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CANADIAN MANUFACTURER

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DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

Vol. 24.

TORONTO, MAY 19, 1893.

No. 10.

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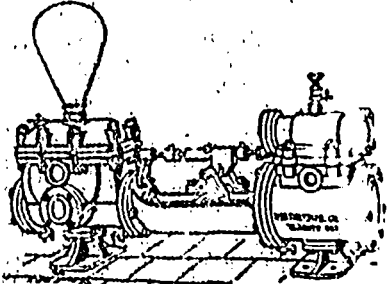
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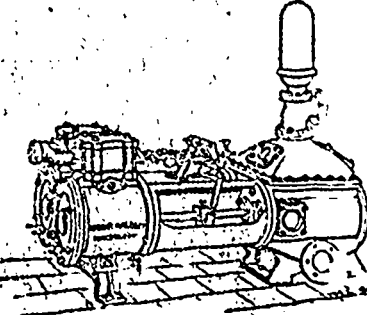
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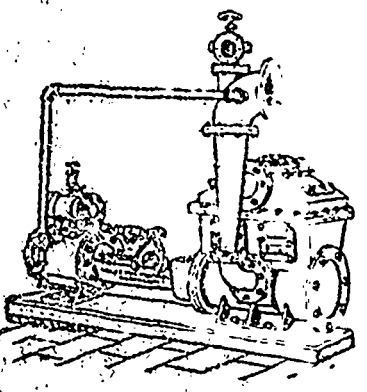
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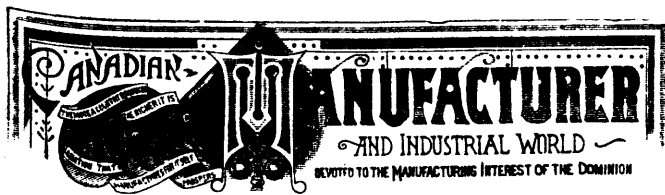


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Room 66 Canada Life Building, King Street West, Toronto.

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CUSTOMS RULINGS.

FOLLOWING are the Customs rulings affecting the tariff promulgated since our last issue:

Frillings and edgings, whether of cotton, silk or other material, are properly dutiable under item 197 of the tariff, at the rate of 30 per cent. ad valorem, though the edges of the same may be either bound or stitched. The provisions of previous memoranda so far as they relate to these goods are rescinded.

Cardigan jackets are properly dutiable under the terms of item 215 of the tariff—"knitted goods"—at the rate of ten cents per pound and 20 per cent. ad valorem. The fact that such jackets have button holes worked in them, and that the edges are bound, does not take them out of the category of knitted goods as mentioned in such item.

The value of sash weights, depending as it does upon the value of pig iron, has been found to fluctuate so largely that the values for these articles given in memorandum of June 10, 1891, are no longer applicable. Therefore, in the entry of sash weights, where there is no reason to doubt the correctness of values as shown in the invoices, such values are to be accepted for duty.

MR. FOSTER AND HIS CRITIC.

ONE of the worst cases of "slop over" that has developed since the Minister of Finance and his coadjutors set out in their investigations regarding the operations of the tariff, occurs in an editorial in the Monetary Times. It proclaims that in this investigation people look for indications of a policy which may enable intelligent observers to note whether a reasonable degree of harmony exists between the Minister and what it calls the predominant sentiment, which demands a revision of the tariff in the direction of the revenue standard: and it points to what Mr. Foster said before the Sir John Macdonald Club at Montreal, that the principle of a protective tariff must be maintained, and that alterations were to be made only in details. This is the gist of Mr. Foster's offence to the Monetary Times. It forgets that the party of which Mr. Foster is so prominent a member was elected to power, and to assume the reins of Government on a platform of which protection was the chief plank. It not only forgets this, but it wants Mr Foster to forget it also. It wants him to stultify himself by going back on his friends, and allowing his political enemies to dictate a policy for him. It assumes that because the conditions of the country are changed somewhat from what they were when the existing tariff was made, necessitating some modifications of it, that the sentiment of the whole people had changed, and that, instead of being adherents of a policy of protection, they are now all the other way, and clamorous for a revenue reform which would be a short cut to free trade. Having assumed these things it is vexed that Mr. Foster does not see eye to eye with it, and because he does not its wrath carries it beyond all decent bounds. It tells us that if Mr. Foster is to continue in his present office as Minister of Finance, the divergence between the growing sentiment in favor of a revenue tariff and the position of the Government must continue to increase; that his party is no longer practically a unit in favor of protection, and that he fails to see that a large body of agriculturists, without respect to party allegiance, demand a modification of the tariff in the direction of free trade. Pray who is this king-maker who suggests the retirement of the Minister, because he does not happen to recognize what his critic calls a growing sentiment in favor of free trade? What manner of eyes has he that he can discern a condition which does not exist? By what means has he discovered that the party upon which the Government relies is no longer a unit in favor of protection,

The smartness that characterizes these assumptions impels our contemporary to still further assume and declare that the object of the tour which the Minister of Finance is making through the country is to interrogate the manufacturers, the beneficiaries of protection, as to how much of it will be adequate for their purposes and that he goes to them as a devoted partisan bound by his own declarations to decide in their favor. This is quite insulting to Mr. Foster. It is insulting in that Mr. Foster did not set out in his investigations as a partisan or special friend of the manufactures: and it is insulting because no honest, honorable man would stultify himself by promising, when acting as a judge, to make declarations that his decisions would be in the interest of any party whatever. This is where the Monetary Times is insulting

towards a gentleman whose official position renders it impossible for him to defend himself.

But the wrath of our contemporary is not appeased by thus criticizing Mr. Foster, and it has equally mean flings at a class of Canadians whom we esteem very highly, but who are smothered with insinuations which will no doubt be long remembered. It tells us that it is a new and ominous feature for Mr. Foster to hold conference with the manufacturers in secret: that the practise has heretofore been that when deputations of manufacturers waited upon the Government to ask that the tariff be changed for their benefit, to receive them publicly, so that the country could learn through the press, what was asked on one side, and promised on the other. "What," it exclaims, "does Mr. Foster expect to learn from the manufacturers? Remember it is he who seeks the interviews with them. Does he expect that any one of them will admit that a state of things exists in which a reduction of the tariff is desirable? Does he expect the beneficiaries to tell him that they are getting more than adequate protection: that they will recommend reductions here and there in their own lines of industry? Then what is the object of the visit? Is it that the Finance Minister may be confirmed in his protectionist views, about which it would scarcely seem possible that any intelligent man should not have doubts and misgivings?" If this stuff means anything, it means that the manufacturers who may converse with Mr. Foster on tariff matters, are a lot of harpies who would sacrifice the best interests of the country for their personal gain, and that Mr. Foster is at heart as base and bad a man as they are in listening to them. Is it possible that the editorial writer of the Monetary Times obtained his political education around the back door of Tammany Hall? It would seem so.

It is strange that so important a question as the revision of the tariff cannot be discussed by the enemies of protection without a divergence into tirades of abuse, and mean, low insinuations—it is more than strange that such a journal as the Monetary Times professes to be—the embodiment of dignity and respectability—should indulge in the publication of such sentiments as those contained in its editorial from which we have quoted. Such stuff is not argument, nor is it calculated to have any other effect upon its dispassionate readers than feelings of nausea and disgust. We can readily understand that many good, honest people differ from Mr. Foster regarding the policy of protection, of which he is very justly the champion: and in the same manner, good, honest people may differ from the manufacturers in this matter. It is to be hoped that the day will never dawn in Canada, when all the people are affiliated with or belong to but one political party. Her Majesty's loyal opposition are, and will always be, a check upon unwise or hasty legislation: but an honest difference of opinion is no reason, as the Monetary Times seems to think it is, for denouncing the other side, and questioning the honesty of the motives which actuate them. Mr. Foster is a deservedly honored man in the Government of Canada; and if he has committed errors, they originated above his shoulders, not beneath his left arm. As to the manufacturers they have done a great deal for Canada. They have developed her resources. They have made her industrially independent. They have given profitable employment to thousands of artisans and workmen, and they have not unfairly or unjustly profited by their investments. Then why abuse them?

A STEEL RAIL INDUSTRY—SHALL WE HAVE IT?

At the annual meeting of the Canadian Pacific Railway Company held in Montreal a few days ago the report which was read stated that the gross earnings for the year 1892 were \$21,409,352, and the expenses \$12,989,004, the net earnings being \$8,420,348. Resolutions were passed authorizing expenditure from capital for the following purposes: \$1,900,000 for permanent bridges and improvements not chargeable to operating expenses; \$750,000 grain elevators and additional terminal facilities; \$1,250,000 additional rolling stock; \$400,000 acquiring bonds of the Montreal and Ottawa railway, interest on which the company guarantees by way of rental; \$3,700,000 for construction of the extension of the Souris branch from the international boundary to Basqua, 126 miles; Temiscamingue railway, fifty miles; Revelstoke branch, twenty-eight miles, and a section of the Eganville branch. The aggregate amount of these capital expenditures is \$8,000,000.

It will be observed that in this proposed expenditure of \$8,000,000 no provision whatever is made for manufacturing in Canada the large quantity of steel rails that this company require annually. There are nearly 17,000 miles of railroad track in use in Canada, about half of which is included in the Canadian Pacific system. This means that over 2,000,000 tons of rails are in use; and still not one ton of these rails was made in Canada. As we have heretofore shown, during the last three years our imports of steel rails amounted to 333,657 tons for which \$7,140,526 in good Canadian gold, or its equivalent, was paid to the foreign manufacturers. This is at the rate of \$2,380,000 per year sent out of the country which, under favoring tariff conditions, should have been kept at home. An analysis of some of the expenditures proposed to be made by the Canadian Pacific Company, out of its surplus earnings, after paying a five per cent. dividend, shows that \$1,900,000 is to be paid for permanent bridges and improvements not chargeable to operating expenses. It is true some of the work done in constructing these bridges may be performed in Canada, but it is also true that the materials, plate steel, steel rods and bars, eye bars, truss beams, angles, and even the bolts and rivets must be imported, for but few, if any, of such materials are made in Canada. It cannot now be stated with accuracy how many thousands of tons of these materials will be required for this purpose, but the money to be paid for it will certainly be sent out of the country. Then \$1,250,000 is appropriated to pay for additional rolling stock, and this means that a very large portion of the money will be sent abroad to pay for materials that cannot be produced at home, but which should be, and would be, under favoring tariff conditions. Then there is \$3,700,000 to be expended in the construction of a branch road 126 miles long; and this means the purchase of 15,000 tons or more of steel rails, with all the necessary fastenings—splice bars, spikes, bolts and nuts, bridges, rolling stock, etc.; in the same proportion for another branch road fifty miles long, and for another of twenty-eight miles. In the construction of this mileage hundreds of thousands of dollars will be expended for materials which must be bought abroad simply because we have not the facilities for producing it at home.

A woeful mistake was made when, in the framing of the tariff, it was decided that no duty should be imposed upon steel rails. In the same manner in which the credit of the Dominion

Government enabled the construction of the Canadian Pacific road, could the means have been forthcoming for the construction of blast furnaces and steel plants and mills for the production of steel rails. Steel rails were a national necessity quite as much as the railroad, and while the one was being provided for the other should not have been neglected. If it had been demanded by the Government as imperatively necessary, the projectors of the railroad would willingly have included a steel rail plant in their proposed equipment. This would not have necessarily retarded the construction of the road, for until the rail plant was in operation the demand for rails might have been supplied from abroad. It would not have been necessary to send out prospectors to search for ore deposits, for the existence of many of those we now have was well known at that time. The work of developing them would have been gone on with, and the ore in sufficient quantities would have been ready for the furnaces as soon as they could have been built. While the iron mines were being developed and the blast furnaces being built, one or more steel plants would have been in process of erection; and by the time the Bessemer converters were ready to be charged the pig iron would have been ready to charge into them, while at the same time the necessary rail mills would have been ready to roll the rails. Money could have effected these things, and the necessary money could have been had for that purpose quite as readily as for the construction of the road. With the iron mining industry thus developed, and steel plants in operation, the demand for mild steel would have been so large that if the converters used in making steel for rails were not of sufficient capacity to meet the requirement for other purposes, such as the manufacture of bridge plates, eye bars, truss beams, etc., others would have been erected, and so the demand not only for steel rails but for all other forms of mild steel would, in a very few years, have been supplied from Canadian sources.

It would be difficult to imagine what a happy effect this would have had upon the industrial progress of Canada. There are, at this time, more than 2,000,000 tons of steel rails in use in railroads in this country, not to mention the quantity of steel consumed in the bridges on the lines of those roads, and the thousands of tons of rails that have been worn out in service. If all this steel had been made in Canada, the untold millions of dollars that went abroad to pay for it would have been kept at home to pay the thousands of men who would have found employment in the mines, taking out the ore: at the blast furnaces in making that ore into iron; at the converters in changing the iron into steel; and at the mills, in manufacturing the steel into rails and other forms. It would have given the railroads all the additional employment which the industry would have supplied, and work to thousands of more men working in connection with the railroads. These are some of the benefits which the country would have derived from the establishment of plants for the production of steel rails at the time when the railroad-building policy of the Government was being put into effect.

Railroad-building in Canada is not being pushed as vigorously now as it was some years ago, but still our imports of rails average over 100,000 tons per year, and within the last twenty years we have imported considerably over 2,000,000 tons. Suppose that twenty years ago a duty of \$10 per ton had been imposed on rails, at the average rate of import this

would have produced a revenue of \$1,000,000 per year. If that sum per year had been appropriated to the development of the mining industry, the building of blast furnaces, and the construction of steel plants and rail mills, in ten years Canada would have been as thoroughly equipped with these necessary adjuncts to prosperity and civilization as the United States. Within that ten years it would have become unnecessary for us to send abroad for steel rails or any other forms of mild steel necessary in railroad building or equipment. But that would not have been all. Our imports of pig iron would have been stopped, because we would have been supplying our requirements from our own furnaces. Our imports of bar iron would have ceased because all such iron would have been made at home. So too, as regards boiler plates, bridge plates, eye bars, truss beams, etc.—all such things would have been produced in Canada.

It is not too late yet to produce such a condition. It can be done in the way indicated. No doubt the railroads would object to a duty of \$10 per ton on rails, but as is shown in the report of the Canadian Pacific Company above alluded to, that company at least, is in remarkably good position to stand it. With a proposed expenditure of \$8,000,000 out of the surplus earnings of one year, perhaps the company might see their way clear to devote a necessary amount towards the erection of a rail plant of their own. But whether they do this or not, the effort should be made by the Government to establish the industry. If a million dollars a year were collected from a duty on rails, a bonus of \$5 per ton might be offered for such rails as might be made in Canada for a term of years. But whatever the details might be, the duty should be imposed and the proceeds appropriated for the encouragement of the establishment of the steel rail industry in Canada.

DIVERSIFICATION OF EMPLOYMENT.

By a series of errors woven into a theory men are made to believe that it would be to their advantage to produce everything they require within their own political boundary, and abstain from exchanging their products with people outside that imaginary line. The idea is not so frequent with regard to small municipalities, for the situation is more obvious, and common sense takes the place of theoretical philosophy. Yet occasionally councils of corporations show a trace of it by paying higher prices to local firms than is warranted by market conditions. It is almost impossible to find anyone believing that it would be beneficial for one individual or one family to produce everything required without exchanging with others, although that position would be quite as logical as the confining of trade within a political boundary in hope of gain.—*Toronto Globe.*

The sophistry of this is apparent. It may be true that it might not be to the advantage of men to produce everything they require within their own political or other boundary; but the truth should consist in the fact of the inability of men thus to produce. This would consist in, first, the physical inability to accomplish more than human endurance will countenance, and, second, in the inability of the surroundings. Thus, if a farmer's entire attention is required in the cultivation of his crop of wheat, he would not have the physical ability to navigate a ship at the same time; and if the farmer's land was not adapted to the cultivation of wheat, no matter what amount of skill he might be endowed with, the inability of his surroundings would render it impossible for

him to be a successful producer of that article. This idea may very properly be enlarged to include not only a small community but also a large country. If the people of a country, Canada, for instance, who require a large diversity of products, have the physical ability to produce them; that is, if it is desired that they shall find employment in a diversity of pursuits, included in which is the production of the diversified products which they require, then it would be to their advantage to diversify their pursuits and to produce these required articles. It might be that when embarking in these diversified pursuits the cost of production would be somewhat greater than what the articles might be obtained for elsewhere. If this be counted as an element of evil, then the compensating good must be counted as an offset in the transaction; and if the good arising from the diversity of employment of the people is found to be greater than the evil arising from having to submit to the greater cost, then the lesser evil must be borne for the sake of the greater good.

