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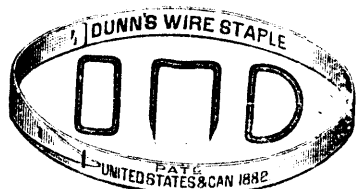
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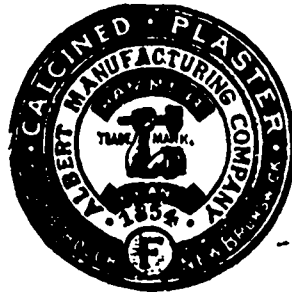
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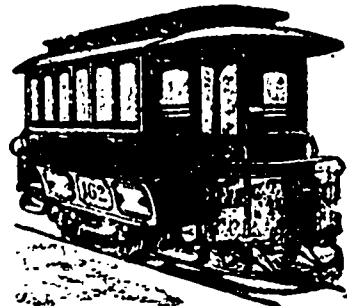
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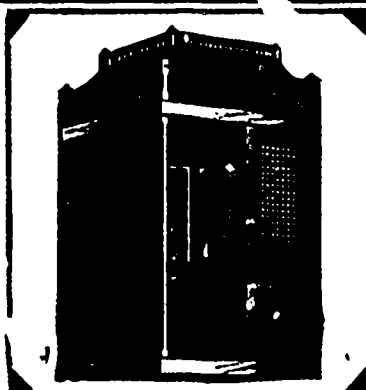
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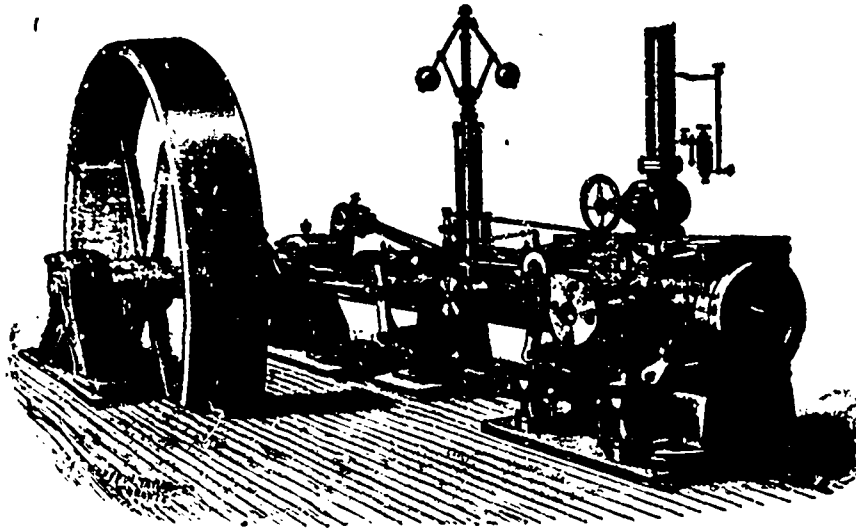
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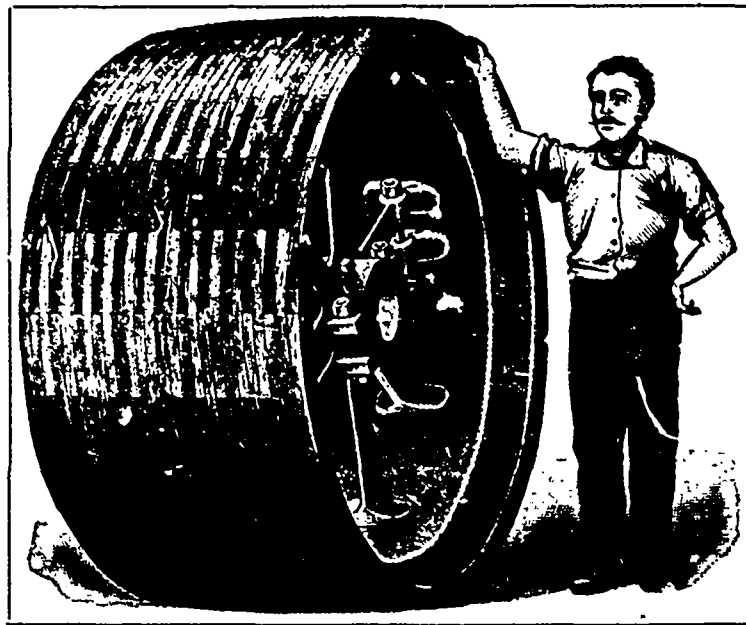
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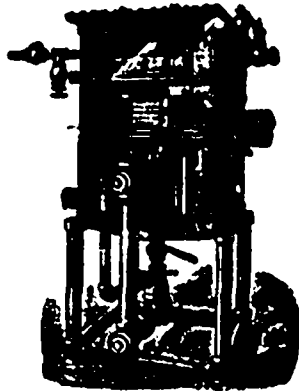
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 and Amendments, Section 22.

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 thereof, for which certain letters patent of the
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 7th, 1888, to Chas. Martin Hall, assignor to the
 Pittsburg Reduction Co., to wit, Nos. 31, 512,
 31,513, 31,514, 31,515, 31,516, 31,517; and also the
 invention in aluminum alloys and manufac-
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 July 20th, 1892, to John W. Langley, assignor
 to the Pittsburg Reduction Company, to wit,
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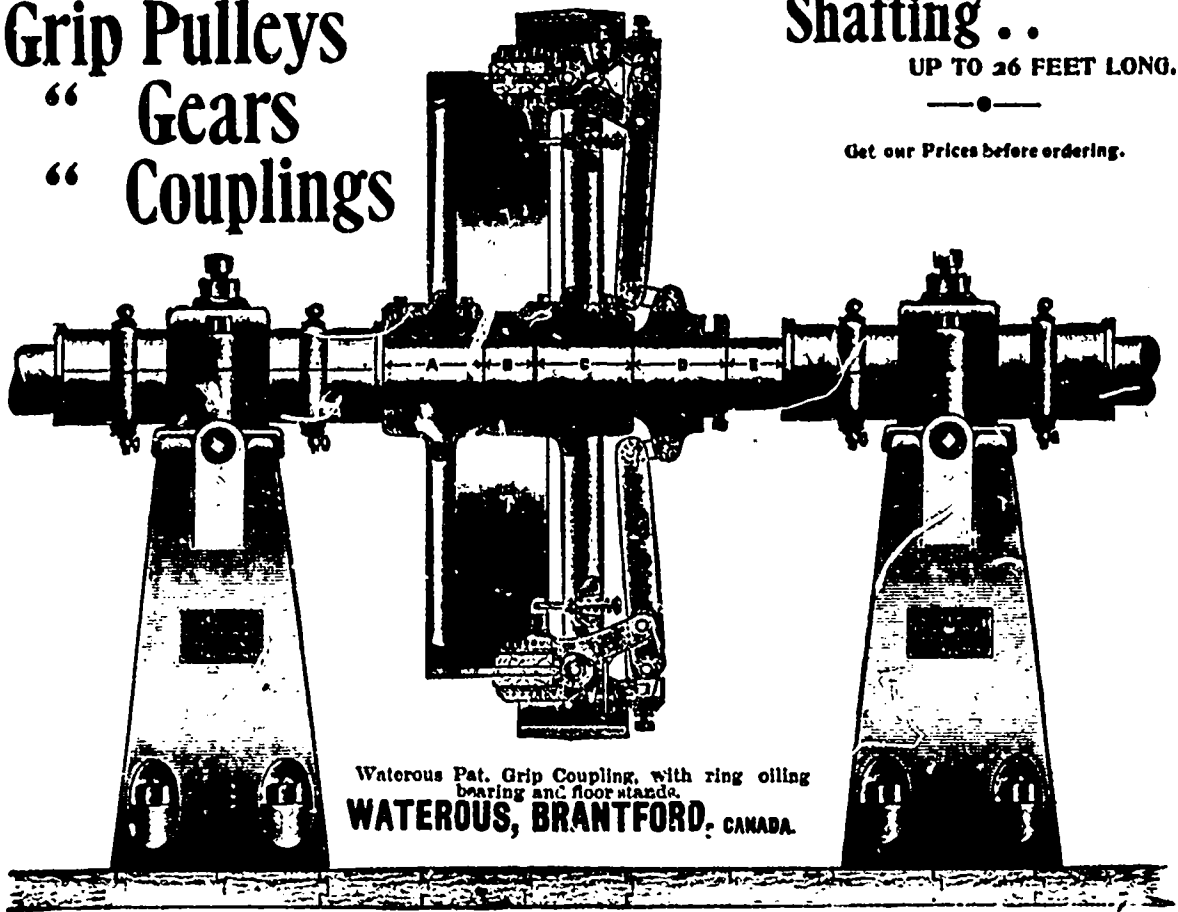
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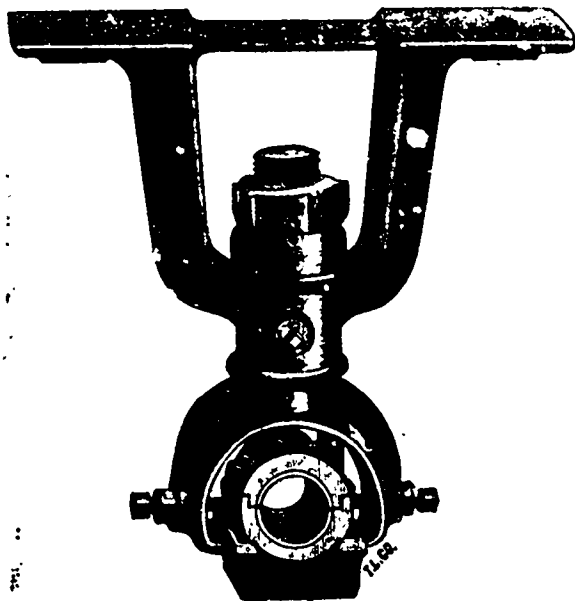
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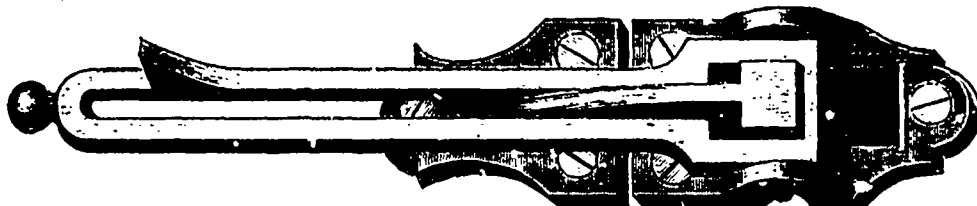
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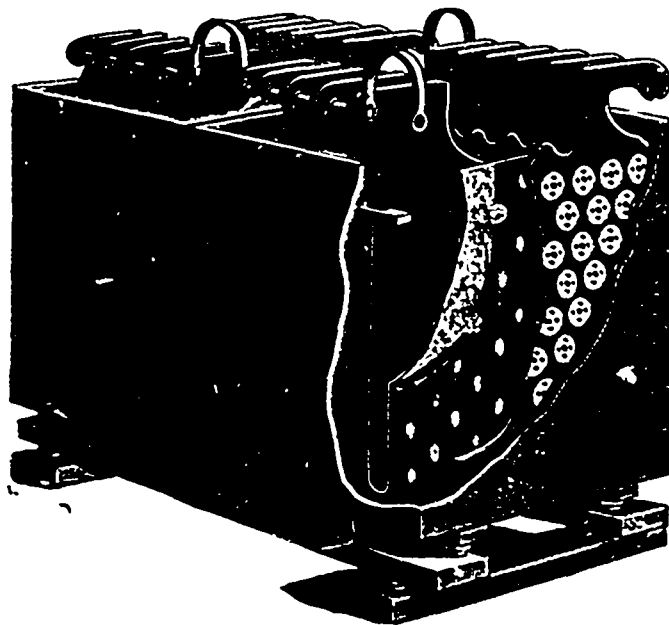
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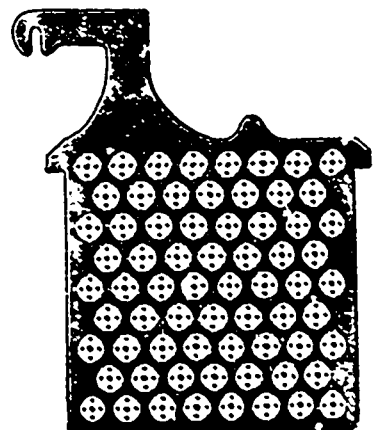
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We regret to say Mr. J. J. Cassidey, editor of this journal, lies very ill at his residence, Howard Ave., Parkdale, this city, but we trust he will be at his post again before our next issue.

THE DRAWBACK OF DUTIES.

The steps taken by the Dominion Government in allowing a rebate of 99 per cent. upon the importation of material required in the manufacture of goods for export is a

most popular and desirable one. It will strengthen the manufacturers without injuring the consumers in even the remotest degree. It will promote our external trade without restricting the process of supplying the home market. It will please the protectionist without affording any ground for honest free trade criticism. It will enable a number of industrial concerns to add to their plants, increase the number of their workmen, and extend their business generally at a time when every little helps in the welfare of the community as a whole. And it will enable Canadian manufacturers, such as the Massey-Harris Co. and the Watrous Engine Company, to begin at once a more or less extensive manufacture for countries ranging from Southern America to the Antipodes.

The principle of rebate is a very old one. It is practised without stint in the French and other continental tariffs. It is a part and parcel of the American protective system and has not been criticised with any severity even by the so-called free traders. It was for centuries a most important portion of the protection which so built up and entrenched the industries of England. And it has been approved by prominent advocates of free trade as well as by protectionists. Adam Smith in his "Wealth of Nations" deals at length with the principle and its operation in his time. He points out—so rigid was the protectionist feeling at the close of the eighteenth century—that goods such as wrought silks, French cambrics, and lawns, calicoes, etc., could not have been imported at all, had not the drawback system allowed of their being brought to England for re-exportation. The customs revenue was thus helped to the amount of the duty retained and to his mind the policy tended to preserve the natural division and distribution of labour. He goes on to say that:—

"The institution itself seems reasonable enough. Such drawbacks cannot force into trade a greater share of the capital of the country than what would have gone to it of its own accord, had there been no duties upon importation. They only prevent its being excluded altogether by these duties. * * * These reasons seem sufficient to justify drawbacks, and would justify them though the whole duties, whether upon the produce of domestic industry, or upon foreign goods, were always drawn back upon exportation."

This is an important utterance from the High Priest of free trade upon a principle which forms a part of nearly all protective tariffs and which is of undeniable benefit to the industries of the country adopting it. And, curiously enough, in the same sentence with which he praises drawbacks, Adam Smith expresses the remarkable belief—one which could only come from a theorist—that protection might otherwise preclude the investment of capital in manufactures. The practice of the free-trade principle as a matter of fact is in the England of to-day rapidly driving capital out of industries as well as from land, and into all manner of strange and sometimes rotten foreign investments. But this in passing.

While very gratifying to manufacturers in general throughout Canada, the recent action of the Government is especially pleasing to this journal. For many years past through all the storm and stress of a prolonged struggle in the interests of national industry and development, the CANADIAN MANUFACTURER has consistently and continuous-

ly urged this course. Now that it has come into operation we expect to witness many and immediate evidences of its practical value and importance. And, first of all, it may be hoped that the Massey-Harris Company will see their way to retain all their works in Canada. Now that their raw material is placed upon the same level as that of United States' concerns, the only reason that we know of for removal is gone, while the future holds out advantages in the way of steamship and cable facilities—to say nothing of a preferential tariff in Australia—which the Republic cannot possibly offer.

We trust also that the Globe may see in a mental looking glass the absurdity of its recent comments upon the policy of drawbacks. As an organ of somewhat muddled free trade theory it will probably accept the rebuke of Adam Smith, already quoted, with some respect. Perhaps, also, it will accept a correction of certain equally absurd collateral arguments. For instance: "to check importation by high duties is to check exportation." Facts directly contradict this statement. During the Anti-Corn Law agitation in England one of the great cries was the allegation that protection promoted the export of corn abroad at a time when multitudes at home were starving for the want of it. Russia, which boasts perhaps the most stringent protective tariff in Europe, imported in 1891, \$180,000,000 worth of products and exported \$351,000,000. The United States which has carried protection to the verge of prohibition imported in 1892 over \$800,000,000 and exported more than \$1,000,000,000. On the other hand, England which claims to be an evidence and living picture of all that is great and good in free trade practice and experience, exported in 1892 more than six hundred millions less than she imported. So much for one argument adduced by the Globe.

The notion that we can do a large selling trade without buying in proportion is repudiated by the same paper in unmeasured terms, but is proved by the experience of the United States in its commerce with England, and will be still further verified by our own experience when the principle of rebate is fully and freely utilized. The American Republic in 1890 exported to the United Kingdom \$444,000,000 worth of products and only imported \$186,000,000 worth of British goods. Not only is this a commentary upon the principles of free trade versus protection, but it affords a more than sufficient answer to the Globe's round-about attack upon drawbacks. It is also contended that the new arrangement tacitly admits that prices to the consumer are higher in Canada than they are or will be to external purchasers of the products which may be exported as a result of the rebate. Of course, this is not a fact, but it will be made, nevertheless, to do good work in the future against the supporters of protection.

