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DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

Vol. 29.

TORONTO, JANUARY 4, 1895.

No. 1.

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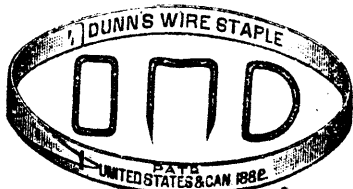
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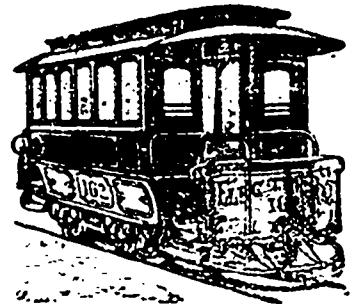
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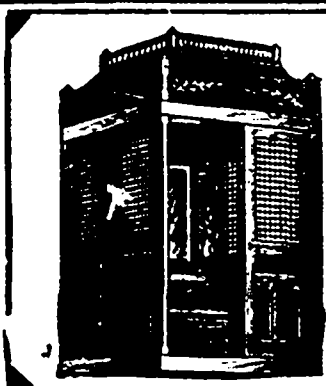
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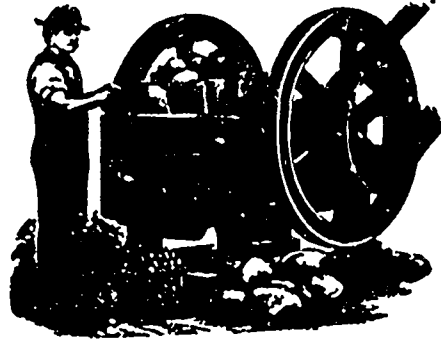
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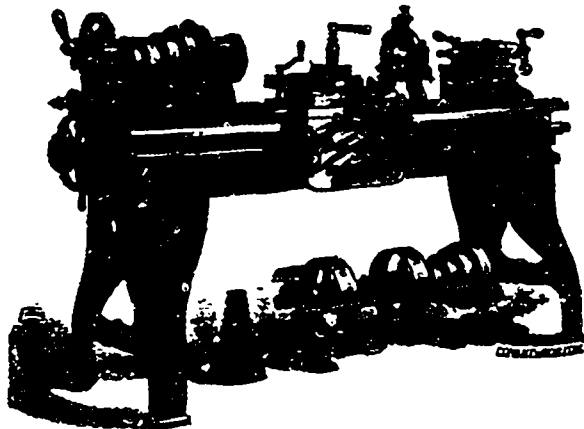
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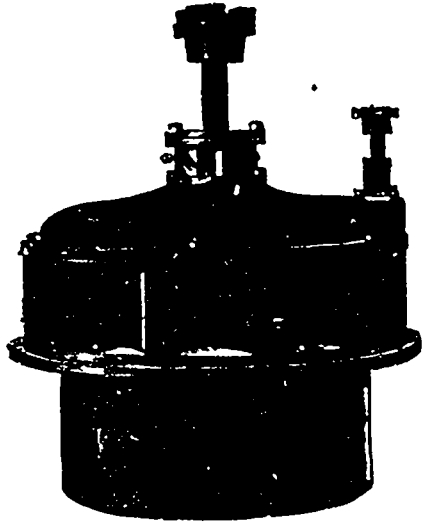
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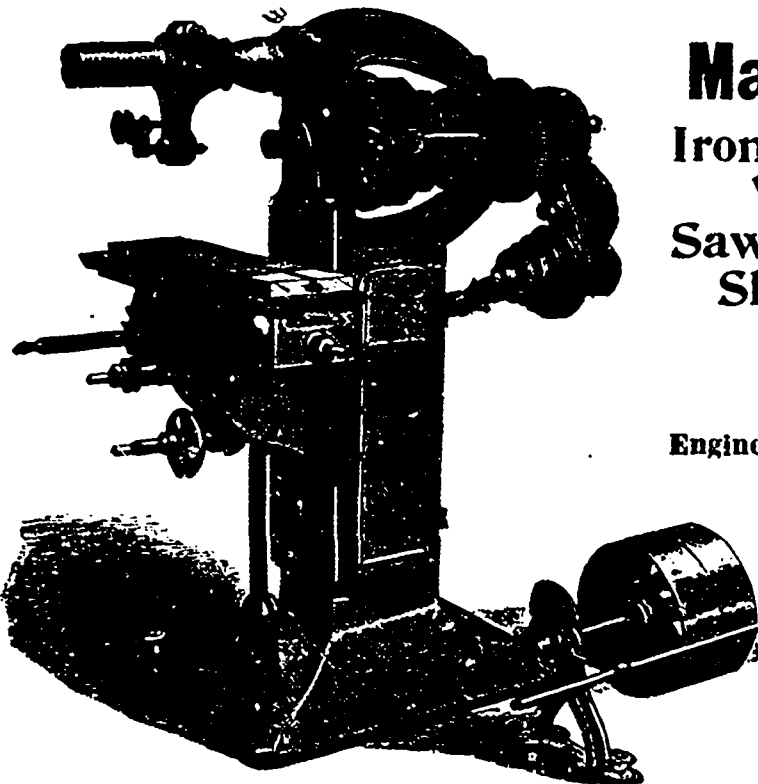
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What leading Manufacturers say about

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The Dodge Wood Split Pulley Co., Toronto.

DEAR SIRs.—In response to your favor of the 27th ult, I have pleasure in bearing testimony to the excellent quality of pulleys made by you. In connection with the industrial operation of this prison we have a great many of them in use, both large and small, and they have always given perfect satisfaction. I can recommend them as in all respects what they are represented to be.

Yours truly,

CENTRAL PRISON OF ONTARIO.

(Signed) JAS. MASSIE, Warden.

SHERBROOKE, Nov. 28, 1894.

Dodge Wood Split Pulley Co., Toronto, Ont.

DEAR SIRs.—It gives us pleasure to testify that we have used your pulleys in connection with our business for the last five or six years and prefer them to iron pulleys, as it enables us to use a lighter line of shafting, and at the same time makes it easy to put on or take off the pulley or change its position on the shaft without unusual delay. We have not only used them but have recommended them to our friends generally.

Yours truly,

THE JENCKES MACHINE CO.,
Boilers and Engines.

QUEBEC, Nov. 25th, 1894.

The Dodge Wood Split Pulley Co., Toronto Ont.:

GENTS.—In reply to yours of the 27th inst., we take pleasure in being able to state that for the past ten years we have been furnishing your pulleys to the different manufacturers here.

We may state that we have placed over 2,000 of your pulleys, and have had the most satisfactory results therefrom, never having had one returned to us.

They are running here in all and every kind of work, from the heavy size in saw mills and electric power work, to the light used in shoe factories.

They are without doubt the best pulley on the market in every respect.

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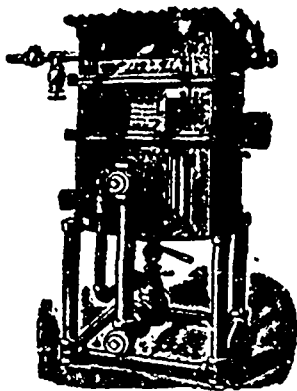
Manufacturers and Capitalists Patent Acts of 1872,
and Amendments, Section 28.

NOTICE is hereby given to all persons do-
siring of practicing the invention in the
manufacture of Aluminum and Alloys
thereof, for which certain letters patent of the
Dominion of Canada were granted on June
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Pittsburg Reduction Co., to wit, Nos. 31, 512,
31,513, 31,514, 31,515, 31,516, 31,517; and also the
invention in aluminum alloys and manufac-
ture thereof, for which certain letters patent
of the Dominion of Canada were granted on
July 20th, 1892, to John W. Langley, assignor
to the Pittsburg Reduction Company, to wit,
No. 32,102 that the undersigned is prepared to
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(Sgd) The Pittsburg Reduction Co.
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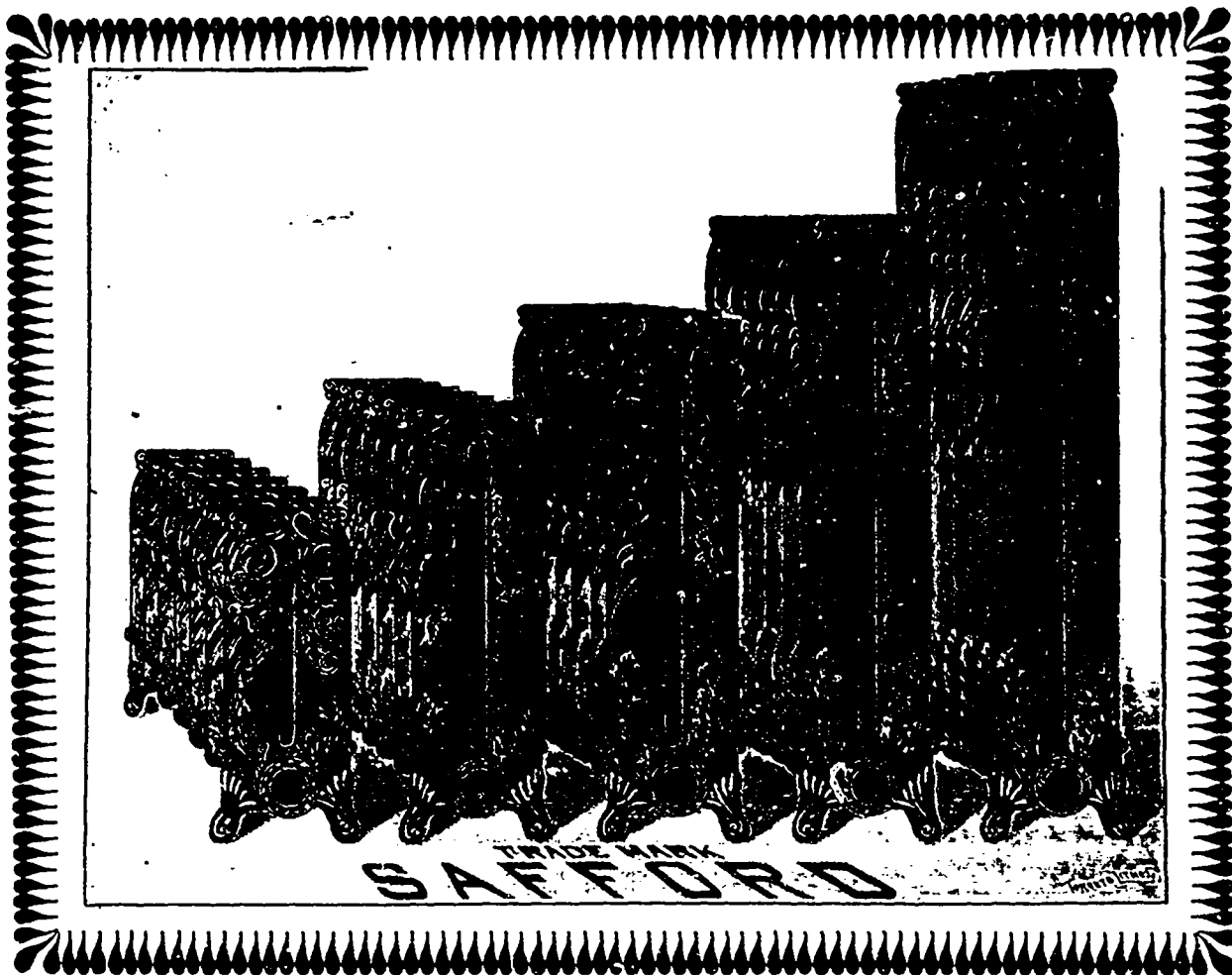
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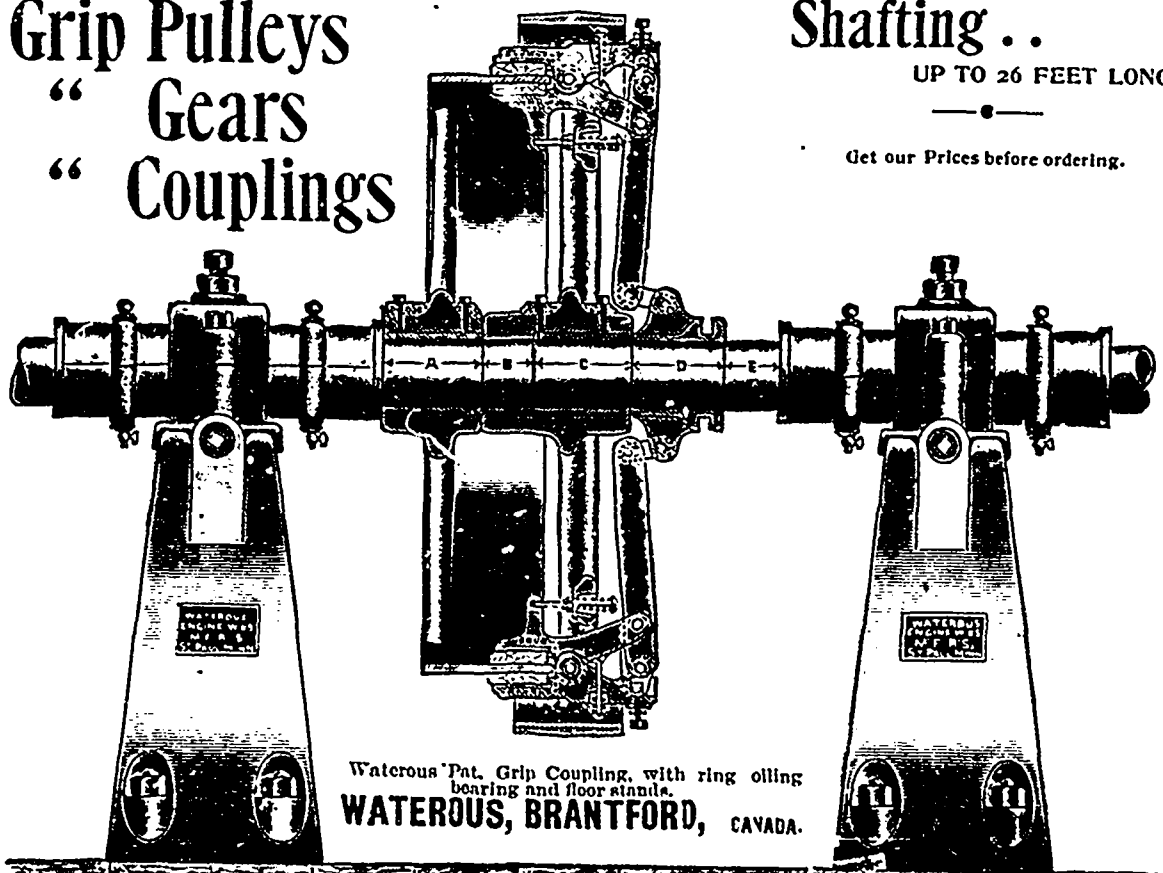
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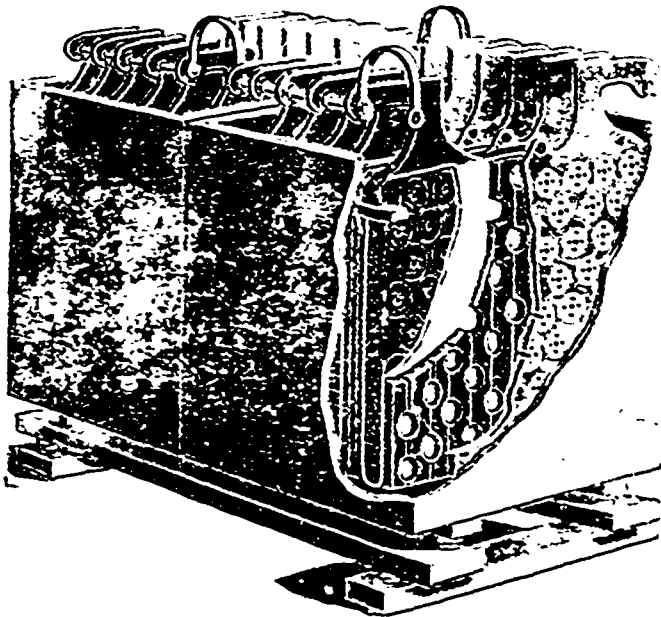
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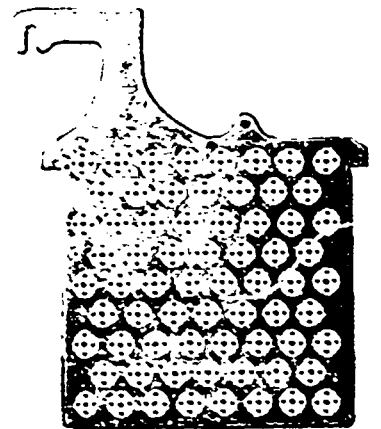
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THE NEW DOMINION GOVERNMENT.

The death of Sir John Thompson on December 12 having dissolved the Dominion Government, of which he was Premier, the Governor-General, Lord Aberdeen, made the following appointments on December 21 :

Sir Mackenzie Bowell, K. C. M. G., a member Queen's Privy Council for Canada, the Prime Minister : to be President of the Queen's Privy Council for Canada.

Hon. Sir Adolphe Philippe Caron, K.C.M.G., Q.C., to be Postmaster General.

Hon. John Costigan, to be Minister of Marine and Fisheries.

Hon. George Eulas Foster, D. C. L., to be Minister of Finance.

Hon. Sir Charles Hibbert Tupper, K.C.M.G., LL.B., Q.C., to be Minister of Justice and Attorney General.

Hon. John Graham Haggart, to be Minister of Railways and Canals.

Hon. Joseph Aldric Ouimet, LL.B., Q.C., to be Minister of Public Works.

Hon. James Colebrooke Patterson, to be Minister of Militia and Defence.

Hon. Thomas Mayne Daly, Q. C., to be Minister of the Interior and Superintendent General of Indian Affairs.

Hon. Auguste Real Angers, Q.C., to be Minister of Agriculture.

Hon. William Bullock Ives, Q. C., to be Minister of Trade and Commerce.

Hon. Arthur Rupert Dickey, Q. C., to be Secretary of State.

Hon. John Joseph Curran, Q.C., LL.D., to be the Solicitor General.

Hon. Nathaniel Clarke Wallace, to be the Controller of Customs.

Hon. John Fisher Wood, Q.C., to be Controller of Inland Revenue.

THE PUBLIC DEBT.

Politicians and newspapers who are opposed to the National Policy and to the party in power that so earnestly support that policy never tire in pointing to the fact that since that party came into power the public debt of Canada has been greatly increased, charging the fact to a mistaken fiscal policy. They invariably state a bare fact and never undertake to analyse it or to mention the circumstances under which the debt was contracted. On a recent occasion Hon. Mr. Haggart, in a speech made at Warton, Ont., took up this matter and at considerable length, and in a most satisfactory manner, explained the origin of the public debt, the reasons for incurring it, the nature of it, and the great benefit Canada has received and is constantly receiving through the expenditure of the public moneys. The Empire in a very clear review of Mr. Haggart's speech condensed his statement as follows :

Dealing with the public debt, upon the increase of which the opponents of the Government are continually dilating as sufficient reason for an immediate change, Mr. Haggart pointed out what the majority know, but which Reform malcontents purposely obscure or ignore altogether, that pretty nearly half the present debt is made up of liabilities of the different provinces assumed at confederation and afterwards allowed them by special Acts. In all, these debts amount to \$109,000,000 and our net debt is \$241,000,000.

In their blind condemnation of the Government in all its branches, the Reform press and Reform leaders, in discussing the debt, speak as if the money had been thrown away, ignoring the fact that the people have in return railways and canals of great utility and public works of a lasting and most creditable character, which, in themselves, will

always prove valuable assets in estimating the wealth of the country. It was not so when the Reformers were in power and the Cartwright Government frittered away many millions in trying to utilize the waterways between lake Superior and Winnipeg in an absurd attempt to create a part water and part rail line of communication with the North-west. The St. Francis locks and other abandoned works in the Lake of the Woods district still stand as evidence of crude methods and as derisive witnesses to the Reform statesmanship, which, between the years 1874 and 1878, increased the debt at an average of eight millions a year. Having failed, and so ignominiously that the people have ever since refused to entrust them with the control of affairs, they have since occupied themselves in decrying those who have shown satisfactorily how work should be done to the best advantage.

