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THE CANADIAN MANUFACTURER

DEVOTED TO THE MANUFACTURING & MINING INDUSTRIES OF THE DOMINION.

AND INDUSTRIAL WORLD.

Vol. 5.

TORONTO, OCTOBER 22, 1886.

No. 20.

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THE CANADIAN MANUFACTURER

AND INDUSTRIAL WORLD.

DEVOTED TO *
THE
MANUFACTURING & MINING INDUSTRIES,
OF THE *
DOMINION.

VOL. V.

TORONTO, ONT., OCTOBER 22, 1886.

No. 20.

THE RECIPROCITY QUESTION.

SOME few weeks ago a long despatch appeared in the daily papers, professing to give the details of a Draft Reciprocity Treaty, alleged to have been framed and agreed to by the American Minister and the Foreign Office in London. Our semi-official papers denounced it as bogus, and its elaborate clauses were found on examination to be copied almost wholly from the old Treaty, made in 1854. This Draft Treaty, it was alleged, had been sent to Ottawa for consideration and criticism by the Dominion Government. Only last week, again, another alleged Treaty document turned up. The Boston *Globe* professed to have received it as a cable from London; and it purported to give the essential parts of the Canadian Government's criticism of the alleged Draft Treaty above mentioned. Here let us quote from the alleged reply:—

"As must be known, the Canadian Government in 1878 entered upon a new era in the adoption of a protective system, having in view the best interests of Canadian manufacturers. That policy, then encouraged, has proven commercially of the highest interest to the business community of the country. Their interests and those of this Government are identical.

"To-day manufactories which have been established for years are running with full work, and employ large numbers of operatives in the manufacture of different lines of goods embraced within the schedule. It is considered that while among the articles so enumerated and submitted to this Government, those which are the products of the land might without danger to the commercial interests of Canada be admitted free into each country, yet there are contained within that schedule many articles which the Canadian Government would not care to admit in the interests of the manufacturing community.

"Being therefore fully aware of the deep interest manifested by Her Majesty the Queen, through the Imperial authorities, in her Canadian colony, and that the proposed draft is the outcome of that consideration, the Canadian Government feel their deep obligation to Her Majesty for the interest thus displayed. It should, however, be considered in this connection, that the will of the people as expressed in a marked degree at the polls in 1878, by the election of a Conservative Government to power, and the confidence reposed in that Government since that time on account of the successful carrying out of the policy then inaugurated, shows clearly that the feeling of Canadians would be opposed to the ratification of such a treaty as that proposed in detail by the draft forwarded to this Government for consideration.

* * * * *

"As regards cotton and woollen clothing manufactured, it is said that at the present time over \$10,000,000 is invested in these lines throughout Canada, of which Montreal and Toronto have an interest of over two-thirds. [What about Hamilton? we beg to ask. Surely a remarkable omission, when manufactured clothing is spoken of.] These wholesale dealers,

who are also manufacturers, have invested their capital with the understanding that they would be protected, and not being able to successfully compete with the manufacturers of the large centres of the United States, it is thought that this line should be dropped from the list of free goods.

"The same objection is also made as regards agricultural implements. If the treaty as proposed by the draft were to go into effect, the result is pointed out as being that the makers of self-reapers and mowers in Ontario would be obliged to close their shops, and throw out of employment some 8,000 men, skilled citizens who are at present employed in different vocations connected with the business. Not only would McCormick, but a horde of American manufacturers of self-reapers, binders, mowers, ploughs, and other farm implements, flood the country with their goods, which they would be able to sell in legitimate trade at 20 per cent. discount from the prices now asked in Canada by Canadian manufacturers.

Si non vero, e bene trovato, says the Italian proverb: if not true it is well found, or cleverly invented, to say the least. If the reasons above set forth have not actually been stated by the Dominion Government, as alleged, they are nevertheless such reasons as it would have been the Government's duty to have given, supposing such a Treaty to have been proposed. After having established the National Policy of building up home manufactures by means of Protection, and that with a measure of success really remarkable for an achievement of only seven years' effort, it would indeed be acting a foolish and cowardly part to throw up the sponge now, and thus sacrifice a victory which already is practically won. We can readily enough believe that English free traders would be zealous to promote any new arrangement whatever, with the United States or any other country, if only it held out promise of making a breach in the defences of Canada's National Policy. But no such blundering sacrifice of this country's interests will be consented to by the Canadian people.

On another page we copy an article from the *Toronto World*, in which is stated at length the one great objection which is, and always must be, fatal to all proposals for Reciprocity between the United States and Canada—in manufactured goods. Such Reciprocity would open American markets to Canadian goods—only this and nothing more. But it would open our markets, not alone to American goods, but to British goods as well, and through Great Britain to the manufactures of all the world besides. The same conclusive argument has been repeatedly set forth in our own columns, as readers of the CANADIAN MANUFACTURER can bear witness. There is positively no way of getting over this gigantic and really insuperable difficulty. Time and again have our free traders been challenged in these columns to explain, if they could, how this difficulty is to be overcome. But no such explanation has yet

been forthcoming; nay, the thing has never even been attempted that we know of. And we make bold to add that no such attempt ever *will* be made, at all events not in our day and generation.

Something that *looked* like an attempt to solve this main difficulty of all was made in the framing of the late Mr. Brown's Draft Treaty of 1874. That document contained a rather limited free schedule of manufactured goods, to be free on both sides respectively. The limitation of the schedule, however, was not dictated by any carelessness for the protection of Canadian manufactures, on the part either of Mr. Brown or of the Free Trade Government then in power at Ottawa, which he represented. But it had its origin in the carelessness of the American negotiators, who feared that Canada might become a vast receiving depot for English goods, which would be sent across the frontier by wholesale under the guise of Canadian manufactures: and therefore the list was limited to articles which as a rule are not imported here from England at all, among which stoves and farm machinery are conspicuous instances. And this was no mere imaginary danger, either, for it certainly would have proved a very real one, and one of the most practical kind, too, had the opportunity for "trying it on" been afforded. Of course it is no reflection on Mr. Brown's memory to say that, as a consistent Free Trader, on principle, he would have been only too glad to have put *everything* on the free list, had that been in his power. As things were, he went just as far as he could get the American State Department to go with him, in the mere *draft* of a treaty, which after all was promptly rejected by the Senate.

Still, the question may be asked: Why not endeavour to improve on Mr. Brown's effort of a dozen years ago, and make up as large a list as we can of manufactured articles, such as are not now imported from England either into Canada or the United States, and would not be even were the ports of the latter two countries thrown open to such articles? The reply must be that we have to deal, not with conditions staple and permanent, but with conditions in a perpetual state of flux and change, which may be one thing this year, and quite another thing next year. Just at present the idea of importing base burning stoves or self-binders from England would be counted the height of madness. But the times change, and we change with them. Already an American sewing machine company has its extensive works in Glasgow, manufacturing for European markets there, much cheaper than they can do in or near New York. This part of the subject, however, is important enough to deserve separate treatment.

Of course professed free traders are not expected to care much what disastrous effects upon home manufactures any particular policy may have. Some of them go so far even as to hold that this country, and perhaps other countries too, would be happier and better off without any home manufactures at all—that is, without any such as come into competition with imports from abroad. Factory life and factory work, they say, is bad for any people, and it would be *our* wisdom, at all events, to let manufacturing alone, and for Canada to stick to grain-growing, stock-raising, dairy-farming, and such like. We have timber from the forest, and fish from the sea, in excess of our own wants; and for these we must seek markets abroad, thereby paying for so much of our imports. Canada has also metallic ores of great value; but, as these ores could not possi-

bly be used at home to any extent except under a policy of high protection, our best plan is to sell them to outsiders and get rid of them for what they will fetch. Why, indeed, should we trouble ourselves with such things as iron-smelting furnaces, which require protection to keep them going? Fortunately our enterprising neighbors south of the lakes are willing and even eager to take off our hands all the iron ores, that we can ship on cars or vessels; so let them take these ores, all they want of them. If iron making cannot be established in Canada without protection, then we don't want it all. Our customs tariff should be one "for revenue only," and not at all for protection.

"A tariff for revenue only," indeed! If this be your drift, you had better look before you leap, in the matter of the proposal for a Reciprocity Treaty with the United States, in which manufactured goods as well as natural products shall be included. At present we are importing such goods from both the Mother Country and the States, and that to a very large amount every year. Our imports from the former average about fifty millions worth per annum, mostly manufactured goods, although it must be remembered that tea and other products of distant lands, which we get from England, count for something. From the United States we import about as much, fully half of which must consist of manufactured articles; the balance being made up of tobacco, raw cotton, corn, pork, etc. We shall probably not be far astray if we put our total imports of *manufactured goods*, from Europe and from the United States together, at something like seventy-five million dollars. At an average of thirty per cent. the duty on these goods would be \$22,500,000. But say that we knock off the odd figures, and call the duty collected the lump sum of twenty million dollars.

Where, my wise and witty free trade friend, will your "tariff for revenue" be, if you coolly drop this little trifle of twenty millions out of our annual income? Why, it would be letting the bottom drop out of the Dominion Treasury. Don't you see now, at a glance, that your proposal is utterly visionary and impracticable. The thing is simply outside of practical politics altogether: positively "it can't be did." Admit manufactured goods free from the United States, and you must admit the same kinds of goods free from Great Britain as well. But British export warehouses are filled, not alone with goods made at home, but with the manufactures of all countries, all admitted there free. Therefore, when you open your ports to American goods, you open them at the same time to British goods, and, through British merchants and British shipping, Canadian ports are opened to the whole world besides. The goods being now free, and paying no duty, at least twenty millions of our annual revenue vanishes away, like Aladdin's enchanted palace when the genius of the lamp waved his mighty hand.

Let our Canadian free traders scoff as they please at the idea of Protection for its own sake—that is, Protection for the purpose of building up home manufactures. But they cannot thus lightly dismiss with a sneer the question of revenue. For a revenue the country must have; and on their own showing "a tariff for revenue only" is their particular hobby. They had better now set their wits to work and show how they would replace the twenty millions, at least, which would be lost to the revenue were we to adopt the crazy scheme of opening our ports to the whole world for manufactured goods.

CANADA DOING FOR HERSELF.

THE *Canadian Gazette* (London, England, Oct. 7) thus invites John Bull's attention to the fact that Canada can do a great deal more for herself than he imagines:—Of axes and general tools a rather striking collection may be seen in the Machinery Hall. The *Times* was good enough to inform its readers recently that the Canadian demand for axes, chisels, and the like was met from the United States, at the same time urging English manufacturers to pay more attention to this field. Unfortunately, the leading journal started on a wrong hypothesis, which renders its advice of no value, for Canadians are fully competent to supply their own needs in this direction. Indeed, at the Philadelphia Centenary Exhibition the Canadian display of tools justly aroused much surprise, even when compared with those sent by English and United States manufacturers: and no one will venture to say that the Canadian methods of manufacture have in any way fallen back, or indeed failed to keep pace with the times, in the interval between then and now. The arrangement of this class of exhibits is in many cases effectively managed on the east and south walls of the Machinery Hall, so that a good idea of the implements is obtainable. Among the exhibitors the following may be mentioned:—Mr. William Campbell, of St. John, New Brunswick; Mr. Josiah Fowler, also of St. John, New Brunswick; Messrs. Frothingham & Workman, of Montreal; Mr. Gawen Gilmore, of Montreal; Mr. O. V. Goulette, of Gananoque; the Halifax (Nova Scotia) Manufacturing Company; Messrs. H. R. Ives & Co., of Montreal; Messrs. Warnock & Co., of Galt; the Welland Vale Manufacturing Company, of St. Catharines; Messrs. Wilson Brothers, of Merritton; Mr. R. T. Wilson, of Dundas, and Messrs. Wintermute & Still, of Tilbury Centre.

WHEAT PRICES.

THE *Mail* gives the following figures, showing how present prices for wheat compare with the prices of eight years ago. On October 14, 1878, the prices of spring wheat in Toronto, Chicago, and Liverpool, stood thus:

Toronto	\$.65
Chicago78
Liverpool	1.36

Spring wheat in Toronto was just seventy-one cents lower than at Liverpool, and thirteen cents lower than at Chicago.

On October 14, 1886, the corresponding date for the present year, the prices were:

Toronto	73 cents
Chicago	72½ "
Liverpool	97 "

Spring wheat in Toronto was thus but twenty-four cents lower than at Liverpool, and just half a cent higher than at Chicago. Let us put it in another way: spring wheat is now eight cents higher in Toronto, five and a half cents higher in Chicago, and thirty-nine cents lower in Liverpool than it was on the same date in 1878. If the prices were relatively as low in Toronto, compared with the Liverpool price, in 1886 as in 1878, spring wheat would just bring forty-eight cents in Toronto to-day. It is in the face of these facts that the farmer is told the National Policy has injured him by causing the price of his wheat to be low.

RECIPROCITY.

(From the *Toronto World*.)

