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CANADIAN MANUFACTURER

AND INDUSTRIAL WORLD

DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

Vol. 27.

TORONTO, MARCH 2, 1894.

No. 5.

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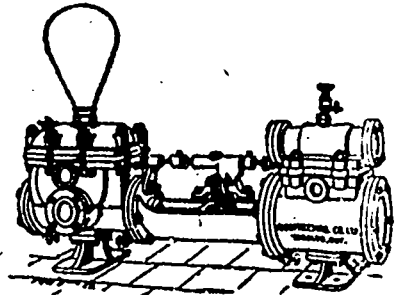
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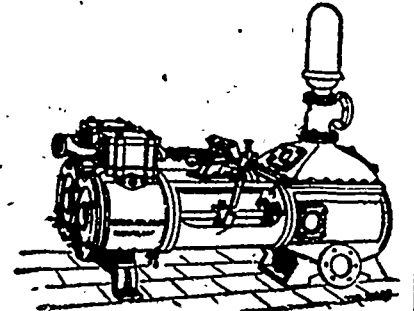
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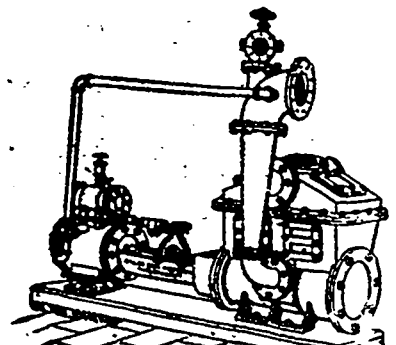


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THE ADVOCACY OF WILD PROJECTS.

The silver question, but, more than all, the uncertainty about the tariff, has produced a condition of things in the United States without parallel in the history of that country. The consumption of pig iron, the fundamental article par excellence, is one of the most accurate barometers of industry; and in 1893 it fell short of the consumption in 1892 by no less than two million tons, or 22 per cent. A statement of this kind prepares one for gloomy reports from the labor market; but the reports are more than gloomy, they are harrowing. The police of New York have just taken a partial census of the unemployed in that city. In the thirty-three precincts nearly fifty thousand families

containing 200,000 persons have been reported on. Of these persons the number usually employed is 78,023, but at present 67,280 are out of work. Of the 50,000 families over 30,000 replied "Yes" in answer to the question, "Are you in need of assistance?" The enquiry was conducted under the supervision of professors of Columbia College, and President Seth Low of that institution says: "I cannot imagine a more impressive argument in favor of prompt action upon the tariff, which shall be decisive in one direction or the other, in order that the element of uncertainty may be removed from the pathway of a business revival."

In New York, Chicago, Philadelphia and Brooklyn, the four largest cities in the Union, upwards of 300,000 men are idle. Food depots and relief works, backed by private charity, are doing something to diminish the suffering, but the amount of misery left unrelieved is appalling. Seventy-five railroads, embracing 32,000 miles about twice the mileage in all Canada—have gone into the hands of receivers. There are 175,000 miles of railway altogether, which ordinarily give employment to 825,000 men, but just now 160,000 men are working short time or at reduced wages or not working at all. Several thousand laborers on the Michigan iron ranges are out of work, and there is much distress in the Pennsylvania and Ohio coal districts. We in Canada have evidence of the depression in the daily arrival of Canadians from the United States, and of American workmen too. In the Province of Quebec hundreds upon hundreds of French Canadians have returned from the New England mills, and the labor market is seriously disturbed in consequence. A despatch from Acton, Ont., says the places of a number of factory hands who have gone on strike for higher wages have been taken by workmen from New York State, glad to accept the old rate. In recent debates in the House of Representatives at Washington such statements as these from the Republican side have gone unchallenged by the Democrats: On January 1, 1892, there were by count 251 iron furnaces in blast; on January 1, 1894, only 132. Of 70 anthracite furnaces 40 have gone out of blast. In New England 50 factories have been closed; in 117 wages have been reduced. The shrinkage in values and loss from bankruptcies during the last ten months have amounted to at least sixteen hundred million dollars, but this does not include the shrinkage in railroad stocks. It is not necessary to darken the picture by dwelling on the terrible scenes reported from the large cities. The New York Evening Post said the other day:—"We must do what we have never had occasion to do before—call attention to the appalling distress which prevails among the unemployed poor of this city. Thousands and thousands of persons who have always hitherto earned a decent livelihood are sinking down into blank destitution, from which recovery with broken health and spirits will be difficult." The Post is a candid paper on the anti-protection side.

There is depression in Canada, but it is not to be compared in extent or intensity with the depression in the United States. The reason why we are escaping so well is that the N. P. prevents the entrance of American bankrupt stocks into this market and the public mind is not greatly disturbed by the question of tariff reform, members of the Government having announced that the measure to be submitted at the coming session will follow protective lines.

The Liberals have dropped unrestricted reciprocity and have not the courage to advocate ordinary reciprocity, seeing that in the Wilson bill the Democrats have studiously refrained from giving them any encouragement; but some of them are shouting vigorously for "free trade with all the world," in the hope of embarrassing the Government. No one knows better than Mr. Laurier that this is sheer demagoguery; that free trade is impossible under existing conditions and that even if it were practicable it would land us in a sea of misfortune. We all remember the days of 1874-78 when, to farmer and artisans, manufacturers and merchants alike, it almost seemed that the Mosaic prediction had been fulfilled. "In the morning thou shalt say, Would God it were even, and at even thou shalt say, Would God it were morning." If times were bad then what would they be now were our market thrown open to the Americans and all the world beside? Factory goods would be temporarily reduced in price by the slaughtering process and to that extent the farmer and mechanic would be benefited; but the moment the Canadian industries interested had been destroyed, prices would go up with a bound just as they did in that awful period, and the last condition of our people would be worse than the first. A Liberal paper in Quebec says "the Liberal leaders must not be held responsible for the utterances of cranks" as "all they want is tariff reform on the Wilson bill basis." If that is what they want they cannot have read the Wilson bill, since it leaves the duties on nearly all manufactured staples higher than the present Canadian duties and establishes ad valorem rates on farm products that are more protective than the specific rates imposed by the N.P. If the Liberals have any regard for the well-being of the country they will cease, for a time at least, to make the tariff a football of party politics. At a crisis like this, when the United States and England are in the throes of an industrial and commercial convulsion, it would be simply courting disaster for us to level the barrier that has thus far saved us from a similar catastrophe. The tariff can be reformed as Ministers propose to reform it without exposing our industries to the certainty of obliteration, and an intelligent effort can be made to increase trade with the Australian colonies and other markets as well as to make the most of those reductions in the United States tariff which are likely to augment our exports of lumber, wool, barley, iron ore and other natural products. That is the only sound policy for us at the present juncture. When the clouds roll by it may be wise, perhaps, to make a further reduction of the tariff, while still adhering to a protectionist basis. Meanwhile every one who wishes well to Canada should discourage the projects of anarchy rather than of reform that are being propounded by ignorant and reckless persons. In the United States there is already a marked reaction against the very moderate reform proposed by the Wilson bill. A few days ago a Republican was elected to Congress from New York City for the first time since 1878, a Democratic majority of 9,000 at the election of 1892 having been turned into a Republican majority of 1,000. The Democrats and Populists in the House of Representatives have a majority of 102 in a membership of 356, but the odds are that the Republicans will carry the House at the Congressional elections next fall. The American people are suffering as they never suffered before, but what would be our condition if, instead of a

temperate measure of reform, the tariff were committed to the hands of the "cranks" who are preaching absolute free trade without knowing what it means or what it would entail?

Following in the wake of the Populists certain Canadian agitators are advocating schemes of finance which if they should ever be realized would be hurtful in the last degree to the public credit. There is no demand for a depreciated currency, but the Kansas project for getting the Government to advance loans on land and crops is coming to the front in Western Ontario. Our experience with the Municipal Loan Fund was bad enough, but if the Provincial Government were to lend money to private individuals at less than the current rate of interest, or even at a higher rate, the treasury would soon be bankrupt. A scheme of the kind was tried in Norway forty or fifty years ago with calamitous results. Most of the money advanced was wasted, private enterprise almost died out, there was an infinity of corruption, non-borrowers were taxed to death to make good the default of borrowers; in the end the Government found itself saddled with an enormous debt and with large tracts of land seized for non-payment of loans, for which it had to charge an exorbitant rent in order to recoup itself for back interest. The Sun, of London, the mouthpiece of the Patrons, is smitten with the single-tax idea, but that fad will hardly make its way among the farmers once they perceive that it means land confiscation. There is far more vitality in the plan for turning the Provincial Government into a note-shaving shop for farmers, though it is not clear why they alone should obtain advances; the rest of us have just as good right to such assistance. Like "free trade with all the world" regardless of the demands of the public revenue or of the immense interests which would be paralysed and destroyed, the loan scheme is one of those radical cure-alls which make their appearance in periods of industrial distress just as an epidemic calls for the quack doctor with his questionable remedies. The danger is that in countries like Canada and the United States the advocacy of them may carry away a multitude of unthinking persons for awhile, embarrass the men of light and leading, and give outsiders the impression that nothing is safe in a community where such chimeras are pursued.

THE WILSON BILL AND THE DOMINION TARIFF

Opposition papers and speakers, perhaps without knowing what they are about, are spreading abroad in Canada a wholly erroneous notion of the extent of the tariff reduction proposed by the Wilson bill. They have in mind that the Democrats at their national convention pronounced the protective tariff a "robbery", declared it to be unconstitutional and pledged themselves to a tariff for revenue only, and take it for granted that the Wilson bill is a heroic measure that cuts and slashes and tears things up by the roots after their own hearts.

Protection has been the policy of the United States for so long, and the leading industries have waxed so great and powerful under its shelter, that even if the Democrats had not committed themselves to the elimination of protection, one would have been warranted in surmising that any bill introduced by them would go far in that direction. In his book, "Twenty Years in Congress," Mr. Blaine

makes out that protection was adopted in the very first revenue bill passed by Congress. Other authorities, the free-trader Taussig for instance, hold that it was not adopted as a settled policy until 1824. The average rate of duty levied under the tariff bill of that year was 20 per cent. In 1828 higher duties were imposed. In 1832 there was a reduction, but the average duty on dutiable articles was 33 per cent. From 1833 to 1842 a gradual reduction took place and in the latter year an average of 20 per cent. had been reached. Then from 1842 to 1846 there was another increase. In 1846 the so-called free trade tariff was adopted, but there was no free trade about it. Tea and coffee were exempt from duty, but cottons were protected by a 25 per cent. duty, and woollen goods, iron and steel goods, manufactures of wood, glass, leather, etc., by one of 30 per cent. In 1857 an overflowing revenue led to a reduction, and, as Taussig says, "for a few years there was as near an approach to free trade as the country has had since 1816;" but even so, the duty on the articles just named was 24 per cent. Before the Civil War broke out in 1861 the Morrill tariff act was passed and duties greatly increased. The first war tariff adopted was that of July, 1862, which imposed an average rate of 37 per cent. on dutiable goods, and the second that of June, 1864, which augmented the rate to 47 per cent. Some slight changes were made immediately after the war, and in 1872 a "horizontal" reduction took off 10 per cent. from the duties; but in 1875 the duties were restored to the old figure. In 1883 the average rate on dutiable goods was reduced to 42 per cent., but by the McKinley act of 1890 it was raised to 47 or 48 per cent.

Thus for a long seventy years without let or break American manufactures have been protected by duties upon the foreign article, and during all that period the average rate of duty has exceeded the average levied in Canada since a protective tariff was established in 1879. Under such circumstances it would not have been at all surprising had the Democrats proposed to reduce the American tariff, as many Canadian Liberals evidently suppose they have done, to something like a revenue basis. One of the fundamental doctrines of protectionists is that protection strengthens national industries and prepares them for the day when they shall be fit to engage in free competition. The protected industries of England arrived at that condition fifty years ago and without doubt the protected industries of the United States are rapidly approaching it.

But what are the facts about the Wilson bill? Does it extirpate protection as unconstitutional or as robbery? On this point Mr. Wilson and his Democratic associates on the Ways and Means Committee frankly state in their report that the bill "no more professes to be purged of all protection than to be free of all error". We may deny, they say the constitutionality of protection, but "we are forced to consider that great interests do exist whose existence and prosperity it is no part of our reform either to imperil or curtail"; moreover "the legislator must always remember that in the beginning a temperate reform is safest". Then comes the announcement a little further on that while the average rate of duty on dutiable goods imported in 1892 under the McKinley tariff was 48.71 per cent., the average under the Wilson bill upon that year's importations would have been 30.31. In 1891-2 the value of the dutiable goods

imported for home consumption into the Dominion was \$69,000,000 and the duty collected \$20,550,000, or an average of 29.8 per cent. If the Wilson bill becomes law, therefore, the amount of protection afforded to American manufacturers will still exceed that afforded to Canadian manufacturers by the present unrevised Dominion tariff.

To give a few rough particulars, Mr. Wilson enlarges the free list of raw materials and chemicals. Then he makes a big cut in the duties affecting industries which have grown strong under protection. In the iron and steel industries, for example, he lets ore and coal in free for the benefit of the New England manufacturers and then proceeds to reduce the duties on finished and half-finished goods. That on pig iron is reduced to 22½ per cent ad val. while implements are put on the free list. He says truly enough in his report that these and other changes are not such as "to call for any halt in the imperial progress" of the iron and steel trade, fortified as it is, he might have added, by the development and experience of three quarters of a century of protection and dating its existence back to colonial days. He was also abundantly justified by the condition of the industries in making refined sugar and coal oil free. But in industries not so well prepared for free competition Mr. Wilson maintains a high rate of duty. Cutlery is protected by duties of from 35 to 45 per cent., glassware 30 to 35, cotton goods 35 to 40, woollens 25 to 45, lace, velvet, silk, etc., from 20 to 50, and so on. American Democrats and Canadian Liberals used to say that duties on farm products were of no service to the farmer, but Mr. Wilson fixes duties ranging from 15 to 30 per cent. to exclude Canadian products. Taking it all round, his bill would have been regarded any time before the Civil War as a high protection measure, and is actually a stiffer one than that now in force in Canada, which is on the eve of undergoing revision as being too stiff.

Although, then, Mr. Wilson has not abolished protection in the United States, but only moderated the measure of it, he has been obliged to incorporate in his bill a revenue-raising device in the shape of a tax on incomes over \$4,000. It is obvious that a root-and-branch onslaught upon the Dominion tariff such as Sir Richard's party contemplates would necessitate direct taxation in a much more drastic form. We could get nothing worth speaking of by taxing incomes over \$4,000; there are not enough of them. Sir Richard himself has confessed that little could be done in the way of economizing in the expenditure because about 75 per cent of it is represented by fixed charges. Nor would it be possible for him to raise sufficient new revenue from tea, coffee and sugar, seeing that those articles are free in the United States and are easily smuggled, or from increased customs or excise duties on liquors. In fact, if Sir Oliver Mowat fulfils his promise to the temperance men and adopts prohibition in Ontario, a good part of the excise revenue of \$8,000,000 that goes into the Dominion treasury every year and of the \$2,000,000 received from customs duties on ale, wines and potable spirits will be wiped out, provided the law is enforced and not left a dead letter. Notwithstanding Mr. Blake's assertion that direct taxation "even in its most promising form, a succession tax, is at present out of the question," to direct taxation Sir Richard would perforce have to come if he undertook to materially reduce the existing tariff. And we should like to know if

direct taxation of the masses in Canada whilst the masses in the United States were exempt, coupled with a general closing of Canadian factories through an unfair because wholly one-sided competition, would render this country more prosperous or the people more contented.

Industries which have been protected for seventy years in a large home market are naturally stronger and more specialised than industries which have been protected for only fifteen years in a much smaller market. The Americans likewise possess an advantage in the vast aggregations of working capital behind their industries, as compared with the modest amounts possessed by Canadian manufacturers. In some respects they have the whip hand of the Ontario farmer. With their low railroad rates from the West they could swamp his local market for wheat, pork, flour and meats if protection were withdrawn from him, while the Wilson duties would prevent him from getting any considerable foothold in theirs. These and other considerations of the same sort plead eloquently for a "temperate reform" of the N.P. Any other would result in widespread disturbance and disaster, and just now the commercial, industrial and agricultural world in Canada and elsewhere has trouble enough. A so-called revenue tariff would land us precisely where we were in 1874-78—exposed to a destructive competition from the surplus wares of American farms and factories without having the power to invade their market and make good our losses there—with this difference, that unless direct taxation were resorted to, the deficits which occurred then would occur again on a vastly increased scale because of the growth of our national obligations, ordinary expenditure having risen from \$24,000,000 in 1878 to \$37,000,000 in 1892. A temperate reform along the lines of protection is safest on every ground that appeals to common sense, and we believe the great majority of the people will be satisfied with it.

THE MINING REVIEW AND THE MANUFACTURERS OF MINING MACHINERY.

In a recent issue of this journal we discussed the question of mining machinery, basing our remarks upon what we thought a wrong conception on the part of Government officials and others of the meaning of item 983 of the tariff which recites as follows:—

"Mining machinery imported within three years after the passage of this Act which is, at the time of its importation, of a class or kind not manufactured in Canada, free."

We showed that under this Act, as generally construed by the Customs authorities, large quantities of mining machinery were being imported into Canada, duty free. What we consider a misconception of the law is in interpreting the meaning of the words "class or kind" so as to admit duty free any article of mining machinery, as for instance a Blake pump, not because equally good pumps are not made in Canada, but simply because Blake pumps are not made here. Then, steam pumps are essential in mining operations, and they are usually known by the names of the makers of them; and it is a generally admitted fact that steam pumps made in Canada, and bearing the name of their Canadian makers, are equal in any and all respects to any similar pumps made in any other country. Indeed the difference between certain Canadian pumps and certain

foreign pumps consists chiefly in the names engraved upon them. Under this improper construction of the law, while the importer admits that he cannot bring in, duty free, a foreign pump bearing a Canadian name, simply because it is of a "class or kind", meaning name, made in Canada, he claims that he has a right to bring in a precisely similar pump, because it is of a "class or kind", meaning name, not manufactured in Canada. This is a most ridiculous and mischievous construction of the law, and one that works very serious injustice to Canadian manufacturers. An absurd result of the general application of his contention would be seen in the fact that if a foreign pump of a certain "class or kind" finding much favor in Canada, and which could be brought in duty free, should become the product of any Canadian manufacturer, then and from that time on no such pump could be imported into Canada without payment of duty. What is said regarding pumps has equal force regarding any other mining machinery.

