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AND INDUSTRIAL WORLD

DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

Vol. 49. TORONTO, MARCH 2, 1900. No. 5.


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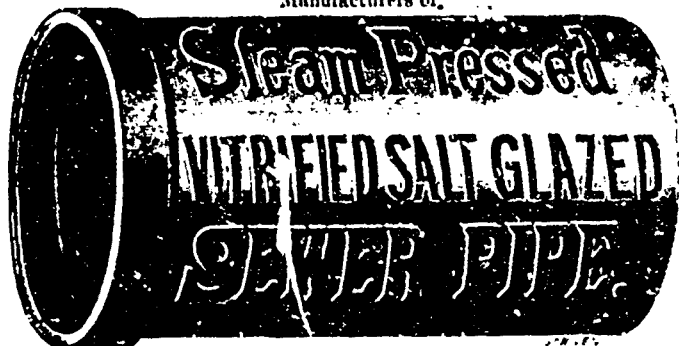
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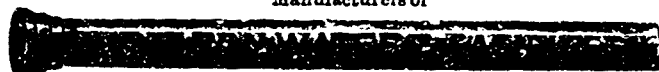
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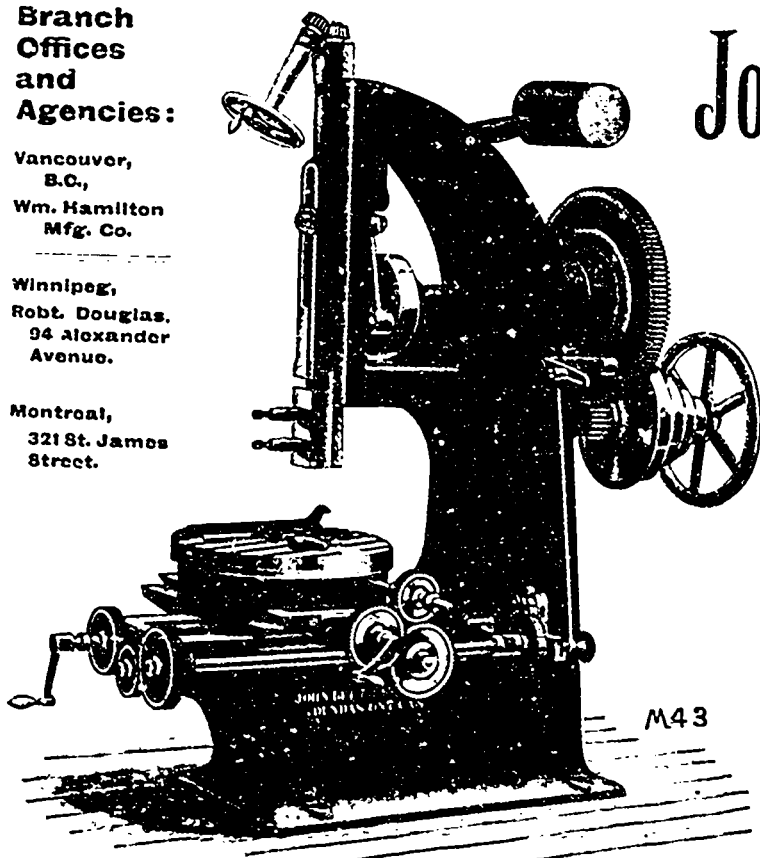
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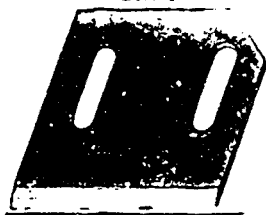
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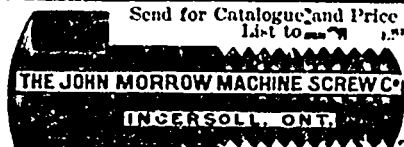
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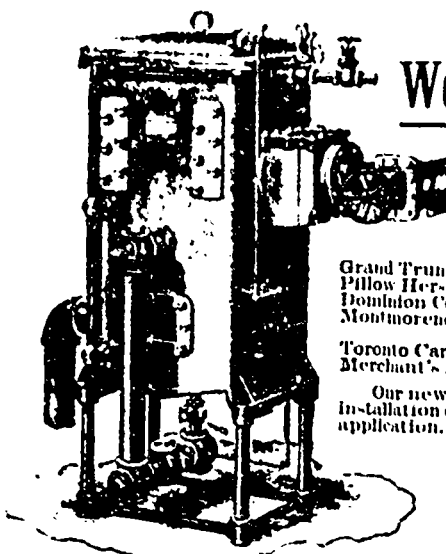
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Montmorency Cotton Mills,		
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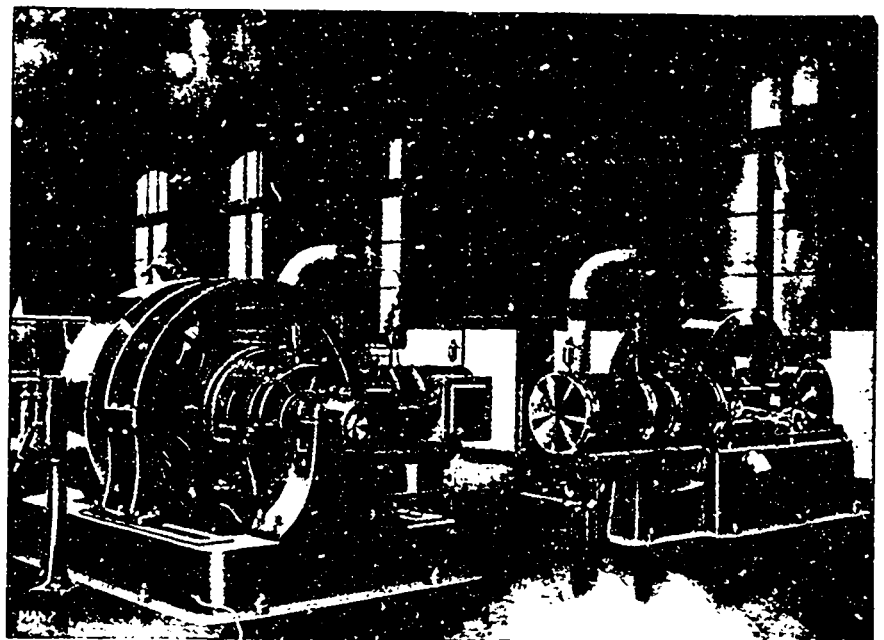
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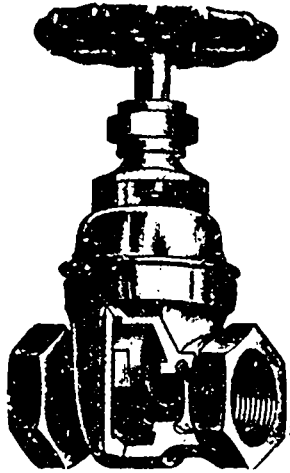


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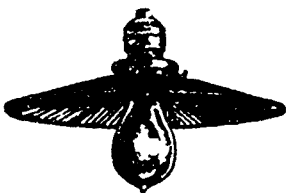
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PUBLISHED ON THE FIRST AND THIRD FRIDAYS OF EACH MONTH

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McKinnon Building, Cor. Melinda and Jordan Sts., Toronto.

J. J. CASSIDY, - - - Editor and Manager.

## OUR INFORMATION BUREAU.

Perhaps the greatest obstacle standing between our manufacturers and merchants and the successful exploiting of foreign trade is the lack of knowledge of the requirements of foreign countries, and the names of importers there who would be likely purchasers of our products. We know that enterprising men in all other commercial countries do profitable international trading, and there is no substantial reason why Canada should not, in proportionate extent, take part in such trade. Our manufacturers are ready to produce the desired articles, and importers and merchants in other countries are ready to purchase them, but the intervening obstacle is in bringing the seller and the buyer into correspondence. This may be accomplished at small expense and in a satisfactory manner through our Information Bureau, and this great difficulty thereby overcome.

The management of THE CANADIAN MANUFACTURER has for many years given much attention to this matter. It has been observed that other countries make special efforts to effect connections between buyers and sellers; to discover who possible buyers are, and what sort of goods they desire to purchase. We have also made such efforts, and with success, and are now in a position to impart such information to our friends. Any manufacturer in the country who entertains any desire to engage in foreign trade can test the matter at very small cost, for we are prepared to put him in communication with possible purchasers in all parts of the world, and to instruct him how to obtain his money for goods sold within ten days after they leave his factory. One trial transaction—one bill of goods advantageously sold, would pay for the cost of information many times over. It should be of much value to any manufacturer to know the names of possible buyers of his products in different countries. We can tell him.

In page 13 will be found a Bulletin in which is mentioned certain countries where certain lines of goods are in demand, and in each succeeding issue of THE CANADIAN MANUFACTURER similar Bulletins will be published. None of these will be repeated, therefore all of them should be carefully preserved for reference. The information connected with these pointers is at the service of our advertising patrons who may desire it, and without charge.

## THE OPPOSITION AND THE NICKEL QUESTION.

It is most remarkable that Mr. Whitney, the leader of the Opposition in the Ontario Legislature, either through ignorance or for political motives, should take such a distorted view of the nickel question as he did in his speech a few days ago. Remembering that the Premier has announced, as the policy of his Government, that hereafter all nickel ores recovered from Crown Lands shall be smelted and refined in Ontario; really, in our opinion, one of the most important acts that could have been performed, looking to the good of the province. Mr. Whitney tells us that the Government have allowed the nickel lands to be gobbled up by foreigners—that they had been sold outright, with no conditions attached that the ore be refined in this country, and that now, under the new regulations, the burden would be unduly heavy on the prospector. The Canadian Copper Company, with its millions, will go free—that the great financial octopus will go free. The gentleman also referred to a resolution passed at a recent meeting held at Sudbury, in which a resolution was passed in favor of the abolition of royalties on nickel ore, and to another in favor of rescinding the Order-in-Council looking to the refining of the ore in Ontario. Everything, he said, which had occurred at the Sudbury meeting went to show that the Government's treatment of the nickel industry is entirely wrong.

We take it that with or without reason, Mr. Whitney's political maxim is "go agin' the Gov'ment" always. In this instance, however, we fail to find any reason whatever for doing so. We are sure we echo the opinion of all Canadian manufacturers when we declare that it is, and has always been, their desire that by whatever process of law necessary the refining of nickel should be done in Canada, for there is not one industrial establishment in the country that would not be benefitted thereby. We cannot see why Mr. Whitney should desire a mistake perpetuated merely because it had been made. The great value of our nickel deposits was not known nor appreciated when they were first discovered, and if Canadian capitalists suffered the rich ore-bearing lands to pass into the possession of American investors, it was through their own neglect and shortsightedness. But now the value of the deposit is known, it should not be said that because Hon. Mr. Ross has no power to prevent the products of the Canadian Copper Company being taken out of the country to be refined, he should allow the ores now remaining in Crown Lands to have free egress in crude form. Surely Mr. Whitney has not read any of the instructive letters, backed by substantial and indisputable facts, that are being so frequently published by Mr. S. J. Ritchie, than whom there is no better authority.

Readers will remember that for more than ten years this journal has discussed this question, always arguing, not the Ontario, but the Dominion Government, to place an export duty on the nickel contained in the ore, or matte, that was being taken out of the country to be refined; and in our opinion that should be done now. Mr. Ross has no authority to prohibit the export of ores not recovered in Crown Lands, nor does he seek to do so, but Sir Wilfrid Laurier has that right, for it has already been given to him by the Dominion Parliament, and if he were to exercise it the Canadian Copper Company octopus would find its tentacles relaxed, and Canada would soon have the largest and most effective nickel

refining works in the world, besides other cognate industries proceeding therefrom. This journal has on many occasions urged upon Mr. Whitney's political friends when they were in power at Ottawa, to impose an export duty, but neither Sir John Macdonald nor any of his successors in the premiership could ever be induced to do it, and now the whole country has Mr. Ross to thank for having taken probably the only step possible in that direction.

Mr. Whitney is on the wrong track.

Closely following Mr. Whitney's address Premier Ross made answer explaining the policy of his Government on the nickel question, which, as reported in *The Globe*, is as follows:—

My hon. friend cannot speak for the whole world yet, although he does presume sometimes to speak for a good many people. We have not yet disclosed our policy in full, but the first and fundamental principle of it is that we shall see by such legislation as is necessary, if legislation is required, or by Orders-in-Council, that the raw material is manufactured into the refined article in this province. Mr. Whitney had asserted that all, or nearly all, of the most valuable nickel lands of the province had been sold in fee simple. That was not true. The Canadian Copper Company had very valuable mines, but there was a very wide and very valuable nickel belt still in the possession of the Crown. The Opposition leader seemed to fear that the owner of lands sold in fee simple would have the advantage of the man who paid royalty. The matter, however, was one that could easily be adjusted. In Quebec an Order-in-Council had been passed imposing a duty of \$1.90 on pulp wood, but providing for a rebate of \$1.50 in the case of wood manufactured in the province. It was easy for Ontario to say that there should be a duty of three, four, five, or so many dollars per ton—he was now speaking without any definite idea of what the amount might be—and grant a rebate of a certain amount per ton on nickel refined in this province. "That is easily adjusted," said Mr. Ross, "and I may tell hon. gentlemen, and I am willing that my words should be known to all engaged in the mining industry, that some such policy as I have outlined will be adopted, in order that every holder of nickel lands can be put upon precisely the same basis. We want to do wrong or injustice to no one, but to accord equal privileges to all holders of nickel lands. By that policy we expect to secure the development of Canadian nickel. It is a lamentable thing to think that we are allowing the raw material of this country to be exported to be refined abroad, thus giving employment to the artisans and workingmen in foreign lands, while our own artisans and workingmen are without such employment. Our policy is Ontario's products for Ontario's sons."

#### AFTER THE WAR.

In his recently published sketch "The Boer War: Its Causes and its Interest to Canadians," Mr. E. B. Biggar, the writer, says:

What will be the outcome of the war? In all probability the union of the present colonies and states in a confederation, in principle like that of Canada, but differing in details, to accord with the varying conditions. When the British and Dutch have got together, after the present conflict, they will see, by a study of their past history, that the policy of mutual hate, distrust and intolerance is a policy that must mark their land with ruin; but the policy of good-will among the white races will make South Africa what its climate and latent resources fit it to become—one of the most delightful in the world. This much is certain, that in the settlement to be made the British Government will not revisit upon the Boers the injustice under which the Uitlander population has groaned for the past eighteen years, but will see that there

shall be absolute equality of rights among the white races and fair, just treatment of black and white from the Cape to the confines of British Central Africa.

Mr. Biggar mentions several miscellaneous facts relating to South Africa that Canadians, especially those who look to engaging in an export business with that country, should remember; thus, including Cape Colony and Bechuanaland, Basutoland, Orange Free State, Natal and Zululand, Transvaal and Rhodesia, the so-called British population is 388,500 and the Dutch 431,500, the total white population being 820,000, while the colored people number 3,500,000. Regarding the aggregate trade, both import and export, during the past five years, we are told that it amounted to about £220,000,000, of which the imports of oversea goods, all brought in through the ports of Cape Colony, Natal and Delagoa Bay, represented a sum equal to £108,855,000, of which Great Britain's share of British goods amounted to £62,800,000, and of British possessions £5,800,000, the balance of about £31,000,000 being the contribution of all other countries.

The close of the existing war is now seemingly in sight, and when it is indeed over there will be a most remarkable rush of all nations through the "open door"—open to all alike—to supply the wastes created by the war, and to meet the requirements of the people. What shall the harvest be to Canada? Our manufacturers are reaching out in all directions for new markets, and we well know that our greatest competitor in many lines will be the United States. We know, too, that that country has been for several years maintaining consuls general, consuls, vice-consuls and commercial agents in all the principal ports and commercial centres—they are there now—watching the course of events, keeping their government advised of all that is going on, and posting American manufacturers regarding all possibilities of trade; and we may be sure that when the door swings open our competitors will not lag in the race for the first place.

What is Canada doing? What preparation is being made? Where are our commercial agents? What information is our Government giving our manufacturers, such as Consul-General Stowe at Cape Town is supplying to his Government and people? If Canada is to receive her share of the South African trade our Government must have live business men there to look after it. There are such men in Canada now whose services are available.

#### THE EXPANSION OF THE NICKEL INDUSTRY.

As was naturally to be expected the advanced mining policy of the Ontario Government, prohibiting the exportation of nickel ore and matte taken from lands patented after the issuing of the Order-in-Council, has provoked a good deal of hostile criticism. Apart from the utterances of avowed political antagonists, who of course are prepared to condemn anything and everything a government does, it is noticeable that the practical objections are raised entirely by those whose personal interests happen to conflict with those of the general community. The head and front of the business, as distinguished from the partizan opposition to the nickel policy of Hon. G. W. Ross, is the Canadian Copper Company.