WHEN it was published that the draft of a new Reciprocity Treaty had actually been framed in London, and that a copy had been received by the Dominion Government for consideration, semi-official denials came thick and fast. In spite of the denials we ventured the opinion that the story was substantially true, and that there was genuine fire underneath all the smoke. And it looks as if this estimate of the report were about to be proved correct. The *Boston Globe* (quoted by its Toronto namesake) publishes a special cable from London, giving the substance of the Canadian Government's alleged despatch objecting to the Draft Treaty, and our city contemporary thinks that the same has every appearance of being genuine. The main objection is simply this: that while Canada will be happy to accept reciprocity in natural products, as under the old treaty, the inclusion of manufactured goods is out of the question. In 1879 Canada entered upon a new era, in the adoption of a protective system. Under this policy manufactures have grown up and expanded, and the idea of exposing them to be crushed out by free trade cannot be entertained.

Thereupon the *Toronto Globe* falls foul of the Macdonald Government, which it says is opposed to reciprocity, because that would be fatal to the N.P. We agree that it would most certainly be fatal to the N.P., were manufactured goods to any extent included in the free schedule. If articles comprising our leading manufactures generally were included, the most important Canadian factories would close their doors in short order. Time and again have we explained in these columns what is the main reason why this must be so; but we may as well lay our account with it that the explanation will have to be very frequently repeated, for the benefit of the "stupid party" in Canada.

Let us suppose, then, that a pretty extensive free schedule of manufactured articles has been agreed upon, all which are to pass duty free, from Canada into the United States, and *vice versa*. "Is not that perfectly fair," you will say, "just the same for both sides; what objection can there be to that?" We reply that it is most emphatically *not* just the same for both sides—no, "not by a long chalk." To our neighbors the result would be that they would have to admit free all *Canadian* manufactures named in the schedule, but not the manufactures of any other country whatever. Canadian manufactures only, and *none other*, would thus be admitted free in virtue of the treaty. But on our side the difference would be something tremendous. Canada being a British colony, cannot collect duties on British goods while admitting the same kinds of goods free when coming from a foreign country. Such a treaty, therefore, would open our markets, not only to American products, but to British products as well. But even this is not all, for British export warehouses are filled, not alone with goods of home production, but with goods from France, Belgium, Germany, and elsewhere on the continent of Europe. To distinguish the latter from British-made goods is *mostly* impossible; and all the more so from the fact that the market is flooded with continental goods, got up expressly in imitation of saleable British makes. This is something to the truth of which our own importers and buyers can abundantly testify. And Great Britain, be it remembered, admits free the manufactures of the whole world, except in cases where a customs duty on the imported article is necessary to balance an excise duty on the home product. The result would be that, whereas our neighbors would be opening their ports to *Canada only*, we would be opening our ports to *Great Britain as well, and through Great Britain to all the world besides*.

Under the former Reciprocity Treaty this difficulty did not occur. For, although the articles scheduled free from the States had also to be free when imported from the Mother Country, yet our interests were not affected, inasmuch as the scheduled articles were all such as we do not import from

beyond sea at all. There would be no import of English wheat, or flour, or pork, or beef, into Canada, duty or no duty. Coal and salt form the only possible exceptions that occur to us just now; and they could never count very heavily. Between a treaty confined to natural products only, and one including manufactured goods as well, the difference is simply immense—*to Canada.*

This is the one great difficulty in the way of making free exchange of manufactured goods between Canada and the United States. Other difficulties have been stated, which might be got over some time, and in some way or other, who knows? But this difficulty is insurmountable; positively it cannot be got over, "no how you can fix it," as a Yankee might say. We see no hint of it in what the *Boston Globe* reveals to us of the alleged Canadian reply, objecting to the London Draft Treaty. But from a Canadian point of view the reply, or what we see of it, is amply sufficient. Ministers who should sanction reciprocity with the United States in manufactured goods would be guilty of high treason to their country's interests. And supposing all that we have heard to be true, Sir John and his colleagues deserve the thanks of the country for having had the courage to say "No," in spite of the blandishments of London and Washington combined.

It was in 1874, a little over twelve years ago, that the Brown Draft Treaty, providing for only rather a limited free schedule of manufactured goods, was given to the public. And the present writer thinks it not at all out of the way to state that promptly on the nail he explained, in a leading journal, the fatal objection above set forth—the fact that free trade, professedly with the United States only, would in effect open our ports to the whole world, so far as the American free schedule was concerned. No attempt to answer this objection, or to suggest how the difficulty might be got over, has ever yet been made, that we know of. And it is safe to say that no such attempt ever will be made; or that at all events if really made it will not be paraded in print. The difficulty stands there, gigantic and insurmountable; and stand there it will while Canada remains a part of the British Empire.

THE STATE OF TRADE.

(From *Weekly Review in the Montreal Herald*, Oct. 18.)

THE improvement in the distributive movement noted last week has been well maintained throughout the present one, and the general aspect of commercial affairs is one full of satisfaction and encouragement. From all sections of the country reports are coming in of renewed activity, and a preparation on the part of storekeepers for a good fall business. Notwithstanding the excitement attending a general election, such as that which has convulsed the Province of Quebec during the week, business men were fully alive to the commercial requirements of the hour, and a very fair volume of trade has been maintained in all departments. Travellers are sending in satisfactory orders, and report prospects good and business improving in all directions. Prices of all descriptions of merchandise are firm and a hardening tendency is apparent. The general aspect of business affairs is encouraging, and business men generally are satisfied with the prospects.

COTTONS AND WOOLLENS.

The feeling is good and prices are very firm. In some classes of goods, sold for spring deliveries, jobbing houses are pressing for a portion of the deliveries now, and are willing to take them at present dates instead of at spring dates. This is of itself a proof of a healthy demand prevailing at the present time. Some manufacturers have, in fact, undertaken as much, if not more, than they can really accomplish within the time allotted to them.

DRY GOODS.

This department of trade, so easily affected by atmospheric changes, reports that notwithstanding the excitement attending election matters trade in the city has been very satisfactory all

round. The retail people say they are doing better than at the same date last year, and the wholesale trade say ditto. Travellers are sending in fairish orders, and the country shop keepers are apparently not afraid to buy. Woollens continue, we are told, to advance in price, and manufacturers are very chary about booking orders ahead, unless they have the wool on hand to make the stuff so sold. Cotton manufactures are held firmly, and we hear of a slight advance in some lines of white shirting, and any change which may now take place will, it is expected, be in the direction of higher prices. Remittances as the month wears on show an improvement, and one of our friends whom we interviewed told us that up to the 13th of this month there is a decided improvement over the corresponding period of last year.

IRON AND HARDWARE.

In the British markets pig iron is strong, and a further slight advance in maker's brands has been effected. Middlesborough iron especially is very firm at an advance of about 2s. per ton, consequent, we believe, on the action of the coal miners and the reduced output. The feeling seems to be that the turn in the market has certainly come, and that much higher prices may be looked for in the future. Whether this expectation will be realized is a difficult matter to judge, as the course of the iron trade in the past two or three years has not been very bright. In the local market the difficulty in securing ocean freights combined with increased first cost of iron has made holders very firm in their ideas. Some of the larger buyers in the West do not feel inclined to respond to this advance, and they will likely have recourse to the hand-to-mouth system of purchasing during the coming winter. Sales have been made at \$17 @ \$17.50 in Montreal for leading brands, and at \$18 @ \$18.50 delivered at Western points. Bar iron is very firm in England, but prices have not advanced beyond the \$1.60 basis, at which figure some good sales have been made. Tin and Canada plates are dull. Other metals are unchanged. Shelf hardware is meeting with a good demand. The general aspect of the market is very encouraging, and manufacturers generally look forward to a better and more paying trade.

SUGGESTIVE FIGURES.

A RECENT work published in London, entitled "Our Colonies and India," throws light on one phase of the importance to Great Britain of her colonial possessions. The statement is made—and is accepted by so good an authority as the *Spectator*—that the yearly consumption of British goods by foreign countries is in France, Germany, Holland, Belgium, and the United States an annual average of ten shillings sterling per head of their respective populations. Meanwhile, the annual average per head for Canada is two pounds, for South Africa three pounds, and for Australia eight pounds. On which the *New York Herald* remarks that this enormous difference in favor of the British colonies is very suggestive, and ought to be a hint to American manufacturers and producers.

OUR CARD BASKET.

THE following is a list of those who have favored us with a call since the date of our last issue:

W. F. Dalley, of Messrs. Dalley Bros., Hamilton; W. B. Campbell, of the *Budget*, Toronto; Wm. Bell, of Bell & Co., organ manufacturers, Guelph; R. R. Pringle, Cobourg; Jas. R. Armstrong, of the Jas. R. Armstrong Manufacturing Company, Guelph; J. R. McLaren, of Messrs. J. R. McLaren & Co., Montreal; F. G. Bullock, Otterville; R. H. Merriman, Hamilton; Mr. McKechnie, of Messrs. McKechnie & Bertram, Dundas; Messrs. Hemming Bros., case manufacturers, Toronto; R. Simpson, Toronto; A. G. Mortimer, Editor *Canada Lumberman*, Peterborough; Thomas Colgan, of Messrs. Colgan, Bros., tanners, Mount Forest; A. L. Jarvis.

THE
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AND INDUSTRIAL WORLD.

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Secretary Canadian Manufacturers Association.

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Communications from Manufacturers, Exporters, and others, are respectfully invited.

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Editorial Notes.

The window glass manufacturers of Pittsburg have taken preliminary steps towards the formation of a national syndicate, the object being to advance and maintain prices.

Following the lead of the pork packers, the Chicago coopers have gone back to work on the ten hours system. The employees of the Union Stock Yards Company's blacksmiths shops have done the same, and the section hands have also gone back to work at ten hours.

One of the most recent London cables says that with the exception of some slight feeling of dissatisfaction in Australia, the idea of an Imperial Institute to celebrate the Queen's jubilee is meeting with general favor, and contributions from the colonies are arriving daily. It is stated in London that Canada will subscribe £50,000.

The latest from the knitting mill district in York State is that the mills of the Manufacturers Association which were running on Monday were still in operation on Tuesday. Some proprietors report an increase in the number of their employees. The Knights of Labor are orderly and determined. Cohoes seems now to be the battleground more than Amsterdam. [For a further account of the troubles in this district see "Textiles."]

In the Grand Trunk half yearly report, issued in London on Monday last, the Directors state that the causes of the depression, dwelt upon in the last report, have now in great part passed away, and business appears to be reviving in the States and Canada. The harvest was satisfactory, and, on the whole, the figures for the last half year, with the results during the current half year, are considered encouraging. The progress made by the company towards recovery from the effects of the depression shows that its recuperative power is reassuring and satisfactory.

The second Hudson's Bay expedition appears to have established this much - that the route is safe and practicable for at least three months every season. That would suffice for one trip down to the southern extremity of the bay and out again. But even were the open season stretched a little over the three months, it would not suffice for two trips. The question now is - would it pay to keep a fleet of suitable vessels for the one round trip per annum? The answer to which must depend upon whether the vessels could find employment elsewhere during the rest of the year.

The shepherd boy in the fable cried "wolf, wolf," so often, when no wolf was there, that at last the people did not believe him when the wolf actually came. In like manner the cable despatches about "wars and rumors of wars" have become so monotonous that now we pay scarcely any heed to them. And yet it may be that what has been long delayed is about to come at last, and that a great European war is among the

All Manufacturers are invited to become members of this Association. Full particulars will be furnished on application to the Secretary.

things appointed for the opening of 1887. In European capitals the belief is gaining ground that the coming winter is to be spent in diplomatic delays for outside appearance, with war preparations going on all the time and scarcely concealed; and that next spring will witness the outburst of the volcano.

The strike of the Chicago pork packers for eight hours has collapsed, and the men have returned to their work of ten hours per day without making any conditions. They got sickened the "walking delegate" at last, and said that instead of obeying his orders any more they were going to act for themselves. This would have been a happy conclusion to the strike but for one unfortunate occurrence. As a train carrying some new comers home again to where they came from was starting out, a disturbance commenced and a volley was fired by the Pinkerton armed band, the result being, that one man was killed. This will bring about a searching investigation, with the probable result that the Pinkerton army will be deprived of its supposed power to enforce martial law.

AMONG our newest enterprises is that of the Canadian Anthracite Company, which has just been organized with a capital of half a million dollars, for the purpose of working and developing the Stewart coal mines, near the famous hot springs at Banff, North-West Territories. The necessary deposit of \$50,000 has been made with the Government, and letters of incorporation will be issued in a few days. The principal promoters, who have associated with them several wealthy American capitalists, are Senator Sharpe, of Wisconsin, and Mr. McLeod Stewart, of Ottawa. The mine is located at a short distance from the Canada Pacific Railway track. One seam crops out of the surface and extends three miles in length. A shaft has been sunk. Two seams are estimated to contain upwards of 950,000 tons of anthracite coal.

A RAILWAY through Ontario territory, from Lake Nipissing to the south-eastern extremity of Hudson's Bay, is talked of; and a company to build it has already been formed. This railway, it is said, will be much easier of construction than the one which is to be laid down between Winnipeg and Fort Churchill. More important still, we have the authority of the Geological Survey for it that the country to the south and east of the great Bay abounds with extensive and valuable deposits of coal. Suppose this to be proved true, and the coal were found easily come-at-able, as we may say, Ontario would have her own coal supply. Much of the coal now consumed in this province is carried over more miles of distance than the Hudson's Bay coal would have to be carried. Ontario business men, manufacturers especially, should surely interest themselves in a project which promises to aid with a giant hand the productive capacity of the province.

