

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/
Couverture de couleur

Coloured pages/
Pages de couleur

Covers damaged/
Couverture endommagée

Pages damaged/
Pages endommagées

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Cover title missing/
Le titre de couverture manque

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Coloured maps/
Cartes géographiques en couleur

Pages detached/
Pages détachées

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/
Transparence

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Quality of print varies/
Qualité inégale de l'impression

Bound with other material/
Relié avec d'autres documents

Continuous pagination/
Pagination continue

Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Includes index(es)/
Comprend un (des) index

Title on header taken from: /
Le titre de l'en-tête provient:

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

Additional comments: /
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
									✓		

THE CANADIAN MANUFACTURER
AND INDUSTRIAL WORLD
DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

Vol. 22.

TORONTO, APRIL 1, 1892.

No. 7.

"Old Dyewood Warehouse"
Established Fifty-three Years.

Theo. H. Eaton & Son,
WINDSOR, ONT.

Importers and Manufacturers of
PURE DYEWOODS, DYEING DRUGS,
SOLID AND LIQUID EXTRACTS OF
LOGWOOD, FUSTIC, INDIGO.
PURE HEMATINE.

Sole Agents for
**THE CROWN ANILINE DYES,
ALIZARINES, ETC.**

*Geminion
Chemical
Works
Toronto*
**GENERAL DRY-SALTERS
ANILINE COLORS
A SPECIALTY**

**Borax, Boracic Acid, Salammoniac,
Gambier, Alkali,
Nitrate of Soda,
Sulphate of Ammonia,
Potash Salts,
Muriate of Potash.**

ALFRED BOYD,
Chemicals, Oil Cakes, Fertilizers,
1 WELLINGTON ST. EAST,
TORONTO.

NOTE.
LARGE SAFE only in use few years. Will sell cheap for cash, and deliver any station in Canada.

ESTABLISHED 1856

THE J. C. McLAREN BELTING CO.
BELTING MANUFACTURED FROM

IMPORTED OAK-TANNED LEATHER

EVERY BELT GUARANTEED.

TORONTO, 76 York Street.

MONTREAL.

THE GUTTA PERCHA & RUBBER CO.
OF TORONTO LTD
110 WARREN ST. W. TORONTO
C. N. CANDEL, SECTY.
BEARING PACKING CLOTHING ROSE
FACTORIES AT PARKDALE.
WAREHOUSE & OFFICE, 43 YONGE ST. TORONTO.

MONTREAL OFFICE:
91 Temple Building,
St. James Street.

ANILINES
BENZO COLORS
METHYLENE BLUES
DYEWOODS
EXTRACTS
CHEMICALS
MANUFACTURED BY
*The Berlin Aniline Co.
The Stamford Manufacturing Co.*
AGENTS,
MIDDLETON & MEREDITH
MONTREAL

John Bertram & Sons,
CANADA TOOL WORKS!
Dundas, Ont.
SEE ADVERTISEMENT, PAGE 222.

TORONTO
Steel Works

Mild Crucible Steel Castings
J. & A. BERTRAM, Makers, Toronto

BROWN BROS. & CO., Providence, R.I. Manufacturers of
Rods, Harness, Hooks, and Supplies in General.

LEATHER BELTING.

IMPERIAL BANK OF CANADA.

Capital Authorized - \$2,000,000
 Capital Paid-up - 1,500,000
 Res. Account - 500,000

DIRECTORS:

H. S. HOWLAND, President.
 T. S. MERRITT, St. Catharines, Vice-President.
 William Ramsey, T. R. Wadsworth.
 Robert Jeffrey, Hugh Ryan,
 T. Sutherland Stayer.
 D. R. WILKIE, Cash'r. B. JENNINGS, Asst.-Cash'r.
 E. HAY, Inspector.

Head Office, - TORONTO.

BRANCHES IN ONTARIO.

Essex. Niagara Falls. St. Thomas.
 Fergus. Port Colborne. Sault Ste. Marie.
 Galt. St. Catharines. Welland.
 Ingersoll. Woodstock. Rat Portage.
 Toronto, Cor. Wellington St. and Lander Lane.
 " Cor. Yonge and Queen Sts.
 " Cor. Yonge and Bloor Sts.

BRANCHES IN NORTH-WEST.

Winnipeg. Brandon. Portage la Prairie. Calgary. Prince Albert. Edmonton.
 Drafts on New York and Sterling Exchange bought and sold. Deposits received and interest allowed.
 Prompt attention paid to collections.
 Municipal Bonds and Debentures bought and sold.
 Agents in Canada for "Cheque Bank, Ltd." Agents, London, Eng., "Lloyd's Bank, Ltd." 71 Lombard St., E.C., with whom deposits may be made for credit with Head Office or Branches.

Largest Manufacturers of **STEEL and BRASS STAMPS** in Canada.

PRITCHARD & ANDREWS

OTTAWA, ONTARIO.

Rubber Stamps, Stencils, Seals, &c.

SEND FOR PRICES.

S. Lennard & Sons

DUNDAS, ONT.

Patentees of the "Elystan" Seamless Hosiery.

MANUFACTURERS OF PLAIN AND FANCY HOSIERY, CAPS, TUCKS, SASHES, Etc., Etc., Etc.

To the Wholesale Trade only.

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

DUNCAN BELL, Montreal.

In British Columbia by

E. G. ANDERSON, Victoria, B.C.

In Western Ontario by

S. LENNARD, Senior Member of the Firm.

McArthur, Corneille & Co.

MANUFACTURERS AND IMPORTERS,

310-316 ST. PAUL ST

— AND —

147-151 COMMISSIONERS ST. MONTREAL.

Offer at closest prices, Pure Olive Oil, Winter Pressed Lard Oil, Extra Fine Spindle Oil, Full assortment of other Lubricating Oils, Greases, Mill Soaps, etc.; all chemicals, Dyestuffs, Dye-woods, Extracts, etc., etc.

Sole Agents in Canada for

St. Denis Dyestuff & Chemical Co.,

PARIS,

A. POIRRIER, President.

Aniline Colors, Aniline Extract, Cachou de Laval, etc.,

British Alizarine Co.

LONDON,

Paste & Dry Alizarine.

Boston Dyewood & Chemical Co.,

BOSTON,

DYEWOODS & EXTRACTS.

COIGNET & CO.,

PARIS,

Glues, Gelatines, etc.

WATSON, WALKER & QUICKFALL LTD.,

INDIGO EXTRACTS.

Millerton, Tannin Extract Co.,

HEMLOCK EXTRACT.

Maintain large stocks fully assorted and will always be pleased to furnish quotations and samples.

WILEY BROS.

JOHN H. BERRY.

KNOX & ELLIOT.

Architects, Engineers and Mill Constructors,

Office: 19 Queen Street, East, TORONTO.

Toronto Stamping Co.

MANUFACTURERS OF

Tin, Sheet, Brass, and Copper

STAMPINGS

And Steel Metal Ware.

TORONTO - - - ONTARIO.

PILLOW & HERSEY MFG CO.

Manufacturers of every description of Cut Nails, Tacks, Brads, Railway and Pressed Spikes, Horse Shoes, Carriage, Tire and other Bolts, Coach Screws, Hot Pressed and Forged Nuts, Felco Plates, Lining and Saddle Nails, Tapping Bolts, Etc., Etc.

The Hardware Trade, Shoe and Leather Finding Dealers, and Boot and Shoe Manufacturers, will find the Largest and Best Assortment and Greatest Variety of above Goods always in stock, and can rely on orders being rapidly executed, our facilities for doing so being unequalled.

Office, 105 Mill St., Montreal.

The BELL TELEPHONE COMPANY

OF CANADA

Manufacturers and Dealers in

Telegraph and Electrical

INSTRUMENTS

Electro-Medical Apparatus,
 Fire Alarm Apparatus,
 Electrical Gas Lighting Apparatus,
 Magnets for Mills,
 Burglar Alarms,
 Hotel and House Annunciators,
 Electric Call Bells, Etc.

For further particulars apply to

No. 12 HOSPITAL ST., MONTREAL.



ESTABLISHED IN 1880.

Published on the First and Third Fridays of each Month

BY THE

Canadian Manufacturer Publishing Co.

(LIMITED)

ROOM 66 CANADA LIFE BUILDING, KING ST. WEST, TORONTO

TELEPHONE - 1274.

FREDERIC NICHOLLS,
Managing Director.

J. J. CASSIDY,
Editor.

J. C. GARDNER,
Business Representative.

SUBSCRIPTION. - - - \$1.00 per year

ADVERTISING RATES SENT ON APPLICATION.

**OFFICERS OF THE
CANADIAN MANUFACTURERS' ASSOCIATION.**

- | | |
|------------------------------|--------------------|
| President | W. K. McNAUGHT |
| First Vice-President | JOHN BERTRAM. |
| Second Vice-President | P. W. ELLIS. |
| Treasurer | GEORGE BOOTH. |
| Secretary | J. J. CASSIDY. |
| Chairman Executive Committee | FREDERIC NICHOLLS. |

OFFICE OF THE ASSOCIATION:

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

"INVENTIONS."

"INVENTIONS" department of the CANADIAN MANUFACTURER is devoted to the interests of inventors and patentees of inventions. Patents are granted in Canada for fifteen years, the Government fees for which may be paid in instalments. Arrangements have been made by which the issue of all patents by the Patent Office at Ottawa, are promptly noticed in this department, and a brief description thereof given; and this will include not only patents but Copyrights and Trade Marks and all renewals and extensions thereof. Enquiries on these subjects are invited and will receive prompt attention. No charge will be made for answers by mail when return postage is enclosed. Information given free regarding patent laws and the obtaining of patents in Canada, United States, Great Britain and all foreign countries. The attention of manufacturers is specially directed to the opportunities for lucrative business which may be acquired by close observation of this department.

WROUGHT SCRAP IRON.

A CORRESPONDENT of the Montreal Herald who signs himself "An English Importer," finds fault with the Canadian tariff on iron because, during the past winter, pig-iron was carried from Glasgow, Scotland, to London, Ontario, at fourteen shillings (under \$3.50) per ton, and that the steamship which brought the iron across the ocean did not receive \$1 per ton for the service. Instead of this fact being an argu-

ment against our iron duty, it is a very strong one in favor of increased duties, and it also shows that our railroads will do more for strangers than for our own people. Coming to Canada in the winter, the port of arrival of the Glasgow steamer must have been Halifax or St. John, or perhaps Portland or Boston, for she could not reach Montreal. Without weeping many briny tears over the fact that this steamer received less than \$1 per ton freight, we are interested in learning that the railroad charge from the seaboard to Western Ontario for this Scotch iron was only about \$2.50 per ton, which, if the freight had originated in Canada, say at New Glasgow, would have been not less than twice that amount, or \$5 per ton. It is doubtful if a car load of iron made in Nova Scotia or New Brunswick would be hauled to Toronto, Hamilton or London, for less than \$5 per ton, and yet the same railroad will haul the same sort of freight over the same route for half the money if it comes from across the sea. As we have heretofore shown thousands of tons of wrought scrap-iron are brought from abroad into Canada at freight charges which probably pay very little more than the cost of handling, with the result that about all the bar-iron made in Canada is of very inferior quality and entirely unsuitable for many purposes, forcing these who require really good iron to import it from Great Britain or the United States. This status exists because the import duty on wrought scrap-iron is only \$2 per ton. The duty upon bar iron, however, is \$13 per ton, and the approximate price of merchant iron in Canada is \$40 per ton. It is not to be expected, therefore, that any really first-class puddled iron will ever be made in Canada under these circumstances. With a higher duty upon wrought scrap-iron—say \$7 or \$8 per ton—much of the pig-iron now made in Canada would be manufactured into puddled bar instead of being cast into water and gas pipes. As it is our furnaces are handicapped, first by the low duty on pig iron, second by the ridiculously low duty on wrought scrap, and third, by the low rates of ocean freight on all forms of iron. Wrought scrap is a manufacture of iron advanced a process beyond cast iron. According to the ethics of protection the duty should be higher on the article upon which the greater amount of labor had been performed, and this should impose a higher duty on wrought scrap than on cast iron. But the duty on wrought scrap is only half that laid on pig-iron. How is it possible then that puddled iron should be made in Canada. The rolling-mill men have a bonanza while the furnace men starve. A duty of \$8 on wrought scrap could not increase the cost of scrap bars to consumers, but the rolling mill men would fight against the advance being made, but they could stand it nevertheless, and with higher duties on both wrought scrap and pig-iron the output of our furnaces would be manufactured into puddled bars instead of into cast iron goods.

Increase the duty on both wrought scrap and pig-iron.

MISUNDERSTANDINGS.

WE have before us a letter written by a prominent manufacturer of Toronto, in which he gives his views regarding the N.P. He shows what he believes to be some of the incongruities of it, and suggests remedies which he thinks would make the system all that it should be. He is the head of a large

manufacturing concern, and the earnest way with which he writes, entitles his views to all due consideration.

He says that the protection which we now have in Canada, is like housing children from wild beasts and then leaving them to starve. It may be said that industries which cannot thrive under protection deserve to die, but that this idea does not hold in countries where the theory of protection is more fully understood than it is here. The United States Government, he says, gives a bounty of two cents per pound on sugar made in the States and exported; that it gives a bounty of ten cents per yard on woolen carpets made there and exported; that a bounty was paid to encourage the manufacture of steel rails, and that experiments are now being made partly at the expense of the Government to discover the utility of nickel steel. "The United States, therefore, not only erects a tariff wall which absolutely prevents outsiders from getting in, but also gives help to American manufacturers to enable them to compete with foreign manufacturers in their own markets. This is ideal protection." The question is then asked, How is it in Canada? A tariff duty, he says, is put on a certain line of manufacture to foster it, but to manufacture it certain materials must be imported, and these should be admitted duty free. But duty is levied upon these materials because, perhaps, some small concerns may be engaged in their production in Canada, although this home production may not be sufficient to meet the demand, or it may be of inferior quality. Window shade cloth is cited in illustration of the writer's contention. He says that window shades are made to quite a large extent in Canada, and therefore the chief materials used in the industry, such as cambrie, benzine, paints, etc., should be admitted duty free. Take woolen carpets also: British and foreign warp must be imported for this business, because Canadian makers cannot supply the demand, and therefore the duty on warps should be rebated when manufactured into carpet in Canada. But to this the N.P. says no, because carpet warp is made here. He says that the United States Government, to kill the Canadian industry, gives a bounty of ten cents per yard on all woolen carpet sent into Canada. Attention is directed to the fact that the United States has done more than any other country to protect and foster her manufacturing industries, and that this was done in such a way as to strengthen her commercial hand to the extent of being able to dictate the terms upon which she will do business with other countries, besides making it worth while for many large European manufacturing concerns to establish factories there.

It is quite surprising that a person who has invested large capital in a manufacturing enterprise in Canada, and who should be well acquainted with the fiscal policy of the Government which has such vital bearing upon his industry, should be so entirely ignorant of that policy and of the effects which it is intended to produce. It is not a happy illustration to suggest that the protection which the N.P. throws around our manufacturing industries is similar to housing children against the attack of wild beasts and then leaving them to starve. It is more like the care which a parent bestows upon his child in giving him a good education and teaching him the methods by which he may win his way in the world. When the child has arrived at man's estate, the parent is not leaving him to starve when he is able to help himself. It is true, protection makes

manufacturing quite possible and profitable; but it is no part of the duty of the Government to guarantee financial success to every protected industry which may be started. Something must be left to common sense. Before investing in a factory enquiry should be made as to whether the demands of the country are not already supplied by existing establishments. If they are the manufacturer should not complain that there was an overproduction when he himself had helped to precipitate the situation. But it is this very competition which reduces prices in protected countries as soon as the supply overtakes or exceeds the demand. No man exhibits wisdom who persists in producing articles for which he has no use and for which he can find no sale. According to the inexorable law of the survival of the fittest, where the supply exceeds the demand, the weak and inefficient goes to the wall; but the theory of protection has nothing whatever to do with the failure.

It is also surprising that in these days of general intelligence any one should suppose that such a condition prevails in the United States, as this writer seems to imagine. There is no bounty paid on exports of sugar, neither is there a bounty paid upon exports of woolen carpets or of anything else. The United States pays no export bounty upon anything. Neither did it ever pay a bounty to encourage the manufacture of steel rails. When American manufacturers demonstrated the fact that nickel-steel armor plates could be made as well in that country as in Europe, the Government were quick to award them large contracts for the article. It is a great mistake to suppose that the American tariff absolutely prevents outsiders from getting into that market. The fact is, since the McKinley tariff came into effect the imports of foreign products into that country are greater than ever before.

The N.P. was not created to build up big manufacturing industries at the expense of the small ones, as this writer imagines it should in his allusions to the window shade and carpet warp industries. He is doubtless aware that there are mills in Canada with capacity to manufacture all the textile material that the trade might require; then why should these Canadian mills lie idle so that a window shade factory might obtain cheaper foreign cloths? We have a large and valuable petroleum industry, and in the refining of our crude oils we make large quantities of benzine, but why should this by-product be thrown away, or why should our oil refineries be abandoned to the end that the Standard Oil Company may possess the Canadian market? As fine and serviceable paints are made in Canada as anywhere in the world, and the capacity of our paint works is equal to any demand which might be made upon them; then why should they be driven out of business? There is a great and most important interdependence of Canadian manufacturing industries one upon another which makes it possible for them all to live and thrive; but it was never intended that the N.P. should allow one of them to exist at the expense of the life of another. But if there must be any discrimination at all it should not be against the weak and feeble. Canada does not despise the day of small things, and if we can succeed in building up every small industry which might contribute to our necessities, we would have no anxiety regarding the larger ones.

It is unfortunate that such misunderstandings and misapprehensions should exist in the minds of the people upon such

important subjects as those herein alluded to, and which so vitally affect the manufacturing industries of the country.

CANADA NOT HOPELESS NOR HELPLESS.