In the cotton-growing states of the South, before the war of the rebellion, where the free trade idea of political economy prevailed, it was the desire of the slave owners to utilize all the labor in the production of cotton. This was a valuable crop, and it was a fond delusion which the slave owners and free traders assiduously nursed, believed and taught, that no where else in the world could cotton be produced as profitably and economically as in their fields, and by their human chattels. It was a drawback to the industry that the slaves must be fed and clothed; but it was a matter never to be considered for a moment that the labor of the slaves should be used for the production of food or the manufacture of textile fabrics. It was an infraction of the dignity of the planter to make hog and cattle raising, and the cultivation of grain, fruits and vegetables, a feature of his plantation. It was explained that if such diversity were indulged in it could not be conducted with any satisfaction to the planter because of the propensity of the slave to gratify and satisfy his appetite at his owner's expense; but the strongest and most unanswerable theory was that the value of the labor of a slave when employed in cultivating cotton was much greater than if devoted to the production of hog and hominy. Therefore the slaves were always fed from store rooms supplied with bacon and corn produced in Illinois, Kansas and Iowa. This was the carrying into practice the theory of Cobden who taught that, regardless of any and all surrounding circumstances, selling should always be done in the dearest market, and buying in the cheapest. And thus it was that Southern ports were always lined with shipping engaged in bringing food and clothing for the use of the slaves, and delicacies for their owners, and in taking away the products of slave labor to be used in foreign factories and in the building up of valuable industries in other lands. This senseless and suicidal free trade idea had such entire control of the slave owners of the South that when, for the perpetuation of slavery, they sought to establish their Southern Confederacy, in framing the constitution of their Government, they embodied a feature which even Great Britain has always declined to adopt; that is, that no duty should ever be levied upon imports. This meant that there were to be no middle classes in that country. The slave owners were to be the aristocrats, and the slaves and all others were to be slaves, as might naturally be expected as a result of free trade. The presence of mechanics employed

in certain trades were considered a necessary evil which, while deplored, could not very well be helped. Houses must be built, and some plantations were equipped with a jack-at-all trades who, as necessity demanded, could be carpenter, brick mason and blacksmith, but this important personage was a slave, for no free labor could ever be employed on a plantation. The contact of free labor with slavery would be demoralizing in the extreme, and an event never to be tolerated. Labor being cheap, the aristocratic slave owner never considered the value of time of such labor in the erection of mansions for himself or of hovels for his chattels. If the presence of an architect or a master builder was necessary, such an one would be imported from abroad, but was always under espionage to prevent the possible contamination of the minds of the slaves with ideas of freedom. It was always a desire and object with these aristocrats to discourage the presence of either free negroes or "poor white trash." In many States it was unlawful to bestow freedom upon a slave, and if such an act were performed—if under any circumstance a slave was made free, it was required that he should evacuate the state or be again sold into slavery. Under this benign condition of free trade the life of a poor white man was even more miserable than that of the negro slave; and even among slaves the most bitter taunt that one could hurl against another was to tell him that he was no better than "poor white trash."

For many years after the war the impatience of the Southern aristocrat was kept in restraint only by the presence of Yankee bayonets. The negroes were free, or supposed to be, but the aristocrats were the lords proprietors of the soil; and the struggle was continued to perpetuate free trade and human slavery in some shape or other as against the encroachments of protection of domestic industries against foreign competition, and the efforts of protectionists to dignify labor, to lift up the working man to a higher plane in the civilization of the age, and to abolish every feature of serfdom and slavery. Meantime it was found that the cotton states of the South was not the only section of the earth upon which cotton could be profitably grown; and it was also found that, under this free trade policy, where there were no other sources of revenue for the Government than from these same aristocratic cotton planters, that they were land poor, and that they must of necessity cut up their plantations into smaller holdings. This disintegration of cotton plantations; this iconoclastic destruction of a free trade idea was the happiest event that ever shed its benignant influence over the South. The free trade aristocrat realized that land without labor was worse than worthless. The negro realized that he was "free," and that his freedom was of a very dubious and equivocal character. The disintegration admitted the presence of an element which cared nothing for either the planter or the negro, but which sought to develop the material resources of the country. Known deposits of coal and ore were developed, and vigorous prospecting developed others. This diversified the industry of the country, and gave occupation to the negroes in directions that they had never dreamed of. Then railroads were built, and this gave further diversity of employment. Then iron works were started which called for the still greater expansion of the demand for labor. Cotton became a secondary consideration in the economy of the country, and now, under the benign influence of the protection thrown over a multiplicity of industries, all of them new in that sec-

tion, the new South of to day is quite as advanced in its manufacturing greatness as any country ever attained to in equal time.

It may be almost impossible to find any one believing that it would be beneficial for one individual or one family to produce everything required without exchanging with others, as the *Globe* contends, but it is not illogical to argue that a country is circumscribed in like manner. The old South was not prosperous under free trade where its commercial energy was directed to the production of cotton. Under free trade no workshops were established, no arsenals for the manufacture of arms and war materials. Such things were to be had cheaper abroad than at home. But when the conflict came a people than whom none braver or more patriotic or enthusiastic never breathed, found their foreign supplies shut out by a few Yankee gunboats, and defeat and blasted hopes the result of their foolish free trade ideas. The new South is not that sort of a country. It is all that the people there can wish for it. It is a grand country, but protection and a diversification of the employment of the people has effected it.

THE RICH AND THE SNOBS PAY THE DUTY.

THE Montreal Star has a fad which it nurses with the assiduity of a hypnotized person who has been made to believe himself a young mother with her first infant. Its unreasoning and unnecessary anxiety is amusing. Its fad is that all specific duties should be abolished, and that protection enhances the price of goods to the extent of the duty. It is constantly illustrating its contentions in these directions—one of its latest being that “the present duty on woolen socks runs from thirty-five per cent. on the rich man’s purchase to fifty-eight per cent. on the poor man’s article,”—this because there is a specific duty on socks, which has no regard to the value: another of its contentions being that because a compound duty is laid upon blankets, that is, a specific duty of so much per pound, and an *ad valorem* duty of so much per cent. of the value, that the tax on the poor man’s blanket amounts in some instances to 110 per cent. of the value. Being hypnotized itself, the Star desires to hypnotize its readers into believing this stuff. Woolen socks and blankets are of similar character as regards the method of levying duty. The duty upon both are compound. Ignorance of facts regarding a matter whereof it may speak is no bar to the discussion of it by the Star. Located in a large mercantile city where there are many dealers in domestic and importers of foreign socks and blankets, no difficulty would be experienced in learning that lines of socks and blankets are manufactured in Canada accepted as being quite good enough for the masses of the people to use: that the imports of such lines of goods are very small indeed, because the home-made goods while equal in quality are much cheaper in price, and that the higher priced articles which are imported, are brought in to meet the demand of a class of rich people who can afford high-priced luxuries, or of snobs who affect to think that nothing that can be made in Canada is good enough for them. It is evident then, that the anxiety of the Star is misplaced. It does not apply to the great body of Canadian consumers, who are satisfied with what they get and with the prices they have to pay: but it applies only to the rich and the snobs. If the duty was really fifty-eight per cent. on socks, as the Star de-

clares, or 110 per cent. on blankets: or if it was ten times as much, it would not increase the cost of these articles to consumers, that is, to those consumers who are satisfied to use such goods as are manufactured in Canada. It may be a good party cry to point to a high duty and declare that it enhances the price; but to those who are intelligent and who investigate, it is plain that such is not the fact. The fact is, both socks and blankets and hundreds of other articles, made in Canada, can be bought as cheaply here as similar articles can be bought for in England. It may be well, this being the case, to simplify and reduce the tariff on many articles, but such reduction could not possibly reduce the cost, and this the Star well knows. The general public understand that they obtain their woolen goods quite as cheap here as they could be had for elsewhere: they understand that revenue must be had by levying tariff duties, and they are quite content that the rich and the snobs who must have foreign goods, should be liberal contributors to the revenue in this way.

THE VALUE OF ROADS.

PROFESSOR LEWIS M. KAUPF, of the University of Pennsylvania, has figured out the relative cost of moving freight over country roads, railroad and by the various means of water transportation, and his figures are most interesting to those whose business depends in any way, as nearly every business does, upon transportation in any of these ways. His figures are given below. It takes a little study to fully comprehend them, but they will fully repay the time and labor spent on them.

The first table shows the cost of overcoming the resistance to movement of freight by the various systems. The distance calculated is one mile, and the load one ton.

THE WAY.	Cost in Mills.	Relative Rates.	Relative Distances.
By common roads.....	150.0	107.1	1.0
By railroads.....	4.0	3.9	35.7
By canals.....	3.5	2.5	41.8
By rivers or lakes.....	2.5	1.8	50.5
By ocean.....	1.4	1.0	107.1

This is for level road. The next table shows the effect of grades and the force necessary to move a load of six tons on a macadamized road at a speed of three miles an hour.

GRADE.	Force in lbs.	Equivalent length of level road.
Rising 1 in 200.....	286	1.085
Rising 1 in 300.....	300	1.170
Rising 1 in 200.....	331	1.255
Rising 1 in 100.....	396	1.510
Rising 1 in 50.....	533	2.019
Rising 1 in 25.....	712	2.600
Rising 1 in 10.....	1000	3.608

The third table shows the value of hard suffrages by giving the force required to draw one ton, on a level, on different materials:

Kind of surface.	Pounds.
On an iron tramroad.....	15
On an asphalt surface.....	16
On a wooden surface.....	21
On best stone block surface.....	23
On poor stone block surface.....	50
On cobblestone surface.....	90
On macadam surface.....	100
On earth road.....	200

By reference to the first table it will be seen that it costs a farmer nearly thirty-eight times as much to haul the product of his farm one mile over the wagon road between his farm

and the railway station as he has to pay for moving it one mile by rail, and a little more than 107 times as much as to move it one mile on the ocean. Or, it can be sent 35.7 miles by rail, 41.8 miles by canal, or 107.1 miles by ocean for what it costs to move it one mile by wagon road.

This is for the ordinary level and smooth country road. If the road has steep grades the cost is increased enormously, and in proportion to their steepness, as shown by the second table, and also by the unevenness or softness of the surface.

While producers are accustomed to complain, and often with just cause, of the exactions of transportation companies, it is here shown that bad country roads impose a far heavier tax on them. At the best, the cost of transportation by their own conveyance from their own farms or mills to the railroad is more than thirty-five times as great as the cost per mile after the railroad is reached. If the country road be rough, soft, or if it has steep grades in it, the cost is still farther and enormously increased. If the country road be very bad, the market is entirely shut out and no progress is possible.

It is reasonably clear, therefore, that there is no part of the great transportation question that so urgently demands solution as that part of it which applies to country roads. It overshadows all other questions affecting business in any country, and particularly in such a country as this. It overshadows all questions affecting taxation, for the cost of transportation is the greatest tax a producer has to pay. There is nothing the producers may not reasonably hope for if they can get easy and cheap access to market. There is nothing they can hope for unless they can get it.

EDITORIAL NOTES.

A FEW weeks ago, a letter was received at the office of this journal from a merchant doing business in the city of Rotterdam, Holland, enquiring the names of parties in Canada engaged in putting up evaporated and dried apples for export. His desire was to form business connections, looking to a trade in this and other similar Canadian products in Holland. We have made numerous enquiries, but have thus far been unable to discover the names of any parties in this country who are engaged in the evaporated fruit industry.

At the request of the proprietors of several large woolen mills, the Secretary of the Canadian Manufacturers' Association has sent out an invitation to about all the woolen mill men in Canada requesting them to attend a meeting to be held in the Board Room of the Association, in Canada Life Building, Toronto, on Tuesday next, 23rd inst. The object of this meeting is to consider the present condition of the industry and things affecting it. The matter is of much importance, and a consultation among the manufacturers very much to be desired.

THE British Post Office has given notice that hereafter the following articles, even though samples only, if sent by mail will not be delivered on arrival, but will be turned over to the customs authorities: cocoa, coffee, chicory, currants, figs, fig cakes, dried plums, prunes, raisins, apricots, tea, tobacco (manufactured or not, including cigars, cigarettes and snuff), hydrate of chloral, playing cards, and transparent soap in the

manufacture of which alcohol is used. The public is therefore cautioned against the posting of any of these articles addressed to Great Britain or Ireland, as they will not be forwarded by mail. Articles of glass and liquids, oils and fatty substances are also excluded from British mails.

AN anomaly of the Canadian law affecting shipping, consists in the fact that if a Canadian who has bought a ship in another country for use in this, can obtain registry for it only on the payment of a tariff duty. If the vessel has been registered in Great Britain or in any British colony, however, a Canadian register is not necessary to engage in our lake or coastwise trade. There are several steamers now being built in the United States for service in Canada, which will escape the payment of the tariff duty by being registered in St. Johns, Newfoundland. Reing registered there makes them British vessels, and under the British Shipping Act, no British vessel can be restricted in trading in any British waters.

A LETTER received from the Waterous Engine Work Company, Brantford, Ont., informs us why they are not making a large display of their machinery at the World's Columbian Exposition at Chicago. They have been crowded with orders for machinery which had to be delivered on time, and this obliged them to increase the number of their workmen ten per cent., and to run their shops fifteen hours per day during the past winter and up to the present time. The only machine that they have been able to send to Chicago, is a 5-mould Simpson dry press for brick-making, and that is now erected in Machinery Hall at Jackson Park. Mention is made elsewhere in these pages of some of the machinery the Waterous Company have recently been turning out from three departments of their works.

IT looks as though Hamilton is really to have what will be the first blast furnace ever erected in Ontario. The New York capitalists who have been engineering the matter for some months seem to have made arrangements satisfactory to them by which they will invest \$400,000 in an iron plant, and later a steel plant at similar cost, the City of Hamilton to donate eighty acres of land at a cost of \$40,000, to pay a cash bonus of \$40,000 when the blast furnaces are completed, and \$60,000 more when steel works are ready for operation. Now let the Ontario Government give a bonus of \$2 per ton upon the pig iron the concern may produce; and let the Dominion Government allow the coke for fuel to come in duty free. Also let it put a duty of not less than \$10 per ton on all imported scrap iron, so as to make a market for pig iron, otherwise much of it cannot be sold.

THE electric motor is becoming a factor of importance in transportation in many places, although it is not as likely to supersede the steam locomotive as some of its sanguine advocates claim. Under present conditions the steam motor is more economical than its electric competitor, except under circumstances found only in the few places where large water powers can be cheaply utilized; but the electric locomotive can be used in many cases where steam and smoke are annoy

ing or dangerous, as in cities, in tunnels, in mines and similar places. Some electric motors of very large size are now under construction for moving freight trains, while in France a company has undertaken to make a test to determine the place of a similar motor in suburban passenger service. In the French case the storage battery system is to be used, and the success of the test, if it is successful, will very probably lead to a wider application of that system than has yet been made.

A SYNDICATE of American capitalists are asking the Dominion Government for incorporation, and for authority to build a ship canal from the mouth of the Thames river, in Lake St. Clair, to the mouth of Irvine creek, in Lake Erie, a distance of twelve miles. The canal would effect a saving of 110 miles in the travel between the upper lakes and Buffalo, and would avoid the intricate and dangerous route now used between Lake St. Clair and Lake Erie, via Detroit. No financial assistance is asked of the Government, and if authority is given to build, it is promised that the work will be completed in two years. We can see no valid reason why the canal should not be built. It would be entirely within Canadian territory, and therefore relieve this country from any sort of obligation to the United States in the matter of passage between Lake Erie and the Upper Lakes. It is true Detroit would become a backwoods town, not in the line of direct water communication, but that is no reason why the canal should not be built.

CONSIDERING the peculiar and equivocal position in which the United States stands in the Behring Sea arbitration now going on in Paris, and that from our standpoint there seems to be no statesman in that country, whose views are not antagonistic to Canada, we recall the fact that it was through the diplomacy of Mr. William H. Seward, who was then Secretary of State, that Alaska was sold to his country by Russia. Mr. Seward was a most sagacious statesman, whose memory should be dear to his countrymen. At the time when the question was under discussion in the United States Senate, of which Mr. Seward was then a member, as to whether the then existing reciprocity treaty, otherwise known as the Elgin commercial treaty, should be renewed or continued, but the continuance of which was refused by the

United States, in advocating the continuance of it, Mr. Seward said:

The policy of the United States is to propitiate and secure the alliance of Canada while it is yet young and incurious of its future. But on the other hand, the policy the United States actually pursues is the infatuated one of rejecting and spurning vigorous, perennial, and ever growing Canada, while seeking to establish feeble States out of decaying Spanish Provinces on the coast, and in the islands of the Gulf of Mexico. I shall not live to see it, but the man is already born who will see the United States mourn this stupendous folly. All Southern political stars must set, though many times they rise again with diminished glory. But those which illuminate the pole remain, for ever shining in increasing splendor.