Although their lands, having been patented many years ago, are exempt from the operations of the embargo, and that they

are thus in a more favored position than their future rivals, being able to continue the exportation of matte to be refined abroad, while others must build refineries here, they are pronounced in their antagonism to the policy. They are shrewd enough to see that their immunity is not likely to last very long, and that just in proportion as the new mining policy is successful in encouraging the development of other properties will the demand become urgent for a nickel export duty, in order to put all on the same footing.

Obviously as matters stand they have no reason to complain, but rather the contrary. That in spite of the existing discrimination in their favor, owing to the limitations of the power of the provincial administration, they oppose the compulsory refining order, is the clearest evidence that they believe that it will be effective in developing the refining industry here, in opposition to their interests in the United States. The real animus of the Canadian Copper Company, in short, is not a desire to promote Canadian mining activities, but a fear that the American refining industry will suffer—that the Order-in-Council will result in the establishment of refineries in Ontario, better equipped and employing more modern processes than the Orford Copper Company, of New Jersey, to which the Canadian Copper Company is merely a feeder. It is American influences, not Canadian, that are arrayed most strongly in favor of the abandoned policy of free export.

Meanwhile the predictions of the opponents of the embargo, that its maintenance would defer the investment of capital in mining enterprises and fail of their intended purpose, has been falsified, and the position of THE CANADIAN MANUFACTURER abundantly confirmed by the actual developments which are taking place. The most important of these is the establishment at Sault Ste. Marie, by Mr. F. H. Clerque, of large and costly refining and ferro-nickel plants, which, in addition to producing refined nickel, will introduce into Canada an entirely new and most important industry—the manufacture of nickel-steel rails. By a novel process the wasteful and destructive methods in vogue at Sudbury for the extraction of the sulphur from nickel ore by burning it out, entailing not merely the loss of the sulphur but the poisoning of the atmosphere within a large area by its noxious fumes, will be avoided—and the sulphur will become an additional source of profit. But the most momentous feature of the new industry is the remarkable cheapening of nickel-steel, hitherto made by effecting a combination by adding the requisite proportion of nickel to the molten steel. Instead of resorting to this more elaborate process it is claimed that a more uniform and consistent alloy is obtainable by a method of treating ferro-nickel ore under which the surplus nickel and other metals can be extracted at a much less cost, leaving the right proportions of the two metals in combination. By this means nickel-steel, suitable for the manufacture of armor-plate, can be made, it is claimed, for about \$30 per ton, whereas the United States now pay contractors at the rate of \$600 or \$700 per ton for the finished plates.

This process, which is regarded as practicable by no less an authority than Krupp, the great German manufacturer, will simply revolutionize the steel-rail industry, as nickel-steel rails will take the place of those made by the Bessemer process. They can be produced at a cost but slightly greater,

while their value in point of durability will be as much greater than that of the steel rail, as the latter exceeds the iron rail. There is every reason to anticipate that owing to her nickel resources and the progressive policy inaugurated by Mr. Ross, Ontario will be the first country where this process will be put into operation for the manufacture of nickel-steel rails, and when the vastly increased demand for rails, consequent upon the railway development policy, is considered, our readers can realize how these two factors will give an enormous and hitherto unlooked-for expansion to mining and industrial enterprise. The possibilities are still more vast and far reaching when the effects of the universal increase of naval armaments are borne in mind, as no other country in the world is so favorably situated for supplying this demand on a large scale.

A notable feature in connection with the extensive nickel-copper refining works being established in Hamilton by the Hoepfner Refining Company, is that its establishment, under the superintendence of D. Carl Hoepfner, of Frankfort, Germany, contradicts in the most conclusive manner the statement recently made in an interview by Judge Burke, of the Canadian Copper Company, to the effect that Hoepfner's process of refining by separating and saving the sulphur, had been found unworkable.

This process is successfully in operation in Germany, and the only basis of the story as to its failure, was some inadequate and incomplete experiments—the suspension of which practically involved a breach of contract on the part of the Canadian Copper Company. The Hamilton enterprise, in connection with the working of nickel mines and the manufacture of nickel-steel, involves the outlay of several million dollars, and includes among prospective shareholders many European and American financial magnates. The attempt on the part of the nickel matte exporters to American refineries, to disparage the Hoepfner process, is entirely on a par with their hostility to Mr. Ross's nickel policy, and dictated solely by their very natural solicitude for the interests of the American refineries.

Indications on every hand point to the rapid and extensive development of our mining interests and the yet more important and lucrative manufacturing industries dependent on and allied with them, as the direct result of the course of the Ontario administration in insisting on the utilization of our raw material within the province. The outlook is bright and encouraging all along the line, and the effect so far in the initiation of new enterprises should induce all the friends of national development to strengthen the hands of Mr. Ross as against sinister influences identified with foreign interests—and to urge on the Ottawa Government the need of supplementing what has been done by the province, by the imposition of export duties on the raw material.

#### FORESTRY IN ONTARIO.

We have received the 1899 annual report of Mr. Thomas Southworth, Provincial Clerk of Forestry, which contains much useful information with regard to forestry in its various phases.

The writer has done well in emphasizing the difference between the costly, semi-military German system—which would not pay in this country—and the more simple methods

by which it is proposed to allow the reproductive power of the forest free scope for the maintainance of a perpetual timber supply. Provided the scourge of fire can be averted—which has been done of late years to a great extent by the fire ranging system—and by keeping squatters out of the reserves. There is no reason why the very extensive regions of Northern Ontario, that are only adopted for growing timber, should not yield steady annual crops, but to effect this judicious methods of lumbering must be adopted and wasteful processes discontinued.

A particularly valuable feature of the report is a history of Crown Timber Regulations from the old days of the French regime to the present, showing the rise and gradual progress of the present system—which as the report correctly says, is far in advance of any other system of regulating the disposal of public timber resources on this continent. Those in charge have made great, and to a large extent successful, efforts to preserve for public uses a larger measure of the country's natural wealth than has been attempted elsewhere. Incidentally this comprehensive review gives a great deal of information respecting the growth, and vicissitudes of the lumber trade, showing how the exportation of Canadian timber to Britain was stimulated by the imposition of heavy duties on Baltic timber early in the nineteenth century, and the prejudices in favor of the European article which had to be overcome. All interested in forestry or lumbering matters should obtain a copy of Mr. Southworth's report for reference purposes.

#### EDITORIAL NOTES.

The Mayor of the city of Boston, Mass., convened a meeting a few days ago to arrange a welcome to the National Association of Manufacturers of the United States, which is to assemble there in April, a hundred prominent business men of the city having been invited to attend. The president of the Boston Chamber of Commerce was named as chairman of the committee of arrangements, with authority to appoint all sub-committees. It is stated that President McKinley will visit the convention. Evidently this Association knows how to look after the interests of its members.

It was our privilege several days ago to be shown two bound volumes of THE CANADIAN MANUFACTURER for the year 1899, the covers and binding of which excel anything ever before seen by us of the bookbinder's art. The beauty and excellence of the designs shown on the covers, and the material used—the volumes having been prepared for an exhibit at the Paris Exposition, as a mark of Canadian industry—is due largely to the artistic taste of Mr. J. J. Cassidey, the editor, to whom the credit belongs for conceiving and furthering Canadian art and workmanship.—The Onlooker.

There was a hot time at the annual meeting of the Toronto Industrial Exhibition Association, held last week, growing out of some severe criticisms against the management of the Toronto Fair made by Mr. J. O. Thorn, of the Metallic Roofing Company, a member of the Association. Mr. Thorn was irrefragable, although President Withrow requested him to subside. The criticism was regarding the general management of the Fair; that many manufacturers were dissatisfied

with treatment they had received; that no efforts were made to remedy the complaints; that a large proportion of agricultural implement makers had decided not to exhibit again; that many Toronto manufacturers could not obtain necessary space, and therefore could not exhibit; that the stove building was entirely inadequate for the purpose; that there is a sad deficiency in sanitary arrangements everywhere, and, in his opinion, there should be a general shaking up. Mr. Thorn was very much in earnest. He held a large number of letters from prominent manufacturers who sustained him in his views. To all intents and purposes he is indeed a thorn in the side of the Fair managers.

Toronto contemplates holding an exhibition during the Pan-American Exposition of 1901. Would it not be more neighborly and equally advantageous for Canada to send all its exhibits to Buffalo?—Buffalo Courier.

No doubt our Buffalo friends expect the Pan-American exposition to be a grand affair, but as far as our knowledge goes the managers of it have extended no invitation to Canadian manufacturers to participate. If the Toronto scheme eventuates no doubt Canadian manufacturers would think it more to their interest to exhibit there than in Buffalo. Between the two they would give the Canadian enterprise the preference. Considering that every factory and machine shop in the country is being run to its utmost capacity, it is not likely that our manufacturers would prepare two sets of exhibits. And then it would be such a pleasant excursion across the line to Pan-American visitors to observe how we do things in Canada.

Mr. Robert Barr, a writer of fiction who thinks he knows it all, recently intimated that if Canadians drank less whiskey they would read more books, and he has gone so far as to tell about the quantity of grain required to produce a certain quantity of whisky. Unfortunately for him, his facts in this respect are like his books—all fiction, and this is the way Mr. George Johnson, Dominion Statistician, analyzes them. Mr. Johnson says:—

Mr. Barr may be an authority on some things, but among them are not included statistics. He states that Canadians consume so much whiskey that they have no money for books, and to substantiate his statement he declares that Canadians turned 100,000,000 bushels of wheat into whiskey during the five years 1885-1889. Now 100,000,000 bushels of wheat are worth, say, \$50,000,000. The whiskey the people of Canada made during those five years was worth \$9,500,000. Does Mr. Barr mean to say that Canadians are such idiots as to take \$50,000,000 worth of material and use it to get a gross figure of \$9,500,000? Evidently there is something very wrong about Mr. Barr's calculation. Instead of the quantity of wheat used being 100,000,000 bushels there were under 8,000,000 bushels. Mr. Barr was "out" just 22,000,000 bushels. Instead of Canada using \$50,000,000 worth of good material to produce \$9,500,000 of spirits, she used under \$4,000,000 for that purpose. To be \$46,000,000 out in a calculation involving \$50,000,000 in all this is, to my mind, good evidence that Mr. Barr's strong point is not statistics, and that, therefore, he is not a trustworthy guide in a question like that of Canadians' regard for literature, based as it necessarily must be upon statistics.

The Philadelphia Commercial Museum has prepared a bill which is being presented in the United States Congress, asking for an appropriation of \$200,000 to aid it in adding to

# THE CANADIAN MANUFACTURER

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In connection with The Canadian Manufacturer, works to attain this end.

Any inquiry addressed to THE CANADIAN MANUFACTURER will result in placing the writer, if he so desires, in communication with Manufacturers, Buyers or Sellers of any sort of merchandise in Canada or any other country.

Merchants, Importers, Exporters, Boards of Trade, Chambers of Commerce and Commercial Organizations in any part of the world are invited to make full use of the facilities afforded by THE CANADIAN MANUFACTURER whenever they may desire information about any article produced in Canada, Tariff Law, Customs Regulations, Routes of Transportation, etc.

We especially request Canadian manufacturers to send us lists of the different lines of goods produced by them so that we may address to them special letters of inquiry as soon as information is received by us.

We desire names and addresses of manufacturers in Canada who make

- Axle Grease Boxes 1 1/2 x 3 inches.
- Broom handles.
- Tallow and Grease for export.
- Furniture for export.
- Wooden Handles for all kinds of Hardware.

We have information, principally from buyers, that is valuable to manufacturers who desire to increase their trade in the British and foreign markets, that will be furnished on application. If you find any item in this list (which is changed overy is-ue), that you are interested in, write to us. If you see an item that does not interest you but would be of value to some friend, kindly inform him or us.

### AUSTRALIA.

Plumbing Materials.  
Purifying Machinery.  
Windmills and Tanks.  
Pumps.

Metal-working Machinery.  
Druggists' Sundries.  
Fancy Goods.  
Medicinal Specialties.

### AUSTRIA-HUNGARY.

Bicycle Parts and accessories.

### BELGIUM.

Wood Screws, Iron and Brass.  
Files, Iron and Wood.

Hinges, Iron.  
Furniture, Hardware, Castors.  
Wire Screw Eyes.

### COLOMBIA.

Steel Roller Flour Mill, complete.

### CUBA.

Household Hardware  
Wire Fence Material.  
Metal Furniture.  
Paper and Stationery.  
Flour.  
Drugs and Chemicals.

Toilet Goods.  
Clothing.  
Haberdashery.  
Glassware and Lamps.  
Groceries, Fancy.  
Canned and Bottled Goods.  
Patent Medicines.

### CAPE COLONY.

Boots and Shoes.  
Sole Leather.  
Upper Leather.  
Morocco and Glazed Kid.  
Cut Soles.  
Shoe Findings.  
Pine Shelving and Lumber.  
Doors and Windows.  
Barbed Wire and Plain Fence Wire  
Dried and Evaporated Fruits.  
Salmon.  
Plows.  
Corned Beef, Bacon and Ham.  
Lard.  
Nails, Cut and Wire.  
Mouldings.

Handles, Pick, Axe, Broom, etc.  
Confectionery.  
Paper Bags.  
Axle Grease.  
Twine.  
Scales.  
Edge Tools.  
Wrapping Paper.  
Furniture.  
Musical Instruments.  
Dry Goods.  
Clothing.  
Jewelry.  
Bicycles.  
Clocks.  
Books.

Builders' Hardware  
Machinists' Tools.  
Blacksmiths' Tools.  
Bar Iron and Steel.  
Plumbing Materials  
Metal-working Machinery  
Corrugated Iron  
Office Furniture  
Optical Goods  
Dried Apples.

Special Machine Tools  
Wood-working Tools.  
Metal-working Tools.  
Sheet Metal-working Tools.

Wire Netting.  
Cotton Blankets.  
Cotton Dress Goods.  
Cotton Flannelettes.  
Shawls, cheap.  
Flannels.  
Woolen Blankets.  
Union Blankets.  
Lawn Mowers.  
Garden Rakes, steel.

Sewing Machines.  
Knitting Machines.  
Bicycles and Sundries.  
Soaps.

Brass and Copper Tubes.

Corn and Cob Crushers.  
Corn Shellers.  
Feed Cutters.  
Evaporators.  
Fanning Mills.  
Harrows.  
Harvesting Machines.  
Incubators.  
Knitting Machinery.  
Butchers' and Packers' Machinery.  
Canning Machinery.  
Dairy Machinery.  
Distillery Machinery.  
Dynamo Electric Machinery.  
Hydraulic Machinery.  
Laundry Machinery.  
Scythes.  
Syringes, agricultural.

Hemlock Sole Leather.

Sole Leather.  
Boot Leathers.

Hardware, all kinds.

### DENMARK.

Shafting, Hangers and Pulleys.  
General Factory Supplies  
Portable Forges  
Contractors' Tools.  
Electrical Machinery  
Telephone Material  
Electric Supplies  
Farming Tools.  
Dairy Supplies  
Flour, spring wheat varieties.  
Wire Nails.  
Table Glassware.

### FINLAND.

Agricultural Machinery, all kinds.  
Leather-working Machinery  
Paper Mill Machinery.  
Dairy Implements and Machinery  
Typewriters.

### FRANCE.

Calf-skins, Tanned.

### GREAT BRITAIN.

Travelling Rugs.  
Horse Rugs  
Furniture.  
Tallow and Grease.  
Wood Pulp.  
Evaporated Apples.  
Tinned Salmon.  
Flannelettes.  
Elm Barrel Stock for mineral water.  
Wire Nails.  
Barrel Stock for liquor.

### INDIA.

Candles.  
Cotton Goods.  
Hardware.  
Coal Mining Tools.  
Rice Hullers.

### ITALY.

Iron and Steel Tubes.

### MEXICO.

Threshing Machines.  
Elevators.  
Hoisting Machinery.  
Metal-working Machinery.  
Mining Machinery, as complete as possible.  
Windmills.  
Water Wheels.  
General and Builders' Hardware.  
Well Machinery.  
Woolen Machines.  
Wood-working Machines.  
Shingle Mill Machinery.  
Bakers' Machinery.  
Windmill Pumps.  
Motive Engines and Boilers.  
Machinery for Rope (cotton).

### SWITZERLAND.

Men's Ready Made Clothing.