In competing for the trade of outside countries our manufacturers—as they well know themselves—have to make allowances for freight and handling, the expenses of middlemen or agents, the loss of time and the investment of money for periods more or less prolonged. They have then to meet on equal or even lower priced terms with the home manufacturers of the country with which trade is being attempted, or else with the manufacturers of England or Germany or the United States and all their wide

connections, experience and concentrated capital. This is what the rebate is required for, and not for the purpose of giving the farmer of Australia or of South America a cheaper machine or article than that sold to the Canadian consumer at home.

For these and many other reasons: in the interest of genuine protection: on behalf of our commercial and trade development: because of the impetus it should give to trade with Australia and other sister colonies: on account of the equality it offers our industries with those of the United States: we once more and with all sincerity congratulate the Government upon the important step it has taken.

AS TO STEEL RAILS.

A few days ago it was announced that the Department of Railways and Canals had closed a contract with a steel rail making concern in Belgium for the delivery of several thousand tons of steel rails in Canada at a price not exceeding \$20 per ton delivered.

Never in the history of this country has a steel rail been manufactured in Canada.

We have probably about 20,000 miles of railway track in Canada, but not a pound of the rails contained in them was produced here.

No pound of Canadian ore, no pound of Canadian coal, no pound of Canadian limestone has ever been used in the manufacture of steel rails either in this or in any other country; and not as much as one day's labor has ever been bestowed by any Canadian in the mining of ore or coal, or the quarrying of limestone; or in work about a blast furnace or steel mill engaged in the production of steel rails.

Think of the many, many millions of dollars that have been paid for the rails that have gone into the construction of railroads in Canada, in the manufacture of which not one dollar—not one cent has ever been paid to a Canadian workman. It has always been and continues to be drain, drain, drain upon the resources of the country to pay for rails made in Britain and Belgium. Canadian mines lie undeveloped, and Canadian workmen go without employment to the end that strangers may fatten upon what we send to them to pay for what we might just as well produce at home.

And yet we are told that Canada has what is said to be an iron policy, by which is meant that the fiscal laws of the country are framed with a special view to the building up of a Canadian iron industry. Can we ever have a true and successful iron industry that does not include the production of railway bars? We think not. If we did not have all the facilities wherewith the industry might be most successfully conducted there might be some reason for the murderous neglect of it. But there is nothing lacking, absolutely nothing. In the first place there is a large and rapidly increasing demand for rails. In the second place our country teems with all the requisites for the manufacture of rails. In the third place we have the technical skill and ability to conduct the enterprise; and we have the whole world upon which to draw for whatever we may lack. In the fourth place, under the stimulus of Government encouragement, we could easily and quickly obtain all the capital necessary. Then why not have a steel rail

industry? We are building up a fine pig iron industry, and a puddled iron industry by a judicious arrangement of the tariff, the provisions of which, perhaps, with certain modifications, if extended in the direction indicated, would soon result in the successful establishment of a steel rail industry. We now impose a duty upon pig iron, a portion of the proceeds of which is paid to Canadian furnacemen upon whatever pig iron they may produce. So with puddled bars; and why not with steel rails? If a duty were laid upon importations of steel rails, and a bonus bestowed upon the production of the article in Canada, guaranteeing the perpetuity of the arrangement for a proper term of years, as in the case of pig iron and puddled bars, the industry would very quickly materialize. There are no classes of consumers in Canada upon which the burden of such an arrangement might be placed with so little discomfort and inconvenience than upon railroads, street railways and electric railways. The burden would be more equably divided than in any other industry.

If one will but observe the really wonderful progress that has been made within the last three years in Canada in the construction of electric railways, chiefly in cities and towns, but now being pushed in all directions into adjacent territory, connecting with their metallic bands sections and neighborhoods that would never have enjoyed any better modes of communication than the common dirt roads, it will be evident that the demand for steel rails must constantly increase; and the question must pertinaciously intrude itself whether this demand shall be supplied from domestic sources, or shall it, as heretofore, be met in Belgium and other distant countries. It is estimated that it is now possible to construct suburban electric railways at a cost not exceeding an average of about \$5,000 per mile. If such roads proved to be of real value to only those living within two miles of it, or covering a strip of country only four miles wide, when it is remembered that there are 640 acres in a square mile, the road would be of benefit to more than 2,500 acres of land for every mile of its length; and if the whole cost of \$5,000 per mile for the construction of the road were charged against the land it would be only \$2 per acre. Would not any farm through which a suburban electric railroad passed be increased in value more than \$2 per acre? Undoubtedly it would. Upon most farms through which such a road might pass the increased value of the crops transported to market over it would amount to much more than \$2 per acre per year. Such roads are fast coming into existence in Canada, and soon there will be an unprecedentedly large demand for steel rails for their construction, and yet until the Government changes its policy, not a ton of this vast quantity of rails will be made in Canada.

Our Minister of Trade and Commerce is taking most commendable and intelligent interest in extending the foreign trade of Canada, and to this end he is promoting the building of lines of fast steamers connecting us with far distant lands, and the construction of submarine cables that will give us rapid means of communication with our antipodean friends. Our Finance Minister has convinced the capitalists of the Old World that the credit of Canada is actually higher than that of any other British possession, and not exceeded by that of any other country of the

world. The world recognizes the fact that we have within our boundaries every natural resource and facility for the building up of a great nation and that the policies of our government are, in the main, those best calculated to build up and extend our greatness. But whatever else we may have we cannot but blush at the fact that we have no steel rail industry, and no policy calculated to produce it. Only a few days ago was it that the Government could see their way clear to brush away some of the obstacles that intervened in the path of the success of their new policy for the extension of our foreign trade; but certainly Mr. Bowell must know that a country that has not a policy entirely fitted to build up an iron and steel industry, cannot reasonably hope to build up many domestic industries which must look to foreign markets for the disposal of their products where different forms of iron and steel, as their raw materials, must be imported. To derive all the benefits we should be entitled to receive from the production of manufactures for export, we should to the utmost extent of our ability produce at home all the raw materials required in the production of such manufactures.

A SPIRITED POLITICAL DELIVERANCE.

The proceedings of the meeting of the Young Men's Conservative Association recently held in Toronto, according to *The Empire*, were of more than usual interest, owing to the fact that the new president, Mr. W. B. Newsome, delivered his inaugural address, which, we are told, was a spirited deliverance and was loudly applauded. Mr. Newsome began by showing the steady decrease of Canada's foreign trade from \$217,000,000 in 1873 to \$153,000,000 in 1879, under the Mackenzie Government; how Sir John Macdonald and the N.P. swept the country in 1878, and that under that policy, in 1893, our total foreign trade amounted to \$247,000,000, the highest point yet attained in the history of the country. He also made some pleasant remarks regarding the Canadian Pacific Railway, and, alluding to a proposition occasionally advanced by some looking to some sort of a preferential trade arrangement with Great Britain, declared himself enthusiastically in favor of such a scheme. Regarding this Mr. Newsome says:—"Permit me to call your attention to a plank in the platform of the so-called Third Party, in which they claim that we should allow the manufactures of the Mother Country a preference in our markets over those of foreign nations. This I am not in favor of, as it would be making a concession for which we would receive no equivalent. I am an enthusiastic Britisher, but when it comes to making a trade arrangement with Britain, I do not believe in Canada getting the worst of the bargain; but while I am not in favor of a one-sided preferential arrangement, I am a strong believer that what is required to-day is preferential trade throughout the British Empire."

Perhaps it was not to have been expected that Mr. Newsome in his address should have more than touched upon the leading facts which point out the salient features of the birth and advancement of the National Policy, and therefore he may be excused for making no reference whatever to the part taken in that event by Canadian manufacturers; but those who are conversant with the facts know

that without the aid which our manufacturers rendered to Sir John Macdonald at that time, his pet policy would have died a bornin'. It might have been pointed out that a large proportion of these manufacturers were not adherents of the Conservative party, and that even until this day they have no special affiliation with that party except in Dominion elections when the National Policy demands and receives their support. It would perhaps be well, therefore, if Mr. Newsome and his young Conservative would bear in mind the fact that in Dominion politics, where the National Policy is always an issue and where the manufacturers are always the friends of the Conservative Government, that party invariably wins; while in provincial politics, where the National Policy is not and cannot be an issue, let the Conservatives fight as they may they cannot dislodge that party of which Sir Oliver Mowat has been its trusted leader for a score or more of years.

This fact somewhat accentuates what Mr. Newsome has to say regarding his Association, the principles upon which it is governed, and the means by which its influence for the Conservative party may be best made to be felt throughout the country. In the first place he declares that, as its name implies, it must be conservative, whatever that may mean. He sits down quite heavily upon what he calls independence in politics, saying that as between the two existing parties the independent man has no choice, but stands, as it were, to one side and views the actions of both of them, giving praise or blame as they seem to deserve. If this is the correct definition of the independent in politics, says Mr. Newsome, then the independent man can have no place in a party organization and commits an act of dishonor when he professes to affiliate with either of the political parties. He applies this test to the Young Men's Conservative Association because it is a portion of the great Conservative party; and he declares that when a man can no longer follow that party he should not continue a member of his Association but immediately withdraw. And then Mr. Newsome points out how "it is better at all times to have an open enemy than a false friend," explaining that if a man cannot go with his party or with a party at all times, and under all conditions and circumstances, the more honorable course for him to pursue is not to go with it at all.

This is indeed quite rough upon all concerned. We observe that Mr. Newsome's Association now numbers among its members men quite old enough to vote but who were not born when Sir Oliver Mowat's party acceded to that which has not yet been surrendered in Ontario. If Mr. Newsome's Association has no other reason for its existence than to take part in Ontario politics, we have no necessity for further discussing his address. But he takes pride in declaring that his Association is an integral and important part of the Conservative party that includes the whole Dominion; and we have already shown that that party is in a large minority as far as Ontario politics is concerned; and that as far as Dominion politics goes, where the National Policy is affected, and where thousands of those whose interests and sympathies are with that policy, and who, in that matter at least, are independents in politics, and who Mr. Newsome declares that, as honorable men, they should have no affiliation with his party, without

the substantial aid of their independents, the Conservative party would never have acceded to power, and the National Policy would never have been more than the fair fabric of a political vision. The fact is, Mr. Newsome is a young politician who has not yet cut his eye teeth. Perhaps he represents the ideas of the young men who compose the Association of which he is president; but he may be assured that unless he modifies his views very materially he will never attain the success as a political leader achieved by Sir John Macdonald. Sir John drew all men unto him—Mr. Newsome would drive out of the Dominion Conservative party all men who are not inclined to cast Mr. Mowat into oblivion.

The true friends of the National Policy can never find much to admire in the political creed of Mr. Newsome; and the wise heads of the Dominion Conservative party will probably take the young man into a back room and give him a good talking to before the coming on of the next general elections.

THE TORONTO FAIR AND CONVICT LABOR.

At the recent Toronto Fair there was one very prominent exhibit displayed in the Agricultural Implement building that should not have been allowed upon the grounds, and the like of which it is to be most sincerely hoped may never again be seen there. We refer to the exhibit of binder twine manufactured by convict labor in Central Prison, and entered in behalf of the Ontario Government by their selling agent Mr. John Hallam. To allow it there was a disgrace to the Exhibition and an insult to all manufacturers who made displays there, and to all free working men and women whose labor produced the articles shown by the manufacturers. The Toronto Industrial Exhibition Association was not called into being for the purpose of displaying the manufactured products of our prisons, and of impressing upon the minds of visitors the fact that binder twine made by convict labor could be sold at a slightly lower price than similar twine made by free labor. That is not what the Exhibition is for. Canada has hundreds of thousands of dollars invested in plants and machinery for the manufacture of binder twine, and if it were left to these establishments to supply the demand, regular and remunerative employment would be given to hundreds of free Canadians—men and women, boys and girls—in the factories. Besides the larger concerns engaged in the manufacture of binder twine, the raw material of which is, almost all of it, imported, there are quite a number of other twine mills which produce the article, or have done it, and would do it were it not for this outrageous governmental interference with the industry. The raw material of these latter concerns is the native Canadian flax grown in Canadian fields, cultivated by Canadian labor, harvested and manipulated by Canadian men, women and children, who find, or found, employment thereat during the growing and harvesting seasons, and who, when cold weather made outdoor work impossible, found steady and good employment in well warmed factories in the manufacture of this flax into twine of various descriptions. Professional politicians and their dupes, in an endeavor to carry favor with the farming classes, instigated and kept alive an insane and unreasoning demand

to have the duty removed from binder twine, with the result that both the Ontario and Dominion Governments instituted binder twine works in their prisons—that of Ontario at Central Prison, Toronto, that of the Dominion at Kingston Penitentiary, besides which, without any sufficient reasons for doing so, the duty upon the article was reduced from 25 per cent. to 12½. These unwise and unnecessary acts, together with the clamor of the politicians and their claqueurs, had such a depressing effect upon the free industry that capital invested in it became almost paralyzed, many mills forced to close, and those that kept going restricted production, much suffering among the laboring people who found their employment in them, being the consequence.

We are not discussing the question of the necessity of keeping prison convicts employed. They should be employed, and it is the duty of the Government to discover the occupations at which they should labor. But we protest against any system of labor in prisons that throws large quantities of convict made goods upon the market in competition with the products of free labor. If the hangman requires rope let it be made by convict labor. If convicts require shoes, hats and clothing, let these articles be made by them in their prisons. If good roads are required throughout the country, let them be built by convict labor; and let the Government cultivate farms with their convicts, and thereon raise wheat, potatoes, vegetables, cattle and hogs for food for convicts. There are plenty of channels wherein convict labor may be employed advantageously without infringing upon occupations whereby free labor may make its honest living.

As to making exhibits of convict made binder twine, or exhibits of anything else produced by convict labor, at the Toronto Exhibition, it should cease. Such exhibits have been made there heretofore, but not in such a disgusting and offensive manner as that of Mr. Hallam this year. The Fair managers should understand that the manufacturers are not competitors in business against the products of convict labor, neither will they be competitors at the Toronto Fair in such competitive display. The Exhibition Association should choose which class of manufactured products they would like to have displayed at their Fair.

FIAT JUSTITIA.

Recently, in discussing the sugar schedule of the new United States tariff, alluding to the sins of the Sugar Trust, the Monetary Times said:—

Acceptance by the House of the Senate bill is the final outcome of the struggle over the tariff at Washington. The Sugar Trust has got its way, and respectable journals openly state that this great organization purchased enough votes to secure success. Not many were required. Mr. Wilson believes, on evidence that convinces him, that the Sugar Trust felt so sure of the passage of the sugar schedule as to make it safe for it to buy, and it did buy \$112,000,000 worth of raw sugar, on which he estimates the profit at \$40,000,000. He practically admits, however, that the basis of his calculation is not certain, when he says that with *ad valorem* duties it is not possible to ascertain the direct gains of the sugar monopoly.

If our esteemed contemporary had taken time to consider the facts which it has stated it could not but have seen the ridiculousness of them. It is not to the point to state

that Mr. Wilson promulgated them in his speech in the American Congress, nor that a number of respectable journals accepted the statement and thereon based arguments which lose their force in the face of the inaccuracy of the figures. If Mr. Wilson's statement meant anything it meant that at the time it was made the Sugar Trust were in possession of the \$112,000,000 worth of raw sugar which had been admitted into American ports free of duty as under the McKinley tariff, and that by the imposition of the 40 per cent. duty, under the Gorman bill, the trust was enabled to add that duty to their other profits, being that much more than they would have obtained if the McKinley tariff on sugar had not been changed. Mr. Wilson evidently desired to convey the idea that if, as under the Senate bill, a duty of 40 per cent. were levied upon raw sugar, the large quantity of sugar that had been imported by the trust, in excess of current demands, and to meet this very emergency, would be worth an extra \$40,000,000 to the trust. Mr. Wilson was in good position at the time he made this statement, to know whether this large importation of sugar had really been made. If it had been made his statement would have been timely—if it had not been made his statement was false and misleading. At the time this statement was made, in refuting it Mr. Searles, the treasurer of the Sugar Trust, declared that the quantity of raw sugar then on hand was equal to only five weeks' supply, and that its value did not exceed \$12,000,000. The value of all the raw sugar imported into the United States during the year ending June 30, 1893, was \$114,955,596; and for the year ending June 30, 1894, \$124,635,031; an increase during the latter year over the previous of only \$9,679,935. This shows that the excessive importation spoken of by Mr. Wilson did not occur during the fiscal year ended with last June. In fact, such an importation would have been practically impossible. Considering that the total imports for 1894 were valued at only \$124,635,000, all of which was required for current consumption, and considering Mr. Searles' statement that only five weeks' supply of sugar was on hand, it is ridiculous to suppose it possible that the trust could have imported almost a year's supply of raw sugar between the beginning of the current fiscal year, July 1, and the day Mr. Wilson made his wild statement, which the Monetary Times and other journals have given credit to. To have even attempted to purchase such a large quantity of sugar, in excess of the regular demand, would have created a flutter in the markets of the world which would have defeated the object of the trust in attempting to buy.

EDITORIAL NOTES.

The Sultan of Turkey has recently issued an order that the uniforms of all army officers and police agents shall be made of material woven in the Imperial Cloth Factories.

This is an example in the line of patronizing home industries that our Government would do well to follow.

The Globe says that in our tariff we have "slavishly copied American principles." In view of the fact that for twenty years our duties have averaged half the American rate and sometimes less than that, and that the McKinley bill of 1890 was intended to act as a measure totally pro-

hibitive of Canadian exports to the Republic, the statement seems a little farcical. It is true that about 1875 and in obedience to local demand and the increased American duties, the Mackenzie Government raised the general tariff $2\frac{1}{2}$ per cent. But probably the Globe does not refer to that.