While Mr. Laurier and Sir Richard Cartwright, and those who echo them, are extremely free in attacking the business methods of the Government, they have never, as Hon. Mr. Haggart truly points out, protested against the assumption of the provincial debts by the Dominion or the subsequent re-arrangements which increased the provincial allowances. Then why should they protest against the expenditure of \$44,000,000 in building the Intercolonial, which was also a condition of Confederation, neglect to carry out which would have resulted in the refusal of the Maritime Provinces to come in? It was a stipulation, respect for which would have been forced upon the Dominion Government whether composed of Conservatives or of Reformers, and it is ridiculous on the part of the Opposition, who had a share in the building of it, to condemn it as a piece of Conservative extravagance and waste. It is true that the railway did not pay for some years, but Mr. Haggart has made it pay and has shown that a well-conducted public work can be made to furnish return. As to canals, the expenditure upon which has been \$36,000,000, judging from the present economical tone of the Liberals, they would not have expended the people's money on canals had they had control of Government, or at least would have built them for much less money, but it is a fact that both Sir Richard Cartwright and Mr. Laurier were in the Government under which a great portion of the expenditure making up this liability was made, and if their actions in the matter of the Welland canal contracts are examined their ideas of economy will be found open to criticism.

The Canadian Pacific railway, another condition of Confederation, is yet another bugbear to the Liberals. Through it the Government incurred a liability of about \$62,000,000 yet it is one of the most popular works ever undertaken in Canada. Not only is it prized here, but the Americans regard it as the most formidable competitor they have, while the British see in it a work of great utility not only to Canada but to the whole empire.

These are the three chief items in the Canadian debt, which at present amounts to \$241,000,000. Of this amount the Government has to account for \$137,000,000, which is the actual increase, when the \$109,000,000, assumed as provincial debt, is deducted, and who is there among us who will say that the great railway and canal systems which Canada possesses, the finest in the world to-day, are not a reasonable return for the money?

THE BINDER TWINE INDUSTRY IN AUSTRALIA.

The recent attack upon the system of tariff protection to domestic manufacturing industries in the colony of Victoria, Australia, is resented by a class of people in that community which, from the standpoint of Canadian Criticism, is rather remarkable. The Government of that colony, in its desire to do something in the way of tariff reform, brought forward a scheme that included a very considerable reduction of duty upon binder twine. According to the Melbourne Leader, a large number of farmers of the Werribee district recently met for the purpose of considering the proposal to remove the duty of 8 shillings per hundredweight on binder twine. The attendance was large and representative, the meeting consisting almost exclusively of bona fide agriculturists, the majority of those present being engaged in making hay to the extent of from 200 to 800 acres each. The feeling of the meeting was most pronounced in favor of the continuance of the duty, speaker after speaker, and all of them farmers who for years have been large consumers of binder twine, dwelling on the fact that the competition created by the local manufacture of the twine had brought the price down from 10 and 11 pence per pound to 5½ pence. Strong sympathy was expressed for the local manufacturing interest, the farmers recognizing that were the local competition strangled, prices for binder twine would at once spring back to "the good old days of free trade" when the importers fixed the prices and charged the farmers exorbitant rates. After full discussion of the matter, the following resolution was passed unanimously:—

That this meeting, recognizing the importance to Victoria of encouraging the local production of flax, and its manufacture in that colony into twine and various other requisites, pledges itself to support the present duty of 8s. per cwt. on binder twine.

Copies of this resolution were forwarded to the parliamentary representatives in both Houses of the Victoria legislature. At a meeting of the Rupanyup and Dunmunkle Agricultural Society, of that colony, held about the same time, it was also decided by a large majority that the society take no action to get the duty taken off of binder twine. The farmers of Victoria charge the importers with aiming to obtain a monopoly of the twine trade; and in making this declaration they appear to be fortified by the fact that when there was no native industry prices were very much higher.

The Manchester Textile Mercury thinks that these circumstances do not effect the case of free trade as against protection, although it may prove that in a market like that of Victoria, where competition is not so fierce as in larger ones, a few merchants may, by combination or mutual arrangement, keep up the prices of imported goods at an artificial level; and that this may be the explanation of the facts claimed by the Victoria farmers as to the decline in the cost of binder twine, although the cheapening of production, which is constantly going on, must also be taken into consideration.

The Age, a protectionist newspaper of Victoria, affirms that the agitation for lower duties upon binder twine was brought about by the action of the manufacturers who were endeavoring to sell twine direct to consumers thus

avoiding the profits usually going to middlemen; that if the duty were taken off of imported twine the industry recently established in Geelong, Melbourne and elsewhere would be destroyed for the sake of profit to a few twine manufacturers in the United States. When a farmer is asked by agents of these Yankee concerns why he should pay duty on binder twine he might very well reply with a query as to what security he would have that the price would be reduced if the duty were removed. Reapers and binders, The Age tells us, are admitted free of duty, yet in proportion they are the most costly machinery imported.

Mr. Thomas, a well known Australian journalist, in discussing this question writes to The Age as follows:—

The morning of my first visit to Geelong I travelled by train with five gentlemen of the road. Their conversation turned on reapers and binders and twine. Two of them travelled in machinery, and spoke as men having authority. Discussing the profit made on each reaper and binder, it was agreed that it might be fairly fixed at £30 on each machine. If the farmers are thus scalped by the importers' ring in the first instance, how would they be treated if the importers got control of a twine ring? At the present time Messrs. Donaghy and Sons are selling their Kangaroo brand harvest twines at prices no higher than that paid by the farmers of New South Wales, where twine is admitted duty free—that is, Manila harvest twine, 6d. per lb.; New Zealand flax twine, 4½d. per lb.

Questioned as to how the abolition of the duty would effect his establishment, Mr. Donaghy, the head of a Geelong twine-making firm, says:—

We have about £25,000 invested in land, buildings, and machinery. We employ about 75 hands altogether, and our wages list is about £7,000 a year. The consumption of coal and wood is valued at about £600. Our sales last year were 600 tons of rope, 237 tones of Manila twine, and 107 tons of New Zealand twine. If the agents of the American ring who have declared that they will crush us out of existence should be successful, which I very much doubt, it will mean that our wages list will be reduced by about one half, and that half of our employes would have to be discharged. But I hope that farmers will not be blinded by the delusive arguments of Free-Trade advocates, but will encourage colonial twine makers whilst we can turn out harvest twine as cheap as and better than can be imported.

This condition of things in Australia where those engaged in agricultural pursuits are so strongly in favor of a policy that looks to the supply of the home market for binder twine by the production of the article by home manufacturers, is in strong contrast to the condition prevailing in Canada that transferred the bulk of the home production from concerns giving employment to free Canadian labor to penal institutions where the production of the article is done by convict labor.

THE CONDENSED MILK INDUSTRY.

In the report of Hon. Mr. Bowell, who was then Minister of Trade and Commerce, regarding his visit to Australia, in the latter part of 1893, is given tables of certain kinds of merchandise imported into these colonies during the previous year, and the value of condensed milk is apportioned as follows:—

New South Wales.....	£70,629
Queensland.....	18,106
Victoria.....	25,880

South Australia.....	£14,067
New Zealand.....	20,753

£149,435

It is very probable that condensed milk was imported to similar extent into the other Australian colonies of Tasmania and Western Australia, and also into Fiji, bringing the total value up to about \$1,000,000, a very large proportion of which was supplied from the United States.

We understand that besides the large factory of the Truro Condensed Milk Company at Truro, Nova Scotia, there is no other similar concern in Canada.

Canada has already achieved a most enviable reputation as a producer of cheese; and we know that the condensed milk produced at the Truro factory is equal to the best produced anywhere else in the world; and considering that some of the dairying industries of Canada are in such flourishing condition, it is to be hoped that the manufacture of condensed milk may soon assume the importance it deserves, and that at least a considerable portion of the Australian trade may be supplied from Canadian factories.

Illustrating the growth and importance of this industry in the United States, the American Agriculturist contains an article that shows that from a very modest beginning at the hands of the late Gail Borden, it has grown into mammoth proportions. In 1859 Mr. Borden made his first unsugared condensed milk. He had a tedious time in introducing it. As a matter of fact, he personally peddled it out in New York himself, meeting with little encouragement and many discouragements, the usual lot of pioneers in industry. He had succeeded in getting a company organized for its manufacture, but the business lagged, and dividends, the stockholders' touchstone to success, were not forthcoming. Of course they murmured, and later they kicked. Mr. Borden, whose faith in his enterprise had never wavered, managed to take the stock into his own hands, but his money was all gone, and things were looking rather blue. The late Jeremiah Milbank came to his aid, and Borden was once more on his feet. This was followed by the breaking out of the civil war, and from that date his fortune was assured. An immense demand for condensed milk at once sprang up. The government furnished its soldiers with good coffee and tea, but no milk, and the condensed milk then came to the front. Every settler and military storekeeper kept a constant supply on hand when he could get it, and the demand soon outran the supply. The Borden company has now a condensery at Elgin, Ill., where they bottle milk and also make unsweetened condensed milk for the Chicago market, and another establishment at Algonquin in that state. In New York State they have a condensery at Wassaic, one at Brewsters, one at Purdys, one at Wallkill, a bottling station at Johnsons, one at Millerton, and a third at Oxford, and they have now about completed a new and very large condensery at Deposit, N. Y. They are manufacturing already about 225,000 quarts per day at their various factories, and the new one has a present capacity of 50,000 quarts daily which can be doubled as the milk is secured.

In casting about for a location for a new condensery, it is important that a place be chosen where the projectors

may be reasonably sure of a supply of milk, and that the character of the soil and water be such that the best quality of milk may be produced. The hillsides of Delaware county are notably perfect in filling these requirements. No better pasturage can be found anywhere, and there is no farm which has not beautiful springs in abundance. The location at Deposit was decided on last winter. A census of dairy cows in the surrounding section which could contribute showed 9,000 of them, and on almost every farm the number can be doubled when the owners are assured of a profitable market for their milk. Construction was begun in May, and the building is now about finished and operations begun, though there is very much work outside in the form of grading yet to be done. The building is of brick. The main building is 50 x 383 feet. The storehouse is 225 x 60. The sugar house will be 80 x 80. The stables and offices are not yet built, temporary quarters being used. This plant will be devoted exclusively to the manufacture of sugared condensed milk, put up in cans, and active operations will begin about Christmas. The entire plant will cost about \$250,000. Mr. Elwood Rue is superintendent of the business, and Mr. E. Brown, who has been with the company 31 years, is in charge of the machinery.

The dairy farmers in that section are delighted with the new factory. It assures them of a market for their milk, at prices as good or better than the New York price, and it removes all the element of worry over the matter of collections. Certain restrictions are placed on those who sell milk to the condensery. The cows are fed only on good, fresh grass, hay, or forage, sound grain feed, etc. The prohibited foods are ensilage, brewers' grains, barley sprouts, glucose meal, etc. The dairymen are always required to keep their stables clean and neat, to white-wash them, and to take special care in keeping the milk free from all contamination. They receive frequent visits from inspectors, who see that the requirements of the company are carried out.

The price paid for milk by these condenseries compares well with the net returns received by farmers who ship their milk to the Boston, New York, Chicago, or other large markets, though the restrictions enforced by the condenseries make it more expensive to produce milk for them than for the ordinary market. The prices paid at Borden's condenseries in New York state and at Elgin, Ill., the past season were just about the same as those paid by the dealers in the New York city market.

FREAKS AND CURIOSITIES.

It is remarkable the strange developments of character and ideas that are brought out by emergencies. The civic investigation recently held in Toronto disclosed the fact that a great deal of boodling was going on in aldermanic circles, and that if purer civic government must be had, a very different class of men must be elected to office than some of the aldermen across whose escutcheons a bar sinister had been unmistakably drawn. The situation called loudly for a remedy and public meetings were held at which resolutions denunciatory of corruption were plentiful, and loud calls made for well-known and trustworthy citizens to come forth and offer themselves as can-

didates for aldermanic honors pro bono publico. But there was never any rush in that direction, and the public were never gratified by the sight of our solid men and best citizens tumbling over themselves in their great anxiety to redeem Toronto from the sad estate into which it had fallen. Of course public halls could be had on application, and, wind and lung power being inexpensive, the atmosphere was loaded with the chin music from many of the influential gentlemen who were so solicitous for the welfare of the city, but alas, the old, old story was repeated of the invitations to a feast and the explanations of the invited guests to attend who excused themselves on account of their private affairs. The patriotism of an American humorous writer during the war led him to declare that to put down the rebellion he was quite willing to sacrifice every one of his wife's relations, but he really could not spare the time to give his personal assistance to so desirable an undertaking. And so each individual solid business man of Toronto was quite willing and even anxious that every other solid business man should offer up himself upon the altar of the city's necessity, but he himself must be excused. This noble and self-sacrificing spirit was quite forcibly illustrated in the remarks made at one of these characteristic public meetings by one of these characteristic public-spirited solid men who, diverging somewhat from the question under consideration, made an adverse criticism upon the provincial law that permits poor men—that is men who are not owners of real estate in the city—to hold aldermanic seats, complaining that his coachman who had driven him in his carriage to the polls on the occasion of a recent election had the same voice and voting power as himself, notwithstanding his ownership of a great amount of valuable city real estate. He thought that such legislation was bad and ought to be changed. And then again this same solid man objected to the city by-law giving men working for the corporation not less than fifteen cents per hour for their services. It is this sort of thing that is wearisome to sensible people. This rich man finds himself entirely too busy clipping coupons and collecting rents to give any of his time to the city for aldermanic purposes, but he finds plenty of time to attend virtuous indignation meetings to protest against incapable and dishonest men being elected to office, to object to his coachman placing a ballot in the ballot box on the same conditions as himself, and to a laboring man being paid for his services a remuneration scarcely sufficient to keep the gaunt wolf of want from the door that shelters wife and children. It is these sorts of freaks and curiosities of human nature that retard our civilization.

SUBURBAN ELECTRIC RAILWAY.

That many of the steam surface railroads are feeling keenly the competition of the electric railway lines is evident from the protests that are being put forth against the extension of such lines. Pretty nearly all the argument against the "trolley" is summed up in a short article in the *Railway Age*, which takes as a text the complaint of the Pennsylvania Railroad in its last annual report concerning the crossing of steam railroad tracks by electric railways at grade. The *Railway Age* says:

Electric railway enterprises for connecting adjacent

villages and cities continue to multiply, and some of them are intended to carry freight as well as passengers; for example, one which there is talk of building from Baltimore to Annapolis, Md., twenty-eight miles, and another suggested to run from Traverse City to Old Mission, Mich., twenty miles. The cheapness at which such roads can be built and equipped (\$9,000 and \$8,000 respectively is the total capitalization in the two instances named), the fact that thus far they have been given free right of way on the public roads, and the accommodating character of the service which they are expected to give, stopping at every street crossing and farmhouse, have made the theory of electric roads very popular, and the movement for their construction has become a sort of craze. For localities not reached by steam roads these light lines may be useful, though their service will be found irregular and unsatisfactory at the best; but where they undertake to compete with steam railways with their solid tracks, spacious cars, high speed and regularity of service they will show to great disadvantage for runs of more than a very few miles, and the expectations which are now popularly entertained of them will be disappointed. The idea of adding the gathering and carrying of way freight to the transportation of passengers on such roads is incongruous. If freight and passengers were carried in the same train, the delays and slow speed would be intolerable; if it is proposed to run freight trains separately, they would interfere with the moving of passenger cars at frequent intervals, without time-table restrictions, which constitutes the only advantage of street cars over railways proper. But most serious of all objections is the peril to the public from the occupancy and crossing at grade of highways by electric cars with their deadly trolleys. With astonishing good nature and blindness to danger village and county authorities have allowed electric roads to appropriate the wagon roads, to the constant terror and jeopardy of those who drive or walk upon the highways. The natural result is such a rapidly increasing number of accidents that local authorities are now awakening to a sense of their folly, and speculative builders of electric roads are not likely to proceed much longer without restrictions that shall protect the public.

There are undoubtedly, says the New York Indicator, very serious problems to be solved before the electric railway system of transportation shall have been made perfect. But so cheap and generally advantageous a means of travel is not likely to be abandoned unless something still more desirable is evolved. The trolley has proven to be a very useful system of suburban transportation, and has therefore struck a serious blow at that portion of railroad traffic which hitherto has been the most profitable. Had the railroads followed a policy of greater liberality with reference to their local traffic, it would have been less easy for the new competition to have got a foothold. It has too often been the case that antiquated rolling-stock, inadequate service and unsatisfactory time-schedules have been given suburban residents, even to the extent of paralyzing the growth of certain localities.

Frequently the roads which practiced so illiberal a policy regarding their local business were most extravagant in their concessions to the demand of through traffic, and often the profits made from the one were squandered in fighting for the other. With the enactment of a pooling law and the railroads agreeing to charge fair rates on their through business, it is possible that a keener competition with the electric roads may be offered by the old railroad systems. Unfortunately for the steam railroads, however, the sympathy of the local traveler is with the newer and cheaper form of transportation.

Whether the electric roads can engage in freight traffic to the injury of the older railroads is a problem which is not to be solved without more experience than has yet been had, but as a system of locomotion, it is an established fact.

ELECTRICITY ON THE FARM.

With the advancement of invention comes electricity to the farm, furnishing light and power for many farm purposes. A writer in the Ohio Farmer, discussing the advantages arising from the use of electricity on the farm, says the use of electricity for light and power has increased many fold in our cities, and that it might be used on the farm to great advantage goes without saying. It is, to a certain extent, harmless and is much more easily controlled than steam. By the use of a motor there are no explosions, neither is there danger from fire. It is perfectly noiseless, needs no labor and little skill to operate it, eats nothing, will last for years, and if properly taken care of will need no expensive repairs. Push a button and you get its full capacity instantly, be it one or twenty horse power.

The results obtained from an electric motor are the same as those obtained by horse power or steam engine. The manner of running a feed mill does not differ in its action, whether it be operated by the steam engine or electric motor; neither does the pumping of water for farm use by an electric pump differ from that done by a wind mill. There is this difference, however, that the electric power is ready at all times, while with the wind mill we have to depend on the elements before we can begin.

Farmers are apt to look with skeptical eyes on any new labor-saving machine; but many are awakened to the fact that "farming for profit" can only be accomplished by the use of improved machinery. We do not think there is coming a golden future when the farmer will be able to sit on his front porch and by merely pushing a button get the electric motor to do all the chores; or sit under a shade tree with a pipe and conduct harvesting by just manipulating the plugs in the switch board. That would certainly make farming a huge joke, and destroy the profits which attend skilled labor. One writer, however, in a current magazine declares that the day is not far distant when the entire farm labor from the preparing and tilling of the ground to the transporting of the crops to the railway stations will be performed by electric motors. It is certainly within the range of possibility that such may be the case.

The prime object of introducing improved machinery on the farm is to reduce the cost of labor, perform more quickly that which is now done by hand, secure better results, and finally give the farmer less manual drudgery and more time for intellectual improvement.

The various uses to which electricity may be applied on the farm may be classified under four different headings, viz.: Power for operating all kinds of farm machinery, for lighting the farmhouse, barns and outbuildings, for heating purposes, and for the operation of telephones, signals, alarms, etc. The first of the items mentioned above may be divided into two classes. The first may be called "power for stationary machines," the second, "power for moving machines and vehicles."

In the first class the motor would operate a hoisting apparatus for hay, straw, grain and feed. It would also operate a pump for supplying water for drinking troughs, fountains, lawns, gardens, the dairy house, the home, the

washing of vehicles, and for fire purposes. Also for operating threshers, grinders, shellers, cider presses, feed cutters, hay presses, grindstones, shop tools, churns, coffee mills, sewing machines, laundry machines, horse cleaners and wood saws.

Under the second heading, motors could be used for operating railway lines on country roads, tramways connecting farm buildings, miscellaneous vehicles such as carriages and field machines of all kinds to which electricity is applicable. This is, of course, more doubtful and remote than the first class.

There are many times in the year when some of the above would not be in use. For instance, threshing machines would only be used for a couple of months, or for a single day on each farm. The hoisting machine for hay would be used but a short time during the haying season. The cider press would only be used about two months all told in the Fall, likewise the hay press. It would, therefore, be advisable to have a portable motor, that is, a motor placed on a truck that could be moved from one place to another about the farm, and even from farm to farm. A flexible cable is all that would be necessary to make the connections to the current which would be carried from the trolley wire in the public road to the various buildings located about the farm.

To the remaining applications of the electric motor to the machines mentioned under the first heading it will be well to call the attention of the reader to the intermittent character of the work to be done. In very few instances is the power required for more than an hour or two each day, and in many cases several days may elapse before the power is needed on some of the machines. In the case of grinding feed, enough could be ground in one day to last a week or a month. It might be required to pump water every day; but enough wood could be sawed in one day to last several months. It will be seen, therefore, that one motor of sufficient capacity to operate the largest machine would have abundant power to run any other machine on the place. Thus one portable motor would be all that would be needed for an ordinary sized farm.