DIVIDENDS have been declared by Canadian Banks for the current half-year at the annual rates given below:

Canadian Bank of Commerce.....	7 per cent.
Imperial Bank	8 "
(and a bonus of 1 per cent.)	
Standard Bank	8 "
Union Bank	6 "
Traders Bank	6 "

—Monetary Times.

No doubt this is exhilarating news for capitalists and investors of bank stock, but it has a dark obverse for manufacturers. Money is worth only about four per cent. per annum in Great Britain, and all that manufacturers there may require in their business can be obtained at that rate. But not so in Canada. In the case of the Imperial Bank, we see that according to the above statement, the capitalists holding the stock are in receipt of eighteen per cent. per annum for the use of their money, an amount far in excess of what most of our most successful manufacturing concerns are realizing. With the exception of the clerks, the banks give but little employment to any sort of labor, while the manufacturers give profitable employment to thousands of working people. The bank capitalist toils not, neither does he spin; yet not even Solomon in all his glory received as much as eighteen per cent. per annum upon his investments in bank stock. It is to be noticed, too, that the chief officer of the Imperial Bank, who is also president of the Toronto Board of Trade, desires to prevent the development of an iron industry in Canada, by having the duties on manufactured iron put on a revenue basis, or having it put on the free list. To do this, would enable the banks to declare still larger dividends, and to give still greater bonuses, but it would be decidedly rough on the manufacturing industries of the country.

When were

YOUR

Boilers

LAST

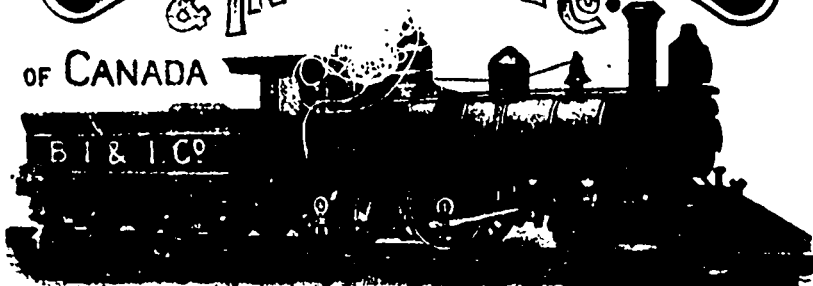
Inspected ?

JOHN L. BLAIKIE ESQ.
PRES.

EW. RATHBUN ESQ.
VICE PRES.

THE BOILER INSPECTION & INSURANCE CO.

OF CANADA



CONSULTING ENGINEERS

G.C. ROBB CHIEF ENGINEER
A. FRASER SEC. TRES.

HEAD OFFICE TORONTO

Are you sure

THEY ARE

SAFE

AND IN

GOOD

Condition ?

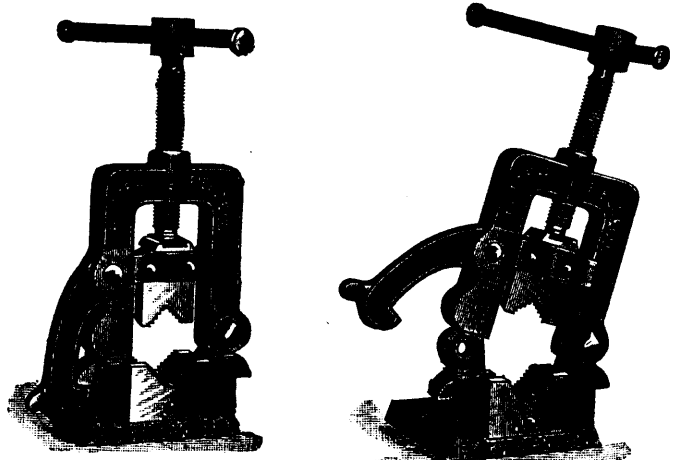
THE *Marine Review*, Cleveland, O., presents a double number and a colored lithograph supplement, representing one of the two finest passenger steamers traversing our great inland seas. Cleveland is perhaps the most important city on the lakes in the ship-building industry: and this being the fact it is not surprising that the appreciation of those interested in that industry of the *Review* should be demonstrated in a manner that has placed it among the foremost of American trade journals devoted to marine matters. The picture to which we allude which would be an ornament in any office, will be mailed in a protecting tube to any address on receipt of forty cents sent to the *Review*.

THE May issue of the *Southern States* magazine contains a number of interesting articles about North Carolina. Governor Elias Carr writes about the State in general, summarizing its resources and the present state of material development. Dr. H. B. Battle contributes an article on the climate of North Carolina, with illustrations representing characteristic climatic conditions. Prof. J. A. Holmes, writes about the mineral resources of the State. President George T. Winston, of the University of North Carolina contributes an article on education. W. W. Ashe, contributes a paper on the forest resources of the State. H. E. Harman, is the writer of an interesting article on tobacco culture, which is illustrated with views in tobacco fields and factories. The *Southern States* magazine is developing rapidly into a popular Southern monthly and shows much literary and artistic merit. Published by the *Manufacturers' Record Publishing Company*, Baltimore, Md., \$1.50 per year.

"FACTS ON CUT GLASS," is the title of a very beautifully illustrated pamphlet issued by the W. L. Libbey & Son Co., Toledo, Ohio, which gives a brief history of the manufacture of glass from very remote ages, describes the wonderful and important advancements made in the science of glass making and art of glass decoration, and tells of the plant the company have established at the World's Columbian Exposition at Chicago, where the industry in all its branches, will be, or is in active operation. This includes blowing, cutting, decorating, spinning, weaving, etc. This exhibit shows great enterprise on the part of the Libbey Company. Under ordinary circumstances a visit to a glass factory in the summer time is not an exceedingly comfortable one, the nature of the business being such as to cause the place to be quite warm. This has been overcome by an equipment of ventilation put in by the Bar-

ney Ventilating Fan Company, of Boston, Mass., by which at all times the temperature will be quite comfortable. If these fans will successfully remove heat from such an excessively hot place, they must be able to do first class work in the ventilation of public buildings, factories, etc.

BUTTERFIELD'S HINGED PIPE VISE.



SOME of the points of excellence of the Butterfield hinged pipe vise herewith illustrated, are: Simplicity and range of execution. The small size takes pipe up to 2½ inches, which more than covers a range of sizes taken by two sizes of some pipe vises. The steel jaws, which in pipe vises are the first parts to give out, are simple, and can be replaced at little cost. The parts are interchangeable. Easily attached to bench or plank. Light and strong. This vise will be introduced to the Canadian trade, by samples being sent to customers of the firm. For further information, apply to Butterfield and Co., Rock Island, Que.

Most manufacturers have had at times more or less annoyance arising from disagreeable odors existing in their goods, especially after being packed away for some time. The cause is not always easy to trace, neither is it easy to rectify, but generally it will be found to proceed from the use of a cheap oil or cheap soap. Then again some men in charge of washing the goods seem to think that a high temperature is necessary to saponify the oil, in order that it will rinse out easily and consequently leave the goods clean and free from smell. This is a mistake, for if the scouring liquor is higher than 120 degrees, the oil will be set in the goods, and never properly scoured out. The latter remark, it is to be understood, applies to goods which have been oiled with mineral oils particularly, but holds good also where lard or olive oils are used. A good lard oil is considered the best for woolen manufacturing, and many practical manufacturers use it now, even though it is higher priced than the compounded article. Oil stock with lard oil, be careful with regard to the temperature of scouring liquor, and above all use a good soap free from bad smell itself, rinse thoroughly after scouring, and the goods will dry bright and clear and will be free from the evil which has annoyed so many manufacturers.

A LONG FELT WANT!

A TYPE WRITER | Which does the Work
of the
For \$20.00 | \$100.00 Machines.

A Perfect Type Writer at a Low Price has long been a crying necessity.

The Odell Type Writer

is a perfect machine in every particular, at the remarkably low price of

\$20.00

Head Office For Canada **ROOM 36 CANADA LIFE BUILDING**

J. W. RUTHERFORD, Manager.

THE MONARCH ECONOMIC BOILER

Patented Can., May 6, 1886; Feb. 10, 1887.

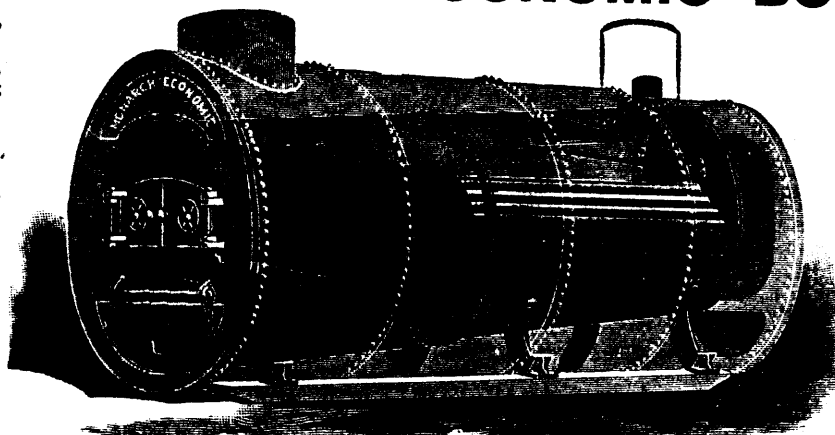
Patented U.S.A. Oct. 5, 1886; Aug. 23, 1887; May 8, 1888.

Is the strongest and most

Portable Boiler

In use, and its high economy in fuel makes it specially valuable to gold miners.

Tested evaporation 10.25 lbs. water per pound of ordinary Nova Scotia coal.



Manufacturers of

The Rob-Armstrong Automatic Engine

The Hercules Engine

(For all purposes).

Saw Mill, Electric Machinery

BELTS

PACKINGS, OILS, Etc.

ROBB ENGINEERING CO.

LIMITED

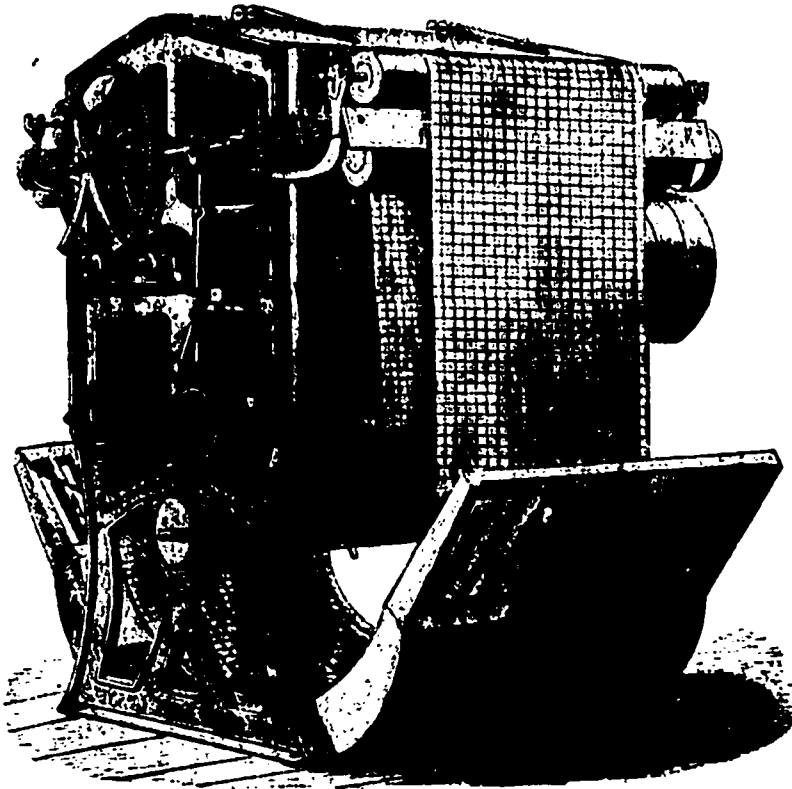
Successors to

A. ROBB & SONS

AMHERST, N.S.

DOUBLE-ACTING ROTARY GIG.

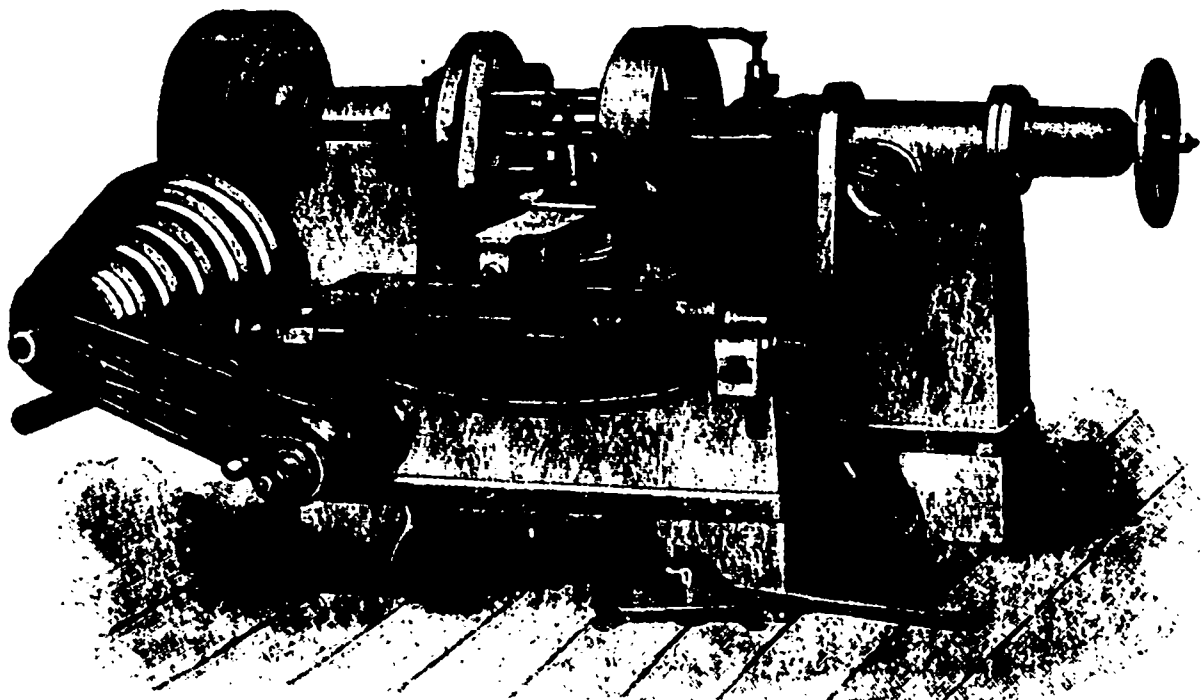
The accompanying illustration is of an improved double-acting rotary gig, manufactured by H. W. Karch, Hespeler, Ont. It is built in a thorough and substantial manner. Heavy iron frames, large shafting, wide-faced pulleys, and has two driving belts—straight and cross—so that the nap can be reversed without changing the goods. The draw rollers are driven by a system of bevel gears, so arranged



that the goods can be run with or against the cylinder, and be kept perfectly straight and free from wrinkles with little attention on the part of the operator. The contacts of the cloth with the gig cylinder can be increased, and the tension increased or diminished to a nicety, allowing more and a different kind of work, while the nap is more thoroughly raised. By this method of construction the cylinder is completely enclosed, so that the operator may examine the cloth with its right side outwards, and is always in view of the operator, and at the same time be protected from all flocks or flyings, or from any dust that may arise by the action of the teazels upon the cloth, a most objectionable feature in gigs heretofore made. The cylinder vibrates rapidly, making it impossible to leave streaks. The cloth is run continually onward, or reversed at the same time, if desired, and is brought in contact with the teazels in two places in passing over the cylinder. It requires less attention than an up and down gig, and is so constructed that the slats can be changed rapidly. It takes no more floor space than an ordinary gig. The special advantages claimed for this machine are: Throwing no flocks or dust, and no need of the operator wearing a sponge. The cloth traverses through the machine with its right side outward, so that it is always in view of the operator, allowing more rapid, easier, and more accurate gigging. The contacts of the cloth with the cylinder can be increased, and the tension increased or diminished to a nicety, allowing more and a different kind of work, while the nap is more thoroughly raised. The goods can be run with or against the cylinder. Can be used as an up and down gig if desired. Requires less attention than other gigs. Less dangerous to the operator than other gigs. No belts to slip. Gears are enclosed and will not clog up with flocks. These machines are made any width desired. For further particulars address, H. W. Karch, Hespeler, Ont.