McKinley will in all probability be the next President of the United States. As the election of Cleveland was to English and Canadian free-traders a sort of vindication of their gospel of competition, it remains to be seen how they will take the other dose.

Levi P. Morton, the recently elected Governor of New York, is a member of an old family which came originally from England, is very wealthy, nearly seventy years of age, and a pronounced protectionist.

The N. Y. Sun, as the organ of Tammany and enthusiastic supporter of David Bennett Hill through thick and thin, is naturally somewhat cast down over the late landslide, but it still praises Hill without stint as having made the greatest political fight since the days of Andrew Jackson. To a certain extent it is correct in saying that he has made it, "disinterestedly, heroically, uncompromisingly." And it would be well for those who think that the New York Senator is done for, to remember that his powers of organization are very great, his skill in party manipulation simply marvellous, and his popularity with the majority element in the State Democratic party, undimmed.

As in the days succeeding Tweed's downfall, Tammany Hall will now have a pretty rough time of it. But existing elements in New York City preclude its entire destruction and render its ultimate revival as probable. The prospect must be unpleasant to American citizens of high moral character.

The treaty recently concluded between Great Britain and Japan is a most important one. It gives the latter country full control over its own customs, ports and courts; makes resident foreigners amenable to Japanese laws, but guarantees them the removal of restrictions now placed upon their movements and trade within the country. The general terms will not come into operation for five years, but fiscal matters are an exception and Japan takes immediate control of its customs duties. A protocol appended to the treaty fixes the ad valorem duties payable upon all the important articles of import, and provides that they shall subsequently give place to specific duties. This tariff comes into force at once, superseding the import tariff hitherto in operation under existing treaties and conventions. According to the London Times, the new tariff is in most cases double and in some treble, that hitherto payable on imports. Like other enlightened nations, Japan resorts to protection as soon as she can do so, for the double purpose of providing increased revenues and promoting industrial development.

One of the amusing features of the recent campaign in the States was the very evident desire of McKinley, Harri-

son, Morton and Reed to make hay for the next presidential nomination. McKinley lauded protection as embodied in his famous measure; Harrison praised his late administration in general terms; Morton spoke of his own past services; Reed was eloquently vague and delightfully sarcastic concerning the Democracy. But the three last named avoided as far as possible any praise of the McKimley bill and its author, as carefully as they avoided praising each other.

It looks now like a straight clear-cut issue between McKinley and Cleveland in 1896.

The Canadian Minister of Finance has done some good work in London. The success of his loan proves that confidence in Canadian securities remains unabated in the money capital of the world, and that the disasters which have played such havoc with South American, Australian and United States' credit have not impaired that of Canada in the least degree.

Sir Charles Hibbert Tupper never uttered a truer word than in his recent letter to the Halifax Chronicle, when he said:

"I yield to none in admiration for the land of my forefathers, but when the glories of free trade are descanted upon I remember that Britain's triumphs were won and her empire secured in the days of a national and protective policy."

The election in the United States proves that Americans prefer feeding upon bread and butter and pie to living upon free trade theories.

It is very gratifying to find that in spite of pessimistic prophecies and doleful fears our cattle trade is steadily growing. Recent figures show that up to Nov. 9, 81,775 head have left the port of Montreal, as compared with 83,000 during the entire season of 1893. The export of sheep is also expanding greatly—126,000 head having already been exported as compared with only 3,743 last year.

We draw the attention of the Farmer's Sun to the six million dollars which have already accrued to the pockets of our farmers this year from the export of sheep, cattle and horses to England. Had the unrestricted reciprocity policy been accepted in 1891, what was left of this traffic would have gone to the Mother Country via the United States, while the local demand would have been restricted by American competition in our home market.

The many substantial tenders by leading British firms for the construction of the Pacific cable demonstrate its feasibility, prove the correctness of Mr. Sandford Fleming's calculations, and illustrate the wise policy of the Government in taking up the matter and obtaining the cooperation of the Australasian and British Governments.

Sir Richard Cartwright in his speech at Otterville, makes the extraordinary assertion that although the Mackenzie administration "had hardly one-quarter as good a case in the matter of the fishery arbitration (1877) as Canada had in the Behring Sea case, we secured a cash equivalent of

\$5,250,000." Sir Richard must know that the commission which met in that year at Halifax was a part and parcel of the Washington Treaty, which he and his friends so bitterly denounced in 1871; he must know that the reference of the amount to be paid Canada for the fishing privileges given to the Republic was only obtained during the Washington negotiations of 1870-71 by the most strenuous labors on the part of Sir John Macdonald; that the Imperial Commissioner at Halifax was Sir Alexander Galt who was not even a member of the party then in power; and that even the amount finally almost forced from the United States was much less than had been expected by Canada. Mr. Mackenzie's administration had little or nothing to do with the matter.

In recently referring to the production of diamonds in South Africa, under the control of the famous De Beers Consolidated Mines Co., Mr. Cecil J. Rhodes, Prime Minister of Cape Colony, diamond king, multi-millionaire, and President of the British South Africa Co., spoke rather strongly of the American tariff. He said "he was for free trade, but also for reciprocity; and if they were to shut Brother Jonathan's new products out, they would perhaps bring him to his senses. They would not ask the shareholders to vote £10,000 again to exhibit their diamonds in America. The moral of it all was that they should leave America alone." A second moral voiced in the sending of Sir C. Mills, Sir J. H. De Villiers, and Mr. Hoffmeyr to represent South Africa at the Ottawa Conference is that as the countries of the Empire turn away from the States, either from force or inclination, they naturally look to Canada.

Japan is rapidly coming to the front as a market for civilized wares and Western products. Its trade even now is almost equal to that of China. Australia is commencing to work up an export of mutton, and in view of the Japs being such great meat-eaters it will undoubtedly succeed. Raw sugar and wool will also be taken from the colonies, while there is no reason why petroleum, machinery, and cotton and woollen goods should not be sent in large quantities from Canada. Our steamship line provides the necessary facilities; and enterprise only is required to capture at least a considerable section of the market.

There is a wild spirit abroad in Europe. A meeting in France, attended by five hundred railroad employes and the Dutch, Austrian, Spanish and Italian delegates to the recent International Railway Servants' Congress, vigorously applauded a speaker who said:—"When you are told of patriotism do not believe in it. It is a lure. After abolishing the religious idea which hampered them, the bourgeois now offer a rag for your adoration. Reject it."

The recent voting of a bonus to the Dominion Organ and Piano Co. in Bowmanville, almost without opposition, is another illustration of inconsistency. One-half, if not more, of the inhabitants of that town are opposed to the N.P. and to protection of any kind—in theory; yet in prac-

tice they vote for the most distinct and pronounced form of the "evil" which their leaders deplore so greatly.

The benefit of British rule was never better seen than in the recent purchase of some female slaves by Ali Pasha, a powerful Egyptian official. He has since been compelled by Sir H. H. Kitchener, "the Sirdar," to free the slaves, resign his post of President of the Legislative Council, and sue for pardon.

Italy is said to be improving steadily in general conditions and financial confidence. There have recently been large purchases of State bonds which had for a long time been neglected; the deposits in the savings and other banks are increasing; the railway returns are steadily rising and industries of all kind show a marked impulse.

In discussing the proposition for an Imperial Customs Union, the London Times comes to the conclusion that it is impossible without the inclusion of the United States. And then it gives the whole free-trade case away and falls helplessly into the arms of Lord Salisbury's reciprocity idea by saying:—"We are the customers of the United States for nearly half of their domestic produce. It may therefore be assumed that the United States would not lose the customer of half its export without being willing to make some concessions in the direction of a mutually advantageous union." Exactly; and the first practical intimation that England was really alive to her own commercial and Imperial interests by the enforcement of a small preferential duty on foreign products in favor of the colonies, would bring the Republic to its knees and create an immediate and successful agitation for the lowering of the almost prohibitive duties now imposed upon British manufactures and Canadian produce. But the English freetrader is too bigoted, as yet, to see this fact, though Lord Salisbury has pointed it out with much force.

The new Government of Victoria as led by Hon. George Turner, is strongly and significantly protectionist. While hard times help in the overthrow of a tariff tinkering party in the States, still deeper depression and financial disaster has had no effect in the chief Australian colony against a principle of protection which it is felt will aid substantially in bringing back prosperity, especially if the colonies can all be brought into union with a tariff like that of Canada against outside countries.

Canadians will heartily congratulate the Marquis of Lansdowne, late Viceroy of India, upon receiving the coveted blue ribbon of British Knighthood—the Garter.

The electric weed killer tested by the Illinois Central Railroad, the invention of Supt. Sharp, is thus described by the Railway Review: In an ordinary box car is placed a small steam engine and dynamo, steam for which is taken from the boiler of the locomotive which pushes the car. The electric current is conducted from the dynamo to a brush suspended from the bottom of a flat car in front of the box car. This brush extends across the track and is long enough to reach beyond the ends of the ties. The

brush is made of fine copper wires which come close enough to the ground to reach all of the vegetation. The brush can be raised or lowered as desired. With the dynamo running at full speed the engine pushes the two cars over the road at a rate of about five miles an hour, and as the wires touch the vegetation the current passes through it to the earth. It was found that a few stalks would escape the first time, but a second run over the ground would effectually kill everything. The voltage at the dynamo is not high, but a transformer is used and as a result of experiments it has been found that a voltage of 10,000 is ample. It has also been found as a result of experience that the brush should be in short sections, each insulated from its neighbor and independently supplied with a current, so that by no means could the entire current of the dynamo temporarily pass through a small part of the brush. The experiment has been so satisfactory that a machine may be built especially for the purpose.

Although Senator Gorman defeated the President, the honor is all upon the side of Mr. Cleveland, who has shown himself to be a man of strength and wisdom. While the President has proved himself the true friend of the people, Gorman and the Senators who assisted him stand revealed as conspirators against the public and the party, and, while Mr. Cleveland's praises will be sung, the Senators will be execrated as men who sold themselves to subvert the will of the people.—*The Empire*.

Excruciatingly funny considering that *The Empire* professes to be an advocate and supporter of the National Policy and the Dominion Government. Senator Gorman and the Senators who assisted him are declared by *The Empire* to be conspirators against the public, and that they will be execrated as men who sold themselves to subvert the will of the people chiefly because, as is alleged, they favored the American Sugar Trust. Under the McKinley tariff this Trust accumulated millions of money through a duty of only \$10 per ton on sugar, which Mr. Gorman's persistence reduces to \$2.50 per ton; and it is noticeable that *The Empire* had no objection when the Canadian Sugar Trust enjoyed protection to the extent of \$16 per ton and which now stands at \$12.80 per ton nor does it denounce Canadian Senators who are interested in sugar refineries as conspirators who should be execrated.

Baron de Courcel, lately appointed French Ambassador to London, will be remembered here as the President of the Behring Sea Arbitration Tribunal at which Sir John Thompson and Sir C. H. Tupper won such deserved commendation. M. de Courcel's speeches were models of praise and delicate flattery mingled with tactful management of difficult discussions. He has also been Ambassador at Berlin and a member of the French Senate.

One of the first effects of the Wilson bill coming into force was the release of large amounts of tin-plate from bond and the closing of various American tin-plate mills from inability to compete with the Welsh product. The establishments which intend to fight it out are lowering the wages of their workmen, many of whom contemplate a return to Wales. If they do leave in any large number the new industry will be paralyzed, as it takes years to train a

rollerman. So much for one effect of reduced duties on competition.

A curious and important development of the struggles between capital and labour has appeared on the Tyne. It seems that Mr. Walter Runciman, head of a large shipping firm, which does business with Scandinavian ports, is so much hampered by the demands of the local Sailors' and Firemen's Union, that he proposes to place two of his vessels under a foreign flag—probably that of Norway. If the experiment is successful in giving him the free hand he anticipates, he will most likely put the whole fleet of his company under the same flag and save at least \$100,000 a year in wages. The importance of such a movement, if at all followed up, on British merchant shipping and the Royal Naval Reserve, can be seen at a glance.

It is as gratifying to find Canadians recognized abroad as it is to find Canadian manufactures and products accepted in the markets of the world. We note, therefore, with pleasure a paragraph in a recent number of the *Globe* stating that the current magazines contain a number of articles by Mr. J. Castell Hopkins. Among others is one in *The United Service Magazine*, dealing with "French Canada and the Empire;" one in *The American Journal of Politics* comparing "The Senate and the House of Lords," one in *The Asiatic Quarterly Review* treating of "Imperialism at the Inter-Colonial Conference," and an article in *The Engineering Magazine*, of New York, upon "The Land of the Mikado." Mr. Hopkins also deals with "The Position of the Established Church," in the current *Canadian Magazine*.

As an illustration of the possible profits in trading with Australia is the fact stated by Mr. Larke the other day that Quebec men told him they could ship leather to England for manufacture there into boots and shoes, for reshipment to the Antipodes. Canadian manufacturers should do this themselves.

There are said to be fully 10,000 professional thieves, 30,000 anarchists, and still other thousands of gamblers, swindlers, drunkards and tramps in the city of New York. With the police coercing honest citizens in favor of the criminal class, and becoming rich on the products of bribery, the recent political revolution in the American metropolis is not to be wondered at.

Free traders are fond of quoting Ricardo where he points out that we cannot control other tariffs, but we can control our own, and that the first duty of a citizen is to aid in reducing the one over which he has power. The whole statement is a mistake. Reciprocity is based upon the influence which a country has over others by means of its own tariff. But English and other free-traders would give to foreign countries equal privileges in their own markets, with their own citizens, who are meantime denied admission to the markets of the countries they are willing to treat so kindly.

The *Montreal Witness* says it is strange and discouraging that though Canada is essentially an agricultural

country, farming being by all odds her chief industry, and that on which every other industry rests, yet the Canadian farmer can win from the soil with hard work only a bare living. A somewhat novel view of the case is attributed to a Montreal man. "Perhaps," he said, "it is not altogether an evil. One of my neighbors in the country asked me recently how I was making out with the farm, and when I told him there was no money in it he said he was glad of it. If there was a safe 10 per cent. to be made out of farming a few hundred capitalists would soon own all the farms, and the farmers would become a race of slaves." The thing has a plausible sound, but the fact is that when farming is prosperous the farmer keeps his farm and his independence, and that it is in adversity that he and his farm get under the control of the money-lender. —Toronto Globe.

The farmer who restricts his operations to the growing of wheat, cannot, with wheat at 53 cents, hope to become wealthy. A proper diversifying of crops is essential to success. If the farmer is successful, and is laying up wealth, why should a capitalistic land shark obtain possession of the remunerative acres?

Canada has better exhibits than ice palaces and better products than snow, and it is a pity that Ottawa should seek to rival Montreal and Quebec in having a carnival of cold. It is advertising in an unfortunate way a fact which to us is pleasant, but to foreigners alarming.

Why do Canadian manufacturers not take more interest in the Imperial Institute? It affords a standing and permanent advertisement amongst the wealthiest classes of the wealthiest community in the world, for any products

exhibited there. The Chicago World's Fair, with its millions of visitors from all parts of a country which rigorously shuts out our products, was not half as useful as this great building and permanent exhibition in the heart of London could be made. Australia, India, and South Africa all surpass Canada in their exhibit of products at present.

There are said to be over 20,000 cotton operatives idle in Fall River. Similar statements from many quarters indicate a very severe winter in the Republic for the workingman.

The New York Times very truly says that "it is not particularly creditable to American enterprise that the work of laying a cable across the Pacific should have been left to the Canadians." It goes on to say that Canadians "have shown great enterprise since the opening of the Canadian Pacific in diverting trade to that route," and that the laying of the proposed cable will give us a very marked advantage in the effort to capture the Asiatic trade.

The Toronto World, which is usually a consistently protectionist sheet, thinks that the Government should either put a duty of thirty or fifty per cent. on steel rails for both railway and street railway purposes, or else remove the duty altogether. That there should not be a duty on rails for the one purpose when there is none imposed on those used for the opening up of the country as a whole. This question brings up the point so often lost sight of—that

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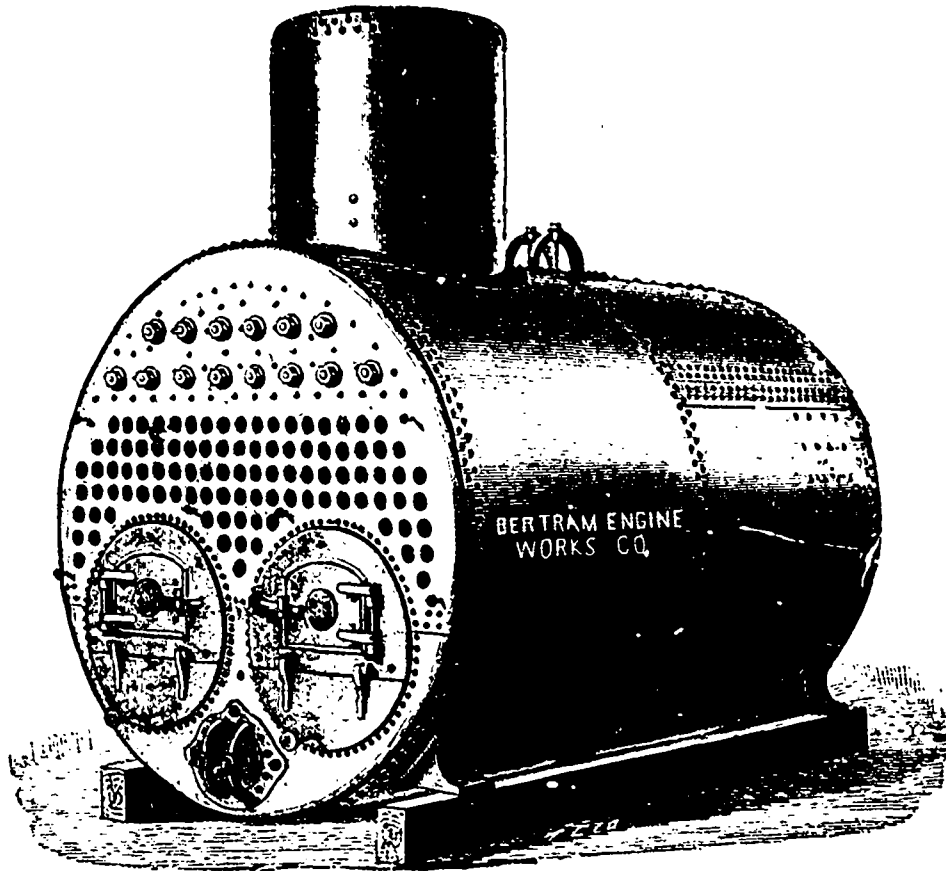
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Steel and Composite Yachts & Steamships.