### TURKEY IN ASIA.

Shoe Findings.  
Harness Leather.  
Tanning Materials.

### URUGUAY.

Toys and Games. Refrigerators.

(Preserve this Bulletin for Reference—it will not be Duplicated).

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and completing specimens and productions to be used by it for the purpose of increasing the export trade of the country. The gentlemen in whose hands the management of the Museum is, have the unbounded confidence of both the people and the Government and therefore have no difficulty in obtaining all the money required for successfully carrying on the enterprise.

A report will presently be made by the Naval Committee of the House of Representatives on the Naval Appropriation Bill, and in this report some provision will necessarily be included for the repair of the egregious blunder made by Congress at the last previous session in the matter of obtaining armor plate for our new warships. This blunder occurred in making such unintelligent regulations respecting the procurement of armor plate that no plate was obtainable and none has been obtainable from that time until this. A limitation was put on the price to be paid for the plate, which was below the market at that time, and this limitation was so binding that it was impossible to modify the regulations, and no contracts for the required material could be negotiated. As to the reasonableness of the price which, it is said, the House Committee intends to insert in the Appropriation Bill, it is to be observed that the figure is still a long way below the current market. The Japanese Government is paying in Europe \$700 per ton for armor plate, and \$600 per ton is the lowest figure quoted in foreign markets this year.—Philadelphia Evening Telegraph.

The leading article of Scribner's Magazine for March is H. J. Wingham's second article on the Boer war, this one dealing with the fights made by Lord Methuen's division in its progress from the Orange river to the Modder river. Mr. Wingham describes three battles. His own photographs and his own maps make perfectly clear to the general reader what has heretofore appeared as merely fragments of news in the daily press. The third "Cromwell" article, by Theodore Roosevelt deals with the second Civil war. The chief battle described is Preston, and the most dramatic event is the death of the king. The author points out how the religious element entered into everything done by Cromwell, "mixing curiously with his hard common-sense and practical appreciation of worldly benefits." The illustrations are on an elaborate scale, and represent some of the very best work of English and of American artists.

Outing, the apostle of fresh air and sunshine, of healthful exercise and exhilarating sports, defies, in its March issue, the conventional aspects of winter and dispels its influence. Whilst other publications are rending the feelings with human slaughter in South Africa, it presents the peaceful landscape and the ways of "Big Game in Mataberland," its forests, its flora and its fauna, with illustrations that are a revelation. It describes "The Irish

Wolf Hound," destined to play a notable part in ridding the Northwest of a scourge, tells of the doughty deeds on track and field in "Wonderful Athletic Performances," gives a birds-eye view of "Match Day on the St. Andrew's Links of old Scotia," and takes its heroine in fiction through a Skiing adventure worthy of the title, "A Modern Cinderella."

In the Methodist Magazine and Review for March, Sir John G. Bourinet continues his very important papers on "Canada During the Victorian Era," with numerous engravings. Principal Caven has a well illustrated article on "The Sorrows of Armenia," and Dr. Hammell one on that strange character, "Barbo-Julie de Krudendor." A graphic sketch is given of "Frederick the Noble," father of the present German Kaiser, with portrait. The Editor has an illustrated article on "Pompeii—the City of the Dead." The popular science paper is "Recent Discoveries as to Nebulae," by Dr. Dallinger.

"The Return of the Business Woman," by Edward Bok, "The Anecdotal Side of Mr. Beecher," "Collego Girls' Larks and Pranks," "The Modern Son and Daughter," "Where the Founder of the Kindergarten was Born," are among the notable features of the March Ladies' Home Journal. "The Autobiography of a Girl," and "The Theatre and Its People" are continued. Howard Chandler Christy contributes the first of his American girl series of drawings, showing her at church, and A. B. Frost humorously pictures "The Country Store as a Social Centre." An Easter solo and an anthem are timely; and the numerous articles on fashions in woman's wear will be a useful guide just at this time.

#### OPPORTUNITIES FOR CANADIAN TRADE.

The following enquiries have been received at the office of the High Commissioner of Canada in London, England.

NOTE—Those who may wish to correspond with any of these enquiries can obtain the names and addresses by applying to THE CANADIAN MANUFACTURER, Toronto. No charge for giving information. When writing refer to the numerals opposite the enquiries.

139. Enquiry is made for names of firms in Canada manufacturing furniture for export, also for firms who manufacture tallow and grease for export.

140. An important London house doing a large commission business in Canadian products are desirous of corresponding with exporters of wood pulp, evaporated apples, tinned salmon, etc.

141. An enquiry comes from Denmark for the names of two or three good Canadian firms that would be likely to interest themselves in the introduction of modern high class dairy machinery and plant, cooling apparatus, etc.

142. An Ontario firm ask to be placed in communication with manufacturers and others requiring wooden handles for all kinds of hardware, etc.

143. An important firm engaged in the canning of British Columbia salmon, desire that their name may be brought before British importers of these goods.

144. A Canadian firm interested in the exporting of mica wish to get into communication with English users of this mineral.

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## CAPTAINS OF INDUSTRY.

The following items of information, which are classified under the title "Captains of Industry," relate to matters that are of special interest to every advertiser on these pages, and to every concern in Canada interested in any manufacturing industry whatever, this interest extending to supply houses also.

If a new manufacturing enterprise of any kind is being started, or an electric lighting plant instituted, or an electric railroad, or a telephone, or a telegraph line is being constructed; or a saw mill, a woolen, cotton, or knitting mill; or if any industrial establishment has been destroyed by fire with a probability of its being rebuilt, our friends should understand that possibly there may be something in the event for them. Do you catch on to the idea?

The starting of any such concern means a demand for some sort of machines, machinery, or supplies, such as steam engines and boilers, shafting, pulleys, bolting, lubricants, machinery supplies, wood or iron working machinery, ventilating and drying apparatus; pumps, valves, packing, dynamos, motors, wire, arc and incandescent lamps, and an infinite variety of electrical supplies, chemicals, acids, alkalies, etc. It is well worth the while of every reader of the Canadian Manufacturer to closely inspect all items under the head of Captains of Industry.

The Sleeman Brewing and Malting Co., Guelph, Ont., has been incorporated with a capital stock of \$500,000, to acquire the business now carried on by George Sleeman, as brewer and malster. The provisional directors include George Sleeman, E. A. Sleeman and W. H. Sleeman, all of Guelph, Ont.

The Powell Granite Co., Toronto, has been incorporated with a capital stock of \$20,000, to manufacture granite, marble and stone, and to acquire business now carried on by Almira Anderson. The provisional directors include A. W. Anderson and B. N. Powell, both of Toronto.

Colin McArthur & Co., Montreal, have applied for incorporation with a capital stock of \$20,000, to manufacture wall paper and coloring materials, and to acquire the business heretofore carried on under firm name of Colin McArthur & Co. The applicants are, Colin McArthur, D. J. McArthur, Wm. Williamson, all of Montreal.

The John Campbell Flour Mills Co., St. Thomas, Ont., has been incorporated with a capital stock of \$100,000, to operate the flour mill and grain elevator now owned by John Campbell. The provisional directors include John Campbell, A. E. Wallace and E. A. Smith, all of St. Thomas.

The Tetrault Shoe Co., Montreal, has been incorporated with a capital stock of \$75,000, to manufacture boots and shoes. The charter members include J. O. N. Tetrault, J. M. Fortier and Remi Gohier, all of Montreal.

The Malted Cereals Co., Montreal, has been incorporated with a capital stock of

\$20,000 to manufacture cereal foods and do a general milling business. The provisional directors include C. M. Johnson, Montreal, A. E. Richardson, Burlington, Vt., and W. J. Van Patton, Burlington, Vt.

The Montreal Cotton Co. will soon have 4,000 looms running in their mills at Valleyfield, Que. The plant for producing mercerized yarns now turns out goods equal to the imported English yarns.

The Slingsby Mfg. Co.'s woolen mill, Brantford, Ont., was damaged by fire recently to the extent of about \$4,000.

The Gatineau Junction Brick Co., Hull, Que., will apply for incorporation with a capital stock of \$20,000, to manufacture bricks, tile, drain pipes, etc. Provisional directors to include Wright & Co., Hull, Que., A. M. Calderon, Ottawa, J. M. Cromwell, Ottawa.

The long-distance metallic circuit line, just finished by the Bell Telephone Company, between Ottawa, Carleton Place, Smith's Falls, and Brockville, Ont., gives Ottawa a direct long-distance service with Buffalo, N.Y., and other western points. It required upwards of 5,500 poles, 4,000 cross arms, and 75,000 lbs. of copper wire.

The British America Pulp and Paper Co. is asking power from Parliament to carry on a pulp and paper business, and to run an electric railway from Ha Ha Bay, on the Saugonay, to La Tuque, on the St. Maurice.

The steamer Guernsey cleared from Victoria, B.C., last week with the largest lumber cargo ever taken from Puget Sound. She has three million feet on board, from the

Hastings and Moodyville mills for Shanghai and Vladivostock. The largest lumber cargo ever carried before was a little over two million feet.

The Bertram Ship and Engine Building Works Company, Toronto, have now under construction two steel, general cargo steamers, of similar dimensions, and sister ships in all other particulars. They are known to the builders as Nos. 35 and 36, the former of which is building to the order of J. R. Booth, Ottawa, Ont., and No. 36 is listed as being under construction for a syndicate. The hull dimensions of these two steamers are: 257 feet over all, 245½ feet keel, 43 feet beam and 25½ feet molded depth. Engines, triple expansion; diameter of cylinders, 17, 28 and 46, by 32 inch stroke. Boilers, 13½ diameter and 12 feet in length. The Bertram Engine Works Company build the engines and boilers, as well as the hulls. The estimated cost of each craft is \$165,000, or a total for both of \$330,000.

An arrangement has been practically concluded under which the Ontario Power Company, of Niagara Falls, will secure a franchise to develop power on a large scale. The Queen Victoria Niagara Falls Park Commissioners and representatives of the company have come to terms. The Government here, of course, sanction the agreement, as it is kept advised of what the Commissioners are doing. Once the Government approves it, the agreement holds, as, under the authority of an act passed last year, the Government has power to enter into a final arrangement with any company, the Legislature having waived its right of ratification. Now, that two Canadian companies have franchises on this side of the Falls, big power developments must follow, and the industries must tend to cluster round that focus.—The Paper Mill.

The Walkerton Electric Light & Power Co., Walkerton, Ont., has been incorporated with a capital stock of \$30,000, to acquire the business now carried on by the firm name of Robertson, Rowland & Co., the provisional directors of which shall be W.A. McLean, David Robertson, John Rowland, Norman Robertson and W. E. Butler, all of Walkerton, Ont.

The Dominion Coal Company estimate their output for 1900 at 3,500,000 tons. Of this, the St. Lawrence ports will take nearly a million tons; the big steel works at Sydney, C. B., another million; the Maritime Provinces, half a million, and 850,000 tons will go to the United States, Everett, Mass., alone taking 600,000 tons.

## INGERSOLL-SERGEANT Rock Drills

FOR MINES, TUNNELS AND QUARRIES

## PISTON INLET Air Compressors

STRAIGHT LINE  
 DUPLEX and  
 COMPOUND.

FOR ALL DUTIES.

... COMPLETE MINE EQUIPMENT ...

JAMES COOPER MANUF'G CO., Limited, - 299 St. James St., Montreal.

Other Offices - - - ROSSLAND, B.O. RAT PORTAGE, ONT. HALIFAX, N.S.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



Citizens of Brandon, Man., will vote on the question of exempting from taxation, over \$20,000, for fifteen years, the mill the Hamburg Mfg. Co. propose to erect.

The amount expended for Canadian products by the Imperial War Office for use in the South African campaign, including freight, will reach in the neighborhood of three-quarters of a million dollars. This information was obtained to-day from Prof. Robertson, Canadian Dairy Inspector, who is looking after the shipments at St. John. So far, he says, the War Office has purchased 12,000 tons of hay, besides 600 tons of flour, 120,000 tins of jam and seven carloads of corned beef, all being put up in Canada. He says the price of hay has increased \$2 a ton all over the country, and, he added: "Hon. Mr. Fisher has received cables from the War Office expressing the greatest satisfaction at the quality of the hay, the corned beef and flour. This is the first time the War Office has purchased so extensively in Canada, and the products of the Dominion having given them such good satisfaction I believe the present war will make both the British army and navy extensive customers of Canada. The hay has been secured in Eastern Ontario, Quebec and New Brunswick; the corned beef in Montreal and Toronto; the flour from the Lake of the Woods people, and the jams from the Simcoe Canning Company, Hamilton. The hay is prepared so as to occupy one-third less space than formerly, and this may constitute a new departure in the hay trade of Canada, where space means so much to the exporter."

The Plessisville Electric Co., Plessisville, Que., has been incorporated with a capital stock of \$12,000, to construct and operate works for producing electricity, etc. The directors include J. F. Deguise, F. Hurtubise, M. I. Montreuil, all of Plessisville, Quebec.

The Toronto Exhibition directors will not assume the responsibility of using the present boilers in the Machinery hall this year, and Mr. Hill has so advised the chairman of the Parks and Exhibition Committee. Boiler Inspector Robb recommends having all the present boilers taken out, the boiler-house remodelled, and two new horizontal tubular boilers of at least 125 horse-power put in, with provision for a third boiler when required, which, with a 72-foot brick chimney, he estimates, would cost \$4,600.

It is announced that the Carbolite Company, Limited, will in a short time com-

mence the construction of a large factory near the Smelting Works, which will be used for the manufacture of calcium carbide. It is proposed to use the Smelting Works slag for the making of the carbide—a material not heretofore used for this purpose in Canada, but known to be valuable for that purpose in other countries. It is expected that about 50 tons of slag will be used when the works are in full blast. The company also intends, in the near future, to locate an American branch of the works at Tonawanda, where there are blast furnaces. —Hamilton Spectator.

A by-law was recently adopted in Barrie, Ont., in favor of guaranteeing \$30,000 debentures for the Barrie Tanning Co. If the Legislature will pass the necessary legislation the company will erect a new tannery that will employ at least fifty men. Mr. S. R. Wickett, Toronto, is the president, and Mr. W. Bickell, Toronto, is one of the directors.

The Jones & Moore Electric Co., Toronto, inform us that they have made the following sales of electric motors:—Queen's College, Kingston, Ont.; The Sill Mica Co., Ottawa, Ont.; Buckles & Matthews, Toronto; Ezo Mfg. Co., Toronto; J. Shales, Toronto; Hatchburn & Sheridan, Toronto; W. R. Adams, Toronto; W. A. Robinson, Cannington, Ont.; John Coons, Guelph, Ont.; Merchant's Check Book Co., Toronto; R. R. Cromarty, Toronto; Copp, Clark Co., Toronto; Bertram Engine Works, Toronto; Massey-Harris Co., Toronto; G. E. Bar-chard, Toronto; Parker's Dye Works, Toronto; Saunders & Lorie, Toronto; H. Shea, Toronto; T. Eaton Co., Toronto.

The Superior Brewing and Malting Co., Port Arthur, Ont., has been incorporated with a capital stock of \$50,000, the provisional directors of which are J. J. O'Connor, Steve Downing, Alphonse Guerdard, George Hodder and Harry Servais, all of Port Arthur, Ont.

The Patterson, Ellis & Whelihan Co., St. Mary's, Ont., has been incorporated with a capital stock of \$40,000, to manufacture cement pipes, etc. The provisional directors are to be as follows.—Joseph Patterson, A. E. Whelihan, both of St. Mary's, Ont., and Stephen Ellis of East Nissouri, Ont.

The Shawinigan Carbide Co., Toronto, has been incorporated with a capital stock of \$1,000,000, to manufacture calcium carbide, etc. The provisional directors are:—D. D. McTavish, T. L. Willson, both of St. Cath-

arines, Ont.; A. E. Plumber, John Payno, both of Toronto, and Clarkson Freeman, of Merriton, Ont.

Bids are about being let for the construction of the proposed improvements in the St. Andrew's Rapids, near Ottawa, Ont. It is estimated that the cost of the work will be about \$800,000.

The establishment of a \$500,000 factory for the manufacture of beet root sugar in Canada will shortly be undertaken by American capitalists, who are working with Messrs. J. E. Askwith and James Fowler of Ottawa, in the interests of the enterprise. The factory will be located in Ontario, and will be capable of handling daily 500 tons of beets. When the factory is started it will pay \$250,000 out every season to the farmers.

The red hematite ore reported to be in sight at the Clerque mine, Michipicoten, has been estimated at 12,000,000 tons. —Sault Ste. Marie Pioneer.