Considering the selfishness of human nature, particularly as developed in this question, it is not surprising that the users of mining machinery should desire to be favored to the utmost extent in tariff matters, and have the privilege of obtaining their supplies any where in the country or out of it without being subject to just such restrictions as environ all other industrial classes in the community. It is surprising, however, to observe that such a respectable journal as *The Canadian Mining Review* should become so sadly afflicted with free trade rabies as is evidenced in its January issue in criticizing our previous editorial.

In alluding to our article on Mining Machinery *The Mining Review* most conveniently avoids anything like argument or discussion, and without preamble gets down to abuse and innuendo, which it keeps up to the end of its chapter. Thus, in speaking of Canadian manufacturers of mining machinery, who only ask that they be accorded the same measure of tariff protection given to other manufacturers, and that a fair and reasonable construction of the law relating to this matter be declared, it does not pretend to show any impropriety or unreasonableness in this request, but berates the manufacturers as "spoilt and petted"; that "the Act in question was passed in order to give some measure of protection to the promising industry of mining—not protection from the honest tonic of competition, but protection from the short-sighted greed of one class of manufacturers (those of mining machinery), who ask their fostering Government to legislate for them only, and compel another and much more important native industry (that of mining) to use antiquated, ill-adapted machinery at exorbitant prices, merely because it is manufactured here." Surely the Canadian manufacturers of mining machinery are a bad lot in the eyes of *The Mining Review*. And hear how it goes for them again. "And this great industry," it says, alluding to that of mining, "this robust, masterful son of a new country, which asks so little (?), is to be denied its equal rights, is to be handicapped, forsooth, that one of its feeble, rickety brethren, represented by the manufacturers of one pump, one stone breaker, or one rock drill, may flourish without effort and without wholesome spur of competition, which they evidently need to bring them up to the level of merit of the high class manufacturers of other countries."

It will be observed that in this wholesale slaughtering of

Canadian manufacturers no exception whatever is made—not one exception; and naturally in our desire to learn who this “pampered and spoilt” gang are, as *The Mining Review* very politely calls them, we turned up the advertising pages of that most excellent journal and discovered the names of some of the most respectable and reliable manufacturers in Canada—manufacturers who contribute quite extensively to the support of *The Mining Review* and enable it to denounce them in a most scurrilous manner. Why, the very first advertisement in *The Review* is that of the Canadian Rand Drill Company, who have extensive and well equipped shops at Sherbrooke, Que., and who are manufacturers of as effective mining machinery as can be produced anywhere in the world. We find there, too, the advertisements of the Jenckes Machine Company, of Sherbrooke, who are also manufacturers of most excellent mining machinery; J. Matheson & Co., of New Glasgow, N. S.; Bertram Engine Works Company, Toronto; Truro Foundry and Machine Company, Truro, N. S.; Alex. Fleck, Ottawa; Garth & Co., Montreal; Carrier, Laine & Co., Levis, Que.; John Bertram & Sons, Dundas, Ont.; B. Greening Wire Company, Hamilton, Ont.; Butterfield & Co., Rock Island, Que.; Canada Explosives Company, Halifax, N. S.; Robin & Sadler, Montreal; M. Beatty & Sons, Welland, Ont.; the Northey Manufacturing Company, Toronto; Ottawa Powder Company, Ottawa; Canadian Mineral Wool Company, Toronto; Dominion Wire Rope Company, Miller Bros. and Toms, and Hamilton Powder Company, Montreal; Robb Engineering Company, Amherst, N. S., and others. Mrs. Malaprop declared that comparisons were “odorous”, and really the effluvia arising from some of the comparisons made by *The Mining Review* between the products of some of our most respectable manufacturers—the Northey Manufacturing Company and the Canadian Rand Drill Company, for instance—and some foreign concerns, is not in accordance with the ethics of true Canadian journalism.

IT IS NOT A FARCE.

In its recent screed against Canadian manufacturers of mining machinery because they ask for a more just construction of the tariff affecting the importation of such machinery, *The Mining Review*, in denouncing what the manufacturers ask for, asks:—

“Is the mining industry to be denied the right of its own judgment and free choice, in favor of a specially protected industry? If so, the whole trade system of the Dominion is a farce, and in the abstract goes far to show the inherent economic weakness of a protective policy, the bolstering up of one class at the expense of another, as long as the latter will submit to it.”

It is exceedingly to be regretted that “the official organ” of several most respectable Canadian mining associations should attempt to array in hostility towards each other two such important and closely related elements of Canada’s greatness as the one engaged in the mining industry and the manufacturers of mining machinery. To do so is to commit a mistake that reaches the importance of a political crime. There should be no antagonism of this character. To give every possible encouragement to the mining industry the Government saw proper to allow certain kinds of mining machinery to be imported into Canada free of duty. The wording of the law is vague

and leads and has led to misunderstandings which should have been avoided. The law says that mining machinery which is, at the time of its importation, of a “class or kind” not manufactured in Canada, may be imported duty free. *The Mining Review* and some of the miners contend that under this law any mining machinery may be admitted duty free provided it does not bear the name of any Canadian manufacturer of such machinery; while the manufacturers contend that the meaning of the law is that foreign machinery performing the same functions in substantially the same manner should be included in the meaning of the words “class or kind”; and that there be a declaration by Parliament to this effect. The question is a simple one which ought to be settled without the interjection of such unpleasant features as *The Mining Review* forces into prominence. The law is vague, and it should be made plain. It was intended to be formed along the lines of the National Policy, and, if it is not intended to abandon that policy, the vagueness of the law which is now interpreted along free trade lines should be made plain by an amendment which should quiet the dispute. Ever since the law was passed in 1890 amicable relations have existed between the manufacturers and the miners, although each were anxious that their own interpretation should be accepted; and until this time it is not known that the miners have ever thought it necessary to their interests to denounce the manufacturers as a pack of harpies who were an incubus upon their industry. Nor does it appear now that they think thus, notwithstanding their proclaimed official organ, *The Mining Review*, has thought proper to say many unjust, unkind and disparaging things about the manufacturers, for which it will no doubt make ample apology when it recovers its equilibrium of good common sense. Abuse is not argument and should not be indulged in.

Of course *The Review* possesses a perfect right to entertain any opinion it desires regarding the principle of protection, and the policy of the Government in making laws conformable thereto; but its abuse of the manufacturers develops some singular weaknesses on the part of the miners, if what it says really expresses their views. Thus, *The Review*, while telling us that the manufacturers are “pampered and spoiled”, and that the mining industry “brings more foreign capital into the country, employs more labor, and results more than any other in general prosperity”, also tells us that it is “denied its equal right” because the manufacturers ask that no special and obnoxious law be permitted in their favor more than in the favor of any other class or element of Canadian industry. We do not underestimate the importance of the mining industry; but we fail to see why it should be specially favored by the free admission of such machinery as can be and is made in this country, while other equally important industries are not thus favored. If the miners must have free machinery, why not the lumbermen, the farmers, the tanners and all other classes who are using machinery? And if the miners must be thus favored, what is it more or less than making them the “spoilt and petted” coddlings of the Government? “What the miners claim as their right,” *The Review* tells us, “is that they shall have that class or kind of machinery which they want, and which is not manufactured in this country, duty free.” If this is a

"right" possessed by the miners, do not all the other industries possess the same right? It also tells us that the manufacturers in asking for an amendment of the law, "would tax all mining machinery if they could, and that, unrestrained, their short-sighted cupidity would do its best to destroy the industry by which they live." Where, pray, could there be a greater exhibition of "cupidity" than for the miners to ask that their industry be relieved of all share in the support of the Government by paying duty upon their imports, while no other industry is thus favored.

The Review does the mining industry no good in the strange course it is pursuing.

PRESIDENT BERTRAM'S ADDRESS.

Following is the text of the address of Mr. John Bertram, president of the Canadian Manufacturers' Association, delivered at the annual meeting of the Association held in Toronto on February 14 :

I have to congratulate you, on this the nineteenth annual meeting of the Canadian Manufacturers' Association, on the large amount of work done by our able secretary in collecting and arranging the opinions and views of manufacturers in all branches of trade in the Dominion; a work particularly necessary at this time, as the approaching debates on the Tariff question in the House of Commons will be anxiously watched by all classes.

The constant line of attack which has followed the National Policy since its inception, occasionally fluctuating as new issues presented themselves, has lately received a new impetus from the events transpiring in the neighbouring Republic by the accession of the Democratic party to power, with President Cleveland at the head of the administration, pledged to a radical reform in the American tariff and a promised repeal of the McKinley bill.

You are all aware that for many years protection to home manufacturing industries has been one of the leading principles of the dominant Republican party, the tariff rate constantly increasing until it finally culminated in the McKinley tariff. This measure singled out for attack most of the raw products entering that country from Canada, as well as certain classes of manufactures largely imported from Britain, and there is no doubt in the minds of fair-thinking men that the McKinley tariff, or at least such of its provisions as related to Canada, were dictated by a mischievous spirit, and looked on as possessing all the elements of an unneighbourly act. This for a time threatened to seriously cripple our trade, but by the timely opening up of other markets the volume of our foreign trade has steadily increased, as is shown by a comparison of exports in the last six months in 1892 with the last six months of 1893, in which we find an increase of \$3,274,683, while a wave of depression and disaster has swept over the United States.

Since the abrogation of the reciprocity treaty between Canada and the United States the Dominion Government have made frequent efforts to obtain a fair measure of reciprocity with that country in the products of the forest, field and mine; but all these attempts proved abortive, as was demonstrated in the last conference with the Harrison administration. The price of reciprocity demanded by the United States was virtually the surrender of our commercial independence, and discrimination against Britain in favor

of the United States. It was then considered high time that undignified begging should cease, and now we find that the Wilson Bill, which is to some extent a crystallization of the ante-election promises of the Democratic party, has passed through the House of Representatives with very little material change, and I have no doubt that if it becomes law, by the putting of staple raw products, such as coal, lumber, wool etc., on the free list, and considerable reduction of duty on a great many articles which Canada can furnish, a material benefit to both countries will be the result; a benefit which could not be so readily obtained through a treaty conference. I have thus commented to some extent on the tariff legislation of the United States as it forms an impressive object lesson to us, as similar questions and issues arise in Canada, and inasmuch as the Wilson Bill is being treated by American legislators purely in the interests of the American people, we have every reason to hope that Canadian legislators will weigh all matters connected with our tariff in the interest of the Canadian people.

In the hands of our Government, as you are all aware, power has been left to give effect to reciprocal interchange of certain products with the United States. These powers have lain dormant for a number of years, not from the lack of desire to exercise them, but from the fact that it requires two to make a bargain.

Another phase of this question is the misapprehension that obtains with some Canadians regarding some of the provisions of the Wilson Bill and of our own tariff, but a glance at each will show a great contrast between the two. Take as example articles which are rated here at 30 ad valorem duty while in the Wilson Bill 45% is the minimum.

Regarding our Canadian tariff, this association have always held the opinion as sound that no tariff is perfect, and none can run a course of years without requiring amendments; and this because markets change, and conditions arise in which trade, commerce and manufactures do not always hold the same relative positions; therefore it becomes necessary that modifications should be made from time to time to adapt our tariff to the necessities of the times. But whatever changes are to be made they should be effected with as little delay as possible, as uncertainty in this respect has a most depressing effect on business.

Another phase of this question which I think is worthy of notice is: have Canadian manufacturers, since the inception of the National Policy, been fully alive to the trust committed to them? Some of you will remember how the opponents of this measure predicted that manufacturers would profit by just the amount of duty on imports added to their products; that it would discourage emulation in improving their quality, and that Canadian consumers would have to submit to the necessity of using inferior home made goods. I need not tell you how effectually these views have been exploded. You are intimately acquainted with the various industries in Canada, and can well endorse me when drawing your attention to a few evidences of the progress made in manufacturing during the last fifteen years. Consider, for example, our railway system, and you must be impressed by the great improvement made in the rolling stock, including locomotives and first-class cars and coaches, nearly all of which are now manufactured at home, and

which are second to none on the continent. Instance also the great change in our stationary and marine steam engines, compound and triple expansion, and consider the economy obtained by the modern style. Then, on every hand we have evidence of the great advance in steel bridge building and steel architectural work; but in no branch of engineering has there been such rapid and marked progress as in the manufacture of electrical appliances, nearly all our cities and towns having been equipped with electric lighting plants, electric street cars, etc., in a very short period; and I have no hesitation in affirming that this mysterious means of transmitting power will speedily make great changes in the economy of manufacture, as even now our magnificent water powers are rapidly being utilized. And again, we see on every hand the improvement made in all classes of agricultural machinery. Harvesters, plows and hand implements all show that with increase in quality and more elaborate finish the cost has been greatly reduced.

I desire to draw your attention to an event of last year in which Canada played a most important part. I refer to the World's Columbian Exposition at Chicago. Large numbers of our people visited that great assemblage of arts and manufactures, where the wealth of the forest, field and mine were placed alongside of the achievements of the factory and workshop; and no better object lesson could be presented to demonstrate to us the remarkable improvement obtained in all classes of manufactures since the effort made by Canada at Philadelphia. Apart from the great success achieved by our agricultural products, which carried everything before them, nearly every industry was represented; and in every building of the White City prominent positions were held by Canadian exhibitors; and the generally expressed opinions of the American and British press has accorded to Canada places of merit alongside those of the United States and Germany. In this connection I cannot do better than quote an extract from London Engineering regarding this exhibition, which states:—"There has been issued from the Foreign Office a report of the Columbian Exposition, by Mr. J. A. Hays Sadler, British Consul at Chicago, who says: The British colonies came well to the front and universally drew remarks of praise and approbation, not only because of the extent, but also the superior quality, of their displays. The exhibits of New South Wales and Canada fairly took the public by surprise." The arrangement of the Colonial exhibits was excellent, and they were well set off by decorative enclosures which were at once simple and attractive. Attention might also be drawn to a Canadian achievement that we all look upon with national pride, and which has won for our country the admiration of the world. I allude to our Transcontinental railway, which extends from the Atlantic to the Pacific, and also our connection with China and Japan by steamship lines. Compare this with a similar work, the Trans-Siberian Railway, which has for some time been taxing the resources of the Russian Government, a work which presents no great engineering difficulties compared with the six hundred miles of the Canadian Pacific Railway in its Rocky Mountain section. It might be asked: what has such an achievement to do with the National Policy? A fair answer to this is that, apart from the moral side of this question a nation's strength and stability lies in its resources,

its power to resist aggression, and to maintain its independence and keep up its credit in the world's market; and I ask you who are conversant with this subject: has not Canada fully occupied this proud position? For while we are witnessing one of the most sudden and widespread depressions that can fall on any nation, such as that which is now visiting the United States, and while we find that the wave of disaster spends its force on the south shore of the St. Lawrence, we have every reason to be thankful that we have a National Policy. Instead of commercial union we have a sound banking system and a form of government that responds at once to the voice of the people.

As to the cry for tariff revision, we are well aware of the origin of this sentiment in its present aggressive form. It is invariably the case that any great political upheaval occurring in any country has a reflex influence on its neighbors, so in our case we find that the supposed success of the tariff reform party in the United States gave new life to a similar movement in Canada; and though those of all shades of politics are agreed as to the necessity of revising the tariff, and of correcting such anomalies as may exist in it, we cannot see any force in the assumption that if the Americans should reduce their tariff rate upon articles bearing 75% down to 50%, we should reduce ours from 30% down to 20%. I have mentioned before that the Wilson Bill is by no means a free trade measure, and if some politicians in Canada take any consolation from it we would have no cause to complain if they should desire to abide by its standard.

RESOLUTIONS.

At the regular annual meeting of the Canadian Manufacturers' Association held in Toronto on February 14, 1894, the following resolutions were unanimously adopted, and the Secretary was directed to forward copies thereof to the Dominion Government:

THE NATIONAL POLICY.

Whereas, from its geographical position and surroundings, the prosperity of the Dominion of Canada depends largely upon the maintenance of a fiscal policy which will foster the agricultural, the mining, the manufacturing and all its other interests;

And whereas, the existing National Policy of protection to Canadian industrial enterprise, inaugurated by Sir John A. Macdonald in 1879, has proved itself well suited to the needs of this country, inasmuch as it has been of inestimable advantage to all classes of our people;

A policy which makes the interests of Canadians paramount to those of foreigners by preventing this country from being made a slaughter market for the surplus products of foreign nations;

A policy which, while fully protecting Canadian industry and enterprise, loyally refuses to consent to trade arrangements with foreign countries which will in any way discriminate against Great Britain;

A policy which gives confidence and stability to capital, ensures prosperity to our manufacturing industries and enables our artisans to maintain a scale of wages far in excess of those which obtain in European countries;

A policy which, by retaining our skilled artisans in at home at wages which enable them to live in comfort, has provid-

ed our farming population with a profitable home market for many lines of agricultural products which cannot be exported ;

A policy which has kept Canada on the highway of national prosperity while almost every other country has been suffering from severe commercial depression ;

A policy which, while it has stimulated production in our own manufactories, has also increased our foreign trade to dimensions hitherto unknown in Canada ;

A policy which has enhanced our national credit in the money markets of the world, and placed Canadian securities at the head of all the British colonies ;

A policy which has encouraged and developed interprovincial trade, and welded this vast Dominion into a homogeneous whole ;

A policy which has produced amongst Canadians a feeling of security, of national pride and of commercial and industrial independence, without which no people can ever attain to the acme of national prosperity.