REGARDING the question of discriminating duties against the United States and in favor of Great Britain, there are some lines of products the duties upon which might be allowed to remain as they are. The following table, compiled from the Trade and Navigation Returns for 1891, illustrates this contention. Our imports of the following named articles from the two countries were as follows :

Articles	UNITED STATES. Values.	GREAT BRITAIN. Values.
Blankets	\$1,232	\$52,256
Cassimeres	107	69,098
Cloths	15,263	1,491,166
Coatings	160	654,082
Doeskins	none	2,037
Meltons	none	22,068
Overcoatings	none	11,011
Tweeds	none	971,036
Felts	4,114	18,130
Flannel	5,071	175,257
Hosiery	2,507	303,822
Shawls	519	111,167
Socks and Stockings (Alpaca)	881	362,057
Yarn—knitting, etc.	739	111,053
Worsted goods	631	608,498
"	1,628	407,486
"	13,361	1,976,017
Wool and worsted clothing for women	16,752	493,590
" " " " for men	4,413	92,064
" " " " underclothing	265	20,695
Clothing, n.e.s.	3,202	64,331
Carpet—Brussels	3,356	481,222
" " Damask	none	651
" " Dutch	5	11,075
" " Tapestry	736	507,579
" " Venetian	none	82
" " Druggets	none	72
" " Felts—printed	119	1,047
" " Smyrna	350	604
" " Ingrain	5,356	39,802
" " " "	10,144	19,163
" " Felts—pressed	10,188	26,854
Winceys	1	7,468
Shoddy	1,695	15,771

On the other hand, there are some articles which are produced in Great Britain of as good quality as those made in the United States, the statistics showing, however, that a large part of our trade goes to the enrichment of American manufacturers. In these lines it might be well to discriminate by advancing duties upon imports coming from countries which impose a duty of five cents per dozen upon Canadian eggs and thirty cents per bushel upon barley. We enumerate :

Articles	UNITED STATES. Values.	GREAT BRITAIN. Values.
Gunpowder	\$8,661	\$2,618
Dynamite	8,132	none
Fuses	11,969	327
Cartridges	47,198	3,633
Rubber boots and shoes	26,211	1,212
" " n.e.s.	145,570	750
" " belting	16,180	224
" " hose	29,023	1,983
" " packing, etc.	12,780	1,273
" " all n.e.s.	127,736	32,303
Hops	146,868	46,771
Printing ink	44,701	1,767
Mowing machines	11,013	50
Spades and shovels	6,702	3,057
Butts and hinges	11,848	807
Cast iron vessels, plates, etc.	60,418	11,479
Locomotives	67,209	none

Builders' hardware	370,455	51,087
Housefurnishing hardware	99,230	19,107
Iron and steel rivets	5,871	90
Locks	50,530	7,112
Horse powers	1,574	none
Portable saw mills	1,366	none
Thrashers	24,246	none
Sewing machines	90,046	2,659
Typewriters	16,280	66
Iron pumps	20,390	378
Safes and doors	3,686	211
Scales	10,511	1,169
Stoves	27,937	1,762
Lapwelded tubes	38,518	5,756
Stamped tinware	128,780	14,082
Barb wire fencing	3,082	none
Nuts and washers	37,204	6,126
Sewing machine needles	11,078	3,673
Axes, etc.	3,065	629
Saws	75,714	2,119
Mechanics' tools	182,255	42,611
Jewelry	273,942	68,418
Leather belting	5,411	889
Sole leather	98,839	1,119
Boots and shoes	212,677	20,533
Lithographic stones	5,457	77
Malt	32,877	2,176
Printing presses and machinery	105,479	8,263
Ships	55,195	2,934
Manufactures of tin n.e.s.	40,274	4,319
Binder twine	24,696	71
Watches	18,592	1,750
Watch cases	66,628	2,393
Watch movements	314,921	1,399
Household furniture of wood	274,713	30,115

These articles comprise only a small portion of a list which might be considerably extended, but it is sufficiently long to show that notwithstanding the hostility of the McKinley tariff to Canadian manufacturing interests, we are nevertheless better customers of that country in many lines than of Great Britain.

We import a large number of articles from the United States upon which no duties are levied, while the most of them, if going from this country to that, would be taxed with heavy duties. We give the names and values of some of these articles imported from the United States into Canada last year :

Articles.	Value.
Hickory felloes, sawed to shape	\$21,834
Hickory billets for handles	1,273
Saw logs	\$59,578
Cherry, chestnut, etc., sawn	130,715
Mahogany	26,563
Oak	240,590
Pitch pine	151,896
Redwood	5,863
Walnut	117,908
Hickory spokes	9,033
Hickory spokes, turned	55,726
Bristles	45,116
Eggs	91,996
Soap grease	91,847
Hair	24,413
Hides	1,869,720
Rennet	30,311
Raw silk	171,939
Wool	555,093
Broom corn	109,042
Bananas	322,278
Pine apples	68,966
Undressed hemp	236,641
Indian corn	52,250
Rattans	22,577
Unmanufactured tobacco	1,592,014
Church bells	11,124
Bolting cloth	17,114
Fire brick	56,676
Cotton waste	233,179
Cotton wool	3,555,278
Nets and seines	246,612
Gutta percha and rubber, crude	739,983

Brass cartridge blanks ..	23,587
Filo blanks ..	12,741
Mining machinery ..	60,238
Steel for saws ..	31,000
Spelter ..	7,259
Oilcake ..	42,047
Palm oil ..	81,000
Philosophical instruments ..	22,005
Rags and paper waste ..	107,846
Ivory veneers ..	10,001

Many of these articles, which are the product of the United States, can also be produced in Canada, and their free admission, in view of the McKinley tariff, is an injustice to Canadian producers. They might be made dutiable when coming from that country. There are many other of these articles which are not produced in the United States at all; and we now pay profits to the importers and middlemen there which might be avoided if we imported direct from country of production.

It will be found that in discussing the questions of reciprocity with the United States, and non-intercourse via our international railway system, these facts and figures will be useful. Canada is not in the hopeless and helpless condition that some of her detractors would have the world believe.

THE BEET SUGAR QUESTION.

SOME months ago the Government announced that Prof. William Saunders, Director of Dominion Experimental Farms, had been instructed to investigate the production and manufacture of beet sugar and the applicability of the industry to Canada, and to report thereon. This service has been performed, and a copy of Prof. Saunders' report is before us. It goes without denial that the investigation has been done in a most thorough and satisfactory manner, all the facts being brought into a small and convenient compass.

It is shown that the cultivation of the sugar-beet is entirely feasible in many countries, including Canada; that it is or would be a very profitable crop for the farmer to grow if there is a steady and reliable demand for the beets; and that the manufacture of them into sugar would afford good remuneration to all concerned, particularly if a bounty is given.

But after having demonstrated all these facts, Prof. Saunders indulges in speculations regarding the desirability of the establishment of the industry in Canada, and makes some volunteer objections which are, to say the least, quite strange and inconsistent.

He tells us that forty large factories would be needed to produce all the sugar required for consumption in Canada, and then speculates as to the effect the establishment of the industry would have on other industries. He says: "The building of forty sugar factories in Canada would for a time give employment to many mechanics engaged in their construction; the increased consumption of coal would give employment to miners; it would add to the earnings of railways engaged in transporting the coal and in carrying the beets to the factories; give employment to machinists, who would manufacture more or less of the machinery; to the makers of barrels and bags to be used as containers for the sugar, and also find employment for a large amount of capital;" all of which is very true and should weigh much in considering the question. But, says he, "It is probable that the strongest objection to the encourage-

ment of this industry, on the only basis on which it is claimed it could be established, will be found in the fact that it would require, when fully developed, an annual subsidy of about \$4,000,000, for the raising of which, as long as we have free sugar, other industries must be taxed. This subsidy might in the course of time be lessened, but in view of all the facts presented it is not likely that the bounty could ever be much reduced without crippling the industry."

It is rather strange that Prof. Saunders or any other sensible man should seem to suppose that it was ever proposed that any bounty money should ever be paid except upon the home side production of sugar. If the sugar were produced the bounty on it should be paid, but no sugar, no bounty. Neither was it ever supposed that the industry would produce as much sugar as the country required—certainly not for many years. Prof. Saunders shows very clearly that Canada is capable of producing beet sugar in commercial quantities, and that the industry would diversify the crops of the farmer and afford him most satisfactory results; but he is not willing that the farmer should enjoy this benefit because sometime in the sweet by and by, when we might happen to produce two hundred million pounds of sugar, we might be called upon to pay bounty thereon to the tune of \$4,000,000. Although not commissioned by the Government to solve or even discuss the delicate question of federal revenue, Prof. Saunders takes it upon himself to do so, and for which the Finance Minister will no doubt feel under many obligations. He sees a barrier in the way of the Government adopting the policy of bonusing the industry in that it would require large sums of money which could not be well spared from the exchequer.

In abating the duties on raw sugar the Government so arranged the matter that only that quality of sugar should be imported duty free which is entirely unfit for food; and that all sugar which is suitable for food shall pay a very high import duty. As we have heretofore shown, this arrangement deprives the people of Canada of using light imported sugar, compelling them to confine their consumption entirely to such as is produced by Canadian refiners. But it is here that the people suffer by what is evidently an unjust discrimination against them in that the duty upon dutiable sugar is too high. The sugar refiners themselves have said that they can manufacture as cheaply as do the American refiners, but our duty on refined sugar is \$16 per ton against only \$10 under the McKinley tariff, a difference against Canadian consumers and in favor of Canadian refiners of \$6 per ton. Our consumption of sugar is about 125,000 tons per year, and the extra and unnecessary duty upon this amounts to about \$750,000. The total number of persons employed in the refining industry amounts to but a few hundred, while, as Prof. Saunders shows, the beet sugar industry would give employment to many thousands. If this \$750,000 were divided in any such manner among the few hundred as the beet sugar bonus would be to the many thousand it would have some appearance of equity and justice. But it is not, for not only the legitimate profits of refining go into the pockets of probably a half-dozen or dozen men, but the \$750,000 also. Now if it is the correct thing to give this unique advantage to the refiners, or if it is the policy of the Government to give it, surely the Government could afford to do as much for the farmers and the beet sugar industry.

If this were done what would be the result? Paying two cents per pound upon the production of beet sugar, \$7,500,000 would bonus the production of 37,500,000 pounds of the article, and any one, even Prof. Saunders, could figure out what a boom this would give to the industry.

Certainly if \$750,000 per year can be given to the refiners a like amount ought to be given to the beet sugar industry.

THE AMERICAN TIN-PLATE INDUSTRY.

We do not know why the *Empire* joins in so heartily with the Democratic press of the United States, in decrying the efforts that are being made in that country to establish a tin-plate industry, except it be on the general principle it seems to have adopted to depreciate that country with or without reason, in sense and out, as a counterfoil to the efforts of the *Globe* and others to boost unrestricted reciprocity. The people of the United States are striving to be relieved of their dependence upon Great Britain for tin-plates, by establishing works of their own. No one doubts the ability of American ingenuity to produce as good or better machinery and appliances for the manufacture of tin-plates as are used in Wales; the only and vital question being whether with these superior appliances and the protection afforded by the McKinley tariff, they can, with the higher prices paid to American workmen, successfully compete with the exceedingly cheap labor of Wales. In that country it is necessary that not only the men, but the women and children also, should labor in the tin works to enable them to live, while that condition does not prevail in the United States. Until last year the American duty on tin-plate was one cent per pound, while under the McKinley tariff it is advanced to two and two-tenths cents. Under the lower duty not a pound of the article was manufactured in the United States, that country, however, absorbing probably two-thirds of the entire Welsh output. This was a commercial vassalage which Congress did not approve of; and we now behold the patriotic American people endeavoring to become independent in this respect, while unpatriotic pessimists endeavor to defeat that object. And the *Empire*, which professes to favor the protection of Canadian manufacturing industries, finds some unaccountable pleasure in helping this latter class. In this connection we quote the following from the *American Manufacturer*:—

The necessity for the extensive employment of both capital and labor in every legitimate occupation, is so apparent, that every citizen should hail with delight the introduction and success of every new enterprise in the land, and each one should exert himself to encourage those engaged therein, by his patronage and words of good cheer. It is not only important to society and the state that labor be judiciously and remuneratively employed, but it is an imperative necessity. Idleness, either optional or enforced, is an unmixed calamity. The introduction of the tin-plate industry in the United States, and its successful development, is a matter of paramount importance to the laborer and wage earner of the land, for little labor is possible, apart from the employment of much capital; and the operative must be compensated, whether the capitalist is remunerated or not. It is evident, that, next to political freedom, the most desirable condition for any people to enjoy is that of industrial independence. To be compelled to rely upon distant and sometimes unfriendly nations for important supplies places us at a disadvantage, even in times of peace.

That this inconvenience is multiplied almost indefinitely in time of war, is clear. Moreover, to spend abroad annually twenty five or thirty million dollars in gold, for an article which ought to, and can better be made at home, is an unwise policy. It is the suicidal policy pursued in 1857 which drained this country of specie, and forced the banks throughout the Union to suspend payment, and brought general disaster to business. The fact that citizens professing patriotism can look with disapproval upon the present efforts to establish the tin-plate industry in our country shows there is need for the authoritative reminder. He who does not provide for his own family has denied the faith, and is worse than an infidel.

CANADIAN IRON AND STEEL WORKS.

The Directory to the iron and steel works of the United States, just published by the American Iron and Steel Association, contains a complete list also of such works in Canada; and as this latter information is entirely reliable, and has never before been published in detail in Canada, and considering the great interest Canada has in building up these industries, we take much pleasure in reproducing it here.

The Londonderry Iron Company, Londonderry, N.S., main office, Montreal. Works at Acadia mines (near Londonderry). Two stacks: Furnace A, 75 x 18 feet, and Furnace B, 62 x 18 feet, built in 1875-6, and blown in in 1887. Furnace A rebuilt in 1883, and again in 1891. Three Siemens-Cowper fire-brick, and one Ford iron-pipe stove. Fuel, coke, made from coal mined in Pictou and Cumberland counties; ores, limonite, carbonate and red hematite from Colchester and Annapolis counties. Product, foundry pig-iron. Annual capacity, 45,000 net tons. Brand, "Siemens." A cast iron pipe foundry and rolling mill are also operated in connection with these works. The rolling mill was built in 1875-6, and put in operation in 1876. There are one single and eight double puddling furnaces; one scrap and four heating furnaces; three trains of rolls (9, 16 and 18 inch), and three steam hammers. Product, bar-iron and nail plate. Annual capacity, 10,000 net tons. Fuel, bituminous coal. A. T. Paterson, president; Hon. D. McInnes, vice president; James Phymister, secretary; J. C. Paterson, treasurer; R. G. Leckie, general manager; A. Muir, assistant manager.

New Glasgow Iron, Coal and Railway Company, Ferrona, Pictou county, N.S. Building, one stack, 65 x 15½ feet, to be completed early in 1892. Three Massicks-Crooke stoves. Fuel, coke, made from coal mined near furnace. Ores, local brown hematite and spathic. Product to be foundry pig-iron, to be branded "Ferrona." J. F. Stairs, president; Graham Fraser, vice-president; Harvey Graham, secretary.

Pictou Charcoal Iron Company, New Glasgow, N.S. Furnace at Bridgeville, N.S. Building, one stack, 52 x 11 feet. One Cooper-Durham stove. Fuel to be charcoal. Ore, brown hematite from East River Valley, N.S. Steam power. Product to be pig-iron for car wheels, malleable purposes and general foundry work. Estimated annual capacity, 8,000 net tons. Wm. B. Moore, president; D. R. Grant, treasurer; Ernst A. Sjostedt, general manager.

Nova Scotia Steel and Forge Company, New Glasgow, N.S. Forge built in 1872, and steel plant in 1881. Two open hearth steel furnaces; first steel made in 1883. Twelve forge fires, eight coal and two gas heating furnaces, six trains of rolls

(9, 16, 18, 22 and 26 inch, and a cold roll train), and seven hammers. Product, railway, marine and engine forgings, car axles, mine rails, machinery, spring and agricultural implement steel, and iron and steel merchant bars. Annual capacity, 24,000 net tons of acid open hearth steel ingots, and 20,000 net tons of finished iron and steel products. Basic steel has been made at these works. Fuel, bituminous coal and producer gas. Graham Fraser, president and manager; H. Ritchie, treasurer; Thomas Cantley, secretary.

Halifax Rolling Mills Company, Halifax, N.S. Works, three miles from Halifax. Built in 1878. Two heating furnaces, two trains of rolls and twenty cut nail machines. Idle.

Coldbrook Rolling Mills, I. & E. R. Burpee, proprietors, St. John, N.B. Built in 1861, and remodelled and enlarged in 1874. One forge fire, seven scrap furnaces three trains of rolls (one 10 and two 18 inch), and two spike machines. Product, bar-iron, iron and steel nail plate, ship and railway spikes, mine rails and bridge bolts. Annual capacity of rolled iron and steel, 6,000 net tons. Fuel, bituminous and anthracite coal.

Portland Rolling Mills, J. Harris & Co., proprietors, St. John, N.B. Works built in 1856, and rolling mill added in 1860. Burned and rebuilt in 1889. One single puddling furnace, five heating furnaces, three trains of rolls (12 and 18 inch bar trains and 18 inch nail plate train), one five-ton hammer. Product bar-iron, car axles, nail plate, steel and mine rails, fish plates, knees for ships shafting, etc. Annual capacity, 7,000 net tons. Fuel, bituminous coal. J. C. Robertson, managing owner; John N. Thornton, manager; James Mowat, treasurer.

The Canada Iron Furnace Company, Montreal. Furnace at Rudnor Forges, Quebec. One stack, 40 x 9 feet, built and blown in in 1891. One Drummond pipe stove. Steam and water power. Charcoal fuel. Ores, lake and bog, from Three Rivers and Lake a la Tortue, Quebec. Product, pig iron for car wheel and malleable purposes. Annual capacity, 10,000 net tons. Brand, "C.I.F." P. H. Griffin, president; Robt. Schott, vice-president; George E. Drummond, managing director and treasurer; Thomas J. Drummond, secretary; John J. Drummond, superintendent, Drummond, McCall & Co., Montreal, selling agents. (The present stack takes the place of the old Rudnor Furnace.)

Metropolitan Rolling Mills, Montreal, Abbott & Co., proprietors. Built about 1880. Equipped with heating furnaces, trains of rolls and machinery for producing bar iron, cut nails, railroad spikes and horse shoes.

Montreal Rolling Mills Company, Montreal. Works at Ste. Cunegonde near Montreal. Built about 1857. Three coal and three gas heating furnaces, three trains of rolls (9, 12 and 18 inch), seventy-five cut nail machines, and seventeen wire nail machines. Product, bar and horse shoe iron, nail plate, skelp, horse shoes, horse shoe nails, cut nails, and iron and steel wire nails. Annual capacity, 10,000 net tons of nail plate, 25,000 kegs of horse shoes, 25,000 boxes horse shoe nails, 125,000 kegs of cut nails, and 20,000 kegs of wire nails. Brand, "M.R.M. Co." in semi-circle. Andrew Allan, president; Hugh McLennan, vice president; William McMaster, managing director; Harrison Watson, secretary-treasurer.

Peck, Benny & Co., Montreal. Works built about 1856.

Equipped with heating furnaces, trains of rolls, and machinery for producing horse nails, cut nails, and ship and railroad spikes, operated by water power.