Now, as to obtaining the current to operate this motor and the appliances in the home, it may be said that it will not be long before almost every farmer on the principal highways will have the electric street cars pass his door, and the electric current will be for sale at so much per horse power per hour to all who may avail themselves of its use. Even at the present time many suburban electric lines are running cars from one city to another, and many more are in contemplation or in the process of erection. Current will be sold cheaply where such lines exist, and within the limit of any wide-awake, enterprising farmer.

The electric railroads in Ohio at the present time are as follows: One running between Cleveland and Berea, one from Cleveland to Collinwood, Collamer, Euclid, and soon to be extended to Willoughby. Another road connects Akron to Barberton, and one will soon be finished from Akron to Kent. Between Canton and Massillon an electric road has been in operation for the past two years; also one from Wellsville to east Liverpool has been running about the same length of time. The roads between Piqua and Troy and Sandusky, Milan and Norwalk are

about as successful as any. From Toledo to Maumee an electric road is being constructed, while contracts are being let for one from Hamilton to Cincinnati, which will no doubt be extended to Dayton in a short time. These electric lines traverse many miles of principal country roads and electric power can be furnished to hundreds of farms at a very low cost. The average price charged by most of the electric companies is now about 6 cents per horse power per hour.

The high speed of an electric motor will enable the farmer to do a vast amount of work in an hour, and a one-horse power motor is about all the power that is required on an ordinary farm for the operation of all machines with the possible exception of the threshing machine.

A one-horse power motor with attachments will cost about \$100, and with proper care these motors should last about fifteen years without any costly repairs. It requires no more intelligence to operate an electric motor than it does to operate a binder or threshing machine.

Electricity more than any other force is adapted to farm work on account of the facility with which it may be distributed. The electric motor as it is to-day can be made a necessity on the farm, as much so as any other piece of machinery in use, and its uses are adapted equally as well at home, in the parlor, in the kitchen, the dairy or the field.

As the farmers are managing at present, they must rise before daylight and labor until dark to accomplish that which with a comparatively small expense could to a great extent be accomplished by electricity.

Will it be necessary to urge this subject on the attention of implement and vehicle dealers? One would think not. It would be supposed that the bare suggestion that they could be enabled to accomplish the same results in one hour by machinery that now occupies several hours of manual labor would be inducement enough to make the attempt worth trying, so soon as specific offers are made them by responsible companies. It will be safe to assume that nobody will need urging among those living on the line of electric railways where current can be obtained.

Farmers, as a rule, are not rich men: but neither is the cost of electric motors expensive, and when we take into account that much of the farm work, now carried on so expensively, laboriously, and inefficiently, by the muscular power of men and animals, might be done so quickly and at so small an expense, it would seem that few would hesitate. Laying aside the question of economy, the matter of superiority in the work performed is of no slight importance.

Electricity is demanded in the country more than in the town where steam and gas are more easily to be had. Electrically driven machinery is an improvement which the farmer can no longer forego.

EDITORIAL NOTES.

It is understood that Mr. J. Castell Hopkins is engaged in writing a Life of Sir John Thompson for a prominent firm of publishers, and that the work will be out in a couple of months. Mr. Hopkins is said to have obtained access to some valuable and interesting documents and letters in

connection with the career of our late distinguished Premier.

From time to time one notes the outbreak of an agitation in some city or another for the limitation of trolley car speeds. Brooklyn has recently been going through the experience, just as Buffalo did two or three years ago, and with like result in the decision not to make the cars go slower than they now do. The fact is, as Mr. Parshall pointed out recently in London before the Institution of Electrical Engineers, accidents occur pretty much inversely as the speed of the car, and are more numerous in the crowded portions of a city where the cars run very slowly, than in the suburbs and outskirts where they make 12 or 15 miles an hour. In reality, the speed of the cars has little to do with it. But there will always be a certain proportion of stupid, careless, nervous and infirm people in the mass of street foot passengers, as well as a number of heedless children, and it is a proper and merciful object to guard them as far as possible from the effects of their own absence of self-preservative ability. Carfenders are, of course, one means to this end, and far better than cutting down the speed; but the obvious remedy, now certainly available, is to apply high class brakes to the car. Anyone who has watched the marvelous quickness of these modern brakes in bringing a fast car to a standstill, must have realized that here was the cure for the trouble without sacrificing any of the great boons of swift comfortable travel that trolley rapid transit is conferring on every large and busy city in the Union. It is an absolute waste of money to equip a road with first-class electric apparatus, and then to have it condemned to a low rate of speed because there is a want of control power. Moreover, the reduction of speed, while wasting the time of the passenger, inflicts on a company the cost of an unnecessary equipment perhaps 30 to 50 per cent. larger than it would otherwise be. These are serious considerations, and while we sympathize with the occasional outbursts of public feeling against high dangerous speeds, we do feel that the companies would hear less complaint and encounter less opposition, if it were known that the braking of the cars was all that it should be; while they who use the cars would be solicitous for the highest speed then shown to be consistent with safety.—Electrical Engineer.

The Ottawa Citizen has an editorial in which allusion is made to a speech delivered on a recent occasion by Hon. Clarke Wallace, Controller of Customs, at Winnipeg, in which he speaks of the great reductions in duties made in the tariff passed at the last session of Parliament; and in his exposition thereof Mr. Wallace is made to say: "In 1891 we took the duty off sugar, practically making it free, i.e., out of 306,000,000 pounds (imported) 303,000,000 pounds of sugar was absolutely free of duty, and of as good quality as can be found on any man's breakfast table." According to the Trade and Navigation Returns for the year ending June 30, 1891, in which, according to Mr. Wallace, the duty was taken off of sugar, our imports of free sugar not above number 14 Dutch standard, amounted to 14,333,602 pounds; in 1892 the imports were 327,674,283 pounds, and in 1893 they amounted to 252,474,140 pounds.

It should be remembered that sugar of no higher quality than number 14 Dutch standard is not suitable for food, and before it can go upon any man's breakfast table must be refined. Of course all this low grade sugar was imported for refining purposes, the refiners being protected by a duty of \$16 per ton of 2,000 pounds. Mr. Wallace must have been misquoted or misunderstood.

The tariff makes it profitable or necessary for Canadian firms to establish branch factories in the United States, and for American firms to do the same on the Canadian side. When a Canadian firm crosses the line it is cited in the United States as a triumph of protection, and Canadian protectionists are equally jubilant when an American firm opens up a branch on this side of the line. Such natural results of protection impose on consumers the expense of dual management and direction, without even the compensating advantage of an increase in the manufacturers' profits.—Toronto Globe.

The Globe endeavors to muddy the water by connecting Canadian interests and American interests, and viewing the situation from that standpoint. But these interests should not be thus associated. The tariff certainly does make it profitable, or necessary for American manufacturing concerns to establish branch factories in Canada—those of them who desire to participate in our domestic trade, and this is certainly a triumph of protection. The establishment in Canada of a branch of an American concern means more employment for Canadian labor and greater consumption of Canadian raw materials, and that is just what protection was intended to accomplish.

The people of Newfoundland have been indulging too freely in the unprofitable game of government; and, like others who have been addicted to a similar folly, they have learned that while a Government can inaugurate distress and stagnation, it is virtually powerless in the opposite direction. After a Government has caused trouble the best thing it can do is to quit doing things.—Toronto Globe.

The Globe is correct in this statement, and its wisdom is unimpeachable. As in the case of the United States under the unfortunate circumstance of the re-election of Mr. Cleveland two years ago backed by a beastly Democratic majority in the House of Representatives, and the leadership therein of Mr. W.L. Wilson, a reign of distress and business stagnation was inaugurated the gloom of which would be hanging thick over that country now had it not been that the people had become sick and disgusted with free trade, and in November last returned to the only thing that could bring comfort and prosperity—protection. No doubt Mr. Cleveland's government would be well pleased if it could act upon the Globe's suggestion and quit doing things, but it can't quit, for transgression produces its own punishment.

Subscribe for and read the leading trade papers published in the interest of your business. Read them thoroughly. The knowledge gained from their columns and advertisements places you in a position to buy and sell to better advantage. They are absolutely necessary to be intelligent.—The Iron Age.

George E. McQuesten, of Marblehead Neck, Mass., has given the electric press the encouraging results obtained

with his windmill electric lighting plant at the family summer residence there. In the spring of 1892 he installed a small steam lighting plant, supplemented by storage batteries, and got his lamps at about 1c per lamp per hour, exclusive of attendance, depreciation and interest. This spring he put in a windmill plant, which consists of a 20-foot windmill mounted on a hard pine tower, 75 feet to centre of the wheel from the ground and 60 feet to the platform. Power is transmitted by means of bevel gears and shafting to a house built at the base of the tower, which is 18 feet 6 inches square at that point. This power drives a small dynamo, which in turn charges a set of forty-six storage batteries, and these supply current to no fewer than 137 lights. All the lights are not burned at once, but there was always plenty of current throughout the summer. At times when there was a brisk enough wind to keep the batteries well charged, current was used also to drive an electric motor for running the machinery in a tool shop. The windmill has thus furnished all the lights from May 1 to November 5, when the house was closed for the winter. The cost of the entire plant, which stands ready to start up any moment, and which in winter would also furnish current for heating, is put at about \$1,500. It was found that a ten-mile breeze yielded from three to five amperes of current at 110 volts, while a twenty-mile breeze gave eighteen to twenty-five amperes, at 110 to 112 volts. The plant was not able to store all the current that a twenty-five-mile breeze would develop.

On November 17 the Canadian Edison Incandescent lamp patent expires and simultaneously the United States patent on the same invention comes to an end, its life being limited by that of the former patent through having been issued in Canada prior to the date of the United States issue. There is, it is true, a chance that its life may be revived in this country by a reversal of the present law in the Bate Refrigerator case, argued before the United States Supreme Court this week, but such an eventuality is pronounced by those well qualified to express an opinion on the subject as extremely improbable. Should such a reversal, however, be made, the patent, of course, during the intervening period is null, and the art free to all. It would not seem possible that anyone manufacturing during that period could thereby be subjected to any claim for an accounting of profits, though he might be compelled to cease manufacturing after the decision, and even this, in view of the past history of patent litigation, cannot be too confidently asserted. There will doubtless occur to many in connection with the expiration of the incandescent lamp patent, reflections in regard to the uncertainty of the protection afforded by our patent laws. Though one of the most important inventions ever made, and notwithstanding the support eventually accorded by the courts and an annual demand for the commodity manufactured under it, which, before the date of expiration, had entered the millions, it is nevertheless true that little if any money has been made from the lamp patent, while much has been lost by investors through a misplaced faith in our much-lauded, though eminently uncertain, patent system.—*Electrical World*.

An analysis of the industrial census of 1891 is being made by Mr. George Johnson, Dominion statistician. The report when completed will show how unfounded is the complaint that the industrial development of the decade was magnified by the inclusion of civil industries in the category of industrial establishments. Mr. Johnson has

gone over the entire industrial returns of the census of 1871, 1881, 1891, divided them into five groups, according to the value of production, and has calculated the percentage of increase or decrease in each group for the three decades. The first group includes industries of an annual production of \$2,000; the second includes those which produce from \$2,000 to \$12,000 annually; the third is of productions up to \$25,000; the fourth up to \$50,000, and the fifth group includes industries showing an annual output of over \$50,000. The results so far obtained show that while there has been a fair development in the industries of each group, the most substantial increase is in the larger industries of the fifth group.

A few weeks ago *The Globe* in its news columns announced that a number of Ontario tanners would apply to the Toronto Board of Trade to be incorporated as a special section of that Board with a view to the promotion of their interests and for the purpose of considering the state of the leather market. The information was also given that the tanners were of opinion that they had been sufficiently sacrificed in past tariffs by their supineness, and that while other interests obtained protection of from 30 to 35 per cent. that of the tanners was raised from 17 1-2 per cent. to only 20 per cent., which was again cut back at the last session of Parliament to 17 1-2. It also stated that this disregard for the interests of the tanners, it was hoped, would be remedied by the organization of this tanners' section of the Board of Trade. In its same issue *The Globe* stated as follows:—

The tanners of Ontario are about to organize for the purpose of perpetuating their Governmental encouragement. They will doubtless form part of the "Coxey's army" which will march, or ride, to Ottawa during the next session to demand help at public expense. If the tanners of Ontario cannot maintain themselves and their families it is certainly a matter for general sympathy and regret. But when they organize to secure public aid they are more apt to arouse opposition and antipathy than kindly feelings. It is more fitting that efforts on their behalf should be left to private benevolence, as it is outside the legitimate sphere of Governmental action to tax others for the maintenance of a needy class. Such public acts generally encourage rather than relieve pauperism.

It is a fact that while many of the tanners are staunch supporters of the existing Ontario Government they are also equally strong advocates of protection, and as such, supporters of the tariff policy of the Dominion Government. But what are these friends of Mr. Mowat to think of what *The Globe* says of them? It tells them that they are a part of the Coxey army which will march to Ottawa during the next session to demand help at public expense. In other words, they are stigmatized as being dishonest and of a class who are not willing to live by their own honest exertions but hope to thrive by special laws made in their behalf. *The Globe* may be depended upon at all times to say false and unkind things regarding Canadian manufacturers, but the article above quoted is one of the meanest and most disgraceful that we have ever observed in its pages. It made its own opportunity for this fling at the tanners by declaring that the purpose of the proposed organization was to interest tariff legislation in their behalf; but a few days after, when the tanners met according to their programme and formed a section of the Board

of Trade the secretary was instructed to officially deny the statement which appeared in the columns of The Globe to the effect that the tanners were advocating a revision of the leather duties, and that they were about to appoint a committee to lay the matter before the Government at Ottawa, and that the question of duties had not been considered by them in any manner. Those of the tanners who had attained any admiration for The Globe will, no doubt, be interested in what it says about them.

As in many other things, The Empire is great at "figures." In a recent editorial it tells how Germany is hitting back at the United States in the tariff war now on between the two countries, the United States has been a large exporter of cotton seed oil to Germany, and now, according to The Empire, the German duty upon the article is to be increased. It says:—

No. The duty upon cotton seed oil is to be increased 250 per cent. over present rates. The present duty on American cotton seed oil is 4 marks (\$1), and it is to be raised to 10 marks.

Some of the smaller children in the common schools contend that if the price of an article is raised from 4 marks to 10 marks the increase is but 150 per cent., not 250 as The Empire claims. If the price were doubled, that is from 10 to 20 marks, the increase would be 100 per cent. But then The Empire ought to know.

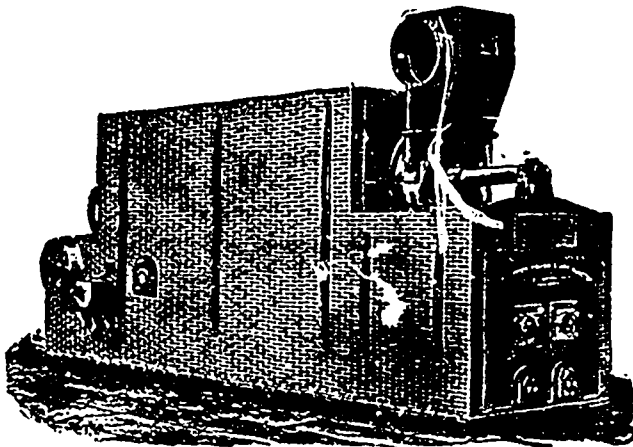
The party of our leading business men with some members of their families, of whom we have made mention before, have their trip all arranged and start shortly.

We look upon the industries they will represent from here as manufacturing a class of goods, which if it is possible to do trade with any of the Australian Colonies, promise the best, and therefore public interest in the venture is very earnest. They will be absent some months, and we trust they will return to us after a thoroughly enjoyable trip, to report that they found our Australian brethren prepared to do trade and quick to adopt a good thing when they saw it.—Galt Reporter.

Some of our exchanges do not seem to appreciate the value of a good item when they have it. If the Reporter had given the names of the gentlemen comprising the Australian party the item would have been of much more value to all concerned.

We learn from the Montreal Herald that arrangements have just been completed between Mr. Lefebvre and the Quebec Government for an increased subsidy to the beet root sugar industry. The Quebec Government, a few years ago, agreed to pay to the farmers growing the beet a bonus of fifty cents a ton. As soon as the crop was delivered to the factory, an officer of the Department of Agriculture visited the several parishes and paid the farmers their bonus in accordance with the certified weight of the beets delivered. A new departure was made lately. The bonus is now paid to M.M. Lefebvre, who undertake to pay the farmers five dollars a ton for their beets, including the Government bounty. During the present session another move has been made. In anticipation of a large crop the Quebec grant was increased to twelve thousand dollars. The amount of beet delivered to the factory is reported to

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be about ten to twelve thousand tons, which, according to law, would necessitate an expenditure on account of bounty of from five to six thousand dollars. Nevertheless the Legislature has authorized the Government not only the twelve thousand dollars already voted, but an additional amount of five thousand dollars, making a total sum of seventeen thousand dollars for the current year. The Legislature has also voted an appropriation of twenty thousand dollars for next year. We learn that MM. Lefebvre have agreed to purchase three pieces of land situated at Berthier, belonging to Mr. Prosper Allard, father of the local M.P.P. for the County of Berthier, for a sum of twenty-seven to thirty thousand dollars. Under such favorable circumstances the Berthier beet root sugar industry cannot fail to prosper. Mr. Beaubien and Mr. Allard are to be congratulated as well as Mr. Lefebvre on the complete success of this combination.

By a decision recently rendered vice-Chancellor Green, of New Jersey, has restrained a labor organization from distributing any circulars or publications containing appeals or threats against the publication of a newspaper, or from interfering with the business of the paper, or intimidating dealers or advertisers. In his decision the vice-Chancellor takes the ground that a person's business is properly entitled under the constitution to protection from unlawful interference; that every person has a right as between his fellow citizen and himself to carry on his business within legal limits according to his own discretion and choice with any means which are safe and healthful, and to employ

therein such persons as he may select; that every other person is subject to the correlative duty arising therefrom to refrain from any obstruction of this right which can be made compatible with the exercise of similar rights by others, and that injury to the business of another is malicious and actionable if done intentionally and without legal excuse.

A press telegram from Washington City a few days ago states that signs multiply to show that the United States is on the verge of a great tariff war with all Europe. France now appears to be following the lead of Germany in placing restrictions and obstacles in the way of the importation of American food products, and, as in the case of Germany, this is a development of the Agrarian policy and is an attempt to help the French farmer, although put forward as a measure in the interest of public health. In a report to the State Department from Roubaix, United States Commercial Agent Angel warned the department of a movement put afoot by the Agriculturists of the Department of the North to establish certain reforms in reference to duties upon agricultural products and other matters. The Minister of Agriculture has been memorialized upon the subject by a delegation. It complains of the importation of American beef and prays that the quarantine laws upon animals may be rigidly enforced; that in cases where the sanitary authorities detect contagious diseases in cattle, such cattle may be refused entry, or at least shall be subjected to quarantine inspection in the special lazarettos established at the various ports of entry. They insist upon

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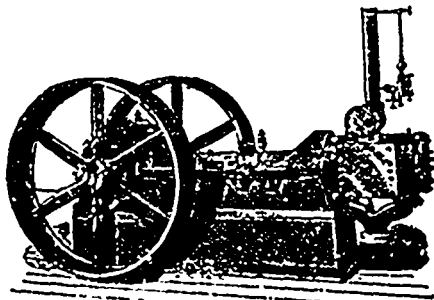
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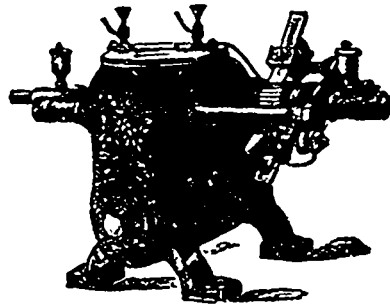
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the danger caused by the establishment of slaughter houses in the maritime ports, which, they say, have the effect of lowering still further the price of meats, on account of the competition thereby created. They pray for an increase of seven francs in the duty upon sugars imported from other than European countries and for a bounty upon French colonial sugars. Some of the advance figures relative to the extent of the imports into the United States coming to Spanish bottoms have been already furnished to the Department of State, and they show that the department has an unexpectedly powerful weapon in a retaliatory war, if it comes to that point. Since September 1 the value of such goods entered at the Atlantic ports was a little over \$4,500,000, or at the rate of \$18,000,000 per annum, a commerce too considerable to be sacrificed by Spain without great provocation.