And whereas, by the popular vote at three general parliamentary elections, the people of the Dominion of Canada have unmistakably declared themselves in favor of a tariff which will afford adequate protection to Canadian manufacturing industries ;

And whereas, in response to these popular verdicts over \$188,000,000 have been invested in manufacturing enterprises in this country since the inauguration of the present protective policy in 1879 ;

And whereas, nothing imperils the security of capital, or paralyses industrial or commercial enterprise more surely or quickly than uncertainty in regard to the fiscal policy of the country ;

Therefore be it resolved that this Association places itself upon record as opposed to any changes in the present tariff system which will imperil the safety of our existing Canadian industries and subject them to unfair competition from foreign manufacturers.

Resolved, that in the opinion of this Association, the prosperity of this country imperatively demands a fixed and definite policy of protection to Canadian industries, from the general principles of which there shall be no deviation.

UNDervaluation.

Whereas, by a decision of the Exchequer Court of Canada made some two years ago, job or unsaleable goods can be imported at slaughter price valuations, although in consequence of combinations among foreign manufacturers, they cannot be sold for consumption in their home market at less than regular prices ; and

Whereas, it is exceedingly unfair to the manufacturers of this country that such undervaluation be permitted ;

Resolved, that the Secretary of this Association be instructed to communicate with the Government with a view to having the Customs' Act so amended that such goods shall pay duty upon the regular and not upon the slaughter price ; and that when such goods have been withdrawn from the market where manufactured the duty price for Canada shall be the lowest price at which bona fide sales have been made for consumption in the country where they were manufactured.

PRISON LABOR.

Whereas, according to the ethics of protection and of the

National Policy, while it is the duty of the Government of Canada and of the different provinces to always legislate in favor of domestic interests and of home industries, it is also and always the duty of those Governments to refrain from enacting any legislation which will in any manner injuriously affect any of those interests ;

And whereas, free Canadian labor, especially when employed in manufacturing industries, is injuriously affected when brought into competition with convict labor ; therefore

Resolved, that this Association deprecates and protests against the employment of convict labor in any manufacturing industry where the product of that labor is brought into competition in the open market with the product of free labor.

EDITORIAL NOTES.

The President of the Baltimore and Ohio Railroad Company, Mr. Charles F. Mayer, recently submitted to the Ways and Means Committee his judgment as to the effect of the removal of the duty on coal. He says : " Nova Scotia coal is now being put into New York and other Northern ports at from twenty-five to thirty cents per ton under American coal. When the duty is taken off, the Nova Scotia miners will reduce their prices just enough to enable them to take such share of the trade as they find it desirable to control. It will not be necessary for them to cut off the full seventy-five cents which represents the duty. They can reduce their price part of this seventy-five cents and add the balance to their profit."

The Metropolitan Church trustees are wise in their generation. They see a storm coming and are running to get in out of the rain. Ald. Hallam has received a letter from them asking for a conference about the opening up of the church grounds for public use. It looks as though the exemption privilege that churches enjoy is to be legislated out of existence during the present session. The taxes on the Metropolitan grounds will amount to a large sum annually, perhaps two or three thousand dollars, as soon as exemptions are abolished. If the grounds are thrown open to the public it will no doubt be on the understanding that no taxes will be levied. Will it pay the city to forego the taxes on this property for the privilege of having it converted into a semi-public park? The trustees evidently want to get under cover before the storm bursts. They show much worldly wisdom.—Toronto World.

A most remarkable electrical experiment was successfully exhibited at the College of Physicians and Surgeons in Baltimore a few days ago. By means of a flexible rubber tube a diminutive electric light was introduced into the stomach of a patient. The lights in the rooms being lowered, over two hundred persons viewed the workings of the patient's internal organs through the transparency the light created in the abdominal wall. The experiment has heretofore been regarded as an impossibility.

An elderly woman in Chatham has been fined \$25 under the Ontario Medical Act for treating patients suffering from cancer. She used an Indian remedy, it is said, with marked success. She "would not ask pay from the poor, but took it from others who were able to reward, according as their means would admit."—Toronto Globe.

It is this sort of business that will, sooner or later, bring the medical profession into such contempt as to induce a

condition that will withdraw from them the legal ability to send people to prison for doing good to suffering humanity when not done in strict accordance with the Ontario Medical Act. This Act permits of the most outrageous oppression, and is of a character a hundred fold more protective in its operations than any tariff law that was ever enacted in any country.

The best way to settle the question as to whether or not suspenders cannot be made as cheaply in Canada as in the United States is to let the people of Canada buy them where they can make the best bargains. It matters little whether they are cheaper in one or the other of two protection countries. The question for Canadians is: Are they as cheap as they should be? If the people, when free, adopt some other method of obtaining them, it is proof that the present method is made burdensome by restrictions.—Toronto Globe.

The best way to break up and destroy important Canadian manufacturing industries, which give employment to thousands of industrious Canadian working men and women, is to open the doors to the output of foreign factories that give employment to foreigners. The Globe's cry for cheapness is a demand for the prevalence of the worse condition that could possibly prevail.

The British Museum possesses an iron axe-head of 1370 B. C., the oldest authenticated iron implement known, but a piece of iron was found in an air-passage of the great pyramid which may have been there since 3700 B. C. A bronze cylinder of 3223 B. C. is the oldest bronze in the British Museum.

Commenting on the prices which were recently paid in Toronto for seats at the Patti performance, and the still greater prices paid to hear Mr. Irving and Miss Terry, The Toronto Globe says:—

Extreme poverty is the necessary accompaniment of superabundant wealth. Nature is bountiful and yields plenty for all, but she is not prodigal, and she can endure wastefulness only by pinching in certain places. Nothing does more to increase the disparity between the rich and poor than restrictions and tariffs for the benefit of a favored few. The National Policy has fulfilled the prediction of Alexander Mackenzie even sooner than he expected.

These remarks are true as far as they represent the sentiments advanced by Henry George, but the application to the National Policy is exceedingly far-fetched. The Globe while attending these performances could not but have noticed that of the men who were present at them there were no manufacturers who had been so benefited by what it calls the "restrictions of the tariff" as to afford to pay any such fancy prices for their amusement. Lawyers, physicians, importers, etc., were there in large numbers and all arrayed in immaculate evening dress, but no manufacturers.

Mr. Thos. J. Watters, acting commissioner of Customs, has issued a memorandum to collectors of customs in which he advises them that beef extract, manufactured by an American firm, may be admitted to entry at the values therein mentioned, the said values to apply to any and all quantities of the goods. These goods are put up in jars ranging in capacity from one ounce to 16 ounces; in bottles ranging from 2 ounces to 16 ounces, and in cans of 10 pounds capacity. This is an important and timely ruling,

as it precludes the possibility of large quantities of the goods, which may have been purchased at low prices, coming into the country at lower prices, and paying lower duty than smaller quantities for which higher prices may have been paid. It is to be hoped that the spirit of this ruling may be extended to all classes of merchandise.

A writer to the New York Sun says the new industry of making linen cloth has got a foothold in Iowa, Minnesota, and Wisconsin. The factory in Eau Claire, Wis., is making excellent linen, and is prosperous and growing fast. It was established by Belfast linen spinners, who moved their plant over to America. And now more linen makers are going to America. Germany, Belgium, and Ireland will not, he states, continue to send £4,000,000 worth of linen cloth annually to the States. The Americans, he asserts, are about to grow fine flax and make this linen themselves. In a conversation with the writer, Mr. James Girdwood, of the firm of James Girdwood & Co., Belfast, said Irish manufacturers were looking to America now. They could do better to manufacture linen in the States, as the Coats thread people do their thread. They wanted raw material free at first, or till they could establish their manufactories. If, says Mr. Girdwood, Cleveland will give raw flax free and keep the tariff on linen cloth where it is, America will soon steal hundreds of linen factories from Europe; and when the factories are established the American farmers will go to work and raise the flax to supply them. Eventually, with raw material free, Minnesota and Wisconsin could make linen cheaper than they can make it and send it fifteen hundred miles inland. A good deal of the foregoing is obviously not founded on probabilities.

Which is the better form of "paternal" interference by the government in behalf of workmen: to maintain tariff duties which will permit them to earn fair wages by fair labor, or to expend public money upon soup-houses and upon public work for which there is no pressing need? Since the revolution against the tariff succeeded, the latter plan has found much favor with certain free trade journals. The New York World, for example, has actually demanded that the federal government shall make a large appropriation to a general pauper fund; and in Philadelphia, the Record and the Times cordially approve the plan of bringing idle men into the service of the city. As things are, any method which will help honest men to escape hunger is preferable to no method. But if the free trade editors care for consistency it would be thought that, after the present experiences, they would be slow in the future to denounce the protective system upon the ground that it taxes all the people for the benefit of those persons who are employed in the protected industries. This nation has to choose between maintaining protection or resorting to that system of trade under which nearly two million persons in the British Islands are at this moment living in a condition of pauperism, dependent upon the public bounty. The Soup-House Movement in Philadelphia is the firstfruits of a political revolution which, if it shall be completed, will make the soup-house a permanent American institution.—The Manufacturer.

The foreign trade of Newfoundland is about \$54 per

head of the population. According to popular philosophy on foreign trade the people should be revelling in luxury.—Toronto Globe.

Fifteen years is a long life for a humbug, especially when it gives privileged classes financial advantages at the expense of the whole people, and yet our protective tariff has been in existence for that length of time.—Toronto Globe

The humbuggery is with the Globe. Newfoundland has free trade, and the foreign trade of that country is about \$50 per capita. Canada has moderate protection and our foreign trade is only about half that of Newfoundland. The United States is strongly protectionist and the foreign trade of that country, per capita, is only about half that of Canada. The Globe desires to have Canada adopt free trade with the United States and extend the tariff wall of that country to the North Pole. Both Canada and the United States, under protection, are supplying themselves to great extent with goods made at home. Newfoundland, on the contrary, is not a manufacturing country, and is forced to depend upon imports from other countries. The nation that manufactures for itself prospers.

It will be noticed how cleverly the Yankees transact their affairs. They want our coal and pass a law to admit it into the United States free of duty. But it will be observed that before passing this law they had already annexed our most valuable coal mines. To all intents and purposes, commercially at least, the best mines in the Maritime Provinces belong to the United States. The removal of their duty on coal is a roundabout way of annexing a portion of our territory.—Toronto Globe.

The Globe is always declaring that free trade is absolutely essential to the full development of Canada's natural wealth; and it has said time and again that our wealth of coal could never be fully realized under any other system. But here we see it deprecating a condition that it should welcome and which all thinking Canadians do most heartily welcome. It is of small moment where the capital comes from that may be employed in developing our industries. When it is thus invested it at once becomes Canadian capital. Don't worry, Dear Globe, about the annexation business. There cannot possibly be enough American capital invested in Canadian mining industries to enable the transfer of one acre of Canadian soil to Yankee jurisdiction. Meantime we gladly welcome all American capitalists who desire to join our procession in our march to industrial development and national greatness.

There may be no relation between the two, but it looks very much as if the annexationist movement and misfortune run hand in hand. Ben Butterworth has disappeared from the political stage, Mr. Wiman is in jail, Sir Richard Cartwright is in a deeper shadow than ever, and everyone else who has touched the movement has been hurt by it in prestige and in pocket. Leave it alone, gentlemen, there's ruin in it, and turn again to your own country as the most promising in the world.—The Empire.

The Empire advises Messrs. Butterworth, Wiman and Cartwright to leave the annexationist movement alone, and to turn again to their own country as the most promising in the world. Whose own country—that of Butterworth and Wiman, or of Cartwright? Which country is referred to as the most promising in the world? Surely the school boy editor still holds the fort of the Empire's editorial sanctum.

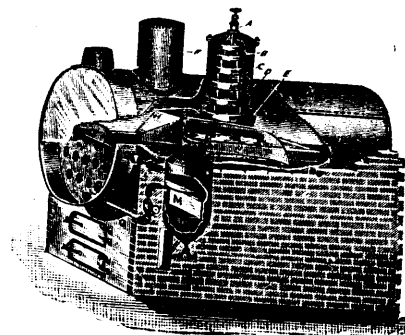
The Canadian Engineer, speaking of the recent meeting of the Brass Manufacturers' Association, says :—

The object of this Association is to drive out of the market the inferior lines of brass work which have lately been introduced, and to manufacture none but standard goods. Every manufacturer of standing is a member of this Association, and well pleased with the results already achieved. A meeting was held on the 11th and 12th ult., at the Queen's Hotel, Montreal, at which it was unanimously decided, owing to the friendly feeling which existed between the members, and the very satisfactory way in which they had worked together during the previous year, to extend the present arrangements for another year, or until further notice. No change in prices was made, on account of the low price at which American goods were being imported. The general feeling was that the Canadian Government should withdraw the duty on raw metals, as it was impossible to meet the keen competition now existing. There was some talk of the brass manufacturers forming themselves into a joint stock company, and it is not unlikely that this question will soon be finally settled.

The duty upon manufactures of brass, under item 337 of the tariff, is 30 per cent. ad valorem; upon pig copper, under item 342, 10 per cent. Copper, zinc and tin are the chief components of brass. Zinc and tin in pigs are now on the free list.

One of the largest retail dry goods houses in the city received a consignment of "pin-tickets" through the customs from the United States the other day. The invoice cost was \$14.40. The duty was \$13.10 and the freight 49 cents. Mr. Foster should reform this "on National Policy lines." Whether this would mean an increase of duty to keep them out altogether, so that the duty would be collected by the Canadian makers, or a reduction to a reason-

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Dear Sir:—As requested, we write to say that we are well pleased with your Purifier. We put it on our boiler last July and run it about five months, and during that time we have taken out about 425 lbs. of lime and salt from off the pans, besides what was blown out daily from the receiver, and about two bushels of old scale that had formed in our boiler before putting in your Purifier. We consider it a great saving to our boiler and fuel. It does more than you claimed it would do, and we have no hesitancy in recommending it to anyone who is troubled with scale in their boiler. We remain,

Yours truly,

AYLMER CANNING Co.

able revenue-producing figure, is what no fellow can find out.

The fact is, pin-tickets can be purchased in Toronto and many other places in Canada at the same prices as are charged in the United States; and if the dry goods concern alluded to went abroad to buy what could have been supplied at home, it was either from a desire to have foreign goods, imagining them to be superior to Canadian goods, or because of inexcusable ignorance of the fact that such goods could be had at home. No doubt Mr. Foster would be delighted to take the Globe into his confidence and have its valued assistance in reforming the tariff—at some other time, but not at this time. No, not at this time. The tariff is now being reformed by its friends, not its enemies.

The Interstate Commerce Commission have sent us its "Fifth Annual Report on the Statistics of Railways in the United States." Attention is called to the fact that this report is issued six months nearer the date to which it applies than any previous statistical report published by the Commission. Even with this gain, however, it seems proper that some explanation should be made in regard to the time consumed in its preparation. It should be borne in mind that the railways are not required to file their reports until two and one-half months after the close of the fiscal year ending June 30th, and, as a matter of fact, many roads do not file them until from six to ten months after that date. In this lies the chief cause of delay, and until the prompt filing of reports can be secured, it cannot be overcome. In order to produce accurate and reliable statistics, it has been found that from eight to nine months are required after the reports are filed for their proper verification, adjustment, and tabulation, and the necessary time for printing.

The personality of a famous man can at times be brought delightfully close to us, and this is true of the picture we get of Nathaniel Hawthorne in his youngest daughter's description of "My Father's Literary Methods" in the March Ladies' Home Journal. The Rev. Lyman Abbott writes of the different relations of a church to its choir,

and Mrs. A. D. T. Whitney gives the second of her "Friendly Letters to Girl Friends." Mr. Stockton carries "Pomona" still further in her travels abroad, and makes her adventures funnier with each letter. "My Literary Passions" continues to afford Mr. Howells opportunity for expressing his estimate of books and their authors, while the editor discusses with much force three or four phases of a young man's life in the outer world. Three exquisitely illustrated fashion pages, "The Art of Dressing the Bride," "The Early Spring Bonnets" and "The Early Spring Gowns," are given by Mrs. Mallon, and Miss Hooper contributes two equally valuable ones on "Colors and Materials for Spring" and "The First Spring Sewing." Miss Scovil gives much practical counsel on "What to do in Emergencies." The cover of this March issue, typical of Phillips Brooks' doves, which always hovered round Trinity Church, and do still, the work of Henry Sandham, is most artistic and makes this magazine a thing of real beauty. Published by The Curtis Publishing Company of Philadelphia, for ten cents per number and one dollar per year.

Mr. Appleton Morgan opens the March Popular Science Monthly with a severe arraignment of prohibition under the title "Abolish All Prohibitive Liquor Laws." He denounces these laws as ineffectual and inexpedient, and as standing in the way of better remedies for intemperance. Frederic Houssay describes, with illustrations, certain industries of animals which closely resemble some industries of man. The origin of right-handedness is treated by Prof. J. Mark Baldwin, who gives the results of experiments upon his infant daughter. John G. Rothermel gives a popular account of what has been discovered concerning Fossil Man, describing, with illustrations, the Neanderthal, Spy, Cro-Magnon, and other famous skeletons. Amherst W. Barber contributes a dish of horrors perpetrated under the European law of torture, which was in force down to about a hundred years ago. Under the title "Customs and Superstitions of the Mayas" there is a curious assortment of the beliefs of this people, contributed by Mrs. Alice D. Le Plongeon. Sir James Crichton Brown, M.D., writes on biology and ethics, with especial reference to the survival of the fittest among mankind. There is an article on the action of massage upon the muscles, by Dr. Douglas Graham, the well-known authority on massage. The first of a series of papers on "The Ice Age and its Work," by the distinguished scientist Alfred Russel Wallace, appears in this number. In the Editor's Table the evil of partisan appointments to public office, the demoralizing effect of sensational and trivial journalism, and the scientific blunders of imaginative writers are considered. New York, D. Appleton & Company. Fifty cents a number, \$5 a year.

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Telling Iron from Steel.