Pillow and Hersey Manufacturing Company, Montreal. Works built in 1859. Eight heating furnaces, four trains of rolls (9 inch guide, 12 and 18 inch bar, and 18 inch plate), ninety-one cut nail machines, and twelve wire nail machines. Product, cut nails, wire nails, bar-iron, railway and pressed spikes, horse shoes, tacks, bolts and nuts. Annual capacity, cut nails, 100,000 kegs; wire nails, 12,000 kegs. Fuel, bituminous and anthracite coal. Rudolph Hersey, president; John A. Pillow, vice-president and managing director; George A. McAgy, secretary; George Luckhurst, assistant secretary.

Ontario Rolling Mill Company, Hamilton, Ont. Three mills, two at Hamilton and one at Swansea, near Toronto. Hamilton mills were built in 1861, and contain three double and two single busteling furnaces, nine coal heating furnaces, five trains of rolls (14 inch muck, 9 and 10 inch guide, 20 inch bar and 20 inch plate), three hammers and forty-five cut nail machines. Product, bar and band iron and steel, fish-plates, forgings, cut nails, rivets and washers. Annual capacity, 100,000 kegs cut nails, and 30,000 net tons of other finished products. The Swansea mill was built in 1888, and contains one coal and three Smith gas heating furnaces, one 10 inch train of rolls, and one 5,000 pound hammer. Product, bar-iron. Annual capacity, 12,000 net tons. C. E. Doolittle, president; C. S. Wilcox, vice-president and treasurer; W. A. Child, secretary.

Number of blast furnaces in Canada: five completed and two building. Of these, two use coke and three use charcoal as fuel, and one coke furnace and one charcoal furnace are in course of erection.

Number of rolling-mills in Canada, twelve. Of these, one has an open hearth steel plant.

EDITORIAL NOTES.

LAST year the United States exported 363,116 dozen eggs valued at \$64,259, or nearly 18 cents per dozen, of which 309,436 dozen came to Canada—duty free. In the same year the United States imported 1,115,481 dozen eggs from Canada valued at \$125,468, or 11½ cents per dozen, the duty upon which was 5 cents per dozen. In 1880 the imports of eggs into Great Britain were valued at \$11,000,000, and in 1890 at no less than \$19,125,000.

A DEPUTATION of influential manufacturers waited upon the Government last week and propounded the following proposition: That, in order to give still further encouragement to the export trade, on all articles manufactured in Canada and exported to other countries the manufacturer be granted a rebate of the amount of the duty which he has paid upon the material that entered into the construction of the article exported. This prayer should be answered. Under the McKinley tariff American manufacturers are allowed a drawback of 99 per cent, upon duties paid upon imported raw materials exported in manufactured form.

AT the recent annual meeting of the Canadian Manufactur-

ers' Association, the Secretary was instructed to ask the Government to modify the Patent Act to the extent that in applying for patents, applicants should not be required to produce models of their inventions unless the Commissioner of Patents should deem the same to be absolutely essential; and that the duration of the term for which patents may be granted should be extended to a period of seventeen years or more. We are pleased to state that a bill has been prepared having these changes in view; that it meets the approbation of the officials of the Patent Office, and that it will most likely receive the support of the Government when it is presented in the House.

A COMPANY has been formed at Havre for the manufacture of nickel. It is having a factory constructed on the Tancarville Canal, and has concluded an important contract with the government for nickel-plating Lebel rifles. The mineral used has hitherto come from New Caledonia, but is henceforth to be imported from Canada.—*Cleveland, O. Iron Trade Review.*

Please notice these facts. A French company having a large contract with the French Government for nickel-plating rifles, abandons drawing supplies of nickel from the French island of New Caledonia, and depends upon Canada for the article. And yet there are those who say that it is possible for New Caledonia to depreciate the value of Canadian nickel. Why not use this nickel club to force agreeable commercial arrangements from disagreeable neighbors?

A BILL has been introduced into the Dominion Parliament prohibiting the importation of aliens under contract into Canada. It is framed upon the same general lines as the American Act, and seems to be in the nature of retaliation for the exclusion from the United States of Canadians who go to that country seeking employment. The bill should never pass. Canada needs the presence of immigrants, particularly skilled artisans and able-bodied workmen and their families. It is claimed that the bill is in the nature of protection to Canadian workmen; but this is not the way to protect them. The way to protect them against American competition is to increase the duties upon such things as can be made to advantage in Canada but are imported in large quantities from the United States. This is the sort of protection Canadian workmen need.

A TELEGRAM from Pittsburgh, Penn., a few days ago, stated that Messrs. Carnegie, Phipps & Co. were working full blast night and day, endeavoring to fill orders for nickel-steel plate, but notwithstanding their immense capacity they have been compelled to secure the assistance of the Cleveland Iron Works. Government experiments with nickel-steel armor have been much more satisfactory than has yet been published, and in consequence those who have the advantage of high official information are endeavoring to secure control of the world's supply of nickel. For some days it has been rumored, and it is now publicly charged, that a gigantic nickel trust is being organized which will be of greater importance than the now defunct Standard Oil Trust. Two prominent senators with tremendous influence in Congress are said to be interested. And so a gigantic trust is being formed in the United States to control the output of Canadian nickel, and still the Dominion Government dally with the question of imposing an export duty on the article. Impose the duty.

ONE of the most important changes which it is to be hoped the Government will make in the iron schedule of the tariff at the present session of Parliament should be to raise the duty on wrought scrap-iron to seven or eight dollars per ton. The duty is now only \$2 per ton, and under it Canada has failed to establish a puddled bar-iron industry. In fact, such an industry is entirely impossible with the duty on scrap-iron as low as it is. No concern can afford to manufacture pig-iron or to import it to be made into puddled iron, when much cheaper and inferior iron made of scrap would confront it at all times. The imports of wrought scrap are immense, and the scrap piles of all Europe are drawn upon to supply the demand. No rolled iron made of this stuff is imported, because the duty of \$13 per ton keeps it out; but our imports of puddled bar are large because, for many purposes, only iron of the best and most reliable character can be used; and for the reasons stated, such iron is not made in Canada. Scrap-iron from Europe can be delivered at rolling mills in Montreal and the Maritime Provinces at about the same, or less, charge for freight as the railroads charge for similar service between Montreal and Toronto; and the only rolling-mill concern in Ontario, having no competitors, buys domestic scrap at exceedingly low prices. How, then, can we expect to have iron furnaces and puddled iron? The duty upon wrought scrap should be increased.

IF the Government listens to the appeals constantly being made to them regarding the imposing of export duties on certain Canadian products, they will do a good thing for the country. A few days ago some of the largest manufacturers in Canada waited upon the Government and urged that an export duty be laid upon spruce logs and also upon pulp wood. Included in the delegation were Messrs. John MacFarlane of the Canada Paper Company, E. B. Eddy and W. H. Rowley, of the Eddy Paper Mills, and Mr. Scott of the Napanee Paper Company. The deputation pointed out that the United States, while reducing the duty on pine lumber to \$1 per 1,000 feet did not reduce the duty on spruce logs, which still remains at \$2 per 1,000. In consideration of the reduction on the one quality of lumber Canada had taken off the export duty on both pine and spruce logs. The United States had imposed a duty on ground wood pulp of \$2.50 a ton, a rate which amounted to about \$1.25 a cord, and in that way, spruce being largely the substance from which wood pulp is made, their tariff practically prohibited the importation of that article into the United States. The deputation asked for the imposition of an export duty upon spruce pulp wood as well as upon spruce logs. They represented the magnitude of the industry, and the extent to which the country was being denuded of these woods in those localities which were near facilities for carriage, and urged the Government to take action without delay. Mr. Abbott, in reply, said that the Government had already been considering the matter of the export duty on logs. Impose the duty.

DISCUSSING what we recently said regarding the Canadian canning industry and the injury it would sustain under unrestricted reciprocity with the United States, alluding to this journal the *American Artisan* says:

It has fumed because the Canadian farmer cannot sell his barley in our markets on account of the tariff which Mr. McKinley has placed upon the fruits of his labor, and yet, when we venture to suggest that the tariff be removed from canned goods so that the Canadian canner may come in if he can compete with our own people in the same line of business, it will have none of it. The journal will pardon us if we say that we can not willingly believe that the project of catering to 5,000,000 extra consumers would tickle the American canners nearly as much as the hope of reaching some of our 60,000,000 would stimulate their Canadian brethren were the barriers removed. But our contemporary believes in trade manufactured by the process of taxation, hence it is consistent only when it opposes suggestions whose realization would tend to foster natural conditions.

"National conditions" eh? Will our anomalous free trade contemporary suggest about the additional number of consumers Canadian canners would be likely to find in the sixty million American market under unrestricted reciprocity, and the same as regards American canners in the Canadian market? Only a "suggestion" is asked for. And when doing this would it also kindly suggest the benefit Canadian canners would experience in surrendering free tin-plates which they now have, and submit to Mr. McKinley's duty of two and two-tenths cents per pound on that article, as Mr. Blaine says they would have to do to obtain access to the American market. The *Artisan* is chronically complaining about the American duty on tin-plates, and then affectionately invites Canadian canners to assume that burden. Go to, thou unwise free trader!

RECENTLY the proprietors of the *Cleveland Marine Review* wrote to the United States Government, enquiring regarding international wrecking privileges, and so-called discrimination against American vessels passing through Canadian canals, and in reply the Acting Secretary of State, Mr. William F. Wharton, wrote them as follows:

I have to acknowledge the receipt of your letter of the 12th inst., concerning reciprocity with Canada in wrecking matters and the settlement of the Welland and St. Lawrence river canal tolls. In reply, I desire to observe that these questions were the subject of consideration in the conference lately held in this department between the secretary of state, the British minister, and the Canadian commissioners. An understanding on both points was reached, which it is hoped will effectually remove the causes of complaint heretofore existing.

This seems to indicate that this matter of canal tolls has been adjusted.

ACTING Secretary of the Treasury Nettleton, has informed the Commissioners of Immigration at the different American ports that the Treasury Department regards the bringing of aliens to that country under contract to perform labor as seamen on board American vessels sailing between ports of the United States and Canada as a violation of the alien contract labor law, but that this construction of the law does not apply to sailors who are domiciled in the United States at the time of beginning of such employment. He says that an American vessel deprived of its crew in a foreign port by desertion or otherwise may engage alien sailors to run the vessel, but that the importation of alien sailors under other circumstances is contrary to the purpose of the laws and would tend to cripple American commerce. This means that in case an American vessel bound for a Canadian port should be deserted by her American crew on arriving at that port, the master may ship a crew of Canadians to bring her back to her home port, without any violation of the law. The Canadians so employed,

would, of course, have to pay their passage back. At least they could not legally ship in an American vessel to work their way back, or go to any other port. This is international courtesy with a drawback attachment. The crippled American vessel in a Canadian port cannot return to McKinleyland without the help of Canadian seamen, but when these seamen arrive in that Land of the Free and Home of the Brave, they are debarred working their way back home in an American vessel. Verily the love which passeth all understanding abideth not in the hearts of these heathen.

THE *American Agriculturist* (New York) for April contains the second of a series of valuable and instructive articles on the beet-sugar industry, this time dealing with the subject as a business investment. The *Agriculturist* presents, as a striking illustration of the benefits of the bounty system, tables showing the increase in the number of factories in Germany, since the Government of that country began its bounty system in favor of sugar-beet raising, the increase in the quantity of the beets worked, also of the sugar and molasses produced. Referring to the erection of factories in Western States, the *Agriculturist* says: "Capital naturally looks to the direction that returns the largest per cent. of interest for a safe investment, and it is the purport of the present article to show that there is no industry, either agricultural, commercial, or manufacturing, that is more attractive to the capitalist than the opportunity now afforded by the cultivation and manufacture of sugar from the sugar beet in this country." Published by the Orange Judd Co., 52 Lafayette Place, New York, 15c. per copy, \$1.50 per year.

FRESH, attractive and pure as a spring blossom; healthful in tone as the pastimes ashore and afloat, which it so zealously advocates, is the April number of *Outing*. Prosperous on the face of it, and this month especially rich in artistic and literary matter, *Outing* is a cheering token of a growing national inclination toward those manly sports and pastimes which will eventually build up for us a race of stalwarts fitted to grasp and guard the magnificent possibilities of our great country. The contents are as follows: "From the German Ocean to the Black Sea," by Thomas Stevens, illustrated by Hy. S. Watson; "A Cigarette from Carcinto," by Edward French; "Goose Shooting on the Platte," by Oscar K. Davis, illustrated; "Saddle and Sentiment" (continued), by Wenona Gilman, illustrated by Hy. S. Watson; "Horseback Sketches," by Jessie E. O'Donnell; "Canoeing on the Upper Delaware," by H. W. Wray; "The Status of the American Turf," by Francis Trevelyan, illustrated by H. S. Stull; "Pole Vaulting," by Malcolm W. Ford, illustrated from instantaneous photos; "Cycling in Rip Van Winkledom," by J. H. Sharpe, illustrated; "Fishing on Cherrystone Creek," by F. B. Jess, illustrated; "The Evolution of the Forty-six-footer," by Geo. A. Stewart, illustrated by Cozzens; "The Connecticut National Guard (concluded)," by Lieut. W. H. C. Bowen, U.S.A., profusely illustrated; "Harry's Career at Yale," by J. S. Seymour Wood, illustrated; "An Irish Otter Hunt," by Capt. Thos. S. Blackwell; "Mutual Aid Among Animals," by Geo. E. Walsh, illustrated; and the usual editorials, records, poems, etc.

THE *Popular Science Monthly* maintains its usual standard of excellence in the April issue. Prof. David Starr Jordan makes the inspiring influence of a great teacher of science strongly felt in his pen-portrait of "Agassiz at Penikese," with which the number is opened. Dr. Andrew D. White, in his article on Astronomy, gives an authentic account of the treatment which Galileo and his writings received from the Catholic and Protestant Churches. An account of researches upon the "Involuntary Movements" which guide the "mind-reader," is contributed by Prof. Joseph Jastrow. Figures are given of tracings made by an instrument resembling the planchette, which was used in the experiments. The relations of Science and Fine Art are pointed out by Emil Du Bois-Reymond. A subject of concern to nearly everybody—"Bacteria in our Dairy Products"—is treated by Prof. H. W. Conn. "The Great Earthquake of Port Royal, Jamaica," is described by Col. A. B. Ellis, with plans of the town, which show that a repetition of the catastrophe has been invited in rebuilding. Hon. Carroll D. Wright gives some important facts and figures in relation to Rapid Transit, bearing on the growth of mileage, relative economy of motive powers, etc. Orchestral Musical Instruments, as made in America, are described in a fully illustrated article by Daniel Spillane. Mr. W. H. Larrabee gives evidences, and names certain cases in which there is lack of evidence, of "Variations in Climate." The subject of "Bad Air and Bad Health" receives

thorough treatment from Harold Wager and Auberon Herbert. There is a biographical sketch of John and William Bartram, with a recent picture of the stone house built by John Bartram in 1731. The frontispiece of the number is a portrait of Rafinesque, of whom a sketch was given some time ago. New York: D. Appleton & Company. Fifty cents a number, \$5 a year.

WILLIAM MORRIS, Poet, Artist, Socialist.—A Selection from his Writings, together with a Sketch of the Man." Edited by Francis Watts Lee. No. 5 of the Social Science Library.—Paper, 25 cents. The Humboldt Publishing Co., 19 Astor Place, New York. The often quoted genius who declared that it was immaterial to him who made a country's laws, so long as he might frame its songs, uttered what is, at least, a considerable part of truth. He pointed to the dictionary, and reminded us that the "poet" is the "maker," and that the untold generations who slowly molded the English tongue agreed in adopting the Greek conception that the man who put the thought and life of his people into verse was essentially the one who "made" his time. The great claim of William Morris—who is a poet alike in prose and verse—upon the English speaking race, is that he has given us the imagings and aspirations that, under all its sordid dress, pant in the Anglo-Saxon breast. He has not trifled with the mere outward coating of the man; he has tried to get at the man himself; he has bent his ear to catch the actual heart-beat of the nation's life, and he has reported it as no other has of late. He has gone straight to the centre for his information; he understands William Morris has a great and kindly heart, simply because he is in thorough touch with his race, which is, at bottom, intensely sympathetic. He understands, and he has approached his audience through the reminiscences of simple, homely life, through their wives and children. Living in a country where to be looked on as "respectable" is the dominant ambition, there is not a "respectability" upon which—like Carlyle and Ruskin—he does not empty the vials of his wrath. He is certainly the most characteristic, and perhaps the most prominent figure in English Socialism, and he is the very one that a hostile press dreads most to attack. For the publishers it should be said that this book of 320 pages is both elegant and cheap.

MRS. GLADSTONE, the wife of the famous British statesman, in the first of her articles, "Hints from a Mother's Life," gives much valuable advice in the April Ladies' Home Journal, which comes promptly to its hundreds of thousands of readers in a dainty Easter cover of pink. The magazine opens with a full-page illustration by W. Hamilton Gibson of an exquisite poem by Eugene Field, entitled "The Singing in God's Acre. The poem only serves to intensify interest in Mr. John Ballantyne's delightful sketch, with photograph, of the poet's wife, in the series of "Unknown Wives of Well Known Men." Mrs. Reginald de Koven, daughter of Senator Farwell, follows with a timely article on "Social Life in Chicago." Mrs. de Koven writes entertainingly upon a subject which, as the daughter of a millionaire senator, and wife of one of the most talented of the younger men of her native city, she has had special facilities for studying. Ethel Mackenzie McKenna contributes a sketch, with portrait, of Miss Helen Gladstone, and Miss Bradley the second of her interesting papers on "The Queens of Westminster Abbey." Frederick Dolman writes of a visit to Fanny Kemble, the woman whom more than half a century ago was known the world over as poet, actress, dramatist and critic, and who now in her English home is spending her declining days almost by the world forgotten. Grace Greenwood writes of "When I Was a Girl"; Ella Wheeler Wilcox of "The Girl Who Brags," and Woolstan Dixey of "Mistaken Literary Success." Mrs. Beecher continues her reminiscences of her gifted husband, and Dr. Talmage, Mrs. Bottome, Robert J. Burdette and Ruth Ashmore write of Easter. Foster Coates talks to boys about training birds and animals; H. H. Battles of "Flowers in Our Homes," and Palmer Cox gives a page of his inimitable Brownies. Mrs. Mallon has several illustrated Easter fashion articles, and Eben Rexford an unusual amount of floral matter. The serial story, "A Brief Prelude," is brought to an effective ending, and Maude Haywood contributes a special illustrated article on the "Baltimore Society of Decorative Art." The Journal's sixteen editors fill their departments with all that is instructive and entertaining, and the entire magazine is a thing of beauty and excellence. This Easter number, with new cover, new features, admirable illustrations, and attractive supplement, is worth many times its moderate price of ten cents. The Ladies' Home Journal is published by the Curtis Publishing Company, of Philadelphia, for ten cents per number and one dollar per year.