The Calcibide Gas Machine Co., Montreal, is applying for incorporation, with a capital stock of \$5,000, to manufacture generators for the production of acetylene gas, etc. The applicants are:—Hon. C. T. Colby, Standstead, Que., C. C. Hollan, J. W. Shaw, G. A. Forbes, J. McGinn and William Bentham, all of the city of Montreal.

The Maritime Milling Co's flour mills at New Glasgow, N.S., were destroyed by fire February 24th. Loss about \$150,000. The property was in three buildings, power-house, mill and elevator.

The employees in the factory of the North American Bent Chair Company at Owen Sound, Ont., have subscribed \$300 to the Patriotic Fund.

The building and machinery of the Port Hope Carpet Mfg. Co., Port Hope, Ont., was destroyed by fire recently. Loss about \$900.

The growth in the exports of Canadian butter to Great Britain is attracting general attention. In 1897 the average exports of butter from Canada to the English markets were 392,000 pounds per month; in 1898 the average was 616,000 pounds per month, and during the first eight months of 1899 the average exceeded 1,624,000 pounds per month. The butter is prepared especially for export, brings a high price and the demand for it seems almost unlimited. The Minister of Agriculture has been especially active in promoting the sales of Canadian butter and cheese throughout Great Britain.

JOHN HANCOCK BLDG., BOSTON, November 6, 1899.

N. ENG. BRANCH CLING-SURFACE MFG. CO.

We have been using Cling-Surface for seven months and are now running our dynamo and other belts slack. We take pleasure in saying that Cling-Surface is giving the best satisfaction. JAMES STACKHOUSE, Supt.

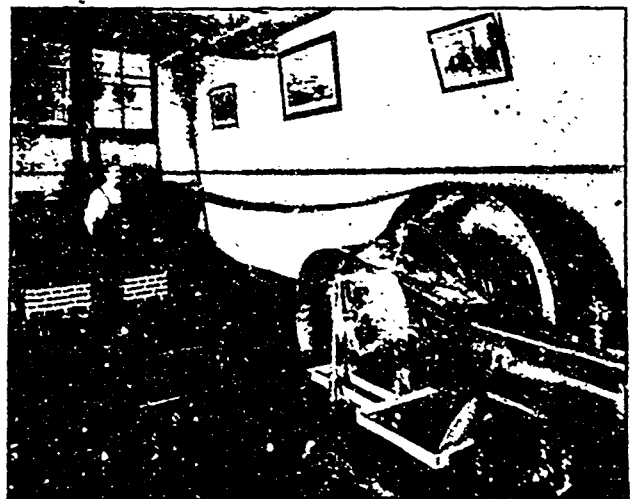
## Cling-Surface Does These Four Things:

- 1.—STOPS SLIPPING.
- 2.—INCREASES POWER.
- 3.—RELIEVES INITIAL TENSION.
- 4.—PRESERVES THE BELT.

If it fails to do these you Pay Us Nothing.

### CLING-SURFACE MFG. CO.

N. Eng. and E. Can. Branch: 120-126 Virginia Street,  
170 Summer St., Boston. BUFFALO, N.Y.  
New York Branch: Chicago Branch:  
253 Broadway. 225 Dearborn St.



When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Chandler & Massey, Limited, Toronto, have been incorporated with a capital stock of \$100,000, to manufacture surgical instruments, etc. The provisional directors will be W. H. Chandler, A. L. Massey and J. H. Horsey, all of Toronto.

At the annual meeting of the Richelieu and Ontario Navigation Company, held in Montreal a few days ago, it was decided to increase the capital stock of the company by \$348,000, this money to be used to meet the expenses occasioned by the building of the Murray Bay hotel, the enlargement of the Tadousac hotel, and the building of the steamer Toronto. The chairman stated that the Toronto had been an immense success, and with another like her, the receipts should increase an additional hundred thousand dollars. No definite decision had been arrived at as to whether another steamer would be ordered in the immediate future. The price of iron and steel had increased so tremendously that they had not thought it advisable to ask for tenders, but at the same time the builders of the Toronto, the Bertam Engine Works Co., were making estimates.

Operations at the cotton mill at Valleyfield, Que., have been suspended owing to a demand from sixty spool hands for an increase in wages ranging from twenty to fifty per cent. As it was felt that this demand could not be complied with and that operations by the other employees could not be continued in their absence, the directors after offering an increase of fifteen per cent., which was refused, decided to close down. The dissatisfaction is confined to the spool hands, whose extravagant demands have thus been the means of throwing out of employment a very much larger number of operatives. There is not a mill in the world

that treats its employees with more consideration, every provision being made for their comfort and improvement. This is the first time in twenty-three years that the mill has shut down through the action of any portion of its employees.—The Shareholder.

In a recent issue of this journal it was stated that the Ontario Starch Co. was being organized with a large capital stock and would erect a starch factory at Kingston, Ont. Since then we learn that if the concern materializes it would probably be at Prescott, Ont. Our information is that some of the wholesale grocers of Ontario are behind the scheme, including one in Toronto, one in Hamilton, and one in Guelph.

It may be of interest to Canadian manufacturers who desire to engage in export business to learn that the American Machinery and Trading Co., with head offices in Bowling Green Building, New York, N.Y., and prepared to handle all kinds of machinery for export to all parts of the world, and invite correspondence with a view of forming connections and pushing trade in all foreign countries.

Citizen's Milling Co., Toronto Junction, Ont., have installed a 100-light incandescent dynamo. Order was placed with the Jones & Moore Electric Co., Toronto.

W. W. Carter & Co., Fesserton, Ont., have installed an incandescent plant. The machinery was manufactured by the Jones & Moore Electric Co., of Toronto.

The British government has forbidden the export of carbolic acid, which is used in the making of lyddite shells, and the price in Canada, which is wholly dependent on British supplies, has more than doubled.

A United States naval surgeon advocates the substitution of wood pulp sheets for flaxseed meal, etc., in making poultices. He cuts a sheet of the pulp to a size approximate to the surface to be covered, soaks the sheet in hot water until it has become thoroughly softened, then wrings it out very lightly, and applies. The wood pulp sheet will absorb and hold from four to five times its weight of water, and, since heat and moisture are the desiderata in poultices, we have them here in simple, cleanly form. No cloths are needed, no cooking, no stirring and spreading on cloth, just a soaking in hot water. And the nicest part is the total absence of the mess inevitable to making flaxseed meal poultices, although there is, too, a great economy of time and trouble. It is sometimes advisable to put a piece of oiled muslin over the sheet to help retain the heat and moisture. When the "poultice" begins to get cold take it off, wring out the water, and soak it again in hot water and so on, indefinitely. He has used the same sheet of pulpwood for two days' poulticing, in the hands of an ignorant man at that, his instructions to him being "to soak the plaster in hot water whenever it got cold, and put it on again." By the way, every physician who has had the annoyance and trouble of being compelled to leave an all-important matter of poulticing to an ignorant person will appreciate a way that will allow no loophole for mistakes and failures.

Brown, Boggs & Co., Hamilton, Ont., manufacturers of all kinds of canning machinery, tinsmiths' machines, drop presses, etc., are running three nights in the week overtime. They report an exceptional demand from Canadian consumers for outfitting canning and preserving plants.

# W. A. FLEMING & CO.

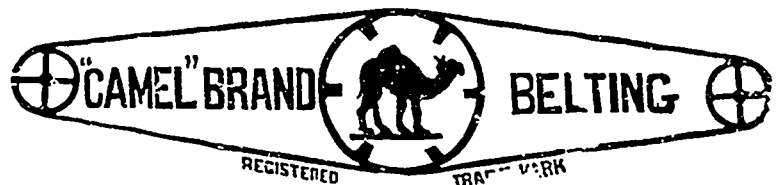
MILL SUPPLIES

CAMEL BRAND BELTING

HOSE of all kinds

DRIVING ROPE

BELTING of all kinds



57 St. Francois-Xavier St., Montreal.

## The Stratford Mill Building Co.,

STRATFORD, - - - - - ONTARIO.

STEEL BOILERS—all Sizes,

THE BROWN AUTOMATIC ENGINE,

FLOUR MILL MACHINERY, CORN MILL MACHINERY

GRAIN CHOPPERS OF ALL KINDS.

Manufacturers  
of....

We keep a Full Stock of Chain, Leather and Cotton Belting, Sprockets, Pulleys and Iron Work of all kinds.

We have one of the Most Complete Boiler Plants in Canada.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Write for  
Prices,

The Cornice Work Manual, an exposition of cornice work in all its branches, compiled from files of the American Artizan, by Sidney P. Johnson, for all in any way interested in the practical working of sheet metal. The American Artizan Press, Chicago: This is one of the most valuable series of technical works being issued by the publishers, and cannot but be of important interest to all sheet metal workers. Some of the chapters have reference to the cutter's bench, cutter's tools, drawing tools and angles, the reading of drawings, estimating, patterns of different sorts and styles, bracing and fastening of cornices to buildings, staging and scaffolding, details of slating and slater's tools, etc. We are told that this is the first work of this character which has appeared for a number of years.

Brightman's hide depository, Peterborough, Ont., was recently destroyed by fire. Loss about \$5,000.

A dam at Niagara is the entering wedge for lock gates at a dozen other places on the lakes. If Lake Michigan is to take the

supply from the lower lakes, it will be necessary to span the Straits of Mackinac, so as to regulate the flow to Michigan's natural supply. The span across the Straits might be pierced in several places with lock gates. —Marine Record.

Heretofore the silver knife used on the dining table has been a thing of beauty rather than utility, being almost useless for carving purposes. A knife which combines the decorative features of the silver article and the keen blade of the more homely steel knife has been recently placed on the market. A thin sheet of steel is buried in the center of the blade along its length, being covered with silver except at the cutting edge. This permits the knife to be sharpened in the same manner as an entire steel blade.

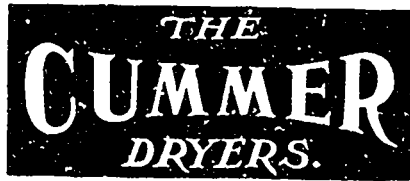
A resolution is to be introduced in the Dominion House of Commons looking to the encouragement of the Canadian butter industry, by the payment of a bonus of one cent a pound on all butter exported, the bonus to be increased at the discretion of

the government for winter production: all the butter to be subject to rigid government inspection, and a number of lecturers to be sent throughout Canada to acquaint the farmers with the requirements of the English and foreign markets.

The Canada Woolen Mills Co., Toronto, has been incorporated with a capital stock of \$1,000,000, the directors being A. W. Brodie, Hespeler, Ont.; J. F. Morley, Waterloo, Ont.; G. F. Benson, Montreal; and Reuben Millichamp and Timothy Eaton, of Toronto.

Hon. J. M. Gibson, John Patterson, John Moodie, James Dixon, W. W. Osborne, of Hamilton; John Dickenson, M.P.P., of Glanford; and J. A. Kammerer, of Toronto, have been incorporated as "Carbolite, Limited," with a share capital of one million dollars.

Winnipeg, Man., Street Railway Co., have recently purchased eight electric motors from the Jones & Moore Electric Co., Toronto.

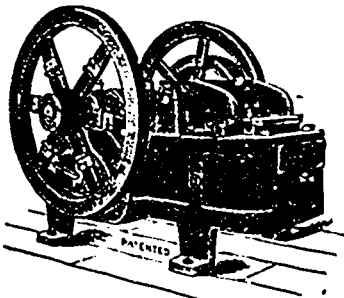


FOR Mechanically Drying Everything

THE F. D. CUMMER & SON CO., HUNDREDS IN OPERATION.

CLEVELAND, OHIO.

CRUSHERS - - - ROLLS

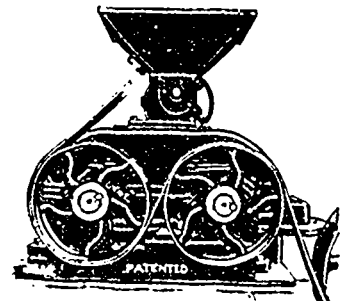


ROLL JAW CRUSHER.

For

FINE

Work on Hard Rock.



CENTRIFUGAL ROLLS.

Roll Jaw Fine Crushers Reduce Large Rock at once to Gravel and Sand. Centrifugal Rolls—Cost half and do three times as much work as Common Rolls of equal dimensions, and do finer work.

Send for Circular. STURTEVANT MILL CO., 104 Clayton St., Boston, Mass.

Shafting—Hangers—Pulleys

FRICITION CLUTCH PULLEYS AND COUPLINGS

Rope Transmission of Power.

HANDSOME ILLUSTRATED CATALOGUE ON APPLICATION.

DODGE MANUFACTURING CO. OF TORONTO, Limited, - - TORONTO.

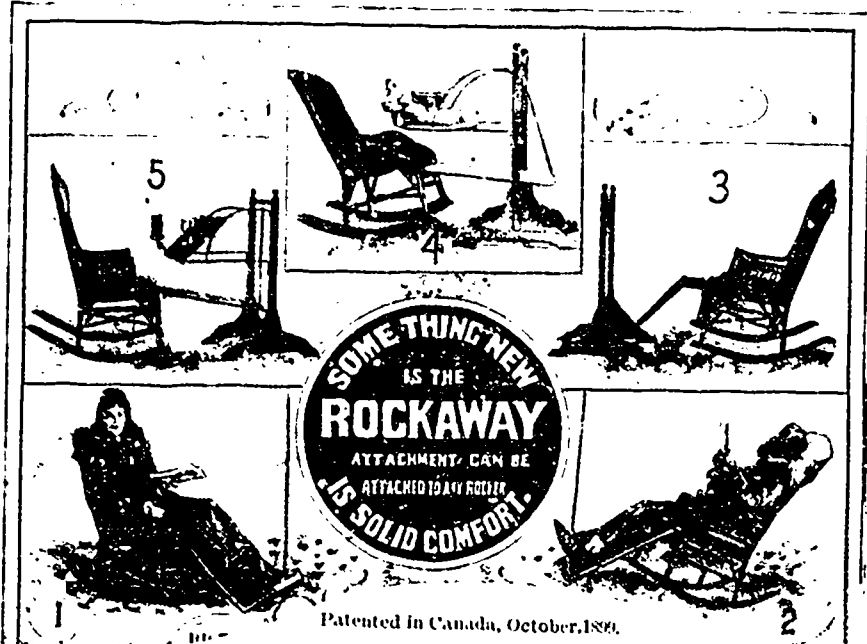
When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Mr. Alfred Rubbra, a very able and popular machinery man, well-known in Toronto as a reliable authority on all matters pertaining to machinery of all kinds, and who for years has held responsible positions as manager of some of the largest machinery houses in Toronto, has accepted a position with the Laurie Engine Co., of Montreal, as manager of their sales department and supplies depot, 321 St. James street, that city. Mr. Rubbra will find a big field before him in Montreal and its tributary territory, and with his wide knowledge of mechanical matters, his untiring energy, coupled with his strong personality, we predict for him in his new quarters a full measure of success. We are sure that the power users of Montreal and vicinity will soon realize in Mr. Rubbra a capable man, prepared to take care of a share of their requirements in a satisfactory manner.

The Goderich Organ Co., whose factory was damaged by fire recently, have rebuilt the burned portions and are again running full force and working overtime trying to catch up with present orders.

The Imperial Varnish and Color Co., successors to Messrs. J. H. Farr & Co., Toronto, manufacturers of fine varnishes, japans, asphaltums, shellacs, enamels, soft oil soap, insulating compounds, etc., have sent us their catalogue and price list relating thereto. The advantages of the different articles, methods of application, etc., are all quite fully described.

Meaford Woollen Mills, Meaford, Ont., have recently placed an order with the Jones & Moore Electric Co., Toronto, for another 80-light dynamo.



Want reliable party to manufacture on royalty or will sell patent. Figures 1 and 2 represent and show lady and gentleman seated in their rocking chairs, to which the "Rockaway" attachment is fastened by means of screw eyes, two fastened in rocker and two in foot rest, a rod passing through them.

Figure 3 shows the attachment as in figures 1 and 2, fastened to rocking chair, but here the spring that holds the foot-rest up is fastened to the crosspiece of a stand instead of coiling as in figure 1 and 2.

Full particulars upon receipt of inquiry.

OTTO CLAUSEN, Davenport, Ia., U.S.

John R. Barbor, President.