The simplest way is to pour on the metal to be tested a drop of nitric acid; let it act for one minute, then rinse with water. On iron the acid will cause a grayish white, on steel a black stain. Steel may be distinguished further from either cast or wrought iron by the closeness of the grain, its toughness and its having that peculiar property called temper, which is the power of hardening when suddenly cooled after being red hot. If a bar of steel be made of a bright red heat and is then suddenly plunged into cold water, it will be found to have become harder than any other metal—so hard, indeed, that it will scratch glass, and is as brittle and readily broken as flint. If, says an exchange, a piece of hard, bright steel is held for a moment in the hollow of a clear fire, a pale straw color appears on the surface; its hardness is slightly lessened and it is fit for razors, surgical instruments, etc.; if held in the fire for a moment or two longer it becomes of a bright golden yellow, and is fit for pen knives and other cutting instruments; held longer still, it becomes bright blue and is fit for watch springs, swords and other purposes requiring great elasticity; if the heat be carried still farther a brown tinge is seen, and it is now rather soft, but still greatly harder than iron and still elastic; saws, coach springs and other articles are made from steel at this temper. If the heat be carried to redness the steel will be quite soft when it has slowly cooled, but if suddenly cooled (as by being plunged into water) the original hard temper comes back again. The most curious manufacture in steel is that of lace, which was made several years ago, looking as fine as any Brussels lace, and said to be equally soft to the touch.—Mechanical News.

Engine Power From Liquid Fuel.

In a paper read before the Pacific Coast Technical Society, Admiral Jasper Selwyn, a retired British officer, made some surprising statements about the possibilities of engine power derived from liquid fuel. Theoretically, he said, a pound of the best coal is equal to converting 16 pounds of water into steam; but, practically, only half of this effect is realized under the most favorable conditions. But with petroleum there was a theoretical value of 21, and in practice he himself secured the evaporation of 16.9 pounds of water to one of fuel.

This was with oil alone. But by blowing the sprayed oil with steam, instead of air, he claims to have raised the service to 22 or 23 pounds of water. This, he explained, was because the steam was dissolved into its component gases, and the hydrogen thus liberated did duty as fuel. Finally, he declared that under marine and Cornish boilers

he was able to burn not only the hydro-carbons of the oil and the hydrogen of the steam, but also the nitrogen gas in the air, which has usually been regarded merely a diluent of the oxygen and a clog on combustion. Thus, he said, he had been able to evaporate 48 pounds of water with one of fuel. In most of his experiments he used, and he recommended that marine engineers always use, an oil of a specific gravity greater than that of salt water, and not emitting gas at a temperature of lower than 360 F.

As is customary in most scientific bodies, when the reading of this paper was finished the subject was discussed by experts, nearly all of whom were sceptical as to the possibility of attaining any such results as had been described. A gain of from 60 to 80 per cent. in efficiency by substituting oil for coal was all that they were disposed to concede. Moreover, doubt was expressed concerning the availability of a supply of the particular grade of oil prescribed. Most of the residuum produced at the refineries of the United States is burned on the spot; very little gets into the market. Admiral Selwyn was not able to produce the detailed information about his tests that was called for, but he insisted that other men's failures to parallel his alleged success were due to the imperfection of their methods.

Forced Draughts For Steam Boilers.

The object of forcing the draught of steam boilers by mechanical means, such as fans, by discharging air under the fire grate, or both above and below the grate, or at the base of the chimney or stack, is to obtain more rapid generation of steam than can be obtained by available natural draught. Many places will not admit of a chimney with diameter and height great enough to give sufficient natural draught. Artificial draught can be readily adjusted to effect the combustion of different kinds of fuel at different rates of combustion. It permits the use of fuel of an inferior quality, and enables a steady supply of steam to be maintained, independent of climate and weather. It enables the supply of air to be properly distributed to the fuel in the furnace, to effect economical combustion.

The supply of air above the fuel can be readily adjusted to effect combustion of the gases evolved by the fuel, and the supply of air below the fuel can be regulated to effect the combustion of the solid portion of the fuel, and the movement of the hot gases can be readily controlled by proper furnace arrangement.

The application of forced draught to a furnace affords a means of obtaining a higher rate of combustion of fuel per square foot of fire grate surface per hour, that is conveniently available with natural draught. The rate of combustion obtained in practice varies with the intensity of the draught, from 30 to 200 pounds of coal per square

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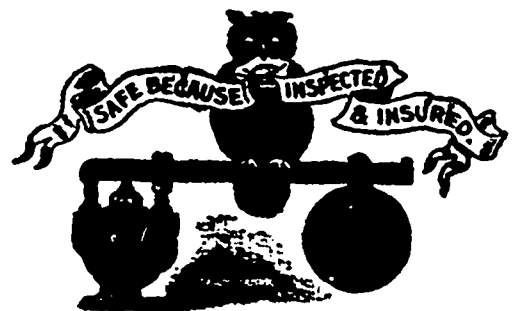
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foot of fire grate surface per hour. The greater rapidity of combustion with forced draught enables a smaller fire grate to be used for the development of equal power than is necessary for natural draught. More complete combustion giving a higher temperature may be obtained in a furnace with forced than with natural draught. The heating surfaces of the boiler are also more efficient, because there is a greater difference in the temperature of the water surface and fire surface of the metal forming the heating surfaces. As the rate of transfer of heat varies as the difference in the temperature of the water on one side of the plate and that of the fuel gases on the other side, the greater this difference the greater the amount of heat which will pass through a unit of heating surface in a given time.

The higher rate of evaporation obtained with forced draught permits the use of smaller boilers for engines of a given indicated horse power than are necessary with natural draught. The economy that may be obtained with combustion with forced draught in a steam boiler is due to the increased rate of combustion and the increased efficiency of the heating surfaces produced by it, resulting in increased boiler power. The increase of power obtained depends principally upon the quantity of air brought in intimate contact with the fuel in a given time, but the power of a boiler may be generally increased from 40 to 100 per cent. by the application of well-arranged forced draught. It is difficult to increase the power of a boiler by forcing the draught without increasing the ratio of consumption of fuel per unit of evaporation.

Economy can only be effected when the quantity of air brought in intimate contact with the fuel is less in weight per pound of fuel consumed than is obtained in combustion in natural draught. To prevent waste of heat, it is necessary that the heating surfaces of the boiler be so arranged as to absorb the greater amount of heat generated in a given time by the increased weight of combustion. If these conditions do not exist, the rates of consumption of fuel to water evaporated invariably increase with the use of forced draught. It should not in a general way be less than 10 inches thick, and it should not be allowed to burn less than seven inches before more coal is put on. A thin fire causes loss from the entrance through the fuel of an excessive supply of air. The stronger the draught, the thicker must the fire be. The height between the top of the fire and the crown sheet of the furnace should not be less than 10 inches, and preferably more.—[Manufacturers' Gazette.

Water Power and Electricity.

At a recent meeting of the British Association for the Advancement of Science a paper was read by A. B. Snell, entitled "Utilization of

Water Power by Electricity." In substance he said that with coal at the average price of the last ten years it was not probable that water power would prove much cheaper when the capital invested, cost of maintenance of the electric plant, and interest were taken into account. There were, however, special cases, such as the Manchester Water-works, which form a magnificent series of artificial lakes and could be used to drive turbines and give electric energy for lighting the various towns in their vicinity. Another example suggested was the case of Greenock, where there was a fall of many hundred feet, and the water was only partly utilized to drive the mills. The most important instance of the application of water power for the electrical transmission of power in Great Britain is, the paper said, that at the Greenside silver lead mines in Cumberland. These mines are among the few that find it possible to compete with foreign mines, and this is chiefly because the use of electricity for winding, hauling and pumping has decreased the cost of working. The fall at the station is equivalent to a vertical head of 400 feet, and the effective horse power is about 200. The generating station contains one of Gilkes & Co.'s vortex turbines of 100 horse power, driving a compound dynamo. The current is conveyed by bare copper conductors on poles, the distance being 6 furlongs, to which it enters the mine at an elevation of 1,850 feet above the sea-level. The conductors from this point are insulated and covered with lead. About 1/4 mile in the mine, or 1 1/2 miles from the dynamo, a 9 horse-power series motor is employed to wind ore from the set of sinkers. Further into the mine is fixed another 9-horse power motor, working a three-throw pump, forcing the water 460 feet in height. Half way between these motors the pressure is reduced from 600 to 250 volts for working an electro-locomotive in the lowest level of the mines, through which the water pumped from the 120 yards level, and the whole of the water used by two hydraulic winding engines, is pumped. The total weight of the locomotive when loaded is 18 tons. The conductors in the level are phosphor-bronze wires. Great difficulty was experienced in fixing this plant. All main stations in the mine are lighted by incandescence lamps in series of six. The author was of opinion that where possible water power should be wholly used; or, if there be not sufficient water for the purpose, hydraulic power such as there was should be used, and steam engines installed as auxiliaries. In this way the cost of working could be considerably decreased.

Professor Unwin, commenting upon the paper, regretted that the author did not give estimates of the cost of installing water power or the cost of working. In America, said he, there are many schemes being worked but too often at a loss, or, at any rate, no profit. In favorable cases water was undoubtedly cheaper than coal when at

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its lowest. He was afraid to say what the cheapness of water really was under the best conditions. Perhaps \$5 per horse-power per year might be taken as an extreme figure. The author, according to Mr. Unwin, only referred to the transmission of water power by electricity. In cases where there was a large surplus of water power, as in parts of Switzerland, electrical transmission was convenient, but in most instances it was not desirable to let a large quantity of water go to waste, and then came the question of storage. Reference had been made to accumulators, but in any large installation of power transmission, this method of storage was so expensive as to be out of question. The great advantage of water as a means of obtaining power was that it lent its use readily to storage. At Geneva, on the Rhine, they used turbines placed in the river to pump water up to a storage reservoir, and it was this water that supplied the power for lighting Geneva at night. Here, the lowest price quoted for electricity was 6d. per unit; in Geneva it was obtained at 1d. per unit. In the Calumet and Hecla mines power was transmitted electrically, it having been tried on a very large scale, but the engineer had come to the conclusion that it was very expensive, and in future it was proposed to go back to air.

Mr. Kapp, referring to the cost of transmitting power electrically, said that in Switzerland, where the power obtained from the Rhine was formerly transmitted by ropes, electricity was now used. At 700 volts, 700 horse-power was transmitted at the cost of 50 fr. per horse-power per year, which was not so far from \$5 per horse-power.

A Novel Experiment.

The details of an interesting experiment which was made in a textile mill at Verviers, Belgium, is described in one of our foreign exchanges, and presents some novel features. The factory employed twenty-five weavers, three of whom were women, upon an equal number of looms. It appears that one of the operatives proposed to his fellow-workers the "pooling" each week of their earnings, and an equal division of the proceeds. The suggestion was examined, discussed, and finally adopted. The employer, when consulted, gave a free hand to the weavers to arrange as they pleased, and to distribute their earnings in whatever way suited them. The arrangement referred to accordingly continued for several weeks, to the complete satisfaction of every one, employers and employed. The weavers, instead of being suspicious of each other, vied with one another in the performance of their tasks, agreed admirably, and rendered mutual support. The experiment, however, appears to have been faced with a difficulty. For several weeks past seven opera-

tives have had to "play." Immediately arrangements were made in order that all might participate in the holidays. Four weavers, turn by turn, took their leave; three others occupied themselves in secondary occupations, such as warping, etc. At the end of the week each received the same wage—the "players" and the workers alike.

According to our authority, the experiment appears to have been further successful, inasmuch as in spite of these conditions the output of the weaving shed was actually increased. The operative who furnished this information adds that the shed included, like all others, "orthodox" and socialist weavers, good ones and bad ones. According to him, the experiment will result in the merchants being furnished with what they require, without the fear of foremen exploiting the operatives who happen to be under them. He thinks that this innovation will extend to the other establishments of Verviers, and that it will improve the lot of a considerable proportion of the working-class population.

That the experiment should have worked so satisfactorily in the instance cited is not perhaps remarkable, considering the small number of weavers employed, and the necessity of mutual sacrifices for the common good. In a limited organization, this principle may often be carried out without great difficulty, but when it is attempted to apply it in the case of larger establishments it is to be feared that the results would not prove so satisfactory. In order to achieve success in such an undertaking, it is absolutely necessary that all should be actuated by the same motives, and that each should be willing to bear his share of the burdens and sacrifices involved. Such a pervading spirit of altruism is hardly to be found in large assemblages of working men.—Manufacturers' Review.

Wastage in Certain Manufactures.

The drawback provisions in the United States tariff laws often make it necessary for the custom officials to determine what is the wastage in certain manufactures which are made of foreign material and exported. The report of custom decisions made in November, 1893, contains several of these wastage decisions.

The first decision gives the wastage in making clock springs from imported steel wire rods; the decision is that the quantity of imported rods used in the manufacture shall be determined by adding to the net weight of the exported article as certified by a United States weigher 16 per cent. of such weight. This means that the waste is a little over 14 per cent.

A second decision has reference to the allowance for wastage of tin used in making salmon cans. These cans, the decision shows, are made from 14x20 tin. The Secretary of the Treasury says:

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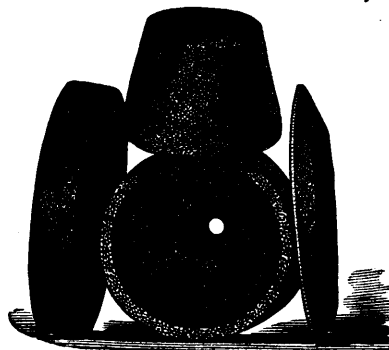
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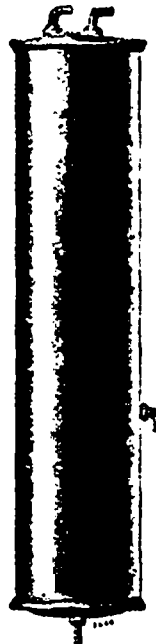


“Upon an examination of the samples submitted of blanks cut from plates, 14x20, for these 1-pound salmon cans, and of the resulting scrap, it is found that an equitable and satisfactory adjustment of the drawback thereon may be reached by weighing 12 samples of blanks and scrap and an allowance for wastage equal to the weight of the scrap, provided, however, that such weight shall not exceed 25 per cent. of the weight of the blanks. If the exporters shall submit with each shipment reliable samples of the blanks used and of the resulting scrap, you are authorized to allow for such wastage, not exceeding 25 per cent., as may be indicated by the respective weights of the blanks and scrap.”

As to the quality of wool used in making carpet the Secretary decided as follows: “The total quantity of the wools used shall be determined as follows: Allow for each running yard, 27 inches wide, of the carpets designated as Victoria Wilton, 6.498 pounds; Victoria Brussels, 4.223 pounds; Whittall Brussels, 4.661 pounds; Edgworth Brussels, 2.931 pounds, and for each Assyrian rug, 54 inches long and 27 inches wide, 12.635 pounds; provided that the quantity of worsted yarn contained in each running yard of the carpets shall not be less than 1.797 pounds in the Victoria Wilton, 1.172 pounds in the Victoria Brussels, 1.125 pounds in the Whittall Brussels, and 0.812 pounds in the Edgworth Brussels, and not less than 3½ pounds in each Assyrian rug.”

Inventive genius has not stopped with the pneumatic tire on the sulky and bicycle, but has been busy with the work of perfecting the ball bearings with such success that a few days since a street car, which was equipped with the latest inventions in ball bearings that would do away almost entirely with friction, was drawn a distance of several hundred feet by a single man tugging gently at three strands of ordinary sewing thread attached to the car. Perhaps a more interesting experiment was that of a carriage manufacturer in the West, who put another style of ball bearings upon the wheels of a large coach, to which four horses were ordinarily hitched. Then he took a trained dog, and harnessed and hitched him to the pole, when the dog drew a huge coach easily around the yard. This sounds like fancy, but it is a fact. This invention should prove a great boon to the over worked car horses, and it is in the nature of a satire that it should come just at the time when horses are almost universally disappearing from street car lines, and the trolley and cable are taking their places.

Resisto Copper Range Boiler.



The accompanying illustration is of the Resisto copper range boiler recently invented by Mr. Geo. Booth, and manufactured by the Booth Copper Co., Toronto. They say that consequent upon the ordinary galvanized boiler failing to meet the requirements of the trade they have given special attention to the production of a low price copper boiler to take its place; and they are now offering to the public the Resisto boiler, which is made of the best Lake Superior copper, strongly made, and handsomely finished. Each boiler is subjected to a hydraulic test of 200 lbs. to the square inch; no rivets are used, the heads being securely fastened by the Booth patented method, and without any dependence for strength upon solder. A desirable feature in this boiler is the low cost at which it is produced and which must bring it into universal favor.

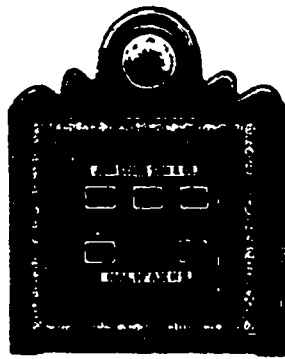
An Edmonton (N. W. T.) correspondent says: “The Edmonton Creamery Co., Ltd., is ordering machinery from J. Pearce & Co., London, Ont., and are completing arrangements with a first-class butter-maker from Denmark. Five hundred cows will supply milk for the creamery, which will be situated at Poplar Lake.”

Moore's mill works, at Golden Grove, a few miles from St. John, N. B., were destroyed by fire Feb. 23; loss about \$14,000.

A rumor is current at Fall River, Mass., that the syndicate, headed by the great cotton machinery firm of Howard & Bullough, of England, who were about to locate an immense machinery plant there, which would employ hundreds of hands in building their latest improved cotton machinery for the United States market, and thus save the import duties, have decided to drop the matter for the present, owing to pending tariff changes, and the consequent uncertainty of the future in the textile business.