Scudder's Magazine for April marks the beginning of two important series. The central subject of all social questions, and one of the most widely discussed of the time, is the conditions of

life among the "Poor in Great Cities." It has passed from the stage of discussion into one of practical experiment, directed by men and women of great experience and scientific knowledge. The conductors of the magazine have determined to embody the most significant of these results in a series of papers in which authors and artists will co-operate to produce a truthful representation of the things achieved. London, New York, Paris, Boston, Chicago, and Naples are among the cities to be represented in the series. The introductory article of the series which leads this number describes "The Social Awakening in London," by Robert A. Woods, author of "English Social Movements." His article describes what is actually doing by the Oxford House, People's Palace, Fabian Society, Salvation Army, the Charity Organization Society, University settlements, etc., with attractive accounts of the interesting men who are leading these movements, such as John Burns, Tom Mann, and others. The effective illustrations by Hugh Thomson show accurately the progress of these social experiments. The second series which is begun in this issue is entitled "Historic Moments," the aim of which is to give brief pen-pictures of important events in politics, history, and invention, by eye witnesses and participants in them, thus preserving in brief compass what it is hoped may be valuable historical material, as well as very interesting reading. These articles are to be instantaneous photographs, as it were, of the culmination of events, and in no sense are they to be elaborate historical reviews of facts which are accessible in well-known authorities. The first article, "The Impeachment Trial," is by Edmund G. Ross, ex-Senator from Kansas, who was one of the seven Republican Senators who voted "Not Guilty" with the Democrats and so secured the acquittal of President Andrew Johnson. Frank Mandy, who was a member of the pioneer corps which opened the way into "Golden Mashonaland," in South Africa "the future gold fields of the world" writes an unusually entertaining article describing the journey of the pioneer fore and the features of the country which they have opened up to civilization. Another fully illustrated article is E. S. Nada's account of "The New Parks of the City of New York," which describes that interesting region (3,848 acres) which has been thrown open to the public by the city at an expense of more than nine million dollars. The third of William F. Apthorp's papers on "Paris Theatres and Concerts," describes the unsubventioned theatres and orchestral concerts, with descriptions of such interesting places of amusement as the Palais Royal, the Vaudeville, the Variétés, and Pote Saint Martin.

The N. and G. Taylor Company, which has been operating a tin-plate factory at Philadelphia, has completed arrangements for the erection of a foundry there which will be one of the largest establishments of its kind in the United States. The company has bought property upon which it is proposed to erect a factory for the manufacture of tin plate of the finest grades, both of the roofing and bright varieties. The factories will have a capacity of twenty-four stacks, with a complete pickling department attached. As each stack will turn out fifty boxes of tin a day, there will be a daily capacity of 1,200 boxes. It is expected the company will be able to begin operations with twelve stacks capable of an output of 600 boxes a day, by the beginning of April.

The name of Mr. G. H. Burrows has come up in connection with the carriage industry of this country. A Grit journal says that he is "not afraid" of the competition of the United States. He is the nominal President of the Brockville Carriage Company, and is said to be seeking a bonus to establish a carriage industry in Canada. The true inwardness of Mr. Burrows' case will be the better understood when it is stated, as it is on the authority of a prominent carriage maker of this city, that he is the President of the Cincinnati Waggon Company, which belongs to the great Cincinnati syndicate, which makes vehicles by thousands. He does not live in Canada. Mr. Burrows, under a policy of unrestricted reciprocity, would send into this country the carriages turned out by his Cincinnati companies. He would not then be looking for stock in a Canadian carriage industry or for a bonus to give it a start. It would be just as it was prior to 1878, when American carriages were brought to the market place in this city and sold under the hammer, thus depriving our local makers of their home market. It is only by virtue of the National Policy that the carriage-making trade has been able to make headway or even retain its hold in Canada, and one of the strongest testimonies of its usefulness is in the fact that Americans, like Mr. Burrows, who wish to work for our people, must come here with their capital and start a plant for the employment of Canadian labor. London, Ont., *Free Press*.

Captains of Industry.

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

McKay & Gress's floating mill, at Renfrew, Ont., was destroyed by fire, March 26th; loss about \$35,000.

McNICOLL'S sash and door factory, at Renfrew, Ont., was destroyed by fire, March 26th; loss \$3,000.

The capital stock of the Canadian Colored Cotton Mills Company has been increased from \$100,000 to \$5,000,000.

The woolen mills of Messrs. Logan Brothers, at Renfrew, Ont., were destroyed by fire, March 26th; loss about \$25,000.

The Kootenay Powder Works Company has been incorporated at Nelson, B.C., with a capital stock of \$25,000, to manufacture explosives.

MESSRS. GODDARD & SCOTT, manufacturers of butter tubs, at Knowlton, Que., are putting in machinery for the manufacture of cheese boxes.

MESSRS. SADDLER, HENDERSON, SHIELDS and others, of Gainsboro', Assa., N.W.T., are organizing a stock company to erect a flour mill at that place.

The Malto-Peptonized Porter Company, Truro, N.S., has been incorporated with a capital stock of \$100,000, to manufacture peptonized porter.

The fruit canning and preserving business of O'Kell & Morriss, Victoria, will be transferred to a joint stock company and the works will be enlarged.

The Westminster, (B.C.) Slate Company employ carrier pigeons to perform an air line message service between their office and the quarry at Jarvis Inlet.

FIRE in the organ and piano factory of Messrs. D. W. Karm & Co., Woodstock, Ont., on March 29th, damaged the concern to the extent of about \$30,000.

MESSRS. WATTS & TROTT, boat builders, Vancouver, B.C., have recently been making some considerable shipments of boats' cars to Auckland, New Zealand.

The Calgary Brewing and Malting Company is being incorporated at Calgary, N.W.T., with a capital stock of \$100,000, to engage in the brewing and malting business.

The J. D. King Company of Toronto has been incorporated with a capital stock of \$250,000, to take over the boot and shoe manufacturing business of Messrs. J. D. King & Co.

The new factory buildings of the Brockville Carriage Company, Brockville, Ont., which are now being erected will cost \$32,000, and will be ready for occupation in September.

The Union Suspender Company is a new concern which has recently started business in Toronto. They manufacture suspenders, belts, sashes and similar articles for gentlemen's use.

The Lake Weedon Pulp-Wood and Lumber Company has been incorporated with a capital stock of \$25,000, with headquarters at Lake Weedon, Que., for the purpose of manufacturing pulp-wood, etc.

The Westminster Wooden Mills, Westminster, B.C., will not be moved to Victoria, as proposed some months ago. The promoters of the scheme will build a new mill in Victoria, and continue to operate the mill in Westminster as usual.

A TELEGRAM from Regina, N.W.T., states that the Richelieu French Coffee Manufacturing Company are doing a big business at their works at Whitewood. The mill is running night and day and is turning out 2,000 pounds of prepared chiefly every twenty-four hours.

The Fine Glass Company of Canada are seeking incorporation with a capital stock of \$100,000, to erect glass furnaces and engage

in the manufacture of glassware at Humberstone, Ont., near the south end of the Welland Canal, where it is said bountiful supplies of natural gas fuel can be obtained.

The Halifax Shovel Company, Ltd., have issued an illustrated price list which contains much information useful to buyers of the articles mentioned therein. The shovels, spades, scoops, etc., manufactured by this company are all E. L. Fenerty's patents, over which the company has exclusive control for the Dominion.

The Lunenburg Iron Company, Lunenburg, N.S., appears to be getting on well. The foundry is well equipped and is in full running order. Its resources have been fully taxed by orders for special castings, and all the energy that can be spared from this work is devoted to the casting of special lines of stoves of the company's registered patterns.

The Dominion Suspender Company, Niagara Falls, Ont., are making a much-needed addition to their factory. The new building is 50x50 feet, two stories high. The capacity of this concern to manufacture their well known Hercules suspenders and braces was 36,000 pairs per week, but their sales have increased so rapidly that an addition to their factory was necessary to keep up with the demand.

The Taylor Decarbonized Iron and Manufacturing Company has been incorporated at Montreal, to manufacture decarbonized iron under a process invented by Mr. F. D. Taylor, one of the incorporators. The process consists in the use of a compound material which is placed in the molten metal after it is drawn from the cupola, the effect being to drive off the scoria and excess of carbon, thereby producing a purer and denser iron which partakes of the nature of mild steel.

The brewery now being erected in Victoria, B.C., by Messrs. Loewen & Erb, will be an exceedingly handsome and ornamental building, the cost of which will be \$60,000. Its size is 110x88 feet, and 90 feet high. The Albion Iron Works of that city are manufacturing a large portion of the apparatus and machinery, including mash tubs, brew kettles, ice tanks, water tanks, boilers, etc.; much of the technical machinery, including a ten-ton ice-marking machine, coming from Milwaukee, Wis.

The Rue Manufacturing Company, Philadelphia, Penna., have sent us their 1892 illustrated catalogue having reference to the Little Giant, Fixed Nozzle and Unique injectors, of which they are the sole owners; to Rue's patent boiler-washing and testing apparatus, and to other injectors, ejectors, jet apparatus, steam valves, boiler checks, etc., made by them. This concern have been in this business about twenty years, during which time they have acquired a deservedly high reputation; and those who may be in need of any apparatus in this line may feel assured of fair dealing from them.

The St. John, N.B., *Gazette*, replying to the statement that the St. John Cordage Works would be closed by the syndicate controlling the cordage factories of Canada, and that the machinery was being removed to Montreal, says: "This story is wholly without foundation. Instead of removing the machinery, the works are being made ready to start, and in a few weeks from date will be running at their full capacity. One machine for making small rope like lobster twine and the like has been transferred to Montreal, the reason being that there is a surplus of such machines here and a scarcity in Montreal. Regarding the monopolists of the West, it may be said that the price of lathe ties a few years ago was 10½ cents per pound, and to-day they can be bought at 4½ cents for a similar quantity."

The Stratford Flax Mill Company, Stratford, Ont., have made an offer to that city to start a binder twine factory, employing at first some twenty or thirty hands, and ask for exemption from taxation for ten years. The offer is likely to be favorably considered. In Perth county, it is claimed, better flax is grown than anywhere else upon the continent, both the soil and the climate being peculiarly adapted to the successful raising of flax. At present most of the flax grown about there is exported to the United States, where it is worked up into twine, towelling and thread, and then returned to Canada in its manufactured condition. The manager of the Flax Mill Company took some flax direct from there and had it manufactured into twine, when it turned out a very superior article, and one which gave more twine to the pound than the ordinary imported goods. An industry, such as it is proposed to establish, if properly protected, should grow to gigantic proportions, and completely oust the American article from our markets.

The gas well put down by the New Toronto Gas Company a short time ago was developed on Saturday in a way that has put the ideas

PRESIDENT.
W. K. McNAUGHT.

SECRETARY.
J. J. CASSIDY.

TREASURER.
GEORGE BOOTH.

The Canadian Manufacturers' Association.

THE OBJECTS OF THIS ASSOCIATION ARE:

To secure by all legitimate means the aid of both Public Opinion and Governmental Policy in favor of the development of home industry and the promotion of Canadian manufacturing enterprises.

To enable those in all branches of manufacturing enterprises to act in concert as a united body whenever action in behalf of any particular industry, or of the whole body, is necessary.

To maintain Canada for Canadians.

Any person directly interested in any Canadian manufacturing industry is eligible for membership.

CORRESPONDENCE WITH MANUFACTURERS REQUESTED.

**Office of the Association: Room 66 Canada Life Building,
KING ST. WEST, TORONTO**

J. J. CASSIDY, Secretary.

TELEPHONE 1274.

of the promoters away up in the clouds. Mr. O'Hara arrived on Friday at New Toronto from Bradford, Pa., with 200 quarts of nitro-glycerine, and on Saturday proceeded to explode sixty quarts of it in the well. The "shooting" was successfully done in the presence of the promoters and a few others. The first shot was put off at 1,300 feet below the surface, and the second at 1,095 feet and the third at 795 feet. At each shot the volume of gas was perceptibly increased, but at the third the pressure became tremendous. The roar of the escaping gas through a two-inch pipe could be heard for a mile. Every one present was astounded at the wonderful results, and a big boom for New Toronto was set down by all for the immediate future. Pipes will be laid into all of the factories, and the cost of motive power will be lessened fully one-half. When a sufficient number of wells have been sunk the gas will be piped into the city.—*Toronto World*.

The Gutta Percha & Rubber Manufacturing Company of Toronto have sent us a circular having reference to the "Kinkproof" steel-clad armored hose manufactured by them. As its name implies, this hose cannot be kinked. By means of the company's new Murphy's patent wiring machine, for the use of which they have the sole rights in Canada, they are enabled to supply armored or wire wound hose that is "perfection itself"—free from all defects. The "Kinkproof" hose may be cut at any wind of the wire without loosening or uncoiling; the wire being self-gripping throughout its entire length. The company say they do not believe in the catch-penny policy of patching up shoddy competition hose with poor wire and palming it off on the public as honest goods. Their market is among the dealers and consumers of this country, and they must therefore maintain the superior quality of their wares, as the continuance of their prosperity depends upon the satisfaction they give. "Kinkproof" hose will resist practically unlimited pressure. The wire armor is an efficient protection against abrasion for mining air, acid, green house, lawn, livery stable, brewers, tanners, oil and wrecking hose, and for all purposes where hose is subjected to rough, hard usage. Building contractors will find this hose most valuable for their service. We are told that this company are the only manufacturers of wire wound hose in the Dominion.

Messrs. W. T. FLANDERS & Co., Nashua, N.H., are calling attention to the Flanders' process for tinning cast iron, of which they are the proprietors. In a circular received from them we learn the following facts regarding their process: To tin cast iron successfully, in large quantities, and at a price which would make its use desirable, has always been considered impossible. The originator of this process has for many years been engaged in the galvanizing and tinning business, and has had occasion many times to note the want of such a process. After many experiments and disappointments, and at quite an expense, he has succeeded in perfecting a process by which common cast iron, regardless of quality, can be given a coat of pure block tin at a price as low as can be reached on malleable castings of the same size and weight. The outlines of the process are as follows: The castings are placed in a tumbling mill constructed specially for the purpose, and with the aid of certain chemicals subjected to a gas pressure of from forty to fifty pounds. After remaining in the mill a certain length of time they are removed and immersed in molten tin, when they at once take on a heavy, even and bright coat. The following concerns have this process in successful operation: Shepard Hardware Company, Buffalo, N.Y., on freezer castings and fruit presses; the White Mountain Freezer Company, Nashua, N.H., on freezer castings, etc.; Enter-

prise Manufacturing Company, Philadelphia, Pa., on meat choppers and other castings; Griswold Manufacturing Company, Erie, Pa., on tea kettles and other cast iron hollow ware; Cleveland Foundry Company, Cleveland, Ohio, general job work; Peck, Stow & Wilcox Company, Southington, Conn., and Newark Rivet Works, Newark, N.J. The cost of tinning by this process runs from \$18 per ton for ordinary castings to \$35 per ton for hollow ware.

CANADIAN MONITORS.

The John Doty Engine Company of Toronto has begun work on a steel steamer of the monitor type, to engage in the grain and coal trade between Kingston and the upper lake ports, for the Canadian Steel Barge Company. The design is by W. E. Redway, superintendent of construction for this company, who has had experience in marine engineering, and naval architecture in Great Britain. The boat differs somewhat from the cargo vessels building in Cleveland, Detroit and Buffalo, and to which the same name has been applied. The machinery is placed nearly amidships, with a view to making the vessel trim better when light. Instead of the cigar-shaped bow of the whalebacks, this boat has a ram bow, with a fore-castle deck forward, the top sides of which flare outwards slightly, something like the mould-board of a plough. She is also fitted with seven self-trimming hatches, the openings being raised about three feet above the top of the rounded deck, and so arranged as to be easily accessible for loading and unloading cargo. Her keel is 22½ feet (full Welland Canal size), beam 38 feet and hold 20 feet. She will be fitted with fore and aft compound engines, having cylinders 26 and 50 inches diameter and 40 inches stroke, with two cylindrical boilers 12 feet in diameter and 11 feet long, and is expected to have a speed of 13 knots on a coal consumption of about 1,000 pounds per hour. She will register about 850 tons and will have a carrying capacity of about 2,200 tons of dead weight, on about 15 feet draft of water. Mr. Redway claims to have secured patents on his design in Canada, the United States and several foreign countries.

In addition to the monitor, the Toronto company have on the stocks a steel side-wheel passenger steamer of 180 feet keel for the St. Catharines-Toronto route. They are also constructing for George Gooderham, Esq., a well known distiller, a steel yacht from designs furnished by Watson, the celebrated designer of Glasgow, Scotland. This yacht will be 119 feet keel, fitted with triple expansion engines of high power, and water tube boilers to carry 200 pounds of steam pressure. She is expected to be very speedy.

The Polson Iron Works of Toronto, having a shipbuilding and dry dock plant at Owen Sound, Ont., has also prepared plans for a vessel similar to the monitors being built by the Cleveland Ship Building Company. The plans were gotten up for a Swedish firm, but no contract has been secured as yet. This company is also building three vessels for the Dominion Government.—*Marine Review*.

The U. S. Treasury Department has decided that machinery imported to the Exposition from foreign countries, either wholly as an exhibit or to be shown in connection with the illustration of some manufacturing process, shall be admitted free of duty. Any raw material imported for use in such process must pay regular duty, however.

* INVENTIONS. *

This department of THE CANADIAN MANUFACTURER is devoted to the interests of inventors, of patentees of inventions, and of manufacturers of patented articles. Patents are granted in Canada for fifteen years, the Government fee for which may be paid by instalments. Arrangements have been made by which the issue of all patents by the Canadian Patent Office and all renewals and extensions thereof will be promptly noticed in this department, and a brief description thereof given. Enquiries on these subjects are invited and will receive prompt attention. No charge will be made for answers by mail when return postage is sent. Information given free regarding patent laws and the obtaining of patents in Canada, United States, Great Britain and all foreign countries. Claims for inventions, as embodied in Letters Patent, also the illustrations of them, will be inserted in this journal at moderate charges. The attention of manufacturers is specially directed to the opportunities for lucrative business which may be acquired by close observation of whatever may appear in this department.

CANADIAN PATENTS.

The following patents have been issued from the Canadian Patent Office from March 1 to 15, 1892, inclusive.

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

MECHANICAL PATENTS.