A New York paper says that after January 1st, 1895, all New York dealers in convict-made goods, whether produced in their own State or anywhere else in the United States, will be obliged to pay a license fee of \$500, and all goods must be distinctly labeled and stamped in such a way that there can be no mistake about their origin.

Mr. H. C. Morris, United States consul at Ghent, Belgium, has written a letter in which he refers to the importance of an arrangement by which international postage stamps will be issued valid to affix to all postal matter passing between any two countries embraced in the postal union. Mr. Morris states that he has seen a re-

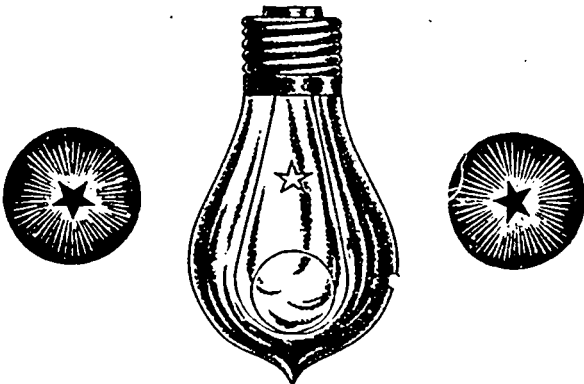
port to the effect that the Minister of Posts, of Germany, has been designing such a stamp which will soon be submitted to other members of the union. It is to be hoped that the time is not far distant when a system of universal postage stamps will prevail.

The armor plates for the new Russian warships are to be made in Bethlehem, Pa. The people of this western Bethlehem are profiting by a wide departure from the message of peace and good-will.—Toronto Globe.

It is a happy condition of affairs when American steel works can capture contracts for furnishing armor plates for European warships. But this could never have been done had it not been that the policy of tariff protection prevailed in the United States under which have sprung up works for the production of armor plates, of quality equal if not superior to any made anywhere else in the world, and at decidedly less price. A great and glorious thing for a country is protection.

Paid advertisements are not inserted in The Commercial as reading matter. Any reference to business firms appearing in this journal as reading matter, are invariably free of charge, and are given as items of news, or because they are supposed to be of interest to our readers. Paid advertisements are always readily discernible as such. When readers come across an item in this journal concerning any business institution, which may possibly be regarded as of some value as an advertisement to the parties mentioned, they may set it down as a fact that it does not appear as a paid advertisement. The reading

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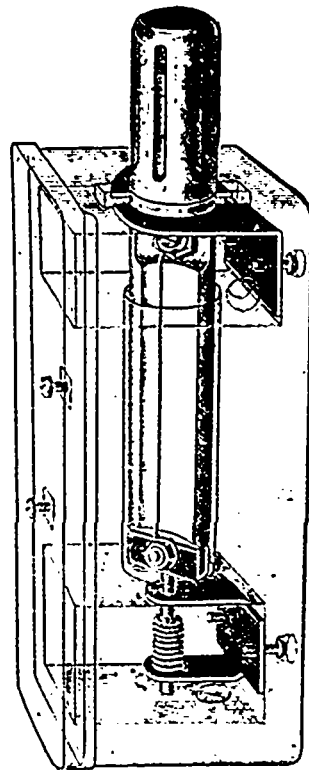
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columns of The Commercial are not for sale at any price.—Winnipeg Commercial.

This is the course that has always been pursued in the management of this journal. All advertisements appear in the form of advertisements and in their proper department. It has always been our object to give prominence to all matters concerning the manufacturing industries of the country, and such items we are always pleased to receive, but no paid for matter is ever allowed to appear among them.

Mr. W. L. Wilson, chairman of the Ways and Means Committee of the United States House of Representatives, and the putative father of the badly discredited Wilson tariff, has written a letter in which he speaks of his recent defeat at the polls as follows:—

I don't allow myself to repine over my own reverses, and as to the general disaster I am confident that the people will soon learn that the Democratic party did not deserve any such chastisement at their hands and will come back to us as passionately as they seem to have left us.

This is richness. Mr. Wilson does not learn wisdom from sad experience. His own West Virginia constituency left him with the same passionateness and impetuosity as the whole people of the country left the Democratic party, and it looks as though the chastisement will be continued and repeated upon Mr. Wilson and his party as long as they adhere to their free trade policy.

Attention is directed to a communication in another

page having reference to the discrimination shown by Canadian railroads against our manufacturers. Our correspondent shows that goods being brought into Canada from the United States are charged much lower freight rates than similar goods hauled a less distance between points in Canada. We are informed that it is quite true that the freight charges on malleable iron castings and similar articles made in Pittsburgh, Penna., and delivered at St. Mary's, Ont., are but 18 cents per 100 pounds, while the charge for transportation to the same place from Oshawa, Ont., is not less than 23 cents. It is this sort of discrimination that demands a quick remedy.

Geo. P. Rowell's journal known as Printers' Ink, has again displayed its ignorance of the milling press by publishing an article purporting to tell all about it. Two dead papers are named and three live ones are omitted. The "little school-master" seems to have a large supply of misinformation still on hand.—American Miller.

The United States Department of Agriculture has just issued a report of farm prices which is singularly interesting and instructive. This represents that in December the average farm price of wheat is 49.8 cents a bushel, or 22.1 cents less than the average price for the four years 1890 to 1893. The plantation price of cotton for this month averages 4.9 cents a pound, which is 3.5 cents less than the average price for the year 1892. These figures indicate a loss for American farmers, estimated upon last

It Requires Something Good To Make Millers Cheerful these ... HARD TIMES. ...

Greay's Mills are Winners Every Time.

Their merits voluntarily bubble out in customers' letters, thus:

PRINCE ALBERT, N. W. T., Nov. 5th, 1891.

WM. & J. G. GREAY, Toronto, Ont.

DEAR SIRS:—You have built me a good mill, and I am doing a good business. I like the running of mill. I am well satisfied with mill. Mill makes best separations I ever saw. The flour is thoroughly separated from the bran and shorts. It can't help but make good results. There are good reports coming in from our flour wherever it has gone. Have not had occasion to solicit orders, as we have been selling and grinding our flour as fast as we could make it. Have people come 100 miles. Everyone seems well satisfied with flour. Have not been able to make enough yet to fill demands.

Yours truly, JOSEPH KIDD.

WM. & J. G. GREAY, Toronto.

DEAR SIRS:—Mill running A.1. and in first-class condition.

MARTINTOWN, ONT., June 14th, 1891.

THOMAS WILLING.

WM. & J. G. GREAY, Toronto.

DEAR SIRS:—I am operating the mill you built for the Whitewood Milling Co. I consider, for a fifty barrel mill, it is pretty hard to beat.

VIRDEN, MANITOBA.

JOSEPH SANDERS.

WM. & J. G. GREAY,

2 CHURCH STREET, TORONTO, ONT.,

Mill Builders and Contractors for
Complete Mill Outfits.

Manufacturers of Latest Improved Flour Mill Machinery and Specialties.

Dealers in General Mill Furnishings.

Agents for Dufour & Co's celebrated Silk Bolting Cloths.

The Largest and Most Varied Stock of Mill Supplies.

Quality the Very Best.

Prices Reasonable.

ORDERS RECEIVE CAREFUL AND PROMPT ATTENTION.

year's crops, of 88 million dollars upon wheat, and nearly 10 million dollars upon cotton. The farmers are going down hill pretty fast. Nearly all other farm products have fallen with wheat and cotton. Rye lost $1\frac{1}{3}$ cents a bushel since last year. Barley lost nearly three cents since 1892. Hay declined 73 cents a ton since last year. Kentucky tobacco went downward to the extent of 1.1 cents. Potatoes declined 4.5 cents a bushel. It is difficult, with available figures, to make a fairly accurate calculation, but it would probably not be an exaggeration to estimate that, taking everything, American farmers this year will get from 300 to 500 millions less for their products than they received last year. Compared with more remote, but still recent, periods, the loss will appear to be heavier. Thus the farm price of wheat this year is more than one-third smaller than the average price for the decade 1880 to 1889.

Thus the cotton which sells in 1894 for 4.9 cents, sold in 1880 for 11 cents. It is practically certain that all these prices will be lower one year hence than they are now. If this matter be not important enough to demand serious attention and the discovery and application of a remedy, the word "important" has lost its meaning.—The Manufacturer.

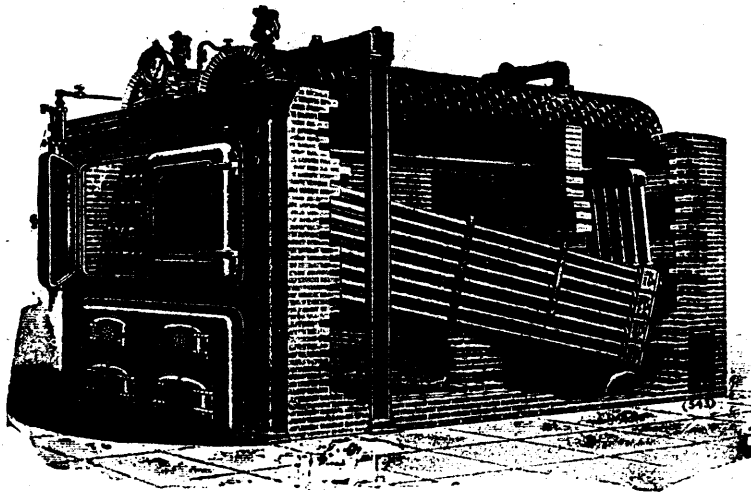
The leaven of protection seems to be working even in free trade Britain. According to a special cablegram to the New York Sun there is a movement afoot to bring parliamentary pressure to bear upon the government to compel the promulgation of a rule confining contracts in the government departments to British subjects who pay taxes.

A similar rule has prevailed in several European countries, notably in Austria, where it is interpreted with great stringency. Free traders detect in this movement the hoof of protectionism and will oppose it, which shows much shortsightedness on their part, because the demand is sure to be popular. There is no reason why this Liberal government would not accede to it, with the proviso that it shall not apply to articles which cannot be made or produced in England. The Irish members are likely to support the proposal as a remedy for one of Ireland's standing grievances. The admiralty oblivious of the merits of Irish pickled pork, persist in placing navy contracts abroad simply to save a few hundred pounds a year in the estimates.

A venture has been made in the way of increasing the Canadian-Australian trade, Mr. H. McLaren having left for the Antipodes with samples of goods from the Dominion Cotton Mills Co., the Canadian Colored Cotton Co. and one or two woolen houses. The result of the venture will be watched with deep interest by manufacturers, and should it be favorable other houses will send out representatives.—Montreal Gazette.

Several important plans for improving the postal service of the United States have just become operative. The principal one is the general reduction of postage rates from Cape Colony, Orange Free States and all other countries not embraced in the Universal Postal Union. Under the provisions of the new schemes, all countries will now

The Caldwell Standard Water Tube Boiler.



**IRON FOUNDERS,
BOILER MAKERS,
MACHINISTS,
ENGINEERS, ETC.**

General Agents in Canada for the Famous
Worthington Pumps, Hydraulic Machinery,
Condensers, Etc.

JOHN MCDUGALL,

CALEDONIAN IRON WORKS,

Office: Cor. William and Seigneurs Sts., MONTREAL.

enjoy uniform rates, except Canada and Mexico, for which special rates have long been in vogue. The change results in a reduction of rates for ordinary mails from 10 to 5 cents on half-ounce, and for newspapers from 2 to 1 cent for two ounces.

The Cleveland, O., Marine Review, speaking of the massive masonry of the new American canal at Sault Ste. Marie, says that it is interesting to note the amounts of stone, concrete, etc., involved in the masonry. On June 30 last, the date of Gen. Poe's latest annual report, which has just been printed, the masonry work on the lock proper was practically completed, and a glance over the report on this feature of the work shows that the lock contains 10,522 cubic yards of concrete, 18,615.02 cubic feet of cut stone and 48,267.04 cubic feet of backing stone, or a total of 80,876.61 cubic feet of masonry, of which 13,985.55 cubic feet is mortar and spawls. In percentages the proportions are 59.7 backing, 23.1 cut stone and 17.2 mortar and spawls. The total number of pieces of cut stone in the lock is 14,150, and this will be increased by 100 or more in work yet to be completed. The largest size of cut stone used contained when cut 105.25 cubic feet, weighing 16,543 pounds. The smallest contained 5.88 cubic feet weighing 924 pounds. The mean volume of the total number of pieces used was 35.44 cubic feet. In this construction 79,957 barrels of cement was used, and the earth filling behind the lock walls amounted to 55,748 cubic yards. The estimated cost of the new lock is \$4,738,865, of which \$3,980,000 has been appropriated. The present

Congress will very probably appropriate \$500,000 more, or enough to insure the opening of the lock after another season has passed with the present facilities.

A St. Louis merchant is of the opinion that a great deal of money is wasted in advertising circulars, and expressed himself in the following manner to the Stoves and Hardware Reporter of that city:—Circulars and descriptive matter are a valuable aid to business and I have made a great many purchases simply because the goods were described in a way that made me see what they were. But a great many of them come to me that are absolutely worthless. They don't give a full description of the goods and the parties who got them up seem to think that all they have to do is to say that the goods are on the market, that they are the very best ever introduced and that they will save money where other goods will lose it. I believe—that is, I know from practical experience—that if any article is worth the expense of a circular it is worth telling about in the right kind of a way. If it has any special merit, that merit should be pointed out in the clearest possible words, not merely referred to or spoken of as being something that no other article has. People want to know what a thing is before they buy it and they are not inclined to take the word of the manufacturer unless he tells them in plain English exactly what the goods are and not what he thinks them to be. The best article of its kind in the market may not turn out a trade winner when introduced through badly prepared circulars, simply because they don't bring out the talking points.

ELECTRICAL SUPPLIES - - -

Do not fail to write for Prices and Quotations on all kinds of Electrical Supplies.

We carry the largest stock of high-class fittings for Electrical Work in Canada.

FANCY PORCELAIN CUT-OUTS, ROSETTES, WALL PLUGS, SWITCHES, BRACKETS, ETC.

Have you tried the I. R. G. P. Wire? We guarantee our wire to have a higher insulation resistance than any wire in Canada.

WRITE FOR PRICES ON ALL SUPPLIES REQUIRED. - - - SEND US THAT RUSH ORDER.

JOHN FORMAN, = = 650 Craig Street, Montreal.

AGENT for Crompton Howell Battery Co., Ediswan United Electric Co. and the India Rubber, Guita Percha and Telegraph Works Co.

LAMPS

DO YOU EVER USE INCANDESCENT LAMPS?

IF so, do you know what a good Lamp is? We can give you Lamps at all prices, and have the best Lamp made in the world; namely: the genuine "EDISWAN," in any candle power, from one to two thousand; to fit any base. Don't buy lamps until you get our quotations.

Frosted Lamps - Colored Lamps - Mogul Lamps

SEND US THAT RUSH ORDER.

JOHN FORMAN, 650 Craig Street, Montreal.

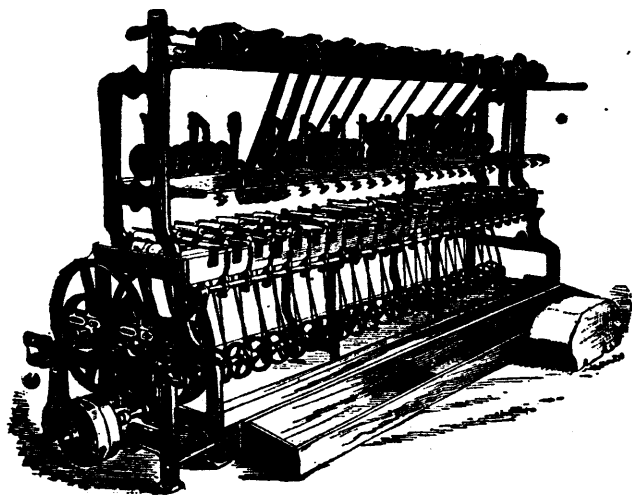
AGENTS:—Edison & Swan United Electric Co., and Hungarian Incandescent Lamp Co.

The Canadian Sault Ste. Marie canal which has cost the Dominion Government nearly \$5,000,000, is the last link in a chain of waterways connecting the head of Lake Superior with the Atlantic. It is to be finished, however, considerably in advance of the other important Canadian canals along the St. Lawrence, which are being constructed on a scheme of only 14 feet depth. The main dimensions of this waterway, which will be known as the Canadian Sault canal, are 3,500 feet long, with a mean width of 152 feet, which is capable of carrying vessels drawing 20 feet of water. The lock is 900 feet in length by 60 feet wide, with a little over 20 feet of water on the sills. This lock is 100 feet longer and of practically the same depth as the new lock on the American side, but in width it will not admit of two of the largest lake vessels being docked abreast of each other as will the new American lock. Since the first contract was given out six years ago, the designs have been changed three times, the plans being enlarged to suit changes in dimension of lake vessels. The first contract was for a lock 600 feet long by 85 feet wide, narrowing to 60 feet at the entrance, and 16 feet deep. Changes equally great have also been made in plans for the lock on the United States side since it was first designed.

The American Miller, alluding to the fact that a large number of people of the United States have recently discovered that certain reciprocal treaties have been repealed virtually by the action of the government of that country says:—It is true that a bill specifically repealing those

treaties was introduced in Congress a year ago. While the bill in question did not pass, a substitute bill did become law which repealed those treaties in effect by ignoring their provisions and giving notice to the nations who were parties to these treaties that we were no longer bound by them. Millers more than any other class of business men were benefited by these treaties; but few voices were raised in protest until the mischief was done. In fact, one of the most perniciously active congressmen in closing markets against our millers was himself a miller. Now why, we ask, was not some of this "kicking" done a year ago? We are sure that such a protest as that submitted by the St. Louis Merchants' Exchange to the Secretary of State would have been heeded by Congress if made a year ago. Of course there is some politics in this treaty question; but politicians generally show themselves ready to listen to business men as such. The only Congressman who said he was "tired of hearing of the business interests" will not adorn the ranks of the new House. Now we don't wish to scold; but we believe the present muddle could have been prevented and the reciprocal treaties maintained for the benefit of our millers, if the protest had been prompt enough and loud enough. But the treaties have gone glimmering, and the next best thing is to negotiate such new treaties as we can. Fortunately there is still a clause left of the old law by which discrimination against the United States can be met by prohibiting imports by proclamation of the President. We trust the President will attend to cases of discrimination against our flour Mil-

MEDAL AWARDED AT WORLD'S FAIR



Patent Bobbin Winding Machine, for Worsted or Cotton Yarns

Pat. Nov. 22nd, 1887. With variable motion. Pat. Aug. 5th, 1883.

The Only Successful Skein Winder

Variable Motion, patented Aug. 16th, 1891, and Sept. 5th, 1893.

W. W. ALTEMUS & SON
... Textile Machinery ...

2816 North 4th Street : : : Philadelphia, Pa.

...Builders of....

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|------------------------|-------------------------|
| Cop and Bobbin Winders | Chenille Cutters |
| Spoolers, Warp Mills | Beaming, Carpet Rolling |
| Machines, Reels, Etc. | |

ESTABLISHED 20 YEARS

A. KLIPSTIEN & CO.

122 PEARL ST., NEW YORK

Anilines, Dyestuffs . . .
. . . and Chemicals

of every variety, of the best quality and at the lowest prices. Delivery made at New York, Montreal or Hamilton.

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Berlin, Germany.

NEW YORK, 55 Beekman St.
BOSTON, 106 and 108 Milk St.
PHILADELPHIA, 122 and 124 Arch St.

A.W. LEITCH, 16 Hughson St. South, HAMILTON, ONT.

lers should see to it that proper representations are made to the authorities at Washington. Perhaps this is locking the stable after the horse is stolen; but the fact that such large discretionary power is lodged with the President may incline Spain, Brazil and other countries to repeal discriminating duties against our flour.