Patented September 3rd, 1886. Weight of Four Quarter Gig, 2,500 lbs.

JOHN BERTRAM & SONS, 50-inch. Pulley Turning Machine



Visitors to the World's Columbian Exposition will find John Bertram & Sons in Machinery Hall With a first-class Display of their Latest Designed Machinists' Tools.

METALLIC DRAWING ROLLS.

The following description and illustration are of the metallic drawing rolls, for drawing the fibre of cotton and other materials as manufactured by the Metallic Drawing Roll Company, Indian Orchard, Mass.

No one thing in the economy of cotton manufacture has been more ardently desired than an efficient substitute for the leather covered drawing roll. This roll remains in practically the same state as when perfected by Arkwright in 1767, and aside from the shell roll is perhaps the only thing about the mill which has not been improved upon. The attempts to improve it have been many, so many, in fact, as to lead a large number of mill men to declare the roll incapable of improvement.

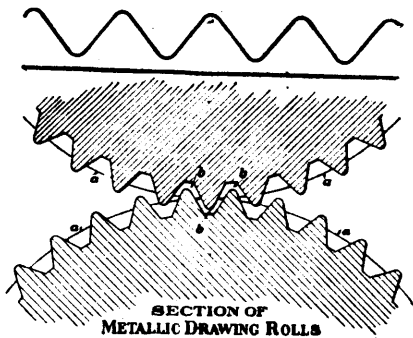


Fig. 1.—The straight line above indicates a sliver from leather rolls; the crimped line shows sliver from metallic rolls, and illustrates why metallic rolls deliver one-third more product.

The principal topic for discussion at the semi-annual meeting of the New England Cotton Manufacturers' Association at Boston a few weeks ago, was this metallic roll, with an exhaustive paper regarding it by Mr. H. L. Pratt, of the Bates Manufacturing Company, Lewiston, Maine, from which we obtain the following description:—

Referring to the engravings here shown, it will at once be noticed that the rolls are practically gears. They are provided with collars shown at A A in Fig. 1, and more prominently illustrated in Fig. 2. These collars are identical in action with the shrouding sometimes used on heavy gearing to strengthen the teeth, being made to the exact pitch diameter of the gears. These collars touch and move in pure rolling contact, thereby preventing the points of the teeth from coming in contact with the bottom of the flutes or grooves, as they only intersect each other 44-1000 of an inch. This separation is clearly shown in Fig. 1, and also in the cross section shown in Fig. 3.

The separation of the gears affords sufficient space for the sliver, and thereby prevents the crushing and cutting of the fibre, which has proved fatal to all other attempts to run interlocking rolls in the past. The space referred to for the sliver is clearly shown in the drawing at B B, Fig. 1. This space is amply sufficient to permit the cotton to be compressed within the limit of its elastic capability, which gives the drawing effect of a cushioned roll without any of its disadvantages.

The question of the wear of collars at once arises. By referring to Fig. 2, we notice that the collars move, as before mentioned, in pure rolling contact, that is, without slipping, hence the wear, if there be any, is reduced to a minimum, and would probably no more than keep pace with the inappreciable wear on the top of the flutes caused by the friction of the sliver being drawn. In fact, I think there is no doubt that the collars will last during the ordinary life of a frame.

Bearing in mind that the metallic rolls are practically gears, adjusted by means of the collars, with sufficient "clearance" for the sliver, a moment's reflection will show that the bite or nip is at the point of contact of the interlocking flutes, being distributed through

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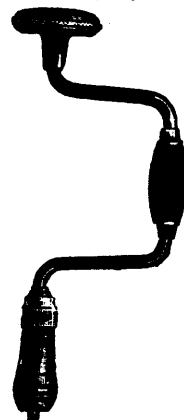
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the number of flutes simultaneously engaged. Hence there is a positive hold maintained on the fibre during the entire passage through the nip, insuring an even and uniform attenuation.

Such a nip can only be obtained, if indeed it can be obtained at all in the case of common leather covered rolls, by the use of very heavy weights, and as a matter of course, these weights are destructive to the leather covering.

With rolls badly covered, or in bad condition, good drawing is impossible. Rolls are run until discovered to be doing bad work, and oftentimes turn out considerable such work before it is detected. Leather covered rolls are not only deteriorating from the time they are started until they are positively bad and replaced. Roll covering being inexpensive, all intend to get as much wear from the rolls as possible.

In the metallic roll system the top roll is driven by the action of the flutes of the bottom roll. Here is a positive draft from direct gearing, as all the pictures show, instead of the slipping draft of the leather covered top roll.

This positive draft of the metallic roll entirely prevents the injurious action always present in the ordinary rolls, where the top roll is driven solely by the frictional contact of the bottom roll, which friction has to be transmitted through the medium of the sliver itself.

It follows, therefore, that with the old system that part of the sliver in immediate contact with the bottom roll is extended more than that in contact with the top roll.

There can be no doubt that this action, together with the slipping frictional loss which exists under the best and most perfect conditions of leather covered rolls, is very largely the cause of imperfect drawing. The heavier the sliver the more apparent the action and injury is.

It is a well-known fact that the draft by weight in the case of common leather covered rolls is less than the figured draft. With the metallic roll the reverse is the case. I consider the reason for this due to two causes: One is the absence of all slipping between the rolls, and the other is the fact that the act of forcing the sliver into the flutes of the rolls introduces a slight draft. In order to obtain a draft of 4 1-2, only a figured draft of 4 should be made on metallic rolls.

There being no friction of leather on the sliver, and no heating of rolls because of slipping and also because of excessive weighting, that great enemy of all carding,—electricity, does not appear.

The leather covering being abolished by the metallic system, the bad effects of warm, damp, sticky weather on the varnish and leather of the old roll system are entirely obliterated.

The sliver following the convolutions of the rolls causes them to deliver about one-quarter more than the common roll of the same diameter. Therefore to get the same production we may run the drawing rolls of a frame four-fifths of the speed required by the ordinary leather covered rolls. This with the reduction of weights effects a noticeable reduction of power required to drive a frame, while obtaining the same production, but much superior in quality.

Inversely, running metallic rolls at the same speed as the common rolls of same diameter, will give a production one-quarter greater than with the common rolls, and of better quality.

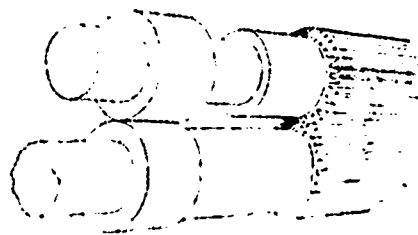


FIG. 2—Perspective view of rolls, showing collets in pure rolling contact, but so adjusted as to separate the gears while permitting them to interlock as shown in Fig. 1.

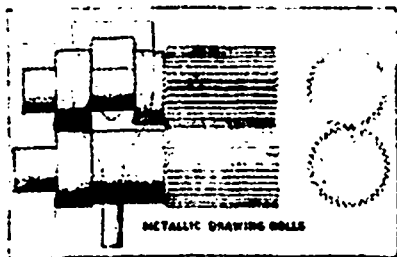
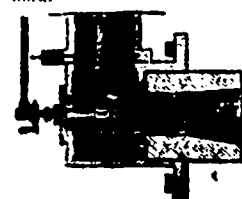
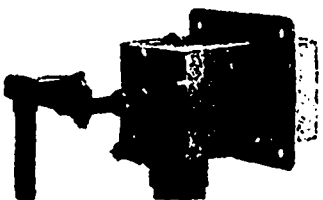


FIG. 3. Front View and Cross Section.

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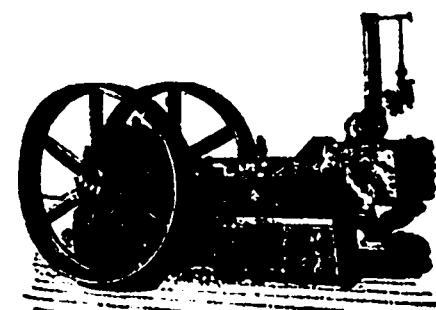


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This can be, and in fact is, taken advantage of by those to whom a saving of floor space is desirable. This increase of production is effected without increased power, or in case of a new plant, with little or no increase of first cost, the extra expense of the metallic rolls being compensated for by the reduced number of deliveries required. This of course refers to drawing alone.

The crimp put into the sliver by the form of the roll, and which at first appears to many as an annoying feature, proves to be a distinct advantage, as demonstrated by less breaking back at the next process. This is accounted for by the fact that in the manipulation of the fibre by the rolls in all drawing processes there is a tendency of the fibres to curl and separate from the arrangement it has been the object of the process to accomplish.

With the metallic rolls it must be obvious that the crimp in the sliver does so condense and unite the fibres that in its delivery to the calendar roll it can suffer no disarrangement, and therefore the fibres are more firmly held together.

Mr. Pratt's experience summarized is as follows:—

First. The metallic rolls are perfectly made, being ground down to extreme accuracy in size, and hence we start with and maintain at all times a perfect roll, working without friction of collars, which will, I believe, last almost indefinitely.

Second. The bite of the roll is positive, and the draft direct and positive, thus requiring less weight and less power.

Third. The rolls running on collars without friction admit of sufficient space to allow perfect attenuation of the sliver without injury, and possessing all the advantages of a cushioned roll.

Fourth. The licking up from electricity and sticky weather is entirely overcome.

Fifth. The imperfect or "cut work" arising from imperfectly covered or imperfectly varnished rolls, or dry rolls because of lack of oil, is entirely eliminated.

Sixth. The cost of roll covering, roll varnishing, delays because of sliver breaking down, licking up, and consequent waste are saved.

Seventh. The product is increased and quality improved.

Eighth. Considerable more leaf and dirt are extracted from the sliver.

Ninth. To sum it all, the quality of the product is much superior, producing yarn of much greater evenness and strength. Therefore the metallic roll, in my opinion, has come to stay.

New York is exporting paper at the rate of \$20,000 worth a week. When one thinks of the enormous amount used daily throughout the United States, without considering our rapidly-growing exports, the wonder is, where does it come from, and how much longer will our forests, which furnish the raw material, be able to withstand the exhaustive demand made upon them. — *Manufacturers' Gazette.*

The French postal authorities, after carefully informing themselves of the working of the English post card system, intend to adopt it, but with improvements. For instance, the post cards will be issued in the form of check books—that is, with foils. On this foil the sender of a post card can write a memorandum of the contents of the post card, and can have the post card and the foil stamped by the post office before the card is torn off, so that a verified proof can be kept of the correspondence.



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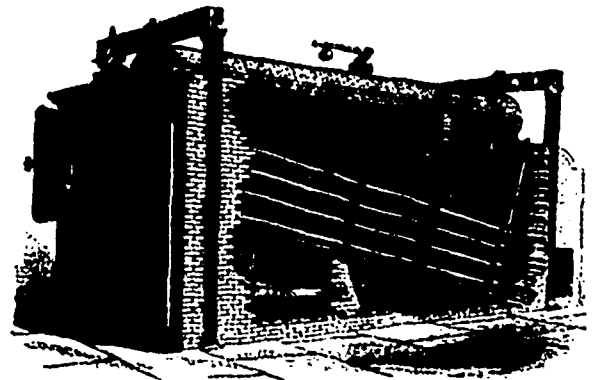


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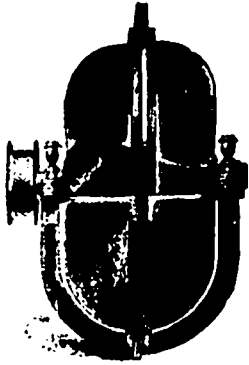
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STEAM IN DYE HOUSES AND HOW TO GET RID OF IT.

Of all the departments in the textile manufacturing plant, that which the manufacturer dislikes the most to visit, and where the output, while being of the utmost importance to him, receives but little of his personal attention, is the dye-house. The reason he does not visit it oftener is, because if he goes into it a white man he come out a gentleman of color. His clothes will have all the hues of



Edge View, Pat. Jan. 26, 1887.

Joseph's famous coat, and the vapor bath which he will get when he is least prepared to take it properly, will make him feel uneasy for an hour or two, and may possibly end in pneumonia. The reason for this is patent. Textile manufacturers have always prospered under these conditions, and as a matter of business, antiquated methods of prosperity are pretty safe, and as long as the boss dyer can turn out the colors which are wanted, we are told that the dye-house has no steam in it, and that the men are contented, and the new roof occasionally on the dye-house is charged up to wear and tear. This is the old way of looking at it.

In new plants, however, we find more substantial structures than ever before, heavier floors, larger expanse of floor area, the most modern and improved style of machinery, all kinds of labor-saving devices, steam heating, good ventilation, and the modern wall is a building my lord and lady can visit, thoroughly inspect, and bring away no scar or sign. The spirit of progress is also felt in the dye-house. Modern appliances, installed by men who are guided by practical experience in such matters, are employed to do work which was formerly done by hand, and we find a better quality of work is turned out and at less expense. The steam which formerly filled every portion of the house is conspicuous by its absence. There is no dripping from overhead, unless there be an iron roof, and with properly constructed floors there are no puddles of water to wade through. The dyers can compare colors without taking them out of doors, and instead of a house where formerly the ice was chopped off of the floor in spring, and boiled to get the yarn out of it, we find an apartment as warm and comfortable at all seasons of the year as any in the entire plant. Does it not stand to reason that the dyer, although, as a rule, possessed of an angelic disposition, will, in such a dye-house as this, do better work for his employer, and more of it, than he will if obliged to work in rubber

boots at all seasons of the year, and with overcoat and hat in the winter, and who meditates constantly on the miseries of existence, and wonders, as he slaps his hands around himself to keep life in his body, why he was born? In this latter case the dyer is enjoying the condition of affairs which has been in existence ever since B.C.; but the model dye-house to which we have referred, belongs to a progressive man, who has found that in this age of competition, any improvement which enables him to turn out more or better stock, is of practical value to him and worthy of consideration. Steam can be removed from any dye-house, although the undertaking differs greatly in different houses, and is entirely dependent upon the present conditions existing in them. The method, however, is practically the same in all cases, whether the undertaking is a simple one, or whether a lot of study and conniving is necessary. The scheme is this:—In the first place, the dye-house is made as nearly air-tight as possible, particular attention having been paid to the closing up of the old-fashioned monitor roof, and all other openings designed to allow the steam to escape through. A powerful exhaust fan is placed at one end of the house, or adjacent to the tubs, so that the steam will surround the fan as it arises from the points where it is generated. When this fan is started, it will in a very few minutes pump out all the air in the house with all the adjacent steam; and now comes the vital point in the whole matter, and one which many manufacturers entirely overlook when using a fan, and frequently give the fan a black eye, on account of its inability to perform a miracle. Everyone knows that at one breath a man can exhaust all the air from a

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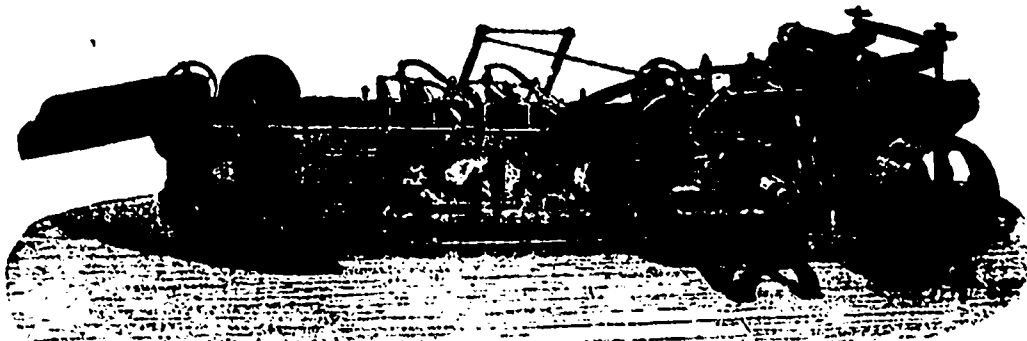
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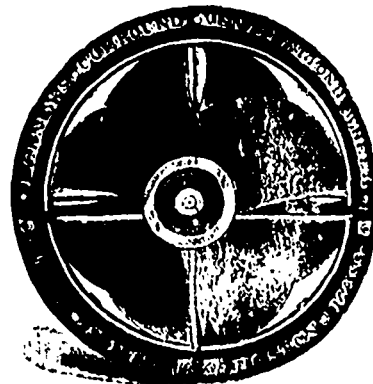


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bottle, and that pull hard as he may after that, he can get no more out, but if he puncture a small hole in the bottom of the bottle then his pull at the neck results in a violent current of air through the bottle, and whatever is inside the bottle quickly goes inside of him. It is the same in the dye-house. After the fan has sucked out all the loose air in the house, unless a supply is furnished, it can pull out no more, consequently, it cannot create currents which will convey the steam to the fan, and while the steam will rise in the partial vacuum, the fan has no means of getting hold of it and discharging it. To overcome this, an opening is made at the most remote corner of the dye-house from the fan, through which the outside air is admitted as fast as the fan pulls it out at the other end of the house. The tendency of the air in the dye-house is to make a steady movement from the point of supply to the fan, and there be discharged out of doors, together with whatever steam, heat, dust, acid, fumes, etc., it may pick up in its progress. This is the scheme for work in warm weather. In cold weather the same scheme is applied, but the air as it comes in from out of doors must be heated in some economical way (the most frequent method used being that of obliging it to pass through a coil of steam pipe), to put it in condition for the work which it is to accomplish. The effect of admitting cold outside air into a dye-house filled with steam is well known to everyone, and the reason for heating this air requires no explanation. The steam coil should be placed as near the floor as is convenient, and should be made sufficiently open so that the fan can draw air through it easily and without sufficient resistance to contract the volume. The action of the air from this steam coil is directly upward, and while it keeps the ceiling warm, so that the condensation is reduced to a minimum, it also keeps the steam there in a light condition, so that it is dragged along by the fan, leaving the least possible moisture behind it, which in turn is dried up by the heated air which follows on directly behind. As soon as this air becomes the least chilled, its tendency is to gradually fall to the floor, and while the warmest and driest air still floats along under the ceiling to the fan, the entire apartment is kept warmed by that portion which is a little too heavy to float. The constantly changing air in the house prevents the steam from accumulating in any quantity, and the condensation and dripping is prevented by the temperature. One can see from one end of the house to the other, and the dye-house gives a light and airy impression, which in itself is worth the cost of the apparatus. The stopping of condensation on the roof not only stops the dripping, which is ruinous to fancy dyeing, as well as a general nuisance, but preserves the roof from decay; and those who have ever repaired a dye-house roof know that when such an undertaking is begun, it is hard to find a place where a nail will hold, or where the work can be stopped except by the entire removal of the old structure. To them, more than to anyone else, is apparent the value of a method which will make these expensive alterations unnecessary.