THE Canadian Pacific is bound to have an Atlantic sea-board connection at New York as well as at Boston and at Dominion ports. It is stated in Montreal that when the new bridge at Lachine is finished, the C.P.R. will be able to lessen the time greatly between that city and New York by having a more direct line than now exists. The roads that will be used for

the Canadian Pacific traffic are the Central Vermont, the Bennington and Rutland, and the old Lebanon Springs road, as the northern section of the new line requires only ten miles of road to be built, and that section is now in course of construction, and will extend the Lebanon Springs road to the Stateline between Massachusetts and New York, where connection may be made with the Housatonic railroad. The idea is to use this road as far as Norwalk and enter New York by the New York, New Haven and Hartford railway. This would be a straight line from Montreal through New England to New York.

FROM Montreal we hear that the shipping trade between Antwerp, Belgium and Hamburg and that port has never been as extensive as during the season now coming to a close. The steamship lines which Messrs. Munderloh and Co. represent as general agents there have made thirteen round trips, and two more steamers will arrive before navigation closes. Every vessel has come out completely loaded with general merchandise, foreign gin forming a large part of the freight. For one firm in Ottawa, the steamship *Kehrwieder*, now unloading at Montreal, had one thousand barrels of gin. It is understood here that the gin is consumed in the logging camps during the winter. Every vessel of the two lines returned from here with full cargoes of Canadian produce, consisting of wheat, flour in bags, corn, barley, rye and peas, and asbestos and phosphate, both of which latter are in good demand abroad. The trade with Belgium and Germany has wonderfully developed, as will be proved at the end of the season when the comparative returns are made out. The number of cities and towns in Ontario to which merchandise is consigned is very large, and an extensive amount is also received for Chicago and other places in the Western States. It is expected that there will be a weekly line established next summer to meet the increasing trade.

THE *Lumberman's Gazette* (Bay City, Michigan) says that just one year ago last week vessels were carrying grain from Chicago to Buffalo for 1½ cents per bushel, and bringing back coal at forty cents per ton. Rates for transporting ore were on a basis of sixty cents a ton from Escanaba to Cleveland. Even at those rates vessels went begging. This year the begging has been on the side of the shippers, and so great has been the competition for vessels that rates have ruled higher than at any time since the memorable financial crash of 1873. In fact, grain by lake and canal from Chicago to New York has been shipped at the same rate it would have cost to have have sent it through in cars, thus elevating the lake interests to an even level with the trunk lines. Five cents a bushel has been paid on corn from Chicago to Buffalo, and vessels are now bringing back coal at seventy-five cents, while \$1.60 is refused for carrying ore from Escanaba to Cleveland. Last year a steamer carried a cargo of corn to Buffalo, and the freight aggregated \$1,200. She left with a similar cargo last week, and at the end of her voyage will receive \$1,000. Her expenses for the two trips were precisely the same. And our contemporary adds that the improvement in the iron trades, with the consequent increased demand for Lake Superior ores, has done it all.

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SOLE AGENTS FOR

PHOENIX BELT OIL

The Only Perfect Belt Dressing.



IT will make the leather more durable.
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 It makes the leather perfectly water-proof. Belts dressed with this oil can be and are run in places where the temperature reaches 160 to 175 degrees, while in the other extreme, we have endorsements from owners who run their belts in ice houses. Indoors or out, in any kind of weather, wet or dry, hot or cold; belts thoroughly dressed with Phoenix Oil will always run satisfactorily.

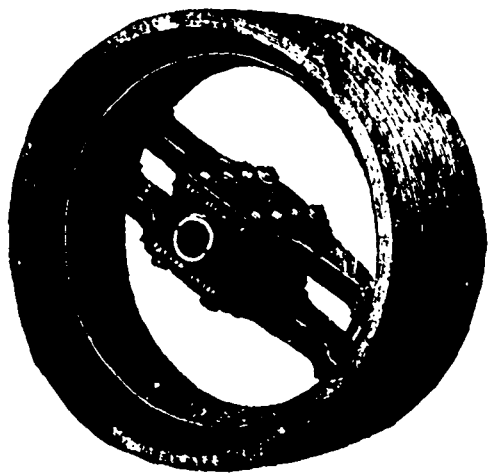
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Best Belt Surface, Lightest, Strongest, Best Balanced, and Most Convenient Pulley in the World.

EVERY PULLEY A SPLIT PULLEY.

The hole in every pulley can be readily bushed to fit any sized shaft. Bushings furnished with each pulley. Guaranteed to give from

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We will furnish a Pulley for any size of shaft, free for 30 days free of charge, if it does not meet the warranty. Prices as low as any other good Pulley. Send for Catalogue, Price List & Guarantee.

70 PER CENT. LIGHTER THAN CAST IRON

And 50 per cent. Lighter than Wrought Iron or Steel Pulleys.

READ THE FOLLOWING.

NORTHWESTERN MANUFACTURING & CAR COMPANY,
SMATTO & DENNIS, MINNEAPOLIS, MINN. STILLWATER, MINN., August 15, 1884.
Gentlemen: You ask why we use the Dodge Patent Pulley. I answer because we consider them the cheapest, most convenient and satisfactory in all particulars.
Yours truly,
S. R. SIMON, General Manager.

C. L. RICE, AGENT, CHICAGO, ILL.
OFFICE OF NEWTON WAGON CO.,
BATAVIA, ILL., Feb. 17, 1885.
Dear Sir: Replying to your favor, will say that after using the Dodge Wood Split Pulley for a year or more we are satisfied they are a good thing, if not the best Pulley made, and shall use them hereafter in preference to any other we know of.
Yours truly,
NEWTON WAGON CO.

We have sold these pulleys for one year, and they have been put to every kind of service and their popularity is wonderful. We refer to the following users for proof of the above statement: Pillsbury & Hullbert Elevator Co., Minneapolis; N. M. Pratt & Co., Elevators; Northern Pacific Elevator Co.; The Pacific Elevator Co.; Minneapolis Harvester Works; Minneapolis School Furniture Co.; M. & S. L. R. R. Co.; Willford & Northway; Washburn, Crosby & Co.; St. Paul Electric Light Co.; St. Paul Roller Mill Co.; Minneapolis Brick Co.; N. W. Mfg. & Car Co., Stillwater, Minn., and very many others.
SMATTO & DENNIS, MINNEAPOLIS, MINN.

W. H. DODGE, PROPET.
THE WORLD'S INDUSTRIAL AND COTTON
Dodge Mfg. Co., MINNEAPOLIS, ILL. CENTENNIAL EXPOSITION,
NEW ORLEANS, March 19, 1885.
Dear Sir: I have a number of your Patent Wood Split Pulleys in use here at the World's Fair and Cotton Centennial Exposition, driving Dynamos for Electric Lighting. They are doing heavy work, and are held upon the shaft by the compression of wood on iron. They hold tight, and do not slip. I have watched with a great deal of interest the many Pulleys of your make running at this Exposition; and I think them the best Pulley I have ever seen. I believe them to possess the following points of merit over any other Pulleys: All Pulleys being split or in halves, best belt surface; best shaft fastening; best method of uniting Pulleys to shafts of different sizes; best balance; lightest on the shaft; strong, and I believe durable. I heartily recommend them.
Yours very truly,
S. H. GILMAN,
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Waste of Power.

According to the best scientific authority it costs one horse power to keep in motion one ton of metal or weight; thus for every unnecessary 200 pounds weight on your line shaft, cost you one horse power. To maintain a horse power costs from \$1 to \$125 per year. Any manufacturer who will take the pains to investigate the necessary weight of Heavy Iron Pulleys, see light belts, etc., will be surprised to find the enormous waste of power consumed in this manner. 50,000 Dodge Patent Wood Split Pulleys now in use. Our capacity being now equal to 100 Pulleys per day, we shall hereafter keep in stock for immediate shipment all sizes.

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THE DODGE WOOD SPLIT PULLEY CO.,

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TAKE NOTICE:--Our List of Prices for the DODGE PATENT WOOD SPLIT PULLEYS is for ALL SPLIT-PULLEYS.

We beg you will note this fact when comparing our List with others which are for SOLID RIM, and NOT for Pulleys in HALVES.

Business Notes.

THE bailiff has possession of the nursery of R. P. West & Co., of London.

W. H. SCOTT & Co, jewellers, at Cobourg, are asking an extension from creditors.

THE effects of Ross Bros. & Miller, refiners, London, have been sold by sheriff at 50c. on the dollar.

THE Essex Centre Manufacturing Co. have sold out their extensive saw mill to T. H. Decew.

CREDITORS have closed out the dry goods stock of A. C. Larose, of Ottawa. The stock sold at 68 $\frac{1}{2}$ c. on the dollar.

H. T. WATERMAN, of the grocery firm Waterman & Co., Ottawa, is reported to have left that city, leaving rather heavy liabilities.

S. C. HERSEY, an old established general store keeper at Exeter, has assigned in trust.

H. S. RUPERT has absconded from Drumbo, and his grocery stock is in the hands of the sheriff. He owes about \$4,000.

A COMPROMISE of 60c. on the dollar has been agreed to by the creditors of G. Barbeau, of St. Genevieve, Quebec.

BULL & Co., of Thorold, who have had a rather chequered business career, have again assigned in trust to E. R. C. Clarkson.

THE bailiff has seized the tailoring stock of Taylor & Co., of this city. The firm have not been paying their rent, hence the seizure.

JOSEPH HOLDEN, of Harbor Main, and Matthew Fleming, of St. John, Newfoundland, both store keepers, have been declared insolvent.

THE McClary Manufacturing Co. have forced the tinsmithing firm of Cummer & Anderson, Wallaceburg, to assign. They owe about \$2,100 and expect to get a compromise.

A. K. KERR & Co., an extensive dry goods firm in Hamilton, are asking an extension spreading over 12 months. The firm show a surplus of \$17,000, their liabilities being placed at \$35,000

O'DOHERTY & Co., commission woollens, Ottawa, are endeavoring to get an extension, showing liabilities about \$3,000 and nominal assets of about \$5,000. The extension is to spread over twelve months.

C. B. GRIFFIN, dry goods dealer, Dunnville, had a meeting of creditors on the 13th inst., when it was decided to advertise the estate for sale. He carried on business at Acton for several years and moved to Dunnville in January, 1886.

A DEMAND of assignment has been made upon McCrosy & Clossan, brewers, of Montreal. The firm started business in October, 1885, and they are believed to be solvent, but the assignment is made in order to hasten a dissolution—the partners not agreeing.

THOMAS BORBRIDGE, dealer in dry goods at Ottawa, has compromised at 35c. on the dollar at three and six months, secured by S. & H. Borbridge. The liabilities amount to \$6,000 and assets \$4,000. The business was established over fifteen years ago.

A STRIKE took place in the shoe factory of Sharpe & McKinnon, of Montreal, which has seriously affected their business. The principal creditors agreed to grant them an extension of three, six and nine months, and the firm claim they have a surplus of \$35,000.

FOR several years past Alexander Weir, shoe dealer of this city, appears to have been going behind. He gave a chattel mortgage in July last to Charlesworth & Co., for \$2,500, and has now assigned owing almost \$4,000. The assets nominally amount to the same amount.

GEORGE WRIGLEY, the publisher of the St. Thomas *Courier*, is asking an extension of fifteen months from November, 1886, which creditors are likely to grant. The unsecured creditors are less than \$600. Partnership troubles are said to have brought about the present difficulties.

THE Ontario Bank have foreclosed a mortgage of \$100,000 which they have held on the limits and plant of W. J. Trounce, lumber dealer, Port Perry. The liabilities outside the bank will not exceed a few thousand dollars and the assets are expected to realize sufficient to satisfy the received claims.

GEORGE HELSON, who has been carrying on a tannery at Ashburnham since 1882, has assigned to the Sheriff, and his affairs are being investigated. His failure brought about that of J. W. Millar, of Peterboro', who has been depending upon Helson for supplies. Millar's stock is chattel mortgaged.

W. J. OVENS, who has been managing the grocery and liquor business of Ovens & Co., Winnipeg, is reported to have absconded. His father-in-law (D. G. McBain) has seized the stock, under a chattel mortgage of \$3,500. The wholesale dealers are under the impression that there is fraud somewhere.

At a meeting of creditors held at the office of McLachlin Bros., of Montreal, Robert Ritchie, of Pakenham, showed his liabilities to be \$2,500, with assets of \$3,600. An extension will likely be granted him, but creditors are having stock taken, so that the figures may be verified. Ritchie has been in business about ten months.

IN New Brunswick the following assignments are announced:—M. Nodeau, general dealer, St. Francis; J. P. Michaud, general dealer, St. Hilaire; I. T. & P. McKeon, tailors, St. Stephen; G. H. Gray, grocer, Portland. Amos Malevern, of Derby, has been closed out by sheriff, and H. F. Proctor, lumber dealer at Waterford, is offering 50c. on the dollar.

