tongue and groove in the door and door frame. One of these is made of wrought iron, which gives strength to the safe and prevents wedging, and the other is made of galvanized wrought steel, which, owing to its being quite thin, and being filled with a non-conductor fire proof material, prevents fire from gaining access to the interior. Messrs. Taylor hold the patent for and are the only concern in the world, so we are informed, who manufacture this style of safe. The fact that these safes meet with such large demand not only in Canada but in Europe and other countries, in direct competition with those of the most celebrated English makers, is the strongest evidence of their excellence.

THERE are three kinds of mirrors known to commerce—the French plate, the German plate and the common American glass, usually called "shocks." The latter can be told by their tendency to plant the nose well around toward the ear, or a more or less successful effort to get both eyes in the same place. The German plate is imported in regular sizes, already silvered. It is a very thin but generally perfect glass, and comes about one fifth cheaper than the French plate, which is used altogether for first-class mirrors. The difference can be told by pressing the finger on the face of the glass, by which the thickness can readily be perceived. There are three factories in the United States manufacturing plate glass, but none of them has yet succeeded in securing the necessary whiteness and freedom from bubbles. Imperfections that are not noticeable in clear plate become very prominent when silvered. "Silvering quality" glass, as it is known, is carefully selected by the French manufacturers and sold for that purpose, commanding a higher price than the balance of the product. There are two different processes of silvering, mercury being used for one, and nitrate of silver for the other. The latter are known as "patent backs," although not patented, and are generally replacing mercury on account of the greatly decreased risk in handling. In the former process a sheet of tinfoil, somewhat larger than the mirror wanted, is placed upon a level table, the bed of which is of glass or marble, and which must be absolutely clean and free from even the slightest scratch. Strips of glass are then placed on the edges of the foil to prevent the mercury from running off. As much mercury as the inclosure will hold is then poured over the foil, after which the plate is floated on and entirely covered with heavy iron weights. The table is then tilted and the surplus mercury drains off, after which they are stood on edge to dry, which requires from one to two weeks. In making a "patent back" the glass is laid on a table, underneath which is a steam coil. The nitrate of silver in solution is then poured on, a gentle heat applied and the silver precipitated. The back is then painted and the mirror is complete. Either process requires a great amount of skill and care. Absolute cleanliness is imperatively necessary in every part of the work. Distilled water is used in cleaning the plate preparatory to silvering, and a drop of perspiration or dust spoils the work.

Textiles.

THE CANADIAN MANUFACTURER.

Send \$2.00 and receive it postage paid for one year.

AN addition of ten new looms is being made to the Windsor N. B. Cotton Factory.

THE capital stock of the Canadian Rubber Company has been increased from \$1,000,000 to \$2,000,000.

PORTAGE du Fort expects to have a woolen, and a sash and door factory shortly established within the village bounds.

THE Chambly Cotton Company's mills are in full operation, employing from 80 to 100 hands and running 160 looms.

THE Dundas Cotton Mills Company held their annual meeting March 11, at which all the old officers were re-elected.

THE St. John, N. B. Cotton Mill has recently been sold to a syndicate, at the head of which is Mr. Thomas McLellan, banker.

THE Guelph Carpet Factory has just been equipped with a new 35 horse power steam engine, built by Goldie & McCulloch of Galt.

AT the annual meeting of the Ontario Cotton Mills Company, recently held in Hamilton, the entire old board of directors were re-elected.

THE Knights of Labor in Norwich have formed a joint stock company and purchased the knitting factory in that village, with a capital of \$3,000.

THE Ontario Legislature has been petitioned to further the scheme for building a tunnel on the Canadian side of Niagara River for supplying mills, factories, etc., with power from the falls.

MR. McLEAN, proprietor of the woolen mill at Pakenham, was recently in Portage du Fort endeavouring to secure a site on which to erect a woolen mill, the machinery of the Pakenham mill to be placed therein.

IT is proposed to erect new buildings for the oil cloth factory at Kingston, the present plant being too small for the rapidly increasing business. This factory is now turning out some 5,000 yards of oil cloth per week.

AT a recent meeting of the Canada Rubber Company it was decided to increase the capital stock from \$1,000,000 to \$2,000,000 and to extend the business and develop other branches of the trade not included up to the present in the goods manufactured.

AT the annual general meeting of the Cornwall Manufacturing Company, recently held in Montreal, the reading of the financial statement showed that the loss by the Cornwall flood was only \$1,156. All of the old board of directors were re-elected.

THE Paris Carpet Factory at Paris, is described as being one of the busiest among the big and busy industries of that thriving town. The Smyrna rug department is especially worthy of mention, the work executed in it being exceedingly fine and elegant.

THE seventh annual report of the Stormont Cotton Manufacturing Company, read at the recent annual meeting, held in Cornwall, showed that the earnings of the mill for the past year were very satisfactory, and the outlook for the future very encouraging.

THE production of cloth for the year in Fall River, Mass., has been 8,916,000 pieces, and the stock on hand at the close was 124,000 pieces. The sales for the year were as follows: Odd goods, 2,563,000 pieces; 60 by 56, 425,000 pieces; 64 by 64, 4,862,000 pieces. Total, 7,800,000 pieces. Sold by mill for conversion, not reported in brokers' sales, 931,000 pieces. Aggregate total, 8,791,000 pieces. The average price of 64 by 64 cloth, 3.30 cents per yard; for 56 by 60, 2.93 cents. The amount of goods on hand in the possession of manufacturers or speculators is 235,000 pieces, against 455,000 in 1885, and 1,146,000 in 1884. At Fall River the amount is 124,000, against 89,000 a year ago, and 849,000 in 1884; at Providence, 111,000, against 334,000 and 652,000. The Fall River mills are contracted ahead for more than 1,000,000.

WOOLEN manufacturers in America are beginning to complain of the tax imposed upon them by their customers in the way of samples of the goods they purchase. A number of these complaints have come to us, which may be illustrated as follows:—A jobber orders fifty pieces woollens at, say, \$4 a yard, of different patterns and colorings, and wishing to supply his twenty travelling salesmen with samples, requires from the manufacturer one yard of each

piece for the purpose. In this case the tax on the manufacturer amounts to \$200 for the single transaction. Of course, when fifty pieces are ordered by a jobber who has only one or two travelling salesmen a much smaller piece of each will do, and the tax is not so heavy in the case of cheaper goods. But then, when the whole list of customers is supplied, this tax on the season's business foots up in many instances a large sum, and the question arises: Ought not the manufacturer to charge his customers for samples? It is thought that if the latter would look at the matter in the light of the total burden thus inflicted, they would come to acquiesce in what would be to each a comparative trifle, and willingly pay for samples large or small. This matter is certainly worthy of the attention of all concerned.—*Journal of Fabrics.*

A MEETING of the representatives of the different cotton mills in Canada will shortly be held for the purpose of ratifying the combination prices and arrangements now in existence, and for furthering the interests of cotton manufacture in Canada generally. The conditions of the business at this time are much more favorable than they were last year. Nearly or quite all the cotton mills in the country are in operation, running full time, and some of them over time; and the number of hands employed is greater than at any previous time, while some of the mills find it necessary to make large additions to their machinery. The secret of this improved state of affairs is in the combination of the manufacturers, and their agreement upon fixed prices for certain lines of products, the standards of which were fixed by the manager of the pool and acceptable to all concerned. In March, 1886, there were about 3,000 hands employed in the various mills and 200,000 spindles working. At the present time there are over 3,500 hands employed and 250,000 spindles working. Last year the mills were running short time, while this year they are all working full time. The average output this year is estimated to be at least 15 per cent. over that of 1886, and the aggregate in wages paid is 12½ per cent. over last year. The prices this year as compared with last year show an average increase of 7½ to 10 per cent.

THE tables compiled by the Silk Association of America, showing the imports of raw silk manufactures, by articles, months and years, and of raw and waste silk, pieced cocoons and noils, show a gratifying increase in American manufactures and a steady decline in imports of most goods made abroad. Considering the growth of population and rapid accumulation of wealth in the country, it might reasonably be expected that the demand for articles of luxury of foreign make would at least hold its own, if it had not increased. In 1886, with an improving trade and gradually strengthening values, the imports were only \$27,821,597, or \$5,483,853 less than seven years ago. The largest decrease in that period was in silk piece goods proving the truth of the claim of the silk manufacturers that New Jersey and Pennsylvania can produce not only a cheaper, but a superior article in plain piece goods to anything Lyons can furnish. Another article of which imports were largely reduced, fully sixty-five per cent. is ribbons. Crapes, cravats, threads and yarns, braids and bindings and silk mixed with cotton goods also show smaller importations. The total weight of raw silk, including waste, entered at the two ports, San Francisco and New York, in 1886, was 6,574,786 pounds, and valued at \$22,965,609. An estimate that each dollar's worth of raw silk produced on the average two and one-half dollars' worth of manufactured silk at wholesale prices—a very moderate estimate, as any one can prove by weighing a piece of silk of medium quality—there was imported material last year for the manufacture of \$57,414,022 worth of silk articles, or more than twice the value of the silk goods imported from abroad. This is a showing that pales the glory of France, England and Switzerland as a silk-manufacturing nations, and warrants the assumption that in less than five years, if tariff meddlers do not interfere, the United States will probably be the foremost silk manufacturing nation in the world.

AN exchange says: "Several large European silk factories are soon to be erected at Patterson, N.J." How silk factories at Patterson can be European we are not informed. They may be owned largely in Europe, but such ownership would no more make them European than it would the Erie railroad, the securities of which are held to quite an extent on the other side of the Atlantic. Perhaps, however, the factories are to be made European so as to fabricate a reason for labeling the products with a foreign mark.—*American Machinist.* It may be rather galling to see American made goods sold under foreign labels, but it is better so, even, than to see foreign goods sold here under any label, and is an honest offset to the practice of some foreign manufacturers who label European made goods with American labels. In the latter case the name is ours, but in the former case the game is ours.—*Sewing Machine Times.*

The DODGE "INDEPENDENCE" WOOD SPLIT PULLEYS



WITH PATENT BUSHING SYSTEM

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

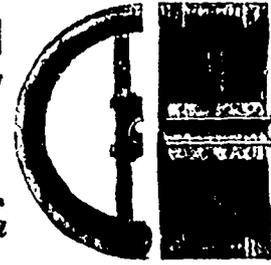
EVERY PULLEY A SPLIT PULLEY.