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our tariff is both a revenue and protective one. The tax upon steel rails for electric roads may not be useful at the present moment as a protective measure, but it may be required, and probably is, for revenue purposes. Hence the duty.

The Liberal leaders claim that Canadian manufacturers are monopolists. Senator Boulton, who poses as a free-trader, points out in a recent letter to the Week the great inconsistency of denouncing protection and at the same time advocating reciprocity with the United States. He declares that "it is only changing the monopoly of Canadian manufacturers for the combined monopoly of the United States and Canada." From the Cartwright standpoint this is true. From the industrial standpoint it would be the survival of the strongest, which means nowadays the success of those who command the most money.

"Tariff Reform," on the other side of the line, aided by existing depression, has produced first a panic, then widespread poverty, then a depleted revenue and the necessity of borrowing \$50,000,000 in order to meet current national expenses.

Great Britain controls 21 per cent. of the Chinese import trade, and 34 per cent. of that of Japan.

It is estimated that the three British general elections of 1885, 1886 and 1892 cost the respective parties a total of

£2,600,000 or \$13,000,000. An American presidential election, however, costs the community in the neighborhood of \$30,000,000, and it is significant that Governor Morton's expenses in New York are filed at \$19,000.

How little a free trade Government cares for the industries or productions of its own country is shown in the following list of supplies from abroad, as admitted during a recent debate in the British House of Commons:—

1. The Danes furnish more than half the salt pork used in the Navy, at a cost of £13,353 per annum.
 2. Lubricating oil is brought from America.
 3. Two gunboats were recently supplied with boilers from France, at a cost of £13,810.
 4. Bentwood chairs were purchased "abroad"—presumably in America.
 5. The English fleet is supplied with Danish butter.
 6. Foreign paper is supplied to the Stationery Office.
 7. Bavarian pencils are supplied to the Stationery Office.
 8. Swedish matches are supplied to the Stationery Office.
 9. German boats are supplied to the Admiralty.
- All these articles are being purchased abroad, while British workmen are unemployed by tens of thousands, and their families are starving.

The document of denunciation left by Count Mercier shows how dangerous a man he really was. His policy

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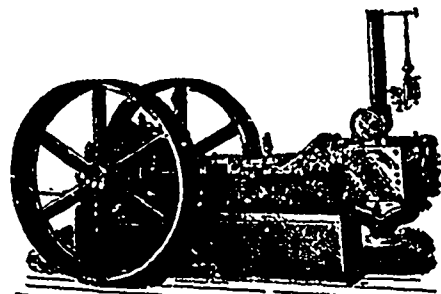
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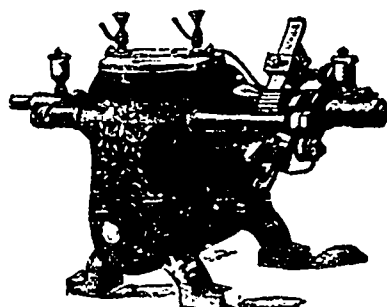
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seems not only to have been corrupt, but his personality to have been steeped in hatred of the English-speaking portion of the Dominion.

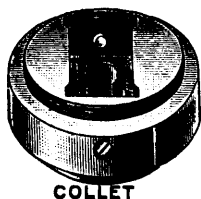
Agriculture does not flourish under free trade. Since 1873 permanent grass land in the United Kingdom has increased by 4,336,000 acres and arable land decreased by 3,285,000 acres. Meantime, wheat has fallen in price from 58 to 26 shillings per quarter.

Screw Plates and Blacksmith's Stocks and Dies.

Butterfield & Co., of Rock Island, P. Q., are doing a very heavy business in screw plates and blacksmith's stocks and dies.



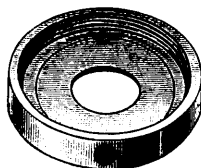
Their new Reece screw plate, which is here shown, is a remarkable illustration of the evolution of mechanical tools.



COLLET



DIE



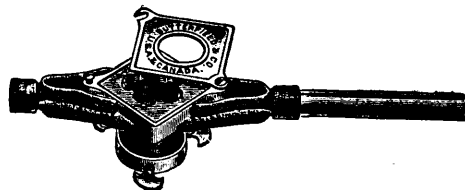
CAP

For many years the old time-honored blacksmith stock and dies in its different forms, was in universal use by both blacksmiths and

machinists. A want was, however, felt for a quicker working screw plate and the result is the New Reece.

While for many uses the old stock and die answers every purpose and will always be largely employed by reason of its low price, the modern screw plate has come into very general use. The Reece will do five times the work that can be done with the old plate; will last longer; the screws are more perfect; equal to lath work; and it is all done with a single cut.

The dies have all the advantages of solid dies, and yet are adjustable, so as to provide for a tight or loose fit and to keep at exact



size, regardless of wear. All the parts are interchangeable so that any part can be replaced when repairs are needed, without sending the whole plate to the makers.

The greatest care is exercised in the steel used and the making of the several parts; everything is guaranteed. The Reece plate is put up in so many different assortments of sizes that any mechanic can select just what he needs for his particular work. Each assortment with tap wrenches, without extra charge, is put up in a handsome case.



In addition to the Reece screw plates and blacksmith's stocks and dies, Butterfield & Co. make all kinds of taps and dies and kindred tools. They supply many of the leading railroads, car shops, machine shops and manufactories both in Canada and the United States. Anything that is needed by a machinist, a fitter of water, gas or steam pipes, is turned out at their works. Most of the leading hardware houses in Canada carry a stock of their goods, so that purchasers can easily obtain them.

We illustrate the collets, dies, and tap wrenches, also a pipe stock for threading all kinds of pipe, which they make in all the various sizes.

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It would be difficult to find in machine shop methods of the past a more rapid and radical change than the one produced by the electric motor. We meet it in every industry, above ground and under ground, driving machinery of every description, sometimes devoting all of its energy to driving one tool requiring large power, and at other times operating a short line shaft from which a gang of small tools is driven. Considering the wide field it now occupies and the diversified duties it performs, it seems wonderful that so few motors are discarded because they have failed to do what is expected of them. The practical trial of the motor has created confidence in its general capability. That this did not exist two years since, even in the minds of progressive manufacturers, is shown by the following incident: The head of one of the largest establishments in the country, when asked why he did not put in an electric travelling crane instead of a square shaft crane, in the changes he was then making in his plant, said: "If, when we made our plans, we had been as convinced as we are now of the reliability of the electric motor, we should certainly have provided an electric crane." The rapidity of the introduction of the motor is shown by the fact that there are now some large plants driven by motors exclusively.

Advocates of the electric motor have always claimed that its most important advantage, as compared with the method of transmitting power by shafts and belts, has been in economy. It has been stated that the efficiency of both dynamo and motor is high, that the loss in conductors is nominal and most important, that there is no wasted energy, since when the machine stops all expenditure stops and the saving is traced direct to the coal pile. To verify these claims we need reliable data giving power consumed by tools of widely varying character, and doing work of all kinds, and compare these results with like ones obtained from tools driven in the usual way. Steps are now being taken in order to obtain this information in the case of electrically driven machines.

As bearing on this question we take the following from an address recently delivered by the president of the Institution of Mechanical Engineers, Prof. A. B. W. Kennedy:

I have found from information very kindly given me by several large engineering firms, that the actual cost to them of power, including coal, stores, wages and depreciation, generally lies between 2 and 5 per cent. of their total costs. In any given factory running on the ordinary system there is a large continuous waste of power, due to the running of the whole shafting, no matter how many or how few machines are at work. Under such conditions the waste work in shafts and belts may well be even 25 per cent. of the average useful work, and the distribution of total work may be approximately:

| | |
|--|------------------|
| Average useful work..... | Horse-power. 100 |
| Wasted in belts and shafting..... | 25 |
| Wasted in engine friction, the engine being supposed large enough to give 150 horse-power at tools as a maximum (at about ten per cent. of maximum horse power)..... | 20 |
| Total..... | 145 |

Now, if all the machines in such a case were driven by separate motors, each having an electrical efficiency of 88 per cent., and these motors worked from a dynamo having an efficiency of 92 per cent. (both of which are high figures for ordinary work at two-thirds output), the figures would stand as follows:

| | |
|---|------------------|
| Average useful work..... | Horse-power. 100 |
| Wasted in motors and dynamo..... | 24 |
| Wasted in leads (say 2 per cent.)..... | 2 |
| Wasted in engine friction (as above)..... | 20 |
| Total..... | 146 |

It will be seen that the two sets of figures are practically the same as to amount of power required. As the electrical efficiencies which I have assumed are not likely to be exceeded, I think it may be said that there is no saving to be obtained in horse-power, and none therefore in any of the items of cost directly dependent on horse-power, in cases where the power wasted in shafting and belts does not exceed 25 per cent. of the whole average useful power.

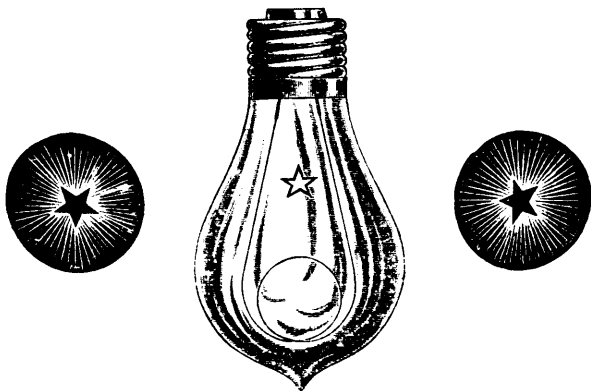
The above might apply to machinery running continuously, but the time during which a machine is idle and from which the greatest item of economy is derived is not considered. This point is most essential, and it is one concerning which there is but scant knowledge.—Iron Age Hdw. Bulletin.

Lubricators and Lubrication.

Some men who are in charge of steam plants, says Mr. W. H. Wakeman in a recent article, apparently do not understand the principle which causes their lubricators to discharge their cylinder oil, drop by drop, into the steam pipe, whence it is carried into the steam chest and cylinder, lubricating the valves and piston, reducing friction to a minimum, prolonging the life of the parts, and saving coal. In the opinion of some it is the steam pressure which causes the oil to ascend or descend, as the case may be, through the sight-feed glass, but it should be remembered that as the oil must go in against the same pressure that exists in the condensing pipe, the pressure is equalized, and, as far as this point is concerned, it is the same as if no steam pressure existed there.

Having rebuilt a lubricator some time ago, I set it up on a stand in the engine room, without connecting the pipes to anything. I then

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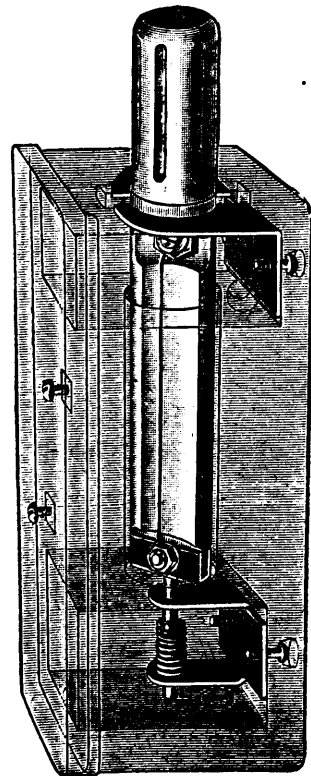
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filled the body of it with oil, and the condensing pipe and the sight-glass with pure water. Calling in a friend, we proceeded to open the regulating valve, when the drops began to ascend, just as when the apparatus was attached to the steam pipe in the usual way, and continued to do so as long as the condensing pipe was supplied with water. His surprise was unbounded, but if any one who thinks that it is the steam pressure which causes it to operate, will try the same experiment, he will see his mistake. The oil should be warm in order to produce the same conditions that exist in practice.

The drop of oil descending into the body of the lubricator, usually through a pipe which extends nearly to the bottom of it, causes a drop of oil to be lifted out, and it then passes on to the steam pipe. Now, the drop of water will descend through light or warm oil by its own weight independently of any pressure, but if a pressure in excess of the steam can be brought to bear upon it, then it will descend through heavy or cold oil without trouble. The condensing pipe furnishes this excess of pressure, by providing a column of water, and the pressure is increased directly as the height of the column above the level of the oil.

If we take a piece of brass pipe 10 feet long, and coil it up until the distance from the top of the oil to where it is connected into the steam pipe is 2 feet, we shall have an abundance of water, but the pressure will be that due to a column of water 2 feet high only, which is a trifle less than 1 pound. On the other hand, if we connect the pipe without putting any coil in it, we shall have a pressure which is due to a column of water 10 feet high, providing, of course, that the condensing pipe is kept full of water. It will be a trifle more than this, because the water, which is below the level of the oil, has an excess of weight over that of the oil, but this is so small as to be ignored. From the above it will be seen that if we have a lubricator which feeds the oil in ascending drops, and it is located in a cool place, it will be well to have a high-condensing pipe. If the cup has what is known as a steam feed, or, in other words, if the drops of oil descend, it does not make so much difference, as these cups soon become warmed up, thus rendering the oil more limpid, and causing it to feed more readily. The fact that an oil is thick and apparently of a heavy body does not always mean that it has good wearing qualities, for some very thin oils are efficient lubricants.

If a certain brand of oil has been used in a cylinder for several years and for any reason it is desired to use some other kind, the new oil may not give satisfaction at first, but this does not necessarily prove that it is not a good oil.

After having used an inferior grade of oil for a long time, I commenced to use one of the best brands of oil in the market, but there

could be no doubt that there was something wrong, as the engine could not be run with it. It was of the automatic, disengaging type and as soon as the valve gear commenced to open the valves, the vibration was so great as to cause them to be released at once, thus shutting off the steam before enough had been admitted to do the work. The remedy was to mix one gallon of the new oil with four of the old, and when the lot was used up, mix another one, using two of the new and three of the old, and so on, until the new oil could be used without trouble.

Before emptying cylinder oil out of the barrel, it is a good plan to nail a piece of mosquito netting, or a fine sieve over the bung-hole, as then all chips, old bungs, etc., will be excluded from the oil tank.

Linen Manufacturing.

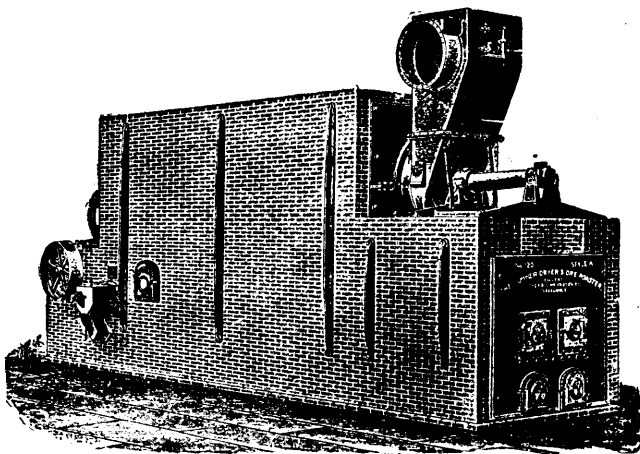
James Girdwood, the senior member of the firm of James Girdwood & Co., Belfast, Ireland, the world-famed linen manufacturers, is at the West. Mr. Girdwood has for years made an annual trip to this country to meet the big wholesalers with whom his firm directly deals.

Mr. Girdwood is one of the strongest advocates of the free admission of raw material, and is now anxiously awaiting the result of the deliberations of the Committee of Ways and Means of the National House of Representatives on that important point. "The flax that is raised in this country," said Mr. Girdwood, "is raised for seed. The straw goes to waste. This should not be so. There is no reason in the world why linen should not be manufactured, and a high grade, too, in this country. Most of the raw material used to make the linen of the world comes from Europe. We can arrange to have this material shipped about as cheaply to New York as to Belfast, and if the present Congress will place the raw material on the free list, we shall proceed at once to erect a linen mill in New York. Labor in this country is higher than in Ireland, but it is of a stronger and more intelligent quality, and we have figured out that if the raw material is admitted free of duty we can compete, and even undersell, European factories."