THE failure of Charles Stern of this city, has surprised creditors, representing about \$70,000, a large portion of the indebtedness being in Canada. Hugo Block, a brother-in-law, is creditor for \$16,000, and several others interested, variously from \$4,000 to \$6,000. No statement of assets has been made, but a large quantity of goods are held in several warehouses in the city, on which advances have been made. The deficiency will likely be large.

A RECENT patented invention that promises a radical change in the method of coal mining, consists in a machine intended for cutting coal near the floor, and the inventor claims that it will do away with slack almost entirely.

A WEAK galvanic current which will often cure a toothache may be generated by placing a silver coin on one side of the gum and a piece of zinc on the other. Rinsing the mouth with acidulated water will increase the effect.

THE shipments of buffalo bones from the Northwest are growing larger. From twenty to twenty-five Canadian Pacific cars loaded with this class of freight arrive at Fort Benton, Ma., every week, consigned to fertilizing works in the East.

How strange this world is spinning round,
Its course we cannot alter,
The man without a fault is found
To be a big defaulter.

A BIG BOOM IN BUSINESS.

IN THE UNITED STATES TRADE DEPRESSION GIVING WAY TO PROSPERITY.

THE New York *World* of a recent date published a lengthy article on the prospects of trade. It says: "The long period of depression in business seems now to be giving way to one of prosperity. Merchants and general tradesmen agree that the prospects of the fall trade are very bright. There is no boom, but a steady, healthy growth. Every one sees indications of better times. It is the universal opinion in commercial and financial circles that not only is the present condition of business better than it has been for a number of years past, but that the future is of greater promise than for a long time."

The bustle and activity in the drygoods district is apparent to all who visit that part of the city. That trade is generally the first to feel the good times. Big jobbing and commission houses are lighted up at night and the sidewalks are lumbered with barrels and boxes. Far into the night men pack goods for shipment. The streets in the drygoods district are lined at night with trucks piled high with merchandise and covered with tarpaulins, ready to be started at daybreak for the steam wharves and railway shipping offices.

Confidence has been restored among investors, and new enterprises are being promoted in Wall-street. The banking institutions are encouraged, and holders of railroad securities are delighted by the increased earnings of the lines, from freight, which clearly shows that goods are being transported everywhere in large quantities.

Iron has advanced in price in the face of the largest production ever known. Croaking and complaints are mainly confined to the "swamp," and the leather trade has felt the effect of the business growth only in the extent of its sales. Tradesmen lament that they are doing business at a loss.

In Philadelphia the revival of business seems to be genuine and solid. Merchants of all classes, commission men, jobbers and retailers are beginning to look forward to an uncommonly heavy trade. The great drygoods houses, the wholesale grocers, and the dealers in staple merchandise are working night and day. The great manufacturing districts of Kensington, Richmond and Southwark cannot turn out goods fast enough to fill their orders. The general opinion of business men is that this is not merely a boom but a healthy revival after a season of unnatural depression. In the iron trade, business has increased 50 per cent. since this time last year, and the demand for coal is enormous. Capitalists and manufacturers are still very cautious about making large contracts, on account of the uncertainty still existing as to the stability of engagements with operatives and the existence of strikes in some quarters; but on the whole the relations between employers and employees are harmonious.

The marked improvement in business in Boston and throughout New England is very encouraging. There has been a great deal of activity in the wool trade. The drygoods trade is better than it was during summer. The agents for the manufacturing concerns are easily disposing of the fall production of the mills. The season's business among the boot and shoe concerns has held on remarkably well. Some of the leading manufacturers are demanding higher prices on new contracts. The furniture manufacturers report a steadier business in progress, and the shops are very busy. The lumber business is very steady.

In Atlanta, Ga., there is a marked revival of business.

In New Orleans there is always a revival of business just after the opening of the commercial year, Sept. 1, but this season it has been more marked than for several years.

At St. Louis there was a genuine old-fashioned trade boom in the spring, which was stopped by the strike on the South-western roads. St. Louis is just about reviving from this, and the outlook is cheerful. At San Francisco business is very dull, and there is little appearance of revival. Very heavy failures have occurred within the past few months.

SMITH'S FALLS ON THE BOOM.

THE RESULT OF THE NEW C.P.R. AIR LINE TO MONTREAL.

THE citizens of our neighboring town, says the *Perth Express*, seem at last to have wakened up, and say that they don't intend to stop until Smith's Falls is at least the county town of the new county, to be formed out of parts of Leeds, Grenville, Lanark and Carleton, even if they do not manage to become a city. A large amount of building has taken place during the past summer, and still there are no houses to rent, though the railway men have not yet arrived. They are extending their boundaries in all directions until the town covers 750 acres in addition to streets and water lots. Plate glass is making its appearance on the main street, and business rents are away up. The source of all this boom is the selection of Smith's Falls as the division terminus on the new air line. The railway company has secured no less than thirty five acres of land, they are putting up a forty-stall engine house, 500 feet in length of repair shops, a stone station nearly as large as that at Perth, and a railway dining room. Fifty trains a day now pass Smith's Falls, and as soon as the Air line and the Sault Ste-Marie lines are opened, the number will be increased to seventy. That means the residence of two to three hundred train hands, conductors, engine drivers, brakemen and firemen, besides some local men in the shops, and the proportion of merchants and mechanics whom they will bring with them. Meantime lots are booming and Smith's Falls looks prosperous.

The tracklaying on the Air line will soon be completed to Smith's Falls to Merrickville. The rails are very heavy, seventy-two pounds to the yard. It is intended to run a fast train, making the distance from Smith's Falls in two hours and forty minutes, which will be two hours and a half less than by the present route via Ottawa. *Montreal Gazette*.

AMERICAN PATENTS TO CANADIAN INVENTORS.

THE following patents were granted to citizens of the Dominion of Canada, bearing date of October 5, 1886. Reported expressly for this paper by Louis Bagger & Co. Mechanical Experts and Solicitors of Patents, Washington D. C.:

Marston, W. P., Toronto, Ont., pencil-sharpener	350,260
Munford, J. A., Hantsport, N.S., steam-boiler	350,140
O'Donnell, J. H., Winnipeg, Manitoba, harness-hook	350,316
Smith, I. L., Montreal, Que., baby-carriage	350,162

Dated October 19, 1886:

Baines, Hugh, Toronto, Ont., velocipede	351,150
McKenzie, D. J., Winnipeg, Manitoba, lubricating compound	351,195
McMillen, John, East Brantford, Ont., bay knife	351,199
Scott, Eliza E., Hamilton, Ont., druggist's sieve	351,207

The following patents, dated August 24, 1886, were omitted from their regular place in our series.

Beaudry, Henri, Montreal, Que., suspenders	348,100
Blackwell, K. W., Montreal, Que., material for use in moulds for casting	348,005
Marshall, Robert, Hamilton, Ont., crimping machine for boots and shoes	348,135
Pope, Edwin, Quebec, Que., telephone switch and circuit	348,139

BUSINESS men who travel in sleeping cars are pleased with the decision in the supreme court at Taunton, Mass., in a case where a passenger had been robbed, that "the car-company bore the same relations to the public as common carriers and innkeepers—that is, should be fully responsible for any and all losses sustained by passengers while in their cars." The jury returned a verdict for the amount lost, with interest.

Iron and Machinery.

ONE WAY TO CURE DEPRESSION.

(Chicago Industrial World.)

WRITER in a recent number of the *London Colliery Guardian*, signing himself "A Forge and Mill Manager," discusses the question of the depression of English iron manufactures, and explains why Belgian manufactures are able to undersell the English. The explanation, as it is submitted, is simple, but the remedy proposed is unique. The explanation is that the Belgian fabricators are not trammelled by laws prohibiting the employment of juvenile laborers, as the English are, and therefore the former have that much advantage over the latter. It seems that within the last twenty years the English Parliament has passed what are known as the Education and Factory Acts, providing that children below a certain age shall not be employed in factories or mines. It is claimed that these prohibitory acts had the effect to raise the price of juvenile labor from one hundred to one hundred and fifty per cent. "A Forge and Mill Manager" thinks this is an outrage on the English iron manufacturer, and that the acts should be repealed. In order that there may be no misapprehension in the construction put upon his language, we quote his exact words. He says:

"I have been astonished over and over again that some employers of labor have not had the courage to bring this matter before the public. The idea of not allowing a youth to work in a factory until he is fourteen years of age unless he has passed the fourth standard is quite absurd. He has then attained an age when it is impossible for men to train him to the work in our iron works and factories. At the age mentioned they have to commence, as a rule, to do the work that I, the writer, in common with many others, had to commence at the age of from seven to eight years, an age which I am confident within myself, and all who know me, I have no doubt, will bear me out, that I am none the worse for now. I would suggest as a remedy for the evils arising from our costly juvenile labor that the Education and Factory Acts be so altered as to allow youths to commence at any age after they have passed the third standard and then, whatever their age may be, that they may be allowed to work without interruption until they are fourteen years of age, and the privilege given them during that time to pass before proficient schoolmasters other two standards, by either attending a night school or by doing home lesson work. But if at the age of fourteen they have not passed the standards required of them, that they shall forfeit another two years' work, so as to enable them to pass the fifth standard at school as would be required by law."

In conclusion this writer sums up the advantages of the proposed repeal by saying, "It would enable us to solve the problem of competing with our foreign rivals." How do American admirers of English methods like this proposed remedy for trade depression.

THIS FIRES THE BEST.

MR. JOHN A. COLEMAN, of Providence, R.I., in an address before the American Railway Master Mechanics Association, spoke about combustion fire-boxes and steam boilers, and among other excellent "points" made were the following:

This fires accomplish this. As already stated, a given amount of coal generates a given amount of gas, and this gas requires a given amount of air or oxygen. This air must be supplied through the grate bars and then pass through the interstices of the mass of heated coal. It requires about ten cubic feet of air to consume one cubic foot of gas. In stationary boilers we find that if we use "pot" and "dust" coal an extremely thin layer must be used or the ten feet of air per foot of gas cannot pass through it; if "chestnut" coal be

used, the thickness may be increased somewhat; "stove size" allows a thickness of six inches, and "lump" much thicker, if any wise man could be found who would use that coarse, uneconomical size. Of course, I am speaking of Anthracite coal. Opinions differ about "soft coal," but the same general principle applies as regards an unobstructed passage of air through the hot bed of coal.

It seems to me much yet remains to be done with the locomotive. We must burn a great deal less coal for the steam we make, and after we have made steam we must use that steam up more thoroughly. In the short cylinder required by locomotive service, the steam entering at the initial pressure pushes the piston to the opposite end, and it then rushes out of the exhaust strong enough to drive another piston. Of every four dollars' worth of coal consumed, at least two dollars' worth is absolutely thrown away, or, of every ten thousand dollars spent for fuel five thousand dollars are absolutely wasted. How can we save this? It would seem obvious, that if steam rushes from the exhaust of an engine strong enough to drive another engine, the common sense of the thing would be to put another engine along side and let the steam drive it, and we should get just so much more out of our four dollars' worth of coal. It seems evident that we must follow the lead of the steamship men and compound the locomotive engine, as they have done with the marine engine.

NEW ALUMINUM WORKS.

A LARGE establishment for the manufacture of aluminum is in process of erection at Lockport, N.Y. The *Buffalo Iron Review* says of the new enterprise: "Hitherto the process of obtaining aluminum has been very expensive, though a combination of chemical heat. At the Cowles work the corundum will first be subjected to intense heat, then broken and ground to powder, after which it will be fused in hermetically sealed crucibles by the powerful electrical current generated by the employment of the largest dynamos that have ever been constructed. The product is the pure aluminum, of which the yield from the corundum is about fifty per cent. No doubt is entertained of the success of the electrical process, which although so recent a discovery as not to be described in scientific works, has been thoroughly tested. Large quantities of the alloy will also be manufactured at the works, requiring, it is estimated, from ten to twenty tons of copper a day when the works get to running to their full capacity. As a very serviceable alloy may be made with only five per cent. of aluminum, it is evident that a very large amount of copper will be required."

THE amount of force exerted by heat and cold in expansion and contraction of metal is equal to that which would be required to stretch or compress it to the same extent by mechanical means.

A PAIR of pumping engines built for a new dock at Newcastle-on-Tyne are calculated to discharge 44,000 gallons of water per minute. The pumps are each driven by a vertical engine 20x18 inches, fitted with Meyer expansion valves.

AN English inventor claims that the grip of a pulley on belting may be increased by covering the pulley with a thin perforated metallic cover, fastened by screws, rivets or solder. Among other advantages, it is said that the strength of the pulley is materially increased, the hold of the belt improved and it is possible to run with slack belts.

"SPEAKING of inventions of a genuine mechanical character," says an exchange, "the ordinary gas meter is perhaps the most remarkable and most profitable device ever constructed. So very sensitive is it that the least reduction in the price of gas sets it into much increased activity, and the lower the price, the greater the activity of the meter, and it has been known, when the family was away on a summer vacation, to remain at home and keep industriously at work all the time."

Textiles.

AMERICAN CUSTOMS DECISIONS.