The hole in every pulley can be readily bushed to fit any sized shaft. Bushings furnished with each pulley. Guaranteed to give from

30 TO 60 PER CENT MORE POWER THAN ANY IRON PULLEY.

Strong enough for any power required. Made in any size and width, from twelve inches to sixteen feet diameter.

EVERY PULLEY WARRANTED.



We will furnish a Pulley for any service for 30 days free of charge, if it does not meet the warranty. Prices as low as any other good Pulley. Send for Catalogue, Price List & Guarantee

70 PER CENT. LIGHTER THAN CAST IRON

And 50 per cent. Lighter than Wrought Iron or Steel Pulleys.

READ THE FOLLOWING.

NORTHWESTERN MANUFACTURING & CAR COMPANY,
SHATTO & DENNIS, MINNEAPOLIS, MINN. SULLY WAGON, MINN. August 15, 1886.
Gentlemen: You ask why we use the Dodge Patent Pulley. In answer to you we consider them the cheapest, most convenient and satisfactory in all particulars.
Yours truly,
S. R. STIMSON, General Manager.

OFFICE OF NEWTON WAGON CO.,
BATAVIA, ILL., Feb 17, 1885.
C. L. RICE, AGENT, CHICAGO, ILL.
Dear Sir: Replying to your favor, will say that after using the Dodge Wood Split Pulley for a year or more we are satisfied they are a good thing, if not the best Pulley made, and shall use them hereafter in preference to any other we know of.
Yours truly,
NEWTON WAGON CO.

We have sold these pulleys for one year, and they have been put to every kind of service, and their popularity is wonderful. We refer to the following users for proof of the above statements: Pillsbury & Huibert Elevator Co., Minneapolis; R. M. Pratt & Co., Elevators; Northern Pacific Elevator Co.; The Pacific Elevator Co.; Minneapolis Harvester Works; Minneapolis School Furniture Co.; H. & St. L. R. R. Co.; Willford & Northway; Washburn, Crosby & Co.; Paul Electric Light Co.; St. Paul Roller Mills; Minneapolis Brick Co.; N. W. Mfg. & Car Co., Stillwater, Minn., and very many others.
SHATTO & DENNIS, MINNEAPOLIS, MINN.

THE WORLD'S INDUSTRIAL AND COTTON CENTENNIAL EXHIBITION,
NEW ORLEANS, March 19, 1886.
W. H. DODGE, PRES.
DODGE MFG. CO., MINNEAPOLIS, MINN.
Dear Sir: I have a number of your Patent Wood Split Pulleys in use here at the Worlds Fair and Cotton Centennial Exposition, driving Dynamos for Electric Lighting. They are doing heavy work, and are held upon the shaft by the compression of wood on iron. They hold firmly, and do not slip. I have watched with a great deal of interest the many Pulleys of your make running at this Exposition; and I think them the best Pulley I have ever seen. I believe them to possess the following points of merit over any other Pulley: All Pulleys being split or in halves; best belt surface; best shaft fastening; best method of attaching Pulleys to shafts of different sizes; best balance; lightest on the shaft; strong, and I believe durable. I heartily recommend them.
Yours very truly,
S. H. GILMAN,
Chief Consulting Engineer.

Waste of Power.

According to the best scientific authority it costs one horse power to keep in motion one ton of metal weight; thus for every unnecessary 2,000 pounds weight on your line shaft, cost you one horse power. To maintain a horse power costs from \$25 to \$125 per year. Any manufacturer who will take the pains to investigate the unnecessary weight by Heavy Iron Pulleys, too tight belts, etc., will be surprised to find the enormous waste of power consumed in this manner. 60,000 Dodge Patent Wood Split Pulleys now in use. Our capacity being now equal to 100 Pulleys per day, we shall hereafter keep in stock for immediate shipment a large size.

Send for Illustrated Circular and Reference List.

THE DODGE WOOD SPLIT PULLEY CO.,

81 to 89 Adelaide Street, West, TORONTO, CANADA.

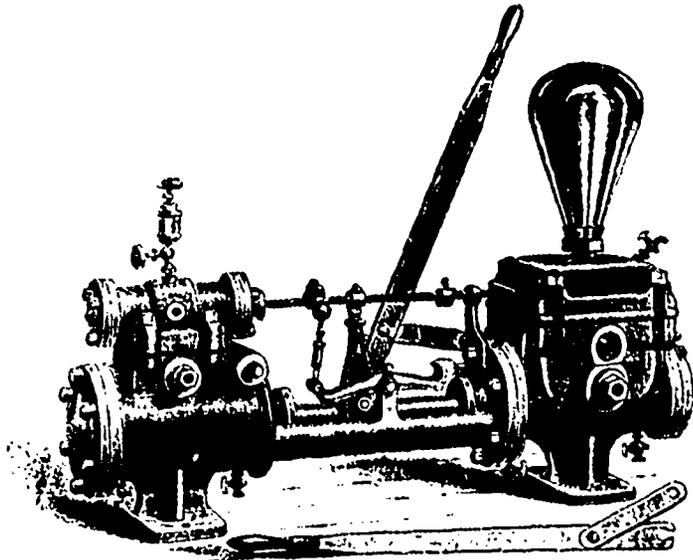
TAKE NOTICE:---Our List of Prices for the DODGE PATENT WOOD SPLIT PULLEYS is for ALL SPLIT-PULLEYS.

We beg you will note this fact when comparing our List with others which are for SOLID RIM, and NOT for Pulleys in HALVES.

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 —BUILDERS OF—
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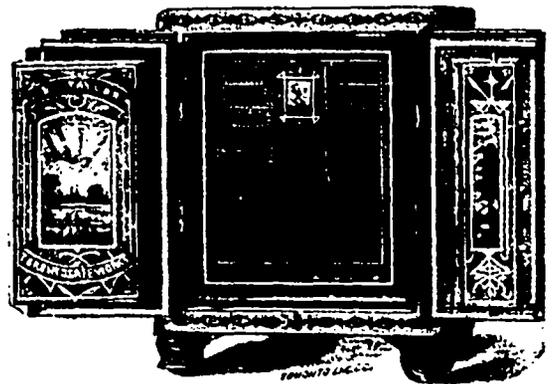
**J. & J. TAYLOR,
 Toronto Safe Works.**

ESTABLISHED 1855.

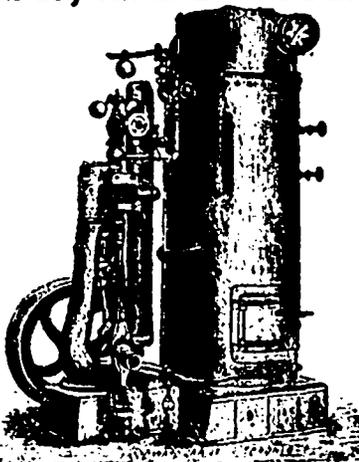
Manufacturers of all kinds of Fire and Burglar Proof Safes.

PRISON LOCKS AND JAIL WORK A SPECIALTY.

We call the attention of Jewellers to our new style of Fire and Burglar Proof Safes, specially adapted for their use.



The Doty Vertical Engine and Boiler.



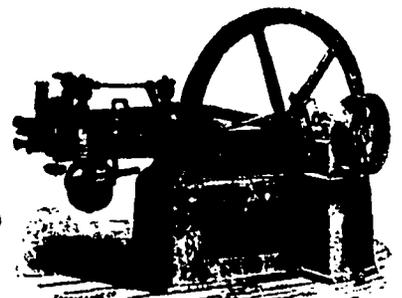
SEND FOR REDUCED PRICE LIST.

In sizes from 3 to 10 H.P. Specially adapted to places where 3 to 10 H.P. is required. Simple, safe and durable.

JOHN DOTY
ENGINE CO.

No. 2 Bathurst Street,
TORONTO, ONT.

THE
Otto Silent Gas Engine.



In sizes from 2 to 7 H.P. Most compact power in the market

SEND FOR CIRCULAR.

Milling.

THE CANADIAN MANUFACTURER.

Send 25c and receive it postage paid for one year.

G. S. MITCHELL, of Owen Sound, Ont., will remodel his mill to the roller system.

A commodious roller grist mill and elevator are being erected at Shoal Lake, Man.

Mr. McNAUGHTON, of Oakland, Ont., will put new roller process machinery into his mill at that place.

Mr. E. PELOW, of Port Hope, so it is reported, has determined to build a 150 barrel flour mill at Lindsay.

THE amount of wheat on passage from India is estimated at 2,536,000 bushels, against 3,248,000 bushels a year ago.

THE Cincinnati Price Current estimates the exportable surplus of wheat for the next four months at 50,000,000 bushels.

TRIAL shipments of Canadian flour to the West Indies have been made by A. W. Ogilvie & Co., millers, Montreal and Winnipeg.

H. S. MOORE, of Norwich, Ont., has been granted a bonus of \$3,000 to assist him in establishing a roller flour mill at that place.

A BONUS of \$4,000 is to be asked for to enable the erection of a flouring mill at Butte, Man., the municipality to also award \$2,000 for the same purpose.

THE machinery for the new roller flour mill, and the wooden mills at Rapid City, Man., has been received and was to have all been placed in position by April 1st.

THE Lake of the Woods Milling Company, headquarters at Keewatin, are making application to Parliament for an act of incorporation. Capital stock, \$500,000.

A MINNEAPOLIS, Minn., millwright has been granted a patent on a machine for pumping wheat. He claims that with it he can unload a car of grain in five minutes, lifting it to an elevation of 200 feet.

THE French Chamber of Deputies has adopted the measure raising the import duty on flour from six to eight francs; and has passed the bill increasing the duties on oats, ship biscuit and starch.