The Popular Science Monthly never flags in its task of giving to the general public the new and broader views of Nature, including man, that scientific investigators are opening up. In the leading article of its January number many of the wonders that astronomers have discovered are brought within the view of amateurs with small telescopes. It is the second of a series of papers illustrated with star-maps which Garrett P. Serviss is contributing under the title Pleasures of the Telescope. Ethics in Natural Law is the title of an essay in which Dr. Lewis G. Janes criticises the famous Romanes lecture by Prof. Huxley. Colonel A. B. Ellis's paper, On the Origin of Weeks and Sabbaths, shows that while weeks of various lengths have existed among different people they have all been intended as subdivisions of the lunar month. Among moon-worshipping tribes, sabbaths at first occurred monthly. The Jews did not have a weekly sabbath until after their captivity at Babylon. Prof. James Sully takes up in his Studies of Childhood the idea of self, of the past, of God, and others that young philosophers puzzle over. S.S. Buckman finds in Babies and Monkeys subjects for many comparisons that are both amusing and instructive. Under the title Animal Tinctumutants the changing of color by animals is discussed by Dr. James Weir, Jr. A striking instance of municipal parsimony is given by G. H. Knight under the head of Schoolroom Ventilation as an Investment. Eduard Strasburger discusses Co-relation of Factors in Organic Growth; and there are a Sketch and Portrait of Prof. Denison Olmsted, whose Natural Philosophy and Astronomy have been known to two generations. New York: D. Appleton & Company. Fifty cents a number, \$5 a year.

Outing for January, the enlarged holiday number, well maintains its place among the leading magazines. Turning over its pleasant pages one seems to hear the ring of skates, the creak of snow-shoes, the crack of rifle—for all the healthful sports of merry winter receive attention. Several interesting pieces of fiction furnish variety to a satisfying and superbly illustrated number. The contents are as follows:—King Skate, by C. Turner; Winning a Christmas Bride, by

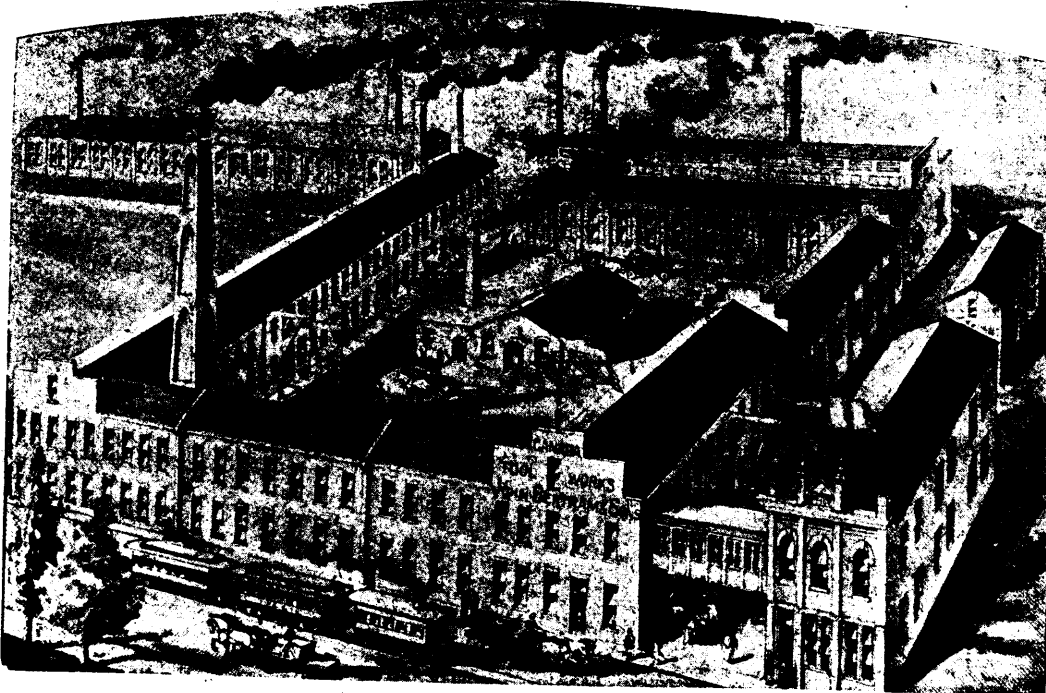
Arthur T. Vance; Bas' Therese, by Jean Porter Rudd; An Elk Battue in Russia, by Fred Wishaw; Two Tries for Turkey, by Ed. W. Sandys; A Sledging Picnic in North China, by Alethe Lower Craig; A Woman in the Mackenzie Delta, by Elizabeth Taylor; In Banana-Land Awheel, by Dr. E.M. Aaron; Lenz's World Tour Awheel, A Jamestown Romance, by Sara Beaumont Kennedy; A Christmas Among the Tules, by Myron B. Gibson; National Guard of New York State, by Capt. E. E. Hardin; Down in the Desert, by W.M. Wolfe; The Tact of Miss Aspinwall-Jones, by Wm. Earle Baldwin, and the usual editorials, poems, records, etc.

The latest number of the series of American Artisan Manuals, issued by the American Artisan, Chicago, is the Furnace Work Manual, by Sidney P. Johnston. It is an exposition of furnace work in its various branches, and, as the author notes in his preface, does not appeal to the heating engineer or the architect but to the builder of furnaces. There are 268 pages, bound in red cloth and the illustrations number 230.

Good Housekeeping for December is a Christmas number. Nearly all of the verse, one or two excellent short stories, and several minor papers are devoted to the holiday season; but this is not at the expense of matters of general household interest, which always receive so liberal and judicial treatment in this model publication. Among the notable articles are The Effort to Procure Pure Foods, by Mrs. H. M. Plunkett; The Markets of Rotterdam and The Hague, by Maria Parloa; Cheese and Cheese Making, by J. Brewster Sedgwick, M.D., and Warming and Lighting, by Mrs. Arthur Stanley. A very appropriate and acceptable gift to any home would be a subscription to this excellent monthly. Clark W. Bryan Company, Springfield, Mass.

We are under obligations to Mr. E. A. Moseley, Secretary of the Interstate Commerce Commission for a copy of the Commission's Sixth Annual Report on the Statistics of Railways in the United States. The minutest details are entered into regarding the management and operations of the American railways. To meet the demand of the public for early statistics, a Preliminary Report on the Income Account of Railways in the United States, for the year ending June 30, 1894, has just been closed and placed in the hands of the printer. It includes data from all operating Reports filed with the Commission up to November 23rd, 1894. Mr. Henry Adams, Washington, D.C., is statistician to the Commission.

One of the best and most instructive trade journals that comes to our editorial desk is Power, published by The Power Publishing Company, World Building, New York. As its name implies, it is



CANADA TOOL WORKS, Floor Space 60,000 Square Feet.

Highest Award, World's Fair, 1893. Bronze Medal and Award, Quebec Provincial, 1894.

JOHN BERTRAM & SONS, DUNDAS, ONT.

MANUFACTURERS OF :

- Engine Lathes
- Brass Finishers' Lathes
- Cap and Break Lathes
- Planers
- Drilling Machines
- Boring Mills
- Shapers
- Slatters
- Bolt Cutting Machinery
- Nut Tapping Machinery
- Wood Working Machinery
- Car and Locomotive Machinery, etc.

Correspondence Solicited.

devoted to power engineering; and as a source of exact and useful information it is invaluable. In its December issue it made the following statement that explains itself:—We're ten years old to-day. With this number Power completes what is, strictly speaking, its tenth volume, the additional four years indicated by the volume number referring to the journal called Steam, which was bought by Power before the latter paper was issued. The projectors saw an opportunity for a paper devoted exclusively to a single branch of mechanical work, making it thereby a reliable authority among readers in its particular field, thus securing a constituency entirely in one line. The projectors, comprising the present management, believed thoroughly in and adopted the plan of strictly class journalism, and for ten years have devoted every issue of Power wholly to matters relative to the economic generation and transmission of power. They adopted also the foundation principle that no part of the editorial department should be used for business purposes, that the pages paid for by the subscriber should be conducted strictly in his interest, consequently no paid notice has appeared outside of the regular advertising pages in the first decade of the history of the paper.

Scribner's Magazine for January begins the XVII volume and gives a foretaste of a number of the important projects which are to characterize the year. Among the most attractive of these is the series of papers by Robert Grant on The Art of Living, written in a semi-satirical but very practical vein, and dealing with the every-day problems of living. Noah Brooks begins a group of three papers on American Party Politics with an account of The Beginnings of American Parties. The chief serial fiction for the year is George Meredith's fascinating novel The Amazing Marriage, a tale full of adventure and incident from the very first chapter. The frontispiece is an engraving by Henry Wolf of a painting by W. M. Chase, and is the first of a series of frontispieces to represent the very best work by American wood-engravers. Notable among the single articles is Mrs. Maud Ballington Booth's account of Salvation Army Work in the Slums, which is a most pathetic and dignified narrative of a work which has won the admiration of all philanthropic people.

Girls who like to read about marriage—and what girl does not?—should buy a copy of the January Ladies' Home Journal and read the excellent marriage article which Mrs. Burton Harrison has written under the title of Heigh Ho! for a Husband. Eugene Field is not less interesting in his charming narrative of The Woman Who Most Influenced Me, while Edward Bellamy sketches, in his own way, what he believes a Christmas in the Year 2,000 will be like. Frank O. Small tells How I Make a Drawing, showing the evolution of a

magazine picture from its conception to its finish. A New Evening's Entertainment is very clever, and will be immensely popular since it is easy and picturesque. The author of the Journal's novel, A Minister of the World, introduces her clever young clergyman to New York's fashionable society, and brings the story at once to its most interesting point. Other articles there are—some twenty odd of them—all good and wise, making this issue of the Journal one of the most evenly interesting which the editors have made. No magazine is certainly better worth its price of ten cents. The Curtis Publishing Company, of Philadelphia, issue it.

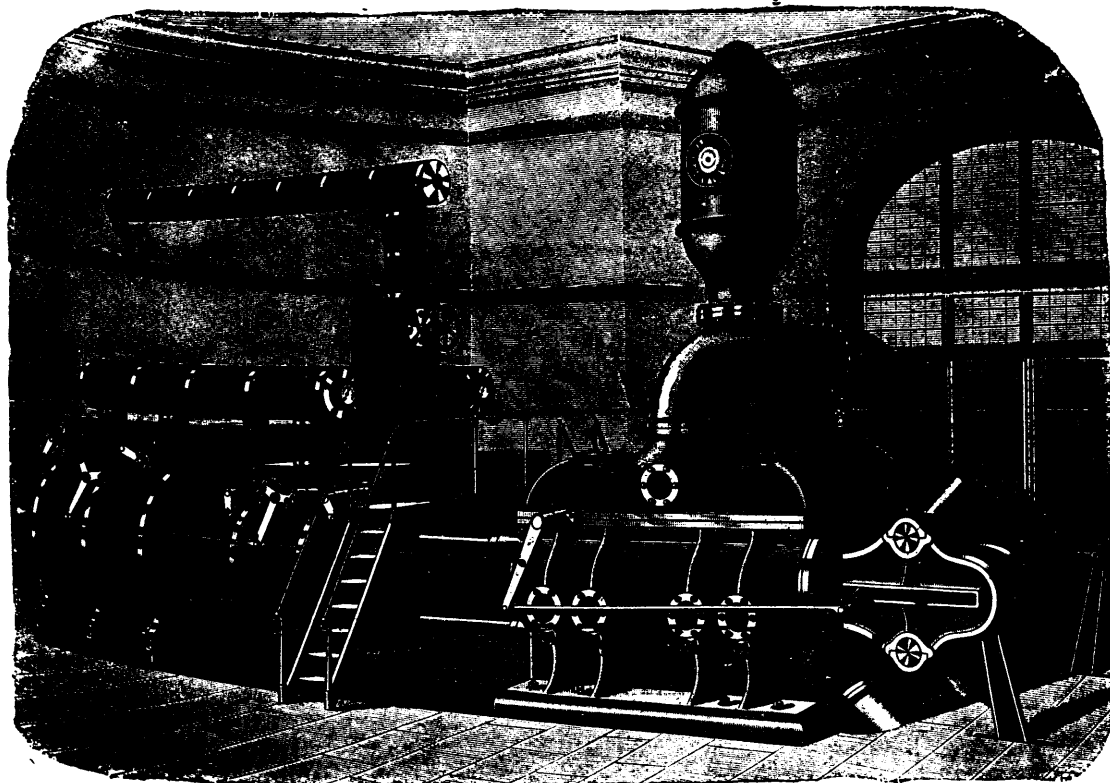
The frequency of boiler explosions, the cause of which can be traced to incompetency, pure and simple, naturally leads to the inquiry as to whether their owners are willing to take the risk of putting them in charge of men ignorant of their real duties for the sake of saving a few dollars in the way of wages. In many instances it looks that way. Men are gifted by nature with the love of taking chances, and there are men who would look with horror upon betting on horse races, or in Wall street, but who will cheerfully gamble on a boiler explosion, the stake being a few dollars in the way of wages between Competency and Incompetency on one side, and the killing of a few people and the destruction of more or less property on the other. Hence it is that so many boiler owners will not pay for inspection, or a good engineer, and will spend their money in seeing that license laws are not passed.—American Machinist.

The New York Tribune says that the railroad suspension bridge at Niagara Falls, which is one of the oldest railroad bridges in the country, and probably the first large suspension bridge ever built, will soon be taken down, and will be replaced by an arched cantilever bridge. L. L. Buck, who rebuilt the bridge, is now at work preparing plans for the new structure. This suspension bridge was built in 1855 by John H. Roebling, the father of the engineer of the Brooklyn bridge. It was considered a surprising engineering feat at that time. The principle employed is practically the same as in use now, the only real difference being that the truss underneath the railroad track was built of wood and iron where it is now of steel. When the bridge was built it met all requirements for the trains in that day, but by 1880 the railroad traffic had increased so much and the weight of the trains was so much greater than before that the railroad companies got to be afraid of the old structure, and a commission of expert engineers were employed to examine it.

JOHN M^CDOUGALL,

CALEDONIAN IRON WORKS,

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THE FAMOUS

Worthington

Pumps

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Water Works

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CRAIG,

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TORONTO, ONT.,

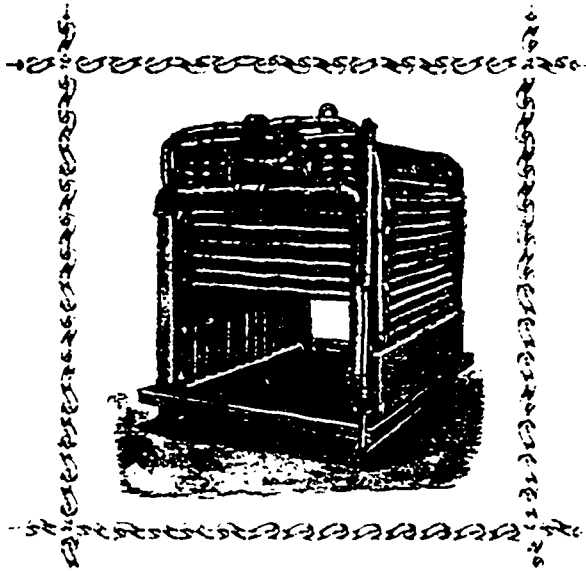
Sub-Agents in Ontario.

The Roberts Safety Water Tube Marine Boiler

- For Yachts, Launches
and other Steamers.
- 
- The original fixed water
line pipe boiler

“Imitation the Sincerest Flattery.”

NEARLY 600 IN USE.



Absolute safety from disastrous explosion.

Great economy in fuel.

Rapid and thorough natural circulation of water.

Rapid production of steam after lighting of fire.

Steady and ample production of steam.

High pressure which can be safely carried.

Steady water line, no foaming or priming.

Light weight, small space, no shop repairs.

PRICES AND FULL PARTICULARS ON APPLICATION TO

The Bertram Engine Works Co., Ltd.

TORONTO, CANADA,

Sole Manufacturers for the Dominion.

The Gould Coupler Works of Buffalo, N. Y., are considering the erection of a broach factory on the Canadian side, probably at Fort Erie, Ont.

The Maganetawan Tanning & Electric Co., has been incorporated with a capital stock of \$50,000 to manufacture skins and leather of all kinds, etc.

The steamer Magnet will be re built during the winter at Sorel, Que. Her berth capacity will be increased to 160 passengers, a new engine put in, the cabin re-fitted and patent feather paddle wheels put in. Probably \$15,000 will be expended.

Our readers will be interested to know that Robert S. Fraser, the well-known and popular machinery and mill-supplies agent, etc., Montreal, is fitting up a factory in this city for garnetting fine wool stock, which will be made a specialty. The factory will be a two-storey one, 50 ft. by 34 ft. in dimensions. It will be lighted by electric light, and will be run by steam power. There will be three garnett machines and two pickers. The new mill is to run under the same of the Canada Garnetting Company, and started operations on 1st January. The name of Mr. Robt. S. Fraser is sufficient to guarantee that the mill will be run on thoroughly good business principles, and we hope and believe that the new enterprise will be a success from every point of view.—Journal of Fabrics.

The Allgemeine Electricitats Gesellschaft, of Berlin, is making a life buoy for use on board ship, which is fitted with an electric lamp so as to be visible at night in the water. The floating apparatus is made of waterproof linen, and is sufficient to bear the weight of three persons in the water, life belts being attached to the buoy. Inside the canvas buoy is a double wooden box containing an accumulator with gelatine material, and it is capable of feeding an incandescent lamp for six hours. The incandescent lamp surmounts the floating buoy in a strong wire frame, and is further protected by an outer strong glass globe. When the apparatus is hanging on board ship, the weight of the lower portion automatically switches off the current, but as soon as the buoy is released and dropped into the water four powerful springs switch the current on. The accumulator will last for two months before requiring to be recharged, so that the apparatus can be employed on board ship where there is no dynamo. The apparatus weighs about 100 pounds, but the accumulator can be made smaller with, of course, a corresponding decrease in the duration of the light. These accumulators with gelatine filling do not suffer from the motion of the ship, or from the fall into the water.

Pneumatic Grain Elevator.

About a year ago a new method of discharging grain cargoes, on the pneumatic principle, invented by Mr. F.E. Duckham, engineer of the Millwall Dock Company, was described in the Times. The system had then just been carried out in a vessel appropriately named the "Mark Lane." A somewhat similar vessel has now been built for the London Grain Elevator Company, for use in the Royal Albert Dock. She is called the "Baltic," and measures 115 feet long, by 22 feet 6 inches wide, and 11 feet deep, but differs from the "Mark Lane," in having nearly double her engine power and in having only two main suction pipes and grain receivers instead of six. The system having been previously described, it is only necessary here to state that the equipment consists of an ordinary compound engine, of 500-horse power, which works four air-exhausting cylinders, producing a partial vacuum. Above the deck of the Baltic, are two sets of apparatus for receiving, weighing and delivering the grain, either in sacks or loose, into lighters which lie on either or both sides of the vessel. The chamber of each set of apparatus is connected with the exhauster by a pipe on the one hand, and with the grain in the ship by a flexible hose on the other. When the exhauster is started the grain is sucked up from the ship's hold into each chamber and is automatically discharged thence into an open hopper, whence it is weighed and delivered into the barges. The contract working capacity of the Baltic, is 100 tons per hour lifted forty feet, with the two suction pipes, and delivered into the barges, but on her official trial 180 tons of wheat were lifted and delivered in the hour. A demonstration of the working of the Baltic, was given on Wednesday in the Millwall Dock, at which a number of mill owners, engineers, and others interested in the grain trade were present, when the capabilities of the vessel as shown at her official trial were fully sustained — London Times.

Casting Aluminum Bronze.

A paper on aluminum bronze read before the Virginia Beach meeting of the American Institute of Mining Engineers, by Dr. Leonard Waldo, of Bridgeport, Conn., has just been published. In it he refers to the great difficulties experienced in casting aluminum bronze. He says: I believe them to be more serious and perhaps less understood than those encountered in the casting of any known metal. The large contraction which takes place in the actual formation of the pattern casting, and the so far unexplained and unknown chemical

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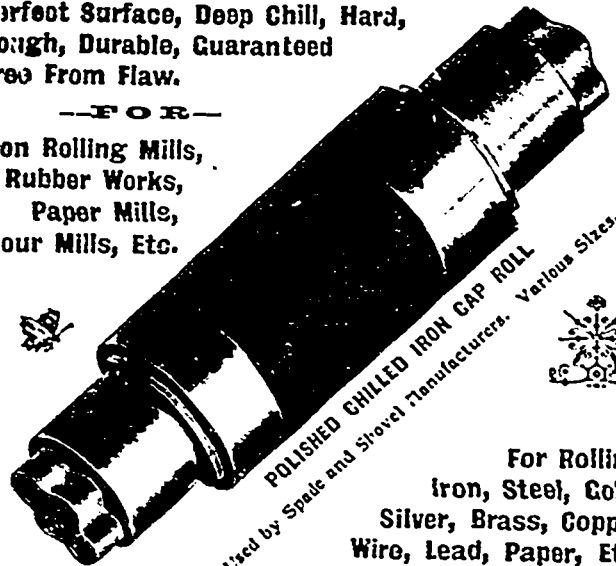
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actions which occur, have called for ingenious and complicated devices for obtaining sound castings. So far we have hesitated about undertaking castings weighing over 2 tons, and, of course, those are small castings in comparison with the work done in steel works at present.