Those engaged in any of the textile manufactures or in the dry goods trade may be interested in the following decisions affecting the classification of textile fabrics, which were given by the United States Treasury authorities during the months of June, July, and August, 1886. (We take the statement from an English journal—*Wool and Textile Fabrics*.) It might do Canadians good to note how very strict our neighbors are in construing the *litera scripta* of their protective tariff:—

Cotton cloth which upon examination is found to be neither wholly bleached nor wholly unbleached, the web consisting of yarn which has been bleached before the cloth is woven, and the other portion unbleached is dutiable at two different rates of duty, and pays the highest of these two rates, viz., 4 cents per square yard, the rate prescribed for bleached cotton cloth of this character:

Narrow strips of a very low quality of muslin, eight inches wide and under, which has been crimped and felled so as to remove them from the commercial condition of cotton cloth, section 324, 35 per cent. ad valorem.

Silk striped cotton "Italians" consisting of bleached cotton cloth with colored silk stripes occurring at intervals, the silk being an important and leading feature of the fabric, are to be included under section 324, and pay the duty on all manufactures of cotton not separately enumerated or provided for, viz., 35 per cent. ad valorem.

Japanese screens, although manufactured of articles of which silk is the component material of chief value, section 378, 40 per cent. ad valorem.

Laces composed of metal and other materials of which metal is a component of chief value, and which are commercially known as "metal laces," section 427, 25 per cent. ad valorem.

Linen pockets, so called, composed of linen and metal threads woven together, section 216, 45 per cent. ad valorem.

Chinese shoes, composed of cotton, leather, pith, &c., having soles about one inch in thickness, which are composed largely of hair, are dutiable, under section 366, 40 cents. per lb., and in addition 35 per cent. ad valorem.

Croise, so called, which is a light-weight material composed of worsted and cotton, and known commercially as worsted coatings, is not to come under the category of "women and children's dress goods."

The cost of making up textile fabrics, which consists in folding and pressing the goods into compact form, stitching and tying the ends, and stamping the quality, number, and trademark, does not form an element of the dutiable value of such goods.

East India hemp, commercially known as Bombay hemp, is dutiable, under section 331, 25 dollars per ton.

Driving gloves, composed of cotton and leather, leather being the component of chief value, are dutiable at the rate of 30 per cent. ad valorem, under the provision of section 463.

Blue serge cloth, imported in the piece and intended for manufacture into habits for use of a sisterhood conducting a school or academy, is not entitled to free duty.

Umbrellas covered with a material of which silk is a component of chief value, the silk portion being thrown on the outside of the cotton for the purpose of giving the umbrella the appearance of being covered entirely with silk, are dutiable at the rate of 50 per cent. ad valorem under section 491.

It has been decided that all old rags imported into the United States in vessels which have passed local quarantine at the port of importation will be admitted to entry in the same manner as other imported commodities, i.e., without requiring special

permits from the health officers as to their landing. The fact that the vessel has passed quarantine will be considered a sufficient evidence that the entire cargo is free from infection.

Cotton muslin caps, slightly trimmed with cotton lace, the embroidery extending throughout the whole article, are dutiable at the rate of 40 per cent. ad valorem under section 325.

Cotton belting, composed of cotton with two threads of metal woven into each edge, is dutiable as a manufacture of cotton.

The United States Secretary of State has been requested to instruct United States consular officers to require shippers of merchandise intended for the United States to state on their invoices whether the charges specified therein are or are not included in the price of the goods.

KNIT-GOODS IN CANADA.

(Special correspondence of *The Philadelphia Textile Recorder*.)

THERE is much similarity at the present time between the state of affairs among the mills here and among the mills on the other side of the line. Nearly every one is busy, and orders are being turned away for the reason that buyers cannot wait until they can be filled. There has been too much of "hand-to-mouth" buying on the part of jobbers, as they have been placing their orders only so as to meet their actual requirements. The result is, as stated, and a little increase over their estimated sales leaves them with a short supply and no very great time to allow the mills to repeat their orders.

Odd and job lots are being eagerly inquired for, but, of course, such goods must be sold at a slight shade under regular market prices, which, at the present moment, are in all conscience low enough. The recent advances in prices of wools are causing talk by the manufacturers of raising prices, but no action has as yet been taken. There is no doubt, however, that when winter samples for the season of '87 are placed on the market, there will be an advance in the prices of knitted goods.

There are whispers travelling around among the manufacturers' agents of forming a combination of the mills to restrict production and advance and maintain prices. There are as yet no labor troubles to bind the mills closer together, but if such difficulties should turn up, they may have the effect of the mills acting in concert on labor matters, which may lead them to unite in the matter of holding prices firm at a paying figure. It does seem as if nothing but some great emergency will ever induce them to combine. One strong point taken by some of the agents is the refusal to send out sets of samples *unaccompanied by an agent*, so that the buyers can have a chance to compare with other goods. In sending out samples in this way, it is scarcely fair to the goods themselves, as often they have to be decided upon by buyers who are not often as well posted they as might be. The good points of the goods are sometimes passed over, and seeming defects or differences which could be explained or perhaps corrected in future (if only the agent were on hand to explain or show up the prominent points), would cause the loss of an order. If only this point of not sending out samples alone were carried, it would be a great gain.

BRADFORD'S WOOLEN AND WORSTED INDUSTRY.

(From *Bradstreet's*.)

Bradford, September 10. - Not for many years past has such an animated feeling prevailed in this market as at the present time. Values are constantly rising, and in the present temper of the commercial mind it is not likely that any receding will take place during the present year. English wools, such as Kents, deep weathers, and all skin wools, are in great demand, and are said to have been well cleared out of holders' hands.

❖ Permanent ❖

Exhibition of **M**anufactures.

Toronto.

NICHOLLS & HOWLAND, PROPRIETORS.



THE undersigned are now prepared to receive applications for space in the PERMANENT EXHIBITION OF MANUFACTURES.

A special building is being erected for us and is expected to be ready for occupation by January next. The structure, which is to be a very handsome one, will have a frontage of 92ft. by a depth of 105ft. and will contain the following accommodation :-

A lofty, well-lit basement, having large doors opening on a lane at back, at such a level as to facilitate the handling of heavy weights; the ground or main floor a few steps above the level of Front street, with a height of ceiling under the galleries of 14ft., while the central portion, up to base of dome skylight, will be 29ft. high. On this floor, in the north-east corner, immediately adjoining the entrance vestibule, will be the general and private offices of the management, and adjoining them a number of small private offices or consulting rooms for the use of exhibitors, besides comfortable lavatory and sanitary appliances. A gallery floor 23ft. wide will extend around the four sides of the building, and will be used for exhibiting the lighter classes of manufactures. A special feature of the building will be the good lighting, for in addition to the rows of large windows in front and rear, there will be a large dome skylight in the centre. Access to the various floors will be by ample stair cases, and by a large elevator. The building will be heated by steam.

It will be located on Front street (nearly opposite the Queen's Hotel), convenient for both boats and railways, for shipping and for visitors.

Some of the advantages likely to accrue to manufacturers exhibiting may be briefly summed up as follows.

1. The Exhibition will be free to all and open throughout the year
2. It will afford all the advantages of a Toronto branch establishment at a very moderate cost.
3. Exhibits will be seen by large numbers of business men who would not be apt to visit a private branch office unless on special business.
4. The Exhibition will be extensively advertised and made very attractive, and as almost every variety of machinery and manufactured goods will be on view under the same roof, it will certainly become an important mercantile exchange.
5. Competent salesmen will be in charge for the purpose of explaining the merits of each exhibit to interested visitors.
6. Exhibitors can have printed on their office stationery "When in Toronto call and see sample of our goods at PERMANENT EXHIBITION OF MANUFACTURES." This may afford prospective purchasers an opportunity of personally inspecting goods, who would not be apt to visit outside towns for that purpose.
7. Exhibitors can appoint us selling agents, or can have their own representatives in charge. In the former case, every endeavor will be made to establish profitable trade.
8. Machinery can be shown in motion, as shafting and power will be provided.
9. Office accommodation will be provided for the convenience of exhibitors and their agents.

Further information will be promptly furnished.



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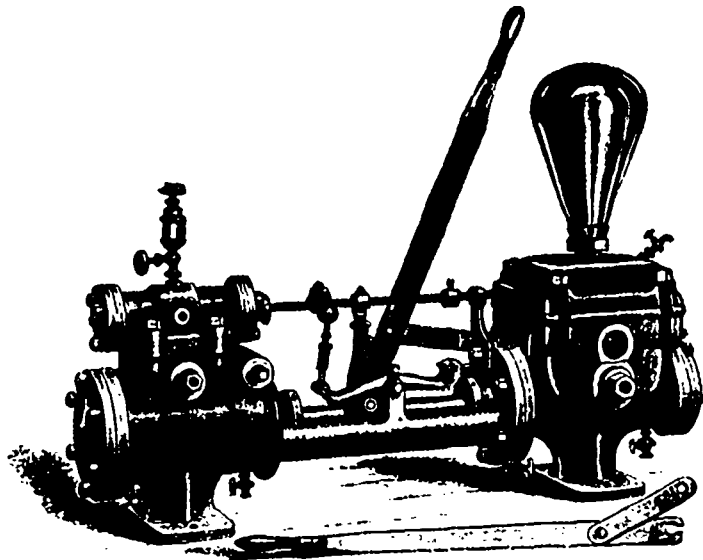
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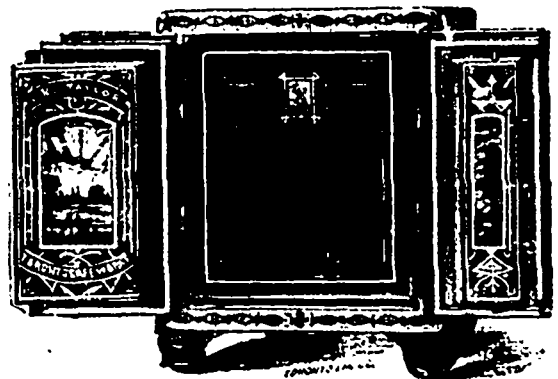
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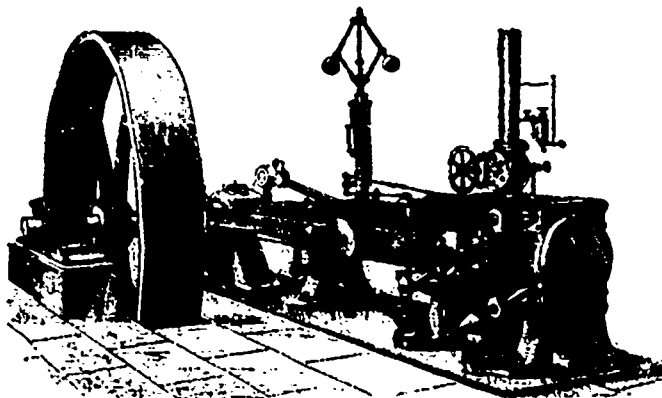
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**STEEL BOILERS
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Write for Circulars.

As contrasted with the period of our advice in June last, these wools have gone up 1d. @ 2d. per pound. Good Irish wools have also shared in the improvement, and are being bought up wherever stocked. Even the once neglected lustrous sorts, such as alpacas and mohairs, are on the move, dealings in the latter on yesterday's change being reported at 15d. @ 15½d. per pound. These increases, however, are but limited as compared with the advance in Australian merino wools, which may be quoted from 30 to 40 per cent. higher than at the opening of the London sales in June last. The history of this upward tendency is remarkable and may be briefly described.

In May last a number of French makers of cashmere and all wool dress goods, taking advantage of the then existing low values of merino wools, bought largely in this market, to the surprise of the home dealers, who were quiescent. Their operations were followed up by the speculative dealings of a French syndicate, backed by large resources, which secured a large holding of merino and fine wools. The effect of these transactions was naturally to stimulate prices, and hence the increase during the June-July London wool sales. A further advance has been established at the series commenced this week in London equal to 1d. per pound for scoured wools. Large quantities of the wools offered are being taken on French account, but Bradford dealers buy wherever possible, having, in fact, a purchasing capacity to the extent of every bale of wool now being offered in London. In view of the foreign competition, it is obvious that such requirements cannot be supplied, and hence the improbability of any fall in values during the present year.

Contemporary with the demand, whether real or speculative, from France, it is evident that the worsted industry of which Bradford is the centre has been stimulated to great activity, both spinners and manufacturers being well employed upon orders placed upon both home and foreign account. So far they are working an uphill trade, having to contend against the reluctance of merchants to give an advance equivalent to that they are called upon to pay upon the raw material. Orders for yarn on export account are freely to hand, and are being placed at enhanced rates. For the United States the consular returns for August show the large increase of £19,127 in worsted yarn alone upon the value declared for August last year. In worsted stuffs there has been an increase of £29,949, and in wool of £36,073, as compared with August, 1885. The worsted coating trade was about stationary. A considerable increase is also shown to have taken place in silk, seals and plushes, and also in machinery. The total value of trade done between the Bradford consular district and the United States in August last was £360,438, a net increase of £111,523 over August, 1885.