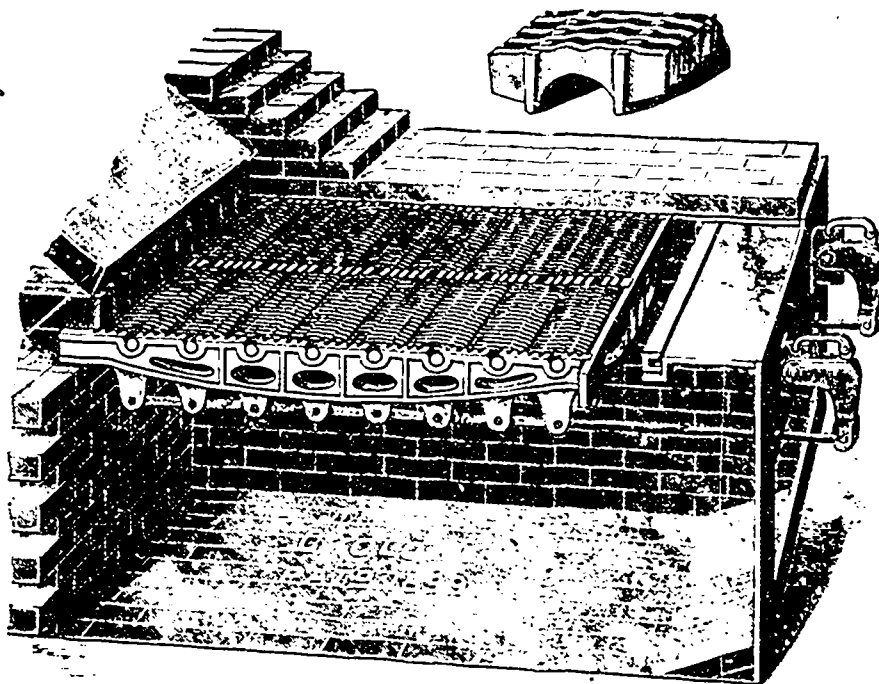
Geo. E. Challes, Sec.-Treas.

Henry Truesdell, Bus. Man.

# THE CYCLONE GRATE BAR

Economy of Fuel and Increased Boiler Efficiency Guaranteed.

Cut allows construction of the Grate. No alteration of Plant necessary.



Simplicity,  
Durability, Economy.  
Burns the Cheapest Fuel  
with the Best Results.

**A BOY CAN OPERATE IT.**

Send for Descriptive Circulars  
and Testimonials.

COPY OF TESTIMONIALS.

TORONTO, Jan. 22, 1900.

THE CYCLONE GRATE BAR Co.,  
(Limited)

10 King St. West, Toronto, Can.  
DEAR SIR: - We have much pleasure in bearing testimony to the good results we have obtained from the Cyclone Grate which you installed in our boiler furnace.

In the first place we figure it saves about 25 per cent. in fuel; (2) it increases the draught; (3) it increases the steaming capacity of our Boiler; (4) it shakes easily without strain on the boiler pipes; (5) frees the ashes from the fire, and the ash shows good combustion; (6) the revision of our combustion chamber and bridge wall to the inventor's idea, we believe, has been of good service to our boiler.

Wishing you every success, which we think your invention well deserves.

We remain, yours truly,

"D. GUNN, BROTHERS & Co.

Manufactured  
by...

**Cyclone Grate Bar Co. Limited,**

Office: 10 KING STREET WEST,  
TORONTO, CAN.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

There is said to be great present demand in the Australian colonies for newspaper printing paper. Every outgoing steamer from Vancouver in the past six months has carried large consignments of paper to Sydney. The average shipment is 100 tons, but the next steamer to sail will carry double this amount. Quantities of paper are also being shipped to Australia from some of the Pacific coast ports of the United States.

A deputation from Meaford, Ont., waited on the Minister of Public Works a few days ago, and urged that a substantial sum should be placed in the estimates this year for the purpose of continuing the dredging of Meaford harbor, already commenced by the Government, to a depth sufficient to accommodate large grain carrying vessels, which are now so freely used on the lakes.

A deputation representing a number of gas companies, which use large quantities of crude oil for the manufacture of gas, have had an interview with Hon. W. S. Fielding, Minister of Finance, urging that the duty of 2½ cents per gallon now imposed on crude oil should be abolished. They represented that the competition between electric light

and gas was becoming so keen that gas companies could not afford to pay the price asked for crude Canadian oil, and that if the duty was removed and crude American oil allowed to come in free, it would lead to a reduction of the price of gas.

Another lot of the modern first-class coaches which the Grand Trunk Railway have been building in their Point St. Charles, Que., shops during the past few weeks have been completed and placed in service on the system. Five of them were turned out of the shops last week, and are very handsomely finished, both in their interior fittings and exterior appearance. They are exactly the same as those turned out last December, a description of which has already appeared. The new cars form part of what is known as the 800 series. The same shops at Point St. Charles have also completed ten cabooses or vans that run on freight trains. The public are not so much interested in this class of car, as they are not for passenger travel, but the Grand Trunk have looked to the comfort of the men who have to ride in them. The seats on each side of the cars are wide and uphol-

stered with heavy plush cushions, so that they can be utilized as a lounge when needed. A stove with an oven attached has also been placed in each of the cars, which will be of great service to the men, who are required to be on the road at all hours and have to prepare their own meals very often. An ice box is another addition not usually placed in a caboose. A very commodious writing desk is observed at one end of the car, and a roomy wardrobe the whole height of the van is added. Altogether, the work has been done with a view to the comfort of the trainmen whose duty is very often far from pleasant during inclement weather.

The electric light plant at Huttonville, Ont., near Brampton, was destroyed by fire, February 15th. Brampton was supplied with electric light from the Huttonville works.

In 1890, 2,000,000 tons of logs were imported into Germany. In 1898, 2,600,000 tons were imported, an increase of 30 per cent. During this same period, sawed lumber increased from 1,200,000 tons to 2,200,000 tons, or an increase of about 100 per cent. Germany should be a good market for Canadian lumbermen and sawmill men.

**BELTING**  
**ENGINE**  
**GOAK**

Leather Belting,  
 Lancashire Hair,  
 English  
 Card Clothing,

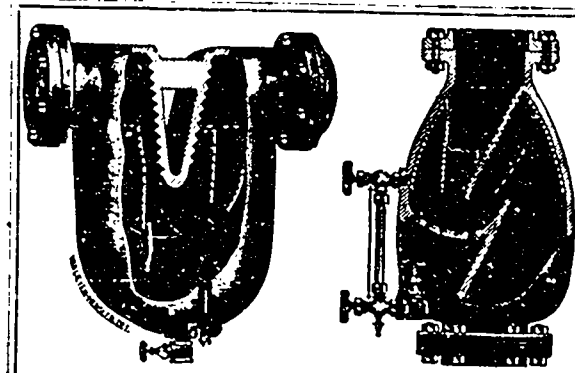
**D. K. McLAREN**  
 Head Office and Factory—  
**MONTREAL**

WESTERN TRADE—**TORONTO STOCK DEPOT,**  
 'Phone 374 **88 BAY STREET.**

ADVERTISE IN.....

**THE CANADIAN MANUFACTURER.**

SEND FOR RATES.



**HORIZONTAL**                      **VERTICAL**

*"Every pound of water in the cylinder requires an equal weight of steam to boil it off."*

And steam costs money. Logically the thing to do is to obviate the trouble by using an

**Austin Steam Separator,**

which ensures dry steam. It's guaranteed to do that. Thousands in use in the United States and Canada.

Hundreds of testimonials in our new catalogue just out. Can we send you one?

**AUSTIN SEPARATOR CO.**  
 38-40 Woodbridge St.                      **DETROIT, MICH., U.S.A.**



**B. GREENING WIRE CO.**  
 (LIMITED)  
 WIRE MANUFACTURERS  
 & METAL PERFORATORS  
**HAMILTON  
 & MONTREAL.**

Wire Screens for Every Class of Material.  
 Perforated Metal of Steel, Copper, Brass, Zinc for all purposes.  
 Special Attention given to Miners' Requirements.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

A company of New Yorkers have a plan to utilize the tide power in the narrow entrance to Vancouver, B.C., harbor. The water flowing in from the Pacific ocean through this narrow pass reaches a high velocity at a certain stage of the tide. With this power a big electric plant is to be operated to supply electricity to the city a mile away. Tide water in natural or artificial basins may some day be an important source of electric energy.

The coal output on Vancouver Island, B.C., for the year 1899 exceeds that of all previous years in the history of coal mining there by nearly 50,000 tons, and for the fourth time passes the million-ton mark. In 1891 the output was 1,029,098 tons; in 1894, 1,012,953 tons; in 1898, 1,117,915 tons; and last year's record was 1,166,251 tons. The foreign shipments are to United States Pacific coast ports, to Alaska, Hawaiian Islands and Australia.

At the annual meeting of the Canadian General Electric Company held in Toronto last week, the stockholders sanctioned the issue of \$300,000 in new stock available to stockholders at 125 at the rate of one new share to three old shares. The financial statement showed remarkable increases

during the year. They were attributed to the wave of prosperity that is being experienced in all lines of business in all parts of the Dominion. The factories of the General Electric Company are working night and day supplying standing orders, but it is thought that with the increased facilities that are being added the work in future can be turned out much more rapidly.

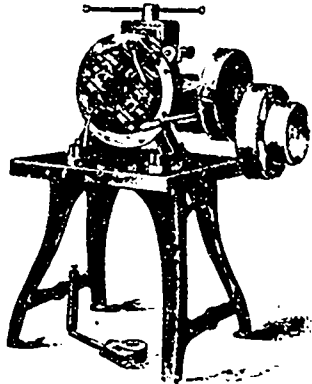
The Austin Separator Co., of Detroit, Mich., manufactures of the Austin steam and oil separators, have just shipped an order of seven of their seven inch new pattern, Fig. E., iron, horizontal receiver machines for use in the immense new power plant of the London and Bristol Tramway Co., London, England, in connection with Allis engines. As this is one of the most important and complete power plants installed in Great Britain during the past year, the selection of these goods is a distinctive honor to American industry.

Twenty-nine engines sold in forty-three days is what the Goldie & McCulloch Co., of Galt, Ont., inform us they have done this year. This is certainly good business and should be very gratifying to the firm. They report being busy in all their other lines also.

The Davis Dry Dock Co., Kingston, Ont., inform us that they have just closed a contract for building a fine steam yacht for a Montreal member of the St. Lawrence Yacht Club. The steamer is to be sixty-five feet long, intended to navigate in shallow waters, the draft not to exceed two feet. The ordinary speed is to be ten miles per hour, power to be obtained from a Davis water tube boiler carrying 200 pound pressure, and an 8x8 inch high pressure engine. The cost when completed will be about \$3,000 delivered. It is expected that her owners and friends will celebrate the Queen's birthday in her in Montreal waters.

The Canadian General Electric Co., Toronto, of which Mr. Frederick Nicholls, is general manager, and whose extensive works are at Peterborough, Ont., have sent us their very beautiful office calendar for the current year. It embodies photo engraved views of the new head offices of the company at 14-16 King street east, including general manager's office, general offices, accounting department, engineering department, drafting department and two views of warehouse department. It also informs us that branch offices are maintained at Montreal, Halifax, Vancouver, Winnipeg and Rossland.

# THE BEST PIPE THREADING and CUTTING-OFF MACHINES



No. 00 Machine, Power Attachment.

ARE MADE BY THE **ARMSTRONG MFG. CO.**  
BRIDGEPORT, CONN.

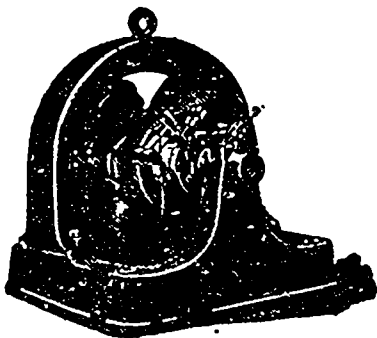
Also Manufacturers of a FULL LINE of **ADJUSTABLE STOCKS and DIES**  
And **WATER, GAS and STEAM FITTERS' TOOLS.**

SEND FOR CATALOGUE 27.

Factory: BRIDGEPORT, CONN.

New York Office: 139 CENTRE STREET.

**Toronto and Hamilton**  
**ELECTRIC CO.**



**Motors and Dynamos**  
COMMUTATORS REFILLED.  
99-103 McNab St. N., Hamilton  
Phone 958.

**RICE LEWIS & SON, LIMITED**

**HARDWARE and METAL**

Bar Iron, Steel,  
Boiler Plate Tubes.

**MACHINIST TOOLS,  
PIPE FITTINGS.**

A COMPLETE STOCK OF  
**STOCKS and DIES. PIPE VICES.**

STILLSON & TRIMO  
**WRENCHES.**

**STEAM PIPE.**

Cor. King and Victoria, **TORONT**

**Electrical Construction**  
**Co. of London, Limited.**



**MULTIPOLAR MOTORS & DYNAMOS**  
And Direct Connected Plants  
for Isolated Lighting.  
Repair Work a Specialty.

HEAD OFFICE AND FACTORY:  
No. 90 YORK STREET, London, Canada.  
760 Main St., Winnipeg.  
42 York St., Toronto, 131 Granville St., Halifax

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

**A BIG PAPER DEAL.**

The Imperial Paper Company of Sturgeon Falls, Ont., it is announced, has sold to Lloyds, of London, the owners of The Daily Chronicle, part of their concession from the Ontario Government for three-quarters of a million dollars. The agreement between the Sturgeon Falls Pulp Company, an English corporation, and the Ontario Government, made in October, 1898, provided that the company should carry on a pulp-making business with a capacity of at least 5,000 tons of pulp per annum. It also provided that the company should, with all convenient des-

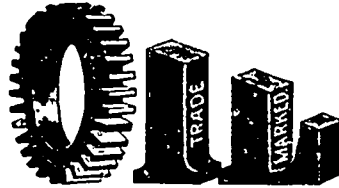
patch, proceed to the construction of a paper mill at Sturgeon Falls or in the vicinity of the waters of the Sturgeon river, and thoroughly equip the same so that the expenditure of the company in the construction and equipment of the said paper mill should be at least the sum of \$1,000,000, and operate the same so that at least 30,000 tons of paper will be manufactured annually, and at least 240 hands on an average be continuously employed. It was provided that \$250,000 should be expended in eighteen months and \$500,000 in two years from October, 1898. The purchase of a part interest in the company by the Lloyds means

that the bulk of the output of the mills will be used in The Chronicle office and that of the other newspapers controlled by Lloyds. It is known that other great English papers are negotiating for the production of their paper supply in Canada. The Daily Telegraph had an agent recently looking over the situation at Niagara Falls, and an English paper merchant who passed through Toronto recently said a definite arrangement had been arrived at to erect a big mill on the Canadian side of the river as soon as the power development project was carried out. Canada is on the high road to become the chief producer of the world's newspaper.

**"Capitol" Cylinder**

**"RENOVN" ENGINE**

**"ATLANTIC" RED**



**RELIABLE WELL-KNOWN BRANDS.**

**ALL ORDERS PROMPTLY FILLED**

THE...

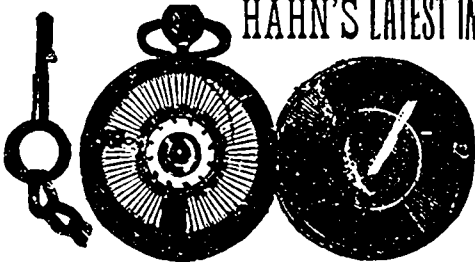
**QUEEN CITY OIL CO.**

LIMITED

SAMUEL ROGERS, President.

TORONTO, CANADA.

**HAHN'S LATEST IMPROVED WATCHMAN'S TIME DETECTOR**



This Clock is adapted for six or twelve stations, and the keys are all different, ranging from 1 to 6, and 1 to 12, instead of as in the old style Time Detectors, which mark either by holes or an impression on the dial, being the same for all stations.

For Circulars, prices and further information address

**A. NANZ & CO.,** Room No. 45, Graham Building, 127 Duane St. NEW YORK

This Clock received the First Prize at World's Fair.



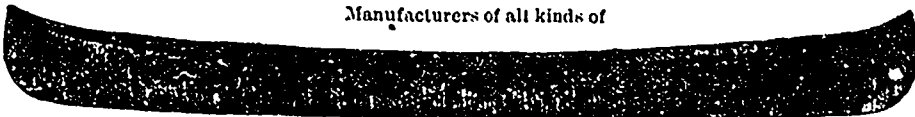
SEND FOR CATALOGUE AND PRICE LIST

**The Diamond Machine & Screw Co.**  
Manufacturers of TORONTO. Limited.

**MACHINE SCREWS and BICYCLE PARTS** OF EVERY DESCRIPTION

**The Canadian Canoe Co., Limited,** P.O. BOX 107, PETERBOROUGH, ONT.

Manufacturers of all kinds of



**CANOE AND SKIFFS** Canoes for Paddling, "Sailing," Rowing and Prospecting Skiffs for Rowing and Sailing.

A FULL STOCK OF PADDLES, OARS, FITTINGS, ETC.