A BONUS of \$6,000 has been granted to the proprietors of the flouring mill at High Bluff, Man., to enable them to put in the roller process machinery. The capacity of the mill will be about 75 barrels per day.

APPLICATION has been made for the incorporation of the Holland Milling Company, at Holland, Man. The capital stock is placed at \$15,000, and a general milling business will be done. W. A. Baldwin can give information.

THE mill of the Manitoba Brewing and Milling Co., at Carberry, Manitoba, which was destroyed by the ignition of flour dust some weeks ago, is being rebuilt, and will soon be in operation.

ALFRED J. GREEN, of Portage la Prairie, Man., offers to build a forty thousand bushel elevator for a bonus of \$7,000. The proposed elevators are to be specially for the benefit of farmers, as well as for all grain buyers, on equal terms and at uniform and reasonable storage rates.

AUTHENTIC statistics show that 26,000,000 acres of land in India were planted with wheat last season. As large as this area is it is constantly being increased, and the enormous extension of the supplies of wheat drawn by Great Britain from India is a matter that is commanding the serious attention of wheat growers both in Canada and the United States.

THE indications are that Manitoba will become the great flour producing territory of the Canadian provinces. A Montreal paper says that a mammoth flouring mill is soon to be commenced at Kewatin, Manitoba, which is the beginning of a movement that will in time make this locality the Minneapolis of the Northwest. The principal mover in this concern is said to be Mr. Alexander Mitchell, of Montreal. The mill will have a capacity of ten thousand barrels per day. In connection with it is to be built a huge elevator with a capacity of one million bushels of wheat.

ONE fact should never be lost sight of by the manufacturer, viz., whenever machinery is put in that requires steam in its operation,

the sharp competition among the different makers of such machinery leads to their estimating and claiming, as features of such machines, the consumption of the minimum quantity of steam to do a certain amount of work, while smaller causes stand in the opposite direction in the rating of the capacity of steam generators. That is, they are usually rated at their maximum capacity. This not infrequently leads to putting down inefficient boiler power, thus causing disappointment and dissatisfaction. *The Locomotive.*

MANIFOLD as are the operations of a mill, there are only four which lead directly to the soft sought flour. These are the reduction of the middlings, tailings, dust middlings and low grade stock. The reduction of these products are the only times when any direct effort should be made to produce flour. There will be flour made at other times, but this is incidental and not in large quantities. In purifying middlings and tailings certain reductions are necessary in order to change the gravity and size of the particles, and these reductions bring with them a certain amount of flour. This, however, is not made purposely. There should be as little of it produced as possible. - *Millstone.*

PROBABLY the last car load of United States flour has been sold in Victoria, B.C., and also Vancouver. The trade of the Manitoba millers has taken the place heretofore enjoyed by the Oregon men, and dealers say that the only demand is for the article ground from the celebrated wheat grown in this province. There are at the present time nearly five thousand bags of flour—chiefly Hungarian and strong bakers—in transit from Winnipeg to British Columbia, and every visit of a Winnipeg representative increases the orders. The consumers positively refuse to take anything that is not the production of Manitoba wheat, giving as their reason that the flour is stronger, and will bake more loaves to the 100 pounds than any other. - *Manitoba Free Press.*

A WELL-INFORMED writer in the *London Standard* notes that Mr. E. H. Walker, late statistician to the New York Produce Exchange, in an elaborate calculation published in *Booth's List*, estimates the quantity of wheat available for export from the United States to Europe from February 13 to June 30 at a little less than 5,000,000 quarters (about 40,000,000 bushels), which closely coincides with an independent computation given by the Cincinnati Price Current. Mr. Walker is not alone in remarking that the public pulse or feeling in America has not harmonized with the situation as statistically presented, and this is true of other countries also. The simple fact that Europe, within the period named, will require more than twice as much wheat as America can spare might have been expected to have some considerable influence upon markets on both sides of the Atlantic, whereas in reality it appears to have been almost entirely ignored.

THERE seems to be a general movement toward organization everywhere among millers. The past year fully a dozen local and state organizations have come into existence. One need not seek very far for the cause of this movement. Milling has been done on very slender margins for a long while. Millers, like other business men the world over, have competed for what business there was until there has been nothing left for profit. Then again, millers have been discriminated against in order to give rebates to favored localities. Insurance companies have boosted their rates on mill property way out of sight, in the Central and Western States. In fact, the millers' lot has been anything but a flower garden. The particular grievances of the miller are such that they can best be righted by local associations. Millers are appreciating this fact, and hence this movement everywhere to organize, not only against outsiders, but also against themselves. - *American Miller.*

A BARREL has been produced from paper pulp which seemed destined to supersede the wooden article. Its general appearance is that of a common wooden barrel thickly varnished, while only five pieces are used in making it. It is bound with ordinary wooden hoops, and the head is in one piece, so constructed that it fits into the barrel air-tight and is held firmly in place by a hoop without the use of nails. The body is seamless and the interior and exterior are glazed with a substance which renders the barrel impervious to moisture, so that liquids can be transported in it without loss. Recently the chief flour inspector of the New York Produce Exchange, certified that he had inspected 150 barrels of flour which had been shipped from a distance in these paper barrels and had found it to be all sound. It generally happens when flour is shipped in wooden barrels that a quantity of it sifts through and is lost. It was found by weighing the flour in paper barrels that none of it had been lost in this manner. The pulp used in the production of these barrels is obtained from any fibrous substance, and as there is hardly a locality where some such substance does not grow, the barrels could be manufactured almost anywhere.

Lumber.

THE CANADIAN MANUFACTURER.

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It is said that the Chatham Manufacturing Company have secured a valuable tract of timber land in the vicinity of Newbury, on which are walnut, chestnut, oak, white ash, and other timbers of good quality.

MR. JOHN ELLISON, of Port Stanley, has been granted a bonus of \$5,000 by that town on account of the wood bending and turning works which he is erecting there. It is expected that these works will be in operation about April 1st.

THE largest tree in California is to be found in Tulare Co. It is 438 feet in circumference. To comprehend the size of this tree, one has only to reflect that a building forty-five feet square could be set on the butt for a foundation, if the tree were cut down, and not project over the sides.

THE exports of lumber from New York have been much larger so far in 1887 than in 1886. The shipments of pine in January amounted to 5,905,000 feet, as compared with 5,181,000 feet in January, 1886. About three-sevenths of the year's exports went to South America, and one third to the West Indies.

THE rapidly growing importance of Montreal's foreign trade in lumber is shown in the fact that the shipments from there in 1885 were—to Great Britain 3,400,000 feet, and to South America 8,000,000 feet, while in 1886 the shipments to Great Britain amounted to 98,000,000 feet, and to South America 21,500,000 feet.

ADVICES from St. John's, N.B., state that the cut of logs on the St. Croix river, the past winter was intended to be about 50,000,000 feet, but in reality it will not amount to more than 30,000,000 feet, or less than half of last year's cut. An early break-up of the ice in the streams is anticipated, and driving operations are likely to be very successful.

MR. HOOPER, president of the British Carriage Manufacturers' Association, after a tour throughout Ontario and Quebec, is writing a book upon our hard woods. He advocates the utilization of our immense and injurious waste of sawdust by mixing with pitch or something similar and pressing into bricks to be converted into charcoal, for which there is a great demand in England.

MICHIGAN advices state that there is every prospect for a good lumber market this season. There will be fully 450,000,000 feet of logs banked this winter, which added to the amount left over from last year will make 550,000,000 feet in Menominee waters for the season of 1887. Logs to the amount of 25,000,000 feet will be brought from the north shore of Lake Huron this year for sawing in Michigan mills.

FINE specimens of French walnut have sold as high as \$2 a pound. Ebony is as costly as French walnut. It often brings as much as \$300 a ton, providing the wood is of the finest quality. Five dollars a pound is often asked and received for exceptionally fine pieces. Rosewood and mahogany are popular woods and are always in demand. The best mahogany comes from San Domingo. Rosewood is worth from three to six cents a pound.

IN many parts of Canada the timber growing upon the land is specially adapted to the manufacture of such pulp as is used in the manufacture of paper, and as a substitute for lumber in the manufacture of furniture and other articles. From 40 to 120 cords of this timber is the average yield per acre, and the pulp, by mixing with clays, steatite, asbestos, plumbago, mica, etc., can be made to assume every possible color, and is adaptable to a great variety of uses.

MR. W. E. EDWARDS, M.P., for Russell, has purchased the extensive timber limits and saw mills in Lanark and Addington counties owned by Mr. Peter McLaren. The area of the timber limit is about 300 square miles, and the price paid about \$900,000. There are two saw mills at Carleton Place, and one on the line of the Kingston and Pembroke railway. Mr. Edwards has also become the owner of the improvements made by Mr. McLaren, on the Mississippi river.

FROM the 1886 report of the commissioner of Crown Lands it is learned that during that year 55,641 acres of Crown lands were sold, the aggregate sales amounting to \$50,169, and the collections

during the year to \$55,452. The sales of Clergy lands amounted to 1,788 acres valued at \$2,087, and the collections were \$3,122. Of the Common School lands, 157 acres were sold valued at \$686, and the collections were \$17,997. There were sold during the year 783 acres of Grammar School lands valued at \$765, and collections on account of these lands aggregated \$3,235. The accruals for timber dues, bonus, ground rents, etc., for 1886 amounted to \$742,089, and the total collections under the same heads to \$715,804. The total collected from all sources during the year was \$820,895. The total expenditures of the department for 1886, amounted to \$258,564. The total collections during the year from woods and forests were \$715,804, which includes \$147,471 payment of bonuses on sale of timber berths, which became due in 1886. This sum being deducted leaves \$568,333 as revenue proper from timber dues, ground rents, etc.