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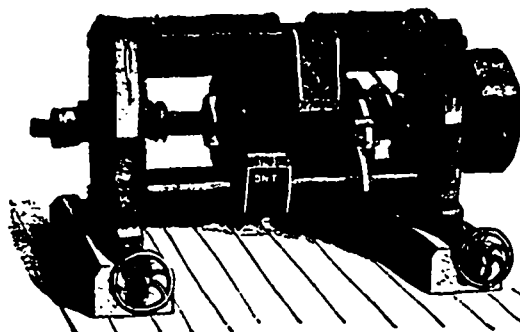
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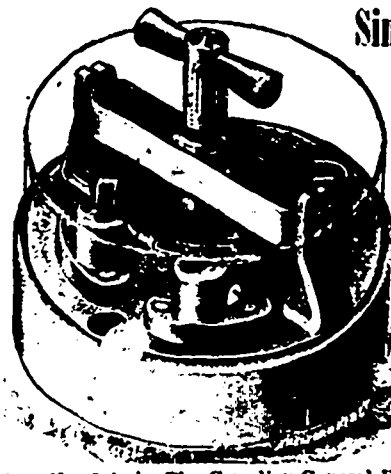
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For Sale by The Canadian General Electric Co., Toronto.

A New Steel Process.

Mr. Thomas Hampton, of Grangeville, near Sheffield, Eng., writes The Ironmonger in reference to his method for the manufacture of steel ingots by the use of Bessemer lime-lined converters only, by which means a pig iron containing too much phosphorus for the Bessemer acid and too little for the ordinary Bessemer basic process is, he claims, readily and economically converted into a superior quality of steel. The novelty of the invention chiefly consists in the method employed for the complete elimination of sulphur (in addition to phosphorus) during the "after-blow." The English patent is No. 15,551, August, 1893. Regarding his process Mr. Hampton says: "The cost of producing ingots, based upon the price of pig iron being 35s. per ton, will not exceed 62s. 6d. per ton. No alterations are necessary to existing Bessemer plant or machinery, and ordinary acid steel converters can be readily utilized by putting in basic instead of gannister linings.

From Ordinary Cleveland, Derbyshire, Lincolnshire or Northamptonshire Pig Iron.

	Analysis of Pig Iron		Steel Product.
Carbon	3.00 to 4.40	3.50	0.07 to 1.23
Silicon	1.00 to 2.00	2.00	trace to 0.021
Phosphorus	0.10 to 1.50	1.40	0.01 to 0.05
Sulphur	0.10 to 0.40	0.40	0.02 to 0.05
Manganese	0.10 to 3.00	1.50	0.25 to 0.50

As required. And upwards as required.
 "The cost of a small Bessemer plant to produce 250 tons to 300 tons of ingots per week will not exceed the sum of £3,500 complete with all necessary machinery and appliances. The process is equally applicable to converters of large capacity.
 "The cost of producing ingots will not exceed £5 per ton, based

upon the price of hematite pig iron being 55s. per ton, and coke, coal and labor, etc., at ordinary current rates. Small converters of 40 cwt. to 50 cwt. capacity are most suitable and convenient for the production of this pure steel, and the cost of a complete Bessemer plant, capable of producing 150 tons to 200 tons of ingots per week, will not exceed the sum of £3,000.

From Hematite Pig Iron.

	Analysis.	Steel Product.
Carbon	3.50	0.35 to 1.65
Silicon	1.75 to 2.00	trace to 0.02
Phosphorus	0.01 to 0.03	0.01 to 0.05
Sulphur	0.01 to 0.03	trace to 0.03
Manganese	0.50 to 3.00	0.15 to 0.50

And upwards as required. Hematite or manganese pig iron.
 The American Manufacturer desires not to be understood as endorsing Mr. Hampton's statements. Indeed, it knows nothing of the process, but the fact that his letter is admitted to The Ironmonger is a quasi endorsement, at least to the extent of suggesting examination.

The composition of smokeless powders is kept a profound secret by all the inventors and by the Governments which purchase them. Nearly all of them consist essentially of gun-cotton or other lower forms of nitro-cotton, acted on by a solvent such as acetic ether or acetone, which reduces the nitro-cellulose to a viscous paste; the paste is then rolled out into sheets and the solvent is allowed to evaporate. The sheets are first cut into strips, the strips are then cut crosswise into grains of any size. -Baltimore American.

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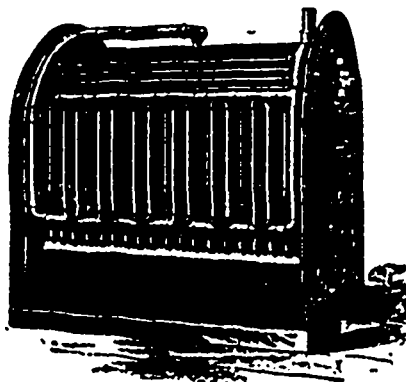
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...FOR...

YACHTS, LAUNCHES and OTHER STEAMERS

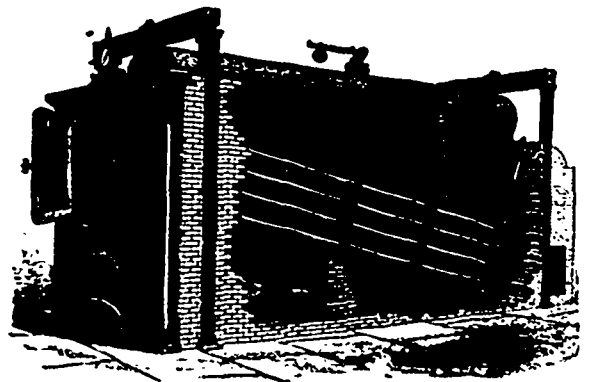
The most efficient and Reliable Water Tube Boiler in the market. Has entirely new features and improvements.

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Send for book "STEAM" free on application.

The Howard Electric Watch Clock.



The accompanying illustration is of the Howard electric watchman's clock, manufactured by the E. Howard Watch & Clock Co., Boston, Mass. The clock with its auxiliary attachments furnishes a perfectly reliable recorder whether the watchman performs his duties faithfully or not; and with this system it is impossible for him to make his record in any other manner than the proper one without the fact being easily detected. This system is the result of 40 years experience and experiment; and while the clock is constructed in the best possible manner it is extremely simple and requires very little care. It is the only system where, we are told, but two wires are required for any number of stations. The advantages of this, in saving cost and maintenance and in the appearance of the buildings from which the wires are run, are obvious. Watchmen's clocks are being required more and more by insurance companies, and quite a reduction in their rates are made on its introduction. The manufacturers of it will be glad to furnish full information regarding it, and estimates of cost upon application of any who may desire information.

Speaking of the operation of of this clock the following information is given:

The clock may be placed in the office, or in any building near to or remote from the watchman's duties, two wires only, running from the clock throughout the building, being necessary for any number of points which the watchman is desired to visit

in his tour of duty. A station is placed at every point which you wish the watchman to visit, into which he inserts his key, (which fits all stations alike), gives one full turn, after which the station automatically makes the record, and the electric currents are, by contact, allowed to pass through the wire and record the specific number of each, and at the moment he visits it. The record is made on a circular piece of paper. It is not necessary that the boxes or stations shall be visited in any particular order or equal number of times, for the record of each box is given independently of any other, and the route of the watchman may be changed, either in direction, or by shortening or lengthening, and the record tells you the truth of what has been done by him. Should the watchman record at one station one or more times at a visit: the record will show it intelligibly in the morning. The record thus shows the time occupied in making any part of the round, as well as the entire round, and how much time is occupied by the watchman between the rounds.

In a paper recently read by Mr. W. Thomson before the Manchester Association of Engineers, in which reference was made to the effects of different paints and varnishes used for the preservation of structural iron and steel from rust, the author stated that from experiments made by himself, he had arrived at the conclusion that red lead paint is the best preservative. This result had struck him as remarkable, because red lead is a highly oxidizing substance; but the reason was found to be that the red lead had the effect of producing a skin of the unoxidizable and protective black or magnetic oxide on the iron itself under the paint. The author also found that other oxidizing agents, such as manganese dioxide, form a paint which preserves iron from rusting; and this discovery he regards as of great industrial importance. Mr. Thomson explained that, having been required some time ago to make a considerable number of experiments to ascertain the most suitable paint for protecting a large iron structure from the action of the sea water spray and rain, he arrived at the conclusion that red lead paint was the best he could find for the purpose. Mr. John West, a vice president of the society, who presided on the occasion of the reading of the paper, supported the statements and views of Mr. Thomson that red lead is the best preservative paint for ironwork. The chief novelty brought out in the paper was the reason why red lead is so efficient in protecting iron.

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PACKARD'S MOGUL LAMPS

200, 300 and 500 C.P.

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They Cost Less and Use Less Current

Than Smaller Incandescent Lamps for the same purpose, and

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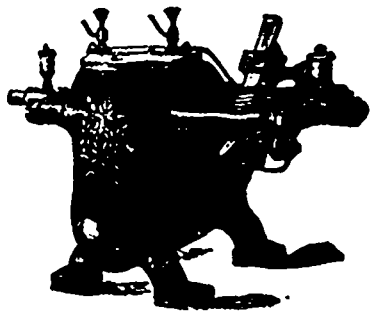
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The "Packard" High Grade Incandescent Lamp

Any Candle Power, and Any Voltage, to fit any Base.

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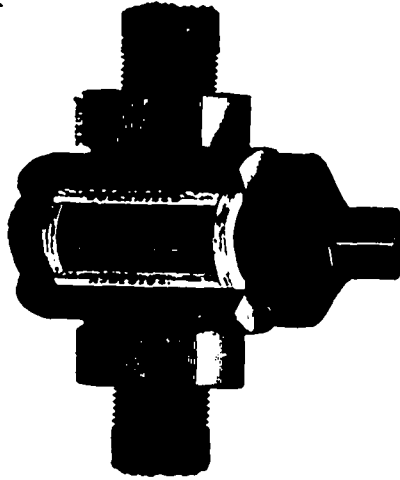
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HAMILTON, ONTARIO

Asbestos Packed Cocks.

The accompanying illustration is of the asbestos packed steam cock manufactured by Rice Lewis & Son, Toronto. In the illustration the side of the body is cut away to show how the packing is arranged. As the plug comes in contact only with vulcanized asbestos, it never cuts grains or splits, as is the case with ordinary cocks. The plug does not come in contact with metal at any point, and the cock always opens and closes easily and remains absolutely tight where other valves or cocks will leak. They are especially recommended for steam, oil, gas, ammonia in all its forms, chemicals, boiler blow-offs, or where a vacuum is required, and in all difficult places. This style has been on the market for a number of years, in which time there have been many thousands sold, and it is being successfully used by many who had found it impossible to use the ordinary cock or globe valves.



CAPTAINS OF INDUSTRY

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

The new power house of the Vankleek Hill, Ont., Electric Light Co. has been completed and is supplying power to meet all demands.

The Lucknow cheese factory was destroyed by fire Feb. 20. Loss about \$1,000.

The Windsor Planing Mills at Windsor, Ont., were destroyed by fire Feb. 6. Loss about \$10,000.

The Bell Telephone Co. have completed the instalment of their fire alarm system at Owen Sound, Ont.

The steam saw mill of John A. Humphrey, near Moncton, N.B., was destroyed by fire Feb. 8. Loss about \$15,000.

The corporation of the town of Lindsay, Ont., will take over the water works system at that place, for which they will pay \$20,000.

A plumbago factory is being started at Buckingham, Que., which will have the capacity to manufacture plumbago at the rate of ten tons per day.

Mr. Henry Wolf, superintendent of the weaving department of the Toronto Carpet Mfg. Co., has been engaged in that line of business for over twenty years.

The Ray Electric Co., Hamilton, Ont., have recently placed electric machinery as follows:—The Canada Vinegar Works, Toronto; The Worsted and Braid, Co., Toronto Junction; A. R. Woodgate & Co., Guelph; Wm. Buck Stove Works, Brantford, and Acme Silver Co., Toronto. The new organ of the Roman Catholic Church at Stratford, Ont., is now being operated by an electric motor supplied by this company.

Mr. T. A. Hollinrake, of the Canada Machinery & Supply Co., Brantford, Ont., has sent us a revised and enlarged catalogue of all kinds of new and second hand engines and boilers, iron and wood working machinery, electric machinery, water wheels, saw and grist mill machinery, etc., handled by them. This concern is doing a large business in this line and they will take pleasure in sending their catalogue to any who may request it.

The Coal Saving & Smoke Consuming Co., Montreal, inform us that they are meeting with great success in the sale of their compound. They claim for it that it saves from 15 to 40% of coal; makes inferior coal last longer and gives more heat to a given amount of fuel; that it burns clinkers, ash and refuse; that in using it no change is required in grates or stoves; that there is nothing in it injurious to the iron, and that it is a preservative of grates, furnaces, ranges, etc. They show testimonials from a large number of manufacturers and others who certify to the facts as claimed by the Company. Among those who have thus testified are Messrs. McArthur, Cornelle & Co.; Jas. McCreedy & Co., and others. The Toronto managers of its business inform us that they are selling large quantities of its compound in this city and vicinity, and that it is giving great satisfaction.

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STEAM ENGINES, STEAM BOILERS,
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The handiest, simplest, and most efficient steam pump for general Mining, Quarrying, and Contractors' purposes.

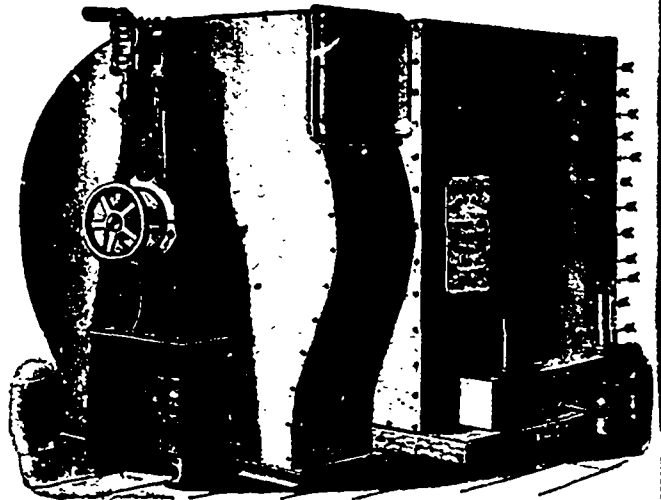
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The Largest Drier in America is equipped with a
"Buffalo" Hot Blast Apparatus

THE OWNERS ARE ENTHUSIASTIC

All Users of Buffalo Kilns write letters similar to this one:

"The Kiln answers every purpose to perfection; the Dry Rooms are run with exhaust steam at more nothing in the way of cost, compared with the old way. Your arrangement is very simple and easily managed, besides being a money saver in operation. We are able, with the Kiln you sent us, to dry soft woods in three days, and hard woods in five days. That's good enough for anyone."—SMITH BROS., Sayre, Pa.

Send for Catalogue

BUFFALO FORGE CO., Buffalo, N.Y., U.S.A.

The Burford Canning Co. is being incorporated at Burford, Ont., with a capital stock of \$15,000, to carry on a general canning business in fruits, vegetables, meats, etc.

The Consolidated Electric Railway & Light Co., Vancouver, B.C., are applying for incorporation to take over the franchise of the Vancouver Electric Railway & Light Co.

A dam will be built at Windsor Mills, Que., for power purposes and the Canada Paper Co. will expend about \$40,000 upon a plant, including dynamos, etc., which will give them sufficient power to operate all of their extensive works at that place, after which they will build a pulp mill at an expense of about \$60,000.

The Cockshutt Plow Co., Brantford, Ont., have sent us their illustrated catalogue having reference to the high grade steel and chilled plows, etc., manufactured by them. These goods are manufactured from the highest grade materials, are finely tempered and extra hardened, and the workmanship is unsurpassed. They have plows for every purpose, and every variety of soil, and are constantly adding new patterns as the trade develops, and are confident that they can supply their customers with any thing that may be required in the plow line.

Mr. J. D. McEachren, Galt, Ont., has sent us a circular having reference to the improved boiler cleaner manufactured by him. He has placed this apparatus with a large number of manufacturers, and he shows testimonials from them which express the opinion that they perform all that has been promised for them. The Goldie & McCulloch Co., Galt, Ont., say that they are very much pleased with it; that they clean out their boilers once in four weeks and each time the pans are fully laden with sediment and incrustation which, without this device, would have been deposited in the boilers; that with the knowledge they now have they would not think of being without this or some other equivalent device in connection with their boilers. The R. Forbes Co., at Hespeler, Ont., say that the McEachren boiler cleaner works quite to their satisfaction and that they could not be without it. The head engineer of the Paterson Confectionery Works at Brantford says that he has taken as much as 60 pounds of mud, etc., from this apparatus at the end of a nine weeks' run, and that he experiences no trouble whatever with the pipes stopping up. The circulation is positive and rapid. The Aylmer Canning Co. say that they are well pleased with this apparatus - that they have it in their boilers and consider it most valuable.

The Robb Engineering Co., Amherst, N. S., are supplying a 150 horse-power compound Robb-Arstrong engine to the Electric Light Co., Windsor, N. S., who are increasing the capacity of their plant.

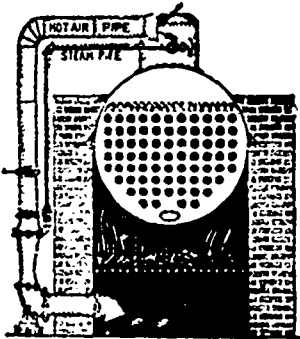
Mr. Herbert Myrick, treasurer of the Metallic Drawing Roll Co., Indian Orchard, Mass., is on a trip through the South and South-western States, combining business with pleasure, visiting the principal cotton mills in that region in the interest of the metallic roll, which is proving so satisfactory south as well as north.

The Eagle Knitting Co., Hamilton, Ont., inform us that they are adding more machinery to their factory. They will put in a new engine and boiler. Among the machines they have recently added was a drill manufactured for them by Messrs. Stevens, Hamilton & Co., Galt, Ont. Mr. Moodie, manager of the Knitting Co., says that he had intended obtaining a drill from the United States, supposing it would be superior to what he might obtain in Canada, but he is so well pleased with the one he has obtained from Messrs. Stevens, Hamilton & Co., that his opinion is that it is far superior to any offered to him by any American manufacturer.