Write for Catalogue J.

Correspondence Solicited

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Among other large engines sold recently by the Goldie & McCulloch Co., of Galt, Ont., are one for the Beaver Portland Cement Co., Marlbank, Ont., one for the Midland Elevator Company, Midland, Ont., one for J. Oliver & Sons, Ottawa, Ont., three for the Lindo British Refrigeration Co., Montreal, Que., one for the Gutta Percha Rubber & Mfg. Co., Toronto, Ont., and several others.

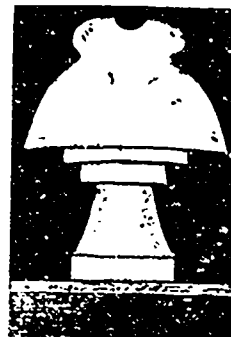
**ADDRESSES furnished ENVELOPES and CIRCULARS**

addressed and mailed

Reliable Type-written lists of names furnished at reasonable rates, from OUR OWN PUBLICATIONS, embracing all the Professions, Trades, Industries, etc., throughout the WORLD, covering every Commercial Centre, in EUROPE ASIA, AFRICA, and AMERICA. MANY of these lists are SPECIAL; that is, can be had only from us, or through our publications; on these lists a REBATE of full amount paid, including postage, will be allowed on all envelopes returned to us post marked "Can't find."

**KELLY'S DIRECTORIES, Limited**  
28 VICTORIA St., Toronto, ONT.

**.. HIGH.. INSULATORS CURRENT**



WILL STAND ANY TEST.

Patent sustained by United States Patent Offices.

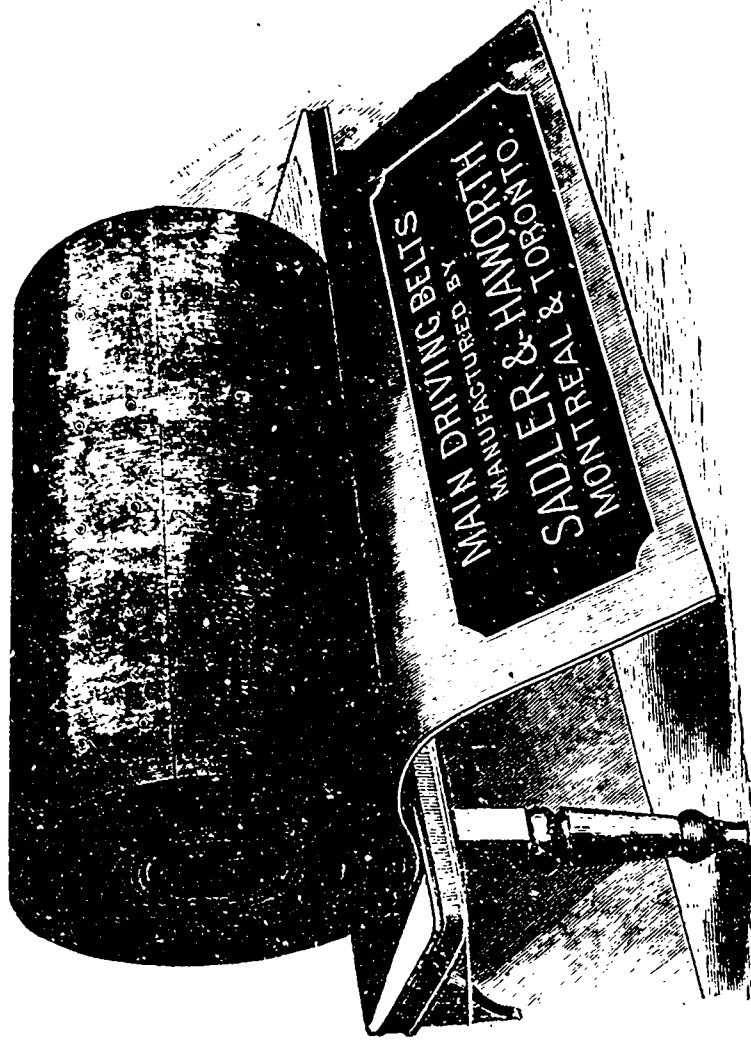
**AGENTS WANTED IN CANADA.**

Write for Samples and Particulars.

**F. M. LOCKE, VICTOR, N.Y.**

# MAIN DRIVING BELTS.

BELTS MADE  
ANY THICKNESS,  
WIDTH, LENGTH,  
AND STRENGTH  
DESIRED.



OUR BELTING  
HAS BEEN TRIED  
AND PROVED TO  
MEET EVERY  
REQUIREMENT.

# SADLER & HAWORTH,

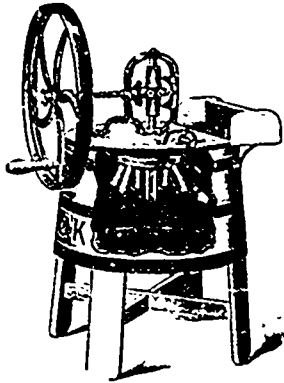
MANUFACTURERS,

# MONTRÉAL and TORONTO.



**THE "O.K." WASHING MACHINE.**

The accompanying illustration has reference to the "O.K." washing machine manufactured by Otto Clauson, Davenport, Iowa. It is called the king of rotary washing



The "OK" Washing Machine.

machines, and is described as being simple and durable, and not liable to get out of order. It is exceedingly easy in operation and effective in its work from the fact that

it is provided with revolving ball bearings which prevents the friction of the cogs, rendering it almost noiseless. The gearing is so arranged that when the fly wheel is turned in one direction the block in the tub moves in both directions, the same as in lever machines. Being equipped with a fly wheel, the operation is so easy that a child of eight years can do the work. The fly wheel has a broad face so that when so desired it can be operated by a belt driven by steam or other power. The inside of the machine, both bottom and sides, is corrugated like a wash-board, and the block, or stirrer, and the pins thereof, are of hard wood.

The machine was patented in Canada, June 13, 1899, and Mr. Clauson, whose address is given above, desires correspondence with parties who would manufacture on royalty, or he would sell the patent outright. The sales for the Davenport factory average, we are told, about 1,000 machines per month.

The Fensom Elevator Works, Toronto, Ont., have been awarded the contract for the elevators for the South African Mutual Life Insurance Co's building at Port Elizabeth, Cape Colony.

**THE NORTHROP LOOM.**

The Northrop Loom Co., of Valleyfield, Que., have sent us an illustrated circular having reference to the Northrop loom manufactured by them. The print show a 36-inch loom in which the reed space is 41 1/2 inches, equipped with Lacey patent head for operating from one to six shafts, auxiliary shaft for multiple harness, and selvage motion.

This harness motion is so made that a change of one gear only is necessary when the number of harness is changed.

The cams are made single, and it is necessary to change one cam only when a larger or smaller set is required, instead of changing the entire set.

The selvage motion is simplicity itself, easily accessible from the outside, adjustable for opening, and made so that the opening in the reed is always the same. This is a great advance over the old style, in which the front and back selvage harness are lifted the same distance, thus making openings in reed unequal.

The yarn beams are made to withstand the peculiar climatic condition of Canada by machinery made expressly for the purpose.

# THE BEST IS NONE TOO GOOD

The largest machinery builders in Canada and United States use our Babbitt Metal.

Is this not sufficient proof of its superiority over other anti-friction metals?

If the largest users are satisfied with our Babbitt Metals, why should it not suit you?

We can furnish you with numbers of testimonials.

**SYRACUSE  
BABBITT**

**BEATS  
THEM  
ALL**

Importers and Dealers in

PIG TIN  
ANTIMONY  
INGOT COPPER  
ALUMINUM

NICKEL  
BISMUTH  
IRON AND STEEL  
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BABBITT METALS  
SOLDER  
TYPE METALS

Manufacturers of

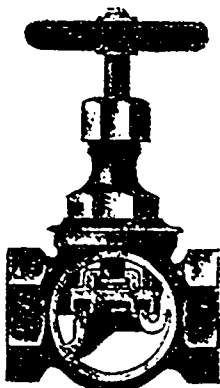
COLUMBIA  
PHOSPHOR TIN  
AND ALL OTHER  
WHITE METALS

## SYRACUSE SMELTING WORKS,

WILLIAM and ST. THOMAS STREETS,

MONTREAL

# FAIRBANKS VALVES



A. D. GLOBE.

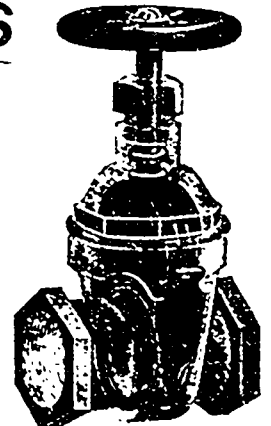
**The Globe Valve**

Has enough metal to stand the strain of expansion and contraction; has the best and simplest renewable disc made; stuffing boxes all packed with "VULCABESTON."

ASBESTHON CHINA

**The Gate Valve**

Has two renewable seat rings VULCABESTON or BRONZE, as desired; Renewable Wedge; Double seated. Made in all sizes in Brass or Iron.



A. S. GATE.

**THE FAIRBANKS COMPANY, 749 Craig St., Montreal.**

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Thorings and gudgeons are forced into place. Gudgeons and barrel turned on centres, and heads held in place with joint bolts. Heads have extra long hubs fitted to gudgeons, instead of being forced on to outside wood. This method effectually prevents the heads coming loose.

The take-up roll is of steel tube covered with steel fillet, and will never shrink or swell.

In connection with this concern we may mention that they are offering a 60-inch warping machine which has been designed with special reference to conditions existing in cotton mills in Canada, and has, we are informed, many new and valuable features

not found in other warpers. The main points of excellence claimed for it are:

Reduced floor space. With full 21-inch beam, the distance from front to back is only 39½ inches.

All rolls run in covered anti-friction roll bearings.

Self-aligning cylinder boxes. No cramping of bearings due to uneven floor, or to failure to put box in proper place after being taken out.

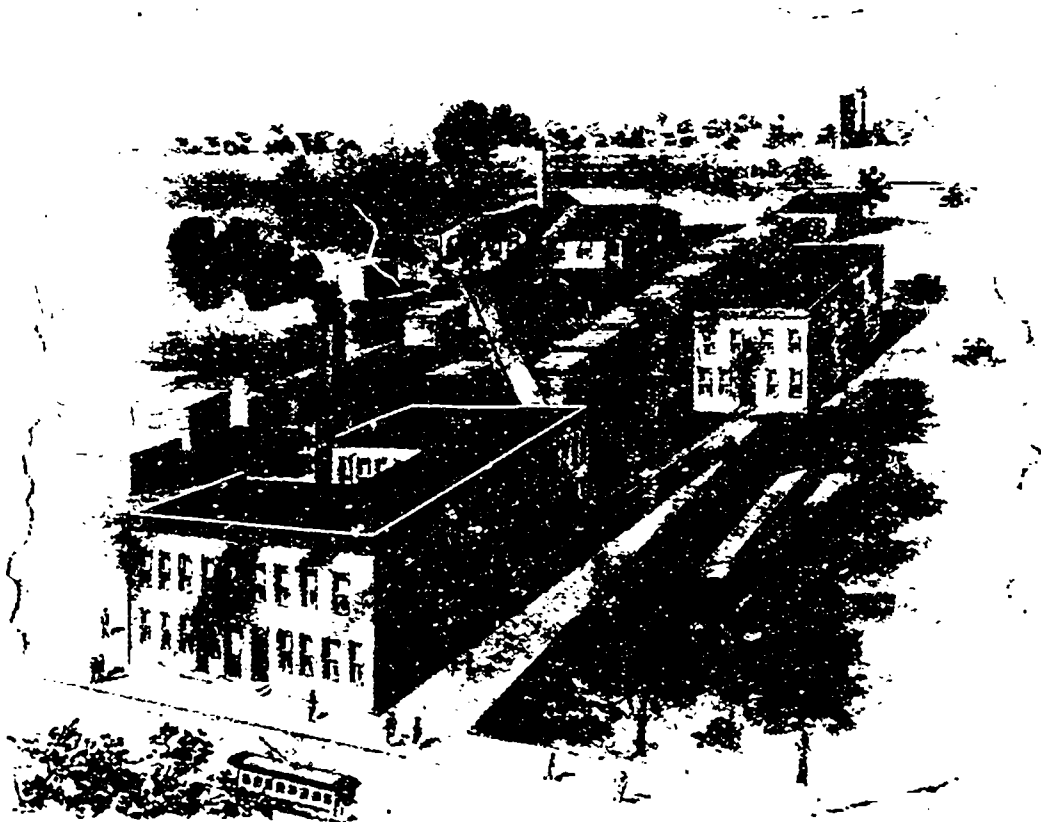
The driving mechanism is so arranged that direction of rotation of cylinder can be changed in less than two minutes with no extra parts and no tool but a small screw-driver.

Measuring rolls of seamless drawn tube. Less power required than in other machines.

Built low and with beam well back, thus making it more easily tended by small operators.

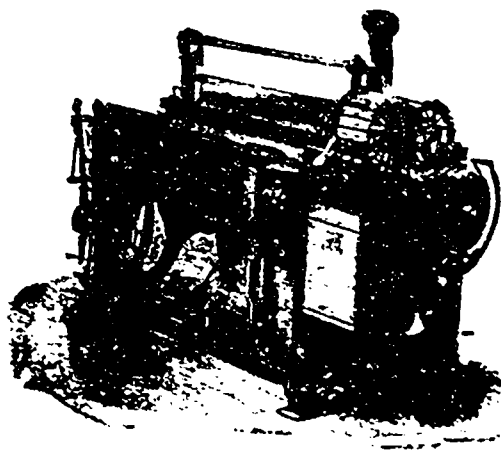
Print shows drop roll. It can be built with rise roll if desired.

The Northrop Loom Co. are not only manufacturers of textile machinery, but are fully equipped to take contracts for all lines of special mill machinery, repairs and general supplies. They are also in a position to render advice on mill engineering, as they employ a competent engineering staff including experienced draughtsmen.



The New Home of The Sprague Umbrella Company.

On this page is shown a half-tone cut of the new and commodious factory buildings of the Sprague Umbrella Co., Norwalk, O. The capacity of the new plant is 2,000 wagon umbrellas, 500 buggy canopies, 1003-bow tops, 500 lawn canopies, 1,000 illuminators, 1,000 advertising parasols and 1,000 campaign umbrellas, every day. Illustrated catalogue and price list sent to those interested enough to write for same.



THE NORTHROP LOOM.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

### There is only one Profitable Plan—BUY NORTHROP LOOMS

With them the Future is Assured.  
They are no Experiment.

Thousands have been running in the United States, and a large number are now in Canada. Sales steadily on the increase.

“The Mills that refuse their opportunities will find their future utility serving as picturesque ruins in the landscape.”

We also Manufacture the Best Warper at present Known—also Spoolers.

Write for particulars and quotations. Address—

**The NORTHROP LOOM CO. OF CANADA, Ltd.**  
VALLEYFIELD, P.Q.

**HAHL'S PNEUMATIC CLOCK.**

The Pneumatic (Synchronous) Clock Co., Chicago, are just putting on the market an exceedingly clever time-keeping device in which the problem of reliable and uniform time is most satisfactorily solved. The system includes a master clock that may be located in any desired place in a building, and a simple contrivance of dials that may be placed in as many different rooms or parts of the building according to necessity, all connected with the master clock by pneumatic tubes. One master clock can operate any number of secondary clocks throughout the building, and connection can be made with neighboring buildings. The master clock is run by gravity, sending an absolutely uniform impulse of air every minute through a system of pipes to all the subordinate clocks connected thereto, the hands of all of them moving in perfect unison.

Regarding the advantages of this system, the maker's direct attention to the fact that clocks impelled by electricity are subject to frequent disturbances, as batteries often give out, wires become crossed, lightning and the elements create disturbances, and in many cases the energy is derived from a motor or steam engine. In hydro-pneumatic systems the supply of water often gives out, pipes burst, and reliance is had for power upon engine or pump in constant motion, and steam systems are subject to the same interferences.