The aluminum seems to have a wonderful capacity for occluding hydrogen gas, and the liberation of this gas at the moment of the union of the aluminum with the copper, and the unknown relation which hydride of copper may sustain to the oxygen which exists in the pores, present difficulties which have still to be thoroughly studied. In this manufacture the purity of both aluminum and copper is of the utmost consequence. Those small percentages which almost defy the reagents of the analytical chemist become extremely important when one is working in the dark in regard to aluminum bronze. In making up our crucible charges we cannot depend upon the chemical formulae only because we must take careful account of the loss and the destructive combinations which take place between aluminum and silicon and iron. In a perfect ingot or casting the solution of aluminum bronze and copper seems to be perfect. The analysis from the top, bottom and sides shows no variation due to segregation. Of course, the mechanical mixture must have been made complete, so as to secure both the chemical combination and the uniform solution of it in excess of copper.

Edison's Kinetoscope.

Amongst the many interesting subjects exhibited by means of Edison's latest invention, the Kinetoscope, is a scene in a barber's shop. When the machine is set in motion by turning on an electric current the interior of the barber shop flashes into view. The barber is at work shaving a subject. He is evidently in a hurry for another customer is waiting, and the barber has no assistant. He lathers and shaves with a rapidity that shows his anxiety to earn as many dimes as he can, and the effect of that haste is shown in the

grimaces of the victim. The waiting customer is reading the evening paper. Something tickles his fancy and he laughs heartily. Another customer enters, takes off his coat, puffs a jet of smoke from his cigar and seats himself. He is evidently an acquaintance of the other waiting customer, for the latter crosses the floor, hands him the newspaper, at the same time pointing out the paragraph that has so amused him. The new comer reads it, strikes his hand on his knee and also has a hearty laugh. In the meantime thirty seconds have elapsed and the whole scene suddenly disappears in darkness. To produce the life like illusion 1380 photographs, each differing slightly from the other, has passed before the spectator's supervision. The effect is startling. The pictures have such attraction for amusement-seekers in New York that patrons of the kinetoscope parlors eagerly look for every new subject that is sent out from the laboratory. It is said the inventors have some intention of exhibiting the wonders of the kinetoscope in Canada, as soon as machines can be obtained. Mr. Edison, in placing his new invention on the market, has avoided the error he fell into with the phonograph and is making a big financial success of it. Kinetoscopes are sold without royalties or restrictions of any kind. Edison's protection is in the manufacture of the film, which is a secret process that no one outside of the laboratory has yet been able to discover. Mr. W. K. L. Dickson, the great inventor's right-hand man in the kinetoscope department, is credited with working out more of the details of the invention than Edison himself. He is an Englishman, and an inventor of many valuable labor saving devices in photography and mining.

Canadian-Australian Buying and Selling.

The report of the Earl of Jersey to the Home Government on the Colonial conference held in Ottawa last summer, which has just been published, contains an appendix which cannot but be of interest to all interested in Canadian-Australian trade. He suggests that Australia

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NEW GLASGOW, NOVA SCOTIA.

might profitably export certain products to Canada, and comments briefly thereon as follows:

1. Wool.—Upon the merino wool produced in Australia there is no duty in Canada, but there is a duty of 3 cents a lb. on the "cross-bred" wools, which are largely produced in New Zealand, and which are grown in Canada.

London is the great market for Australian wool, and if the proposed direct trade were established the effect would perhaps be to divert some of the wool now exported to it. But a large amount of wool is now sold in the Australian market, and shipped direct to its destination, and the cost of the trans-continental freight would militate against any material loss to London in respect of her exports to Eastern Canada.

Canada imports wool (unmanufactured) in almost equal quantities from Great Britain and the United States. The United States are themselves largely supplied from Australia, and, therefore, the probable result of the contemplated arrangements would be some diversion from the United States.

The New Zealand delegate suggested a preferential duty in Canada in favor of woolen fabrics, such as are produced in his colony.

*In 1892 the figures were: From Great Britain, to the value of \$575,427; from the United States, \$682,365.

2. Frozen Mutton.—The Canadian duty is 35 per cent. ad valorem, but it is believed that mutton could be sent from Australia to British Columbia, and some further distance east, so as, after payment of this duty, to give a satisfactory profit to the producer. Mutton can be bought in the colony of Victoria for 2 cents per lb., and in Vancouver the price is as high as 25 cents. When it is considered that frozen mutton can be conveyed from Australia to London at an inclusive cost of 2d. per lb. it is apparent that this belief is well founded. The president of the conference gave it as his opinion that the frozen mutton could be conveyed as far east as Chicago, and yield a profit after paying the American duty.

Most of the mutton now consumed in British Columbia is said to come from Oregon.

3. Tinned Meats.—The Canadian duty is 25 per cent. ad valorem. Large quantities are consumed in British Columbia by the sealing fleet and campers and the naval station at Victoria. The supply comes from the eastern provinces and the United States. A great many of the boats, it was observed, are fitted out with canned meats from Chicago.

4. Raw Hides and Skins.—These are admitted free into Canada. They are chiefly supplied from the United States, who themselves import them from Australia and South America.

Tanned hides pay a duty, and it was suggested by the New Zealand delegate that this duty should be remitted, as he stated that skins cannot be properly tanned after being dried during export.

5. Hard Woods, Gums.—These woods would be useful as street blocks. There is no duty on the raw article, i.e., if merely sawn or split.

6. Fruits.—Oranges, lemons, apples, and other fruit could be supplied during the Canadian winter. There are various duties on different kinds of green fruit.

The cost of transport to the eastern provinces would probably be prohibitive.

7. Butter.—The duty is 4 cents per lb. The retail price in British Columbia, 32 to 35 cents per lb., would yield a satisfactory price, but it is hardly anticipated that this article could be sent further east.

8. Sugar.—Under the new tariff sugar is admitted free up to 16 Dutch standard.

9. Tin.—No tin is produced in Canada, and the article is admitted free.

10. Gum.—The United States have hitherto been the principal customers in this article. There is no duty in Canada.

11.—Flax.—This is admitted free in the unmanufactured state.

12. Wines and brandy.—There are various duties.

The principal articles which it is suggested might be exported from Canada to Australia are the following:

1. Paper.—Canada possesses every natural advantage for this article, and the Australasian delegates were much impressed with the Canadian paper manufactories.

To select two colonies, New South Wales and Victoria, admit printing paper free.

2. Cotton Goods.—Cotton in the piece is admitted free in both colonies. Cotton goods are imported largely from Great Britain into Canada, but some, chiefly of a simple and special character are manufactured locally.

3. Frozen Fish.—Fresh fish is free in both.

4. Hops, and 5 Soft Woods.—These are specially required by Victoria, and must be obtained from the United States or Canada. They are admitted free into that colony if undressed. In New South Wales there is a duty on rough timber of 1s. 6d. per 100 feet.

6. Matches.—Free in New South Wales, 6d per gross if in wooden boxes in Victoria.

7. Agricultural Implements.—These are admitted free in Victoria; reapers and binders are free in New South Wales. There is no doubt that some of the agricultural machines manufactured in Canada are very good and suitable for use in Australia.

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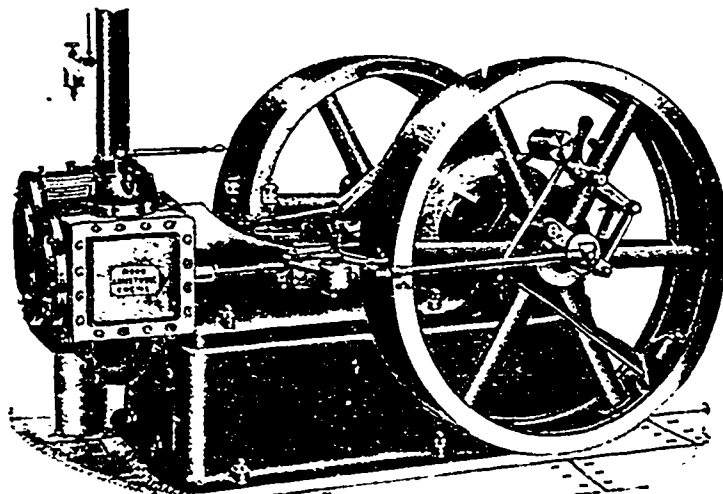
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Wm. McKay, Seaforth, Ont., Travelling Agent.

8. Carriages and Carriage Materials.—There are various duties on these articles.

9. Paints and Drugs.—Dry colors are free in Victoria; crude rugs free in New South Wales.

The articles, which it was suggested the Cape might send to Canada, are:

1. Wool.—The kind produced in Cape Colony is admitted free. It is understood that the quality is at present inferior, and that, therefore, the Australasian articles would, under present conditions, hold the market; but efforts are being made to correct this shortcoming.

2. Wines.—There was at first an impression that the treaty recently concluded on behalf of Canada with France would make it necessary to concede to France any reduction of rates which might be given to the Cape. This was corrected by Mr. Foster, who explained that any tariff advantages granted by Canada to any third power should be enjoyed also by France, but that Cape Colony is not a "third power," and, therefore, an arrangement could be made between Canada and the Cape altogether outside of this treaty.

This explanation was received with much satisfaction, as some of the delegates had apprehended that Canada had, by this treaty, precluded herself from giving, in certain articles, more favorable terms to the other colonies than to France.

3. Fruit.—Sir H. de Villiers thought that the Cape could send fruit to the eastern side of Canada at a cheaper rate than Australia could. But the competition of the West Indies would be difficult to face.

On the other hand Canada could send to the Cape:

1. Lumber.—Very large quantities will, it is believed, be wanted for the mining districts in South Africa. There is a duty of 2d. per cubic foot at present, but it was suggested that this might be taken off in favor of Canada, if corresponding advantages were given.

2. Agricultural Implements.—These are subject to a duty of 10 per cent. A considerable proportion are, it is understood, at present received from the United States.

3. Paper.—On this article the duty of 12 per cent. is levied, except on paper for printing, which is admitted free.

Canadian-Australian Trade.

As has been announced, and as is well known, Mr. John S. Larke, Canadian Commissioner to the Australian colonies, sailed for that far-off country last month, and the following is what the Vancouver News-Advertiser has to say in the matter:

Amongst the guests at the Hotel Vancouver for the past day or two are Mr. J. S. Larke and family of Oshawa, Ont. Mr. Larke

leaves by the outgoing Warrimoo from Australia, where he opens up an office for the Canadian Government. This is the continuation of the good work inaugurated some months since by the Hon. Mackenzie Bowell, and since so carefully fostered by the Canadian Government. It was happily attended on its outset by the inauguration of a steamship line, although the international trade at that time was so small as to actually authorize almost nothing. Since then the line has been successfully maintained, and though the inward cargoes have often been somewhat light, those from this end, thanks to Canadian enterprise, stimulated by such able officials as Mr. William Brown, of this city, have again and again been bumper loads. And now upon these lines and in their completion comes the Pacific cable, which is certain to develop further trade relations.

To stimulate this trade, to aid in its development, and to oversee and foster its many branches, the Government is sending Mr. Larke, whose headquarters will be at Sydney. In him the Executive have found a man thoroughly conversant with the varied capabilities of Canadian products, not only the natural ones, but even more especially those manufactured products which find within the boundaries of Canada too restricted a market. Amongst these the agricultural implement men have already reached out, and poured train load after train load into the antipodes, which, with the Cape of Good Hope, appears as the readiest consumer of the output.

Australia to-day imports \$160,000,000 worth of goods. She has enormous raw exports, but manufactures but little herself, sending out the raw in exchange for the other. In timber and fish she is a great importer. Of the former Norway and Sweden send to one colony alone three times the amount that Canada does, while the United States exceeds the former by another fourfold. So far the timber trade of the west coast has centered in San Francisco, thus throwing it quite naturally into American hands, but the time seems to be at hand when charters with this province can be obtained directly from the centres of the antipodes, and thereby greatly increase trade in this staple. Of fish the same might be said. Trade follows the ship, and the old established line from San Francisco naturally controlled it. A trade is rapidly springing up in paper, especially in those adapted to newspaper requirements. At Everett and other Washington points factories recently established are rapidly increasing their output, and in every cargo of the dual liners heavy shipments are found. In the spruce of British Columbia ample material is found, and only enterprise is wanting to create a large and very remunerative trade.

Yesterday Mr. Larke went over to New Westminster and there met many of the leading merchants, as he has also been doing in this city. To-day he leaves for Victoria, and hopes by

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these visits to be the better able to co-operate with the exporters of the west in their attempts to gain a footing upon such large and important markets as those of the colonies. He greatly favors, however, the personal visits to these far-off markets of representatives of the parties seeking to trade there, and suggests as an aid in these lines a preferential tariff betwixt the two countries, if not also between the many scattered members of that empire upon which the sun never sets.

The Blenheim.

As is well known the Blenheim is a sister ship of the Blake, whose fame has spread all over Canada. The former is even a little more up to date than the Blake. She is the swiftest cruiser in the British navy and in the world. The Blenheim was built by the Thames Iron Works and Shipbuilding Company in 1890, and was launched on July 7 of that year at Blackwall. She was built from designs by Mr. W. H. White, the director of naval construction. She is an admirable ship in all her lines; an object to delight the eye. She is 375 feet long between perpendiculars, 65 feet broad amidships, and 38 feet deep, with a draught of water 25 feet 6 inches, and a displacement of 9,000 tons. She was built for great speed and she is to day, with her sister, the Blake, a ship of high speed before all things, whilst in her character of a protecting and protected cruiser she is the pride of the Queen's navy. All her experiences have proved this. She has triple expansion engines, built by Messrs. Humphrys, Tennant & Co., of 20,000 indicated horse power. Her trial speed was easily 22 knots. Her design was based upon the desire to make her class superior to all rivals, not only in speed and coal carrying capacity, but also in horizontal armor protection. So that she is the foremost modern vessel that rides the seas in a day of marvelous advancement in steamship and warship construction. Her bow is a ram. The armor of the Blenheim weighs 1190 tons. The hull of the ship is of steel. And steel is liberally used in the protection of the ship's machinery. As for her armament, it is terrific. There are two 24-ton, and ten 6-inch breech loading guns; sixteen 3-pounder quick-firing guns; one 1-inch and seven 0.45 inch Nordenfolt guns, besides four 14-inch Whitehead torpedo tubes. The heavy guns are carried on the upper deck, as bow and stern chasers, with large horizontal arcs of command. The 6-inch guns are 5-ton guns, and are also quick-fire. Six of the 6 inch guns are carried on the upper deck, two for use ahead and on the broadside, two for use astern and on the broadside, and two amidships. The remaining four guns are carried on the main deck, two on each broadside, in casemates composed of 6-inch steel-faced armor.

Boiler Corrosion.

Corrosion in boilers has long been an annoyance to steam users, and anything that will serve to prevent the immense loss following the condensation of so many short-lived boilers, to say nothing of the loss in efficiency of those continued in service, and the danger that always accompanies the use of a boiler thus effected is sure to meet with the approval of the progressive engineer and his employer.

The efficiency of zinc suspended in water in preventing corrosion in boilers is due to the fact that when two metals of a dissimilar character are immersed in a liquid capable of chemically acting on both of them, and are connected or in metallic contact, the metal which is most affected or acted upon by the excited medium becomes the positive or corroded element, and the other becomes the negative or inactive element thus escaping corrosion as long as the metals are in contact. Zinc being the most readily acted on, it becomes the corroded element, and concentrates and absorbs corrosion, which would attack the metal of the boiler if the zinc were not present in metallic contact; thus a very small quantity of zinc suspended in the water, or about two pounds weight of zinc per ton weight of the boiler, will prevent corrosion. When the water is good, or moderately pure, an enamel-like film, or coating, efficiently protective against corrosion, may be given to the interior surface of a boiler, when clean, by using zinc plates suspended in the water, and adding common soda continuously to the feed water.

Another method used in the application of zinc for this purpose is that of placing a ball of zinc, through which a bar of pure copper is passed, in a cage suspended in the water, and with this arrangement to connect the ball by wire to those parts of the boiler which is most from corrosion.—Manufacturers' Gazette.

Another Car Ferry Service on the Lakes.

All details for a car ferry service on Lake Erie between Conneaut, O., and Port Dover, Ont., are now fully settled, and it is expected that the two ferries, which are to be built by the Craig Ship Building Company of Toledo, will be in service by August. A company separate from the Pittsburg, Shenango & Lake Erie Railroad Company and the Grand Trunk of Canada, which are the principal railway companies connected with the project, has been organized to own and operate the ferries under contracts with the railway companies. The new corporation is the United States and Ontario Steam Navigation Company, organized under the laws of New Jersey and having its principal office in Jersey City with branches at Conneaut, O., and Meadville, Pa. Incorporation under New Jersey laws and the maintenance of an office in that state are not matters of importance, as this proceeding is due only to features of law in the east that are

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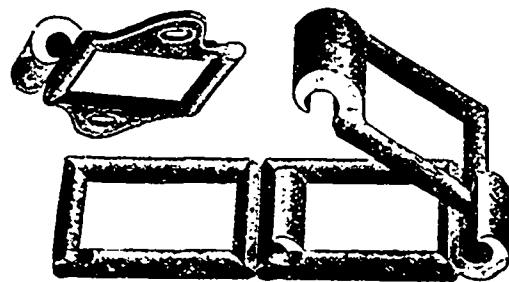
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: 34 Washington St., Chicago, Ill.

SAMUEL LITTLE, Pres. RUFUS B. CARR, Gen. Mgr.
ARTHUR M. LITTLE, Treas.

more favorable to corporations than the laws of Ohio and other western states.

The capital of the new company is \$350,000, and it is expected that this amount of money will be sufficient to build the two boats and provide for terminals at Conneaut and Port Dover.

Col. Dick and other promoters of this project, who had been trying to sell bonds for the construction of steel boats according to plans prepared by Mr. Frank E. Kirby of the Detroit Dry Dock Company, are understood to have given up this plan and concluded to put more money, on their own account, into less expensive wooden boats for the new company, after having made a trip across Lake Michigan in very heavy weather on one of the Ann Arbor ferries, constructed some time ago by the Craigs. The boats, upon which work is to begin immediately at Toledo, will, accordingly, be of the same design as the wooden ferries now on Lake Michigan, but will have four tracks and capacity for twenty-six instead of twenty-four loaded cars. They will draw about 12½ feet of water and are expected to make about 12 miles an hour in fair weather. As in the Lake Michigan boats, the power will be in two engines aft and one forward, all of the compound type. The engines aft will be 23 and 46 by 36 inches, and the forward engine 20 and 40 by 36 inches. Negotiations for the construction of this machinery are now pending with S. F. Hodge & Co. and the Frontier Iron Works of Detroit, Mich., and the contract will very probably go to one of these two concerns.

A prospectus just sent out by the new company gives all details of the tripartite contract between the Canadian and American railways and the navigation company. The arrangement seems quite advantageous to the project. Exclusive rights held by the Grand Trunk in the harbor of Port Dover are to be given up to the new company for twenty years, and the Canadian railway is to make an appropriate

tion of \$50,000 for sidings and approaches. Of course, the principal aim of the whole scheme is to make a direct connection between the coal fields of Pennsylvania and the consuming districts of Ontario through the Grand Trunk and over it to the Canada Southern, Canadian Pacific and other railways of the Dominion. It is estimated that this connection will provide new territory for at least 500,000 tons of bituminous coal, or about one-third of the present consumption in the Province of Ontario. Lumber, grain and other leading articles of freight are expected to provide a return traffic, but not, of course, as extensive as the probable tonnage of coal. By the distribution of rates agreed upon, the navigation company is to have a minimum of 25 cents a ton on coal and coke, with a higher schedule on other freight. On this basis, the following figures are made for the two boats:

Forty-three weeks, ten trips a week, twenty-six cars each boat	22,360 cars
22,360 cars, averaging 25 tons, 560,000 tons, at 25 cents	\$115,000
Excess of freight over coal rate on general business	25,000
Return business, passengers and merchandise	30,000
Total	\$170,000

As against gross receipts of \$170,000, as noted, expenses are figured at \$96,000, leaving a balance of \$74,000, and this, the prospectus claims, on a basis of only one and one-half trips a day for the boats, although it is thought they will be able to make two trips. It is claimed that by the ferry route Pittsburg will be eighty-two miles nearer Hamilton, Ont., than by any other railway route now in operation.—Cleveland, O., Marine Review.