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>38,377 Up and down draft brick kilns, John T. Cullens <i>et al</i>, March 1st.</p> <p>38,378 Holders for air brake hose, Beery Valve Company, March 1st.</p> <p>38,379 Typograph, John R. Rogers, March 3rd.</p> <p>38,380 Car coupler, Nicholas Sedore, March 3rd.</p> <p>38,382 Applying celluloid to key-boards, Augustus Newell, March 3rd.</p> <p>38,383 Veneering press, Augustus Newell, March 3rd.</p> <p>38,384 Lining of boilers or digesters used in the manufacture of paper pulp and other similar purposes, Carl Kellner, March 3rd.</p> <p>38,385 Carriage gear, Joseph J. Kinsman, March 3rd.</p> <p>38,386 Car brake, Anthony B. Pool and Joseph J. Beals, March 3rd.</p> <p>38,387 Cattle-guard, Kennett W. Blackwell and George D. Smith, March 3rd.</p> <p>38,388 Centrifugal steam injector, Martin R. Ruble, March 3rd.</p> <p>38,389 Car-coupler, James H. Brown, March 3rd.</p> <p>38,390 Nail making machine, Louis Goddu, March 3rd.</p> <p>38,391 Car-coupler, Hans B. Ledel, March 3rd.</p> <p>38,392 Hot water bag for use of the sick, Albert A. Hesser, March 3rd.</p> <p>38,393 Cloth finishing machine, William Heddon, March 3rd.</p> <p>38,394 Milk cooler and aerator, Henry Fowell, March 3rd.</p> <p>38,396 Hemp brake and cleaner, John D. and John H. Shelby, March 3rd.</p> <p>38,398 Closet seat protector, Thomas A. Swann, March 3rd.</p> <p>38,399 Apparatus for playing duplicate whist, Cassius M. Paine and James L. Sebring, March 3rd.</p> <p>38,400 Steam engine, Rainsford W. Basom, March 4th.</p> <p>38,401 Thill coupling, Archibald Paul, March 4th.</p> <p>38,402 Nut lock, Joseph Broadly, March 4th.</p> <p>38,403 Flour bolt, Charles A. Schied, March 4th.</p> <p>38,404 Queen cell protector and Queen cage, Noah D. West, March 4th.</p> <p>38,405 Varnish and similar bottle, Thomas G. Watson, March 4th.</p> <p>38,406 Car-coupler, C. H. Shuttleworth and Frank F. Hoyer, March 4th.</p> <p>38,408 Ammonia engine and apparatus connected therewith, Joseph H. Campbell, March 5th.</p> <p>38,409 Fanning-mill, Ninian M. Newkirk, March 5th.</p> <p>38,410 Rotary engine, Garden C. Hollar, March 5th.</p> <p>38,411 Roweling mold for glassware, Asa G. Neville and William H. Mencham, March 5th.</p> <p>38,412 Concrete stone gully, Ebenezer North, March 7th.</p> | <p>38,413 Loom for weaving cane or other material, Archibald Hay, March 7th.</p> <p>38,414 Turpentine and means for producing same, Thomas Drake, March 7th.</p> <p>38,415 Construction of tea-chest lining and cover, August Schilling, March 7th.</p> <p>38,416 Gas engine, Henry T. Dawson, March 7th.</p> <p>38,417 Lint package, James W. Johnson, March 7th.</p> <p>38,418 Pulsating steam pump, William P. Theermann and John B. Foxwell, March 7th.</p> <p>38,419 Grate bar, Improved Zigzag Grate Bar Company and Wm. James, March 7th.</p> <p>38,420 Bath-tub, Kallmann Glass and Ignatz H. Rosenfeld, March 7th.</p> <p>38,422 System for operating railroad signals, The Scarr Railway Signal Company (Ltd.), March 7th.</p> <p>38,423 Machine for cutting soles and other forms, Allison M. Stickney, March 7th.</p> <p>38,424 Can, Wm. Pratt, March 7th.</p> <p>38,427 Making moulds for casting, Stephen Alley and John A. MacLellan, March 7th.</p> <p>38,428 Fruit jar, Petaluma Fruit Packing Company, March 7th.</p> <p>38,429 Derrick, Foster Milliken, March 7th.</p> <p>38,430 Automatic coupler for railway coaches, trucks, wagons and like vehicles, American Mechanical Construction Company, March 8th.</p> <p>38,431 Weighing apparatus for vehicle, Wanamaker International Car Scale Company, March 8th.</p> <p>38,433 Spring gear for vehicle, George E. Bartholomew, March 8th.</p> <p>38,434 Railway switch, Axel A. Strom, March 8th.</p> <p>38,435 Flood gate, Joshua Shellaborger <i>et al</i>, March 8th.</p> <p>38,436 Butter worker, Fred C. Whiting, March 9th.</p> <p>38,438 Rectal and vaginal syringe, H. G. Leiseuring, March 8th.</p> <p>38,439 Clamp for stationary basin, J. J. Odonnell, March 8th.</p> <p>38,440 Grinding and crushing mill, H. W. Fleury, March 8th.</p> <p>38,441 Transposing piano action for overstrung piano scales, C. G. George, March 8th.</p> <p>38,443 Appliance for closing mouths of bottles and jars, E. Hirsche and Franz Gerike, March 9th.</p> <p>38,444 Station indicator, I. U. and S. Soly, March 9th.</p> <p>38,445 Manufacture of the bars and connecting rods for railroads, A. A. Strom, March 9th.</p> <p>38,446 Combined tie bar and slide plate for railroad track, A. A. Strom, March 9th.</p> <p>38,447 Type-writing machine for the blind, E. Sthresley, March 9th.</p> <p>38,448 Method of loading brick from machine, Edward New, March 9th.</p> <p>38,449 Stove-pipe damper, J. B. Cook, March 9th.</p> <p>38,450 Barrel for liquids, R. P. Blake, March 9th.</p> <p>38,452 Demijohn holder, E. W. H. Holme, March 9th.</p> <p>38,453 Wire cleat, R. Gorton, March 9th.</p> <p>38,454 Hotel register, J. Murray, March 9th.</p> <p>38,456 Valve, J. King, March 10th.</p> <p>38,457 Valve operating mechanism for tanks, J. King, March 10th.</p> <p>38,459 Attachment for raising or lowering any article of furniture, J. D. Raymond <i>et al</i>, March 10th.</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

FETHERSTONHAUGH & CO.

Patent Barristers and Solicitors. Electrical and Mechanical Experts and Draughtsmen.

PATENTS

Procured in Canada, United States, Great Britain, and all Foreign Countries.

Counsel Work undertaken in Patent Causes. Patent Suits prosecuted before the Courts. Validity and Infringements of Patents investigated. Searches made. Assignments and Agreements drawn. Advice on Patent Laws, etc.

Head Office, Canadian Bank of Commerce Building, - - - Toronto.

Telephone 2589.

CABLE ADDRESS "INVENTION, TORONTO."

- 38,461 Clothes drier, John McKinnon and W. Jamieson, March 12th.
- 38,462 Damper, W. A. and A. E. Kemp, March 12th.
- 38,463 Stove-pipe damper, W. A. Kemp, March 12th
- 38,464 Sleigh truck, C. M. Spence, March 12th.
- 38,465 Machine for weighing travelling loads, A. E. Brown, March 12th.
- 38,466 Machine for weighing travelling loads, A. E. Brown, March 12th.
- 38,467 Hoisting and conveying machine, A. E. Brown, March 12th.
- 38,468 Hoisting and conveying machine, A. E. Brown, March 12th.
- 38,469 Boring tool, A. E. Brown, March 12th.
- 38,470 Drilling tool, A. E. Brown, March 12th.
- 38,471 Grab bucket, A. E. Brown, March 12th.
- 38,472 Gold extractor, L. Sanson, March 14th.
- 38,473 Gold extractor, L. Sanson, March 14th.
- 38,474 Window screen, A. McKerlie, March 14th.
- 38,475 Comb cleaner, E. R. Pettit, March 15th.
- 38,476 Dress shield, I. B. Kleinert, March 15th.
- 38,477 Sieve surface for moving sieves of all kinds, O. Sohnelle, March 15th.
- 38,479 Household altar for sacramental purpose, L. C. Braodet, March 15th.
- 38,480 Clothes drier, A. Caron, March 15th.
- 38,481 Vestibule hood for car, A. Bissell, March 15th.
- 38,482 Oven and oven door, J. ... Armstrong, March 15th.
- 38,483 Thill coupling, D. S. Brown, March 15th.
- 38,485 Fountain flower holder, E. Buchan, March 15th.
- 38,486 Carpet stretcher, J. Vandyke, Sr., March 15th.
- 38,487 Mucilage bottle, W. T. Leitch, March 15th.
- 38,488 Corset, D. H. Warner, March 15th.
- 38,489 Tramway, L. M. Brock, March 15th.
- 38,490 Guard ring, J. H. Ballard, March 15th.
- 38,491 Steam generator, C. W. Foster, March 15th.
- 38,492 Wrench, S. Hussey, March 15th.
- 38,493 Saw, W. Dunbar, March 15th.

SCIENTIFIC PROCESSES.

- 38,381 Manufacture of candy, William P. and James W. Kirchhoff, March 3rd.
- 38,395 Method of procuring lithographic stippling, Charles H. Gordon, March 3rd.
- 38,397 Method of making key-board, William C. Zeidler and Augustus Nowell, March 3rd.
- 38,407 Process for producing ozone water and oil in which the ozone is retained for a considerable period without alteration, Dr. Graf & Co., March 4th.
- 38,432 Composition of matter to be used in lighting fires, James McDougall, March 3rd.
- 38,437 Artificial stone, O. E. C. Guelich, March 3rd.

G. de G. LANGUEDOC,
PATENT SOLICITOR,
 CIVIL ENGINEER AND ARCHITECT.
 Associate Member Can. Soc. Civil Engrs., Member of the Soc. of Archts. of the P.C.
 Room 7, (3rd floor), 180 St. James St., MONTREAL.

38,460 Simultaneous production of cellulose and oxalic acid from ligneous material, J. L'Eschutz, March 12th.

ELECTRIC.

- 38,421 Independent electric clock, Philip A. Jenkins as trustee, March 7th.
- 38,425 Electric ignitor for gas-engine, Mora M. Barrett and John F. Daly, March 7th.
- 38,426 Electrical clock, Frank A. Ellis, March 7th.
- 38,442 Underground electric car system of street car propulsion, Elias Hazelton, March 8th.
- 38,451 Electro magnetic apparatus, Leonidas G. Wooley, March 9th.
- 38,455 Telegraphic apparatus, S. V. B. Essick, March 10th.
- 38,458 Alternating electric current motor, W. B. Bram and A. J. Arnot, March 10th.
- 38,478 Electrolytic production of caustic soda, caustic plaster and other products from their salts, J. C. Richardson, March 15th.
- 38,484 Electrical decomposition of solutions of chloride of sodium and potassium, J. C. Richardson, March 15th.

THE PATENT OFFICE RECORD.

We have received the first (January) number of the *Canadian Patent Office Record* as now being published by the Government Printing Bureau at Ottawa. It will be remembered that, heretofore, for a number of years the official record of the Patent Office was published in Montreal under a contract with a publishing concern of that city. It was issued in connection with, and as a part of a monthly magazine; and while the arrangement might have been the best possible when it was made, and while the style of the production might have been acceptable then, Canada's interests in inventions and the patenting of them have now assumed such large importance that a change was imperatively demanded in the style and general appearance of the monthly record of this bureau of the Government.

With this object in view, therefore, the publication of the *Record* has been transferred to the Government Printing Bureau, and the initial number of it under the new arrangement shows that the change was a desirable one. As compared with the previous issues, the improvements include a handsome gray paper cover, upon the outside of which is a picture of the fine large and beautiful block, which contains the various offices, model rooms, etc., of the Patent Office, made from a photograph thereof; and on this cover is shown a table of contents of the book. The type used is also much larger and clearer, and the illustrations are clearly cut and defined.

There is one feature, however, which has not been departed from and which will always be considered objectionable by all who have

occasion to study the *Record* all the descriptions of the things patented are massed together in one part of the book, while all the illustrations of them, to which reference is made, are massed together in another part. Following the previous style, all the descriptive matter is printed two columns to the page, while the illustrations occupy three columns. It does not seem to have occurred to the manager of the printing bureau that it is of great importance that the description of an invention and the illustration of it should be contiguous to each other, and that this could have been effected by setting the type of the descriptive matter three columns to the page instead of two. This is a feature which, we presume, will be corrected in subsequent issues.

It is to be hoped that greater promptness will be shown in issuing the subsequent numbers of the *Record* than has characterized that to which we here allude. This number contains a record of transactions occurring in the month of January, and it should have been presented to the public in the early days of the following month—February—but it did not make its appearance until after the middle of March; and the transactions for the month of February, as officially announced in the *Record*, have not yet seen the light. This is to be regretted.

The annoyance which those interested might otherwise feel because of this delay in the appearance of the *Record* is avoided by those who read the CANADIAN MANUFACTURER, which gives the list of Canadian patents dated down to within a day or two of the date of publication. Thus all the patents dated after the middle of a month are recorded in the issue of the CANADIAN MANUFACTURER which appears on the first Friday of the ensuing month, and all patents dated previous to the middle of the month, are recorded in the issue of the third Friday of that month. This is an enterprising feature of this journal, which inventors, patent attorneys, and all others interested will appreciate.

COPYRIGHT LAW.

It was formerly held that by common law an author had a perpetual right in the products of his intellect. This is now denied, and the whole matter has become the subject of statute, so that now, unless the provision of the law designed to secure to the author the exclusive ownership of the results of his labor are strictly complied with, the product is public property. We shall now see what may be copyrighted, and the method thereof.

First, books, meaning not only such in their ordinary sense, but such as are printed only on one sheet, as the words of a song, or the music accompanying it. It may be a diagram with directions on one sheet of paper, private letters, abstracts of title, an illustrated newspaper. If the book is in manuscript it may yet be copyrighted. Foreign books may not be, translations otherwise. A new edition of a copyrighted book is protected by the original copyright, but not to the extent of protecting new matter in it.

Compilations may be copyrighted. Under this head also fall dictionaries, books of chronology, gazetteers, guide books, directories, calendars, catalogues, tables, collections of statistics, recipes, designs.

Abridgements and law reports, where there is original matter, may be copyrighted.

Advertisements as such may not be copyrighted. Maps, charts, newspapers, magazines, musical and dramatic compositions, engraving, cut, print or photograph, may be copyrighted.

The law gives the right to the author, inventor, designer or proprietor, or the assigns thereof, who are citizens or residents in this country, to obtain a copyright. To obtain a copyright:

1. Deliver to the Librarian of Congress, by mail or otherwise, a printed copy of the title of the book or other article, or a description of the painting, drawing, or whatever it may be.
2. Within ten days from the publication, deliver to the Librarian of Congress two copies of such book or article, or in case of a painting or other work of such sort, a photograph of the same.
3. Give notice of the copyright by inserting in several copies of every edition published, on the title page or page following, or if a

picture or any such production, on the face or front thereof the following words: "Entered according to Act of Congress, in the year —, by A. B., in the office of the Librarian of Congress, at Washington," or the words, for instance, "Copyright, 1891, by George Brown."

A copyright is assigned by an instrument in writing, which instrument must be recorded in the office of the Librarian within sixty days after its execution, otherwise it is void as against a subsequent purchaser or mortgagee for a valuable consideration without notice.

England was as much a part of our system of jurisprudence as it was that of Great Britain. Strictly speaking, the United States has no common law. The Constitution declares that the judicial power of the United States extends to all cases arising under the Constitution, the laws of the United States and treaties. There was no principle which pervades the Union and has the authority of law that is not embodied in the Constitution and Acts of Congress. However, as the common law was the substratum on which the Constitution was founded, we must go to the common law for a definition and an interpretation of its terms.

All the States with the exception of Louisiana, have adopted the English common law as their local law, subject to statutory alterations, and only to such extent as suits its conditions. This will effectually answer the complaint of many who cannot see the necessity in the study of the law of spending so much time on study of the common law of England from the commentaries of Blackstone. When it is remembered that this magnificent body of unwritten law (so called because in its origin not so far as known the subject of legislative enactment) was the law of the Colonies prior to the Revolution, was the birthright for which the great war of independence was fought, is the source of interpretation of our constitution, our laws and treaties, in so far as they use voids and expressions to which the common law alone gives a meaning, became the law (subject to statutory changes) of all but one of the States of the Union. We are prepared to assign it the place it deserves in the estimation of the student—the foremost and best.—*W. C. Sprague, in American Artisan.*

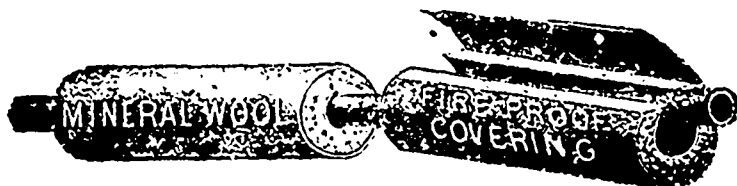
WORK OF THE PATENT OFFICE.

THE report of the Commissioner of Patents, United States, is a most interesting document, both as a record of what has been accomplished, and as suggesting improvements in practice that would be of no little importance to inventors and to the public. During the last year there were granted patents, including design patents, to the number of 21,236 to the citizens of the United States, together with nearly 2,000 additional granted to foreigners. One of the most striking facts with reference to this evidence of American inventive genius is the geographical distribution of these patents over the country. As might be expected, Yankeeedom stands at the head of the list in the number of inventions compared with the population, and as might also be anticipated, Connecticut—the home of the wooden nutmeg and the papier mache ham—stands pre-eminent among the States, with Massachusetts an exceedingly good second.

In the Southern States the art of invention does not flourish, reaching its lowest degradation in South Carolina, where there was only one patent issued last year to more than 23,000 inhabitants, as against very nearly one to 1,900 in Connecticut. Another very interesting feature of the report shows graphically the growth of invention as compared with the population of that country. Up to 1850 progress was slow, but at that epoch the industrial spirit seemed to seize upon the American people, and invention began to increase. There are two periods in the last half century when inventors were stirred to extraordinary activity; one of these was during the Civil War, from 1860 to 1866, during which time the number of patents issued considerably more than doubled, the result, doubtless, of the stimulation of inventions concerning the arms and munitions of war.

One other such tremendous increase in invention is to be noted, and its cause can almost with certainty be ascribed to the advent of

LAMKIN'S PATENT.



If You Need a Pipe Covering, Get the Best

Lankins' Patent will pay for itself in six months, or in other words, will pay a profit of 100 per cent. a year. That's a good investment. If will pay you to investigate. Catalogue free.