THE London *Timber Trades Journal*, in its annual review of the lumber markets, after speaking of the serious falling off in the importation of pine from Canada, United States pitch pine being preferred, says: "Next in importance is oak timber, where there is again a large decrease in comparison with previous years, the total import for the year being only 250,000 cubic feet, against 587,000 cubic feet in 1885. This is a most startling reduction, and it behoves the Canadians to look after this branch of the Quebec exports, as it is evident this branch of trade is slipping away from them very rapidly. Not only are they being beaten out of the market by the cut waggon scantling now sent forward by the Americans, who have improved the cutting and manufacture greatly of late, but some of the large railway companies are making a new departure in the construction of their rolling stock by substituting iron and steel frames for waggons and carriages where oak was formerly used. Oak planks cut for waggon scantling and other purposes now form one of the most important articles we receive from the United States. The low prices at which these goods are sold, together with the improvements made in the culling and cutting, are fast superseding the old methods of accuracy in producing the required sizes from oak logs in this country but, as we have remarked before, innovations in the construction of waggons and carriages are being introduced by most of the railway companies, who are substituting iron and steel frames, which will curtail the use of this timber to a considerable extent."

At a recent meeting in London, Eng., of the Society of Arts, a paper was read giving reports of some practical tests made with samples of such woods as can be obtained in the colonies in considerable quantities, and which were displayed at the recent Colonial Exhibition. The object of the experiments was to introduce to the notice of those interested in the subject woods which, although hitherto practically unknown in England, might to advantage be carried to English markets. All such varieties as are already in common use were excluded from the tests; and the scope of the trials was further limited by rejecting all woods which, from their scarcity, could only be regarded as curiosities. In reporting upon Canadian woods it was said of the Douglas fir: "This tree is found in great abundance, and grows to an enormous size, some trees attaining a height of as much as 300 feet, with a girth of 40 feet at the base. The quality of this wood differs very considerably, according to the locality in which it is grown, varying from a straight-grained, mild-working wood, which might fairly compete with the best yellow pine, to a coarse-grained, harsh wood, little, if any, superior to common Scotch fir. Another variety is beautifully figured, and might well be used for cabinet-work and ornamental joinery, as a substitute for pitch pine. During the trials some of the wood was made into a door, while other portions were converted into straight and circular mouldings and other joinery. Some boards were also passed through planing machines, and converted into match-boarding, with a feed of 40 feet a minute, the work in every case being thoroughly satisfactory. As yellow pine is becoming scarcer every day, it seems probable that the better quality of Douglas fir may be largely imported into England, especially as the Canadian Pacific Railway passes through the forests in which it abounds, thus facilitating its transport." Concerning Canadian black ash the report says: "This wood is found in great abundance in the woods of Nova Scotia, New Brunswick, Quebec and Ontario. It is tough and elastic, and has already been imported to a limited extent into England. The trees grow to a great size, but the larger trees are liable to decay in the centre. It is well adapted for agricultural implements, cart, waggon, and general wheelwrights' work; and, indeed, for all purposes for which the best English ash is used." The iron-wood, or American hop-horn-beam tree is described as being a "light-colored heavy wood, very tough and elastic, and is generally used in the colony for axe-handles, hammer-shafts, and other similar articles. It can be easily worked by machinery."

Mining.

THE CANADIAN MANUFACTURER.

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THE Megantic Mining Company (Lim.), has been incorporated with a capital stock of \$250,000.

MAJOR STEWART, of the Cascade coal mines, says their output will soon reach 500 tons daily, and that the intention is to supply San Francisco and the Pacific coast.

In searching for coal on the Pipestone river a shaft 60 feet deep has been sunk, and experienced miners express the opinion that a paying seam of the fuel will eventually be reached.

THE Hibbard antimony mines, at Lake George, N.B., were recently sold at Fredericton, under an order of the Equity court, the New Brunswick Antimony Mining Co. being the purchaser.

MR. T. P. PIERCE has purchased the property of the Cobourg, Peterboro and Marmora Railway and Mining Company, and will apply to Parliament for authority to build the road and operate the mines.

THE Carleton Gold Mining Company, according to the Halifax Critic, sent to Yarmouth a few days ago a shipment of 60 ounces of gold, taken from that mine and valued at about \$1,200—the result of crushing 32 tons of quartz.

THE discovery and actual working of new mines in territories along the Rocky Mountains range is rapidly increasing the production of the precious metals. The yield of 1886 was \$35,000,000 gold, and \$50,000,000 silver—an increase of \$3,200,000 gold, and \$2,000,000 silver, over the yield of the previous year.

FEW people have any idea of the great richness of the Lake Superior mineral districts. According to a report of an agent of the United States geological survey, the total copper product for the year 1886 was 156,373,421 pounds, and of this 79,728,838 pounds came from Lake Superior. The output from that district is steadily increasing.

THE shipments of crude and refined Canadian petroleum, reduced to crude equivalent, during February 1887 amounted to 50,858 barrels, the shipment in January being 51,524 barrels. For January 1886 the shipments were 34,536 barrels, showing an increase for the first month of this year of 17,168 barrels. During the month of February 1886 the output was 37,517; showing for the second month of this year an increase of 13,441 barrels.

SIR A. T. GALT, according to the Montreal Witness, has recently taken to that city samples of coal taken from the Bow River mines, of which concern he is the head. The coal is represented as being of excellent quality in several grades, emits a fine, glowing heat, and appears to be equal to any obtainable from the Lower Provinces. It is being used to a considerable extent by the Canadian Pacific Railway, west of Port Arthur, and is finding a good and expanding market in Winnipeg.

THE Hartsfeld Portable Smelting Furnace Co., of Newport, Kentucky, U.S., desire correspondence with those interested regarding their mining, desulphurating and smelting appliances. This company have recently obtained Canadian patents on these devices, and are prepared to furnish patterns, blue-prints, working drawings, and specifications of them. They claim that by this method for preparing the ore and smelting it in one operation, 90 per cent. of rebellious ores, such as sulphides, sulphurets, sulphates, chlorides, bromides, pyrites, etc., 90 per cent. of pure metal is obtained.

At a recent meeting of the managers of the British Iron Trade Association, the increasing consumption of hematite iron ores by the United States and other countries was considered. From a report submitted by the secretary, it appeared that the deposits of high-class iron ore in Algeria and the island of Elta were becoming rapidly exhausted, and that, as there was an increasing demand for the hematite still left in the north of Spain, British ironmasters would in the future probably require to draw large quantities from other sources.

THROUGHOUT the Dominion are scattered 97,000 square miles of coal fields, containing at a low estimate 100,000,000,000 tons of coal. These beds are found in the Maritime Provinces, the North-west Territories and British Columbia, but not in Ontario or Quebec. In 1885 the collieries at Wellington and Nansimo, B.C., produced

360,000 tons of excellent coal, which was shipped to San Francisco, and Honolulu, or consumed in the Province. Great lignitic coal beds have been found along the valleys of the Saskatchewan and the Souris rivers. In Nova Scotia there are three distinct coal basins, Cape Breton, Pictou and Cumberland. The Sydney mine in Cape Breton was begun in 1785 and has been in constant operation since. During the past year 1,430,000 tons of coal were shipped from Nova Scotia.

THE Lake Superior mining regions of Michigan made an excellent showing in 1886. The total output was estimated at 3,562,015 tons of ore, against 2,427,337 tons the year preceding. The total product from the opening of the mines in 1854 up to the end of 1886 was 31,120,702 tons. Of this amount the Marquette range has yielded 23,376,352 tons and the Menominee range 6,240,991 tons. The balance was distributed between the Gogebic and Vermillion ranges and some old and abandoned mines. Of the total product in 1886 of 3,562,015 tons, the Marquette range produced 1,636,996 tons, the Menominee range 888,880 tons, the Gogebic 731,743 tons and Vermillion 304,396 tons. The shipments for the year were: Marquette range, 1,609,118 gross tons; Menominee range, 872,201 gross tons; Gogebic range, 756,281 gross tons, and Vermillion range 304,896, making a total of 3,541,996 gross tons.

In the Canadian Parliament, on a recent date Mr. Barlow Cumberland pointed out that since the United States imposed a duty of 75 cents on Canadian coal the export of coal from Nova Scotia had decreased from 450,000 tons in 1865, to 34,000 tons in 1885. Notwithstanding this fact, however, the output of coal had increased in Nova Scotia, a market having been found in Canada to the extent of some 334,000 tons in the port of Montreal alone. If the canals were deepened so that coal could be taken through to Lake Ontario without transshipment, the coal trade of Ontario would also be opened to Nova Scotia. The distances between Cleveland and Duluth and between Pictou and Montreal were the same. Coal was carried from Oswego to Duluth at the same rate as that charged from Cleveland, with the cost of transport through the Welland canal added. The distance between Oswego and Cleveland was the same as that between Toronto and Montreal, and on this analogy coal could be delivered on Lake Ontario for just the cost of tolls on the St. Lawrence canals. The cost of transshipment, and the damage done to the coal by the change from one mode of transport to another, prevented the use of Nova Scotia coal in Ontario. If the Ontario coal supply were secured for the Eastern province it would mean an annual increase of 498,000 tons, that being the amount used in Ontario last year. He looked upon the deepening of the canals as a patriotic project, and one for the advantage of the whole Dominion.

THE mining law of the United States, so far as it relates to government land, is a source of infinite litigation and much complaint. Under the general mining law the discoverer of a vein on government land has a right to take up a claim of 1,500 feet by 600 feet on the vein and to follow the vein wherever it may go, whether it passes out and under other claims or not. It is necessary, however, that the locator possess the "apex" of the vein within the limits of his claim, or if not, he cannot hold the mineral that passes through his claim, even though his location may be older than that having the "apex." When the mineral, as in the case of placer or gold gravels, is not "in place," then the law limits the rights of the discoverer to an area bounded strictly by his surface lines. Much dissatisfaction has been found with the working of the lode claim law, and it is probable that before very long the law will be changed so as to limit the miner's rights strictly to what underlies his surface location. This is known among the miners as the "square location law," not because the location is necessarily square, but because the proposed law calls for a rectangular figure. The advantages claimed for the old law by its advocates are that it stimulates prospecting by making the prize larger when found, and that it facilitates the disposal of mines by "honest miners;" for everyone knows that the miner has a firm belief that every vein grows larger and richer as it goes down deeper, and consequently from a small body of ore in a prospecting pit he can conjure up a vast bonanza at some depth that "his means will not allow him to reach, but that the capitalist can count on realizing." Of course experience shows that, as a rule, veins grow smaller and poorer rather than larger and richer in depth; but what does experience weigh when hope and avarice oppose it? To countries, if any there be, that think of adopting these mining laws, because we are now the greatest mining nation in the world, we would repeat Punch's famous advice to a friend on marrying—"don't."
—Australasian.