"Are American climatic conditions unfavorable to the manufacture of linen?"

"That assertion has been made so often that many people have come to believe it. The atmospheric conditions are probably not as favorable as they are in Ireland, but there is no reason why, with our improved processes, linen cannot be manufactured here as well as anywhere in the world. It is to the advantage of this country to start new industries. With a linen industry there would be a renewed demand for flax and an improved market, and I believe that within a short time you would be raising all the raw material that your mills would consume."—Minneapolis Tribune.

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Dyeing With the Benzo Dyes.

The "benzo" dyes is the familiar name by which dyers note the series of direct dyeing or substantive cotton colouring-matters sent out by the Farbenfabriken, vorm. Fr. Bayer & Co. These now number upwards of one hundred—a truly large number, and one which points to a considerable development both in their manufacture and use, especially when it is remembered that scarcely a decade has passed since the first member of the series, Congo red, was introduced. These are usually applied, in dyeing, in baths containing salt, Glauber's salt, or soap; or in a bath of soda and soap; or what gives the same result, potash and soap. The makers have lately published the results of a series of experiments which have been made with a view of ascertaining which of these "mordanting" materials gives the best results.

In general the best results were obtained with common salt; with most of the colours with which this mordant was applied the baths were better exhausted than with the other two mordants. Glauber's salt and soap gives less satisfactory results; while with potash and soap, or with soda and soap, the results were only moderate—in some cases quite unsatisfactory.

Blue Dyes.—Benzo black-blues B and G yield perfectly useless shades with common salt. Benzo black-blue 5 G exhausts best with salt, giving only moderate results with potash and soap. Benzo indigo-blue and benzo black-blues R and G exhaust best with potash and soap. Azo blue works best with Glauber's salt and soap. The benzo azurines, benzo blues, and benzo cyanines give the best results with common salt, as do also Congo blue and brilliant azurine 5 G.

Brown Dyes.—All the brown dyestuffs give the best results with common salt. The results with potash and soap, or with Glauber's salt and soap, were generally, only moderate, and in the case of benzo brown NBR were useless; and of benzo browns NB, G, GG, R extra, BX, NBX, BR, and Mikado browns B, G, and M, were bad, or not particularly good.

Yellow Dyes.—The yellow colouring matters exhaust pretty well with all three mordants. Common salt gives the best results, the chrysamines being the only exception; they give bad shades, and are precipitated in the dyebath; they work best with Glauber's salt and soap. Benzo olive gives poor results with both Glauber's salt and soap, and potash and soap. Brilliant yellow, chloramine, chrysophenine, Hessian yellow, Mikado yellow, and primuline and Clayton yellow give good results with potash and soda or with Glauber's salt and soap.

Orange dyes.—Benzo orange R gives the best results with potash and soap. Salt is useless with this dyestuff. Congo orange G and

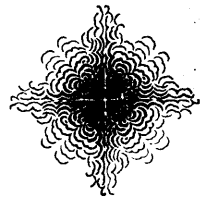
Congo orange R give bad results with potash and soap, and but poor results with Glauber's salt and soap. They work best with salt. Mikado orange G, Mikado orange 2 R, Mikado orange 4 R, toluylene orange G, and toluylene orange R give fairly good results with either Glauber's salt and soap or potash and soap, the best results being obtained with salt.

Grey and Black Dyes.—Benzo grey gives useless shades with salt, working well with either of the other mordants. Benzo black does not give good results with salt. The other dyes look best with salt. Benzo fast grey and benzo black S extra do not work well with potash and soap. Benzo grey S extra gives but poor results with Glauber's salt and soap, salt giving the best results. Diazo brilliant blacks B and R and the diazo blacks B, G, and R work well with all mordants.

Red Dyes.—All the reds give the full shades with salt. Generally, however, these are rather duller or may be yellower than those obtained with Glauber's salt and soap or with potash and soap, both which mordants yield the brightest shades. They are therefore the best to use with the red dyes.

A reduction of the cost of casting steel, iron and other metal by 5 per cent.; a great saving in time, the production of castings free from oxide action and blow holes, and most important of all, the production of pig iron in the mountainous and remote districts having water power and ore but no coal; all these things may result from the application of electricity, according to a new process described in a report to the department of state by United States consul Frank Mason, at Frankfort, Germany. The process is known as the Tausig process and provides for smelting and casting metals by electric heat, under the influence of rarified air. An air-tight furnace lined with glazed fire brick, has its hearth connected with moulds into which the fused metal flows by gravitation. The fire brick lining forms an efficient insulation and the electric current is sent through the charge directly without the use of any fuel or the employment of carbon electrodes. Thereby the fused metal is nearly pure and free from carbon, and the continued exhaustion of the air and gasses produced increases the fluidity of the molten material, prevents oxidation and blistering and produces dense, smooth castings of the highest mechanical qualities. In a small, experimental furnace a ton and a half of pig iron was smelted in fifteen minutes by a current of 30,000 amperes and 50 volts—about 2,000 horse power. With water power the cost is very low and even using steam to generate the electric current there is economy in fuel in smelting of 30 to 50 per cent. The cost of pig iron, with ore at \$2.40 per ton is said would not exceed \$8 per ton with a motive power of 1,000 horse power.

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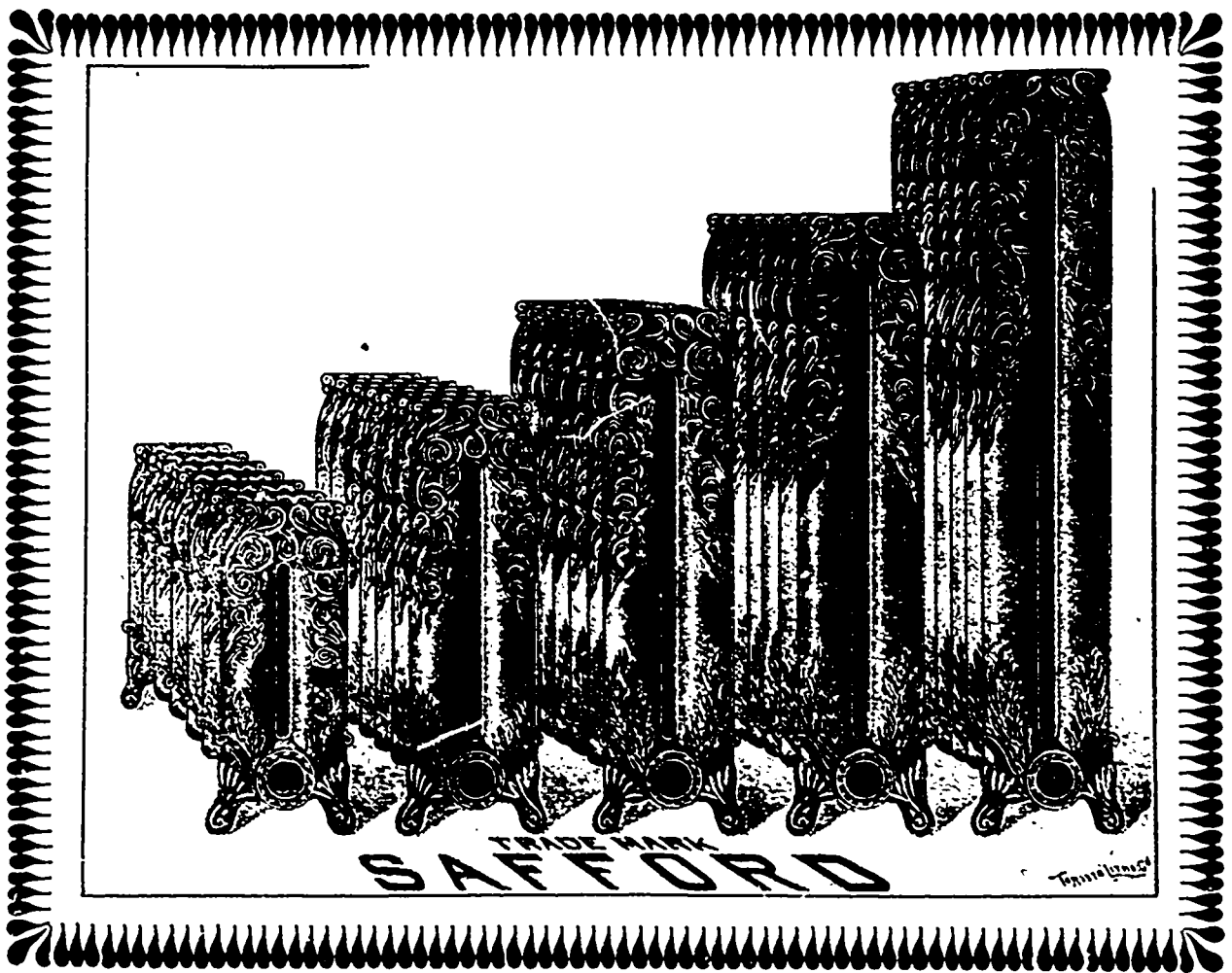
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Electric Tanning.

L. A. Groth, the inventor of the electrical tanning process, writes Hides and Leather from Orbe, Switzerland, that his system is in successful operation there in the sole leather tannery of Jules Rodd.

After the hides have been unhaired and fleshed in the usual manner they are worked slowly in a drum with soft water, then rinsed and placed in Groth's tanning vats. The hides are hung on a special framework, which is given a reciprocating or rotary motion in the vats. After remaining in the liquid for from three to four-and-a-half weeks, they are said to be completely tanned and are withdrawn, scoured, rinsed in clean water and dried. Total time required, from the day the green hides are placed in soak until the leather is brought into the warehouse, is from five to seven weeks. The tanning liquor used is preferably a mixture of oak wood extract and pine extract. The first liquor, being naturally weak, is strengthened four times during the tanning, so that its final strength is 25 degrees, according to the barkometer used. The electric current is applied during the tanning, according to the nature of the hides, condition of the tanning liquors and description of leather required.

Mr. Groth continues: "Extensive experiments have been carried on to ascertain whether it is better to keep the hides in motion or stationary in the tanning liquors. The result was in favor of motion. The cost of keeping liquors in circulation by constant pumping is somewhat heavy." He employs an apparatus by which the hides are given the reciprocating or rotating motion, but are also lifted up and down, whilst the liquors are kept constantly in circulation, without any pumping being required.

Cast Steel Billiard Balls.

One of the possibilities of manufacture, and which is in direct contradiction with theories previously held, is shown in the statement that at the last meeting of the Foundrymen's Association, the Secretary called attention to some cast steel billiard balls lying on the table. The balls, he said, were made by Mr. Peter Ostberg, Stockholm, Sweden, and had been sent to the Union League Club, Philadelphia, by Mr. P. G. Salom, who was at one time connected with the Standard Casting Company, of Chester, Pennsylvania. The balls were of the same weight as ordinary ivory balls of the same size and cost about two dollars each, or about one-fourth the price of ivory balls. The castings were made with a core, the holes being afterward plugged and the castings finished in a lathe. The thickness of the casting in its finished state was said to be one-sixteenth inch. *Stove and Hardware Reporter.*

Cooling Condensing Water.

The cost of condensing water, which in some localities is very high indeed, has proved one of the most serious objections to the use of condensing engines. In many countries, Germany in particular, the difficulty has been very successfully overcome by the use of cooling towers, which, by exposing to the atmosphere a large surface of the heated water, cools the latter sufficiently to enable it to be used continuously.

Another arrangement consists of a closed box, the water being sprayed at the top and falling like rain to the bottom, where a current of air is forced by a fan in the opposite direction. In practice it is found that the loss of water by evaporation is only trifling. In this country, pond or reservoir is more often made to do duty in this way, and if the dimensions of the cooling pond are sufficient, the arrangement is preferable to any form of cooling tower. It should be noted that both volume and surface are factors which determine the efficiency of this device. Evidently the pond must have such a volume that a given quantity of water shall remain in it the length of time necessary for the cooling effect of the total surface to abstract the amount of heat which the quantity of water received in the operation of condensing the steam. Of course the size of pond necessary will vary considerably, being largely influenced by the climatic conditions which obtain in the particular locality. Probably it will not often occur that the circumstances will be more adverse than in the case of the engines of the Victor Cotton Mills, Charlotte, N.C., where a compound condensing Corliss engine of 400 h.p. is operated under a very constant load indicating 385 to 400 h.p. Water for the condenser is taken from a pond about 130 by 180 feet and about five or six feet deep. An independent jet condenser is used, discharging the water at 120° to the pond, where it cools in the hottest summer weather to 110°, at which temperature it is returned to the condenser. About 20 inches of vacuum is thus formed, while in cold or cool weather the temperature naturally falls, and 24 or 26 inches of vacuum is obtained. *-Mechanical World.*

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The Diamine Dies in Jute Dyeing.

The diamine dyestuffs are favorably known to dyers on account of the wide range of their capabilities in dyeing all kinds of fibre, and in the dyeing of jute they are just as applicable as in other branches of the industry. The jute does not require any mordanting for the diamine dyes. It takes these colours up from baths containing common salt or Glauber's salt, or a mixture of Glauber's salt and soda, some dyeing best with one assistant, others with another, which will be seen by an inspection of the recipes given below. Not requiring any mordant, the jute fibre is left soft and flexible, while its lustre is not impaired. The colours obtained are fast to rubbing, and are on the whole fairly so to washing. Although not quite fast to light, still they are sufficiently so for all practical purposes, especially for goods made from the jute fibre, which as a rule are not exposed to much light.

From the following recipes the character of the shades and the quantities of dyestuffs required, which are based for 100 lb. of jute, will be gleaned.

1. Black.—Use 4 lb. oxy-diamine black N, 5 lb. soda, and 15 lb. Glauber's salt. This gives a somewhat violet shade of black.
2. Black.—Use 4 lb. diamine jet-black OO, 5 lb. soda, and 15 lb. Glauber's salt. This gives a fine jet-black. The addition of a little diamine green B will more thoroughly ensure the production of a jet-black shade.
3. Canary Yellow.—Use 2 lb. thioflavine S, 5 lb. soda, and 15 lb. Glauber's salt.
4. Chrome Yellow.—Use 3 lb. diamine gold and 20 lb. Glauber's salt. Similar shades are obtained from 3 lb. diamine fast yellow A, which requires 20 lb. common salt; or from 3 lb. diamine yellow N, which is best dyed with 5 lb. soap and 15 lb. phosphate of soda.
5. Deep Violet.—Use 3 lb. diamine blue 3 R and 20 lb. common salt. This gives a deep violet, of a reddish tone.
6. Pale Blue.—Use 3 lb. diamine sky-blue and 20 lb. common salt.
7. Blue.—Use 3 lb. diamine blue 6 G and 20 lb. common salt. This gives a medium shade of blue, of a greenish tone.
8. Dark Blue.—Use 3 lb. diamine blue 2 B and 20 lb. common salt. This gives a reddish shade of blue. Should a brighter and greener shade of blue be required, then use 3 lb. diamine blue 3 B and 20 lb. common salt.
9. Black-Blue.—Use 3 lb. diamine black BH, 5 lb. soda, and 15 lb. Glauber's salt.

10. Chocolate.—Use 3 lb. diamine brown M, 5 lb. soda, and 15 lb. common salt.
 11. Bismarck Brown.—Use 3 lb. cotton brown N, 5 lb. soda, and 15 lb. Glauber's salt.
 12. Walnut Brown.—Use 3 lb. diamine brown V, 5 lb. soda, and 15 lb. Glauber's salt.
 13. Mahogany Brown.—Use 3 lb. cotton brown A, 5 lb. soda, and 15 lb. Glauber's salt.
 14. Seal Brown.—Use 3 lb. diamine brown GG, 5 lb. soda, and 15 lb. Glauber's salt.
 15. Orange.—Use 3 lb. diamine orange G and 20 lb. common salt. This gives a fairly bright shade of orange. By adding a little diamine scarlet S the shade may be reddened.
 16. Dark Violet.—Use 3 lb. diamine black RO, 5 lb. soda, and 15 lb. Glauber's salt.
 17. Red.—Use 3 lb. diamine fast red F, 5 lb. soda, and 15 lb. Glauber's salt.
 18. Red.—A somewhat yellowish shade of red than the last is got from 3 lb. diamine red NO, 5 lb. soda, and 15 lb. Glauber's salt.
 19. Scarlet.—Use 3 lb. diamine scarlet B and 50 lb. Glauber's salt. This gives a very bright shade.
 20. Scarlet.—A bright yellow shade of scarlet is got from 3 lb. diamine scarlet HS and 50 lb. Glauber's salt.
 21. Lilac.—Use 1 lb. diamine violet N, 5 lb. soda, and 15 lb. Glauber's salt.
 22. Plum.—A fine red shade of plum is obtained from 3 lb. diamine violet N, 5 lb. soda, and 15 lb. Glauber's salt.
 23. Green.—Use 1 lb. diamine green B and 20 lb. Glauber's salt.
 24. Russian Green.—Use 3 lb. diamine green B and 20 lb. Glauber's salt.
 25. Bronze Green.—Use 3 lb. diamine bronze G, 5 lb. soda, and 15 lb. Glauber's salt.
 26. Dark Grey.—Use 3 lb. union black, 5 lb. soda, and 15 lb. Glauber's salt. A somewhat darker shade is obtained from 3 lb. diamine black HW, 5 lb. soda, and 15 lb. Glauber's salt.
- The diamine dyes may also be mixed together in any way, so that by their means a wide range of shades can be dyed on jute.