The real meaning of the active demand for fine wools is the onward development in the manufacture of goods made from that material. On the part of foreign makers, the French appear to be straining every endeavor to maintain that supremacy which they had acquired after years of cultivation. On the other hand, Bradford manufacturers, having fairly thrown their energies into the soft-goods trade and become successful competitors, are equally determined to secure a portion of the all wool trade in conjunction with the making of mixed fabrics, in which they have no rival. The result is seen in the large output of Cashmeres, Italian cloths, worsted coatings, and other goods made exclusively of fine wools. In a former communication mention was made of a further development, by the introduction of chevriots and other goods suitable for men's wear from Bradford looms, which had hitherto been of Scotch manufacture. At that period this department was in embryo; now it has become a considerable business both for home, continental and American consumers. The various styles are known as chevriots, Saxonys, Scotch worsteds, homespun, etc., and are in infinite variety of styles, made of colored yarns from Botany, Cape and Buenos Ayres wools. A lighter description of cloths, suitable for lawn tennis and cricket apparel,

is also being successfully introduced. The seal and plush trade is also making considerable headway, and although not dependent on the wool market, being principally of silk, it employs a large number of hands. By these means is the present activity explainable, and, considering all the circumstances, it may be regarded as a healthy and permanent activity, affording every reason to hope for the return of a general revival in commercial affairs.

DECIDING ON A GREAT LOCKOUT.

AMSTERDAM KNIT GOODS MANUFACTURERS TO BE SUSTAINED.

COHOES, N.Y., Oct. 13. (*Special*). Many thousands of people have anxiously looked forward to to-day, the time set for the Executive Committee of the National Association of Knit Goods Manufacturers to meet and canvass the secret vote of the various local associations in the State on the question of shutting down the mills in sympathy with the Amsterdam manufacturers. At three o'clock the committee got to work and canvassed the votes of the mill owners of Amsterdam, Schenectady, Cohoes, Little Falls, Stillwater, Waterford, Philmont, Hudson and Valatie. None but the committee was admitted, and as the votes had been secret the various mill owners were as anxious as to the result as were the operatives. In the association fifty-nine mills are represented, employing 25,000 operatives. After two hours the result was announced, although the vote was refused to the press. It had been decided to sustain the Amsterdam manufacturers in their lockout and to shut down all mills in the National Association on October 16 as against the order of the Knights of Labor and its members. While the vote of the manufacturers was secret, still it is learned that among those who opposed shutting down were four Cohoes mill owners: one of them, Andrew Root, of the Tivoli Mills, the largest in the city and employing 500 operatives, said that he would forfeit the \$5,000 bond he gave to live up to the agreements of the association, and get out of it. Robert McHaffie, the secretary of the concern, says that the mills of the Root Manufacturing Company would not shut down, no matter what action was taken by the National Association.

The whole trouble arose in Amsterdam, where a boy was promoted from being a reaping boy to jackspinner. He was a Knight of Labor, but not a member of the Spinners' Union, and the union demanded that a regular spinner be employed. The manufacturers refused to be dictated to, and the Amsterdam Manufacturers' Association decided upon a lockout and the National Association sustains them by locking out also in sympathy with them, and against the Knights of Labor who sustained the Spinners' Union.

If the statements of various Chemnitz glove and hosiery manufacturers are correct, they have orders in light all-silk gloves—one of the few articles still in active request—which will last till March. In face of this, however, it is hard to understand how prices should show no sign of an upward tendency. Commissions continue to be received in better goods, though not in heavy kinds. Hosiery goods are in large request, prices being satisfactory. The prospects of this branch are very good, as up to next spring transatlantic buyers will regularly visit this market. *Kuhlow's German Trade Review, Berlin, Sept. 22th.*

Poitouise leather is being used in the manufacture of shoes, the resemblance to French kid being very marked. It has a long, tenacious fibre, and as it will not crack or tear is very durable and waterproof, and makes an excellent leather.

In the Swiss village of Meyrin some disused wells have been hermetically sealed to serve as barometers. On a fall of atmospheric pressure, air escapes through a small hole in the well cover, blowing a whistle, and thus giving warning of a coming storm; but when the outside pressure is increasing, the air being forced into the well causes a different sound, and announces the probability of fine weather.

Milling.

MILLING NOTES

(*American Miller for October.*)

It is an encouraging sign when the proprietor of a "grain and stock exchange," or in other words, a bucket shop, can be convicted as the keeper of a common gambling house, as was recently done in Montreal. We export a good many rascals to Canada; it would be a good thing if we could import some of her salutary justice.

Our sprightly contemporary, *Daily Business*, predicts that the time will come when grain carrying railroads will own their own elevators for the accommodation of cereal freight, the same as other merchandise. It thinks that the charges for this service will be nominal, and it is only to be hoped that *Daily Business* will prove a true prophet.

PEOPLE have curious places where they bank their money. A man living near Morenci, Mich., used a bran bin as his favorite depository, and some one else drew on his account to the extent of \$1,000. One of the rich stock men of early times in Illinois, a man with nearly half a million of dollars, always kept his cash in a meal bin, and frequently had as much as \$50,000 in his house at one time. He was never robbed, however.

DULUTH's wheat trade is making strides which are truly astonishing. Four new elevators are either contemplated or in course of erection; and Duluth has to-day, in store, six million bushels of wheat. Minneapolis has passed Chicago as a receiver of wheat, and she in turn will be compelled to divide honors with Duluth. Eastern millers will not object to have the Zenith City wax great as a wheat port. Duluth is bound to be a great factor in equalizing competition between Eastern and Western millers. Buffalo and vicinity is to-day as eligible a location for milling as the country affords.

THE National Bi-Metallic Coinage Association have issued an address to the wheat growers of the United States in which the relation of silver to the price of wheat is clearly set forth. The fact is pointed out that Indian wheat has only been a competitor of that grain in the United States, through the depression of silver here, and the boast of East Indian speculators is referred to that the depression of silver must move the ruin of the United States as a wheat and cotton-growing country, and result in the development of India as the great wheat and cotton exporting country of the world. A statement of Mr. Moreton Frewen is quoted that a fall of a penny in the price of silver means a fall of a shilling a quarter in the price of wheat in Mark Lane. The relation between silver and the price of wheat is certainly close, as evidenced by the history of the past few years.

ONE of the marked things about the North-western wheat trade during the past few weeks is the surprising promptness of wheat in coming forward. In former years, while deliveries were free, owing to the fact that so many farmers were compelled to realize on their grain, there has nevertheless been a disposition on many occasions to hold back for better prices, especially when the market value of wheat has been low. This year forms an exception to the rule. Farmers in the Northwest seem to have grown tired of trusting to prognostications of the future. They have disregarded the arguments of the "bulls" and marketed their wheat for what it was worth. Last year taught them a lesson in wisdom. And it is not difficult to prove that the farmer who markets his wheat in the fall gets more, as a rule, than the speculative farmer who waits until spring. The farmer who puts 800 bushels of wheat into his granary after harvest is often surprised to find that it does not figure up so much the next June when he takes it to the mill or elevator.

Mining.

COAL NOTES.

(*Coal Trade Journal.*)

We have heard it rumored that under the new management of the Reading Companies, the mining of coal by the Coal and Iron Company would not form so prominent a feature as it has; that the collieries would be leased to individuals. This being so, there would be quite a revolution in some Anthracite circles.

NATURAL gas companies met the cold snap at Pittsburgh very successfully on the 1st inst. There was no repetition of the famine in gas that tortured Pittsburgh one year ago with the advent of cold weather. The Philadelphia Company have twenty more gas wells now than they had then. Many of them are plugged to hold their product in reserve. Some of this surplus was turned on to keep up with the increased demand.

THE solution of a very serious problem is about being attempted in France, namely: the working of coal mines by the colliers themselves. At Rive-de-Geir, in the department of the Loire, a deputy - M. Laure - has obtained the concession of twelve abandoned coal mines for a group of miners, who declare the collieries are sufficiently rich to pay working, although the original company decided otherwise. The miners have no capital, and claim to require none. The experiment must have great weight on the social question, but which is not to be confounded with socialism.

SIXTY days ago the Chicago Department of Public Works advertised for bids for furnishing Anthracite coal to several public institutions. Of the fifteen bids received all were at \$5.75 and \$6.25 a ton. Mayor Harrison did not like the look of the bids, and ordered a new advertisement. In response to this forty dealers put in bids all at the same figure. All these dealers wanted \$6.25 for Nut coal, of which 100 tons were desired, and \$6 a ton for 700 tons Range and Egg. There was, however, one exception to these bids. The Lehigh and Franklin Coal Company offered to furnish the coal required at \$5.72 per ton for small Egg, and \$5.97 for Range and Nut. The contract was promptly awarded to this company. The Anthracite Coal Association held a meeting to find out why the Lehigh and Franklin offered to furnish the city with coal at \$5.72. The President of the company gave "a satisfactory explanation," and there was an end to it.

AN ingenious process for giving silver surface to iron has recently been devised in Austria. The iron is first covered with mercury, and silver is deposited upon this surface electrolytically. The iron is then heated to about 300° C., and the mercury evaporates, leaving the layer of silver upon the surface of the iron.

WHATEVER may be the extent of Bob Ingersoll's heterodoxy, he is certainly quite sound on some subjects. This is the way he expresses himself in regard to the alleged struggle between labor and capital:—"Here is a shoe shop. One man in the shop is always busy at work during the day—always industrious. In the evening he goes courting some good, nice girl. There are five other men in the shop who don't do any such thing. These spend half their working evenings in dissipation. The first young man by and by cuts out these others, and gets a boot and shoe store of his own. Then he marries the girl. Soon he is able to take his wife out to ride of an evening. The five laborers, his former companions, who see him indulging in this luxury, retire to a neighboring saloon and pass a resolution that there is an eternal struggle between labor and capital."

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It is a great mistake (says the Lynchburg, Virginia, *Advertiser*) to suppose that because our farm products are very cheap at the present the farmers and planters are doing a losing business or living harder than in former years. While everything they have to sell, especially corn, wheat, and tobacco, is very low, it is equally true that everything they have to buy is unusually cheap, so that when they come to strike the difference between profit and loss they will find the advantage and gain decidedly in their favor. For instance, take the following figures. In 1816 one bushel of corn would buy one pound of nails; in 1886, one bushel of corn will buy ten pounds of nails. In 1816 a pair of woollen blankets cost as much as a cow; in 1886 a cow will buy five pairs of woollen blankets. In 1816 it required sixty four bushels of barley to buy one yard of broadcloth; in 1886 sixty four bushels of barley will buy thirty yards of broadcloth. In 1816 it took twenty dozen of eggs to buy one bushel of salt; in 1886 twenty dozen eggs will buy ten bushels of salt. In 1816 it required one bushel of wheat to buy one yard of calico; in 1886 one bushel of wheat will buy twenty yards of calico.