Face View.

The Barney Ventilating Fan Co., 70 Pearl Street, Boston, Mass., whose card appears in another column, are experts of twenty years' experience in this line of work. The compound fan which they build is the invention of their Mr. James E. Barney, who, having had a long experience in the use of air-moving machinery, has finally devised a fan which, he says, cannot revolve without air passing through it, and through which no discharged air can get back while it is in motion. This fan, on account of its superior ability, has been found to have been most applicable to plants where hard work is to be done. The Barney company make a careful study of every piece of work which is presented for their consideration, and they ship no wheels away unless they know that the recommendations which they make regarding size of fan, location in which to put it, speed to run it at, etc., will be complied with, so that the buyer will get the very best results from it as soon as it is started, without any further expense or experimenting. A great many of the largest manufacturers in the United States, who have had years of experience, have adopted this fan on account of its practical value. In their circular, which is sent on application, they explain the construction of their fan, and show why it will perform an immense amount of work with a very small outlay of power.

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A representative of this journal has visited the office and wareroom of this company in Boston, and saw this fan in actual operation, and testifies that the compound fan seems to move a tremendous volume of air. These fans drive air as hard as it pulls it. This is the advantage of the compound fan, and a great many of them are used for all kinds of drying purposes, where a large volume of air at a low temperature is preferred to a limited circulation and high temperature. Of course, the cooler the air which is supplied to a wool-dryer, the better will be the quality of the dried stock. It is not the heat of the summer wind which dries so perfectly, but the immense volume of air constantly sweeping by the wet material and carrying off the moisture. The usual method of using these fans for drying wool is to place them in one end of an ordinary bed dryer and make them blow up through the wool, which blooms as it dries, and facilitates the progress of the air through it. These people recommend that wool be spread about ten inches or a foot thick to do quick drying, and their twenty years' experience in the use of fans enables them to make recommendations to their customers which, being the result of practical test and experimenting, frequently save time and expense, and assure their customers of getting the best results obtainable.

The amount of business which this company does in Canada, seems to warrant their making special endeavors to serve their customers here, and they will shortly have a stock of fans on this side of the line, which can be shipped to buyers in the Dominion without the payment of any duty.

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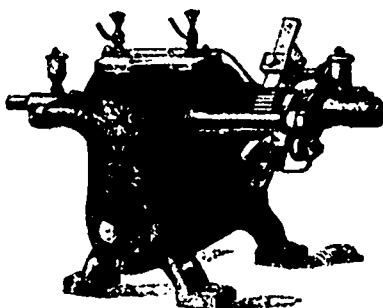
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TORONTO

Inventions.

CANADIAN PATENTS.

The following patents have been issued from the Canadian Patent Offices from April 11 to April 29, 1893, inclusive.

Information in regard to any of these patents may be had free on application to **THE CANADIAN MANUFACTURER**, or copies of American patents corresponding to these, where the American patent has been previously granted, can be procured through us for the sum of twenty-five cents.

MECHANICAL.

- 42,567 Valve gear, C. F. Littlejohn, April 12th.
 42,568 Hold back for vehicle, E. P. Parker, April 12th.
 42,570 Boiler, H. A. R. Dietrich, April 12th.
 42,570 Boots and shoes, J. O. Trotter, April 12th.
 42,571 Stove and furnace, S. P. Hutchinson, April 12th.
 42,572 Wire harness machine, J. S. Reid, April 12th.
 42,573 Making built-up work for pew backs, M. Lancaster, April 12th.
 42,574 Garment hook, F. E. DeLong, April 12th.
 42,575 Garment hook, F. E. DeLong, April 12th.
 42,576 Garment hook, F. E. DeLong, April 12th.
 42,577 Coffee pot, F. H. Abell, April 12th.
 42,578 Brick kiln, J. Henney, April 12th.
 42,579 Heating apparatus for buildings, Q. N. Evans, April 12th.
 42,580 Communicating motion, L. Warfield, April 12th.
 42,581 Lunch box, J. P. Duval, April 12th.
 42,582 Attachment for harvesters to cut peas, W. Cosgrove, April 12th.
 42,583 Composition of ingredients for melting ice and snow, J. W. Hallman, April 12th.
 42,584 Door lock, J. Cathrein, April 12th.
 42,585 Stoneware jar, G. H. Farrar, April 12th.
 42,586 Feeding attachment for threshing machines, C. and P. Quintus, April 13th.

- 42,587 Mowing machine, T. S. Brown, April 12th.
 42,588 Tube, E. T. Greenfield and J. Nagel, April 13th.
 42,589 Steam and hot water boiler, A. Catchpole, April 13th.
 42,590 Tobacco cutter, A. Stuart, Jr., April 13th.
 42,591 Cash registering and recording appliance, J. Shakespeare, April 13th.
 42,592 Car journal box, E. W. M. Hughes and E. M. Dickens, April 13th.
 42,593 Corn harvester, D. M. Osborne & Co., April 13th.
 42,594 Sash weight, D. P. Slattery, April 13th.
 42,595 Water tube steamboiler, H. W. Sellar, April 13th.
 42,596 Locomotive boiler, J. S. Nowlin and W. S. Coburn, April 13th.
 42,598 Holder for spring harrow teeth, A. B. Farquhar, April 13th.
 42,599 Garment waist supporter, H. M. Clark, April 13th.
 42,600 Nursing bottle, G. R. Schimmel, April 13th.
 42,601 Draft regulator, C. D. Howard, April 13th.
 42,602 Steam muffler, C. E. Healy, April 13th.
 42,603 Food cutter, M. Fader, April 13th.
 42,604 Envelope, J. W. Alton, April 13th.
 42,605 Measuring tape, J. J. Oxley, April 13th.
 42,606 Mould for making plaster slab, T. Curran, April 13th.
 42,607 Heating apparatus, A. J. Wattles and C. M. Loken, April 14th.
 42,608 Automatic car coupler, E. B. Reid, April 14th.
 42,609 Brush fibre clamp, W. S. McDonel, April 14th.
 42,610 Brush, J. S. Edgar, April 14th.
 42,611 Refrigerator, the Frusell Automatic Freezer Co., April 14th.
 42,612 Stove pipe elbow, Kickhefer Bros. & Co., April 14th.
 42,613 Rice scourer, S. A. Pickett, April 14th.
 42,614 Bicycle, H. G. E. Pointon, April 14th.
 42,615 Floodwater trap for collars, J. L. Smith, April 14th.
 42,616 Cotton harvesting device, G. Boeckman, April 14th.
 42,617 Rocker and cup for operating pump, J. Barrett, April 14th.
 42,618 Journal box lifter, E. E. Taylor, April 14th.
 42,619 Adjustable wire bale tie, J. W. Griswold, April 14th.
 42,620 Valve for steam engine, F. W. Bruce, April 14th.

FETHERSTONHAUGH & CO.

*Patent Barristers and Solicitors,
 Electrical and Mechanical Experts
 and Draughtsmen*

PATENTS

Procured in Canada and all
 Foreign Countries

Counsel Work Undertaken in Patent Causes.
 Patent Suits Prosecuted before the Courts.
 Validity and Infringements of Patents Investigated.
 Searches made. Assignments and Agreements
 Drawn. Advice on Patent Laws, etc.

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G. de G. LANGUEDOC,
PATENT SOLICITOR
 CIVIL ENGINEER AND ARCHITECT
 Associate Member Can. Society Civil Engineers. Member of the Society of
 Architects of the Province of Quebec.
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C. G. C. Simpson, 146 St. James St., Montreal

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PATENTS

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Henry W. Williams

Solicitor of Patents
 and Counsellor in Patent Causes

PATENTS

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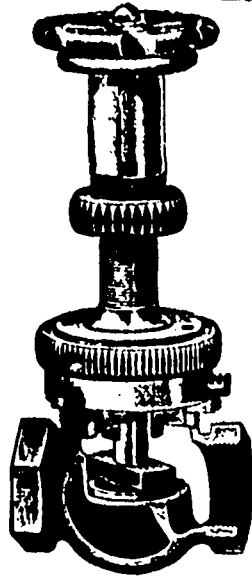
UNITED STATES

AND PATENT SUITS PROSECUTED AND DEFENDED IN
 THE UNITED STATES COURTS.

Over 24 years continuous practice in the U. S. Patent Office. Letters
 desiring information cheerfully answered.

OFFICES AT 131 DEVONSHIRE STREET, BOSTON, MASS.

- 42,621 Oven door for cooking stoves, W. Buck, April 14th.
- 42,622 Neck yoke, J. F. Kollog, April 14th.
- 42,623 Railway brake, T. A. Allon, April 14th.
- 42,624 Street car hoater, G. Myers, April 14th.
- 42,625 Steam engine, Littlejohn, April 14th.
- 42,626 Window sash lock, G. Gibson, April 14th.
- 42,627 Calking tool, J. O. Walton et al. April 14th.
- 42,628 Safety bolt, A. C. Goodman, and J. Dahindon, April 14th.
- 42,629 Hitching strap holder, S. T. Smith and H. P. Proctor, April 14th.
- 42,631 Extracting and sawing stone and minerals, P. Denard, April 14th.
- 42,634 Street car, J. Marshall, April 15th.
- 42,635 Railway signalling, J. J. Boyle, April 15th.
- 42,636 Wall ventilator, G. McSpudden, April 15th.
- 42,637 Curtain holding device, E. E. Piper and G. H. Davis.
- 42,638 Land roller, C. T. Barrett, April 15th.
- 42,639 Tire tightener, J. P. Ross, April 15th.
- 42,640 Centrifugally treating particles of metallic or mineral bearing substances of different degrees of specific gravity, O. B. Peck, April 15th.
- 42,641 Oil burning lamp, F. T. Vine, April 15th.
- 42,643 Elevator, M. Y. Calcutt, April 15th.
- 42,644 Cable car grip, D. D. Nolley, April 15th.
- 42,645 Spotted, flaked and fancy yarns, J. Robb, April 15th.
- 42,646 Gas stove, J. W. Danforth, April 15th.
- 42,647 Cutting fabrics, The Becker Machine Co., April 17th.
- 42,648 Whiffletree hook, C. E. Jones et al, April 17th.
- 42,649 Can filling machine, J. S. Moore et al, April 17th.
- 42,650 Friction roller, The Brussels Tapestry Co., April 17th.
- 42,651 Centrifugally treating particles of metallic or mineral bearing substances of different degrees of specific gravity, O. B. Peck, April 17th.
- 42,652 Nut lock, J. C. Cooke, April 17th.
- 42,653 Valve gear for engines, the Wolf Valve Gear Co., April 17th.
- 42,654 Drawing sheet metal, E & O. W. Morton, April 17th.
- 42,655 Registering the number of persons entering or leaving tramway cars, etc., A. Gujardo, April 17th.
- 42,656 Gas stove, J. Gibbons April 17th.
- 42,657 Generating steam for heating air or water and for corking purposes, T. Lishman, April 17th.
- 42,658 Making washers and nuts, J. P. Mason et al, April 17th.
- 42,660 Automatic detector stop motion, for wire netting and other wire working machinery, E. S. Bond, April 17th.
- 42,661 Cooking apparatus, J. Gibbons, April 17th.
- 42,662 Grooving machine, Peck, Stow & Wilcox Co., April 18th.
- 42,663 Opening cans, W. H. Thicke et al, April 18th.



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SEND FOR CATALOGUE.

- 42,664 Controlling the application of power, J. F. McFauchlin, April 18th.
 42,665 Broiling apparatus, J. Gibbons, April 18th.
 42,666 Knitting machine, W. H. Haskell, April 18th.
 42,668 Road cart, J. D. Dort & W. Durant, April 18th.
 42,669 Bottom for kettles and other vessels, J. Simpson & G. M. Collins, April 18th.
 42,670 Cooking apparatus, G. Noaks, et al, April 18th.
 42,671 Car coupler, J. B. Graves, April 18th.
 42,672 Thill support, W. M. Buchanan, April 18th.
 42,673 Straw cutter and other such like machines, J. A. Manning, April 18th.
 42,674 Candle, John James and W. R. Tennant, April 18th.
 42,675 Artificial ear drum, G. H. Wilson, April 18th.
 42,676 Pipe coupling, etc., G. B. Howell, April 18th.
 42,677 Loop for harness and other straps, W. P. Gelabert, et al., April 19th.
 42,678 Interchangeable lining for journal bearings, F. E. & C. W. Leonard, April 19th.
 42,679 Heater for fire places, A. E. Lytle and S. D. Oviatt, April 19th.
 42,680 Support for shelves of book-cases and other like articles, W. E. Richards, April 19th.
 42,681 Track sanding, C. W. Sherbourne, April 19th.
 42,682 Necktie fastener, L. Greenwald, April 19th.
 42,683 Basket, B. D. Babcock, April 19th.
 42,684 Shaft loop or tug, E. L. Fenerty, April 19th.
 42,685 Crutch, C. J. Farr, April 19th.
 42,686 Propelling boats by hand power, F. Giles, April 19th.
 42,687 Car coupler, J. B. Graves, April 19th.
 42,688 Medium or composition for decorative purposes, J. Balahtyne and J. Deuhagyer, April 19th.
 42,689 Thermostatic instrument, M. Martin, April 19th.
 42,690 Handpiece for dental engine, F. D. Price, April 19th.
 42,691 Advertising device, A. C. Macdougall, April 19th.
 42,692 Trunk, J. T. Dwyer, April 19th.
 42,693 Trunk, J. T. Dwyer, April 19th.
 42,694 Liquid dispensing apparatus, W. M. Fowler, April 19th.
 42,695 Carpet sweeper, E. H. Raymond, April 21st.
 42,696 Carpet stretcher, J. D. Trenaman, April 21st.
 42,697 Clod pulverizer, G. D. Heldebrant, April 21st.
 42,698 Potato digger, H. Krebs, April 21st.
 42,699 Pneumatic balanced slide valves, J. McDonald, April 21st.
 42,700 Stove, E. R. Weston, April 21st.
 42,701 Nut lock, E. W. Taylor, April 21st.
 42,702 Hose supporter, P. F. Daniels, April 21st.
 42,703 Cheese press, J. L. Helmer, April 21st.
 42,704 Compressing and pumping apparatus, A. Reidler, April 21st.
 42,705 Cheese manufacture, J. Boyd, April 21st.
 42,706 Rotary pump, B. F. Taber, April 21st.
 42,707 Automatic gauging tape, G. F. Oakley, April 21st.
 42,708 Chair pad, E. G. Wheeler and J. J. Totman, April 21st.
 42,711 Flooring and siding tong, G. W. Miller, et al., April 21st.
 42,712 Knitted fabrics, W. H. Haskell, April 21st.
 42,713 Grinding rolls, D. J. Davidson, et al., April 21st.
 42,715 Bicycle, J. B. Evans, April 22nd.
 42,716 Vertical broiler, J. Gibbons, April 22nd.
 42,717 Heating furnace, J. Gibbons, April 22nd.
 42,718 Centrifugal machine, R. Folsche, April 22nd.
 42,719 Boiler, C. E. Marston, April 22nd.
 42,720 Rotary fan for ventilators, L. J. Davidson, April 22nd.
 42,721 Drawing die, E. & O. W. Norton, April 22nd.
 42,722 Saddle for cycle vehicle, C. W. Laladee, April 22nd.
 42,723 Car coupling, T. H. Gilbert, April 22nd.
 42,724 Car coupling, E. D. Whipple, April 22nd.
 42,725 Waggon scale, L. G. Clawson, et al., April 22nd.
 42,726 Weight attachment for bicycles, R. Kroncke and E. Schoneyder, April 22nd.
 42,728 Rotary hook for sewing machines, H. Moore, April 22nd.