The success in foreign countries of "the greatest improvement in cotton spinning since Arkwright's time" is equally as marked as in America. Mr. Benjamin F. Nichols, formerly treasurer of the Metallic Drawing Roll Co., Indian Orchard, Mass. the American company but now of the English and Continental company, has recently completed a tour of a few of the leading cotton mills in Russia. In one week he sold patent metallic rolls for over 600 deliveries of drawing rolls to take the place of the old fashioned leather covered rolls in old frames. Most of the new machinery for foreign cotton mills is being ordered with the patent metallic roll. Among the orders secured by Mr. Nichols was one from the Krenholm Cotton Manufacturing Corporation at Narva, about 90 miles from St. Petersburg, which is the largest cotton mill in the world. It has 450,000 spindles and runs 24 hours a day seven days in the week. The cotton manufacturing industry is comparatively prosperous in Russia, all the well managed mills being very profitable. They are mostly under the management of competent Englishmen.

EARLE'S

STEAM and AIR INJECTORS, .. EXHAUSTERS, ETC.:::



For burning hard and soft coal, screenings, run mine and lump coal under steam boilers, exhausting air and vapors from buildings, ventilating ships, mines, etc.

Highest Medal and Diplomas given at the World's Columbian Exposition, Chicago, 1893.

The Best Blower in the market for Steam Boilers.

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MONTREAL and TORONTO

Wire Drawers, Galvanizers

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MANUFACTURERS OF

Iron Steel WIRE Brass Copper

FOR ALL PURPOSES

...also...

Steel and Brass Wood Screws, and .. Wire Nails..

Crescent Coat and Hat Hooks, Steel and Brass Jack Chain, 2 and 4 Point Barb and Plain Twist Fencing.

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**==EAGLE BRAND THE BEST==
ROOFING**

It is superior to any other Roofing, and unequalled for House, Barn, Factory, or Out-Buildings; it costs half the price of shingles, tin or iron; it is ready for use, and easily applied by anyone; it is the best Roofing in the market, in durability, to all others. Send for estimates, and state size of roof.

... RUBBER PAINT ...

The best known Paint in the world for Tin, Iron, or Shingle Roofs, Fences, Sides of Barns and Out-Buildings. It costs only 60 cents per gallon, in barrel lots, or \$1.50 for a 5 gallon tub. Color dark red. It will stop leaks in tin or iron roofs that will last for years. It is guaranteed not to peel, crack, scale, nor wash off, and is fire-proof against sparks. TRY IT.

... SHEATHING PAPER ...

920 square feet, \$3; keeps building cool in summer, warm in winter.

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== FACINGS**

Core Compound, Ceylon Plumbago Foundry Supplies and Moulding Sand

CANADIAN AGENTS FOR

**Root's Positive Blower
Colliau Cupola Furnace**

Hamilton Facing Mill Co.

HAMILTON . . . Ontario

Messrs. C. W. Batreck & Son will build a large shingle mill at Byng Inlet, Ont.

Mr. Joseph Biette will erect a large cheese box and heading factory and saw mill at Scone, Ont.

Considerable new machinery is being placed in the mills of the Woodstock, N.B., Woolen Mills Co.

The Worsted and Braid Co., Toronto Junction, contemplate an addition to their factory and will put in worsted machinery.

Mr. A. McCracken, owner of the Temple Woolen Mills, Kildare, Ireland, proposes to erect similar works at Mission City, B.C.

Letters of incorporation have been issued to the John Abel Engine and Machine Works Co., Toronto, with a capital stock of \$500,000.

Fire in the storehouse and factory of the James Morrison Brass Mfg. Co., Toronto, on Feb. 14, did damage to the extent of about \$30,000.

The file works recently started in Almonte, Ont., by Messrs. Shaw & McLeod and but recently put in operation, are full of orders and are working over time.

Mr. James H. Etherington, proprietor of the Empire Carpet Works St. Catharines, Ont., has introduced electric power into his factory, by which he operates 30 looms.

Messrs. Joseph Williams & Co., Glen Williams, Ont., manufacturers of hosiery, etc., and who are operating 12 knitting machines full time, will add considerable new machinery.

The Watson Mfg. Co., St. Catharines, Ont., manufacturers of knit underwear whose output is now 100 dozen per day, will increase their capacity by the addition of new machinery.

The output of the Canning, Ont., Woolen Mills, W. H. Wilcox, proprietor, is now 370 pairs of blankets per day. He has recently put in a Goddard Bur machine and other machinery.

Mr. Frank Hammond, with the Penman Mfg. Co., Paris, Ont., has patented a button for an electric stop motion for flat cuff and border machines. This motion can be attached to any machine and do perfect work.

The Dominion Government have given notice that parties desiring to exhibit at the Hobart International Exhibition of 1894-95 to be held at Hobart, Tasmania, on November 15 next, are notified that on application to Mr. H. B. Small, Secretary of the Department of Agriculture, forms of application for space and also the regulations framed for the guidance of exhibitors, with other important information, will be forwarded by mail.

The capital stock of the Bain Bros. Mfg. Co. Woodstock, has been increased to \$100,000.

Messrs. Cassidy, Bonner & Co., Montreal, have started a factory for manufacturing leather belting.

The Toronto Milling Co. are seeking incorporation, with a capital stock of \$25,000, to carry on the flour milling business.

Messrs. S. Taylor & Co., St. Catharines, Ont., manufacturers of hosiery, etc., will put in more machinery for the manufacture of underwear.

Messrs. Darling Bros., Montreal, inform us that they are now putting in a power elevator in the leather warehouse of Messrs. Bickell & Wickett, Toronto.

The Hart Emery Wheel Co., Hamilton, Ont., will no longer sell their manufactures through the Dominion Emery Wheel Co., but will hereafter do business for themselves.

The Richmond Water Power and Manufacturing Co., Richmond, Que., has been incorporated, with a capital stock of \$40,000, to construct dams for power purposes, etc., on the St. Francis River at that town.

The Canadian General Electric Co. have been awarded a contract from the Toronto Railway Co. for 80 high grade motors and generators, aggregating about 3,000 horse power. This contract amounts to \$250,000.

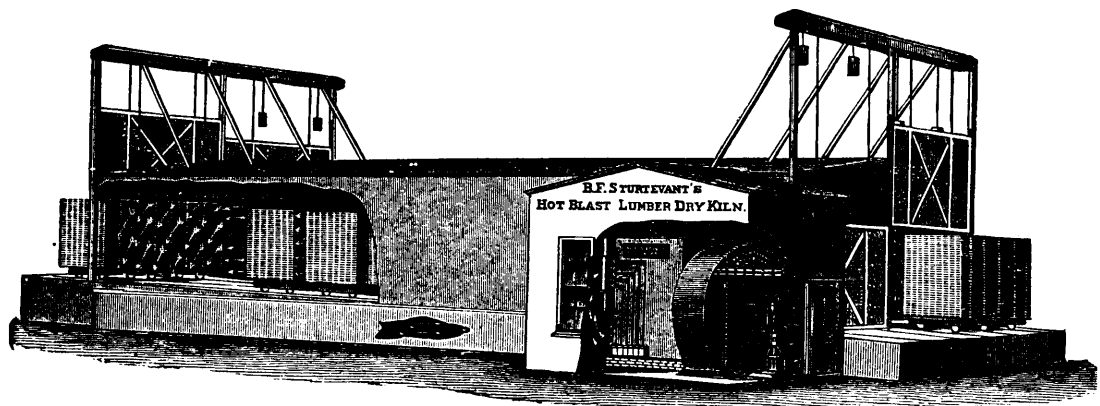
At the recent annual meeting of the Londonderry Iron Co., Montreal, the old board of directors was re-elected. Mr. A. T. Paterson will continue to be President and Managing Director, and Mr. James Phymister, Secretary.

The L. H. Young Mfg. Co., Montreal, are applying for incorporation with a capital stock of \$100,000, to manufacture various articles of iron and steel. A.W. Olgvie, of Montreal, Hugh Scott and Thomas Walmsley, Toronto, are among the incorporators.

The Dominion Dyewood & Chemical Company, Toronto, are in receipt of the following circular from Farbenfabriken, vormals Friedr. Bayer & Co., Elberfeld, Germany, which explains itself. The Dominion Dyewood Chemical Co. are now offering this article alluded to. The colors are of much interest to the trade, being largely used by cotton dyers:—We beg to inform you that our action against Messrs. K. Oehler & Co., Offenbach, on account of patent infringement, has been amicably settled and that from this date we shall also sell Toluylene Orange G (patented) and the different brands of Toluylene brown (patented) of the same quality and strength as delivered by Messrs. K. Oehler & Co.

The Sturtevant Progressive Lumber Dry Kiln

Complete
Plans --
Furnished
With --
Each -
Apparatus

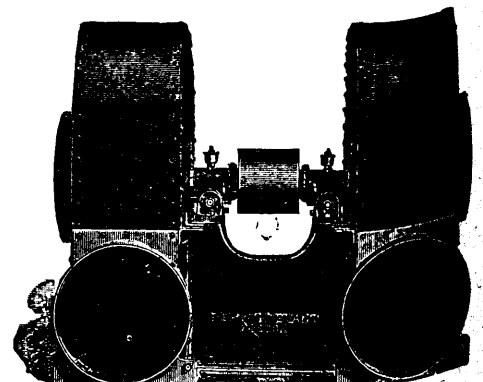
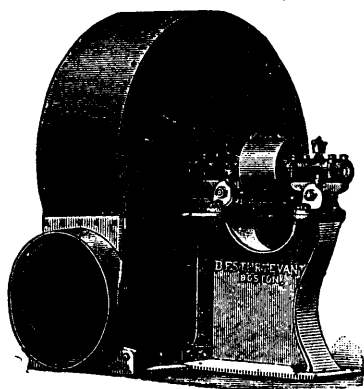


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Safe...
AS A
**FIRE
RISK**
Quick Drying
Economical in
use of steam

THE STURTEVANT Steel Plate Exhaust Fans

For Removing Refuse
from Wood-Working Machinery

Send for Catalogues



B. F. Sturtevant Co.
BOSTON, MASS., U.S.A.

DOUBLE EXHAUSTER

The saw mill of Joseph Graf at Chepstow, Ont., was destroyed by fire Feb. 14. Loss about \$2,000.

Messrs. Rhodes, Curry & Co., Amherst, N. S., have orders from South America for over a million feet of spruce lumber.

The Canadian Engineer informs us that four large 100 horse power motors are being constructed for the Toronto Street Railway Co. We are glad to know that these will not be small 100 horse power motors.

Messrs. Crossman & Laws, Amherst, N.S., will enlarge their foundry and machine shop plant by the erection of a new moulding shop 110x55, a 28x26 iron and storage room, a two storey 75x28 packing shed, etc.

The Dominion Dyewood & Chemical Co., Toronto, inform us that they are meeting with good success with Mucklow's liquid Hematine, for wood dyeing, for which they are agents. This article is fast replacing chip logwood, they tell us, and that it is preferred by many dyers to any other substance now offered.

Mr. Thomas Robertson, of the firm of Robertson Bros., Toronto, the well known manufacturing confectioners, has invented a new machine to be used in his business, and he is now perfecting arrangements for the construction of it in Great Britain. Mr. Robertson is the inventor of the most valuable machinery known now used in the manufacture of lozenges, having supplied machines to confectionery manufacturers in Great Britain and the United States, and the new machine which he is now about to place upon the market will no doubt be received with equal favor.

Wm. J. Matheson & Co., Montreal, importers and manufacturers of dye stuffs, natural and artificial etc., have sent us a circular having reference to Diamine Dyes, in which they say: Our attention has been called to quotations for colors purporting to be our well known Diamine Dyes, at figures said to be considerably below our prices. Investigation has shown that these colors are really not our Diamine Dyes and are not the colors we sell, although the vendors give them our denominations and claim them to be equal to our dyes. Like all imitations they lack some essential feature of the genuine. Our customers can rely on us to give them the lowest prices consistent with reliable goods. If cheaper colors are wanted, we can match these substitutes offered by our competitors, at figures below those which they name. We should be glad to match any samples you send us, and give you quotations on same; or we will dye on your own goods if you will send us a sample, any shade of color you are interested in, and return you the dyed sample with recipe. We would like to emphasize the fact that in sending us such samples and in receiving such recipes from us, you are under no obligation to buy of us anything that you can buy, or think you can buy, cheaper elsewhere.

Messrs. Conroy Bros. Deschenes, Que., will use electric motors for moving lumber and timber about their large saw mills at that place.

The Alaska Feather and Down Co. are applying for incorporation, with a capital stock of \$20,000, with headquarters at Montreal, to manufacture feather and down goods and bedding of all descriptions.

Messrs. Cowan & Co., Galt, Ont., are busy filling some good orders which they have recently received. Some of their recent shipments have been to Waterloo, Stevensville, Warton and Winchester, Ont., and to St. Joseph, Que.

Mr. Wm. Morrison, Lambton Mills, Ont., manufacturer of woollen goods, etc., has recently added considerable new machinery to his factory, including eight Crompton looms, a spooler and a new Sargent burpicker. An improvement has been made to his dryer, which will double its capacity.

The Whyte, Allan Co., of Toronto, are applying for incorporation, with a capital stock of \$20,000, to manufacture fringes, crapes, tassels, gimpes, dress and cloak trimmings, braids, woolens and other articles for upholsterers' use. Messrs. George Whyte, T. A. Whyte and A. G. Allan will be the first directors.

REDDAWAY'S PATENT



BREAKING STRAIN ON CAMEL BRAND BELTING 200 LBS.
ON DOUBLE OAK LEATHER BELTING 100 LBS.

W.A. FLEMING
SOLE AGENT FOR CANADA

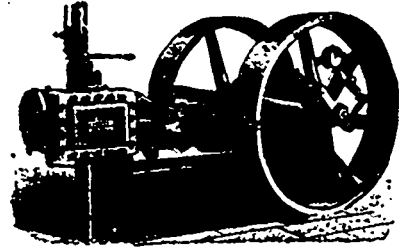
57, ST. JAMES AVENUE (24 FRONT ST. E. AT HAMBURGH)
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LONDON - - - CANADA
MANUFACTURERS OF
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(NEW DESIGNS)
STEAM PLANTS EQUIPPED FOR ALL PURPOSES
Highest Economy, Regulation Perfect. Send for
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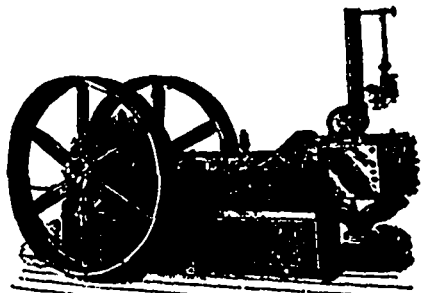
Robb-Armstrong
Automatic Engines
Simple and Compound



Built on the American
Interchangeable System

Robb Engineering Co., Ltd., Amherst, N. S.

Armington & Sims
AUTOMATIC HIGH SPEED ENGINES



-FOR-
ELECTRIC LIGHTING
-AND-
GENERAL FACTORY
PURPOSES

Perfect Regulation and
Highest Economy.

Steam Pumps
SHAFTING, PULLEYS
-AND-
General Machinery

Nie & Whitfield - HAMILTON, ONT.

THE WEBBER PATENT
Straitway Valve
FOR
STEAM, WATER OR GAS
EVERY VALVE TESTED



THE KERR ENGINE CO. (LTD.)
WALKERVILLE, ONT.

Sole Manufacturers for Canada.
Send for Price List.

The Lang Packing and Provision Co., Montreal, have ordered a new boiler from E. Leonard & Son, London, Ont.

John Dovey, Lindsay, Ont., is building a new saw and shingle mill in Haliburton. F. J. Drake, of Belleville, is supplying the machinery.

The Richelieu and Ontario Navigation Company have bought a 50 h.p. Robb-Armstrong engine for their electric plant on the S.S. Canada.

George V. Clark, Lost Creek, Ont., is building a new saw and shingle mill. The machinery is being supplied by F. J. Drake, of Belleville, Ont.

Tenders are invited by the Halifax, N. S., Board of Works until the 26th March for the supply of about 2,500 barrels cement. Address Wm. F. Reilley, assistant clerk of city works.

At a meeting of the hardware manufacturing trade, held in Montreal a few days ago, the following resolution was adopted: "That it is desirable that all firms in the Province of Quebec doing business at wholesale in shelf and heavy hardware, or as agents of Canadian or foreign manufacturers of these goods, and the manufacturers of pig iron, and rolling mills, iron foundries and iron workers should form themselves into a branch association of the Montreal Board of Trade, under the title of the Metal and Hardware Association, in order to take counsel together in regard to matters pertaining to the conducting of this branch of the business." A committee was also appointed to draft a constitution and by-laws for the new association.

James Shearer, Montreal, Que., is remodelling his saw mill and putting in a new Lane pattern mill, manufactured by the Jencks Machine Co., of Sherbrooke, Que.

Messrs. Pelletier, Pruneau & Co., Montreal, have placed a 40 h.p. Monarch Economic boiler in their furniture factory. It was bought through W. H. Nolan, magr. of Canada Machinery Agency.

Mr. John Forman, Montreal, has secured the agency for the Dominion for Crompton & Co., Electrical Engineers, London, England; also for Messrs. Willans & Robinson, Thames Ditton, England, manufacturers of the celebrated Willans patent engine.

The Slingsby Manufacturing Company, Brantford, Ont., manufacturers of woolen goods, capacity, six sets of cards and 18 looms, have lately put in new machinery, consisting of four sets of cards, three sets being Davis & Furber's and one Jas. Smith's, all 60 inch; four Davis & Furber mules, nine Knowles looms, one Davis & Furber napper and other finishing machinery; also a 150 horse-power water wheel. Four sets of machinery are operated at the present time, and as soon as the work which is now in progress at the dam is finished, the entire machinery will be operated. The main mill, which was recently built, is a fine brick structure 90x54 feet, and three stories high. The finishing department is 90x30 feet and three stories high. There is also a dye house and a fine office and sample room. The entire plant is fitted up with all the modern improvements. John Slingsby is superintendent.