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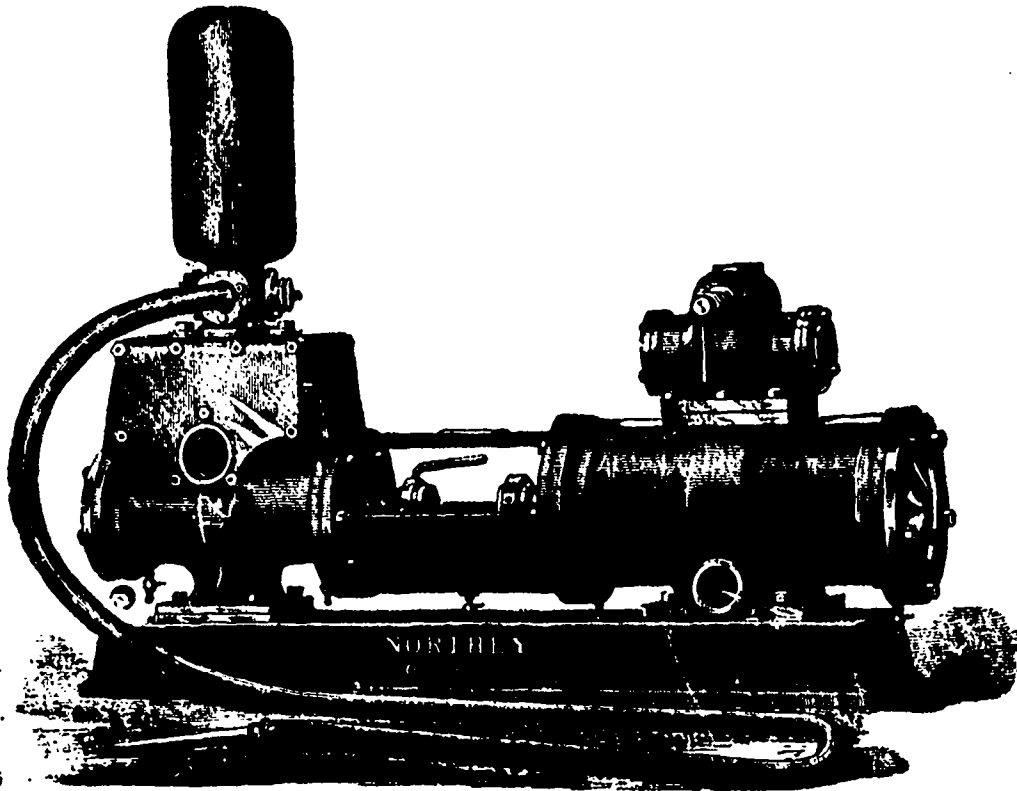
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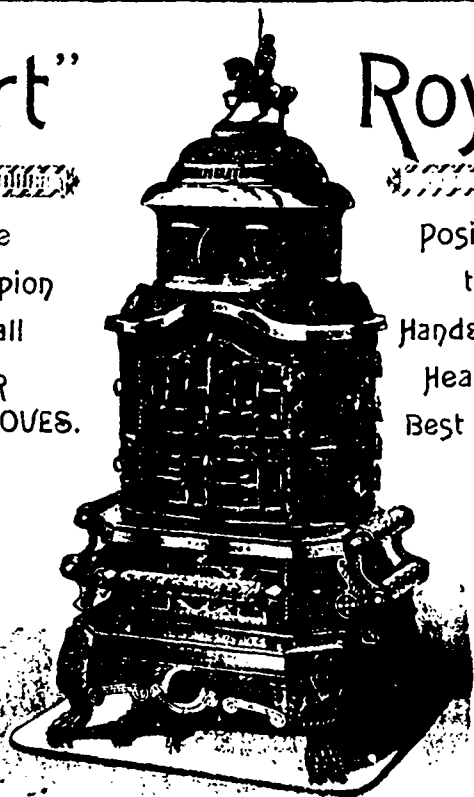
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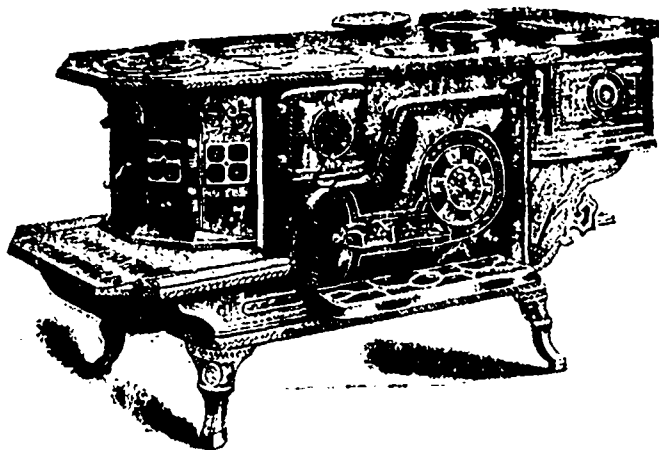
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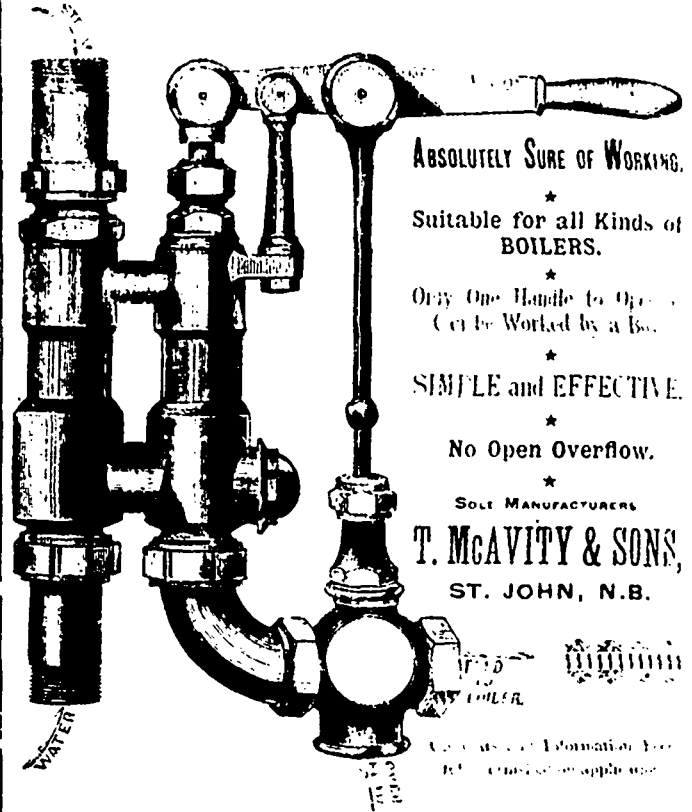
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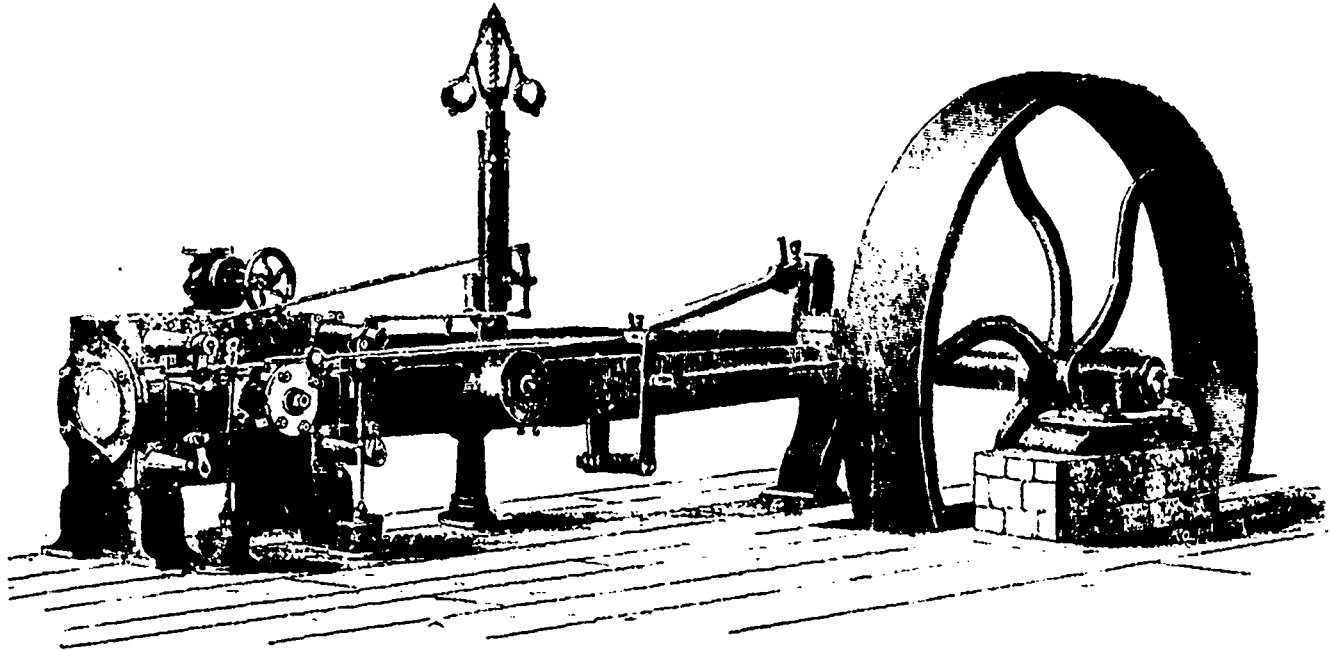
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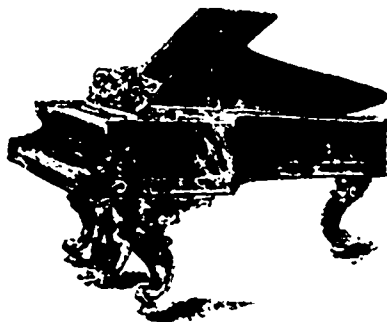
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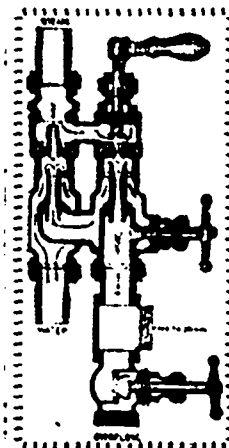
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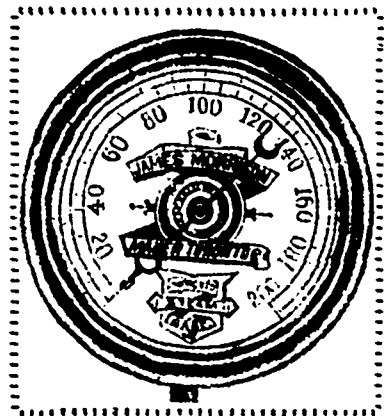
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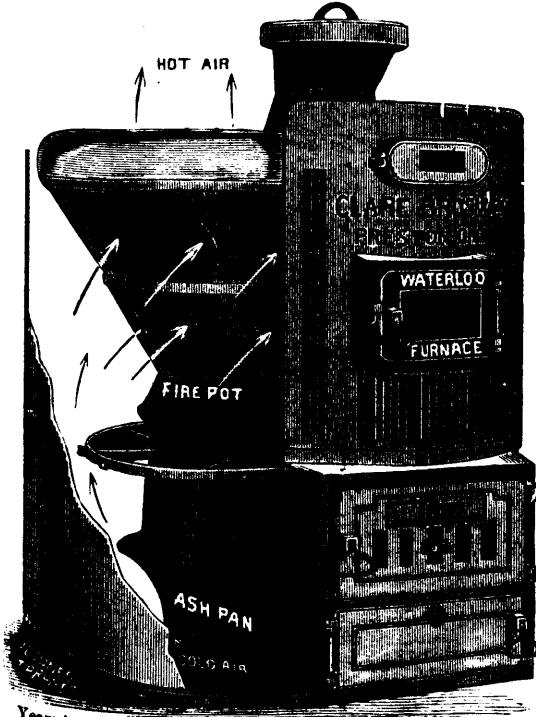
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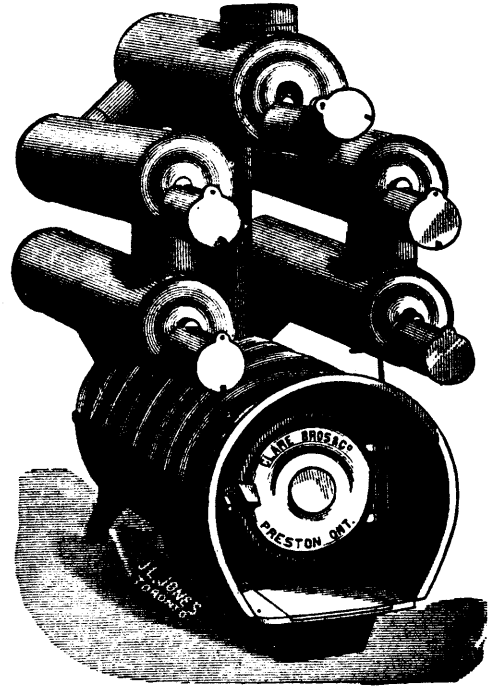
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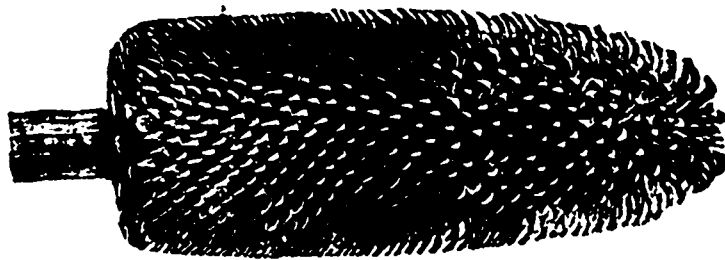
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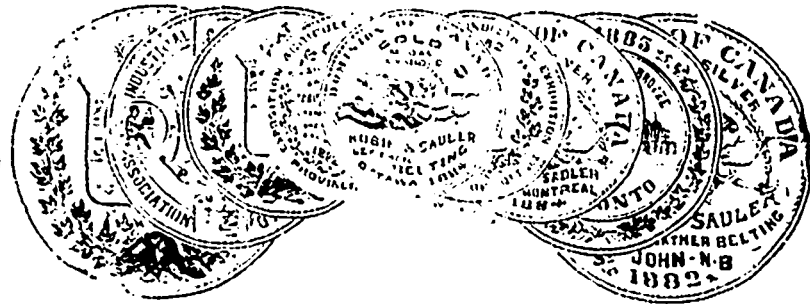