MACHINERY.

FOLLOWING list of New and Second-Hand Boilers, Engines and General Machinery for sale by The Canada Machinery and Supply Co., Brantford, Ont., dealers in New and Second-Hand Machinery and Supplies:—

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ONE 10 x 15 HORIZONTAL ENGINE, Whitelaw make, in first class order.

TWO 6 x 12 HORIZONTAL ENGINES, Waterous make, "Clipper."

ONE 9 x 12 HORIZONTAL ENGINE, Morrison maker, Hamilton.

TWO 7 x 9 SLIDE VALVE ENGINES, Beckett's make.

ONE 11 H.P. ENGINE, Leonard make, nearly new.

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ONE ONE-SIDE MOULDER.

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ONE HEAVY IRON FRAME SHAPER, Cowan & Co. makers.

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ONE 16 INCH "LITTLE GIANT" WATER WHEEL.

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- 42,729 Tobacco pipe, T. Anderson, April 22nd.
- 42,730 Sulky plow, The J. T. Case Plow Works, April 22nd.
- 42,732 Cabbage and root cutter and cider mill, J. D. Mills, et al., April 22nd.
- 42,733 Overshoe, J. Guimane, April 22nd.
- 42,734 Couch, lounge and sofa, R. S. Wright, April 22nd.
- 42,735 Bevel square, G. R. Richardson, April 22nd.
- 42,736 Waggon wheel, C. T. Wallowman, April 22nd.
- 42,737 Ink stand, L. B. Manley, April 22nd.
- 42,738 Insole, St. Louis Wooden Insole Co., April 22nd.
- 42,739 Setting and holding plate glass for bevelling, E. Hill, April 22nd.
- 42,740 Auger bit, A. L. Adams, April 22nd.
- 42,741 Knot for nets, etc., R. Semmler, April 22nd.
- 42,742 Cigar attachment, T. Guilfoyle, April 22nd.
- 42,743 Fence posts for railroads and farm fencing, H. Allen Wartman, April 22nd.
- 42,744 Wire coiling and cutting machines, J. Fulgham, April 22nd.
- 42,745 Bottle sealing devices, W. Painter, April 22nd.
- 42,746 Bottle sealing devices, W. Painter, April 22nd.
- 42,747 Attachments for moulding machines, R. M. Shelely, April 22nd.
- 42,748 Disk Harrows, J. Henry Groutk, April 22nd.
- 42,749 Check hooks, Hugh Gordon, April 22nd.
- 42,750 Fifth wheels for vehicles, Lewis Bosart, April 22nd.
- 42,751 Claw hammer, W. Kendall, April 22nd.
- 42,752 Compound for treating fuel, R. Chas. Flower, April 22nd.

- 42,753 Automatic brakes for railway cars, Curtis Whitacre, April 22nd.
- 42,754 Engine valve, W. Curtis Whitacre, April 22nd.
- 42,755 Couplings for Pipes, John Snyder, April 22nd.
- 42,756 Machine for bolting flour, J. M. Finch, April 22nd.
- 42,757 Method of, and apparatus for, condensing fibrous materials preparatory to spinning, F. V. Map Raabe, April 22nd.
- 42,758 Vegetable waste fibres, F. V. Map Raabe, April 22nd.
- 42,759 Fabrication of vanished leather, M. Cantin, April 22nd.
- 42,760 Calcining gypsum, L. C. Davidson, April 22nd.
- 42,761 Abdominal supporters, Mrs. P. L. Pickering, April 22nd.
- 42,762 Shocking machines, R. Connell, April 22nd.
- 42,763 Piston valves for steam engines, M. E. Hershey, April 22nd.
- 42,764 Bicycle handle bar, P. Olin Johnson, April 22nd.
- 44,765 Attachments for beds, H. C. Wierenga, April 22nd.
- 42,766 Reducing pressure valves, E. James Wood, April 22nd.
- 42,767 Controlling draft in chimneys, Geo. Lander and F. Niell, April 22nd.
- 42,768 Wardrobe fixtures, J. J. Bisel, April 22nd.
- 42,769 Ladders, F. Dallinger and E. J. Popp, April 22nd.
- 42,771 Hot air registers, Thomas Cissel, April 22nd.
- 42,772 Attachments for driving reins, Geo. Corder, April 22nd.
- 42,773 Refrigerators, J. G. Malcolm, April 22nd.
- 42,774 Attachment by which small drills may be advantageously used in a large drilling machine, J. J. Stevens, April 22nd.

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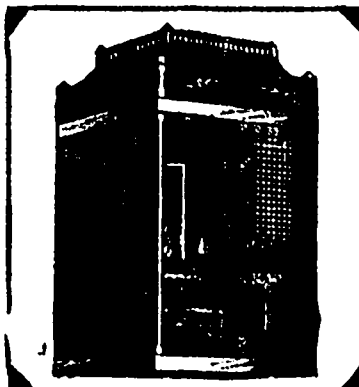


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- 42,775 Packing Gold films and device for applying the same, W. Hamilton, April 22nd.
 42,776 Seal locks, P. H. Conger, April 22nd.
 42,777 Belt and pulley covers, E. Brockmuhl & Co., April 22nd.
 42,778 Method of preparing and holding sausage casings, P. Turner, April 22nd.
 42,779 Car couplings, M. I. Welch, April 22nd.
 42,780 Coverings for steam boilers, F. Sparhan, et al., April 22nd.
 42,781 Saw teeth, W. E. Brooke, April 22nd.
 42,782 Bungo, John Rasmile, et al., April 22nd.
 42,783 Furnace, E. Gurney, April 22nd.
 42,784 Steam motors, E. H. Edwards and Edgar Ambrose, April 22nd.

ELECTRIC.

- 42,564 Cooling the iron in transformers or in the armatures of dynamo electric machines, H. A. Rowland, April 12th.
 42,565 Cooling the iron in transformers or in the armatures of dynamo electric machines, H. A. Rowland, April 12th.
 42,566 Cooling electrical conductors, H. A. Rowland, April 12th.
 42,597 Underground conduit for electric railways, C. P. Tatno, April 13th.
 42,630 Storage battery, P. Kennedy & C. J. Diss, April 14th.
 42,632 Electric lamp lighter, J. C. Chambers, April 15th.
 42,633 Electric arc lamp, W. H. A. Kester, April 15th.
 42,642 Electric Welding Apparatus, H. Leup, April 15th.
 42,659 Electric apparatus for indicating the progress and result of races, games and other events, S. D. Mott, April 17th.
 42,667 Electric arc lamp, Reliance Electric Manufacturing Co., (Limited) April 18th.

- 42,710 Electric lamp elevating windlass, C. R. Eddy and S. E. Whitehead, April 21st.
 42,727 Electrically heated smoothing iron, Butterfield-Mitchell Electric Heating Co., April 22nd.
 42,731 Electric regulator, Electric Secret Service Co., April 22nd.
 SCIENTIFIC PROCESS.
 42,709 Process of treating sludge, The Grassello Chemical Co., April 21st.
 42,714 Ageing or ripening wines, spirits and other liquids, T. R. Turby, April 22nd.
 42,770 Process of tanning, S. Duries and G. Duries, April 22nd.

MR. WIMAN'S financial difficulties have now become so serious as to compel him to make a general assignment for the benefit of his creditors. The market of sixty millions that was to save all Canada's business men was unable to save its discoverer. Gazette.

THE obstacle to the general substitution of aluminum for iron and steel in the arts has been the high cost of extracting it from the native clay. This has been partially overcome by progressive improvements in the process of manufacture, but still aluminum remains too costly to be thought of as a substitute for the base metals, notwithstanding its advantages in other respects. The reported discovery of extraordinary rich deposits of aluminum clay in Alabama and Georgia indicates a long step forward for the white metal. Six counties in these two States are said to be underlaid with bauxite ore, some of which has yielded as high as 48 per cent. of pure aluminum. If the reports from these counties are reliable the aluminum age is approaching.

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Captains of Industry.

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

Messrs. MACKLEM & SLATER will build a large grain elevator at Niagara Falls, Ont.

The Canadian Rubber Company, Montreal, are placing three new large Lancashire boilers in their factory.

The Perfection Hoop and Veneer Company, of Eugenia, Ont., will remove their works to Toronto.

MR. P. KEEFER's sash and blind factory at Iroquois, Ont., was destroyed by fire, May 9th, loss about \$6,000.

The Grant-Lottridge brewery, at Hamilton, Ont., was damaged by fire on May 3 to the extent of about \$60,000.

Messrs. ROBIN & SADLER, leather belting manufacturers, Montreal, will build a new belting factory this season.

Messrs. BELDING, PAUL & Co. are building a large addition to their silk factory in Montreal, which will double their capacity.

The stained glass works of Messrs. McCausland & Son, Toronto, were damaged by fire on May 8th to the extent of about \$10,000.

The Union Furniture Co., is being incorporated at Wingham, Ont., with a capital stock of \$95,000, to manufacture furniture, etc.

The Rathbun Co., Deseronto, Ont., will place a new boiler in their Gravenhurst mill. Messrs. John Inglis & Son are building it.

Messrs. JAMES HALL & SON, Brockville, Ont., have given an order to John Inglis & Son, Toronto, for a new boiler for their glove works.

The Sash and Door factory and electric light station of Mr. Patrick Keefe, at Iroquois, Ont., were destroyed by fire on 9th instant.

The Polson Iron Works, Toronto, is now being operated by Messrs. F. B. Polson and J. B. Miller, who have purchased the estate.

Messrs. McKELVY & BIRCH, Kingston, Ont., have placed an order for a new boiler for their works with Messrs. John Inglis & Son, Toronto.

The Sutherland-Innes Company is being incorporated at Chatham, Ont., with a capital stock of \$500,000, to manufacture cooperage stock, etc.

The Ontario Excelsior Manufacturing Company has been incorporated at Chatham, Ont., with a capital stock of \$25,000 to manufacture excelsior cooperage, etc.

Messrs. JONS INGLES & SON, Toronto, are supplying a 100 h.p. compound condensing corliss engine and a boiler for same for the electric light plant at Selkirk, Man.

The I. C. Ry. have given an order to Messrs. John Inglis & Son, Toronto, for a 100 h.p. compound condensing corliss engine for running their car shops at Moncton, N.B.

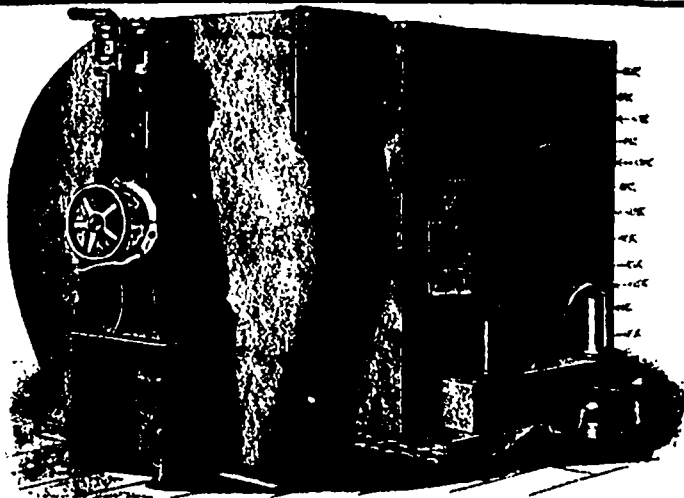
Mr. W. R. SCOTT, Toronto, has just placed a Barnes screw cutting lathe with the Eclipse Office Furniture Co., Ottawa, they having had to supplement their plant to cope with orders ahead.

The Face Hammered Solid Steel Car and Locomotive Wheel Co., is being incorporated at Hamilton, Ont., with a capital stock of \$400,000 to manufacture the Face patent car and locomotive wheels.

The Hold & Cullen Milling Company of Stratford, Ont., is being incorporated with a capital stock of \$50,000, to take over and carry on the flour milling business of Messrs. Hold & Cullen, of that place.

The City of Toronto is applying to the Legislature for authority to pay the Ontario Iron and Steel Company \$75,000, to be expended in making foundations for buildings and machinery of said company in this city.

The Cornwall Manufacturing Company, Cornwall, Ont., have



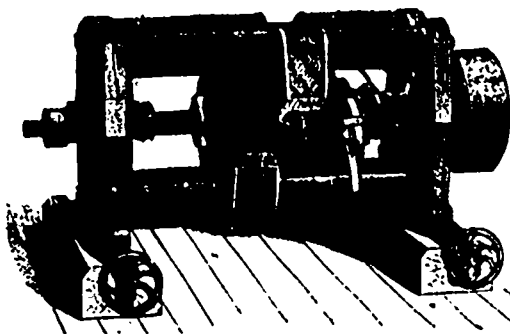
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MANFG.
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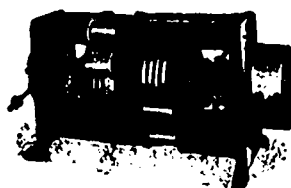
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and Incandescent Lighting

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The Best Apparatus. Prices Reasonable. Guarantee Absolute
Write for Printed Matter and Estimates.

taken out some of their narrow looms and replaced them with fourteen broad Crompton looms, and have also added a new Barker tub for their carding machines.

The pulp mill of James Davy at Thorold, Ont., furnished the first pulp to the Niagara Paper Company's mill, the largest in the world, at Niagara Falls, N. Y. The Niagara Paper Company's pulp plant is not yet ready for use.

MESSRS. GERHARD HEINTZMAN & Co., piano manufacturers, Toronto, have recently made some additions to their already expensive plant, the machines having been placed by Mr. W. R. Scott, 489 Church St., in this city.

The Record Foundry and Machine Company, of Moncton, N.B., have established a branch office in Montreal to facilitate their rapidly growing business in that city. Full lines of their goods will be carried in their Montreal house.

The Auburn Woollen Mills, at Peterborough, Ont., are being enlarged by the addition of 50 x 40 feet, three storeys high of stone with iron roof. Thus, and other improvements about being made will increase the capacity of the mills about one third.

MESSRS. E. LEONARD & SONS, of London, Ont., builders of steam engines, boilers and machinery, have opened an office in Toronto, at 79 York street, under the charge of Mr. Thomas Nopper, who has been connected with the concern for a dozen years or more.

The Niagara Peerless Manufacturing Co. is being incorporated at Chippewa, Ont., with a capital stock of \$90,000 to manufacture threshing machines, and other agricultural implements and machinery. Mr. C. M. F. Lutz, of Buffalo, is at the head of the enterprise.

The Record Foundry and Machine Company, Moncton, N.B., have opened a branch warehouse at 1301 Notre Dame Street, Montreal, where they will carry a full line of their stoves, ranges, furnaces, and kitchen hardware. Mr. G. F. Atkinson, will be manager of the Montreal branch.

The Chatham Wired Hoop Company is being incorporated at Chatham, Ont., with a capital stock of \$50,000 to manufacture cooperage, hoops, woodenware, and wire and cooperage materials, etc. This is an American concern, at the head of which is Mr. Hugo Mattullath, of New York city.

The Hamilton Facing Mill Company, Hamilton, Ont., have just furnished a Colliery cupola furnace to Messrs. Paxton, Tate & Co., Port Perry, Ont. These cupola furnaces are coming into very general use in Canada since the sale of them has been in the hands of the Facing Mill Company.

BUTTERFIELD & Co., Rock Island, Que., manufacturers of taps and dies, and similar tools, inform us that they are having a very heavy trade this season. They have been obliged to add largely to their plant, already one of the most extensive in the Dominion, yet they still have great difficulty in keeping up with their orders.