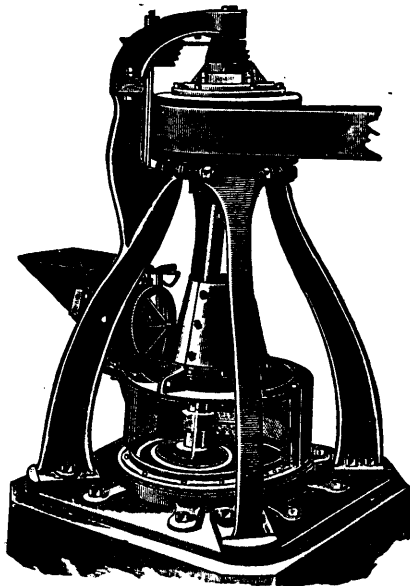
Emery Wheels AND MACHINERY

Standard Emery Wheel Co., Albany, N.Y.

THE GRIFFIN MILL

The Only Perfect Pulverizer

OF
**QUARTZ,
 GOLD
 OR SILVER
 ORES,
 PLUMBAGO,
 PORTLAND
 CEMENT,**



OF
**PHOSPHATE
 ROCK,
 FOUNDRY
 FACINGS,
 And All Other
 Refractory
 Substances.**

Will work either wet or dry, and deliver a finished product. Capacity, 3 to 4 tons per hour on Phosphate Rock, 1½ to 2 tons per hour on Portland Cement, Quartz or Ores, depending on hardness of material to be pulverized and fineness of product. Grinds from 30 to 250 Mesh with equal facility.

NO JOURNALS IN GRINDING CHAMBER. BALL RIGID ON SHAFT HAVING DIRECT POSITIVE ACTION ON MATERIAL. MINIMUM POWER PRODUCES MAXIMUM AMOUNT OF PRODUCT. IT IS ABSOLUTELY GUARANTEED IN EVERY RESPECT, BOTH AS TO CONSTRUCTION AND CAPACITY. FIRST COST, WEAR, AND OPERATING EXPENSE MUCH LESS THAN STAMP MILLS. LARGE NUMBER OF MILLS IN USE ON DIFFERENT MATERIALS WITH POSITIVE SUCCESS IN EVERY INSTANCE.

Correspondence solicited, and illustrated descriptive pamphlet furnished on application to

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McLAUGHLIN BROS. TEASELS

Skaneateles Falls, N. Y.

Business Established in 1832

Books and Accounts

Preparing Annual or Special Statements, Periodical or Special Audits, Making Investigations or Unravelling Tangles, Adjusting Joint Stock or Partnership Accounts.

I go to any part of the country at a moderate charge.

Keep my address before you—

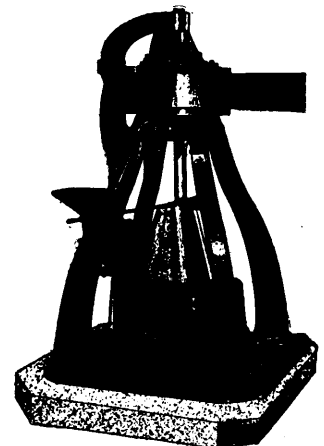
A. C. NEFF, Chartered Accountant, Auditor, Assignee, etc.
 32 Church St., TORONTO

THE GRIFFIN MILL

IN CANADA

IS MANUFACTURED AND SOLD ONLY BY

Pulverizes Portland Clinker, Native Cement, Cold and Silver Ores, and Plumbago.



Pulverizes Phosphate Rock, Foundry Facings and Refractory Substances of all kinds.

The Jencks Machine Co.

SHERBROOKE, QUE.

Branch Office: 16 Victoria Square, Montreal

Correspondence Solicited

Stadacona, Que., is to have waterworks shortly.

A new Roman Catholic church will be built at Richmond Hill, Messrs. Post and Holmes, Toronto, are architects.

The Crompton-Howell Electric Storage Co., of England, have appointed Mr. John Forman, of Montreal, their agent for Canada.

The McAfee Foundry and Machine Co., St. John, N. B., has been incorporated with a capital of \$20,000 to manufacture iron and brass goods, stoves, furnaces, machinery, etc.

The London, Ont., city engineer is preparing specifications for lighting the city by electricity, for terms of one, three, five and eight years. Tenders will be invited afterwards.

The proposed new smelting works, Hamilton, intend soon to ask for tenders for the supply of 2,500,000 brick to be used in the erection of the works. Mr. S. J. Moorhouse is manager.

The Niagara Falls Park and River Railway Co. are contemplating the construction of a bridge from the Canadian side of Niagara river to Mary Island, thence to the Canadian shore. The company also intend to extend their road about two miles further up the river.

There were fifteen different tenders put in for the fire hose for the city of Montreal recently. The contract was divided up between the Fabric Fire Hose Company, of New York, for whom Mr. W. A. Fleming, Montreal, is Canadian agent; the Revere Co., of Boston, and the Chicago Hose Co. The city authorities had the hose tested at McGill College. A 50 foot length was taken from each party tendering and put under pressure until it broke, then the contract was divided among the three best. All of the three stood over 1000 tons pressure to the 50 foot length.

Mr. Thomas Forrester, 118 St. James St., Montreal, informs us that he is the representative in Quebec for Messrs. R. & J. Dick, of Glasgow, Scotland, and handles their Dick's patent gutta percha belts, which have been most thoroughly tested for a number of years past, and which are admitted by those who have used them to be of most excellent and uniform quality. The quality and uniformity of these belts prevents any danger of their either slipping or stretching while on the pulleys, and show perfect action under the most difficult circumstances. An important factor of them is their strong gripping power which, we are told, enables them to transmit the whole power given off by the engine. They may be operated in any temperature, damp or dry, and in water also if necessary, as there are no joints. Mr. Forrester says that he has placed these belts with a large number of saw mill and other manufacturing concerns in Quebec, and is now rapidly extending his trade throughout the Dominion, and is willing to send trial belts to parties who may desire him to do so, and which, if not found satisfactory, may be returned at his expense.

A notice of caution that will interest all cotton mills has been issued by the Metallic Drawing Roll Co., Indian Orchard, Mass., as follows: The patents held by this corporation cover every description of metallic rolls so separated or adjusted as to perform the function of drawing or elongating the fibres of cotton or other material preparatory to twisting or spinning the same. Consequently, whoever makes, sell, or offers for sale, or uses, or has in his possession, any infringing devices with intent to use the same, will be promptly prosecuted to the utmost extent of the law for damages.

Lubricating Oil s.

Probably the most exhaustive and complete tests of the lubricating qualities of cylinder and engine oils were those made previous to the opening, and during the existence, of the World's Columbian Exposition at Chicago.

The mammoth mechanical and electrical plant, aggregating over 30,000 h.p., comprising all classes and methods of producing motive power, from a 5 h.p. gas engine to the 2,000 h. p. "Allis" steam engine, with the necessary 36 feed pumps for boiler room, 6 large pumps aggregating ten million gallons capacity and over, and miles and miles of shafting, together with the largest electrical installation the world has ever witnessed, were successfully, satisfactorily and economically oiled by oil; two grades of oil, viz., The Standard Oil Co.'s "Renown" engine and cylinder oils. It is not possible to obtain any higher or more convincing testimony as to the extraordinary qualities these oils possess, and it should make it a simple matter for any concerns using steam or electrical power to decide in this matter. This Company being also the largest refiners and manufacturers of oils in the world, are enabled by their unequalled facilities to place their oils direct with the consumers. These oils are kept in stock and marketed by The Bushnell Co., Ltd., 160 McGill Street, Montreal, and 24 Front Street East, Toronto, Ont., who will be pleased to fill orders or furnish samples sufficient for testing.

Following are copies of letters from the Chief Mechanical Engineer,

WANTED:::

SITUATION as Weaving Boss, or would prefer to meet a party having some capital to invest in Textile Manufacturing business, by one who has had long and varied experience, and who knows how to manufacture a considerable variety of goods not made in Canada. Can give first-class references.

Address "J. T." Office of Canadian Manufacturer

BRUNNER, MOND & CO., LTD., NORTHWICH, ENG.

Manufacturers of **PURE ALKALI** Guaranteed 58 Degrees.

The Strongest and Purest Form of SODA ASH in the Market, and the Most Economical Form of SODA for the Manufacture of



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- FLANNELS—Plain and Fancy Flannels, Overcoat Linings, Plain and Fancy Dress Goods, etc.
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Plain and Fancy Hosiery

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Represented in Eastern Ontario, Quebec, Nova Scotia, and New Brunswick by

ANDREW BELL, Montreal

Mr. Chas. F. Foster, and the Chief Electrical Engineer, Mr. R. H. Pierce, of the World's Columbian Exposition, giving details of tests, work performed and description of engines, pumps, dynamos, generators, etc., which were lubricated by these oils.

OFFICE OF D. H. BURNHAM, DIRECTOR OF WORKS, WORLD'S COLUMBIAN EXPOSITION, JACKSON PARK, CHICAGO.

Mechanical and Electrical Depts: Chas. F. Foster, Mechanical Engineer; R.H. Pierce, Electrical Engineer.

November 1, 1893.

GENTLEMEN:—I am pleased to be able to state to you, after a period of six months' continuous use of your Capitol cylinder oil and Renown engine oil on our engines, line shafting and other machinery, both large and small, running at both high and low speeds, that it has given us great satisfaction. We have been able to get excellent lubrication under most trying circumstances, such as a temperature of 128° in the engine room, in which case the bearings only showed from 5° to 6° higher temperature. Some of our pieces of larger machinery have run 110 days with but one filling of the oil cups, (Chambers on Westinghouse 15,000 light dynamos.)

I understand that before the adoption of your oil, extensive tests were made by one of my predecessors, with various makes of oil, resulting in the selection of yours, and I am pleased to state that I am satisfied with it in every respect.

In order that you may judge of the extent of our work, I would say that we have 77 engines, 36 feed pumps, 6 large pumps, and innum-

able feet of shafting, which has all been lubricated with your oil with great success. I trust that the excellent satisfaction which your oils have given us, will amply repay you in increased business to the outlay involved, and beg to remain,

Yours truly,
CHAS. F. FOSTER,
Mechanical Engineer.

November 8, 1893.

GENTLEMEN: Your Renown engine oil has been used exclusively upon all the electrical machinery operated by the World's Columbian Exposition. This machinery included almost every type of commercial machine produced in this country, and several of foreign make, and the largest sizes of the various types; there being a total of about 20,000 electrical horse power of dynamos and 1800 horse power of motors. The machines were of all sizes and speeds.

I take pleasure in stating that I have never had a complaint from the Operating Department concerning your oil. The machinery has been lubricated in a most satisfactory manner, and with great economy. The results obtained by the use of your oil have been perfectly satisfactory to the Exposition and to this department.

If you desire to have a descriptive list covering the number, capacity and make of the different systems operated at the World's Columbian Exposition, under my direct control, I shall be pleased to furnish it upon request.

Thanking you for courtesy shown this department, I beg to remain,

Yours very truly,
R. H. PIERCE,
Electrical Engineer.

...WOOL...

A. T. Paterson & Co. MERCHANTS

REPRESENTED BY... 35 St. Francois Xavier Street
MR. DAVID OUTLAKE MONTREAL

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Toronto Fringe and Tassel Company

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Manufacturers of

Suspenders & Suspender Web

Fringes, Tassels, Cards

UPHOLSTERY TRIMMINGS and

UNDERTAKER'S TRIMMINGS

GEO. D. ROSS & CO. Woolen Commission Merchants MONTREAL and TORONTO

Advances Made on Consignments. Correspondence Solicited.

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PRESTON : : : ONT.

Manufacturers of....

Fine and Medium TWEEDS.

BRODIE & CO.

Hespeler : : Ont.

Mfrs of FLANNELS, TWEEDS and SERGES

Selling Agents, McMillan, Coye & Co., Montreal and Toronto.

WOONSOCKET SHUTTLE CO., 157 North Main St. WOONSOCKET, R.I.

Manufacturers of

Power and
Hand Loom ..

SHUTTLES

Of Every Description.

Write us.



...WE MANUFACTURE...

FANS FOR NOTHING

But hard work, and having had twenty years experience we know how to get steam out of

Dye Houses and the largest possible product from Dry Rooms

OUR COMPOUND WHEEL is the most powerful in the world, and if we can't be of actual value to you we don't want your money. No CUSTOMS DUTIES on our Fans.

Send for Circular and information

Barney Ventilating Fan Co., 79 Pearl St., Boston, Mass., U.S.

CANADIAN PATENTS.

The following patents have been issued from the Canadian Patent Office, from December 18 to December 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.

LIST OF PATENTS.

- 44,901 Purifier, grader and separator, David J. Davidson, Stephen C. Martin, and Abraham S. Martin, Port Huron, Mich., December 18th.
- 44,902 Car brake, William H. Brownlow, Brockville, Ont., and John Wood, Ottawa, Ont., Dec. 18th.
- 44,903 Roofing and roofing tile, Johan M. Olsen, Hans P. Olsen and Franz W. Bronn, Christiania, Norway, December 18th.
- 44,904 Agricultural boiler and feed steamer, Edward Foster, and Jefferson J. Foster, Leamington, Ont., December 18th.
- 44,905 Rail joint, the Heath Rail Joint Co., Minneapolis, Minn., December 18th.
- 44,906 Rail joint, The Heath Rail Joint Co., Minneapolis, Minn., December 18th.
- 44,907 Method of and apparatus for coiling wire and inserting it into fabrics, Calvin Jackson, and James H. Sternbergh, Reading, Penn., December 18th.
- 44,908 Metallic flux for refining iron, Robert L. Sentinella and Edgar W. Beckingsale, London, Eng., December 18th.
- 44,909 Test system for Multiple switch-boards, The Bell Telephone Co., Montreal, Que., December 18th.
- 44,910 Multiple switch-board system, The Bell Telephone Co., Montreal, Que., December 18th.
- 44,911 Combination joint, Elie Depeyre, Que., December 19th.

- 44,912 Fence post, David Rodgers, Bridge Hampton, N.Y., December 19th.
- 44,913 Apparatus for attaching calks and hobnails, Geo. de Roussy de Sales, Sainte Menouhould, France, December 19th.
- 44,914 Method of producing sterilized condensed milk, etc., August Fjelstrup, Nybrogate 24 Copenhagen, Denmark, December 19th.
- 44,915 Treatment of wood for protection from the Terebo, Francis Hall, Tacoma, Wash., December 19th.
- 44,916 Arc lamp, Arthur S. Atwater, Cleveland, Ohio, December 19th.
- 44,917 Electric battery, James H. Mason, Brooklyn, N.Y., December 19th.
- 44,918 Gas engine, Maurice Lorois, 5 Avenue Allard, Nantes, France, December 19th.
- 44,919 Overhead conductor for electric railways, Alexander Phillipsborn and Walter Reichel, Berlin, Prussia, December 19th.
- 44,920 Process of extracting fatty matter, Adolph Schweiser and William F. Jobbins, Chicago, Ill., December 20th.
- 44,921 Lath, The International Sheathing Lath Co., Viroqua, Wis., December 20th.
- 44,922 Station apparatus for telephonic and telegraphic purposes, The Bell Telephone Co., Montreal, Que., December 20th.
- 44,923 Wheel, Edgar D. Misner, Brantford, and William H. Hanes, Lynden, Ont., December 20th.
- 44,924 Method of making waterproof paper articles, Julius Goldberg, Weissensee, Prussia, Victor Benedix and August de Bary, Berlin, Prussia, December 20th.
- 44,925 Electric engine, The Lawrence Electric Co., New York, December 20th.
- 44,926 House for cooling milk, Elias Meek, Freeport, Ont., December 20th.
- 44,927 Ink bottle, Burt Ramsay, Attleborough, Mass., December 20th.
- 44,928 Border and protector for graves, George R. Mease, Frank E. Dumm and Avery Henderson, Upper Sandusky, Ohio, December 20th.

AUBURN WOOLEN CO.....

PETERBOROUGH, ONT.

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Selling Agents, D. MORRICE, SON & CO., Montreal and Toronto.

TORONTO CARPET MFG. CO., Ltd.