Wm. J. Matheson & Co. Limited

423-425 ST. PAUL ST., MONTREAL

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OUR

Diamine Dyes . . .



- Have the Singular Merit of Dyeing Cotton, Wool and Silk in an Alkaline Bath, in one operation, without a mordant, hence their great importance for Mixed Fabrics. Some of the shades produced are faster than Alizarine.



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OVER 15,000 IN USE, Preventing Disease and Prolonging Life.

The most complete article ever offered for Protecting the Throat and Lungs from Dust. Poisonous Gases, and all other Impurities,

In places where persons are exposed and many times life endangered.

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Canada NIAGARA FALLS United States

Trade D Mark

The largest, oldest and most progressive Manufacturers of Suspenders and all kinds of Elastic Goods.

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- TWEEDS—Fine, Medium and Low Priced Tweeds, Serges, Cassimeres, Doerings, Etouffes, Kerseys, etc.
- FLANNELS—Plain and Fancy Flannels, Overcoat Linings, Plain and Fancy Dress Goods, etc.
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Paton Manufacturing Co'y

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Montreal Office: 409 Board of Trade Building.

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The Aged Boiler.

The life of a boiler, like that of a horse, has its limits. The number of its birthdays depends, of course, on its original stamina, and the use or abuse of its service. If sound in material and construction, and intelligently handled, its term of life is prolonged into a respectable old age, and to this on these conditions there is necessarily a limit. It is possible, however, that any arbitrary limit is beyond absolute calculation, and is likely to overlap dates that at the best can only be approximate. The biography of a boiler is one of strain and tension, and is subjected to sudden transitions from a high degree of heat to the temperature of cold air or water suddenly admitted. That iron should lose its qualities as a boiler plate in the course of years it is reasonable to assume, and that when age and service have reached a certain point the conditions of safety are weakened, is equally reasonable. The basis of calculation must, however, necessarily vary, as the qualities of the metal used may not be uniform, nor the intelligence of service always at the same standard. From tests made of plates taken from iron boilers, varying from fifteen to thirty years of service, it has been found that there has been not only a loss in tensile strength, but also a marked loss in ductility. A plate that originally stood a test 35,000 pounds tensile strength, after about twenty years of service, shows a deterioration of tensile strength to about 38,000 pounds. On this basis alone the conclusion is that the boiler, if weaker, is still good for considerable pressure, with the fact, however, left that the plate under certain conditions would act as a piece of cast iron would act, and also suddenly give way at a certain pressure. It is obvious that a boiler constructed of plate of this character would never tempt the money of a steam user. It might have a higher tensile strength than cast iron, but in the matter of brittleness the advantage would be scarcely apparent. As most, or many, boiler explosions are caused in whole or in part by a sudden shock, a boiler plate of a brittle nature is broken by a blow, which would be as ineffective as a drum tap on a plate of lower tensile strength. Here the quality of ductility asserts itself as indispensable to boiler safety, allowing it to sustain heavy shocks or strains without giving way. The presence or absence of this quality determines the value of old boilers so far as their safety goes, and for this reason it is the opinion of many engineers that boilers of the cylindrical-shell type are in their dotage at about twenty years of service. This date or period may or may not be measurably accurate, but it is obvious that at a certain age the danger line needs special attention.—Age of Steel.

The Ontario Peat Fuel Co.

The experiments with the Dickson peat fuel plant conducted during the past year by this company have proved eminently satisfactory. The methods heretofore adopted have either been simply cutting and drying the raw material, or by using extreme heat in the process of manufacture. Both plans have not succeeded, the first by reason of the light, loose and bulky nature of the article, and the second because the volatile oils of the peat, which give it real value, were dissipated by the heat, and the fuel was, it is claimed, thereby rendered almost useless. Moreover the process of manufacture was very slow and therefore expensive. The machine which Mr. Dickson has patented completes its work within a few minutes from the time the raw material is taken from the bog, produces the finished article at the rate of two tons per hour and without the application of heat. The peat is pressed to a density practically the same as anthracite coal. Its heating qualities have been amply demonstrated by comparative tests of peat and anthracite egg made by the Abell Engine Works, Toronto, running a 200 horse power engine and all the machinery in a large shop. The supreme advantage, however, of peat fuel is its adaptability for special purposes. It lasts longer than bituminous coal, makes a bright, warm fire, is perfectly clean, leaves but a small percentage of ash, and it makes neither dust, soot, smoke or cinders. It is absolutely free from sulphur and will cost in all probability much less than coal. The property acquired in the County of Welland contains about 5,000 acres, for which the company pays the sum of \$1,530 per annum for 15 years and thereafter a rental of 25 cents per acre. Peat moss covers the whole area to a depth of about 2 feet, and the company has already cut from an area of about 3 acres something like 2,000 tons. This moss litter is of a very superior quality for stable bedding, and we understand a contract has been made with an American firm to purchase not less than 1,000 tons for the first year and to increase the purchase thereafter by not less than 5,000 tons annually. The price agreed upon is reported to be not less than \$4.00 per ton delivered at the company's works for all shipments made eastward, and \$5.00 for shipments to Buffalo and westward. This company, it may be said, have expressed the belief that they will require 25,000 tons the first year, and a large quantity each successive year. It is worthy of remark that the Welland marsh was thoroughly drained by the Ontario Government at great expense some thirty years ago, so that the moss is perfectly dry. The company has equipped the works with an expensive plant and arrangements have been made for immediate railway connection with the works.—Mining Review.

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Specialties:

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Williams' Heddles, Shuttles, Reeds, Heddle-frames, Loom Repairs.

DODGE WOOD SPLIT PULLEYS

Best Oak Tanned Belting and Lace Leather.

Canada Chemical Mnfng. Co.

Manufacturers of

Sulphuric, Nitric and Muriatic Acids, Commercial and Chemically Pure. Mixed Acids for Explosives, Liquid Ammonia, Glauber Salts. Copperas, Muriate Tin, Tin Crystals, Acetic Acid, Nitrate Iron, Bisulphite Soda, Acid Phosphate for Baking Powders and General Chemicals. Fertilizers, Etc.

LONDON,

ONTARIO

Railway Discrimination.

Editor the CANADIAN MANUFACTURER :-

SIR,—The manufacturers of Canada have reason always to complain that the railways of this country unduly favor our competitors in the United States. And this unfair preference in freight rates is always made most grievous when, as is the case at present, American manufacturers are making the most frantic efforts to sell goods in Canada. We cannot object to manufacturers selling their products at cost or below for the purpose of keeping hands employed, but when the railways which we have bonused by large grants of money carry the same class of goods for a foreigner for a mere fraction of the charges made to a Canadian, there is surely good grounds for governmental interference.

It is well known that the malleable iron industry in Canada has been badly handicapped in that the railways deliver castings from Pittsburg to points in Ontario at \$1 00 per ton cheaper than from Oshawa to the same place, although the distance is three times as great. Machinery of the same weight and size can always be delivered as cheaply from Chicago to points in Ontario as between two stations in Ontario not one quarter the distance apart. And this is always true of all kinds of manufactures. While we have to pay heavy freight to the Grand Trunk R. R. on our raw material from abroad, that Railway invariably discriminates against us in favor of our competitors in the same lines of manufactured goods in the United States.

Truly the lines of manufacturers in Canada are not cast in pleasant places as far as this railway discrimination is concerned.

A.

December 20.

Diamine Fast Yellow B.

William J. Matheson & Co., New York, call attention to another very valuable addition to their list of diamine colors, namely: Diamine Fast Yellow B. The color dissolves readily and it is dyed as follows:—

Cotton may be dyed in copper or wooden vats, in alkaline or neutral baths, that is to say with soda and Glauber's salt or with the latter only, which property distinguishes it advantageously from competing products.

Diamine Fast Yellow B. is distinguished by its great fastness to light surpassing in that respect all other yellow dyestuffs including Alizarine Yellow. Severe washing does not influence the shade of dyeings done with Diamine Fast Yellow B. and white washed to-

gether with such dyeings is scarcely tinted.

Its fastness to hot ironing is good and the color will even resist the passage through a strong solution of chloride of lime.

The above properties in connection with the low price of this dye-stuff render it one of the most desirable colors not only for self colors but for mixtures. Diamine Fast Yellow B. does not change by diazotising and developing and is well adapted for mixtures with dyestuffs that are to be diazotised, for instance, in combination with Diamine Black or Diamine Brown.

COTTON & WOOL OR COTTON & SILK. It gives the same shade on the different fibres, with the advantage of covering the vegetable fibre than wool and silk.

WOOL & SILK. Its fastness to washing and water should make it welcome to the silk industry. Wool and silk are dyed with the addition of 10% Glauber's salt and 5% acetic acid.

PRINTING. Diamine Fast Yellow B. can be applied as a print color on all kinds of fabrics by simply printing and steaming. It should be of particular advantage for printing mixed goods composed of animal fibres. It is well adapted for padding on account of its ready solubility and produced the important cream and straw shades on cotton. Diamine Fast Yellow B. can be easily discharged as our Diamine Yellow N. and Diamine gold.

We shall be glad to send you a sample of the color and any further particulars that are of interest to you.

The Ireland National Food Company.

One of the largest and most complete cereal food mills in the Dominion of Canada, the products of which include nearly every line of cereal foods, is operated by the Ireland National Food Co. of Toronto. This company was incorporated in 1889 with a capital stock of \$100,000, the company taking over the business of F.C. Ireland & Son, which had been established some years.

The American Miller contains an illustrated article descriptive of this concern, a part of which is as follows:—

The mill has a daily capacity of about 300 barrels of various products. About one-half of the entire output of the mill is rolled oats and oatmeal, of which a high grade of goods is manufactured. The company's specialties are, however, a superior quality of cereal breakfast foods put up in packages and known throughout the Dominion as "Our National Foods." These are acknowledged to be among the finest cereal goods on the market. The company has so far confined its attention altogether to the home markets, but finding these rather limited for the package goods trade, is now seeking an outlet for these products in the English and Australian markets.

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Were awarded Gold Medals at the World's Columbian Exhibition, Chicago, for their

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and --

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Kensington Art Squares, Axminster Mats, Rugs, Squares, Body Border and Stairs.

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FALL 1894

Ginghams, Zephyrs, Cheviot Suitings, Flannelettes, Dress Goods, Skirlings, Oxfords, Shirtings, Cottonades, Awnings, Tickings, etc.

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Dyeing and Printing of Cotton, Woolen, Mixed Fibres, Etc., etc.

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SHADES MATCHED.

German Finishing Paste

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Cotton and Merino Softeners

Wool and Cloth Scouring, etc., etc.

Cordage and Carpet Size

Shade Cloth Colors and Size

Belt Dressing

The Industrial Economizer Apparatus patented, for reclaiming the valuable products from waste waters. Apparatus in operation at our works. Patented June 26th, 1894.

This means a saving to you of thousands of dollars every year.

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Distillers of

Benzole, Naptha

and Manufacturers of Carbolic Acid and Varnish.

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Fine and Medium TWEEDS.

NOTICE.

• •

January 7th, 1895.

Although we have been one of the sufferers at the recent fire, we beg to notify our customers that the loss of our Warehouse and Factory on Jordan Street will in no way affect our business or delay the filling of orders, as we have arranged for other premises on the same street, and will have a stock of all sizes of Leather Belting from our New Factory in Montreal, in the course of a few days.

We ask our friends to address as formerly, and orders will have our usual prompt care.

Robin, Sadler & Haworth,

Jordan Street, Toronto.

511 William St., Montreal.

The National Food Company's plant consists of a solid brick building, with a stone foundation. It is 90x75 feet in size, with 12 feet between floors, and two drying kilns 24x24 feet. The engine and boiler house is under the same roof, but separated by heavy fireproof walls. A railway siding laid in the premises affords excellent facilities for shipping and for receiving grain, fuel and other supplies.

Power for the mill is obtained from a 100-horse power compound tandem Wheelock Engine with a 14x5 boiler, feed pumps, heater, etc., furnished by Goldie & McCulloch, of Galt, Ont. The mill itself is equipped with the most improved machinery, most of which was supplied by Wm. and J. G. Greey of Toronto. The equipment is augmented from time to time by special machines that the company have had built in the mill under their own direction and that of their head miller, Mr. William Philip, a man of large experience in the milling business.

The company also operates a 60,000-bushel elevator situated in one of the best grain sections of Ontario, from which the mill gets a regular supply of selected grain of uniform quality.

Mr. W. A. Strouger, the manager, has been connected with the company ever since its incorporation.

Cheap Boiler Insurance.

The danger of employing unqualified boiler inspectors was recently well exemplified in a small English town by a boiler explosion which did considerable damage to property in the immediate neighborhood of the scene of action. The boiler in question, it would seem, had gone the way that many boilers unfortunately do go, after having served nearly the full period of their usefulness, from its last place of fairly safe operation to the paint shop of a second-hand dealer, from which it emerged spick and span, ready to be sold again to some one unacquainted with its history and eager for a bargain. Paint has a wonderfully rejuvenating power over boilers as well as some other things, and with the help of an unprincipled inspector's certificate, soon had this boiler again at work, with the result, before long, of a wrecked boiler house, damaged buildings adjoining, though, happily, no loss of life, and a bill for the owner for the costs of the usual investigation by the local authorities. The payment of the costs was exacted "as a warning to other steam-users who rely upon unqualified, incompetent inspection, because it is cheap, and afterwards plead ignorance as an excuse for their conduct."

The episode pointedly directs attention once more to the subject of cheap boiler inspection and insurance, which off and on has been condemned for many years, though evidently not with sufficient vigor

to have brought about its suppression. Cheap inspection and insurance rates, in fact, seem to possess an allurements to many boiler owners which is quite surprising, when even slight consideration will show that cheap service of any kind in connection with boilers is simply not worth having. It cannot be profitable, but certainly will prove dangerous. England, more than any other country, has suffered from a multiplicity of boiler inspection and insurance companies, and with growing competition among these, and failure on the part of steam users to properly appreciate the value of thorough and conscientious examination of their boilers, decrease in price and corresponding decrease in the reliability of the service rendered have become natural and unavoidable results. There is a price, as has often been argued, below which a guarantee of faithful inspection cannot possibly be extended without seriously affecting the financial stability of any insurance company. A close approximation to what this price is could probably be made in most cases without much difficulty, and any offer of insurance and inspection at a much lower rate should be regarded with suspicion. In the United States, if not elsewhere, the truth of this seems to have been thoroughly realized. Boiler inspection and insurance competition are there at a minimum. The work is practically all in the hands of one company, and for a long term of years has been carried on in a painstaking, thorough manner, which has demonstrated its merits beyond all question.—Cassier's Magazine.

CAPTAINS OF INDUSTRY.

This department of the Canadian Manufacturer is considered of special value to our readers because of the information contained therein. With a view to sustaining its interesting features, friends are invited to contribute any items of information coming to their knowledge regarding any Canadian manufacturing enterprises. Be concise and explicit. State facts clearly, giving correct name and address of person or firm alluded to, and nature of business.

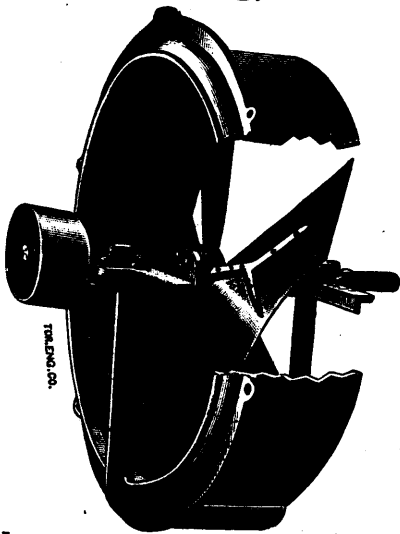
The capital stock of the Temple Electric Co., Montreal, has been increased from \$20,000 to \$190,000.

Mr. B. T. A. Bell, Secretary of the Mining Association of Ontario and Quebec, places the production of phosphates in Canada during 1894 at a little over 5,000 tons. Of this quantity, 2,600 tons were exported to Europe, and 1,800 to the United States, while about 700 tons were used in Canada.

McEachren's Improved Fan

PATENTED 1893

For Ventilating, Heating, Drying, Etc.



Specially adapted to
HEAVY WORK

Will handle more air at a **GIVEN PRESSURE** with a **GIVEN POWER** than any other fan in the market.

For particulars address

J. D. McEACHREN - - GALT, Ont.

Rockwood, March 16th, 1893.

Mr. J. D. McEachren, Galt.
Dear Sir,—In reference to the Drying and Ventilating Fans that you put in last fall they are working well, keeping the rooms dry and comfortable. The wool dries with cold water coil; is drying 500 to 600 lbs. of wool per day WITHOUT HYDRO EXTRACTOR, on 6 x 12 feet of netting. If the room was larger we are sure that the capacity would be much increased. The Fan in end of dye house keeps the steam well drawn off, and the alterations on cloth drier have enabled us to dry more than double the goods than we could formerly. We would make special note of the small amount of power required.

Yours truly, HARRIS & Co.



Buffalo Planing Mill Exhaust Fans

**EFFICIENCY
UNEQUALLED
DURABILITY
UNSURPASSED
SMOOTH
RUNNING
INCOMPARABLE**

THE LARGEST

FORCE

In the World

Thirty-Eight Other Designs of Portable and Stationary Types.

BUFFALO LUMBER DRY KILNS

Blowers, Blacksmiths' Tools, etc.

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BRANTFORD, ONT., BY CANADIAN MACHINERY & SUPPLY CO.
MONTREAL, QUE., BY SA NADA M CHINERY AGENCY.
CHICAGO STORE, 22 and 24 WEST RANDOLPH STREET.

Irenee Trotter's Wool carding mill at Grondines, Que., was destroyed by fire Dec. 27.

Mr. D. F. Brown, Moe's River, Ont., is building a dry house in connection with his sawmill.

Eaton Bros., of Owen Sound, Ont., will convert the firm into a joint stock company, capital \$200,000.

The Maud Hydraulic Mining Co., of British Columbia, are applying for incorporation for mining purposes.

The Royal Electrical Co., Montreal, proposes to erect new workshops, and to make other improvements.

The Lake of the Woods Milling Company will build three elevators in Manitoba and the Territories next spring.

The Lower Fraser River Navigation Co., of British Columbia, are applying for incorporation with a capital stock of \$15,000 to operate steamboats, etc.

The Montreal & British Columbia Prospecting & Promoting Co., are applying for incorporation with a capital stock of \$20,000 for mining purposes, etc.

The International Ice and Storage Co., are applying for incorporation in British Columbia, with a capital stock of \$50,000 for the purpose of purchasing and erecting ice factories, etc.

Messrs. D. M. Ratcliffe & Co., Alberta, are establishing a pork packing factory, creamery and cold storage warehouse at Calgary, and expect to be ready to begin operations in the spring.

Five carloads of machinery have arrived in Berlin, Ont., from the Windsor, Ont., Brush & Broom Factory. The business will be carried on in Berlin by Messrs. Bingham & Co., under the name of the Berlin Brush Co.

Messrs. Darling Bros., Montreal, Canadian agents for The Sterling Co., of Chicago, have just completed the erection of two Sterling boilers of 250 h. p. each in the power house of the Royal Electric Co., Montreal.

John Pugsley has purchased the plant of the Napanee Pulp and Paper Company, at Napanee and Fenelon Falls, Ont., and after extending and improving them, will recommence operations. A new bleaching house is being erected at the Falls.

Messrs. Darling Bros., Montreal, inform us that they have just secured an order from Messrs. A. S. & W. H. Masterman, of that city, for a 120 h. p. Webster Vacuum Feed Water Heater; and an order from Messrs. William Barber & Bro., Georgetown, Ont., for a 3-inch Webster oil extractor for use in their paper mill at that place.

Letters patent have been issued incorporating the Tavistock Milling Company, with \$20,000 capital.

James Calvert's large roller flour mill at Thedford, Ont., was destroyed by fire Dec. 27, loss about \$7,000.

The Standard Boot Co. is being organized at Levis, Que., with a capital stock of \$25,000, to manufacture boots and shoes.

The Canada and Michigan Tunnel Co. are applying for Dominion incorporation for authority to construct a railway bridge across, or a tunnel under the Detroit River.

The new paper mill which the E. B. Eddy Company, of Hull, Ont., have recently fitted up, will be put in operation about January 1. The machinery is nearly all in position.

The Hamilton Auer Light Co., Hamilton, Ont., are applying for incorporation with a capital stock of \$50,000 to manufacture appliances for illuminating purposes, etc.