COL. F. D. BUTTERFIELD, of Butterfield & Co., Rock Island, Que., manufacturers of taps, dies, etc., is spending some time in Chicago, in attendance upon the World's Columbian Exposition. This enterprising firm expects that some member of their house will be present there during most of the period over which the Exposition will extend.

The Intercolonial Railway have ordered from the Robb Engineering Co., Amherst, N.S., a 125 horse power Monarch Economy boiler, for the shops at Moncton. This boiler will have a Paris patent corrugated furnace, which the Robb Engineering Co. are using in the larger sizes of their boilers, when they are to be run at a high working pressure.

MESSRS. BELLHOUSE, DILLON & Co., importers of chemicals, dyestuffs, acids, etc., Montreal, have removed their office to 30 St. Francois Xavier St., where they have a good warehouse in connection. They are representing Messrs. William Peckhardt & Kuttner's celebrated aniline colors, and alizarines. Mr. G. A. Dillon informs us he will be calling on all the mills in the West during next month.

MR. C. N. VROOM, St. Stephen, N. B., manufacturer specialties in footwear, has sent us a very pretty advertising device which includes bits of history, illustrated with queer designs, regarding the foot-covering of the ancients. It goes back to a time 3,800 years ago when such articles were first mentioned in the bible, and continues down to the time of Vroom in the closing years of the nineteenth century.

The Waterous Engine Works Company, Brantford, Ont., inform us that during the past winter, and at this time, they have been so busy that they have found it necessary to put on ten per cent. more

THE

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POWER HAMMER

Patented in the United States, Canada, and England

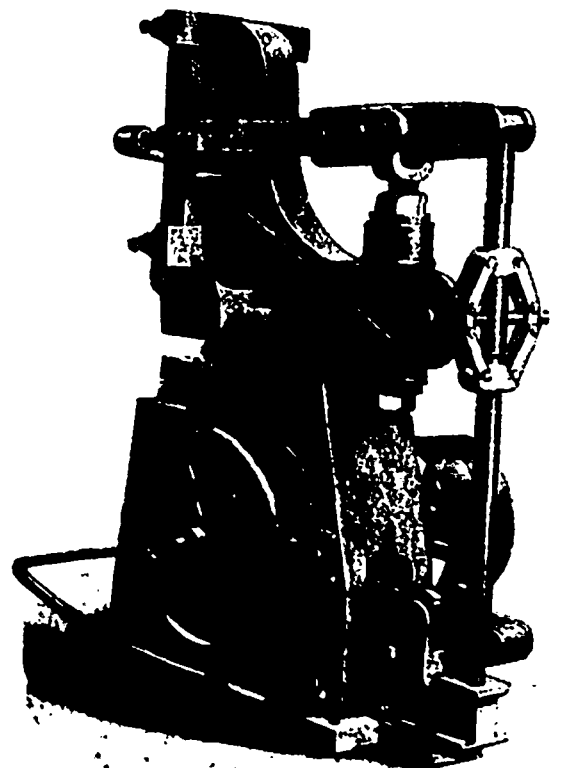
W. H. LAW

Inventor

MANUFACTURED BY

THE CENTRAL BRIDGE AND ENGINEERING CO., (Ltd.)

PETERBOROUGH, ONTARIO, CAN.



workmen than they have usually employed—more than what they had previously thought the utmost capacity of their shops would allow, and that, with this largely increased force, for several months during the winter their works were run fifteen hours per day.

The McKinnon Dosh and Hardware Company, St. Catharines, Ont., are enlarging their business by putting in a plant for the manufacture of suspender buckles and trimmings. They will make both wire and flat metal buckles, which will be first-class in all respects, and which they will place on the market at much lower prices than what similar goods can be imported for from the United States. Their samples are now about ready to be shown to the trade.

At the tannery of C. H. Peters a new line of manufacture has been inaugurated. The new departure is in the line of patent and upholstering leathers. The firm now employ between 30 and 40 men. Their leathers are sold chiefly in the upper provinces, where they have earned a high reputation. The firm look forward to an early enlargement of their output of patent and grained leathers, of which they can now turn out about 100 hides per week. St. John, N.B., Sun.

About two months ago the General Mining Association commenced using one of the Robt Engineering Company's 100 horse power Monarch economic boilers, at the Victoria Mines, Sydney, C.B. This boiler has proved so satisfactory that they have ordered another of the same size, which was shipped from Amherst last week. This style of boiler appears to be a favorite in Sydney and that neighborhood, as there are now eight or ten of them in use there. Critic.

The Gurney Scale Company, Hamilton, Ont., are furnishing the large new flour mill of Archibald Campbell, at Toronto Junction, with one 50-ton track scale, three flour packer scales, four double pillar hopper and warehouse scales, and a number of portable platform scales. The 50-ton track scale is similar to the scale of like capacity recently furnished by this company to the Peterborough works of the Canadian General Electric Company, and heretofore illustrated and described in these pages.

Messrs. JOHN BERTRAM & SONS, Dundas, Ont., inform us that their exhibit at the World's Columbian Exposition, at Chicago is

in position. Included in it are one iron planing machine, 10 feet x 36 x 36 inches; one shaping machine; one 12 feet x 24 inches iron turning lathe, and one drilling machine. These machines are specimens of the latest and most approved tools which Messrs. Bertram are supplying to their customers, and which will maintain the credit of Canada before the world in this line of machinery.

Mr. A. JENNINGS, Montreal, has just manufactured a lorry wagon for exhibition at the Chicago World's Fair, which is attracting much attention. The frame is described as being of light but strong construction of angle steel, the crossbars and supports also being of steel, with a wooden floor which is removable. The wagon is 12 feet long, 6 feet wide, and weighs 2,800 pounds. The pole is so arranged that the weight of it will not bear upon the necks of the horses, and is detachable, thereby saving much space when needed. All the steel used in the construction of this wagon was manufactured by the Nova Scotia Steel and Forge Company at New Glasgow, N.S.

The Waterous Engine Works Company, Brantford, Ont., are hustling in the production of brick machinery. They have recently supplied as follows:—Garson, Purser & Co., Brockville, Ont., one 4-mould Simpson press with disintegrator. La Prairie Pressed Brick & Terra Cotta Company, La Prairie, Que., two 4-mould Simpson presses with 9-foot dry pan and 40-inch disintegrator, two No. 2 screw presses, one sizing machine, a 100 horse power compound steam engine, two steam boilers and all necessary elevators, screens, shafting, pulleys, etc., constituting a complete dry press brick plant capable of turning out 40,000 bricks per day. Charlemagne Lumber Company, Montreal, one 4-mould Simpson press with 9-foot over driven dry pan, shafting, belting, pulleys, etc. The Rathbun Company, Deseronto, Ont., one 4-mould Simpson press.

The London Machine Tool Co., London, Ont., present a very attractive business card in another page, in which they announce that they are manufacturers of machine shop equipments—lathes, planers, column, radial, and suspension drills, shapers, slotters, bolt cutters, milling machines, turret lathes, automatic gear cutters and cutting off machines, boring and turning mills up to 20 feet swing, driving-wheel lathes, boring and turning mills, cylinder boring machines, frame slotters, boiler equipments, pinchers and shears, bending rolls, straightening rolls, plate planers, multiple drills, brass finisher's equipments. Fox monitor

IN PRESS

THE SHIPPING MANUFACTURERS' LIST

INDEX TO leading Manufacturers of Canada and articles manufactured by them.

The INFORMATION which this work contains is of value to all classes of BUSINESS men, and may be considered a good COMMERCIAL RATING on any one that appears in this list of Manufacturers. The value of this work will be appreciated when it is known that the INFORMATION it contains has been obtained by a thorough Personal Canvas of Manufacturers THROUGHOUT THE DOMINION. Nearly eighteen months have been consumed in getting the information this work contains of the Manufacturing Industries of CANADA.

The work contains 500 pages handsomely bound in cloth, and represents over forty departments of trade. Section 1 contains over twenty thousand entries of articles. Section 2 contains over twenty thousand addresses of Manufacturers. Section 3 contains over four hundred advertisements of Manufacturers, making this the most thoroughly representative work published on this Continent.

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FURNACES DESIGNED AND BUILT

FOR EVERY PURPOSE

Estimates MADE AND Works EQUIPPED COMPLETE

W. K. ROCKWELL

Constructing Engineer

81 Centre Street, NEW YORK

lathes, plain turret lathes, valve millers, vertical milling machines, valve chucks, box chucks, etc., Mr. A. R. Williams, Esplanade, Toronto, is general agent for the Dominion for this company.

The Waterous Engine Works Company, Brantford, Ont., are capturing a large number of orders for machinery for driving electric plants. Some of their recent placements are as follows:— Brantford Electric Street Railway, two 150 horse power, compound high speed steam engines with large pulleys. Brantford Electric and Power Company, two 150 horse power steam boilers, a very large quantity of shafting, grip pulleys, and grip couplings. Hamilton Electric Light & Power Co., 12 grip pulleys and two 300 horse power couplings. Kingston Electric Street Railway, nine grip pulleys, two 300 horse power grip couplings, two plain pulleys, shaftings, boxes and floor stands. Royal Electric Company, Montreal, two 600 horse power pulleys 84 inches diameter, by 23 inches face, making in all 9 grip pulleys of this size or larger, furnished to the Royal Company. Perth Electric Power Company, two pairs 150 horse power grip gears for connecting water wheel to each end of line shaft, so arranged that either wheel can be thrown in or out without stopping the shaft. Sandwich Windsor and Amherstburg Electric Street Railway, six grip pulleys, two 300 horse power cut off couplings, 42 feet 5½ inch steel shafting, boxes, floor stands, etc.

During the past winter the Waterous Engine Works Company, Brantford, Ont., supplied their No. 2 large band saw mill as follows: Davidson and Hay, Cache Bay, Ont., two hand mills with full outfit of tools, 5 block No. 4 girder steel carriage, with patent offsetting attachment, 4 saw double edger and lumber trimmer. McBurney Laycock Lumber Co., Callender, Ont., one No. 2 hand mill, full complement of tools, and 3 block carriage. Mickle, Dymont & Son, Gravenhurst, Ont., one No. 2 hand mill, full complement of tools and 3 block carriage. Baker Lumber Company, Gravenhurst, Ont., one No. 2 hand mill and full complement of tools. J. D. Shier, Bracebridge, Ont., one No. 2 hand mill, and full complement of tools. Campbell Lumber Company, St. John's, Newfoundland, a complete hand saw mill, a No. 2 hand mill, full complement of tools, a 3 block carriage with steam feed, endless chain log jack, double edger, trimmers, slasher, 60 horse power steam engine, two steam boilers, and all necessary shafting,

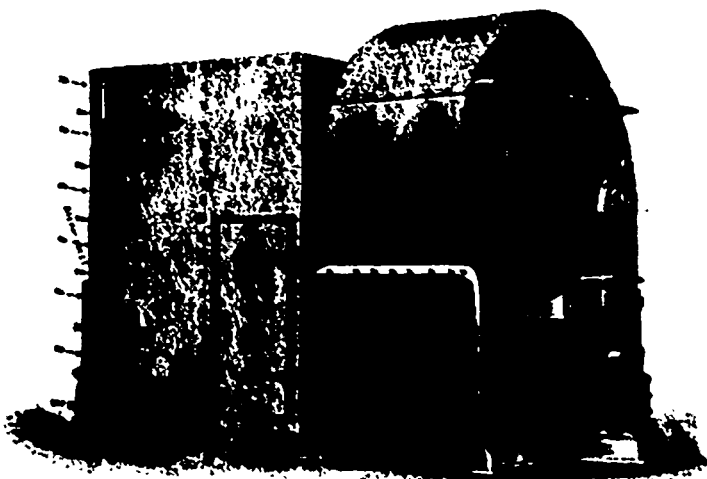
pulleys and bolting. J. K. Ward, Montreal, one No. 2 hand mill, and full complement of tools. In addition to the above they also manufactured a large number of circular and portable saw mills, with several large mills for export.

The amalgamation of the business of Rhodes, Curry & Co., builders and contractors of Amherst, N.B., with that of James Harris & Co., car-builders, of St. John, and the location of the new company's works at Amherst, is going to mean a great deal to that town. The firm of Rhodes, Curry & Co., was established in 1876 with a small capital, since when the business has steadily grown until, at the time of amalgamation, the figures placed upon it by the appraisers was in the neighborhood of \$100,000, counting nothing for good will. Their property includes the extensive planing mill, with plant and equipment, and the lumber yard at Amherst, the sawmill and 10,000 acres of timber land at Athol (near Amherst), with booms, dams, railway siding, slides and lumbering outfit. Added to this are existing contracts for the erection of buildings, estimated at \$90,000. The establishment of the business of James Harris & Co., dates back to 1828, and has met with a large measure of success. For the past twelve or thirteen years their average output of cars has been over \$350,000. Thus it will be seen that these companies, under one management, promise to become an extensive manufacturing concern. It is expected to have everything in full running order early in June. The new car works which will be situated directly in the rear of the planing mill, alongside the railway tracks, will occupy four acres of land. They will be as follows: An erecting shop, 80x160 feet, with four tracks, capable of holding sixteen box or twelve passenger cars. This building is rapidly approaching completion, and will be finished in a few days. Wood-working shop 60x160 feet, two stories in height. Engine and boiler house, of brick, 32x42, with chimney 100 feet high. This work is also well advanced. Dr. house, 30x60 feet. Blacksmith shop 70x60 feet. Machine shop, 70x60 feet. Car wheel foundry 70x80 feet. General foundry 70x90 feet. Pattern shop 70x20 feet. Warehouse 48x60 feet. Other buildings will be the upholstering shop, paint shop and iron, coal and sand sheds. The Company expects to turn out this month \$26,000 worth of cars for the Dominion Coal Company. They have also on hand a large number of orders for the various lines of work which they are prepared to do.—Critic.

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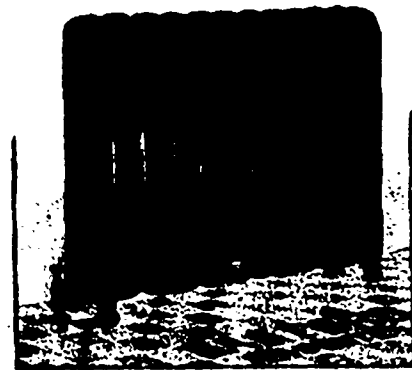
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HUNDRED
SIZES.



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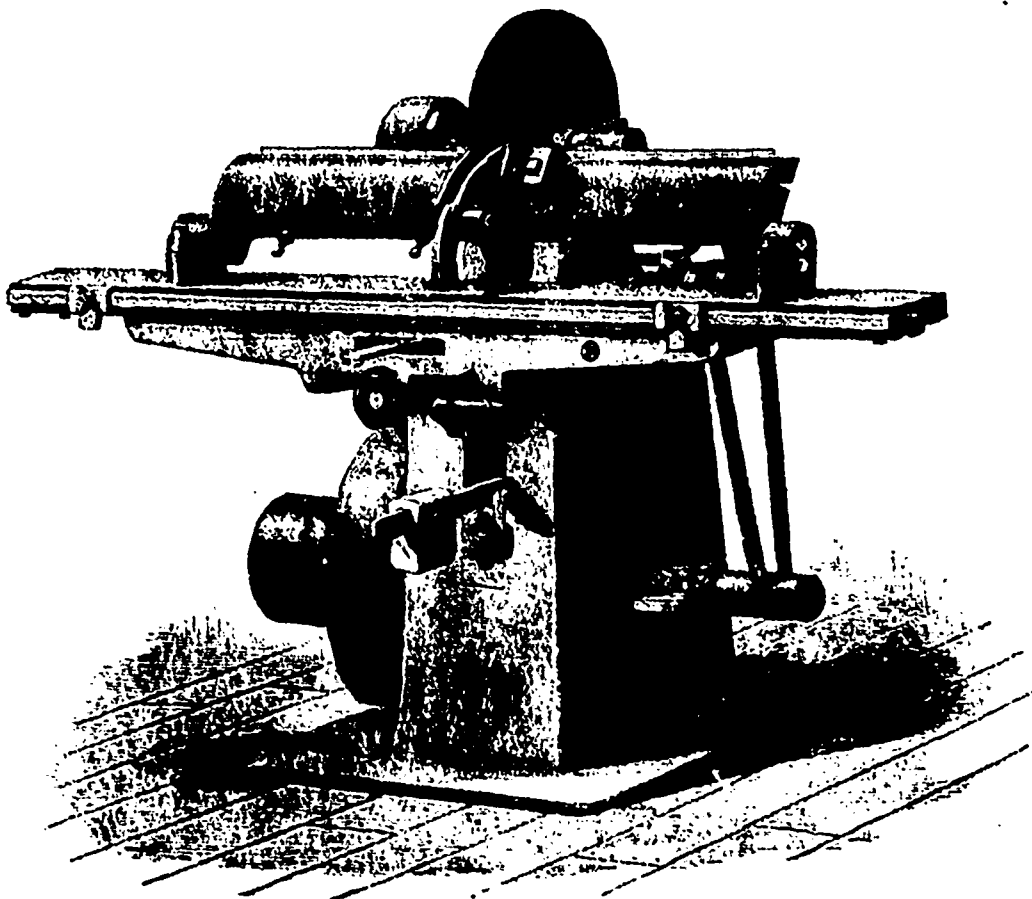
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See it in use in new Bank of Commerce Building, Toronto; new Royal Insurance Company Building, Montreal; Imperial Fire Insurance Company Building, Montreal, St. Lawrence Sugar Refinery, Montreal.