Gast & Co., Toronto, Ont.

electric
lasted
true lig
science
Patent
of what
with w
suits o
consid
Patent
fit of i
The
tions,
First a
eithe
secure
are not
source
bar a v
treated
long be
Two
one of
a prior
with su
foreign
vantage
sacrific
comply
other c
that no
from th
shorten
Such
practice
by com
this mi
equally
the peri
vent th
applicat
to paten
so much
As a
the abu
selves o
vision tl
been gr
able fut
reputabl
sharks n

We ha
in produ
thero ap
in order
This is
those w
ing of tl
trolling
the nece
which m
sequence
right, bu
In mi
will reali
his atten
patent
develop
The on
high a v
world in
some one
price for
it would
though it
The fac
produced

electricity as a factor in human industry. It began in 1879 and lasted some four or five years. It was during this period that electric lighting, motive power, and all kindred branches of applied science were growing most rapidly, and the effect of this on the Patent Office is, indeed, most marked. So much for a little view of what the Patent Office has done. At present it is overcrowded with work and an extra force of examiners is needed. The patent suits of the last half-dozen years have brought to public notice a considerable number of points in Patent Office procedure and Patent Office law which ought to be changed for the mutual benefit of inventors and the public.

The commissioner makes several valuable and important suggestions, which, if carried out, would be most salutary in their effect. First among them is the proposition that two years of publication either in a patent or otherwise act as a bar to any attempt to secure a patent for the thing involved. Two years of public use are now required, and the determination of what is public use is a source of endless difficulty. If publication constituted a similar bar a vast deal of litigation would cease, and we should not be treated to the spectacle of patents granted for things which have long been known, if not persistently used.

Two other provisions would be peculiarly useful in application, one of them abrogating the now existing law that the expiration of a prior foreign patent invalidates the American patent. If coupled with suitable time limits set upon the application for American and foreign patents, this would enable American inventors to take advantage of the longer term of life of American patents, without sacrificing them by short term foreign patents, or by neglect to comply with some of the conditions imposed upon the patentee in other countries. The other important amendment suggested is that no patent shall in any case live for more than twenty years from the date of the first application, joining to this provision one shortening the time allowed for action upon applications.

Such a law would effectually prevent the abuses of Patent Office practice that have of late been forced into unpleasant prominence, by compelling rapid action on the part of litigants. Occasionally this might work injustice to one of them, but as a rule it would be equally fair for all parties concerned, and would not only diminish the period of exasperating and expensive litigation, but would prevent the public being imposed upon by deliberate efforts to keep applications pending in the office. Still other propositions looking to patent reform are made by the commissioner, but these are of so much practical value that they deserve especial commendation.

As a whole they are just to the inventor, and will tend to check the abuses of patent law that at present render the patents themselves of questionable value - except to the litigants. Another provision that increases the definite importance of a patent that has been granted, and tends to check applications made in questionable faith, should be cordially greeted by every inventor and every reputable patent attorney in the country. The opinion of patent sharks need scarcely be taken into account. *The Electrical World.*

A WORD TO INVENTORS.

We have frequently been asked by inventors who have succeeded in producing small articles of more or less merit, and for which there appears to be a demand, what is the best method to pursue in order to put them on the market.

This is a question which has puzzled a great many, and especially those who, with small means, are unable to go into the manufacturing of their speciality on a large scale, without parting with a controlling interest in their patent to another party in order to raise the necessary capital with which to push the business, a transaction which many object to on account of the possible and probable consequences which often follow, viz., the loss not only of the patent right, but of all share in future business.

In nine cases out of ten it is far better for the inventor, and he will realize more from his invention, to sell out entirely, and turn his attention to some other business, or the production of a new patentable article. That is in case he has no money with which to develop and place his invention on the market.

The only difficulty in this is that a majority of inventors set too high a value upon their invention. They think they have the world in their hands, and are disposed to hold on to it, unless some one comes along who is foolish enough to pay an unreasonable price for the patent. This is where they are often mistaken, and it would be far better for them to accept a *bona fide* offer, even though it is but a fraction of their ideal value of the article.

The fact is that no invention, however valuable at the time it is produced or perfected, is sure of a monopoly, or even a fair com-

peting chance for a great while, and the sooner the inventor disposes of it the better off he is. Thousands of inventions have been dead failures, and never returned to the inventor one dollar, simply because, thinking that he held a monopoly, and that the world was bound to him, he has held on to it, unable himself to put it upon the market, and alike unwilling to allow any one else to do so for a reasonable consideration, until some one else has come out with something equally good, and possibly an improvement, and he finds himself without a bidder, and another man making money which he might have had, had he used better judgment and good sense.

Another way in which a mistake is made is in starting out on too large a scale. If you have a really valuable patented article, there is very little difficulty about finding a market for it, if you are not too hasty. It is better to begin in a small way and gradually increase, than to begin by forming a large stock company and beginning too large. We are speaking in reference to the inventor's interests. If he can get his goods manufactured so that he can handle them himself, even though in a small way at the start, if his invention is worth anything he will soon be able to increase his business, and can then hold control of it himself. As a rule, we are of opinion that it is better to contract with some reliable firm for the manufacture of the article, than to go to the expense of putting in the necessary machinery, etc., to do it for yourself.

By doing it in this way, you are saved the care and management of a shop, and have more time to devote to pushing the sales of the article, and the difference in the cost is very little, hardly sufficient to compensate for the possible saving.

It also gives you the use of the capital which would be required to fit up and maintain a shop, with which to push the business, and at a time when it is needed, too.

After the business has grown sufficiently large to warrant it, then there is time enough to put in a plant, and you will be better able to do so, and you will be in a position to know what is required.—London Eng., *Manufacturer.*

MR. G. DE G. LANGUEDOC, Montreal, requests the attention of inventors and those who may desire to obtain patents in Canada or elsewhere, or who may desire to obtain any information regarding patents, etc., to the fact that he is a patent solicitor and prepared to serve those who may require his services, either in the directions indicated or as civil engineer or architect.

A BILL protecting foreign exhibitors of patented articles at the Chicago World's Fair from all possible prosecution for infringement has been passed by the United States Senate, and is pending and reported sure to pass in the House. The bill reads as follows: "That no citizen of any country shall be held liable for the infringement of any patent granted by the United States or any trade mark registered in the United States where the act complained of is performed in connection with the exhibition of any article or thing at the World's Columbian Exposition at Chicago."

We are to-day on the very eve of electrical developments in the line of transmission of power that are destined, perhaps, to change profoundly our industrial methods. Until now the world has been wont to rely upon steam, or directly upon water-power, to drive the machinery of its great manufacturing. Since the electric motor has sprung into prominence, much has been said regarding its use for bringing to the dwellers of our great cities the energy of distant waterfalls; but, until very recently, comparatively little has been done, and to-day the list of plants purely for the transmission of power is not very extensive. All this is to be changed radically and permanently.—*The Electrical World.*

A GERMAN inventor has devised a means of producing a light far superior in strength to either oil or electricity. It is by means of air driven through pumice stone, the latter having been impregnated with benzine. The benzine gas thus obtained is then carried through a fine magnesium powder, and proceeds upward through a pipe to be consumed in a small flame of a claimed 400,000-candle power. The apparatus for producing this light consists of a blast engine for driving the air through the pumice, and a number of other accessories, all of which take up but a small space, and which are enclosed in a glass case for protection from the elements, as the light is especially designed for coast illumination. The arrangement is especially adapted for giving an intermittent light, the consumption of magnesium being small, depending on the power of the light required. The apparatus can be used without condensers, fog arrangements or reflectors, although the use of lenses further strengthen the power of the light.

The application of electricity as a motive power in the manufacturing arts is being rapidly extended, and is now being successfully introduced in the textile industry. An account was recently given

of the invention of an electric motor for use in knitting mills, which seems to be an ingenious and valuable contrivance, and particularly adapted to this class of work. The motor is of diminutive size, and yet possesses ample power to operate a single knitting machine, the object being to make each machine perfectly independent in its operation. The advantages gained by this device are that, the power being supplied by a continuous current, a number of machines can be run by one operative, each one being stopped at will, or all together, as the case may require, the facility with which small plants, which are not able to employ steam power, may be provided and the slight expense involved. Electricity has not yet been introduced for the operation of large or heavy machinery. *Manufacturers' Review.*

Recent experiments have demonstrated the fact that the addition of aluminum alloy to cast-iron in crucibles so improved the metal that it was readily welded and bent to an angle of forty-five degrees without breaking. Iron foundries will be able to make their own steel castings independent of steel works by simply melting ninety parts of No. 2 foundry pig iron, six parts of wrought or steel scrap, and three parts of aluminum alloy composition together in a crucible. By means of this new process the iron will flow more fluidly and remain in that condition considerably longer time, thus preventing blowholes or spongy castings. We have seen castings produced by this method as described above, and have seen them welded, twisted, bent back and forward, hammered out and horse-shoe nails made out of it; cork-screws, drills, swords, etc. We also seen them tempered and cut glass with them. They are the most remarkable castings in toughness and strength that ever were produced without annealing. — *Aluminum Age.*

Under the name of wire-glass, a new invention has been brought on the market by a Dresden firm which marks an important development in the glass-making industry. The process of manufacture consists in furnishing glass in a hot plastic condition with a flexible metallic layer, iron wire netting, for instance, which is completely enclosed by the vitreous substance and effectively protected against exterior influences, as rust, etc. The new glass, which has been patented in the leading countries, possesses much greater resisting power than the ordinary metal, and is, it is claimed, indifferent to the most abrupt changes of temperature, and will even withstand open fire. A further proof of its toughness and durability is stated to be the fact that it may, in a highly heated state, be sprinkled with cold water without being materially damaged. The glass is specially adapted for sky-lights, the powerful resisting qualities of the material enabling the usual wire protectors to be dispensed with. As wire-glass cannot be cut by the diamond, except under the application of great force, and cannot be broken without creating considerable noise, the substance is claimed to be, in a measure, burglar-proof. — *Iron.*

MILLERS' AND MANUFACTURERS' INSURANCE COMPANY.

The seventh general annual meeting of the the Millers' and Manufacturers' Insurance Company, at which the directors submitted their general statement of the business of the Company for 1891, was held at the Company's offices, 32 Church Street, Toronto, February 26th, Mr. James Goldie occupying the chair, and Mr. Hugh Scott, the Manager, acting as Secretary. The total number of policies in force at the close of the year was 524, covering at risk the sum of \$1,354,015.

By referring to the Profit and Loss Account, it will be seen that the sum at the debit of this account on December 31st was \$70,224.53, which has been apportioned as follows:—Dividend to policy-holders, \$4,196.28; to shareholders, \$1,607.71; and after placing to Re-Insurance Reserve, \$13,524.41, the balance remaining to carry forward to the credit of this account was \$50,896.13.

The President, in moving the adoption of the report, said:—

"With such concise and lucid statements of the business of the past year, as you have before you, I shall merely draw your attention to a few facts in connection with the position we have attained, and the saving accomplished since our organization in 1885, which, to me, is exceedingly gratifying.

"The available assets for the policy-holders' protection, now amounts to the very satisfactory ratio of \$13.98 per cent. of the amount of risks in force, and the ratio of surplus assets alone, over all liabilities, to amount of risks in force, is \$3.75 per cent.

"The total fire losses and management expenses combined, has amounted to only \$58.59 per cent. of the net cash income of the

Company, from its inception in 1885 to December 31, 1891.

"While accomplishing such unprecedented results, policy-holders have made a saving on the premiums they have paid to this Company of, compared with the current exacted rates, upwards of \$70,000; and in addition thereto the cash dividends to policy-holders amounts to \$17,446.42.

"I need scarcely add that, in view of such a highly satisfactory showing, I have very great pleasure in moving the adoption of the report."

The report was adopted and the retiring directors unanimously re-elected; and at a subsequent meeting of the board, Mr. James Goldie was re-elected President, and Mr. W. H. Howland, Vice-President for the current year. The Board of Directors is now constituted as follows:—James Goldie, Guelph, President; W. H. Howland, Toronto, Vice-President; H. N. Baird, Toronto; Wm. Bell, Guelph; Hugh McCulloch, Galt; S. Neelon, St. Catharines; Geo. Pattinson, Preston; W. H. Storey, Acton; J. L. Spink, Toronto; A. Watts, Brantford; W. Wilson, Toronto.

ROPE TRANSMISSION OF POWER.

MR. JOSEPH H. HOADLEY has a letter in *Power* regarding the transmission of power by manilla rope, which is of so much interest that we reproduce the salient points of it. He says:—

"In looking back through the files of *Power*, I find, in the issue for April, 1889, several opinions on manilla rope transmission, and would like to add mine to the list, even at this late day. I recently spent several days in looking over the principal power plants in New England, and judging by the views expressed by the mill men I fear this will be like shaking a red blanket before a mad bull. The common expression was, 'Belts are good enough for us; we would not have ropes if you would make us a present of them.' Upon inquiry I found they knew nothing whatever of the Dodge system of endless rope transmission, their knowledge extending only to the old English system, and in nine cases out of ten they only knew what some one else had done. One thing was certain, they had set their minds solid that ropes are a failure, but we may yet see them all fall into line as advocates of manilla rope transmission.

"In the number of *Power* referred to, Mr. W. A. Preble says that manilla ropes are good for three months only. I have several transmission plants running to-day with the same manilla rope that I started nearly five years ago, and the rope looks as if it had been running only about thirty days. He must have seen a poorly designed transmission. Next came the Jewell Belting Co., who think ropes will 'sink back out of sight again in a little while.' They can make up their minds that ropes have come to stay, and that they are much more efficient than belts. Then came Mr. Manning, who says he will hold on to belts a while longer. The Amoskeag Mills held on too long. Had they used ropes the fly-wheel accident would never have happened. The experience quoted by Mr. Manning—5,000 feet per minute with an eight-foot pulley for the transmission of 500 horse-power—was simply a mis-application. If properly designed it would have been a 'howling' success. Twelve wraps of 1½-inch manilla rope, or nine wraps of 1½, would have done nicely; and if proper attention had been paid to the *one* splice, he would never have known of its existence, providing the rope was properly dressed at intervals to keep the fibers from drying.

"I should like to learn the results of the tests anticipated by Mr. Leavitt in that April number. It does not seem to me that any material gain over belts can be made by the use of single ropes (English system). His remark that, in the use of ropes, 'the danger from the breaking of a big belt is almost eliminated,' should be carefully considered by all large concerns. An impressive object lesson on this point has just been taught.

"In the same issue Mr. Webber makes the broad statement that rope driving is 'not proven' What constitutes proof? Does not five years constant use—with thousands of horse-power in operation, in drives of from three to 1,500 horse-power each—prove anything? Will a saving in first cost and in cost of operation, exemption from slippage, and noiselessness in running be of any effect? This reminds me of the late Alex. G. Abel, of San Francisco, who often got into arguments with his son over quotations from some writer. At times he would be in the wrong, and when his son would get the book and prove it, he would invariably say, 'Well, the d—d fool did not know what he was writing about.' It may be hard to convince Mr. Webber. The forty years he speaks of is a long life for a belt, but ropes will save the cost of a dozen belts in that time.

to l
rev
wra
bet
leng
incl
on c
for l
any
stra
tion
tran
ho v

To
dive
time
fact
dom
whic
is ab
only
seve
exist
at a
ries

C
R
E

Otte

I

OT

Lond

Rt

225

FORR

FORR

ics for yc
FORR

891.
policy-hold-
paid to this
upwards of
to policy-
satisfactory
tion of the
unanimously
Mr. James
land, Vice-
ors is now
nt; W. H.
nto; Wm.
atharines;
L. Spink,

rding the
h interest

the issue
sion, and
y. I re-
ver plants
the mill
e a mad
ough for
resent of
er of the
ledge ex-
s out of
ing was
a failure,
manilla

ble says
several
ope that
ad been
only de-
s., who
while,
ay, and
ne Mr.
r. The
the fly-
erence
ht-foot
'a mis-
'howl-
or nine
m had
its ex-
als to

ed by
e that
ropes
e dan-
should
essive

t that
s not
opera-
prove
, ex-
f any
franti-
ons
when
say,
out,
s he
of a

"Where are bolts in the following proposition? Horse-power to be transmitted, 3,000; wheel, 24 inches in diameter; speed, 70 revolutions per minute; width of face, 56 inches, grooved for 33 wraps of 1 1/2-inch rope; engines, of the pair form, 19 feet 6 inches, between centres; distance from centres of pins to bearings and length of bearings in both engines, 8 feet. This leaves 11 feet 6 inches space for a pulley of 36 inches face, leaving three feet room on each side between flange of wheel and eccentric, so if crowded for room, 14 feet between centres of engines would be ample. Can any one beat this with a belt? What do you save on main bearing strains, tighteners, and many other points too numerous to mention? I am certain that if any one desiring to use manilla rope transmission is careful to have it properly designed and erected, he will never regret having adopted it."

The key to success in any manufacturing business lies in the diversification of its products. Conditions are shifting, and often-times they shift with a great deal of rapidity. One line of manufacture may be so profitable one year that it will be heavily overdone thereafter. New inventions render obsolete one year that which was most in use the preceding one. The state of the market is always an uncertain quantity, and the manufacturer who has only one line of goods is far more at its mercy than is he who has several from which he can select one or more to push according to existing conditions. If one line of manufacturing is not profitable at a particular junction, the man, firm, or corporation which carries on several lines, is almost always able to select others to push

which are profitable, and a plant with diversified products always yields better returns than one restricted to a single class of goods --except in a year of phenomenal activity, when that particular class of manufactured product is in heavy demand, and such years come just frequently enough to unsettle business conditions. Ohio Valley Manufacturer.

To Manufacturers.

The Land and Security Company, Toronto, offer to lease on long time and most favorable terms, that desirable centrally located five storey double warehouse on east side of Bay Street between Front and Esplanade Streets, Toronto, extending back to a lane twenty feet wide.

The building is solid brick with cut-stone and pressed brick front, well lighted, and splendidly adapted for manufacturing purposes, and will be let together or separately. The interior dimensions are 56 x 32 feet each with an aggregate floor space of over 30,000 square feet. The joists, columns, and beams are exceptionally strong. Suitable hoists, lavatories, and all conveniences. Address,

WM. I. MACKENZIE, Manager,
7 Victoria Street, Toronto.

CORRUGATED IRON
ILLUSTRATED CATALOGUE FREE
METALLIC ROOFING CO.
MANUFACTURERS TORONTO

Otterville Manufacturing Co., Ltd.

Dowel Rods, all sizes; Turned Balls, Rosettes, and small Wooden Specialties.

OTTERVILLE, - ONTARIO.



CHAMPION BURGLAR AND FIRE PROOF SAFES,

Stump and Stone Extractors, Cash and Parcel Railway for Stores, Iron and Wood Money Tills, etc. Good Agents wanted in every town. For catalogues, terms, etc., address

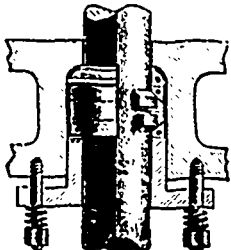
S. S. KIMBALL, Manufacturer,
577 Craig St., Montreal.
P. O. Box 945.