The T. F. G. Foisy Piano Mfg. Co., is being organized at Montreal with a capital stock of \$300,000 to take over the piano manufacturing business of Mr. T. F. G. Foisy of that city.

The American Fish Co., are applying for incorporation with a capital stock of \$100,000 for the purpose of carrying on a general fishery business, etc. The principal place of business to be at Vancouver, B. C.

Mr. W. W. Ogilvie, the flour king of Canada, states that during the coming season his company will enlarge the capacity of their flour mill at Winnipeg, Man., and also erect six new grain elevators in different parts of Manitoba and the North-West.

The Whitney Electrical Instruments Co.'s works at Sherbrooke, Que., were damaged by fire to the extent of about \$10,000, on Dec. 29. Canadian orders are promptly attended to at their American works at Penacook, N. H., until their Sherbrooke works are rebuilt.

The Buffalo and Fort Erie Bridge Co. are applying for Dominion incorporation to construct a railway bridge across the Niagara river opposite the north end of Grand Island, connecting the Canadian and American shores. The head office of the company will be at Niagara Falls, Ont.

The Richelieu & Ontario Navigation Co. will build a fine steel steamer during the winter for their passenger route between Toronto and Montreal. The vessel will be about 160 feet long, will accommodate about 250 passengers, and will cost about \$200,000. She will be equipped with every convenience necessary to safety and comfort. The steel plates for her construction are being manufactured at Pittsburgh, Penn.

FETHERSTONHAUGH & CO.

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Equal to the Best English and German Brands

..... MANUFACTURED BY.....

THE OWEN SOUND PORTLAND CEMENT CO., LTD

OWEN SOUND, ONTARIO

use is authorized by the Toronto City Engineer and Engineers of other Public Works.

QUALITY GUARANTEED

.....Write for Prices, Tests and Samples.

JOHN LUCAS, 377 Spadina Ave. Representative for Toronto.

Fire Bricks :-

Cement

:- Drainpipes

AT LOWEST PRICES

F. Hyde & Co., 31 Wellington St

..... MONTREAL.....

Messrs. Connolly Bros., Kingston, Ont., will erect a large dredge at a cost of \$50,000.

The Dominion Rubber Reclaiming Co., has been incorporated with a capital stock of \$100,000 to manufacture rubber stock, reclaimed rubber, etc.

The Toronto Hoop and Veneer Co., of Toronto, Ont., are applying for incorporation with a capital stock of \$50,000 to manufacture hoops, staves, veneers, etc. The operations of the company are to be carried on at Eugenia, Ont.

The Muskoka Improvement Co., are applying for incorporation with a capital stock of \$25,000 for the purpose of building, constructing and operating electric tramways, etc. The general place of business is to be at Huntsville, Ont.

The Garden City Carpet Mfg. Co., St. Catharines, Ont., are applying for incorporation with a capital stock of \$10,000 to manufacture carpets, fringes, etc. Henry Milligan, Wm. Richardson and Stephen Syer, are to be the first directors of the company.

The Standard Oil and Gas Co., of Essex, Ont., are applying for incorporation with a capital stock of \$400,000 for the purpose of drilling and operating for petroleum, oil and gas, etc. The operations of the company are to be carried on in the counties of Essex and Kent. Windsor, Ont., is to be the chief place of business.

The F. D. Cummer & Son Co., Cleveland, O., manufacturers of dryers, ore roasters, dry kilns, hot air apparatus, etc., have sent us a copy of a letter received from The Rathburn Co., Deseronto, under date of December 19 last, in which they say:—"We have pleasure in stating that your hot air 'Direct Heat' apparatus we recently placed in our cement works have given us every satisfaction. We consider it far superior to the steam drying plant it replaced, and which we put in but a few years ago as the best system available. There is a substantial saving in the quantity of fuel used as well as a large increase therefrom in the output of the tunnels. We are also glad to report continued satisfaction from the use of your revolving dryer, in the operation of which we have been put to neither trouble nor expense for renewals." The Rathburn Cement Works include fifteen tunnels for drying purposes, and the heating apparatus was of a very expensive character, but when the attention of the company was directed to the merit of the Cummer system it was immediately adopted, the previous apparatus being rejected, and the testimony of the company, as above given, is of the most satisfactory description. In the use of the Cummer system there is a great saving of fuel, and all the heat obtained therefrom is utilized, none of it being wasted.

The Provincial Gas Co. has located a well on Mr. John Whiteman's farm at Humberstone, Ont.

The Henderson Cycle & Mfg. Co., of Brantford, Ont., is being incorporated with a capital stock of \$24,000 to manufacture bicycles, sulkies, and other vehicles, hair clippers, clipper grinders, office appliances, etc.

The Hubbell Primary Battery Co., of Ottawa, Ont., is being incorporated with a capital stock of \$45,000 to manufacture the Hubbell Primary Battery, also electric batteries, motors, generators, and other electric appliances.

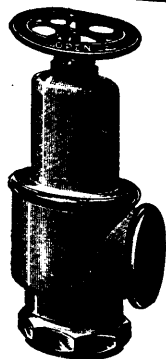
Mr. George Darling, of Messrs. Darling Bros., and Mr. Thomas Chisholm, of the Montreal Cold Storage and Freezing Co., have just returned home from Chicago, where they placed an order with The Fred W. Wolff Co., of that city, for two 100 tons Linder ice machines, fitted with two 150 h. p. poppet valve steam engines, to be placed in the works of the Cold Storage Co., in Montreal, whose plant when completed will be, it is said, the most modern and effective of its kind in Canada, and will be quite equal to the largest plants in the United States.

Mr. R. E. Slack, who went to Parson's Pond, Newfoundland, last July, to drill for oil for the Newfoundland Oil Co., has returned home having ceased operations for the winter. The report of so thoroughly experienced a driller, who has bored the soil and rock pretty nearly the world over for several years past will be both reliable and interesting. As to the Newfoundland field, Mr. Slack tells us that there is every possible indication of rivers of oil, and he has no hesitation in predicting that it will turn out to be the best in America. The oil is of an excellent quality, and oozes out of the ground in every direction when a little hole is dug. When spring opens up Mr. Slack will return to work. He says that in all his experience he never saw such a good show for oil in large quantities. He also informs us that the company will build a refinery just as soon as good results from the drilling for crude warrants the outlay.—Petrolia Advertiser.

CANADIAN PATENTS.

The following patents have been issued from the Canadian Patent Office, from October 11 to October 30, 1894, inclusive.

Information regarding any of these patents may be had on application as follows:—



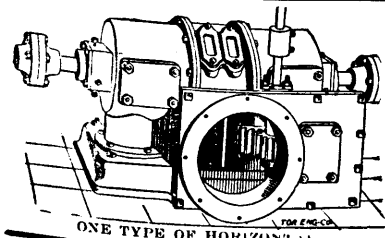
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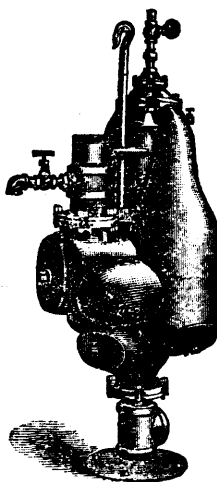


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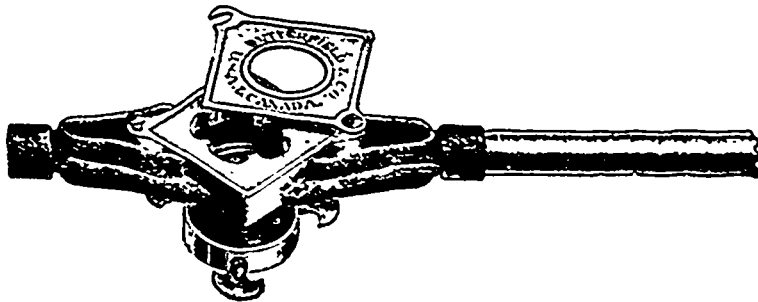
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 A. Harvey, Central Chambers, Ottawa.
 J. A. Grenier, Imperial Building, Montreal.
- Copies of American patents corresponding to Canadian patents can be procured from either of these attorneys for the sum of twenty-five cents each.
- 47,232 Roll paper holder and cutter, C. H. Wright, Cambridge, Mass.
 - 47,233 Match splint coiling machine, George Rehfusio, et al, Philadelphia, Pa.
 - 47,234 Filler forming mechanism for cigarette machines, K. H. Carper, Salem, Va.
 - 47,235 Registering attachment for printing machines, etc., W. H. R. Toye, Philadelphia, Pa.
 - 47,236 Automatic band cutter and feeder C. H. Edwards, Alta, Ia.
 - 47,237 Indexed disc, A. J. Wills, Milwaukee, Wis.
 - 47,238 Cart, John Jones and Alexander Gillies, Toronto, Ont.
 - 47,239 Fish and seal spear, H. F. Norton, Seattle, Wash.
 - 47,240 Landing net, Allan Holmes, Dunedin, New Zealand.
 - 47,241 Perforator, J. T. Scott, Coeur d'Alene, Ida.
 - 47,242 Vise, J. R. Denison, Grand Rapids, Mich.
 - 47,243 Separator for oil and water, Eugene Austin, Detroit, Mich.
 - 47,244 System of electrical distribution, J. F. McElroy, Albany, N.Y.
 - 47,245 Mop wringer, C. A. White and O. N. Wardwell, Jamaica, Vt.
 - 47,246 Type-writer, The Pneumatic Patents Co., Dock House, London, Eng.
 - 47,247 Wood grinder, Frederick Hiorth, Christiania, Norway.
 - 47,248 Process of purifying water, Thomas Craney, Bay City, Mich.
 - 47,249 Tobacco pipe and mouthpiece, Charles Peterson, Dublin, Ireland.
 - 47,250 Device for protecting trees against creeping insects, Casper Feener, West Northfield, N.S.
 - 47,251 Tree protector, J. M. Crews, Arlington, Tenn.
 - 47,252 Cross-cut saw, J. B. Kelly, Portland, Ore.
 - 47,253 Plough, G. W. Stow, Binghamton, N.Y.
 - 47,254 Feed water heater and purifier, Edward G. T. Colles, Chicago, Ill.

- 47,255 Hamestaple, John A. O. Livoni, Marion, Kan.
- 47,256 Power transmitting apparatus, G. J. Altham, Swansea, Mass.
- 47,257 Feed water purifier, H. E. Moffatt, Galt, Ont.
- 47,258 Oil extract or for exhaust steam, H. E. Moffatt, Galt, Ont.
- 47,259 Bicycle, Henry Cutler and William Smallwood, Toronto, Ont.
- 47,260 Car coupler, William Dunlap, San Deigo, Cal.
- 47,261 Car brake, Alonzo Hendee, Columbus, O.
- 47,262 Sap boiling pan, Marcelle St Amour, Ste. Scholastique, Que.
- 47,263 Car coupler, Francois Molleur, Dillonton, Que.
- 47,264 Brake, F. K. Bell and H. W. Howell, St. George, Ont.
- 47,265 Garment holder, P. A. Sweeny, Providence R.I.
- 47,266 Steam engine, H. W. Nipper, London, Ont.
- 47,267 Dehorning instrument, A. C. Brosius, Cochranville, Pa.
- 47,268 Organ and desk combined, M. E. Puntenney, Butler, Ill.
- 47,269 Hub for vehicle wheels, Z. T. Wilson, Inverness, Fla.
- 47,270 Wheeled vehicle, Philip Heseltine, Rochester, N.Y.
- 47,271 Excavator, W. M. Gross, Spokane, Wash.
- 47,272 Machines for lifting stones, etc., Azarie Lemire, Wolton, Que.
- 47,273 Stove pipe damper, Michael Murty, Peterborough, Ont.
- 47,274 Injector, The Automatic Injector Co., Cincinnati, O.
- 47,275 Machine for lasting boots and shoes, B. A. Morwood and J. S. Holt, Boston, Mass.
- 47,276 Oil regulator for lamps, H. S. Pullman, Meriden, Conn.
- 47,277 Spray nozzle, H. F. Neumeyer, Macungie, Pa.
- 47,278 Plumb rule, Frank Holt, South Pittsburg, Tenn.
- 47,279 Direct acting steam engine, J. D. Gray, et al, Baltimore, Md.
- 47,280 Diving apparatus, G. W. Smith, Milwaukee, Wis.
- 47,281 Treatment of h. v., etc., and apparatus therefor, D. A. I. S. Victoria Mills, Wharf Road, Stratford, Essex, Eng.
- 47,282 Window frame, Theodore Witte, Chulivack, B.C.
- 47,283 Tubular lantern, E. T. Wright, Hamilton, Ont.
- 47,284 Steam generator, C. D. Mosher, New York, N.Y.
- 47,285 Steam generator, C. D. Mosher, New York, N.Y.
- 47,286 Machine for grinding cocks automatically, C. M. Jarvis, Erie, Pa., and Mrs. R. S. Byron, Stewart, O.
- 47,287 Twine lifter, John Watson, Nesbitt, Man.

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- 47,288 Storage reservoir, The Automatic Water Tank Co., Camden, N. J.
- 47,289 Water elevator, The Automatic Water Tank Co., Camden, N. J.
- 47,290 Caster, Wm. S. Gunn, Grand Rapids, Mich.
- 47,291 Valve for pneumatic tires, F. W. Morgan and Rufus Wright, Chicago, Ill.
- 47,292 Cable grip, Gilbert Gagnon, Nanaimo, B. C.
- 47,293 Fraction ditcher, J. B. Hill, Bowling Green, O.
- 47,294 Car coupler, J. C. Hurley, Fairhaven, Wash.
- 47,295 Steam boiler, C. W. Baker, Montclair, N. J.
- 47,296 Pneumatic tire, Henry Wood and Isaac Wood, Kingston, Ont.
- 47,297 Ruckle, P. B. Southworth, San Francisco, Cal.
- 47,298 Kettle, B. C. Sabin, Minneapopolis, Minn.
- 47,299 Fireproof ceiling, W. A. Burr, Berkhamsted, Eng.
- 47,300 Manufacture of asbestos cement, Messrs. Kuhlewein & Co., Cities of Hamburg and Berlin, Germany.
- 47,301 Refrigerator, Ralph Hirsch, et al, Syracuse, N. Y.

- 47,302 Printing block, F. I. Getty, et al, Springfield, Ill.
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- 47,304 Printing block, F. I. Getty, et al, Springfield, Ill.
- 47,305 Quilting machine, A. J. Mitchell and Jos. Hidy, Washington Court House, Ohio.
- 47,306 Cash register, R. P. King, et al, Ottawa, Ont.
- 47,307 Car coupler, C. W. H. Relyea and H. C. Langdon, North Adams, Mich.
- 47,308 Gate operating device, J. M. Rose, Vancamp, Ont.
- 47,309 Draw bar guide, H. W. F. Jaeger, Sandusky, O.
- 47,310 Air induction apparatus for furnaces, Jonathan Mills, New York, N. Y.
- 47,311 Storm window, H. W. Tinker, Nashua, N. H.
- 47,312 Carriage, Wm. M. Ward, Cornua, and Adolph Roedel, Linden, Mich.
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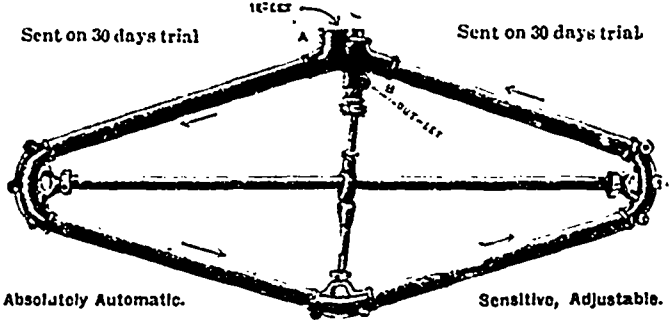
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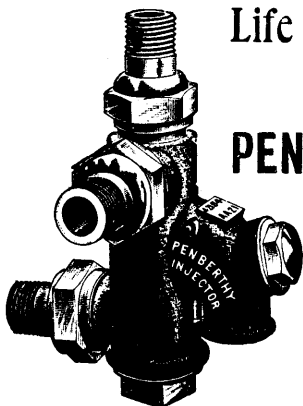
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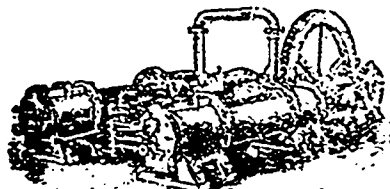
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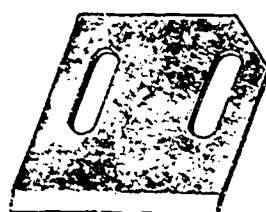
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1 3/8	1 3/8	5.01	"	3	2 11/8	22.59	"
1 1/2	1 1/2	5.94	"	3 1/4	3 1/8	26.60	"
1 3/4	1 11/16	7.46	"	3 1/2	3 1/8	30.94	"
2	1 11/8	9.83	4 cts.	4	4	42.33	5 cts.
2 1/4	2 1/8	12.53	"	4 1/2	4 1/2	53.57	"
2 1/2	2 1/8	15.55	"	5	5	66.13	"

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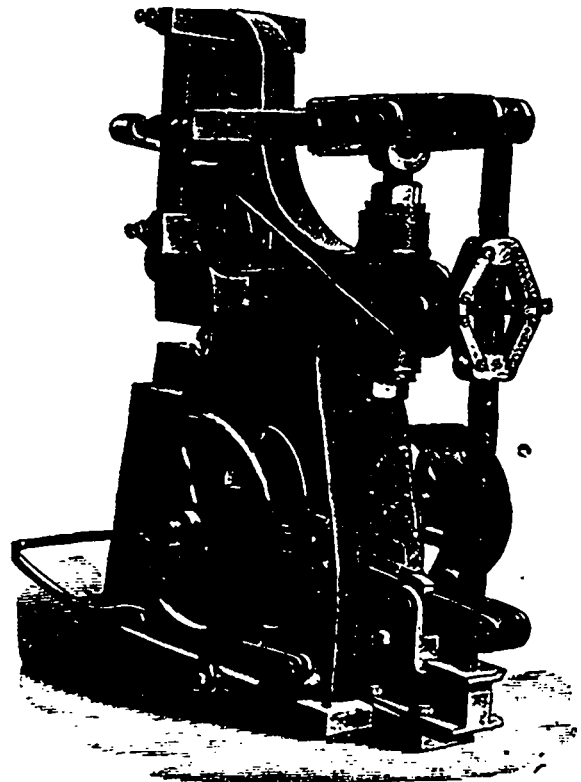
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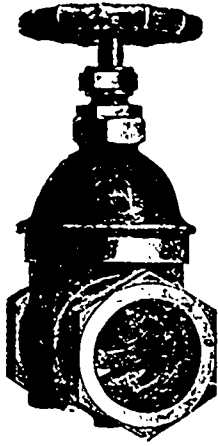
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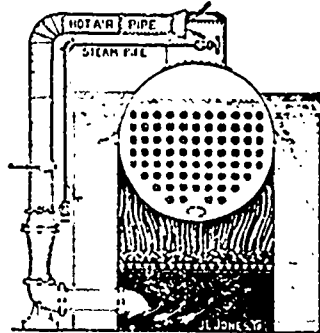
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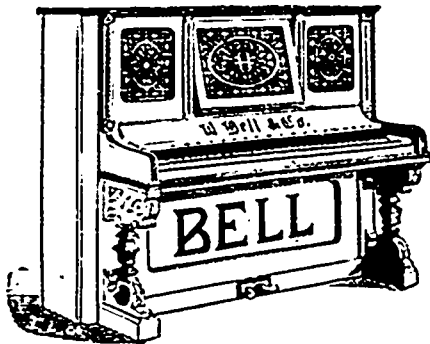
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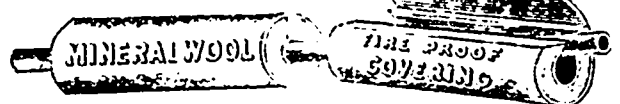
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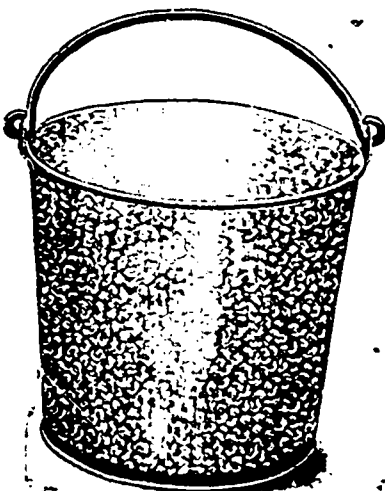
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