Miscellaneous

THE CANADIAN MANUFACTURER.

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THE Hochelaga Cotton company, Hochelaga, have declared a quarterly dividend of $2\frac{1}{2}$ per cent.

THE Canada Paper Company intend rebuilding their mills at Windsor, and tenders for the construction of a spacious factory will be asked.

THE wool growers of Alberta, Man., have formed an association, with Mr. F. White as president. It is estimated that there are twenty-seven thousand sheep on the ranches there.

THE Welland canal will be opened on Monday, May 2nd, for vessels drawing 12 feet, and on and after May 16th a draft of 14 feet will be available throughout.

CARDINAL TASCHEREAU has succeeded in taking the matter of the Knights of Labor before the Holy Office. It is probable the decision will ratify the condemnation of the order in Canada, and forbid any extension in the United States.

AN artesian well being sunk at White Plains, Nev., is down over 2,300 feet, and can go no further until the water, which is seventeen per cent. salt, and so heavy that the ropes and tools float on it and the drill does not penetrate the rock, has been shut out.

THE Department of Marine has awarded the contract for the supply of oil to be used in the Dominion light house service, to the Imperial Oil Company, of London, Ont., and the Petrolea Oil Company of Petrolea. The contract calls for more than 75,000 gallons a year.

THE St. John Cotton Factory, at Courtenay Bay, N.B., which has been idle for nearly three years has resumed operations. This factory was operated only a few months after being started, but has now passed into the hands of new men with ample capital who will inaugurate a vigorous management.

THE Dominion of Canada made a magnificent show of fruit at the Colonial Exhibition in London, and there is a little doubt it is destined to become, in the near future, a very formidable rival to the United States in the supply of apples to the English market. The Canadian fruit possesses high color and delicate flavor equal to the best American apples.

IMMIGRANTS are beginning to pour into Canada almost every day, notwithstanding that it is so early in the season. A few days ago three hundred of a superior class of agriculturists arrived at Montreal, the majority being farmers of means to purchase land and supplies, in order to settle in the North-west. Other large arrivals of settlers are expected by every steamer.

ACCORDING to information from St. Petersburg the Russian Government is drawing up a bill imposing such a heavy duty on pig iron as to render its importation into Russia simply impossible. The measure is specially directed against England and Germany. The English export to Russia in 1885 amounted to 2,600,000 cwt., or about 10 per cent. of the total export of this one article.

THE commercial travelers of the United States say that there are 250,000 of them, that at the lowest estimate their average expenses for transportation and hotel living are \$5 a day or \$1,250,000 a day paid out by their body. Yet they have to pay full rates to railroad companies and hotels while theatrical and circus showmen and excursionists get rates one-third to one-half lower and sometimes less.

MR. F. W. HENSHAW, Montreal, is agent in Canada for Peabody's Australasian line of vessels sailing from Boston. He will forward to the colonies in the Southern Hemisphere such catalogues and price lists of Canadian manufacturers as are sent to him. Freight by car load is discharged on covered pier alongside of ship, the route affording to the Canadian shipper is a safe and reliable route for goods of all kinds.

It is found that when paraffine is thoroughly mixed with linseed oil, cast into small blocks, and cooled, it may be used to make any fabric, as cloth, felt and leather, waterproof, by rubbing it with such a block and ironing afterward to equalize the distribution of the material in the pours. If too much is not put on, the material may be made to be only impervious to water, but not to air, the small, greasy particles simply repelling water.

A TELL-TALE paint has been invented for showing when a bearing is growing hot. At normal temperature it is brilliant red, but as it is heated it grows darker until at 180° Fahrenheit it is quite brown. As it cools it regains its original color. If the bearings of an engine or machine be covered with paint the man in charge can tell at a glance if they are running cool, and if they become hot, he can watch from a distance the effect of the lubricant he applies.

THE Accident Insurance Company, of North America, for which Messrs. Medland & Jones, Toronto, are general agents, have introduced a new system of accident insurance for mercantile and professional firms. It is that of granting joint policies of insurance against accidents on members of partnership firms, whereby the whole firm is included under one policy; and in the event of either member dying from accidental cause, the amount of the policy is payable to the surviving member for the benefit of the firm.

SHOE pegs require 100,000 cords of timber annually in their manufacture; matches, 300,000; lasts and boot trees, 500,000. All this is of the most superior quality, straight-grained and clear of knots and gnarls. To raise the telegraph poles of the country required 800,000 trees, and 300,000 more are required for annual repair. The railway ties of the country annually consume 75,000 acres of timber at least thirty years old, and the fencing of railways represents \$45,000,000 and the annual repair \$15,000,000. These are but a moiety of what is required of the United States forest supply. The burning of brick alone requires 2,000,000 cords of wood annually.

As an instance of the great benefit a railway running through a section of country is to that country, we may mention the fact that taking the cities, towns, and villages through which the Canadian Pacific Railway and its branches run, the value of property for assessment purposes has increased sixty million dollars since 1881. That is in five years the assessed value increased to within twenty-five millions of the whole addition to the public debt in consequence of the construction of the Canadian Pacific Railway. Villages and towns which had no existence in 1881 have now an assessed value of from \$100,000 to close upon \$2,000,000, while towns like Carleton Place have increased \$194,000, and cities like Peterboro' nearly \$1,000,000. — *Montreal Gazette*.

THE buildings at South Kensington, in which the American Exhibition in London is to be held are progressing so rapidly that the whole promises to be complete on the opening day in the beginning of May. Few people at present have any idea of the interest taken in the scheme, not only in the United States, but among Americans on this side of the water; and, judging from the readiness with which their manufacturers have come forward, there will be much to show quite new to the mercantile world, and to the British public especially. As no efforts are being spared to make the exhibition attractive to the million, exhibitors need have no misgivings that their displays, no matter of how general a character, will be passed unnoticed. — *British Trade Journal*.

THE St. Paul Pioneer Press says that the Canadian Pacific Railway have made desperate efforts to prove that their road runs through a banana belt. Bananas be peeled! The C.P.R. runs through no such mushy vegetables as that. It is wheat, hard red wheat; cattle, fine fat shorthorns; timber, pine that is guiltless of a flaw; ore that would attempt the Phœnicians out of their graves, if they knew of it. Bananas indeed! It runs through a land flowing with the modern equivalents of milk and honey, of such varied attractions that the only difficulty is to decide in which favored spot to stay, and to which the hampered millions of Europe are reaching out their arms as they cry for some Moses to ferry them across the Atlantic. Bananas! Why not talk about yams. — *Montreal Herald*.

In some of the great saw mill establishments of the west, 6-foot circular saws are run 760 revolutions to the minute. Running at 750 revolutions to the minute, the teeth of the 6-foot saw are traveling nearly three miles a minute. Six-foot saws have been driven at as high rate of speed as 880 revolutions to the minute. In Michigan, a few years ago, a Canadian company geared up its mill to run its 6-foot saw 850 revolutions to the minute. A saw mill at Paducah, Ky., which had a 76 inch saw and steam feed, cut one day 10,751 feet of 1-inch poplar boards in about seventy minutes. In this trial the saw made no sawdust; each tooth tore out a strip of wood about one-quarter of an inch long. Michigan sawyers have boasted of a mill dropping sixteen 1-inch 16-foot boards a minute, but this seems like an exaggeration. — *Boston Budget*.

It has been estimated that, comparing the dead weight of a tree as it stands in the forest with the dead weight of the lumber that is obtained therefrom, not more than 25 per cent. is actually delivered

in the timber market. The remainder consists of limbs, slabs, roots, edgings, buttings and waste in general, in the forest and at the sawmill. However extravagant and wasteful the timber trade may have been in time past, it may now be noted with satisfaction that, owing to the increased demand in various directions for these so-called waste products, it is likely that the proportion utilized will be reversed and the loss not exceed 25 per cent., even if it reaches that amount. This is especially due to the growing uses for wood pulp, which now enters not only into the manufacture of paper—in itself a vast industry—but also finds employment in many other directions of almost equal magnitude.

THE United States Patent Office has recently issued patents to the following named persons in Canada:—J. S. Andrews, Milton, N.B.—car-coupling. J. G. Bailey, Richmond Hill, Ont.—making plow-coulters. C. W. Dennis, Toronto, Ont.—wash-boiler fountain. James Morrison, Toronto, Ont.—bath-tub, basin, etc. Archibald Spence, Montreal, Que.—water-heater. John Tye, Toronto, Ont.—wire mat. H. H. Warren, Cote St. Paul, Montreal, Que.—mechanism for forging hammers. C. H. Waterous, Brantford, Ont.—portable engine. William Brisley and W. S. Finch, Toronto, Ont.—composition for preserving wood. W. P. Clarke, Winnipeg, Manitoba—spool-holder. Henry Moody, Terrebonne, Que.—lag-iron for horse-powers. Henry Pattison, St. John, N.B.—combined press and seaming machine. Henri Beaudry, Montreal, Que.—suspenders. Patrick Lewis, Quebec, Que.—adjustable tent pole. Patrick Lewis, Quebec, Que.—tent-ventilator.