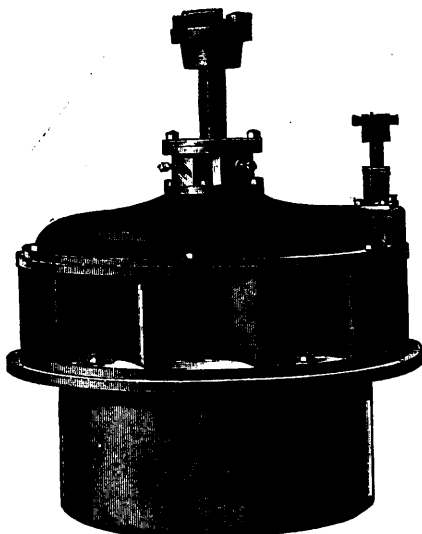
To make edge tools that are brittle and hard hold an edge, put them in boiling fat for two hours. Treated in this way they will retain their hardness without being brittle. Another simple remedy for tools that are too hard is to light a piece of paper and run it across the edge after grinding.—The Industrial American.

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Chenille Axminster Carpet in Philadelphia.

One of the most important transactions of the past month was the organization in Philadelphia of a company for the manufacture of genuine chenille axminster by power. This, we believe, has never before been attempted in Philadelphia, though hand-made axminster of a creditable kind has been made here. The present patent hails from Canada being owned and made exclusively by the Toronto Carpet Manufacturing Company, of which Mr. James P. Murray is president. Mr. John R. White, of Boyd, White & Co., is the principal organizer of the new enterprise, in the formation of which he has had, during two weeks of the past month, the active presence and direction of President Murray himself.

The fabric to be made was exhibited at the Chicago Exposition, in the booth of the Toronto Carpet Manufacturing Company, on the main floor of the Palace of Manufactures. The extraordinary height and deep pile and ingenious back of this axminster deeply interested such experts as stooped to examine. The award given it was the only one granted, so far as we know, to power loom chenille axminster designed as such at the Exposition. This fabric, which was perfected at Toronto, is notable for its remarkable wearing qualities, for the tenacity of its pile (sweeping off being almost impossible), the unlimited range of its colors or designs, and for its remarkable cheapness.

This organization will be styled the White-Murray Carpet Company, its chief business being the manufacture of power-loom chenille axminster carpeting, rugs and mats. The rugs from this fabric are now widely used over Canada, and the makers of late have been unable to keep pace with their orders. The fabric has the same affinity for light and delicate colors that is observed in moquette, but discloses its strength quite as well in dark rich colors. A special emblematic design in crimson, recently executed for the Toronto Athletic Club, is pronounced a remarkably attractive carpet.

The company has been organized on a basis of \$200,000 capital, the intention being at an early date to place the requisite number of looms and to proceed at once to the weaving of goods in Philadelphia. It is presumed that Mr. John R. White will be president of the company, and that the board of directors will include some of our leading capitalists. The promoters feel assured of a quick market for their product, the experimental stage having been passed two years ago in the Toronto mill.

This new axminster and the machinery to produce it is covered by patents both in Canada, the United States and European countries.—Carpet Trade Journal.

A German has taken out a patent for producing varnish from linseed oil by means of an electric current. The oil, after being purified in a proper manner, is thoroughly mixed and agitated with sulphuric acid and water, and subjected to the action of an electric current for two or three hours, so that the oxygen produced in the nascent state by the passage of the current converts the oil into varnish. The varnish so produced is said to be almost colorless and perfectly free from all mineral or metallic admixtures or impurities.

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.

A trunk factory is being started at Richmond, Que., Mr. Caron is the manager.

Bennett & Wilson's cheese factory at Woodburn, Ont., was destroyed by fire on 5th inst.

The Galt and Preston Electric Railway are thinking of extending the line to Hespeler, Ont.

Joseph Gagnon's large saw mills at Three Rivers, Que., were destroyed by fire on 8th inst.

The tarpaulin works of Moorehouse & Snell, Preston, Ont., were destroyed by fire on 6th inst.

The Richlieu and Ontario Navigation Company will build two more boats to be ready for next season.

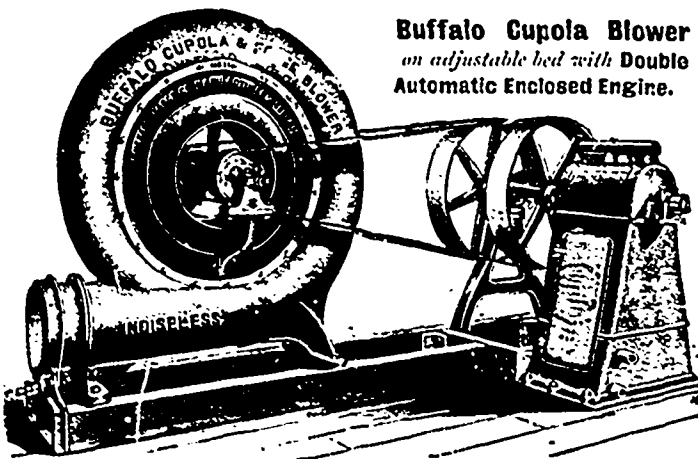
The Corticelli Silk Co., St. Johns, P. Q., are about installing an electric plant for lighting their factory.

The village council of Sweetsburg, Que., are considering the advisability of electric lighting their streets.

Mr. L.E.N. Pratte is expected to take possession of the organ factory at Huntingdon, Que., at an early date.

Messrs. Cronkhite Brothers of Wisawasa, Ont., are talking of moving their woolen factory to North Bay, Ont.

Mr. Hiram Walker, of Walkerville, Ont., proposes to erect a large creamery and cheese factory near that town.



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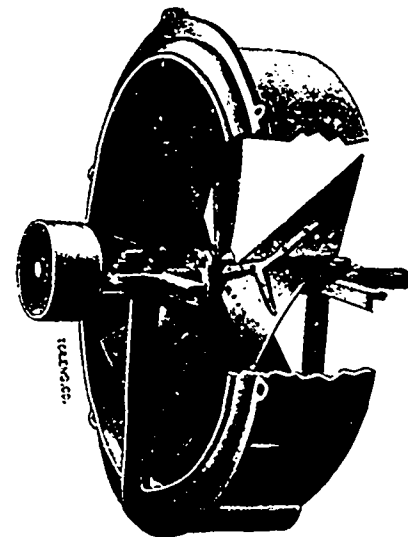
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J. D. McEACHREN - - GALT, Ont.
Rockwood, March 16th, 1893.

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

Yours truly, HARRIS & Co.

Winnipeg will shortly spend \$200,000 on improvements and extension to the waterworks system.

The Dominion Suspender Co., Niagara Falls, Ont., will build an addition to their factory 100x50 feet.

The Electric Light Co., Huttonville, Que., will add another alternating current dynamo to their plant.

Vancouver's electric street railway and lighting system has been sold to an English company for \$350,000.

The Montreal Transportation Co. will construct a new dry dock adjoining their shipyard at Kingston, Ont.

The Bain Wagon Works, of Brantford and Woodstock, Ont., have been amalgamated with headquarters in the former city.

Smith's grain elevator and contents at Portage la Prairie, Man., were destroyed by fire Nov. 11. Loss \$15,000.

The Dominion Glass Company with headquarters in Montreal, has been incorporated. The capital stock is \$100,000.

The St. Maurice Tool and Axe Works, Three Rivers, Que., has been incorporated with a capital stock of \$40,000 and will manufacture axes, hammers, tools, etc.

Messrs. McDougall & Co., Galt, Ont., are building a three-storey brick addition to their works. They also intend putting another storey on the old building in the spring.

The Canadian Fire Extinguisher Company, Montreal, are applying for incorporation. Capital stock \$50,000. The applicants are Joseph S. Bousquet, banker; Moses Davis, broker; O. Marin, notary; G. H. Le Noir dit Rolland, and N. J. Cote, manufacturer, all of Montreal.

The Spanish River Talc and Nickel Mining Company, North Bay, Ont., are applying for incorporation. The capital stock is \$96,000.

Letters patent have been issued incorporating The Petrolia Light, Heat & Power Company, Petrolia, Ont., with a capital stock of \$25,000.

A number of farmers around Comber, Ont., have formed a syndicate and will construct and operate a large cheese factory in that town.

The ratepayers of Meaford, Ont., will vote on the 24th inst. on a by-law authorizing the expenditure of \$20,000 for waterworks purposes.

The Simpson Company, furniture manufacturers, Berlin, Ont., will erect a 140x25 feet five-storey block next their present factory early next spring.

It is proposed to organize a company at Guelph, Ont., to build a rolling mill for the manufacture of iron. James Watt, president of the Guelph Board of Trade has particulars.—Trade Review.

On the 9th inst. the new seven-storey building being erected by the Montreal Street Railway Co. on the corner of Craig Street and Place D'Armes Hill, Montreal, fell in with a crash, killing three men and injuring several others.

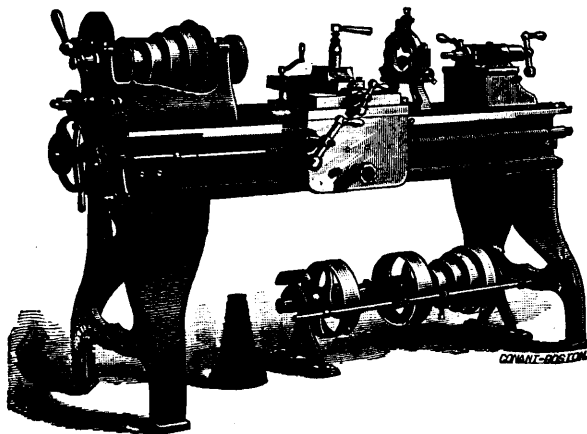
J. D. Cockburn, Crown Lands Agent, and O. Aubin, merchant, Sturgeon Falls, Ont., waited on the Government last week, asking that permission be granted to the township of Springer to vote a bonus of \$7,000 to a pulp mill to be established at Sturgeon Falls. The mill which it is proposed to establish will have a daily capacity of two carloads.

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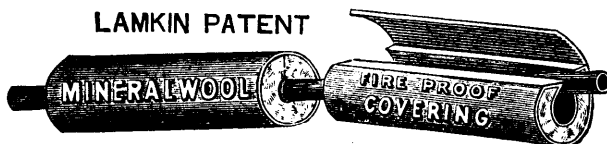
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S. Y. Bullis, Athens, Ont., is fitting up his saw mill for the coming season.

Mr. Running's new flour mill at Frankville, Ont., is expected to be in running order in a few days.

The Temple Electric Company, Montreal, Que., will add a 300 horse-power Corliss engine to its plant.

F.H. Sleeper & Co., Conitcook, Que., are supplying the 500 light dynamo, for lighting of Richmond, Que.

The boilers for the new asylum at Brockville were built by the Waterous Engine Works Co., Brantford.

Mr. J. R. Booth, Ottawa, has bought a site in that city for \$15,000 on which will be built the car shops of the Ottawa and Parry Sound Railway.

The London Electric Company, London, Ont., has been incorporated with a capital stock of \$250,000 to manufacture dynamos and electric machinery.

The town council of Farnham, Que., have not renewed the contract with the Electric Light Company, but are considering the advisability of taking the lighting of the town into their own hands.

The Western Wire and Nail Company, London, Ont., are applying for incorporation with a capital stock of \$50,000. The provisional directors are Thomas S. Hobbs, London, Ont., A. J. Somerville, and Thomas R. Wood, of Toronto.

The Peters' saw mill at Parry Sound, the largest on the Georgian Bay, will be refurnished with new machinery this winter. A dynamo will be put in, and electric power furnished to the lumber cars, and light throughout the mill and yards.—Pembroke Standard.

The Department of Railways and Canals has called for tenders for the Simcoe and Balsam Lake division and also the Peterborough and Lakefield division of the Trent Valley canals. Plans and specifications can be seen at Ottawa or at R. B. Rogers' office in Peterborough, Ont.

A.B. Wilgus, of Boston, representing a company of American capitalists, has made a proposition to the City Council of Brockville, Ont., offering to build an electric street railway in that city. They ask for a twenty-year franchise, an acre of ground for buildings, exemption from taxation and permission to run the cars on Sunday. In return they offer complete and well-equipped electric car service with a 5c. fare. As the question of running cars on Sunday is involved, it is likely that a by-law will be submitted to the ratepayers at the municipal elections in January.

The Cossett Brothers Company, Brockville, are applying for incorporation with a capital stock of \$400,000.

The Canada Sugar Refinery's Works at Moncton, N. B., are undergoing extensive repairs and alterations.

Mr. Smith's roller mill at Jarvis, Ont., was destroyed by fire on 11th inst. Loss \$10,000; insurance about \$5,000.

The Chambers Electric Light and Power Company, Truro, N. S., will add a 90 horse-power Robb-Armstrong engine to its plant.

The Palmerston Woolen Mills, Palmerston, Ont., have shut down for two weeks for repairs. They will add a lot of new machinery.

Mr. Jas. R. Beatty, secretary-treasurer of the town council of St. Lambert, Que., is inviting plans for a suitable system of waterworks for that town.

The Magnetawan Tanning Co., with head office at Burk's Falls, Ont., are applying for incorporation with a capital stock of \$50,000 to do a general tanning business. Messrs. C. G. Marlatt and W. T. Marlatt, of Oakville, Ont., and John Waddie, of Toronto, are to be the first directors.

It is understood that Mr. S.J. Cherry of Preston, Ont., will proceed at once to rebuild his mill which was destroyed by fire on the 3rd inst. The water privilege is a good one with probably something like 70 or 80 horse power at all times, and this accessory to cheap milling is important. The structure, to replace that burned is, we believe, to be of brick, furnished throughout with the latest and most improved machinery.—Galt Reporter.

The Point Abino Street Railway Company are applying for incorporation with a capital stock of \$100,000 to construct an electric railway from Fort Erie to Port Colborne, Ont. The applicants are Leonard McGlashan, Humberstone; T.F. White and Donald McGilivray, Port Colborne, Ont.; John Foy, Toronto; William M. German and Edward C. Raymond, Welland; Eugene Coste, Buffalo, N. Y.; Henry C. Symmes, Niagara Falls, Ont., and Robert G. Cox, St. Catharines.

The Brantford Starch Company, Ltd., are applying for incorporation with a capital stock of \$100,000. The object for which incorporation is sought, is to manufacture and sell all kinds of starch, starch feed, glucose, syrup and other corn or grain products and the packages to contain the same, and to acquire by purchase the necessary property, including the works formerly opened by "The British America Starch Works, Brantford, George Foster and Company (Limited)." The first directors are David Lowrey, J. Coekshutt, H. W. Brethour, H. R. Yates and Edmund Sweet, all of Brantford, Ont.

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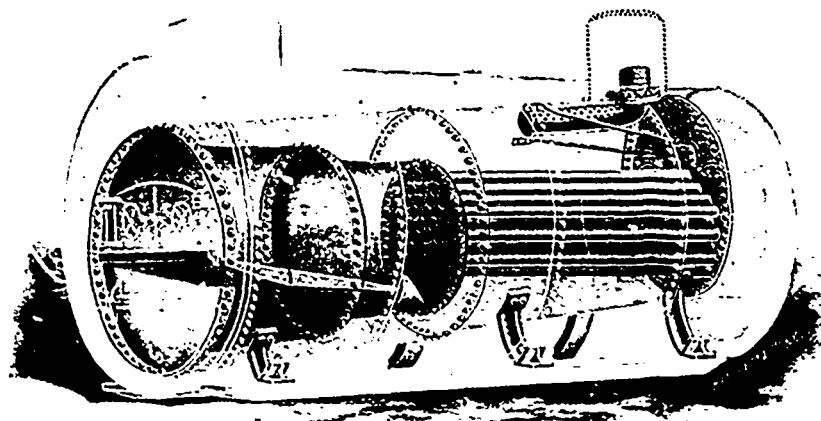
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Robb Engineering Co., Ltd., Amherst, N. S.

A tannery has been started at Portage la Prairie, Man., by Frank W. East.

A. Carnochan & Son have taken over the Lovell planing mill at Niagara Falls, Ont.

An Electric light and waterworks are to be established at Sudbury, Ont., at a cost of \$40,000.

Letters patent have been issued to the St. Stephens Edge Tool Co., St. Stephens, N.B. Capital \$5,000.

The Snowball Wagon Works, St. Georges, Ont., are contemplating moving their works to Hamilton, Ont.

Mr. Walter Blue, Sherbrooke, Que., intends building a factory in that city for the manufacture of ready made clothing.

The City of Moncton, N. B., will take the plant of the Moncton Light and Power Company. The cost will amount to \$25,000.

Mr. C.W. Taylor's sash and door factory at Cookshire, Que., was burned on 7th inst. Loss estimated at \$4,000, insured for \$3,000.

The City Council of Stratford, Ont., propose building a fire hall and electric light station combined and supplying their own light.

Milford, Lalonde & Co., Winnipeg, Man., succeed the firm Nesbit & Lalonde who were running a sash and door factory in that city.

A starch factory is being erected by Mr. Dumas at Lower Grand Anse, Gloucester, N. B., near the Bay of Chaleur.—St. John, N. B., Globe.

James McMillan & Co., of Minneapolis, Minn., are about to open a branch of their business in Winnipeg, Man., for handling hides, wool, seneca root, etc.