London Rubber Stamp M'g Co.

Rubber and Metal Stamps, Notarial Seals, Hectograph Copying Pads, Stencil Cutters, etc. etc.

225 HOLLIS ST., - HALIFAX.

FORREST SILVER BRONZE PACKING.



Applied to any stuffing box without disconnecting. Steam, air and water-tight without the aid of soft packing, under highest steam pressure and piston velocity. Automatic, admits of excessive vibrations, lashing, and crowding of rod, does not bind, economical, guaranteed to outlast all other packing. Used by the largest Iron Works, Steamships, and Electric Light Companies for years all over the world.

FORREST SILVER BRONZE PACKING CO.,
115 Liberty St., New York.
Agents Wanted Everywhere

CAST IRON SUCCESSFULLY TINNED

We are prepared to put in successful operation tinning plants for the above named purpose. This is no experiment, as the process is in successful operation with several well known firms. We are also prepared to put in Galvanizing or Tinning Works for any class of work. Sample of Tinned Cast Iron on application.

WM. T. FLANDERS & CO., Nashua, N.H.

Judicious Advertising

- Has Created Many a New Business.
- Has Enlarged many an Old Business.
- Has Revived Many a Dull Business.
- Has Rescued Many a Lost Business.
- Has Saved Many a Failing Business.
- Has Preserved Many a Large Business.
- And Secures Success in Any Business.

Established in 1848

STEEL.

Singer, Nimick & Co.,

(LIMITED)

PITTSBURGH, PA., U.S.A.

Manufacture all kinds of

Tool Steels, Hot and Cold Rolled Sheet Steel, Hammered and Rolled Steel, Saw Plates, "Soft Steel Centre," "Iron Centre," "Iron Back," "Soft Steel Back" (extra thick face), Plow Steels, Crucible, Open Hearth and Bessemer Plow Steels, Finished Rolling Plow Cutters, Rotary Harrow Discs, Round, Square and Flat Machinery Steel, Springs, Axles and Steel Tire, Agricultural Steel Cut to any desired pattern.

Represented by

MR. HUGH RUSSEL

Temple Building, 185 St. James St., MONTREAL.

Mention this paper.

SIMPSON'S PATENT CENTRIFUGAL EXHAUST HEAD

FOR EXHAUST STEAM PIPES.

Screwing Flanges included with every Head.

No wet floors or sidewalks. Thoroughly entraps water and grease from the Exhaust Steam without back pressure. Utilize the water of exhaust steam. Save your roofs by keeping them dry, and avoid the nuisance created by spray from exhaust pipes blowing on pavements, etc.

It should be used by all Rolling Mills, Blast Furnaces, Breweries, and Manufactories using Steam.

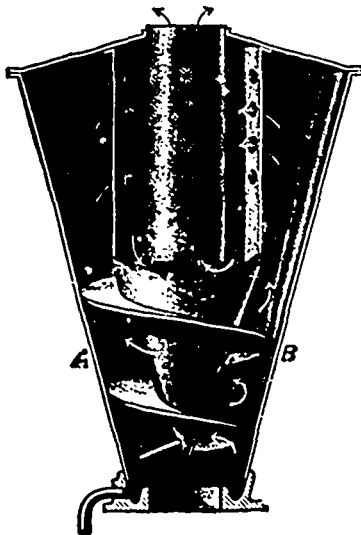
Centrifugal Steam Separators, Centrifugal Oil Extractors, Centrifugal Exhaust Heads, Keystone Double and Single Plunger Bell Pumps, Keystone Feed-Water Heaters and Purifiers.

List of Prices and Sizes of Exhaust Pipe Heads on application to

Keystone Engine & Machine Works

W. L. SIMPSON, Proprietor.

Fifth and Buttonwood Sts., Phila., Pa.



THE ROYAL ELECTRIC CO., 54 to 70 Wellington Street, MONTREAL

SOLE PROPRIETORS FOR THE DOMINION OF CANADA OF THE

Thomson-Houston Systems of Arc and Incandescence Electric Lighting

The Most Perfectly Automatic System of Electric Lighting in the world.

Thomson-Houston Arc Dynamos and Lamps for 1,200 and 2,000 c.p.

Thomson & Thomson-Houston Incandescence Dynamos for low tension direct current.

Absolutely Automatic Regulating and Compound Wound. Thomson Alternating Dynamos, Transformers, and all Supplies for long distance Lighting. Thomson Power Generators and Motors of the latest and most efficient types. Our Customers all over the Dominion are our references, and our plants speak for themselves.

FULL LINES OF ELECTRIC LIGHTING AND POWER SUPPLIES.

THE TORONTO CONSTRUCTION & ELECTRICAL SUPPLY CO., LIMITED.

Authorized Capital
\$250,000

OFFICE AND SHOWROOMS: 63 to 69 Front St. West, Toronto.

Branches at
Winnipeg, Man.; and St. John, N.B.

ELECTRIC LIGHTING FOR MILLS AND FACTORIES

We are prepared to submit Estimates for Complete Electric Light and Electric Power Equipments for Mills and Factories.
We carry the Largest Stock of ELECTRICAL SUPPLIES in Canada.

SOLE CANADIAN AGENTS
FOR THE

THOMSON-HOUSTON SYSTEMS

OF INCANDESCENT
ELECTRIC LIGHTING.

Electric Street Railways, Electric Mining Apparatus, Electric Fans, Electric Hoists, Power Generators and Motors, Direct Reading Watt Meters, Transformers, Incandescence Lamps and all General Supplies for Electric Light and Railway Plants.

THE "WOOD" ARC LIGHTING SYSTEM.

(Manufactured by the Fort Wayne Electric Company.)

A Full Line of Electric Lighting and Power Supplies always in Stock. Write for Estimates.

W. R. BROCK,
President.

H. P. DWIGHT,
First Vice-President.

FREDERIC NICHOLLS,
Second Vice-President and General Manager.

BRUNNER, MOND & CO., Limited, Northwich, Eng.

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

The Strongest and Purest Form **SODA ASH** in the market, and the most Economical Form of **SODA** for the Manufacturers of



Glass, Paper, Wood Pulp, Soap and Starch

Also for **PRINTERS, BLEACHERS** and **COLORS.**

WINN & HOLLAND, Montreal,

Sole Agents for the Dominion of Canada.

POROUS TERRA COTTA FIREPROOFING

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

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

Try our improved Cedar Oil for cleaning boilers. We guarantee it to satisfy or no pay.

ADDRESS

THE RATHBUN COMPANY

DESERONTO, ONT.

G. & J. Brown M'f'g Co.

(LIMITED.)

BELLEVILLE, ONT.

Engineers, Boiler Makers, Machinists,
Foundrymen and Bridge Builders

RAILWAY & CONTRACTORS' SUPPLIES A SPECIALTY

FROGS, DIAMOND CROSSINGS, SWITCHES, HAND CARS, LOCHES,
VELOCIPED CARS, JIM CROWS, TRACK DRILLS,
SEMAPHORES, RAIL CARS, DOUBLE AND
SINGLE DRUM HOISTS, ETC., ETC.

The Londonderry Iron Co., Ltd.

MANUFACTURERS OF

**PIG IRON, PUDDLED BARS,
BAR IRON, NAIL PLATES,
WATER PIPES, ETC.**

OFFICE,

MONTREAL.

WORKS,

LONDONDERRY, NOVA SCOTIA.

Canada Iron Furnace Co. (Ltd.)

MONTREAL, RADNOR AND THREE RIVERS.

—Manufacturers of the well known—

"C. I. F." Three Rivers Charcoal Pig Iron

Suitable for Car Wheels, Cylinders and Fire Castings where the utmost strength is required.

This Brand of Iron has been found Equal to the Famous "Salisbury" Iron.

Offices: New York Life Insurance Building, Montreal.

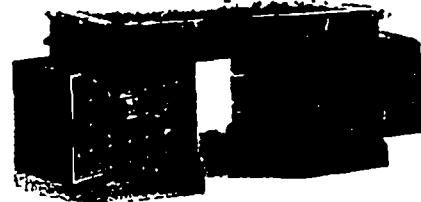


The Canadian Office & School Furniture Co., Ltd.

PRESTON, ONTARIO.

SUCCESSORS TO W. STAHLSCHEIDT & CO.

Manufacturers of Office, School, Church and Lodge Furniture.



Rotary Desk No. 50.

SEND FOR CATALOGUE.

C. C. CLEVELAND.

C. F. CLEVELAND.

J. L. GOODHUE & CO.

MANUFACTURERS OF SUPERIOR QUALITY

LEATHER BELTING

DANVILLE, - QUE.

As Saw Mill work is the hardest that Belting has to do, we refer
by Permission to

Messrs. Gilmour & Co., Trenton, Ont.; The Rathbun Co., Deseronto, Ont.; Messrs. Boyd, Caldwell & Son, Carleton Place, Ont.; The E. B. Eddy Manfg. Co., Hull, Que.; Messrs. Beck & Co., Penetanguishene, Ont.; Messrs. Flatt & Bradley, Casselman, Ont.; Messrs. Hall, Neilson & Co., Three Rivers, Que.; Cookshire Mills Co., Sawyerville, Que.; The Bennett Saw Mill Co., New Westminster, B.C.; The Waterous Engine Works Co., Brantford, Ont.; The Wm. Hamilton Manfg. Co., Peterborough, Ont.

NAPANEE CEMENT CO.,

(LIMITED.)

NAPANEE MILLS, ONTARIO

MANUFACTURERS OF

Hydraulic Cement

Warranted equal, if not superior, to any native cement, and as good, for most uses, as Portland.

Full particulars of strength, tests, etc., furnished on application. Endorsed by leading Cities, Engineers, Railways and others.

ROACH LIME Particularly adapted for paper manufacturers, gas purifying, etc.

Established 1872.

THE
Accident Insurance Co.

OF NORTH AMERICA.

NEW FEATURE:

Joint Insurance for Partnerships.

Important to Manufacturing Firms.

MEDLAND & JONES, Gen'l Agents,

Mail Building, TORONTO.

Millers' and Manufacturers' INSURANCE COMPANY.

STOCK AND MUTUAL.

OBJECTS.

1. To prevent by all possible means the occurrence of avoidable fires.
2. To obviate heavy losses from the fires that are unavoidable by the nature of the work done in mills and factories.
3. To reduce the cost of insurance to the lowest point consistent with the safe conduct of the business.

METHODS.

All risks will be inspected by a competent officer of the company, who will make such suggestions as to improvements required for safety against fires, as may be for the mutual interests of all concerned.

Much dependence will be placed upon the obligation of members to keep up such a system of discipline, order, and cleanliness in the premises insured as will conduce to safety.

As no agents are employed and the company deals only with the principals of the establishments insured by it, conditions and exceptions which are so apt to mislead the insured and promote controversy and litigation in the settlement of losses will thus be avoided.

The most perfect method of insurance must, in the nature of things, be one in which the self-interest of the insured and the underwriters are identical, and this has been the object aimed at by the organizers of this company.

W. H. HOWLAND, Vice-President. **JAMES GOLDIE,** President.

HUGH SCOTT, Managing Director.

Applicants for insurance and other information desired, please address **MILLERS' AND MANUFACTURERS' INSURANCE COMPANY** No. 24 Church Street, Toronto.

Canadian Rubber Co.

OF MONTREAL,

Capital - - - \$2,000,000.



A. ALLAN,
President.

J. O. GRAVEL,
Sec'y-Treas.

F. SCHOLLES,
Man. Direc.

Manufacturers
OF
RUBBER SHOES
AND
FELT BOGTS.

Sole agents and manufacturers of the Forsyth Pat. (Boston Belting Co.'s)

SEAMLESS RUBBER BELTING,

For the Dominion of Canada

All kinds of Rubber Packings. Rubber Engine, Hydrant, Suction, Steam, Brewers' and Fire Hose. Rubber Valves, Car Springs, Wringer Rolls, Carriage Cloths, Blankets, etc., etc.

MOULD GOODS OF EVERY DESCRIPTION.

Our **GARDEN HOSE** is the Best in the Market.

HEAD OFFICES AND FACTORY, MONTREAL.

J. J. McGILL, Manager.

WESTERN BRANCH, Cor. Yonge & Front Sts.

J. H. WALKER, Manager.

TORONTO.

THE MANUFACTURERS'

Life Insurance Company

PRESIDENT: **GEORGE GOODERHAM,**

President Bank of Toronto.

**A
Five
Years'
Record**

Income	\$207,486.49
Increase over previous year	\$36,069.08
Gross Assets	437,959.11
Increase over previous year	86,219.16
Insurance Reserve for the protection of Policy-holders	289,045.00
Increase over previous year	71,795.00
Surplus on Policy-holders account	135,307.63
New Business written in 1891	2,111,100.00
Insurance in force Dec. 31, 1891	7,414,791.00

Head Office, - **TORONTO.**

JOHN F. ELLIS,

Managing Director.

BELL UPRIGHT PIANOS
REED ORGANS
— AND —
CHURCH PIPE ORGANS

SUPERIOR QUALITY

**IN MATERIAL, WORKMANSHIP AND TONE, MODERN
IN DESIGN, AND CONTAINING ALL THE LATEST
PRACTICAL IMPROVEMENTS KNOWN.**

Recommended by Leading Musicians throughout the World.

SEND FOR CATALOGUES TO

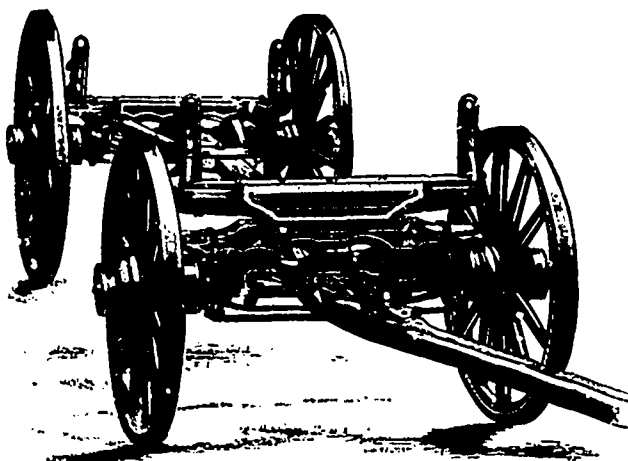
THE BELL ORGAN & PIANO CO., Ltd.

HEAD OFFICE AND FACTORIES:

GUELPH, ONT.

BRANCH WAREHOUSES,

LONDON, ENG., SYDNEY, N.S.W., AND TORONTO, HAMILTON & LONDON, ONT.



THE ABOVE CUT ILLUSTRATES THE

CHATHAM GIANT

With Chautauqua patent front gearing, which, with the patented improvement seen at the shoulders of the arms in above cut, we assert without fear of successful contradiction, makes the best, the strongest the most durable, and the easiest running wagon made in Canada. The two improvements in wagon building embodied in the wagon illustrated above, are covered by two Canadian and American patents. These wagons are sold by Mr. Wm. Hewitt, 39 McGill St. Toronto, and all other dealers in Chatham Wagons throughout the Dominion. Made exclusively by the

CHATHAM M'FG CO. L'td.,

Chatbam, Ont.

1892.
Co.
Do.
facturers
OF
SER
SHOES
ND
BOGTS.
g Co.'s)
ant,
ket.
Sts.
D.
ty
36.49
9.11
5.00
7.63
.00
or.

Industrial and Trade DIRECTORY.

Acids and Aniline Dyes.

THEO. H. EATON & SON, Windsor, Ont.; Detroit, U.S.A.—Importers of description Pure Aniline Dyes and Woolen Manufacturers. Dy... furnished on application. Address correspondence to Head Office, Detroit, Mich.

DOMINION DYEWOOD & CHEMICAL CO., sole agents in Canada for Farbenfabriken, vormals Friedr Bayer & Co., Elberfeld, Germany and Read Halliday & Sons, Huddersfield, England.—All shades for woolen, cotton, leather and paper manufacturers. Latest information on dyeing as well as dyed samples on application.

McARTHUR CORNEILLE & CO., Montreal.—Supply of best quality at lowest prices, every description of coloring materials required by manufacturers of wools, cottons, silks, paper, leather, etc. Are sole agents in Canada for the celebrated aniline dyes of A. Perrier, Paris.

MIDDLETON & MEREDITH, Montreal.—Aniline Dyes, Benzidine Colors, Dyewoods, Extracts, Chemicals.

Advertising

IF YOU wish to advertise anything anywhere at any time write to Geo. P. Rowell & Co., No. 10 Spruce Street, New York.

EVERY one in need of information on the subject of Advertising, will do well to obtain a copy of "Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of Advertising. Address: ROWELL'S ADVERTISING BUREAU, 10 Spruce Street, N.Y.

Agricultural Implements and Parts.
WELLAND VALE MANUFACTURING CO.—Lock No. 2, St. Catharines Ont., Canada.—Manufacturers of axes, scythes, forks, hoes, rakes and edge tools.

THE WHITMAN & BARNES MANUFACTURING CO., St. Catharines Ont.—Manufacturers of mowing and reaping machine knives, sections, guard-plates, cutting apparatus complete, spring keys and cutters, etc.

Bridge Builders.

DOMINION BRIDGE CO. (Limited), Shops at Lechinc, Quebec.—Builders of Steel and Iron Railway and Highway Bridges.

Chemicals and Dye Stuffs.

McARTHUR CORNEILLE & CO., Montreal.—Offer at lowest figures chemicals required by soap-boilers, oil refiners, paper-makers and manufacturers of wools, cottons, leather, etc. Sole agents for British Alizarine Co., London.

THEO. H. EATON & SON, Windsor, Ont.; Detroit, U.S.A.—Carry full line of Pure Dyeing Drugs, Dyewoods and Extracts adapted for the requirements of Woolen and Cotton Manufacturers.

DOMINION DYEWOOD & CHEMICAL CO., sole agents in Canada for Mucklow & Co's celebrated English Dyewoods and Dyewood Extracts, Indigo Extract, Gullbear and all chemicals used in dyeing. Stocks kept in Montreal and Toronto.

MIDDLETON & MEREDITH, Montreal.—Agents for the Berlin Aniline Co., Berlin. Pure Aniline Dyes. The Stamford Manufacturing Co., New York, Dyewoods and Dyewood Extracts, James Musprat & Sons, Liverpool, Soda Ash, Bleaching Powders, etc. Specialties for Cotton, Woolen and Leather Colors.

Edgo Tools, Saws and Hardware.
WELLAND VALE MANUFACTURING CO., Lock No. 2, St. Catharines, Ontario, Canada. Manufacturers of axes, scythes, forks, hoes, rakes and edge tools.

Holsts and Elevators.

LEITCH & TURNELL, Canada Elevator Works, cor. Queen and Peter Streets, Hamilton, Ont.—Patent safety Hydraulic, Hand and Power Elevators. Telephone connection.