The finest thing for suburban cottages. Excludes heat and cold; is cheap and Durable.

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NATURAL CEMENT TESTS.

Tests of Cements made by the Government during progress of work at Kingston Graving Dock, 1891.
by Louis Coste, Acting Chief Engineer, Ottawa.

		Time in Water.	Thorold Cement.	Queenston Cement.	Napanee Cement.	
Thorold was the Only	Test with 1 per cent salt in water for tensile strain.	30 days	177.10	183.00	164.10	2,000 Barrels Thorold Cement used in Kingston Graving Dock.
		60 days	270.40	246.10	187.	
		90 days	287.50	248.80	193.10	
Canadian Natural Cement used in this Work.	Test with 8 per cent salt in water for tensile strain.	30 days	189.60	172.40	110.80	
		60 days	201.60	183.10	115.50	
		90 days	243.60	221.10	130.00	
	Test with 2 per cent salt in water for tensile strain.	30 days	306.90	194.20	126.80	
		60 days	203.50	183.50	138.	
		90 days	217.10	230.80	152.40	
	Test with 12 per cent salt in water for tensile strain.	30 days	323.10	164.40	197.00	
		60 days	331.70	175.80	207.30	
		90 days	344.30	189.30	218.50	

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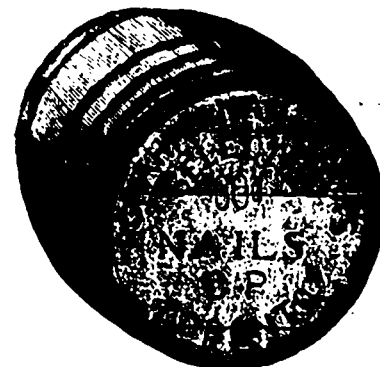
Tests of Cements made by the Government during progress of work at Kingston Graving Dock, 1892, by Louis Coste, Acting Chief Engineer, Ottawa.

	TIME IN WATER.	C.R. Wright & Sons, Portland	British Portland Cement Anchor Brand	German Portland Lion Brand	Stamrose Portland	Montreal Imperial Portland	Queenston Cement	Thorold Cement	Quebec Cement	Napanee Cement
Average tensile strength of 25 to 50 lb. briquettes each, 1 in. square, made of cement consistency of mortar.	7 days	371.01	319.04	182.96	357.12	206.52	93.72	51.20	60.00	21.52
	30 "	523.79	443.96	212.32	353.44	117.09	190.80	190.28	111.72	55.32
	60 "	519.12	519.20	359.81	351.84	148.20	348.58	257.88	214.00	131.21
	90 "	651.52	626.20	391.76	389.72	340.20	308.24	329.40	311.20	178.68
	3 "	684.16	646.56	not given	621.56	601.20	406.88	353.06	370.20	194.76
	6 "	686.78	618.00		614.00	615.96	429.28	367.04	383.02	221.00
Average tensile strength of 25 to 50 lb. briquettes of each Cement, 1 in. sq., not cement rammed in mould.	7 days	356.12	467.70	394.89	434.72	313.32	186.78	206.92	172.02	40.92
	30 "	421.22	512.30	375.40	532.40	423.88	277.08	131.02	164.10	60.77
	60 "	537.91	541.70	430.00	688.20	510.24	417.58	314.76	283.32	133.06
	90 "	614.74	624.40	427.00	636.24	542.88	472.76	323.36	400.32	230.82
	3 "	637.21	601.12	408.20	648.52	546.08	494.84	381.96	383.32	264.00
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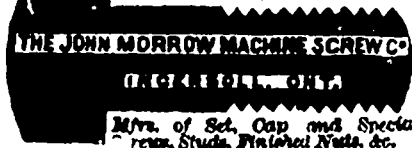
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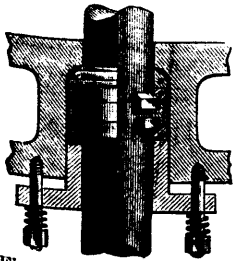
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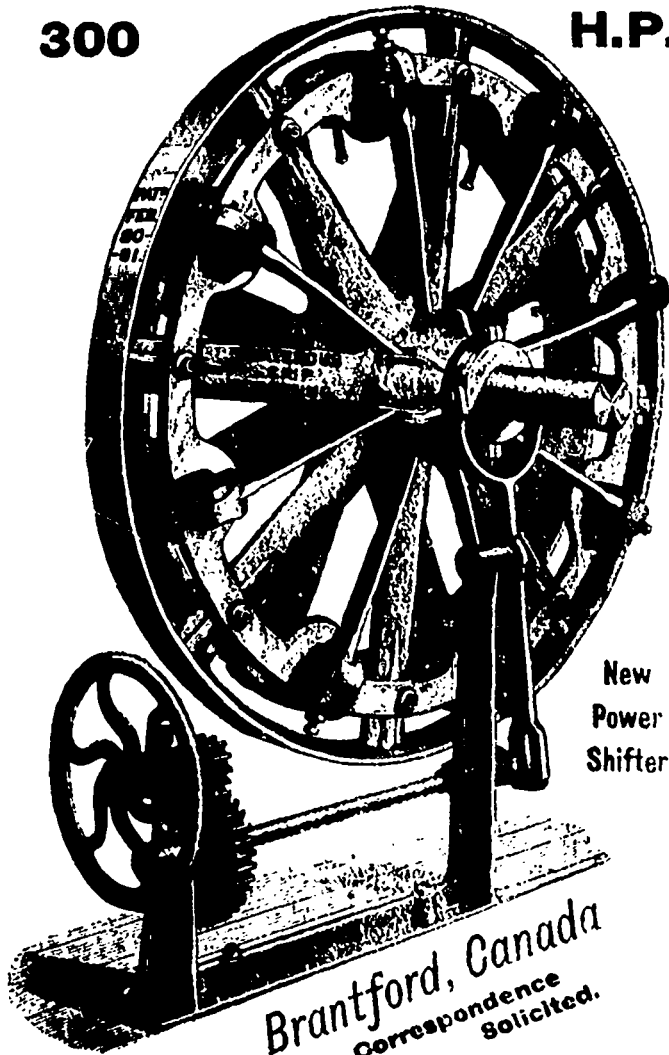
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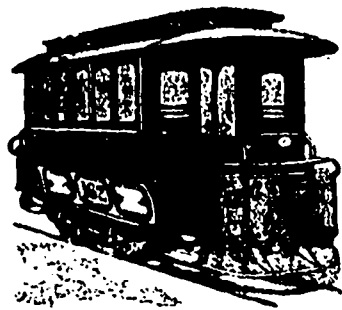
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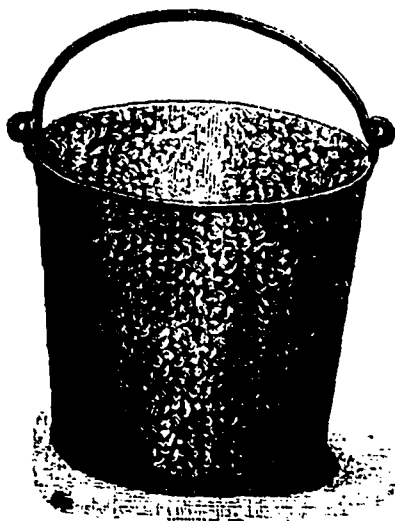
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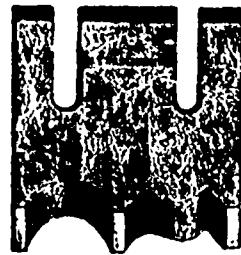
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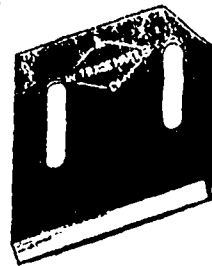
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The report was adopted and the retiring Directors unanimously re-elected. The Board of Directors are now constituted as follows: James Goldie, Guelph, pres.; W. H. Howland, Toronto, vice-pres.; H. N. Baird, Toronto; Wm. Bell, Guelph; Hugh McCulloch, Galt; S. Neelon, St. Catharines; George Pattinson, Preston; W. H. Story, Acton; J. L. Spink, Toronto; A. Watts, Brantford; W. Wilson, Toronto.

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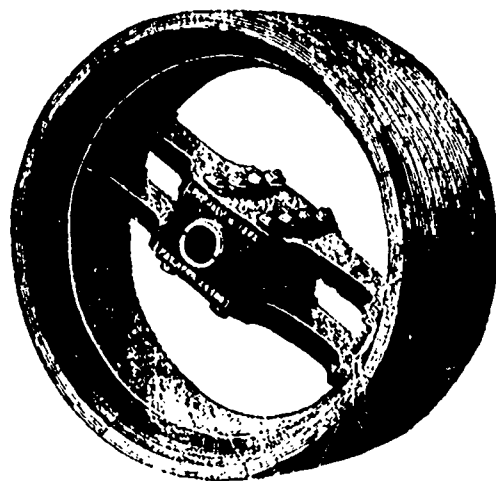
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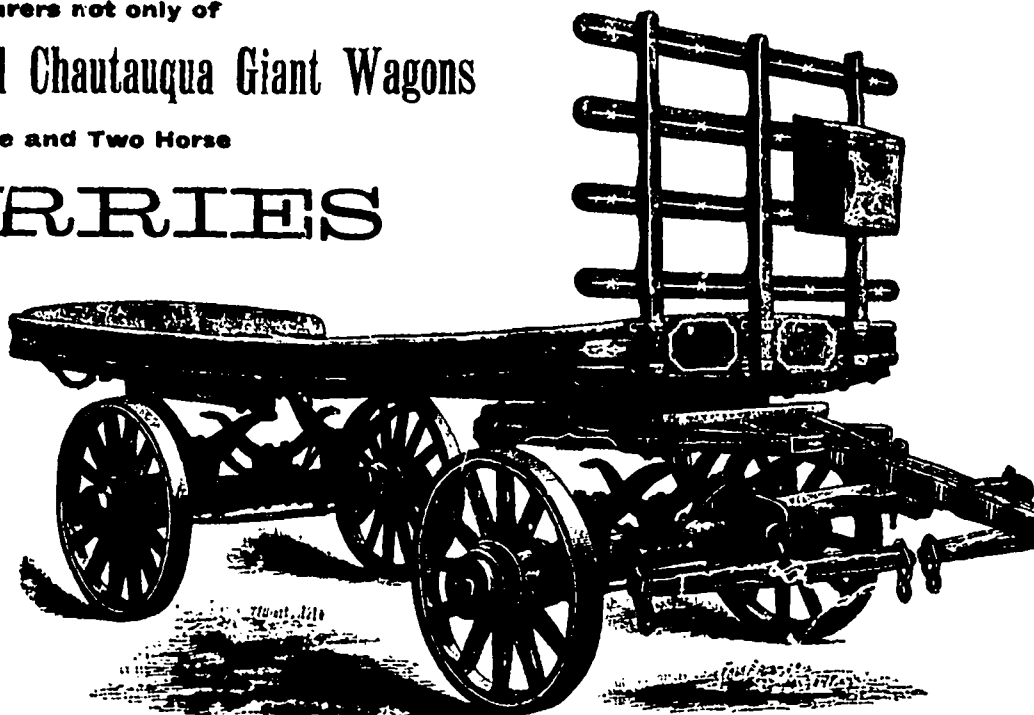
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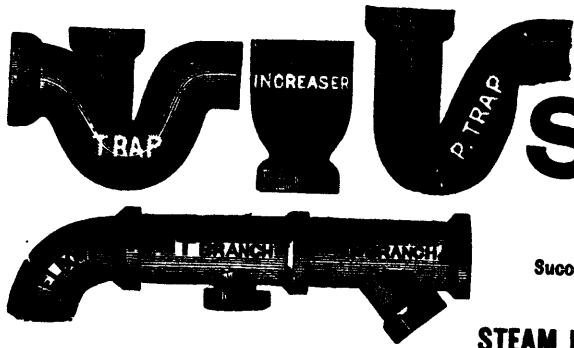
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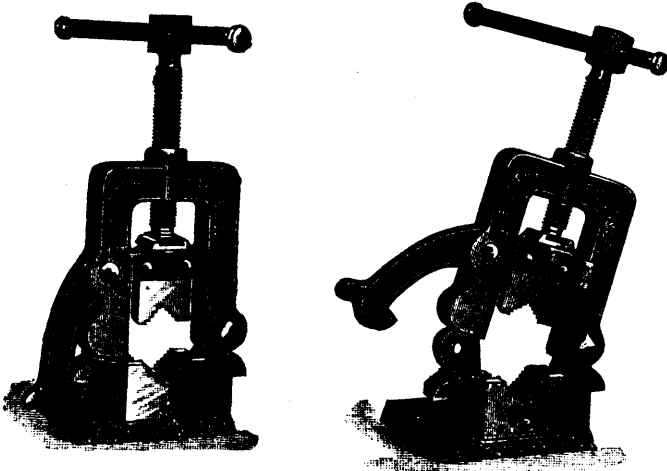
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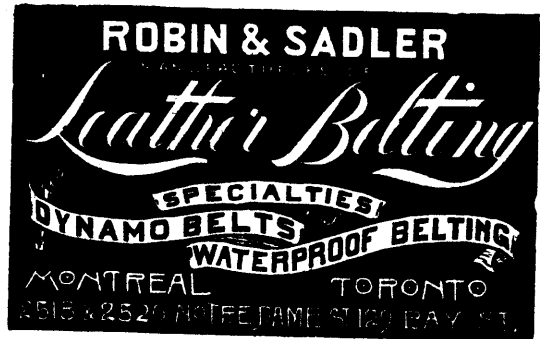
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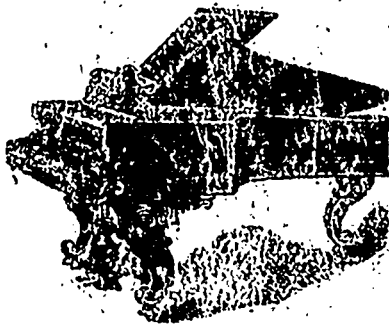
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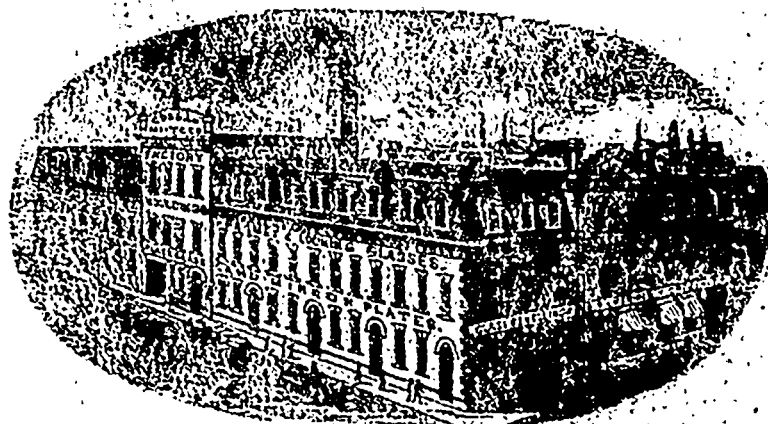
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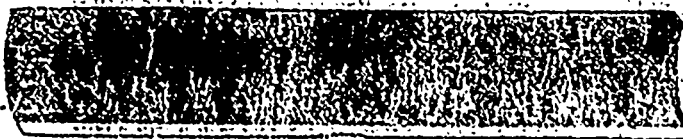


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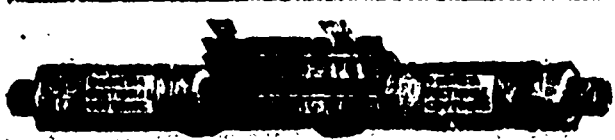
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