Charles Boeckh & Sons, broom and brush manufacturers, Toronto, lately received in one shipment, 500,000 pounds of broom corn. Twenty-eight cars were required to carry the shipment.

The building on Cote St., Montreal, occupied by Dominion Rolled Plate Co., Montreal Watch Case Co., and the Montreal Silk Co., was damaged by fire on 9th inst. to the extent of about \$10,000.

Extensive repairs and improvements are being made to the Hudson's Bay company's grist mill at Prince Albert. The old machinery has been removed. The mill is to be completely remodelled.—Commercial.

The Canadian Pacific Railway car shops at Winnipeg are to be enlarged, the amount of work now called for being greater than the capacity. The car-repairing sheds will be enlarged by an addition 145 feet long by 45 feet wide, covering two tracks.—Commercial.

D. Fisher, Paisley, Ont., will rebuild his woolen mill.

Vancouver, B.C., ratepayers have voted in favor of purchasing an electric light plant at a cost of \$100,000.

The Dominion Government propose erecting two dairy stations in Manitoba this winter, to cost \$4,000 each.

The new water wheel of the Electric Light Co at Smith's Falls, Ont., is placed in position and running nicely.

Wm. Barnum's saw mill near Quakersboro', Ont., was destroyed by fire on 9th inst. Loss \$2,500; insurance \$1,000.

Letters patent have been issued to The Thousand Islands Carriage Company, Gananoque, Ont., with a capital stock of \$50,000.

The ratepayers of Beamsville, Ont., will shortly be asked to vote the sum of \$13,000 to be expended in constructing a system of waterworks.

The Williams Hurlburt Company, Collingwood, Ont., are seeking incorporation with a capital stock of \$11,000. The objects of the company are the general manufacture of all kinds of hosiery and knitted goods.

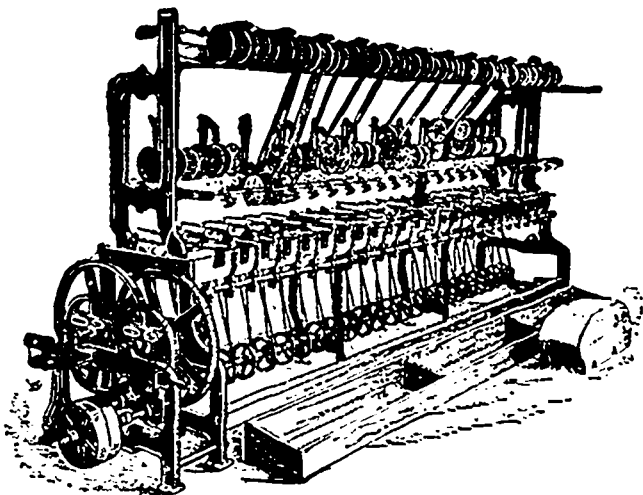
The Valley City Seating Company, Dundas, Ont., are seeking incorporation with a capital stock of \$50,000 to manufacture seats, seating, furniture, etc. R. T. Wilson, J. D. Pennington, Geo. Anderson, James J. Steele, all of Dundas, Ont., are the first directors.

The town council of Sault Ste. Marie, Ont., is reported to have made an agreement with a company of capitalists to construct a complete system of waterworks and electric light. The company also propose to build a large pulp mill and to expend about \$500,000 in three years.

J.S. Playfair & Co., have purchased big saw mills at Midland, Ont., and signed a contract for ten years to supply to Arthur Hill, of Saginaw, Mich., 20,000,000 feet of lumber annually. This means a great boom for Midland. The planing and box factories, will, it is believed, be opened almost immediately.

Some seven years ago the Montreal Cotton Company, at Valleyfield, Que., were working about 1,300 looms; their production of cloth, each week, amounted to about 200,000 yards, which production they found considerable difficulty in disposing of, which was evidenced by the large stocks stored away in their warehouse sheds. Lately their product was about 375,000 yards per week, which they had no difficulty in disposing of. The number of looms running was over 1,000. The weave room plant has now been increased to 2,500, with a weekly production of 450,000 yards.

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James E. Patmore's evaporating works, London, Ont., were destroyed by fire on 8th inst. Loss \$1,000; insured.

The engine for the Kincaidine (Ont.) Electric Light Company which was built by John Inglis & Son, Toronto, was shipped last week.

McArthur & Co., Toronto, have concluded a deal with Messrs. Gilmour, Hughson & Co., for the whole of their next season's cut of lumber.

Letters patent have been issued incorporating the Georgian Bay Portland Cement Company, Owen Sound, Ont. The capital stock is \$95,000.

The Shirra Milling Company of Caledonia, Ont., are applying for incorporation with a capital stock of \$25,000. Robert Shirra, Caledonia, Ont., is one of the first directors.

The Victoria Electric Light Company, Lindsay, Ont., are putting in a Goldie & McCulloch engine, a large boiler, new dynamo and a large generator, and expect to be able to supply light in a short time.

Messrs. Garson, Purser & Co., Brockville, Ont., whose planing mill was destroyed by fire on 29th ult., are removing such of the machinery as they can use to another building which has been fitted up for them.

A company has been formed with a capital stock of \$10,000 to furnish electric light for Summerside, P. E. I. Leonard Morris is secretary. The Canadian General Electric Co., Toronto, have the contract for the plant.

Mr. E. C. Whitney's large saw mill at Long Lake, on the Ottawa and Parry Sound Road, is nearly completed. The mill is built and they are only waiting for the heavy machinery which will be brought up on completion of the railway which is already laid to within ten miles of the mill.

The preliminary steps have been taken towards the organization of a company to construct an electric railway between Ottawa and Brockville. Mr. George E. Kidd, as solicitor for the applicants, has given official notice to the Government that they will apply for an act incorporating the company at the next session.

Jas. Dunsuir, John H. Turner, Thos. B. Hall, F. W. McCrady, R. Menaugh, and Clinton Graham Ballentyne, all of Victoria, B. C., are engaged in floating a company in Hawaii to be known as the Honolulu Electric Railway and Power Co. (Limited), the first object of which will be to construct an electric system in that town. The capital is stated to be \$625,000.

Daniel Shannon, Prince Albert, N.W.T., is building a new saw mill at that place.

A. H. McLane has purchased the milling property at Saw Mill Creek, Hopewell Hill, N. B.

The Mand Hydraulic Mining Co., Vancouver, B.C., are applying for incorporation with a capital stock of \$25,000.

The Stellarton Gold Mining Company of New Glasgow, N.S., are applying for incorporation with a capital stock of \$20,000.

The Light, Heat and Power Co., of Newmarket, Ont., are putting in an incandescent system for the stores and dwelling-houses in town.

Chicago Tanners have started raising canaigre, a weed of the yellow dock family, in the San Joaquin valley, Cal. The vegetable contains 28 to 33 per cent. of tannic acid, which can be extracted at little cost, and shipped to their tanneries in Chicago.

The North-West Shoe Company with headquarters at Montreal are applying for incorporation. The capital stock is \$40,000. The applicants are E. A. Mahon, Winnipeg, Man.; Wm. G. Cameron, Geo. H. Ansley, Walter Binmore, and A. R. Oughtred, Montreal, Que.

The St. Stephen Edge Tool Company, St. Stephen, N.B., have issued a circular in which they say they have taken over the business formerly carried on by The E. Broad & Sons' Company. This company manufacture a very fine line of tools, among which may be mentioned chopping axes, broad axes, hatchets of all kinds, hammers, miners' picks, sledges, shees and adzes. The mechanical department will be under the management of Mr. H. W. Broad, which will ensure the product on of tools in every way equal to those turned out by the old company.

Word has been received from Montreal, by R. G. Lackie, manager of the Londonderry Iron Works, Acadia Mines, N.S., to proceed at once with the work of cleaning out, and relining the blast furnaces. The men have been at work now for some few days, and everyone is glad that this work has commenced. It will take probably till the end of the year to finish the work, and there is plenty of labor now at the Mines to complete this job.

The prospects of better times are also seen in the supply of coke that is daily coming in. Some 600 tons of coke are already in stock and it is arriving daily in quantities of eight to ten car loads.

The outlook is also good for a fair winter's work, as 1500 tons or more of ore are being removed from present exposed positions to the sheds for use in furnaces. It is understood also that the instructions from Montreal, include the mining of ore at the West Mines and men are to commence work there at once. —Moncton Times.

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

Moringstar & Minor have started a chopping mill at Humberstone, Ont.

W. J. Tippins is about to open a factory for manufacturing confectionery at Victoria, B.C.

E. A. Byram's stave and hub factory, Blenheim, Ont., was damaged by fire on 8th inst. Loss \$600; insured.

Forty-eight tons of machinery for the Pilot Bay, B.C., smelter were carried by the Kootenai on her last trip south from Revelstoke.

The St. Thomas Street Railway are applying to the council of the Township of Yarmouth for a franchise for an electric railway to Port Stanley, Ont.

H. O. Bell Irving and Sol Oppenheimer, of Vancouver, B.C., are among the promoters of a scheme to establish a line of steamers between that city and the far North.

The New Glasgow Milling Company, New Glasgow, N.S., are seeking incorporation. The capital stock is \$225,000. Mr. Joseph Howard, New Glasgow N.S., is one of the provisional directors.

R. Kennedy, of Lindsay, and P. Davis & Son, Bobcaygeon, have purchased the grist mill at the latter place, formerly owned by Mr. Needler of Lindsay. Repairs are being made and gristing will commence as soon as the water is let into the canal again.

Mr. Fletcher of the Indianapolis Chain and Stamping Co., of Indianapolis, Ind., has been in the city for the past two days, and has secured the exclusive right of the Wilson and Henderson patent bicycle chain rivet for the United States, they being the largest company in America making bicycle chains. It is admitted by Mr. Henderson that the consideration is about \$17,000.—Brantford Courier.

The engine for the electric light station at Elmira, Ont., arrived there this week.

R. W. Wright, Burford, Ont., has had his flour mill overhauled and added a lot of new machinery.

The Buckingham Manufacturing Company's pulp mill, Buckingham, Que., was totally destroyed by fire on 7th inst.

The Jencks Machine Company, Sherbrooke, Que., are about to put up two very large buildings. These additions are necessitated by their ever increasing business, the present buildings having become inadequate, although they cover a large area of ground.

Messrs. C. B. Wright & Sons, cement and lime manufacturers, Hull, P.Q., have arrived at a settlement with their creditors and as soon as all the legal formalities have been finished, will re-establish business at their quarries and cement works on a more extensive scale than before.

An immense lumber deal is reported to have just been closed by the Ross-Maclaren Lumber Company. It is stated on what may be considered reliable authority that they have entered into a contract to ship 100,000,000 feet of lumber to South Africa. This means that their immense mill on the Fraser, which has been lying idle for a long time past, will start up again, and also the North Pacific mill on Burrard Inlet, belonging to the same company. As both mills combined cannot cut more than some 250,000 feet of lumber a day of ten hours it means work for many men, to say nothing of the big fleet of vessels that will be required to transport the lumber from British Columbia to South Africa. It is understood that the contract, which comprises both dressed and rough lumber, calls for delivery of the whole amount within a year.—Victoria Colonist.

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The Bell Telephone Company have opened new offices this week at Canmore, South Mountain, Suffolk, Inkerman, Hallville and Mountain Station.

The Wentworth Navigation Company, with headquarters at Toronto, Ont., are applying for incorporation. The capital stock is to be \$18,000. The applicants are W.P. Bull, F. Byrne, John Berkinshaw, M.N. Merry and W.T. Merry, all of Toronto.

The Victoria and Black Rock Ferry Company, with headquarters at Kingston, Ont., are applying for incorporation with a capital stock of \$12,800. The applicants are Perry Burns, Buffalo, N. Y.; John Hazlett, J.H. Scott, Joseph Swift, and Wm. Power, Kingston, Ont.

John Flett and Joseph Tait, Toronto; L. C. Raymond, Wellard; R.N. Campbell, Niagara Falls, N. Y.; and G. W. Pound, Lockport, N.Y., are applying for incorporation as The Niagara River Tramway Company with capital stock of \$40,000 to construct and operate a cable tramway across Niagara River.

The Great Northern Transit Company, Collingwood, Ont., have given a contract to John Inglis & Son, Toronto, for the engine and boilers for their new palace boat which is to be used on the Upper Lakes next season. The engine is to be fore and aft compound, the cylinders are 28 and 54x36 in., the two marine fire box boilers are 10 ft. diam. by 14 ft. long and are to carry 130 pounds of steam.

Notice has been given that an application will be made at the next session of Parliament for the incorporation of a company to build a railway from Quebec to Port Simpson on the Pacific coast, with power to make connections with Montreal and with a deep water harbor on Hudson's Bay and to work a vessel transportation service in connection therewith, and to operate telegraph and telephone lines along the railway for the benefit of the public.

From the extensive work now going on in and about the old Victoria Foundry at the Chaudiere, it can be seen that the city council was more than justified in encouraging the saw manufacturing company to locate its new establishment in this city. Improvements are being made on an elaborate scale by the owners—Messrs. P. Whelan, J. W. McRae and T. Ahearn, and the company is equipping it so completely with machinery that it will be one of the first saw factories in Canada. Several car loads of machinery have arrived and more are in transit. The enterprising members of the company, Messrs. Feeney and Bingham, expect to commence operations by December 1st. The alterations to the building will cost about \$7,000.—Ottawa Citizen.

The C.P. Ry. are contemplating a line from Niagara Falls to Buffalo, N.Y.

The Neilson Furniture Co., of Calgary, N.W.T., is applying for incorporation.

Messrs. Darling Brothers, Reliance Works, Montreal, Que., report the following shipments of special machines since our last issue: One 75 h.p. Webster Vacuum feed water heater to John Bertram & Sons, Dundas, Ont.; one improved power elevator to George Mathews Packing Co., Ottawa, Ont.; twelve complete Morse valve reseating machines to S.M. Gartman, London, Eng.

About two years ago two young men named Stagg, who had been employed by The Canada Hair Cloth Company, started to manufacture hair cloth in St. Catharines, Ont. In the spring of 1893 they were joined by C.H. Morse, a railway contractor, who invested considerable capital in the concern, and the firm was then known as Stagg Bros. & Co. The venture seems to have met with poor success from the first, as the ground was pretty well covered before. Mr. C.H. Morse recently became sole proprietor and has now sold out to The Canada Hair Cloth Co., St. Catharines, Ont.

Messrs. John Inglis & Son, Toronto, report they are keeping busy. The following contracts have been filled since our last mention of them: One 40 h.p. Corliss engine for Wm. & J. G. Greey, Toronto, for driving a flour mill in N.W.T. Eight tubular boilers for Bennett & Wright, Toronto, two of which are going to the N.W.T.; two boilers for W. J. McGuire & Co., Toronto; one for The O'Keefe Brewing Co., Toronto; one for The Comet Cycle Co., Toronto; two for the Toronto Furnace Co.; one for Elliott Bros., Kingston, Ont., and one for McKelvie & Birch, Kingston, Ont., also a large storage tank for the Kingsville (Ont.) Water Works.

The Brown & Sharpe Mfg. Co., Providence, R. I., manufacturers of fine machinery, tools, etc., have sent us a copy of their new pamphlet on cutters. Several of their stock cutters are recognized in the pages, but most of the illustrations are selected to suggest the company's facilities for special work. They tell us that there is no limit to the size of cutters, or the number which may be combined in a gang, except the size, stiffness and power of the machines in which they are to be used. They now manufacture 19 varieties and 840 sizes of stock cutters, and can make any size or shape, or arrange for any combination of cutters that may be desired. The formed cutters can be sharpened by grinding without changing their outline. The illustrations in this book are exceedingly handsome; and the company will take pleasure in mailing it to any who may be interested.

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ONTARIO.

J.M. Donnelly has opened a tannery at Calgary.

John Sharpless, of Calgary, N.W.T., has shipped two carloads of butter to Japan.

A by-law to raise \$132,000 for the purchase of the town water-works is to be submitted to the electors of Chatham, Ont.

The Buffalo Forge Co., Buffalo, N. Y., are in receipt of a letter from the engineer of SS. W.H. Gratwick No. 2, which speaks very highly for the efficiency and economy of their forced draught system for furnaces. We take pleasure in giving the letter below:—

Cleveland, O., Oct. 18th, 1894.

The Buffalo Forge Co., Buffalo, N.Y.:

Gentlemen, — The forced draught you put in the steamer "Wm. H. Gratwick 2," is a complete success. We have not been able to get the slack coal and have mostly burned lump, and I find a saving of more than ten per cent. in better combustion in the forced draught against natural draught. This last trip we had on one car of slack coal to try it. I worked the engine for two and a half hours, full stroke, and had more steam than I wanted. I feel satisfied with the forced draught. I can burn anything that looks like coal, and have all the steam I wish for.

Yours truly,

W.F. Sauber, Engr. Str. W.H. Gratwick, No. 2.