THE following is a complete list of patents granted by the Government to Canadians during the week ending March 26th:—John Tye, Toronto—improvement in wire mats. John Connell, Toronto—improvements in self-waiting dining tables. David McDonald, Toronto—process by which paper may be made to adhere to metal. J. L. Armstrong, Ottawa—improvements in trusses. Joseph Camilien, *et al.*, Montreal—improvements in ventilators for chimneys, etc. J. R. McLaren, Montreal—improvements in toboggans. J. C. Craig, Fenelon Falls, Ont.—improvements in combined latches and locks. A. S. Grosset, Kingston Flats, Que.—improvements in dryers for drying paper. Francois Halle, *et al.*, Que.—air engine capable of being used with either steam, water or compressed air. E. R. Parker, Wyoming, Ont.—improvement in whiffletrees. W. S. Johnson, Hawkesbury Village, Ont.—improvements in snow roads. William Mann, Montreal—improvements in furnaces for cremation. Fred. J. H. Hezard, Belleville—improvements in cash carriers for store service.

THE Dominion Commercial Travellers Mutual Benefit Society, of Montreal, has sent us a circular referring to its aims and objects, from which we learn that life insurance can be secured by commercial travellers on almost nominal terms. The society is operated on purely mutual principles, no assessments being made except to pay death losses; the working expenses being provided for by the payment of one dollar from each member as entrance fee, and one dollar annually. The amount payable on the death of a member is equal to as many dollars as there are members. Since organization in January, 1886, only two assessments have been made, to meet the claims arising from the death of two members, which were promptly paid. No assessments have been made since July last, and all members who have joined since then have been insured for the nominal amount of their entry fee and Annual Assessment. Mr. H. W. Wadsworth is the secretary and treasurer of this company.

FANCY a single ship requiring 2,000 big oak trees in her construction. We can hardly conceive the enormous drain on our forests a fleet of similarly-constructed vessels would entail. From the calculations made, however, by the commissioners of inland revenue, a 74-gun wooden ship contained about 2,000 tons of oak, which, at the rate of a load and a half per ton, would give 3,000 loads of timber, and consequently would require 2,000 trees to build her. As not more than forty oaks, yielding a load and a half, are reckoned to stand upon one acre of ground, it would take, therefore, fifty acres to produce the oak necessary to build a 74-gun frigate. It will be easy to understand what a vast saving of timber the adoption of iron-constructed vessels has brought about, not, however, to such an extent in the navy as at first blush might be supposed, though the saving in the merchant service must have been considerable. The hulls of the ships forming her majesty's fleet are still partly wood, the backing to the iron plates being an important factor in the consumption of timber, though this, after all, is a mere bagatelle as compared with what was formerly required, and certainly does not affect the oak market, the armor backing being principally teak.—*Timber Trades Journal.*

THE Manitoba railroad will execute the greatest feat in construction in 1887 that has ever been accomplished in this country, and it

is no less than the partial building of the road by electric light. The following information was obtained from General Manager Marvel of the road: It is proposed to build 580 miles from the western end of the Manitoba road to Great Falls, Mon., and 90 miles from Great Falls to Helena. This extraordinary step is made necessary because of delays caused by negotiations with the Northern Pacific railroad. This latter road, which was the only one that could transport the steel rails to the other end of the proposed route, so as to enable the Manitoba to build from both ends at the same time, placed such a heavy freight rate upon the transportation of the rails that it amounted to a prohibition. The contract has been let for the whole work, which stipulates that it shall be completed on or before November 23rd next. In order that this may be accomplished the services of more than 5,000 graders will be required, and in laying the steel the contractors propose to use a steam track-laying machine and employ three separate crews of men, who will work eight hours each day, using electric lights at night, which, it is expected, will enable them to complete five miles per day. In this way this vast work will be done and the Manitoba will have advanced its western terminus to within 750 miles of the Pacific coast. In addition to graders and track-layers, large crews of men will be required to build bridges, culverts, water-tanks, stations, telegraph lines, etc.

I WAS chatting the other day with the Vice-President of one of the trunk lines of railway when a messenger entered with an important contract, having twenty-one years to run. It was a traffic agreement with a competing line, and was a very valuable document. It happened to be written with a typewriter in aniline ink. Upon seeing this he positively refused to sign the paper. He then took the contract to the President of the road and said: "Mr. —, if you want to sign this contract you can do it, but I never will." When asked why, he replied: "It is written in aniline ink, which fades, and long before the expiration of this contract this document will be entirely faded and practically worthless." The result was the return of the contract, with a request that hereafter all important documents, the preservation of which is desirable, should be written in ink that would not fade. During Gen. Grant's term as President one of his Cabinet officers discovered that the records of an important branch of one of the departments had been for two years written in purple ink. He had at once issued an order forbidding its use in the department, purchased a new set of books into which two years' records were copied, and thus saved what in a few years might have been lost. It is one of the problems of chemistry to find something which will make permanent the beautiful aniline colors, but thus far all efforts have failed. It is growing more and more the custom to have deeds, contracts, and valuable documents printed on a typewriter in aniline ink. This is a great mistake, because in a few years they are sure to be obliterated.—*American Grocer.*

THE most perfect protection that could be given is that afforded by forest cultivation, and, as the experience of the European states amply proves, forest cultivation can be so carried on as to be a large source of revenue. The annual income of Germany from her state forests is not under a million pounds sterling, and this after providing for the cost of an unrivalled system of protection, involving the support of eight forestry training schools. In France the department of forests yields an average net profit of half a million dollars a year, and vast areas of drifting sand and useless marsh have been converted into profitable forests. The forests of Austria yield an income of ninety thousand pounds a year, and Italy also derives an income from her state forests. The most convincing proof that forest cultivation may be profitably carried on by a state is furnished by India. In 1864 a state department of forestry was created and an attempt made to preserve and add to the existing forest areas, solely for the purpose of preventing the climatic evils of deforesting. In 1876 this department yielded a surplus of £291,051, the destruction of the forests had been checked, and the forest area was increasing instead of diminishing. If such results as these can be achieved in the comparatively densely settled countries of Europe and Asia, there is no reason whatever why Ontario, Quebec, New Brunswick, and British Columbia, should be denuded, or should cease to draw a large revenue from their forest lands.—*Montreal Witness.*

THE throwing of fuel upon the fire is generally considered as a means of augmentating the amount of heat produced, and taken as a whole it does have that effect. But for the maintenance of a steady fire and even heat only a small amount of fuel should be thrown upon the fire at a time. The reason for this is that coal is dependent upon two constituents for its heat-giving properties. One of these, the carbonaceous, remains in a solid state; while the

other, the bituminous, is volatilized. As the latter process must be accomplished before the first will be ready for burning, the first effect of throwing fuel upon the fire is that of cooling. Not only must the solid coal be raised to the furnace temperature, but the volatilization must be carried on. Here the same laws come into play as in the evaporation of water. The evaporation and the volatilization require more heat than that accounted for in the elevation of temperature, and which is therefore rendered latent. Hence unless care is taken to burn these gases as they are given off, it would be better that they did not exist. For it will be readily understood, that if the one which is due to the combustion of the solid carbons did not have to heat these gases, it would give out just that same amount of heat that would be available for steam making. It is due to this fact that coke has been accredited with greater heating properties than bituminous coal, simply because the gases in the coal have been distilled and not burned. But when the furnaces are so designed that these gases are thoroughly burned, the heating properties of the coal will be found to be greater by just the amount of heat given out by the combustion of the gases in excess of what was required to distill them. These principles simply go to prove what we have so often urged, namely, light and frequent firing, with a careful adjustment of dampers to prevent the formation of smoke.—*Power-Steelm.*

The tide of emigration to the Dominion of Canada, which has set in from districts ranging from Southern Russia to the North Cape of Norway, was last year of a remarkable character, the increase, as we are assured by excellent authority, being nearly 400 per cent. over the return of 1885. The nuclei of the various settlements are progressing most favorably. Several nationalities have their societies in Winnipeg, and the Roumanians at New Toulcha, the Swiss at Rolandrie, the Bohemians at Nova Cechy, the Hungarians at New Hungary and Esterhazy, and the Germans at New Alsace, Hohenlohe, and Bismarck, are preparing for a large influx of their compatriots during the ensuing spring. The Icelanders at New Thingvalla are also making arrangements for the reception of some 400 or 500 of their fellow-countrymen, and there are now between 6,000 and 7,000 Icelanders in Manitoba. The Government of British Columbia, with the view of attracting Scandinavian settlers, have set apart a tract of land for a Colony of fishermen and farmers from the North Cape, Norway; and flourishing accounts are received of the Swedish Colonies at New Stockholm and New Sweden. Indeed, the settlement of foreigners from the Continent of Europe will, it is confidently anticipated, form an important feature in the emigration to Canada during the year 1887. As is well known, some 13,000 German-speaking Mennonites emigrated to Southern Manitoba from Southern Russia ten or twelve years ago. The majority of these have now become wealthy, and in view of the fact of their not being able to purchase land in their neighborhood at a reasonable figure for their sons, who have now become men, they have formed a new settlement on the Manitoba and North-Western Railway, and have already taken up between seventy and eighty homesteads. It is a remarkable feature of pioneer settlement in all parts of the American continent that it is generally accomplished by "migrants," that is, the sons of settlers in the older districts rather than by immigrants direct from European countries, who usually at first settle in the older States or Provinces, and it is only now that Manitoba is beginning to feel the effect of this movement. --*Liverpool Journal of Commerce.*

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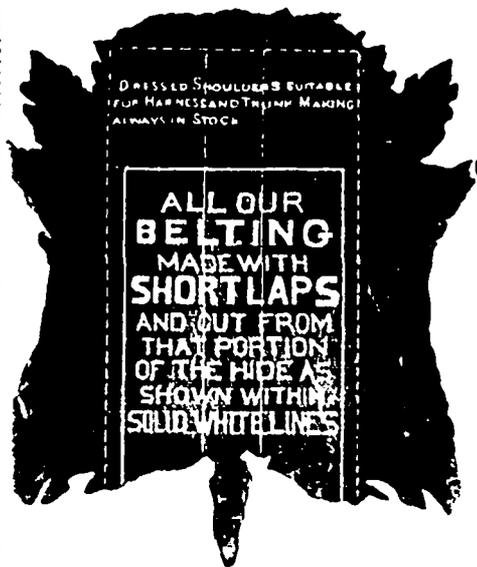
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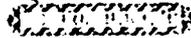