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SEVEN QUALITIES OF INGRAINS

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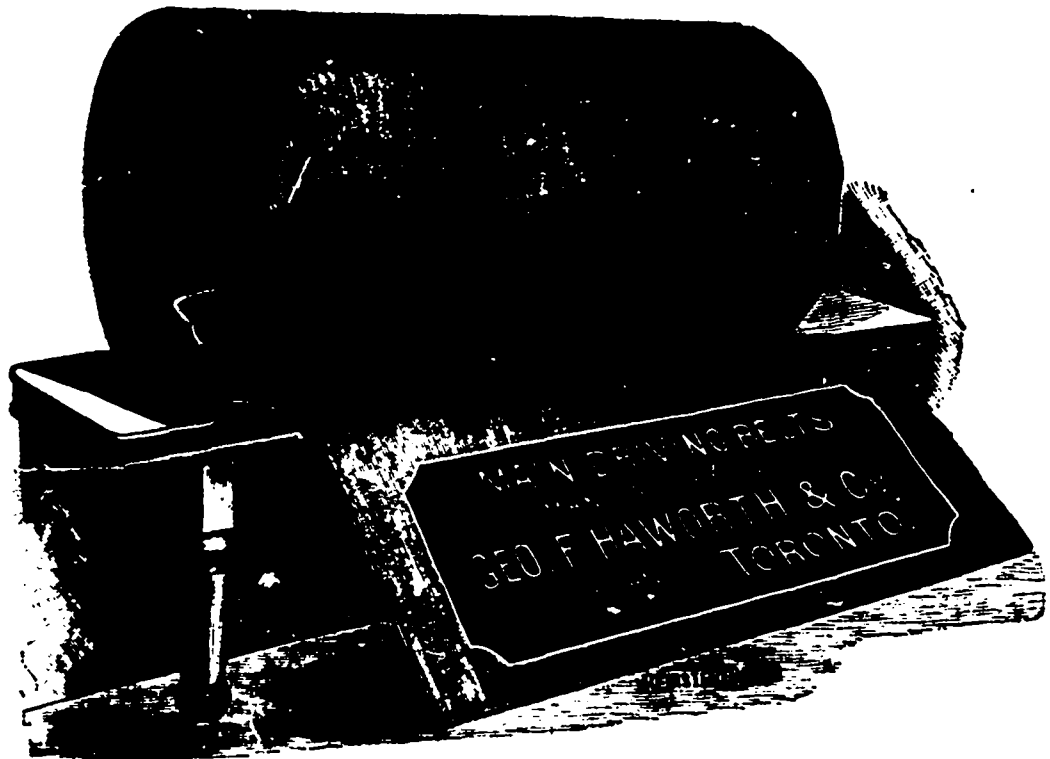
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- 44,933 Lamp, John U. Bauchelle, Elizabeth and Thomas M. Fell, Tenafly, N.J., December 20th.
- 44,934 Check, order, etc., Lomas C. Newton, Detroit, Mich., December 20th.
- 44,935 Wrench, Theodore C. Lippitt, Shenandoah, Iowa, December 20th.
- 44,936 Shingle, Cyril D. Iers, St. Flavien, Lotbiniere, Que., December 20th.
- 44,937 Switch and frog for railways, L. Henry Veronneau, Montreal, Que., December 20th.
- 44,938 Revolving sole plate for ploughs, Adam Murchey, and Robert Orr, Guelph, Ont., December 21st.
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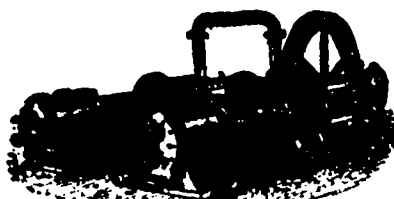
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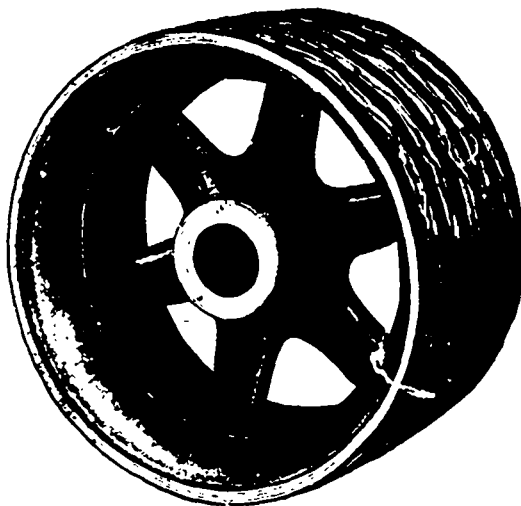
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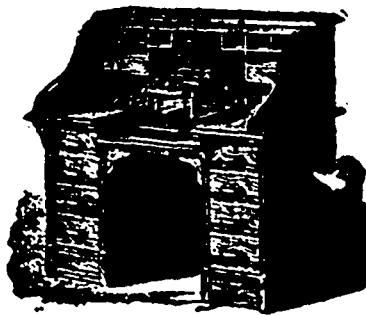
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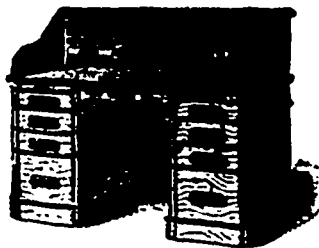
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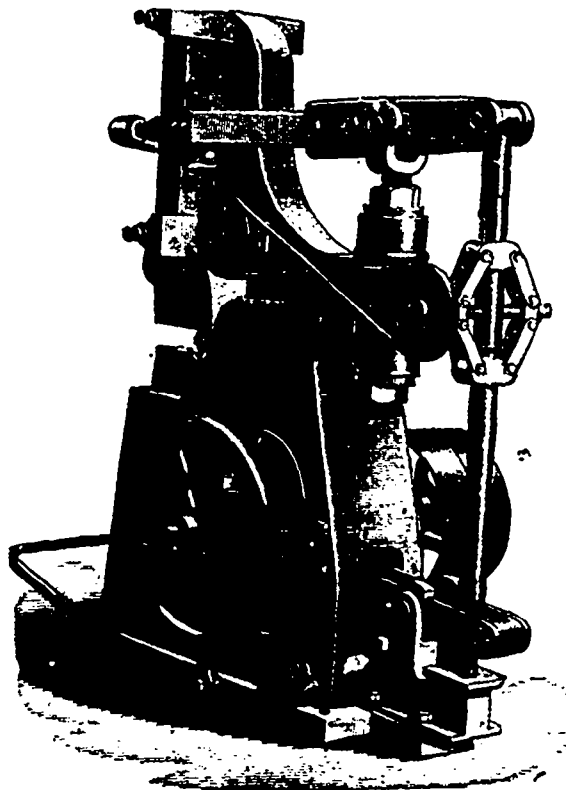
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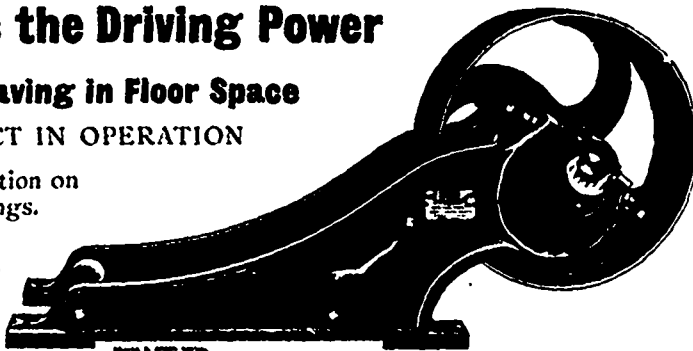
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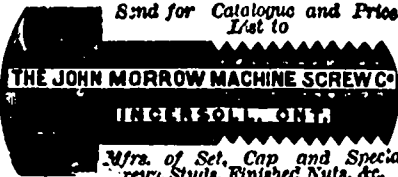
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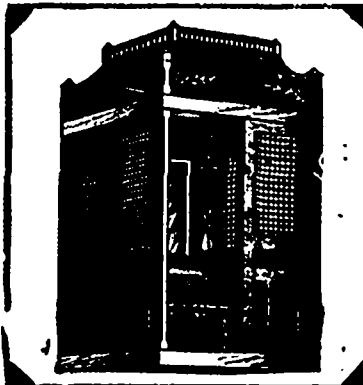
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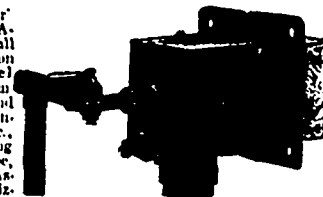
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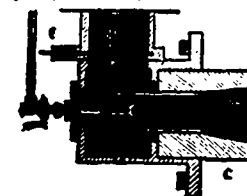
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FOR BURNING CRUDE PETROLEUM
UNDER LOW PRESSURE

(Meyer
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kinds of Iron
and Steel
Forging, Tem-
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Welding, An-
nealing, etc.,
for burning
Sewer Pipe,
Heating As-
phalt, Oxidiz-



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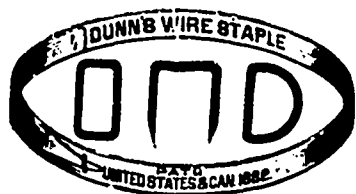
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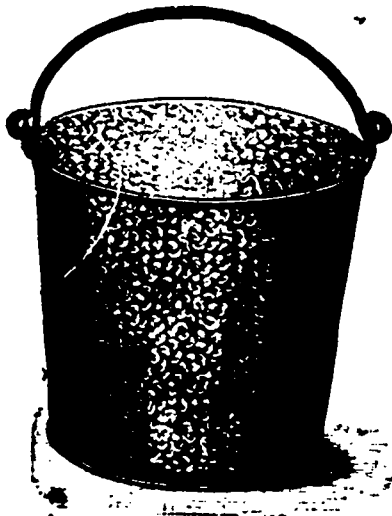
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Improved Pattern



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They are superior to the ordinary flaring English bucket, being of greater capacity.

They are stronger in shape, consequently more durable.

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Fox Monitor Lathes, Plain Turret Lathes, Valve Millers, Vertical Milling Machines, Valve Chuck, Box Chucks, etc., for cutting and stamping and drawing tin and metal tools up to the heaviest work required.

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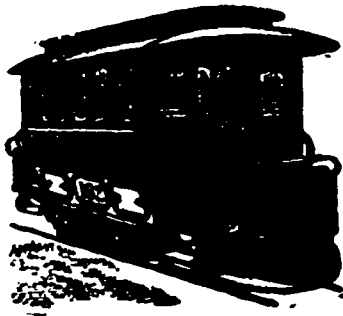
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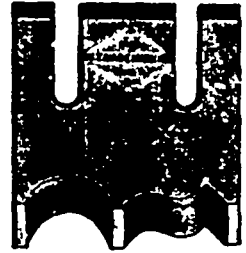
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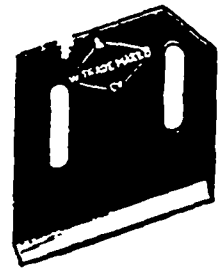
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W. & B. Diamond Twist Drills.

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Quality Warranted.



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OF NORTH AMERICA

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Important to Manufacturing Firms

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MAIL BUILDING, TORONTO.

Millers' and Manufacturers' Insurance Co'y

STOCK AND MUTUAL

ESTABLISHED 1888

The President, James Goldie, Esq., in moving the adoption of the report on the business of 1892, said: I have much pleasure in drawing your attention to the fact that this Company has verified, in a marked degree, every expectation set forth in the original prospectus when organized in 1885.

Up to the present time the insurers with this Company have made a saving, when compared with the current exacted rates, of \$91,044.20. And in addition thereto bonus dividend have been declared to continuing members amounting to \$21,522.72.

Besides achieving such result, we now also have, over all liabilities—including a re-insurance reserve (based on the Government standard of 50 per cent), a cash surplus of 1.93 per cent, to the amount of risk in force.

Such results emphasize more strongly than any words I could add the very gratifying position this Company has attained. I, therefore, with this concise statement of facts, have much pleasure in moving the adoption of the report.

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 Mc'ulloch, Galt; S. Neelon, St. Catharines; Geo. Pattinson, Preston; W. H. Story, Acton; J. L. Spink, Toronto; A. Watts, Brantford; W. Wilson, Toronto.

JAMES GOLDIE, Pres. W. H. HOWLAND, Vice-Pres. T. WALMSLEY, Treas. HUGH SCOTT, Man. Dir.

Applicants for insurance and other information desired

Please address MILLERS' AND MANUFACTURERS' INSURANCE CO., No. 32 Church Street, Toronto.

**Manufacturers
Life Insurance Company**



RESULTS FOR 1893

New Business Issued	\$2,498,210	Cross Cash Income	\$287,340
(Increase over 1892)	\$467,988	(Increase over 1892)	\$45,525
Assets 31st December, 1893	\$673,738	Surplus on Policyholders' acct.	\$164,598
(Increase over 1892)	\$137,671	(Increase over 1892)	\$38,922

Insurance in Force 31st December, 1893, - \$8,937,834

GEORGE GOODERHAM,
President.

JOHN F. ELLIS,
Man. Director.

PULLEYS

MACHINE
MOULDED
STEEL RIM
AND GRIP

Steel Rim Pulleys are practically unbreakable, are lighter and easier on shaft, and cost same as cast pulleys.

ANY STYLE FURNISHED SPLIT

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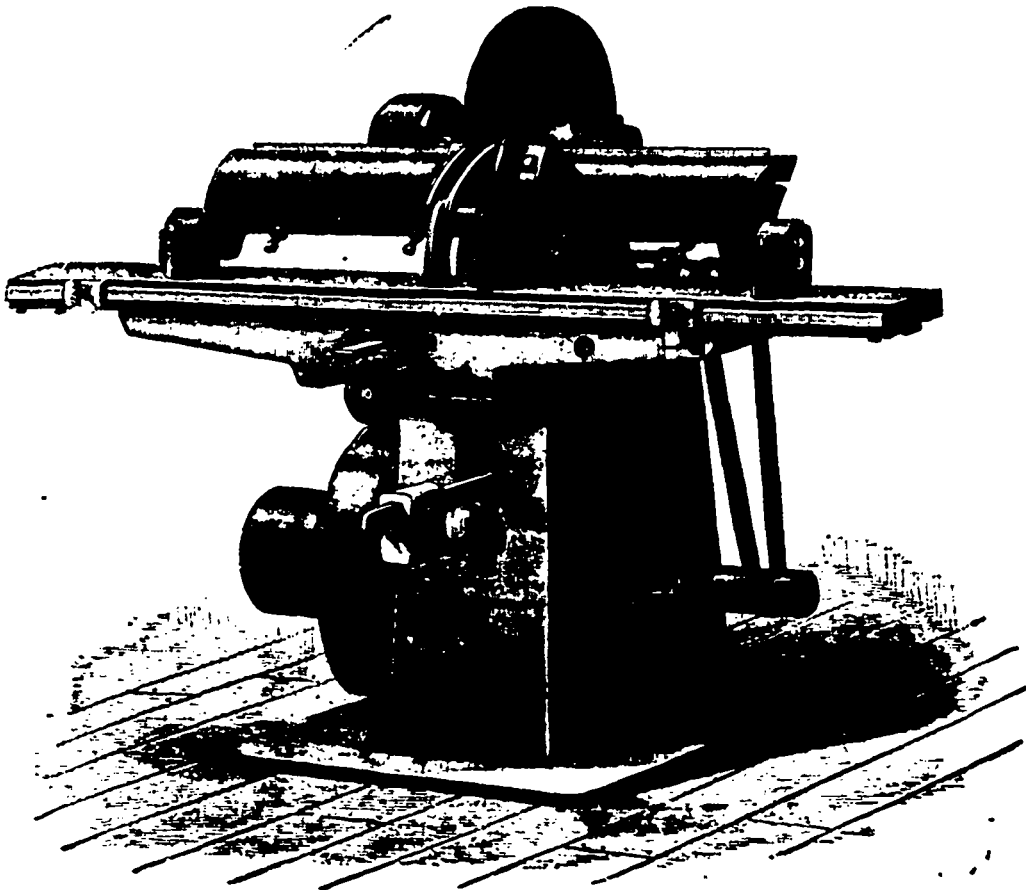
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SAVING COUPLINGS. STEEL OR IRON.
PERFECTLY TRUE AND POLISHED.
KEY SEALED WHEN DESIRED.

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**KNIFE
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MACHINE**

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 THE CONSUMERS OIL REFINING CO.
 (Signed), T. WOLFE, Manager.

SOMETHING NEW

The COAL SAVING & SMOKE CONSUMING CO., Ltd.

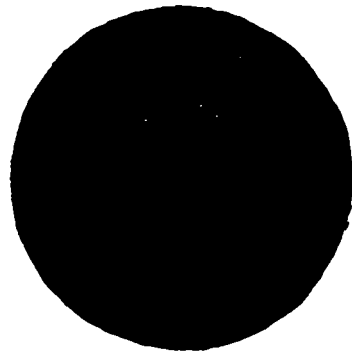
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S.C.C.	COMPOUND	
Patented	 394	Feb. 21, 91.

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MANUFACTURERS'
ASSOCIATION**



W. H. LAW, President. GEORGE BORTH, Treasurer. J. J. CASSIDY, Secretary.

**Office, Room 66 Canada Life Building
KING STREET WEST, TORONTO. TELEPHONE 1274**

THE OBJECTS OF THIS ASSOCIATION ARE:

- To secure by all legitimate means the aid of both Public Opinion and Governmental Policy in favor of the development of home industry and the promotion of Canadian manufacturing enterprises.
- To enable those in all branches of manufacturing enterprises to act in concert as a united body whenever action in behalf of any particular industry, or of the whole body, is necessary.
- To maintain Canada for Canadians.
- Any person directly interested in any Canadian manufacturing industry is eligible for membership.
- Manufacturers desiring to hold meetings for the promotion of their business are invited to avail themselves of the liberal room of the Association for the purpose, which is offered to them free of charge.

J. J. CASSIDY, Secretary.

A. ALLEN, *President.*

J. O. GRAVEL, *Secretary-Treasurer.*

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Head Office and Factory: **MONTREAL**

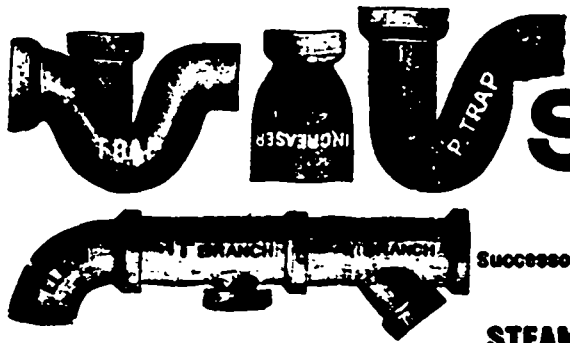
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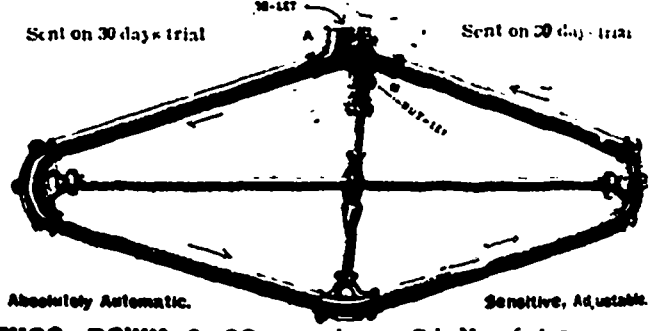
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Sent on 30 days' trial

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The business man's best confidence
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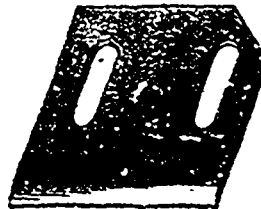
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McCull's Lardine, Machine, Cylinder and Engine OILS =
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