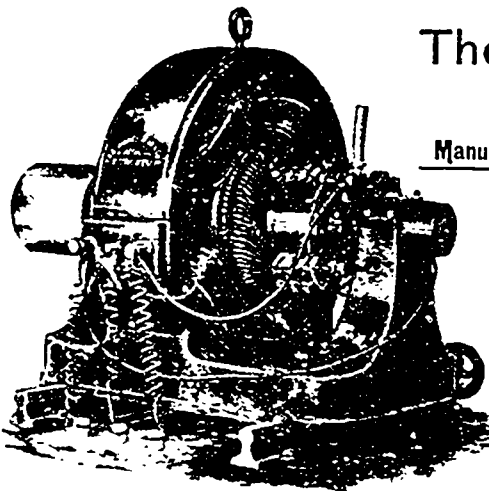
The free air system here alluded to entirely dispenses with the use of other elements, and by means of a simple contrivance insures uniform time under all conditions of temperature, atmospheric pressure and even leaky pipes. The master clock embodies a bellows or air chamber which at one minute intervals alternately compress and expand. The subordinate clocks are connected by suitable piping at any desired

distance from the master clock, the hands of which move one minute by the compression of the bellows, and the next minute by the expansion.

The system requires no skilled mechanic, electrician or engineer to operate it, all the attention required being the simple act of winding up once a week. The subordinate clocks have no springs or weights, require no winding, setting or repairing; are not disturbed by jarring of the wall and are not affected by changes of temperature or atmospheric conditions. We are informed that in one building in Chicago in which this system is installed, the aggregate length of piping through which air is impelled by the master clock to all the subsidiary clocks, is over 12,000 feet.

The uses to which the system can be put are almost innumerable. In schools a programme attachment is connected; in hospitals a striking or alarm attachment; in hotels alarms are placed in each bed-room; in factories a time recorder at watchman's stations, also employers time recorder—in fact the system is adapted to every field where accuracy and simplicity in time service is necessary.

Further information can be obtained by addressing The Pneumatic Clock Co., Chamber of Commerce Building, Chicago, Ill.



**The Jones & Moore Electric Co.,**

Manufacturers and Contractors

All Work Fully Guaranteed

**ELECTRIC LIGHT and POWER PLANTS a Specialty**

A Few Second-Hand A 1 Machines For Sale Cheap

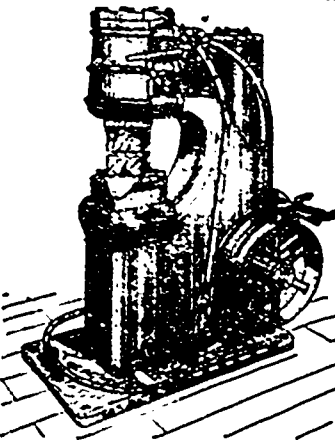
20 and 22 ADELAIDE STREET WEST TORONTO

**The Yeakley Vacuum Hammer.**

Canadian Patent November 9, 1897.

Is now Manufactured and for Sale by the undersigned Sole Proprietors of the Canadian Patent:

**George Brush**  
EAGLE FOUNDRY,  
MONTREAL.



**"IDEAL" ACETYLENE GAS BURNERS**

\$2.40 per dozen, \$20.00 per gross.

FOUR LIGHT CLUSTER—\$2.00 each. Larger sizes on application.

**"IDEAL" Carbide Sub-Merging Acetylene Gas Machines,**

15 to 2,000 Lights. WRITE FOR PRICES.

**"IDEAL" BURNERS and MACHINES** are the BEST in AMERICA.

Manufactured by **J. WALLACE & SON,**  
GET THE "IDEAL,"  
**HAMILTON, ONT.**

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

How far the sales of the Goldie & McCulloch Co., of Galt, Ont., extend may be seen from the sales of two Ideal engines this year. One went to St. Francis Xavier College, Antigonish, N.S., the other to Wm. Cown & Co., Prince Albert, N.W.T. They have also sold three in Ontario.

**T. H. & A. H. DRYDEN**

Manufacturers of and Dealers in

**FLOUR, SPICE AND**

**OATMEAL MACHINERY**

Grain Elevators      Portable Mills  
Shafting, Hangers      All Sizes  
Pulleys, Sprockets      Gears Cogged  
and Chains

MACHINES MADE TO ORDER

All kinds of Repairing Promptly Attended to

Warehouse Elevator Works      Electric or Steam.  
TORONTO

**Dominion Oil Cloth Co.**

Manufacturers of....

**OIL-CLOTHS** of Every Description

Floor Oil-Cloth, Table Oil-Cloth,  
Carriage Oil-Cloth,

Enamelled Oil-Cloth,  
Stair Oil-Cloth, etc.

Office and Works  
Cor. St. Catharine and Parthenals Sts.,  
MONTREAL, Que.

**TIMBER TESTING.**

At a recent meeting of the Canadian Institute held in Toronto, Mr. J. A. Duff, B.A., of the School of Practical Science, read a paper on the subject of "timber testing." Referring to timber investigations, the lecturer pointed out that on account of the magnitude of our forest wealth and of the industries dependent thereon, it is

important to every citizen that our forests should not be allowed to disappear through neglect, nor be wasted through ignorance. He explained that there are two distinct objects for which experiments may be made upon industrial materials, the one, called the scientific, is for the single purpose of determining the nature and properties of the material; the other, called the com-

mercial, is for the purpose of employing the material with greater economy and skill in works for the advantage of man. The commercial experiments are applications of the scientific, and their value is in proportion to the progress of the latter. The scientific investigations require a large expenditure of time and money and are beyond the resources of the private individual. They are

**FOR SALE. PATENT RIGHT FOR CANADA.**



**THE RUGGLES FLUE CLEANER.**

**MOST PERFECT CLEANER**

OF BOILER FLUES KNOWN.  
Manufactured and sold with  
**Great Success**  
IN THE UNITED STATES.

For Particulars Write to  
**FRANKLIN A. BECHER**  
224 GRAND AVE.,  
MILWAUKEE, WIS., U.S.A.



**VANDUZEN'S STEAM-PUMPS**

Fully guaranteed. Especially serviceable for elevating or forcing sandy or muddy water from Mines, Quarries, Wells, Excavations, etc. Simple, portable, cheap. Requires no skill or attention. 10 sizes, ranging from \$7 to \$75. Send for Catalogue No. 69.

E. W. VANDUZEN, Cincinnati, O.

CHARLES F. CLARK, President. JARED CHITTENDEN, Treasurer.  
ESTABLISHED 1849.

**BRADSTREET'S**

Capital and Surplus, \$1,500,000. Offices Throughout the Civilized World.

EXECUTIVE OFFICES, - - 346 and 348 BROADWAY, New York City, U.S.A.

THE BRADSTREET COMPANY gathers information that reflects the financial condition and the controlling circumstances of every seeker of mercantile credit. Its business may be defined as of the merchants, by the merchants, for the merchants. In procuring, verifying, and promulgating information no effort is spared, and no reasonable expense considered too great that the results may justify its claim as an authority on all matters affecting commercial affairs and mercantile credit. Its offices and connections have been steadily extended, and it furnishes information concerning mercantile persons throughout the civilized world. Subscriptions are based on the service furnished, and are available only by reputable wholesale, jobbing and manufacturing concerns and by respectable and worthy financial, fiduciary and business corporations. Specific terms may be obtained by addressing the Company at any of its offices.

CORRESPONDENCE INVITED

Toronto Office, - Cor. Jordan and Melinda Streets. Winnipeg Office, - 398 Main Street.  
Hamilton " - 39 James Street South. Vancouver " - Cor. Hastings and Hamilton Sts.  
London " - 365 Richmond Street. Victoria " - Board of Trade Building.

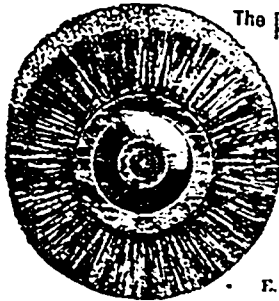
THOMAS G. IRVING, - - General Manager Western Canada, - - TORONTO.

**FRICTION PULLEY BOARD**

If you are not yet using it, send for sample.

The Dominion Leather Board Co.,  
MONTREAL, QUE.

Please mention CANADIAN MANUFACTURER.



The **PRESTON BRUSH FACTORY**

Manufacturers of ALL KINDS OF BRUSHES.

ORDERED MACHINE BRUSHES

Mail Orders Promptly Filled

E. B. Sabers, Prop. PRESTON, ONT.

**THE SMART-EBY MACHINE CO., LIMITED**

Steam and Gas Engines,  
Pumping Machinery,  
General Machinery.

193 BARTON STREET EAST  
HAMILTON, ONT.

CITY AGENTS WANTED.

WRITE US BEFORE PLACING YOUR ORDER.

**ONTARIO GOLD MINING DISTRICT :**

- Sultana Mine.
- Foley Mine.
- Mikado Mine.
- Olive Gold Mine.
- Cameron Island Mine.
- Hammond Reef Mine.

**A Few Mines**



WHO USE

**BRITISH COLUMBIA :**

- Le Roi Mine.
- War Eagle Mine.
- Old Ironsides Mine.
- Centre Star Mine.
- Crown Point Mine.
- Knob Hill Mine.

**CANADIAN RAND DRILL COMPANY, Montreal**

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of benefit to the whole community, and it is clearly the duty of the government to make provision for this department of scientific work. If the scientific experiments are made under the auspices of the government the commercial enterprise of the individual will prompt him to apply the knowledge so gained to investigations for his own immediate benefit. The rich province of Ontario has been receiving for many years about \$1,000,000 per year from timber dues, but has expended only a few thousand dollars of all this money on the science of forest production and not one dollar on the economic manufacture and use of wood products. The methods adopted and the results obtained by the United States Division of Forestry were described, and reference was made to a series of tests on white pine beams, made in the School of Practical Science, the results of which indicated that if the strength is high the fracture on the tension side of the beam will be stringy and fibrous, but if the strength

is low the fracture will be short and brashy. This suggests the simple method of judging the quality of white pine by breaking a small stick across the knee.

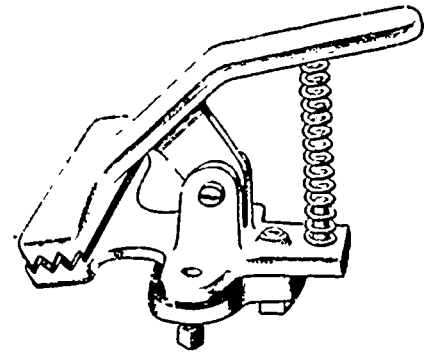
At the conclusion of the paper lantern illustrations were given, showing the methods of testing timber and the operations of rafting, river-driving and logging, interspersed with forest scenery.

The meeting emphasized the necessity of the government undertaking the scientific investigations essential to the better development of our Canadian resources.

**LOWNES' BED CLOTHES CLAMPS.**

The accompanying illustration is of L. M. Lownes' patent bed clothes clamp, recently patented in Canada. The device, as shown, is of such simple construction as to require no detailed description. It can be adjusted to the rail of any style of bedstead or child's crib. It is durable and inexpensive. It

has a sure grip and cannot become dislodged or detached from the bedclothes. For adults, place four on a bed, near the head and near the foot, each side. For children's



bed or crib, one on each side near the head. Being on the under side of the rail it does not interfere with anything, and is not in the way. It is specially useful in hospitals and asylums when patients are inclined to be restless; and it is invaluable when there are small children who are often made sick by having the bed covering kicked off. For further information enquire of L. M. Lownes, Norristown, Penn.

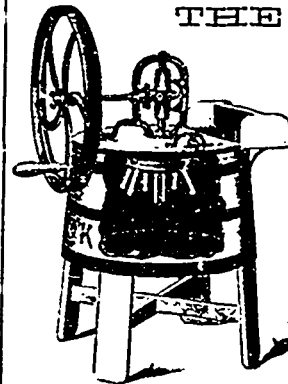
**In the High Court of Justice.**

*QUEEN'S BENCH DIVISION.*

MR. JUSTICE BRUCE.--Wilson Brothers Bobbin Co., Limited, and Herbert William Wilson v. Wilson & Co., Barnsley, Limited, Saturday, January 27th, 1900. A PERPETUAL INJUNCTION was this day granted against the Defendants, restraining them, their servants and agents, from infringing the Letters Patent No. 5559, of the year 1895, for "Improvements in means for strengthening and protecting tubes and bobbins used in the preparation and spinning of fibrous materials." And it was ordered that the Defendants should pay to the Plaintiffs damages, to be ascertained on enquiry, and costs. The Judge also certified to the validity of the Plaintiffs' patent.

The above has reference to the Patent CORNHOLME Shield, with "beaded" or "rolled" edge, for fastening.

**THE O. K. ROTARY WASHER**



Has revolving steel ball gearing, making it almost noiseless; thus superior to others. Wheel continuous one direction, the stirrer in both directions. Lid closes tight. No escape of steam.

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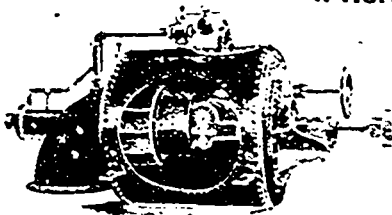
(Patented in Canada June 13, 1899.)  
Want reliable party to manufacture on royalty, or will sell patent. Factory in U.S. sells nearly 1,000 per month.

Full particulars upon receipt of inquiry.

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**THE Crocker Patent Turbine**

**n Horizontal Setting, with Quarter Turn Elbow.**



Where the nature of the location will permit its use this type has many advantages. It is very suitable for direct connection to dynamos, and many are in operation in this class of service.

Notice how complete and compact this arrangement is, and how easily it may be installed. Can you use anything of this kind? Your inquiries will receive prompt attention.

**WATER POWERS** examined and Reports made. Estimates submitted for Complete Equipments. . . . .

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**THE TOBACCO INDUSTRY.**

A deputation of the Dominion Cigar Manufacturer's Association waited upon Sir Henri Joly, Minister of Inland Revenue, at Ottawa, on July 14th, at which Mr. Michael Hirsch, the president, pointed out that the association represented between seventy-five and eighty per cent. of the output of domestic cigars. He then read a statement in which it was pointed out that great injustice existed in the sale of Canadian tobaccos in the local markets. This Canadian grown, raw leaf tobacco pays no excise tax and interferes to a large extent with the sale of the manufactured article which bearing in addition to the costs of manufacture the revenue tax, cannot compete. Not only is this unfair competition injurious in this way, but from the fact that this leaf is placed upon the market in a raw and usually uncured state the confidence of smokers is lost to the merits of Canadian tobacco, and a vast amount of injury done to its standing and credit, which the plug and cut manufactures have been exploiting with growing success.

The members suggested that the sale of raw leaf should be entirely prohibited except, as in the United States, only to or through licensed leaf dealers.

After touching upon the excise tax of ten cents per pound and which, according to programme, will likely be increased, the following resolutions were presented for the consideration of the Government.

Resolved—That the Government be requested to prohibit the sale of loose leaf Canadian tobacco and that all transactions in this leaf be made only to and through licensed vendors, or that all raw leaf tobacco sold for consumption be made to pay the same excise tax as the manufactured article.

Resolved—That in view of the fact that the growers of Canadian tobacco are pressing for an increase in the tax of ten cents per pound now levied on foreign leaf, that the excise of \$6.00 per thousand on cigars be reduced in proportion.

The deputation afterwards met Hon. Mr. Paterson, Minister of Customs, when Mr.

Hirsch pointed out that since the imposition of the leaf tax of ten cents per pound levied on all foreign leaf used in the manufacture of cigars, the industry has been laboring under a disadvantage, with respect to the protection afforded by the existing duty of \$3.00 per pound and twenty-five per cent. ad valorem, collected on imported cigars. Although the number of cigars manufactured and entered for consumption during the past fiscal year shows a substantial increase, it is well-known that the net proceeds to Canadian manufacturers have on the other hand decreased to a very large extent.

The association requested that the duty on imported cigars should be fixed as in the United States at \$4.50 per pound, twenty-five per cent. ad valorem, and the addition of the excise tax of \$6.00 per thousand. At the present time cigars are being imported from foreign countries, outside of Cuba, and entered into direct competition with the only class of goods which Canadian manufacturers can make a fair business margin.

This request was embodied in a resolution

and presented to Mr. Paterson, and he in turn promised that the matter should receive consideration.

**"FREE LOGS FOR FREE LUMBER."**

At the annual meeting of the Ontario Lumbermen's Association recently held in Toronto, Mr. John Bertram, the president, presiding, presented a report reviewing the doings of the association. He had seen Sir Wilfrid Laurier in reference to a \$2 duty on lumber, but the Premier had informed him it was not the intention to make any changes in the tariff at present.