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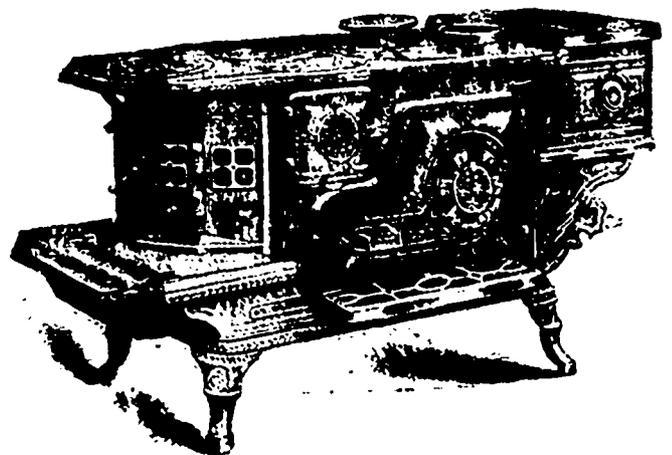
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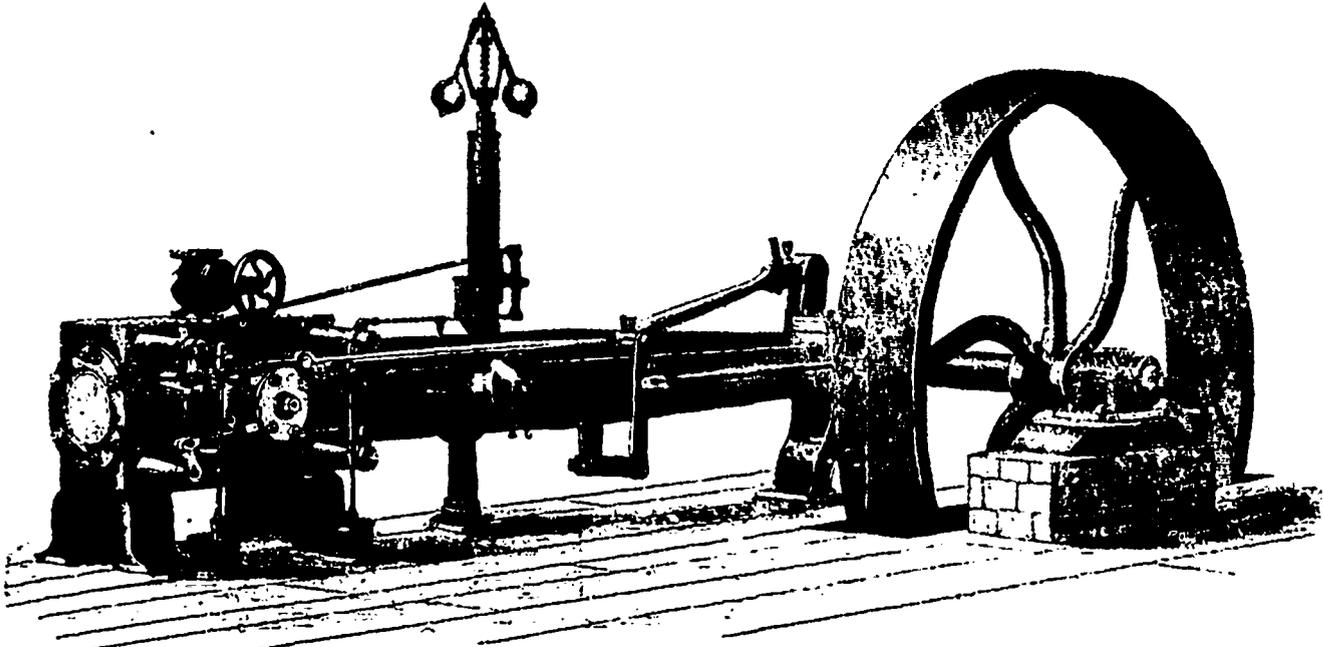
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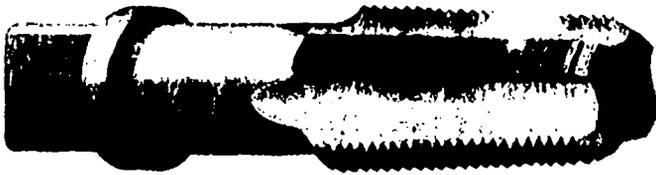
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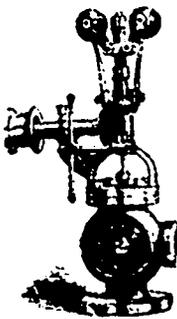
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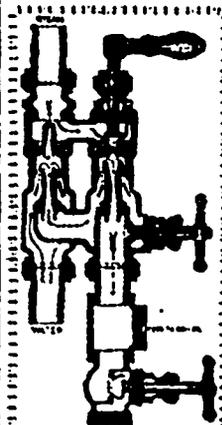
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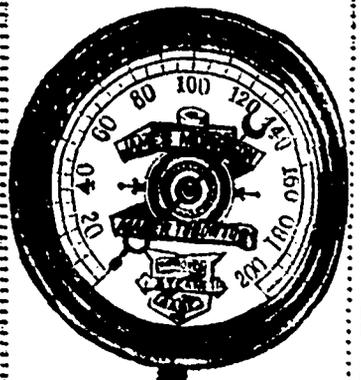
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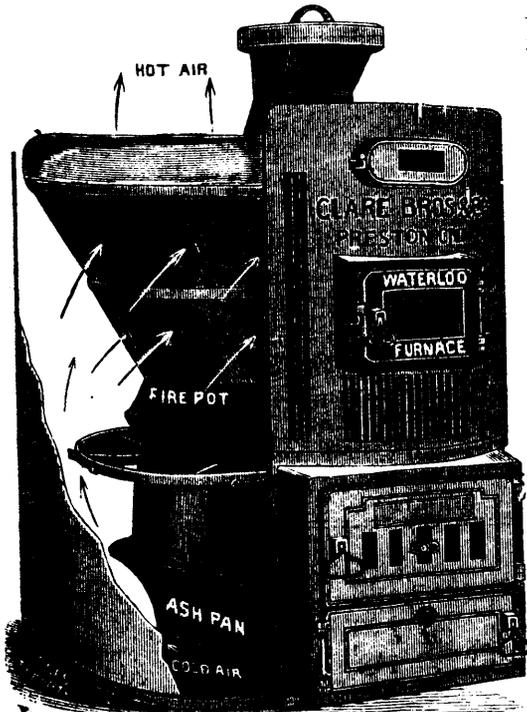
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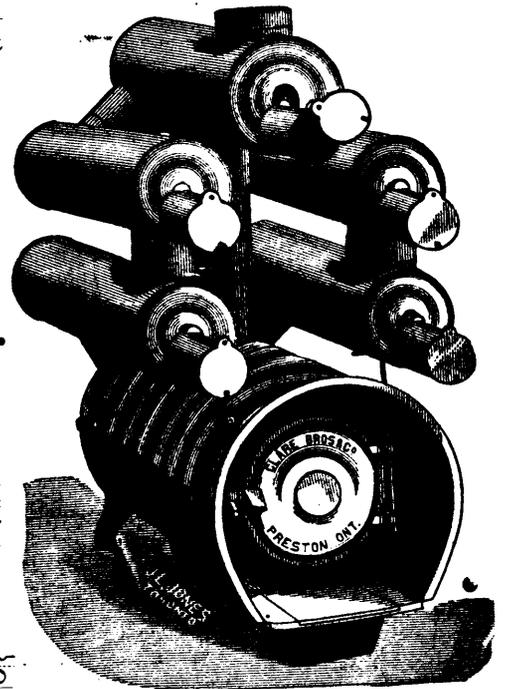
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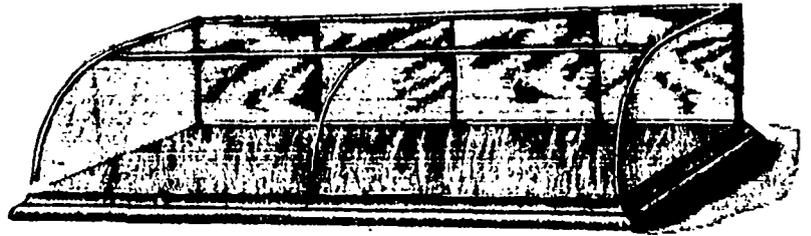
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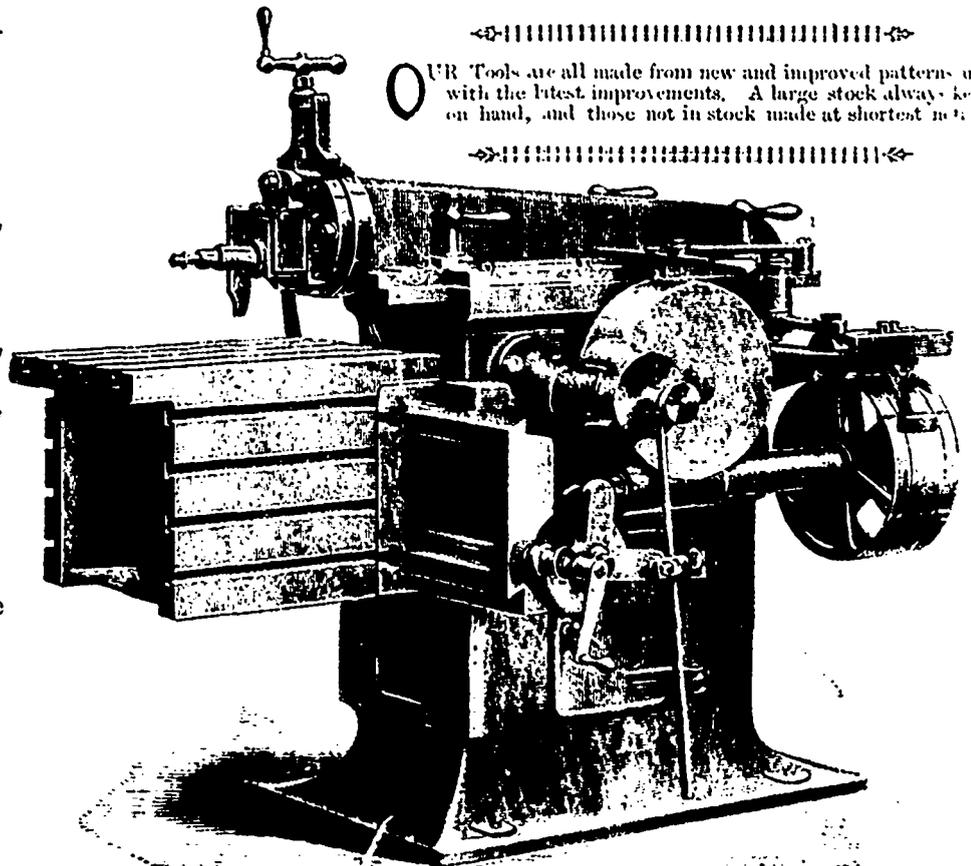
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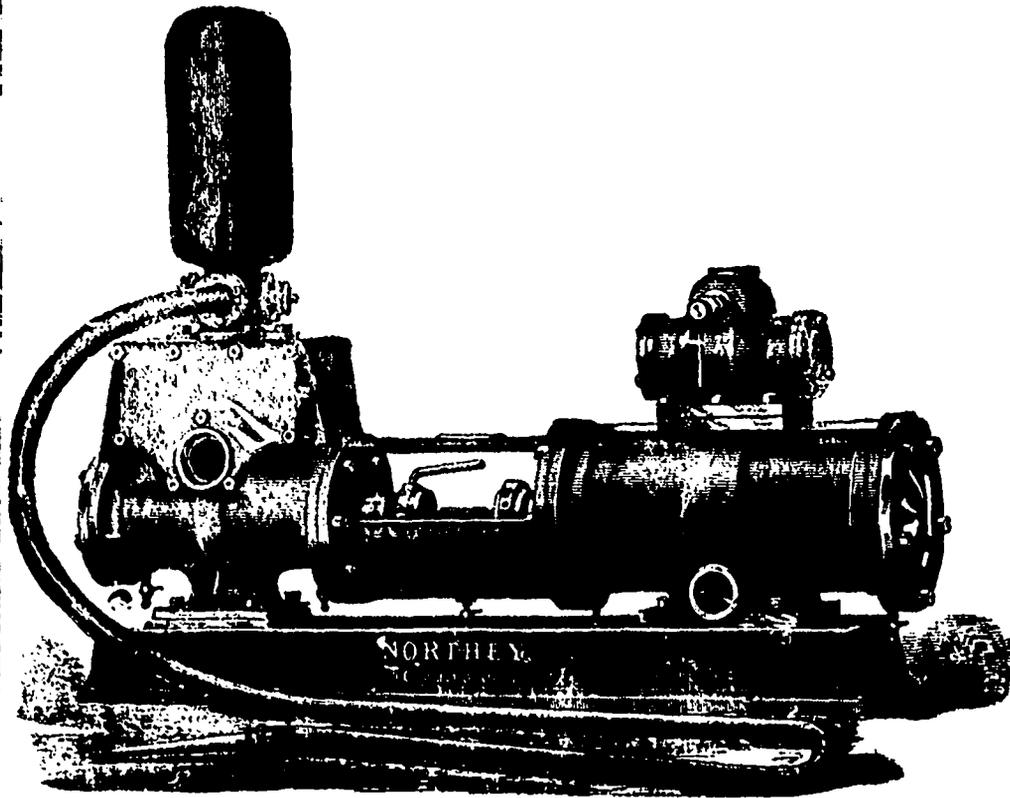
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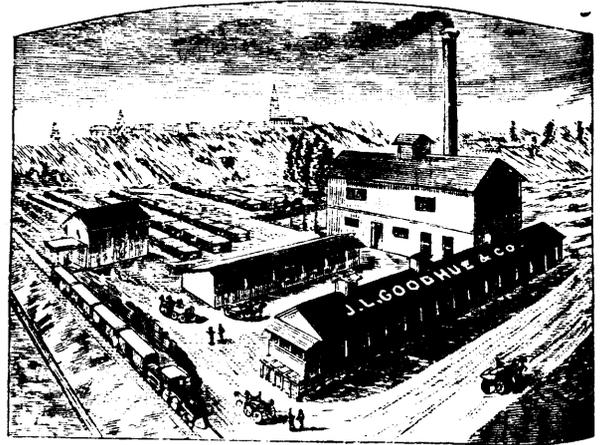