Messrs. I. Matheson & Co., engineers, New Glasgow, N. S., inform us they are very busy in their works, having at the present time the following contracts in hand: For Dominion Coal Co., Glace Bay, one 16x42 in. hoisting engine and other smaller contracts; for General Mining Association, Sidney Mines, N.S., two large tubular boilers and engine for driving new ventilating fan; for Dominion Government, two tanks for steamer Stanley; for Caribou Gold Mining Co., a complete outfit for a 10 stamp mill; for Looseland Gold Mining Co., a complete outfit for a 10 stamp mill; for Salisbury Gold Mining Co., a 5 stamp crusher, and for the Dominion Government Department of Marine and Fisheries, nine buoys. With regard to these buoys it is interesting to know they are to be entirely a Canadian product. We believe this is the first time this has been so. The steel plates being rolled by the Nova Scotia Steel and Forge Co., New Glasgow; and the steel being produced from "Ferrona" pig iron produced by the New Glasgow Coal, Iron and Railway Co. Messrs. I. Matheson & Co. further say, "We have commenced the work on the buoys and find the plates in every particular equal to any plates of the same class we have ever used." Heretofore although these buoys have been made up in the Dominion, the plates have been of foreign manufacture.

CANADIAN PATENTS.

The following patents have been issued from the Canadian Patent Office, from August 9 to August 27, 1894, inclusive.

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

Fetherstonhaugh & Co., Bank of Commerce Building, Toronto.
Ridout & Maybee, 123 Bay street, Toronto.
A. Harvey, Central Chambers, Ottawa.
J. A. Grenier, Imperial Building, Montreal.

Copies of American patents corresponding to Canadian patents can be procured from either of these attorneys for the sum of twenty-five cents each.

- 46,791 Automatic electric signalling device, Edward A. Hermann, St. Louis, Mo.
46,792 Art of producing metallic zinc, Parker C. Choate, New York, N. Y.
46,793 Adjustable binder for index files, Francis W. Briggs, Auburn, Me.
46,794 Thermo-electric generator, Harry B. Cox, Hartford, Conn.
46,795 Process for smelting and converting ores, Charles M. Allen, Butte, Mon.
46,796 Electrical measuring instrument, Johannes H. F. Gorges, Berlin, Germany.
46,797 Machine for knitting stockings, Charles J. Filgate, Kingston, Ont.
46,798 Treating or aging spirit, Richard C. Scott, Liverpool, Eng.
46,799 Process of making tanning liquor, Martin Dennis, New York, N. J.
46,800 Cheese-making apparatus, William T. Armstrong, Fresno, Cal., and Henry M. Wilson, St. Louis, Mo.
46,801 Electrical keyboard and circuit-closing devices, Charles E. Allen, Washington, D. C.
46,802 Rug, Andrew M. Newlands, Galt, Ont.
46,803 Automatic electric signalling device for crossings, Edward A. Hermann, St. Louis, Mo.
46,804 Brush supporters for dynamos, The Canadian General Electric Co., Toronto, Ont.

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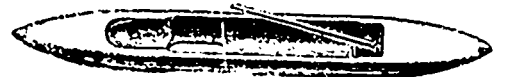
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 46,806 Multicolor printing press, Emma L. Forbes, Boston, Mass.
 46,807 Multicolour printing press, Emma L. Forbes, Boston, Mass.
 46,808 Electric car, Eben M. Boynton, West Newburg, Mass.
 46,809 Regulating sockets for incandescent lamps, etc., Elias E. Ries, Baltimore, Md.
 46,810 Electric railway signal, Frank E. Seagrave, Toledo, O.
 46,811 Paper feeding machine, Thomas A. Briggs, Arlington, Mass.
 46,812 Cigarette machine, Adolph Moonelis, New York, N.Y.
 46,813 Cigarette wrapper cutting machine, Adolph Moonelis, New York, N.Y.
 46,814 Electrodes for secondary batteries, Henry C. Porter, Chicago, Ill.
 46,815 Truss, Carl B. Rostel, Jacksonville, Ore.
 46,816 Feet for dredges, Edward Woods, Sault Ste. Marie, Mich.
 46,817 Buoy for locating wrecks and attaching cables thereto, Fread Canney, Detroit, Mich.
 46,818 Car coupler, Charles S. Park, Montague, Mass.
 46,819 Refrigerating composition, Martin Warner, Yorktown, Ind.
 46,820 Clothes wringer, George B. Dowswell, Hamilton, Ont.
 46,821 Logging system, Richard Lamb, New York, N.Y.
 46,822 Stone and ore crusher, Caleb G. Collins, Woodburgh, N. J.
 46,823 Machine for cutting cigarette wrappers, Adolph Moonelis, New York, N.Y.
 46,824 Machine for cutting cigarette wrappers, Adolph Moonelis, New York, N.Y.
 46,825 Cigarette machine, Adolph Moonelis, New York, N.Y.
 46,826 Electric conduit system, Hiram S. Woolley, Paris, Idaho.
 46,827 Electric mining machine, The Canadian General Electric Co., Toronto, Ont.
 46,828 Electric railway block system, The Canadian General Electric Co., Toronto, Ont.
 46,829 Screws for cheese presses, William Stafford, Lancaster, Ont.
 46,830 Process of extracting nickel and cobalt, Dr. Carl Hoepfner, Giessen, Germany.
 46,831 Nut-lock, Murray C. Slusser and William J. Slusser, Slusser, Va.

- 46,832 Nutmeg grater, George V. Saaw, Savannah, Ill.
 46,833 Horse collar and hames combined, David K. Bill, Hillsborough, Ore.
 46,834 Rollers for reciprocating rods for railway points and signals, Edmund Charrington, London, Eng.
 46,835 Distribution of rotary electric currents, Alard Emile du Bois, Raymond, Berlin, Germany.
 46,836 Alternating current motor, Frank H. Sleeper, Coaticook, Que.
 46,837 Alternating current generator, Frank H. Sleeper, Coaticook, Que.
 46,838 Eccentric spring motor, David Seibert, Sr., Petoskey, Mich.
 46,839 Electric railroad signal, Benjamin C. Seaton, Rochester, N.Y.
 46,840 Pulley, Harry S. Pell, Toronto, Ont.
 46,841 Apparatus for moving and locking railway points and safety bars, Peter Black, Canterbury Road, Kilburn, County London, Eng.
 46,842 Detector bar for switches, James H. Boylett, Poughkeepsie, N. Y.
 46,843 Electric block system, The Electric Selector and Signal Co., New York, N. Y.
 46,844 System of electrical distribution, Waldemar Meisner, Konigsberg, Prussia, Germany.
 46,845 Rheostat, Charles A. Hussey and Charles C. Edey, New York, N.Y.
 46,846 Serture, Odile Feber, St. Hyacinthe, Que.
 46,847 Method of propelling vehicles by electricity, Ries and Henderson, Baltimore, Md.
 46,848 Cart, William Brogan, Mt. Albert, Ont.
 46,849 Child's carriage, Abner Woodward, Shelburn Falls, Mass.
 46,850 Street gully, Louis Lavergne dit Reneaud, Montreal, Que.
 46,851 Railroad switch, The New York Car Switch Co., New York, N.Y.
 46,852 Railway switch, The New York Car Switch Co., New York, N.Y.
 46,853 Joist hanger, Henry A. Goetz, New Albany, Ind.
 46,854 Combined car and air brake coupler, Smith W. Summers, St. Louis, Mo.
 46,855 Thill coupling, Louis Ballback, Detroit, Mich.

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- 46,857 Swing chair hammock, Charles M. Burk, Colborne, Ont.
- 46,858 Hame tug, William Timmins and William E. Moore, Wilsonville, Neb.
- 46,859 Folding bicycle, Michael B. Ryan, Boston, Mass., Charles L. Backus and Charles F. Lincoln, Andover, Conn.
- 46,860 Air brake, Nathaniel B. K. Hooffman, New York, N.Y.
- 46,861 Drive chain, The Gould Bicycle Co., Brantford, Ont.
- 46,862 Revolving pea harvester, Daniel Osborn, Picton, Ont.
- 46,863 Bicycle saddle, Louis L. Richmond, Meadville, Pa.
- 46,864 Hand-saw, William H. Bedell, Monroe, N.H.
- 46,865 Car brakes, C. A. Christin, Ottawa, Ont.
- 46,866 Window and door fastener, James N. Emver, New Castle, Pa.
- 46,867 Bottoms for metal pails, David A. Lisk and Truman V. Fox, Clifton Springs, N.Y.
- 46,868 Lath, Arthur O. Wright, Birmingham, Eng.
- 46,869 Wagon jack, Harry H. Gould, Bay Port, Mich.
- 46,870 Indicator, The Patent Telephone Indicator Co., Chicago, Ill.
- 46,871 Railroad tie and chair, Phillip Wheeler, Branchport, and Geo. H. Pierce, New York, N.Y.
- 46,872 Car coupler, Otto Flohr and Fred C. Loh, Buffalo, N.Y.
- 46,873 Alternating dumping grate, Eli L. Long, and Alvin K. Long, Buffalo, N.Y.
- 46,874 Foot warmer, Robert H. Thielemann, Lichtenstein, Kingdom of Saxony, Germany.
- 46,875 Mechanical movement, Samuel G. Brosius, Savannah, Ga.
- 46,876 Washing machine, Edward C. Brewer, North Yakima, Wash.
- 46,877 Machine for cooling carriage wheel tires, Aron Hassard, Farewell, Ont.
- 46,878 Saw-mill, Alexander McKay, Vancouver, B.C.
- 46,879 Vehicle wheel, Russell A. Shay, New York, N.Y.
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- 46,881 Egg case, Joseph D. E. Lafond, Montreal, Que.
- 46,882 Devices for cutting cards with bevelled edges for photograph mounts, Bernard McHugh, Ottawa, Ont.
- 46,883 Steam shovel, Jack M. Boudrie and Thomas McManus, Rulo, Neb.
- 46,884 Washing machine, Johnson M. Grover, Winnipeg, Man., and Lucien E. Anston, Toronto, Ont.
- 46,885 Combined spring and shackle, Howard K. James and Louis G. Mayer, Lawrenceburg, Ind.
- 46,886 Skate, Thomas Harrison, and E. H. Whelpley, Darmouth, N. S.
- 46,887 High or low water alarm, William Hodgson, Manticoke, Pa.
- 46,888 Steam engine, Thomas Cooper, Great Ryburgh, Norfolk, Eng.
- 46,889 Mode of heating reservoirs in cooking stoves and ranges.
- 46,890 Tire tightening machine, Christopher H. Olson, et al., Vancouver, B.C.
- 46,891 Sulky spring tooth cultivator, The J. W. Mann Mfg. Co., Brockville, Ont.
- 46,892 Fire pot for stoves, Daniel Brazier and William H. Carson, Detroit, Mich.
- 46,893 Hop picking machine, The Mills Hop Picking Machine Co., Syracuse, N.Y.
- 46,894 Milking machine, Elswood Smart, Brockville, Ont.
- 46,895 Metallic piston rod packing, Charles F. Churchill, Melrose, Mass.
- 46,896 Let-off mechanism for looms, John H. Mayer, Waterloo, Ont.
- 46,897 Burial casket, George E. Shaw, Cincinnati, O.
- 46,898 Furnace, Richard Bow, McKeesport, Pa.
- 46,899 Combined swinging chair and hammock, Samuel R. Gilmore, St. Stephen, N.B.
- 46,900 Catch band, Frederick R. Nicholson, Toronto, Ont.
- 46,901 Violin and other musical instruments, Bruno E. Wollenhaupt, New York, N.Y.

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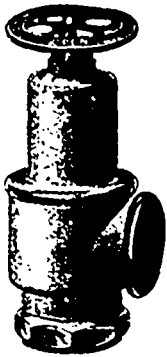
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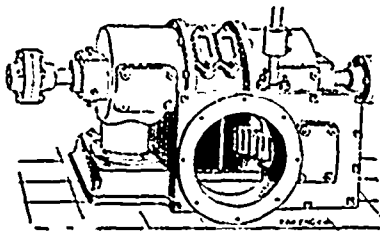
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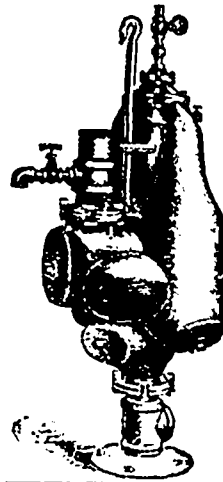
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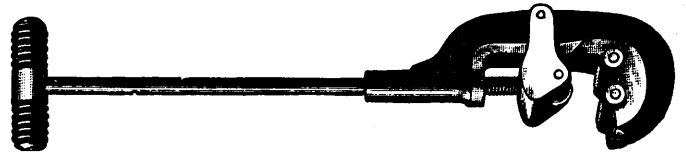
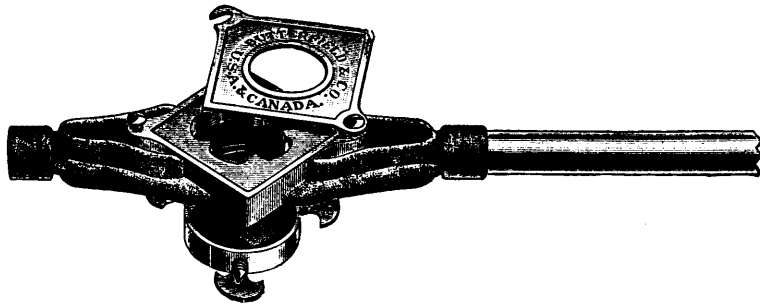
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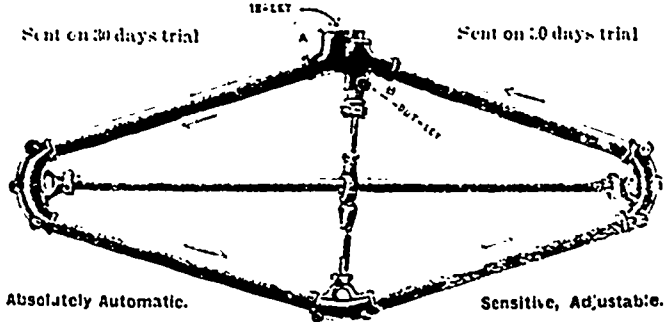
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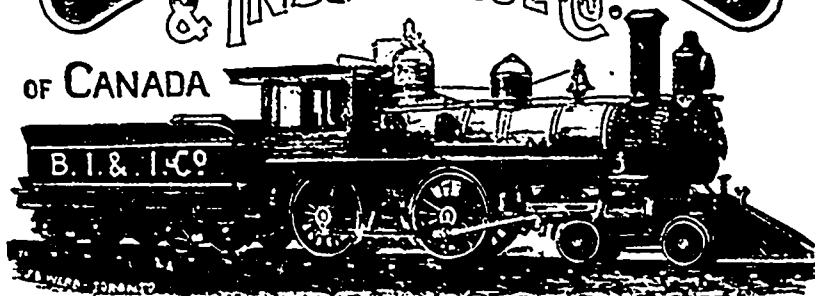
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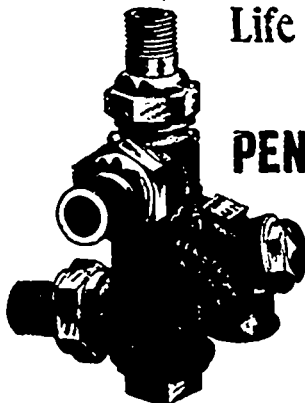
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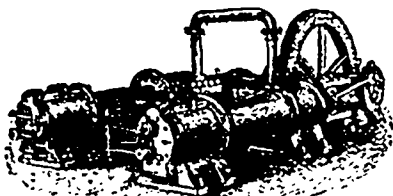


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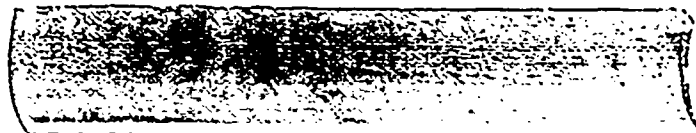
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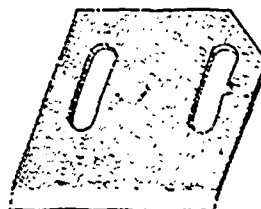
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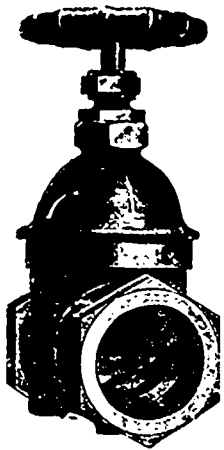
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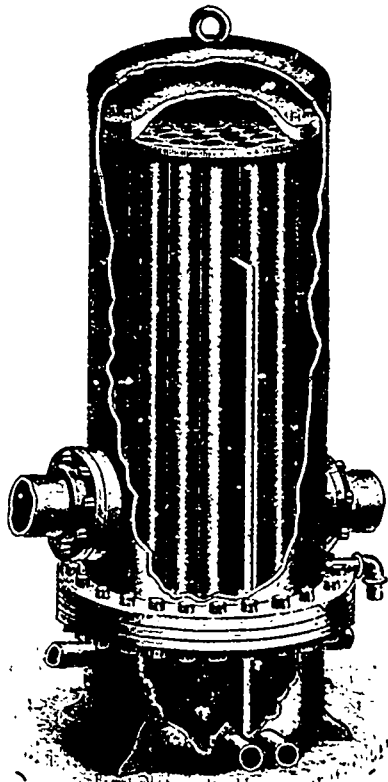
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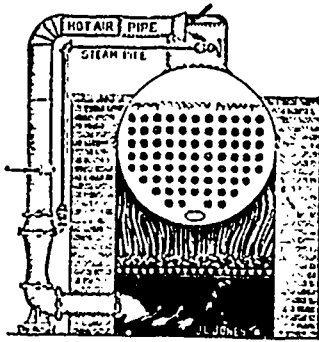


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