Speaking of the action of the Ontario Government in regard to the exporting of saw logs, he considered the reservation of Ontario logs for Ontario mills a matter of sufficient importance to justify the existence of the association, as they were largely responsible for bringing about that desirable result. Inflation and depression were the worst foes of the lumber industry, and it

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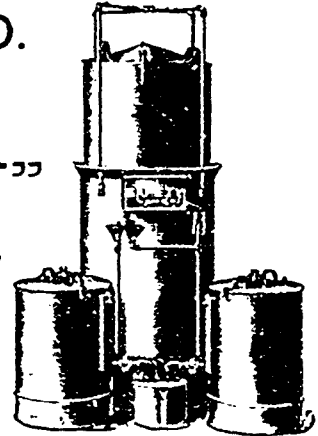
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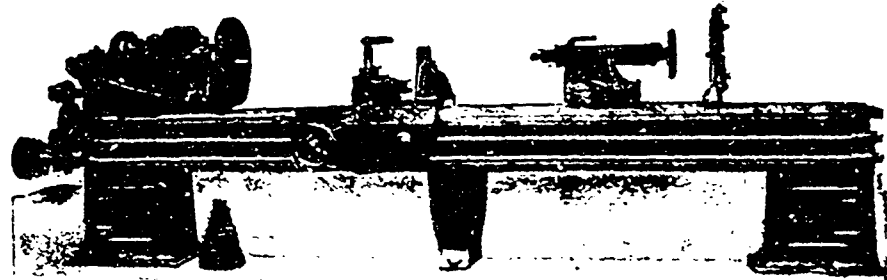
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FLEXIBLE AND FLANGE PIPE.

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was a matter well worthy of consideration whether it was not advisable to limit the cut and avoid a plethora of lumber on the Canadian market.

Mr. Gordon, representing the British Columbia lumber and shingle manufacturers, read a circular which had been sent to the Government, pointing out the disadvantages under which they were laboring, and arguing that it would be more advantageous to locate in Washington or Oregon. They held a meeting recently in Vancouver, and were very anxious to join the Ontario lumberman in a deputation to Ottawa in order to keep the matter before the Government.

Mr. Scott pointed out that while the local men were suffering as they once did, the principle remained the same, and the time would likely come when the same troubles

would again be experienced in British Columbia and Rat Portage.

Mr. Conlon thought the Dominion Government were ignoring them, and wished the association to pass resolution reaffirming the principle of all wood being manufactured in this country.

Mr. Bortram said the association had never taken any other stand than that of "free logs for free lumber," and he didn't think they should go any farther at present.

Mr. Conlon said the Government were still under the impression that they were willing to give free logs for free lumber, but he contended this was not the case.

Messrs. Dymont and Laidlaw favored leaving the matter in abeyance, as the time would come when they would be looking for an outlet for their lumber on the American market.

The following resolution, which is similar to the one passed at the previous annual meeting, was then passed:—

"That the Lumbermen's Association of Ontario express their satisfaction with the Provincial Government in putting the manufacturing clause in all licenses, and further that this association reiterate the opinion expressed on former occasions, that in the absence of reciprocity in lumber between Canada and the United States, the Government of Canada be requested to impose an import duty on lumber corresponding with that imposed by the Government of the United States, and thereby remove any injustice which at present exists to Canadian lumbermen."

The secretary was instructed to forward a copy of the resolution to Sir Wilfrid Laurier.

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## LUXFER PRISMS

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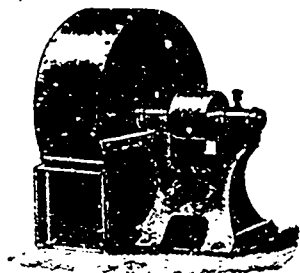
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For removal of refuse from Wood-Working  
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**AN ONTARIO FOREST RESERVE.**

An immense forest reserve, covering almost 2,000,000 acres, or 3,000 square miles, in the territory surrounding Lakes Temagaming and Lady Evelyn, north of Lake Nipissing, will be set apart by the Ontario Government in pursuance of its policy of preserving for future generations large areas of forest, where the land is unfit for agricultural purposes. The district chosen will comprise one of the finest lots of timber in the province, being white and red pine and virgin forest, which will be permanently withdrawn from agricultural settlement. The trees are as yet not over ripe, and in taking this step the Government is guided partly by the fact that they will not suffer it left standing for some time to come.

The other consideration, and which will weigh more with the public, is that this reserve will make one of the finest, if not the finest, sportsmen's paradises on the continent. The locality has already been visited by thousands of tourists, and the beauty of the lakes and the attractions in the way of the smaller game will enhance this feature immeasurably, once its merits become known.

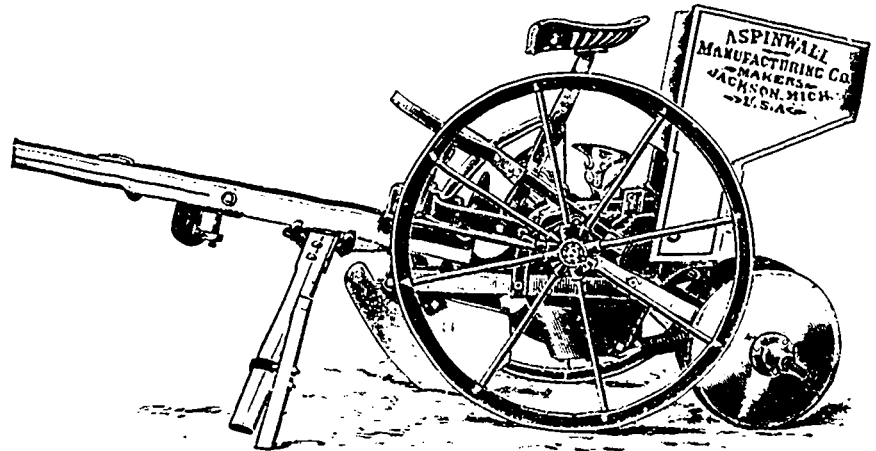
Additional fire rangers will be appointed to secure protection from the flames, which might otherwise be a source of danger when so many tourists visited the locality. When the pines show further evidences of ripeness the government will be enabled to license the limits for timber, but only under conditions that will provide for the reproduction of the pine by natural processes. The details of the setting apart of this reserve are not yet settled, but an order-in-council covering the matter will be passed in a few days.

Only a few days ago the Government passed an order-in-council setting apart about 45,000 acres in the township of Sibley, about forty miles east of Port Arthur, on Lake Superior, as a forest reserve. This land was burned over about thirty years ago during the Silver Islet mine excitement, and is now grown over with pine and spruce, chiefly spruce. The fringe of the township bordering on the lake is taken up in mining lands.

**THE NEW ASPINWALL POTATO PLANTER.**

When an implement has become thoroughly standard, acquiring a world-wide reputation for all-around excellence, it would seem as though a greater advancement along the line of mechanical structure, compactness and utility, would be difficult of attainment; yet, in their new stylo potato planter for the season of 1900, the Aspinwall Mfg. Company, of Jackson, Mich., have shown themselves to be thoroughly in touch with the spirit of unceasing progressiveness which now pervades all lines and gives promise of greater achievement during the next decade.

which allows the pulverized earth to fall back into the furrow to be partly re-opened by the chute. This arrangement prepares a bed of soft earth seven inches wide and about two inches below the seed, in addition to the covering. The improved fertilizer attachment is rotary, with force-feed; the plough of fertilizing material being constantly in view of the driver and its capacity under perfect control. The plow which is in advance of the potato chute is also arranged to receive a chute from the improved force-feed fertilizing attachment. This attachment is located in front of the driver and discharges fertilizer uniformly in the bottom of the furrow under the potatoes.



The Aspinwall potato planter of the past twenty years has needed no apology; its record for perfect and satisfactory work finds substantiation in every potato growing section of the globe, where thousands of them are in use; so, with the new planter, combining the essential features of the old, with improvements in keeping with up-to-date potato culture, the grower finds the handling of the crop easy and economical. The planter is entirely automatic; a loose furrow is opened by means of an anti packing plow, which thoroughly pulverizes the soil, and the potatoes are dropped through a separate chute a short distance in the rear,

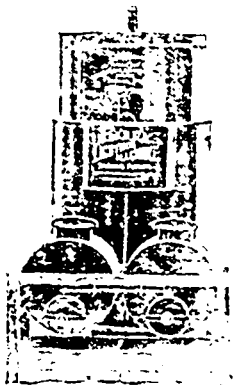
Disc or runner covers, raised by foot lever and easily adjusted to any width or depth, are provided.

The machine is instantly thrown out of gear by lifting the plow.

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The latest torpedo-boat destroyer for the English navy is called the Viper. It is designed to make 40 miles an hour, the speed of an ordinary express train. This is accomplished by the use of the Parsons turbine engine. The Viper is not unlike the run of British torpedo-boat destroyers, except that she is larger. Her slim, finely-formed hull is 210 feet long, with a maximum beam of only one-tenth the length. She has a displacement or total weight of 325 tons, and draws only 5 feet 4 inches of water—quite 2 feet less than any other boat of her class. It is not until one's eyes rest on her stout, stumpy smokestacks, and the great gaping ventilators, down whose throat must go the fierce draft for her roaring furnaces, that one realizes a sense of hidden power.

The marine turbine is another adaptation of the modern windmill principle, but there the likeness ceases; for where the farmer's helper has a dozen blades, perhaps, Mr. Parson's turbine has several thousand. In this turbine there are none of the piston rods, shifting valve gears, revolving cranks and fly or balance wheels, with which we are familiar. The propeller shafts become the balance wheels, the casings of the turbines become the cylinders, and the thousands of little blades studding the shaft collars become the pistons of old. These blades stud the collars as thickly as porcupine quills and are turned at just the proper angle to receive the maximum impulse of the entering steam, which passes from one end of the casing holding the turbine to the other. The steam, still full of vitality, then passes into another low-pressure casing, where it finally expends itself before going on to the condenser, to be

turned again into water for further use in the boilers. The blades in the first or high-pressure turbine are short, because the leverage upon them of the steam right from the boilers, at an initial pressure of 250 pounds is enough to balance the power developed in the low-pressure turbine, where the pressure is much less, while the blades are correspondingly longer to give added force to the lessened power of the steam. The casing fitting around the turbine is studded with other blades like those on the shaft collar, only they are immobile, and they are to guide the steam into channels leading directly to the moving blades. In the ordinary engine, steam is exhausted at a pressure of

seven or eight pounds, which means that seven or eight pounds of propulsive force simply goes into the condenser as so much waste. With the turbine, the steam is utilized thoroughly, and the exhaust is about one pound absolutely. This means that coal is not burned uselessly. Mr. Parsons has designed his own boiler, which is of the modern high-power, fast-steaming, water-tube pipe, and no small share of credit given the turbine is due to the fine working of these boilers.

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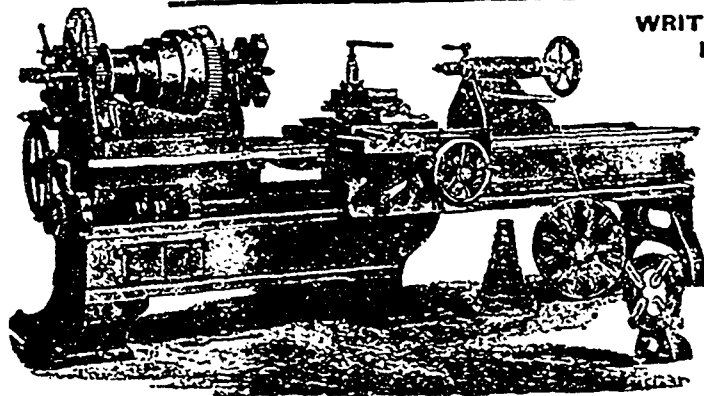
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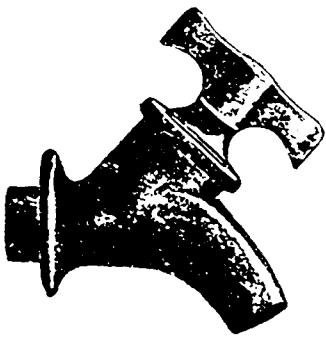
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Is made by a NEW PROCESS, and is highly spoken of by sporting papers and sportsmen.  
Kills at greater distance than soft shot.  
Send to your Gunmaker for Samples.

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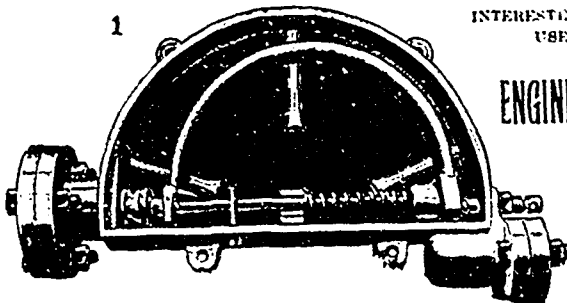
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STEAM  
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INTERESTING TO ALL STEAM  
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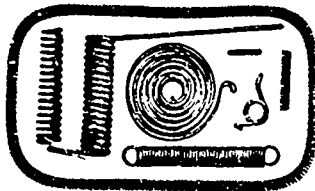
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case of the Viper, may be said to be about 70 per cent. only of the total force exerted by the engines—the rest going to overcome friction and to move the machinery's dead weight—means an effort equivalent to raising the boat to the top of the nation's Washington monument in a minute's time. In other words, each ton of the Viper's body has nearly 37 horse-power pushing it along. The battleship Kearsage of 11,550 tons displacement and of quite 17 knots speed, has engines which, on her recent trial, developed but 11,674 horse-power. The Viper has but 325 tons to drive.

The Viper is driven by sixteen propellers, working in sets of four on four shafts—each shaft being turned by one turbine, the high-pressure turbine on each side actuating the outer shaft, while the low-pressure turbine turns the inner shaft, which also has attached to it a small reversing turbine for running the boat astern, for the other turbines can give only a forward motion.

Because of the very high rate of revolution, the engines work substantially without vibration, which does away with the need of extra local strengthening of the boat, demanded by other engines, and because of the absence of vibration the guns can be aimed with more accuracy at high speed, while the physical tax on the crew is greatly lessened by the non-presence of that harmful shaking.

Because of the smallness of the engines they can be placed below the water-line and beyond the probable reach of an enemy's shot, and because of this low position they add materially to the stability of the craft. The use of numerous small screws, instead of two big ones, permits the boat to be operated in shallow waters, making her just that much more dangerous by her wider field of operation. The weight saved in the boilers and engines can be given over to more coal, yielding a greater radius of action; and the simplicity of the engines means, less first cost, less expense in attendance, and a reduced outlay in annual up-keep. An economy in the use of steam is promised at something like 20 to 25 per cent. below that of the best of the ordinary 30-knot "destroyers."

The boat carries a destructive battery of one twelve-pounder, and five six-pounder rapid-fire rifles, and two eighteen-inch torpedo discharges.

At top speed, which may exceed the promised 35 knots, the little witch will go rippling through the water at a rate that will make the spray sting like hail on the bare flesh, and to fall overboard means certain death, as though one fell from a modern skyscraper.

The turbine is not new, save in its application to ship propulsion, and the performance of the Viper means much to the ship-builder of the world ever intent on developing something in excess, even, of our present fleet of merchant craft and ocean greyhounds.

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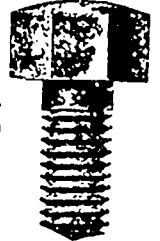
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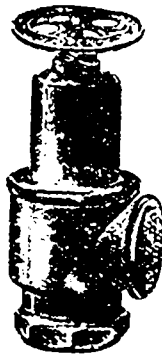
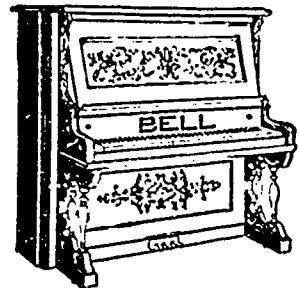
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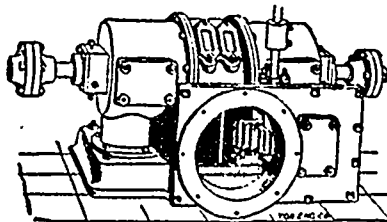
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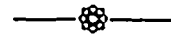
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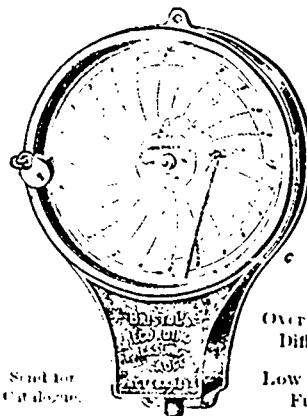
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