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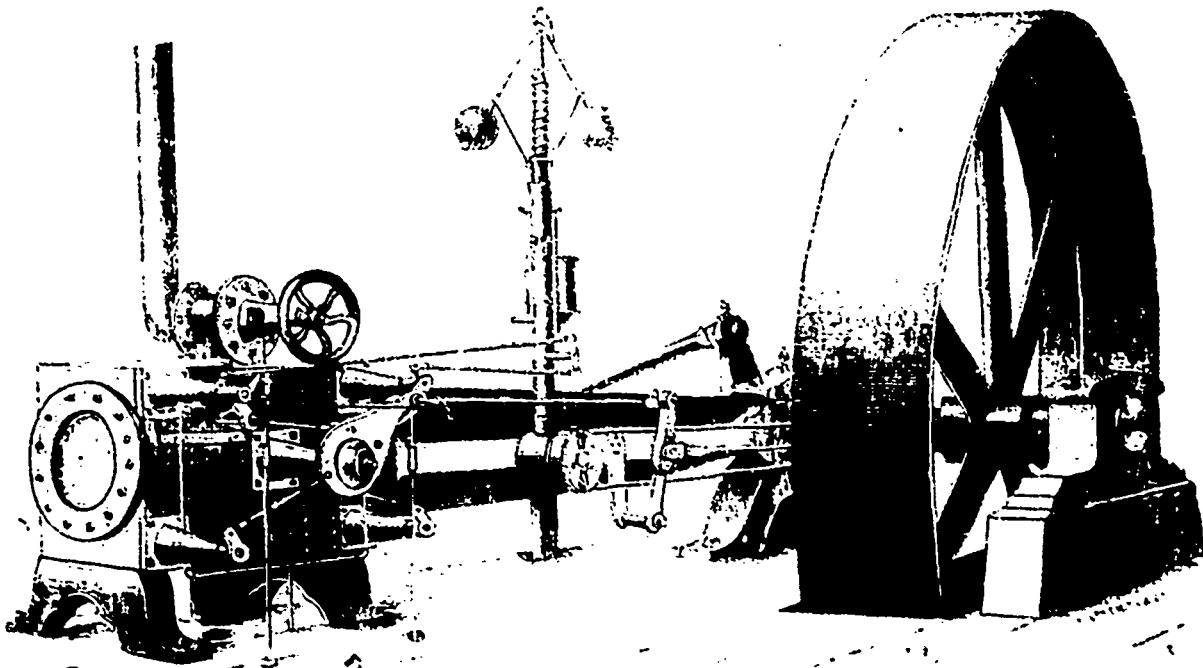
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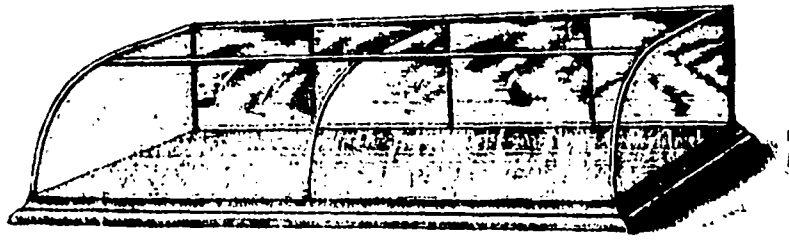
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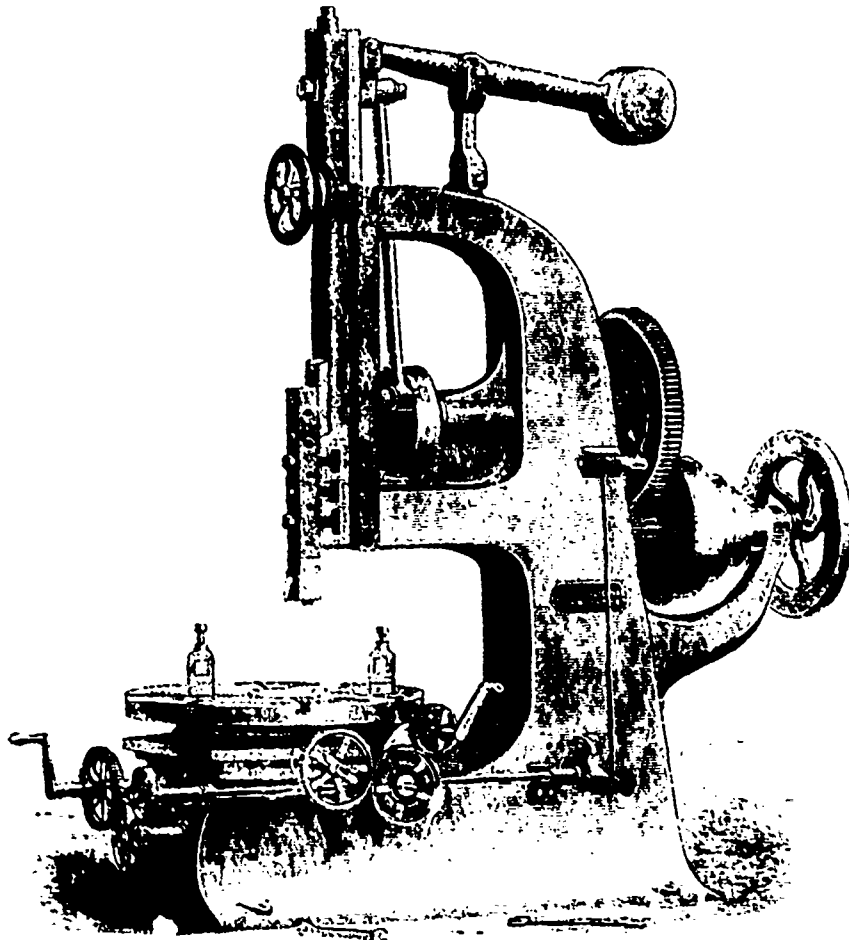
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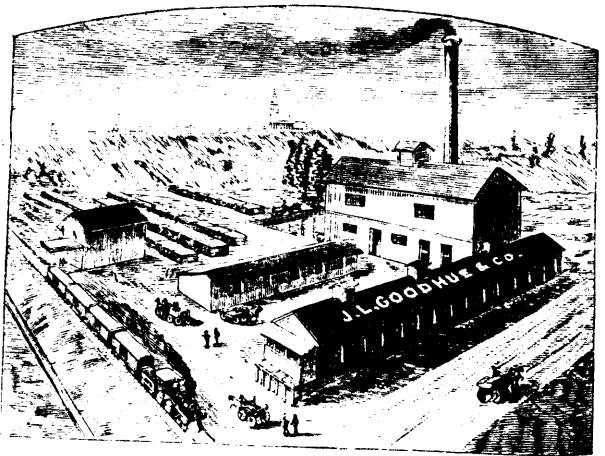
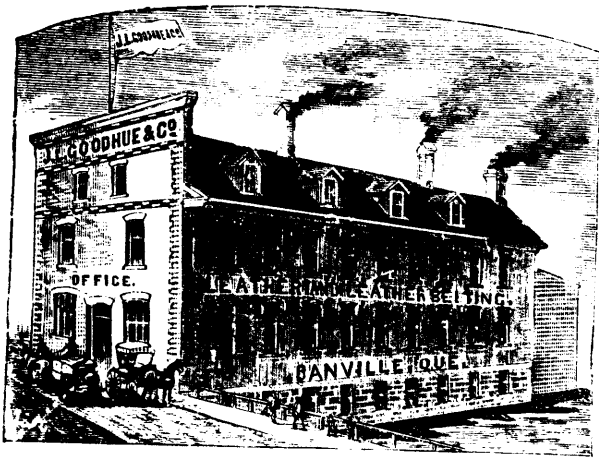
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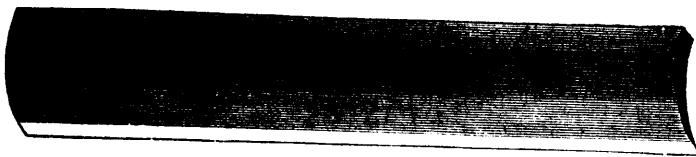
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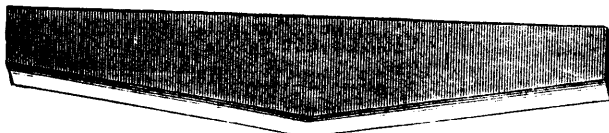
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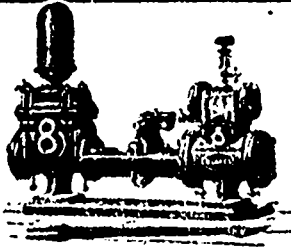
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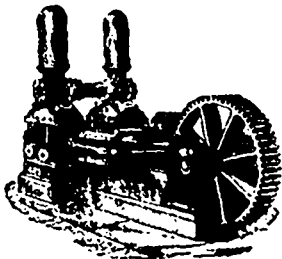
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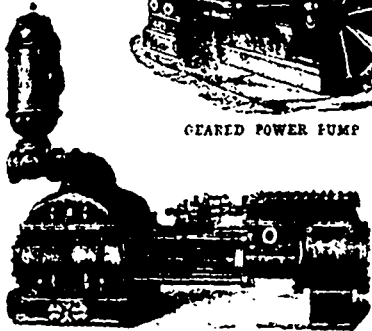
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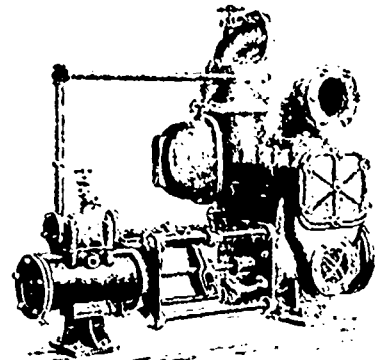
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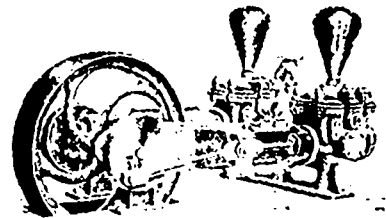
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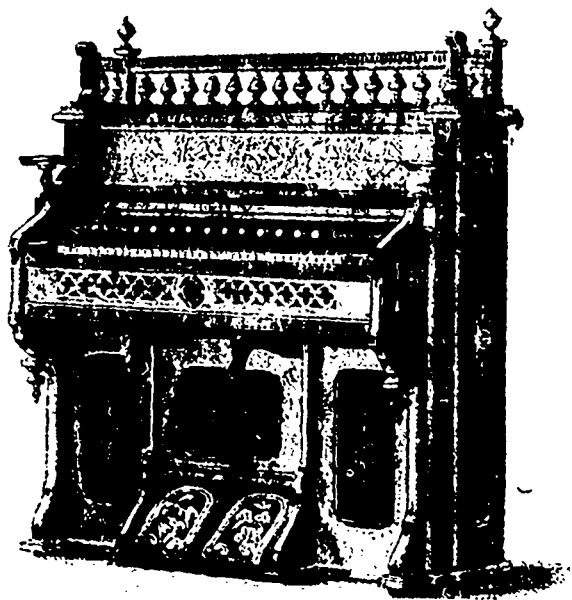


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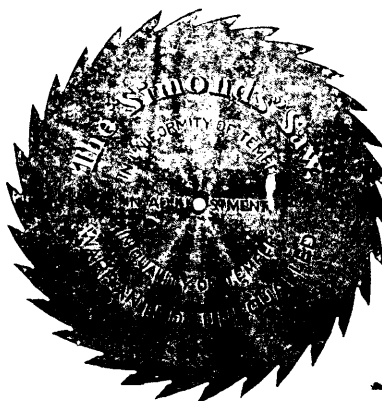
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We want Live, Energetic and Capable Agents in every county in the United States and Canada, to sell a patented article of great merit. An article having a large sale, paying over 100 per cent profit, having no competition, and on which the agent is protected in the exclusive sale by a deed given for each and every county he may secure from us. With all these advantages to our agents, and the fact that it is an article that can be sold to every house-owner; it might not be necessary to make an "Extraordinary Offer" to secure good agents at once, but we have concluded to make it to show, not only our confidence in the merits of our invention, but its salability by any agent that will handle it with energy. Our agents now at work are making from \$150 to \$300 a month clear, and this fact makes it safe for us to make our offer to all who are out of employment. Any agent that will give our business a 30-day trial, and fail to clear at least \$100 in this time, above all expenses, can return all goods unsold to us, and we will refund the money paid for them. Any agent or General Agent who would like ten or more counties, and work them, through sub-agents for 90 days, and fail to clear at least \$750 above all expenses, can return all unsold and get their money back. No other employer of agents ever dared to make such offers, nor would we if we did not know that we have agents now making more than double the amounts we guaranteed, and that but two sales a day would give a profit of over \$125 a month, and that one of our agents took 35 orders in one day. Our large descriptive circulars explain our offer fully, and these we wish to send to everyone out of employment who will send us 3 one-cent stamps for postage. Send at once and secure the agency in time for the boom, and go to work on the terms named in our extraordinary offer. We would like to have the address of all the agents, sewing-machine solicitors and carpenters in the country, and ask any reader of this paper who reads this offer, to send us at once the name and address of all such they know. Address at once,

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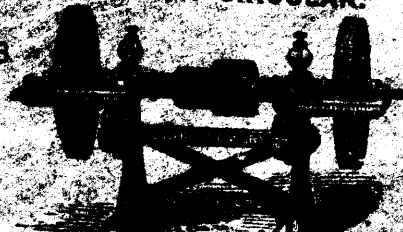


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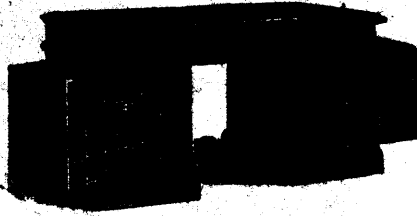
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17 inch Water Wheels.	30 inch Water Wheels.
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