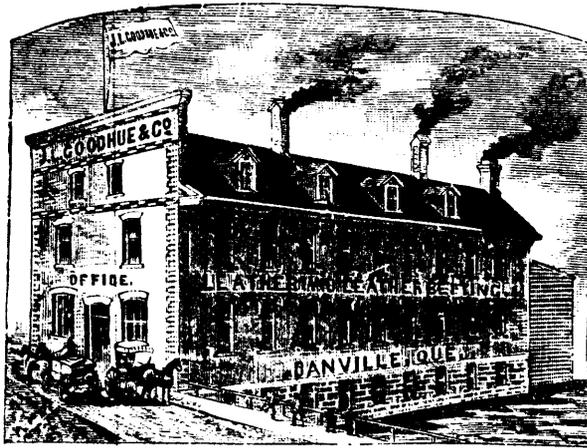
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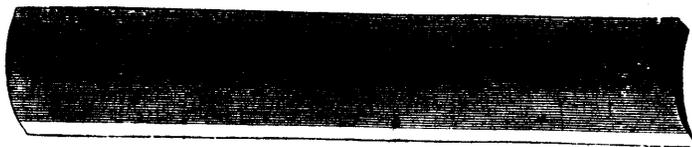
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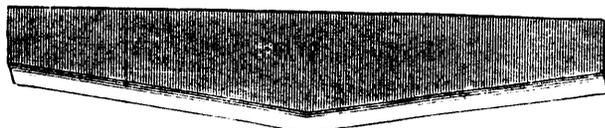
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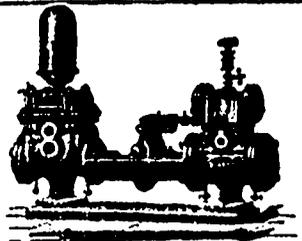
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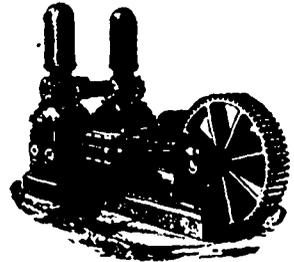
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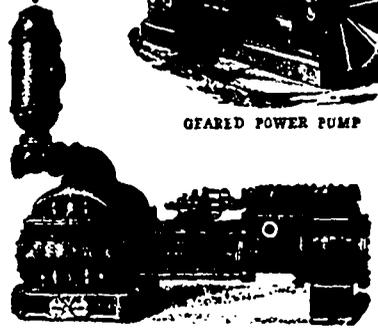
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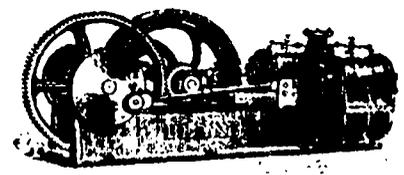
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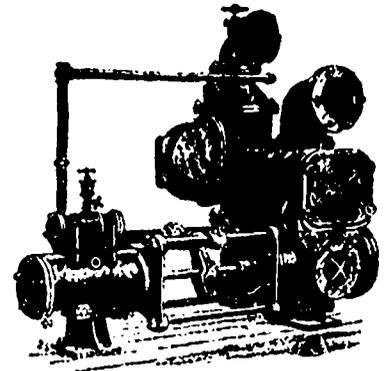
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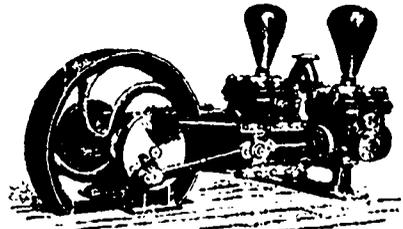
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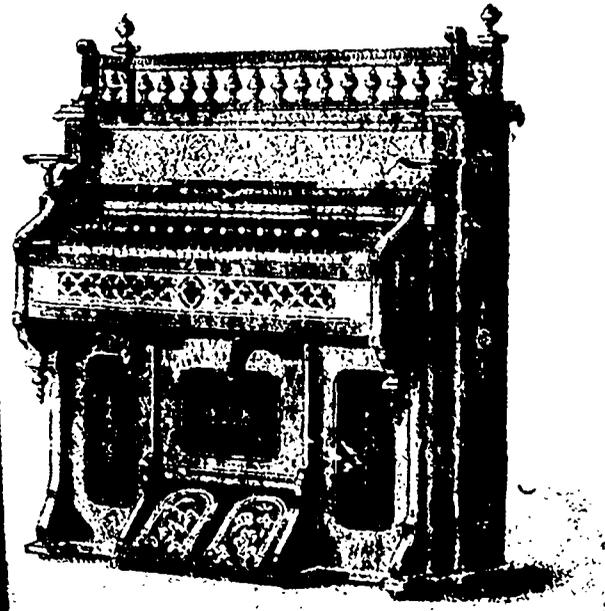


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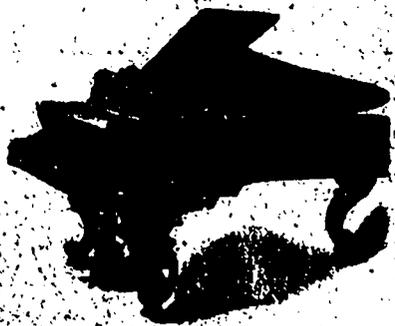
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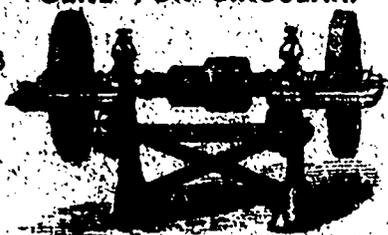
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