Hubs, Spokes, Handles, etc.

F. W. HORE'S SONS, Hamilton, Ont.—Manufacturers of wheels, wheel material, shafts, poles, etc.

Knit Goods.

S. LENNARD & SONS, Dundas.—Manufacturers of plain and fancy hosiery.

Machine Tools.

JOHN BERTRAM & SONS, Dundas.—Machine tools and wood-working machinery, Toronto warehouse 58 Yonge St. Agents—The Polson Iron Works Co. Montreal warehouse, Craig St. Agents for Quebec—The Machinery Supply Association, Montreal.

Malleable Iron.

THE OSHAWA MALLEABLE IRON CO., Oshawa, Ont.—Manufacturers of Malleable Iron Castings, to order, for all kinds of Agricultural Implements and miscellaneous purposes.

SMITH'S FALLS MALLEABLE IRON WORKS, Smith's Falls, Ont.—Manufacturers to order of refined malleable iron castings. Agricultural and other castings a specialty. Carriage castings in stock.

Oils.

McARTHUR, CORNEILLE & CO., Montreal.—Afford best value in pure olive and lard oils, also in all other leading lines of vegetable, animal and mineral oils for factory use.

Paper Manufacturers.

WM. BARBER & BROS., Georgetown.—Manufacturers of book and fine papers.

THE TORONTO PAPER MANUFACTURING CO., Cornwall, Ont.—Manufacturers of engine sized superfine papers, white and tinted book papers, blue and cream laid and wove foolscaps, account book, envelope and lithographic papers, etc., etc.

Tanners' Supplies.

THEO. H. EATON & SON, Windsor, Ont.; Detroit, U.S.A.—Supply at lowest prices all chemicals used by Tanners and Wool Pullers. Special Aniline for Sheep Skin Dyers, Wool Mat Manufacturers, etc., etc. Address correspondence to Head Office, Detroit, Mich.

DOMINION DYEWOOD & CHEMICAL CO.—Quercitron Bark and Quercitron Bark Extract. Solid and liquid Dyewoods and Anilines specially adapted for dyeing leather. Alum, acids, tin, crystals, etc., at lower prices.

McARTHUR CORNEILLE & CO., furnish at lowest prices extracts for tanning and coloring. Sumac, Gambier, etc., Sulphide of Sodium, and other chemicals. Aniline colors, etc.; also

Pure Cod Oil and other oils for Carriers, Degras, etc. Sole agents in Canada for Miller Tannin Extract Co., Hemlock Extract, and Gondolo Extract Co.'s Oak Extracts.

Wire Works.

THE B. GREENING WIRE CO. Ltd., Hamilton, Ont.—Perforators of zinc, iron and steel; manufacturers of wire cloth, all grades, wire ropes, bank and office railings, etc.

TIMOTHY GREENING & SONS, Dundas, Ont.—Wire manufacturers and metal perforators, wire cloth, all grades, perforated sheet metals of every description, all kinds of special perforating and indenting done to order.

Woodworking Machinery.

COWAN & CO., Galt.—Manufacturers of every description of wood-working machinery.

THE CAST BROS CO. of Galt, Ltd., Galt, Ont.—Wood-working machinery for builders, planers, furniture, sash and door and wagon works. Toronto warehouse, 141-145 Front St. west. Agent, H. W. Petrie, Front St. west.

Wool Stock.

SMITH & CO., 219 Front Street East, Toronto.—Manufacturers and dealers in Wool Stock, Shoddies, etc., Wool Pickings, Woolen and Cotton Rags, etc., bought, or worked up and returned. Carbonizing and neutralizing a specialty.

Sprague, Duncan & Hutchinson, Limited.

FRANK J. SPRAGUE,
LOUIS DUNCAN, Ph.D.,
ALFRED BISHOP MASON,
CARY T. HUTCHINSON, Ph.D.

Consulting Electrical Engineers. 15 WALL STREET, NEW YORK.

Hamilton Whip Company HAMILTON, - ONTARIO Manufacturers of the world-renowned

Eel Skin Lined Whips.

Pat. Jan. 30, 1888. All infringements prosecuted.

Send For Estimate

On the Pulley you need. Give speed of shaft, diameter, power transmitted, and say if a driven or a driver.

MADE

SPLIT OR

SOLID

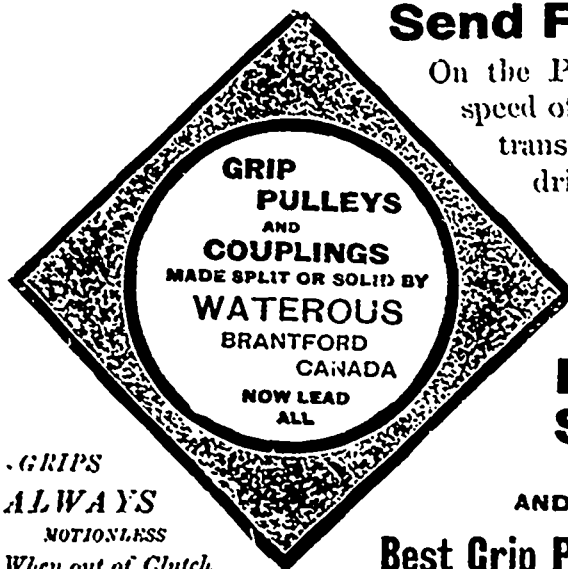
DOUBLE OR

SINGLE DRIVERS

ANY SIZE

AND FOR ANY POWER

Best Grip Pulley Ever Invented



THE HEPANS TABLETS regulate the stomach, liver and bowels, purify the blood, are pleasant to take, safe and always effectual. A reliable remedy for Biliousness, blotches on the face, Bright's Disease, Catarrh, Colic, Constipation, Chronic Diarrhoea, Chronic Liver Trouble, Diabetes, Disordered Stomach, Dizziness, Dysentery, Dyspepsia, Eczema, Flatulence, Female Complaints, Full Breasts, Headache, Heartburn, Hives, Jaundice, Kidney Complaints, Liver Troubles, Loss of Appetite, Mental Depression, Nausea, Nett to Rash, Pimples to the Head, Piles, Prostration, Salt Head, Stomach Ache, Skin Diseases, Stomach, Tired Liver, Ulcers, and every other disease that impure blood or a failure in the proper performance of their functions by the stomach, liver and intestines. Persons given to over-eating are benefited by taking one tabulo after each meal. A continual use of the Hepans Tabules is the surest cure for obstinate constipation. They contain nothing that can be injurious to the most delicate. 1 gross \$2, 1-2 gross \$1.25, 1-4 gross 75c, 1-24 gross 15 cents. Sent by mail postage paid. Address THE HEPANS CHEMICAL COMPANY, P. O. Box 67, New York.



Toronto Lithographing Co.

LITHOGRAPHERS & ENGRAVERS.

TORONTO.

BROWN & CO.,
Manufacturers of
**SQUARE AND HEXAGON
HOT PRESSED NUTS.**
PARIS, ONTARIO.

STEEL STAMPS
I.C.FELL & CO.
VICTORIA & TORONTO.

J. L. O. VIDAL & SON,
City of Quebec.

Are agents to sell and handle on commission all sorts of New and Second-hand Machinery.

Trade Mark Manhattan.
Registered Sept. 24, 1889, No. 17,054.

**MANHATTAN
SELF-LUBRICATING
Plumber's Packing**

Is the best to be had for Engines, Pumps, with oil, hot or cold water, Steam Hammers, etc. It is made round and square.

Send for circulars, or sample for trial to
GREENE, TWEED & CO.,
Mfrs., 83 Chambers Street, N.Y.

**NEW & 2ND HAND
MACHINERY**
ILLUSTRATED CATALOGUE FREE
H.W. PETRIE
TORONTO, CANADA.

**BEST LEATHER
BELTING**
ALWAYS ON HAND
TELEPHONE 2390.

SPECIAL MIXTURE USED FOR SHOES & DIES

WRITE FOR PRICES

MATHESON & CO
ENGINEERS AND
BOILER MAKERS
NEW GLASGOW,
NOVA SCOTIA

GOLD-MINING MACHINERY

WINDING GEAR MILLS PUMPS &c

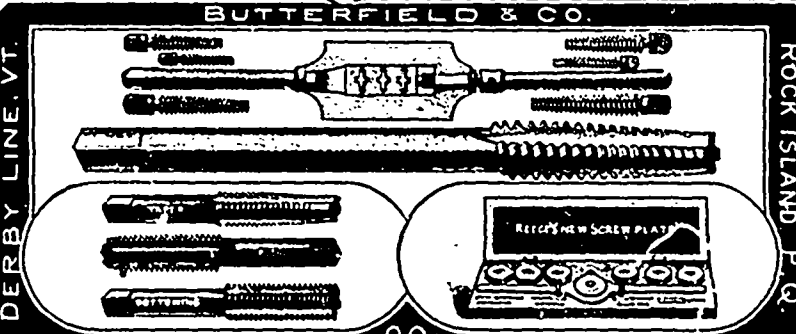
**JORDAN CHAMBERS
W. B. Kramer
DESIGNER & ENGRAVER
ON WOOD**
TORONTO ONT.

ALL KINDS OF
Boxes, Crates and Packing Cases
MADE TO ORDER AND BY CONTRACT.
RE-SAWING, PLANING and MATCHING
R. B. ELGIE
141 to 151 Esplanade St. West, - Toronto.
Telephone 2563. Opposite Union Station.

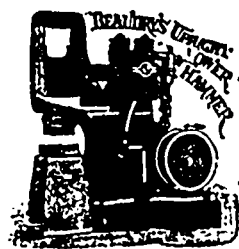
**ONTARIO
Bureau of Chemical Information,**
Laboratories, 57 and 59 Colborne St., Toronto
REPORTS GIVEN ON MINING PROPERTIES, COMMERCIAL PRODUCTS ANALYSED, ORES ASSAYED, RESEARCHES UNDERTAKEN.
Manufacturers Supplied with Processes and unsatisfactory Processes perfected.

BUTTERFIELD & CO.

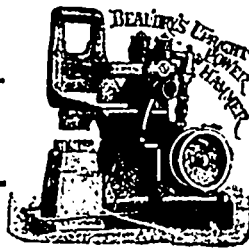
DERBY LINE, V.T. ROCK ISLAND P.G.



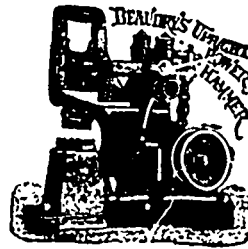
WRITE FOR 1891 CATALOGUE



SIMPLE,



PRACTICAL

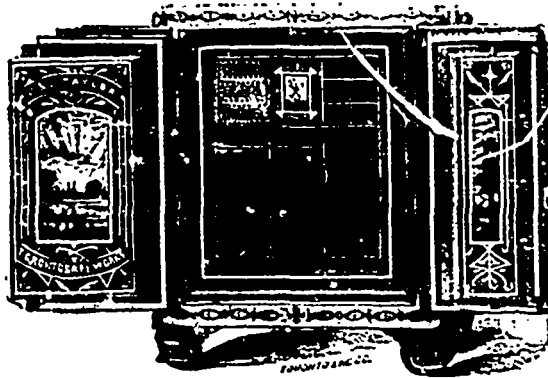


AND BEST.

BEAUDRY UPRIGHT CUSHIONED POWER HAMMER

The most handy, compact, and above all, the most efficient tool ever invented for Manufacturers of all descriptions, Railroad Shops, Steel and Machine Forgers, File and Vice Makers, Knife and Cutlery Makers, Axle, Edge Tool and Agricultural Implement Manufacturers, Carriage Builders and, in fact, all others who need a first-class Hammer, and one of extraordinary capacity and adaptability. Correspondence solicited.

MILLER BROS. & TOMS, SUCCESSORS TO Miller Bros. & Mitchell, Sole Makers for **MONTREAL.**
Toronto Office, 71 York Street.



J. & J. TAYLOR'S Double Tongue and Groove FIRE-PROOF SAFES

(Patented January 14th, 1886.)

Established 33 years.

All our new style Fire-proof Safes are fitted with TWO COMPLETE TONGUES AND TWO GROOVES on both the door and door frames, which effectually prevent the heat from passing between the door and frame into the interior of the safe.

They are also fitted with CHILLED CHROME STEEL PLATES under the Lock and Bolt Spindles to prevent drilling; and have DRY AIR-CHAMBER inside to prevent dampness to papers.

For Catalogues and Prices on application.

J. & J. TAYLOR, Toronto Safe Works

INTERCOLONIAL RAILWAY OF CANADA.

The direct route between the West and all points on the Lower St. Lawrence and Bale des Chaleur, Province of Quebec; also for New Brunswick, Nova Scotia, Prince Edward Island, Cape Breton and Magdalene Islands, Newfoundland and St. Pierre.

Express trains leave Montreal and Halifax daily (Sunday excepted) and run through without change between these points in 27 hours and 30 min.

The through express train cars of the Intercolonial Railway are brilliantly lighted by electricity and heated by steam from the locomotive, thus greatly increasing the comfort and safety of travelers.

New and elegant Buffet sleeping and day cars are run on all through express trains.

The popular summer sea-bathing and fishing resorts of Canada, are along the Intercolonial, or are reached by that route.

The attention of shippers is directed to the superior facilities offered by this route for the transport of flour and general merchandise intended for the Eastern Provinces, including Cape Breton and Newfoundland; also for shipments of grain and produce intended for the European market.

TICKETS may be obtained, and all information about the Route; also FREIGHT and PASSENGER RATES, on application to

D. POTTINGER,

Chief Superintendent.

RAILWAY OFFICE, MONTREAL, N.B., June 29, 1891

N. WEATHERSTON,

Western Freight and Passenger Agent, 33 Rossin House Block, York Street, TORONTO, ONT.

IMPROVED WOOL WASHER

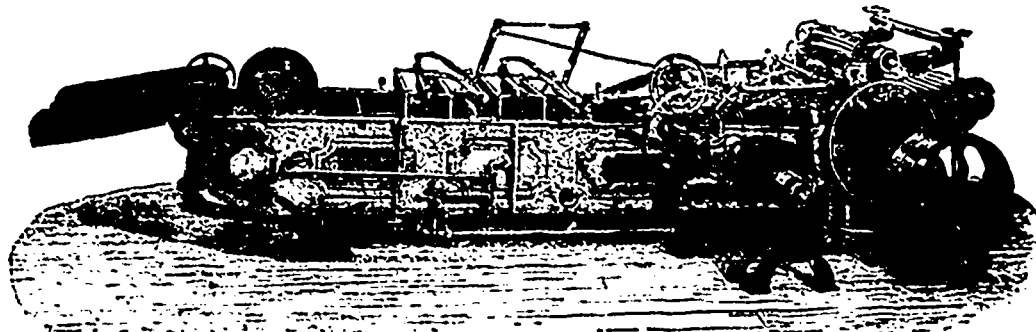
BUILT BY

C. G. Sargent's Sons

Graniteville, Mass.,

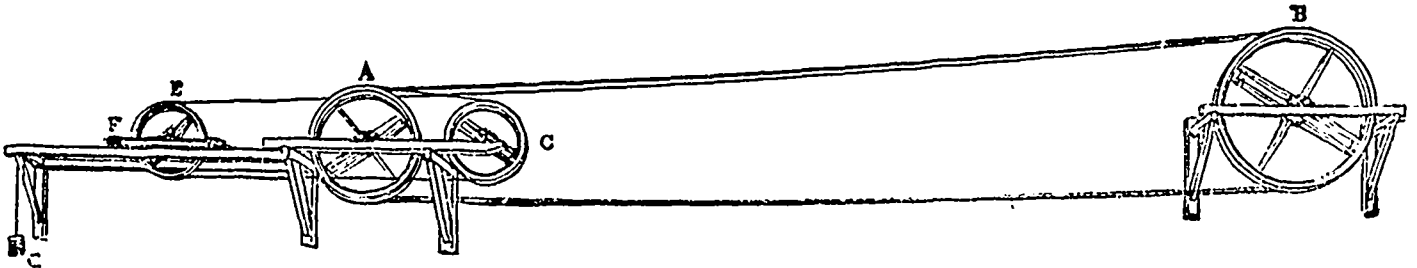
U.S.A.

Builders of Wool Washers,
Burr Pickers, Wool
Dryers, etc.



The above represents our New Hydraulic Wool Washer, superior to Rake Machine. Send for Illustrated Catalogue.

ROPE TRANSMISSION OF POWER



We have numerous Drives running throughout the Dominion, constructed on above plan, transmitting from 2 to 100 H.P., all of which are giving best of satisfaction. If you want to transmit power, economically, and at little cost, we invite correspondence.

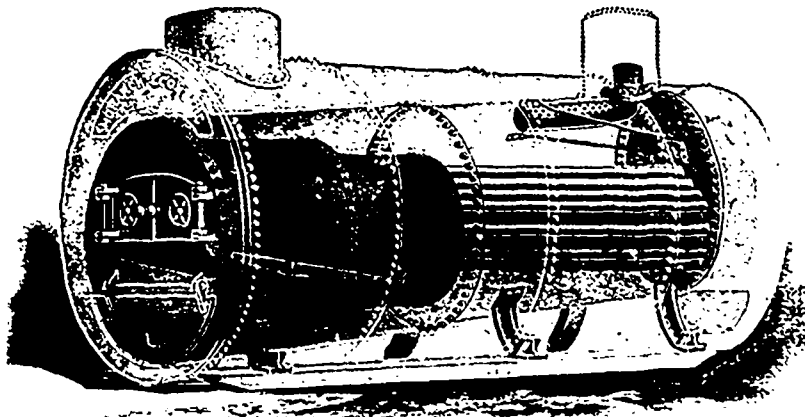
DODGE WOOD SPLIT PULLEY COMPANY TORONTO

THE MONARCH ECONOMIC BOILER

Patented Can. May 6, 1866;
Feb. 10, 1887.
Patented U.S.A. Oct. 5, 1886;
Aug. 23, 1887; May 8, 1888.

Is the strongest and most
Portable Boiler
in use, and its high economy
in fuel makes it specially valu-
able to gold miners.

Tested evaporation 10.25 lbs.
water per pound of ordin-
ary Nova Scotia coal.



Manufacturers of
The Robb-Armstrong
Automatic Engine,
The Hercules Engine,
(For all purposes).
Saw Mill, Electric Machinery
BELTINGS,
PACKINGS, OILS, Etc.
Robb Engineering Co.
LIMITED,
Successors
A. ROBB & SONS
AMHERST, N.S.

WHEN WERE YOUR
Boilers
Last Inspected?
ARE THEY IN
SAFE
WORKING ORDER?

THE BOILER INSPECTION and Insurance Company of Canada.

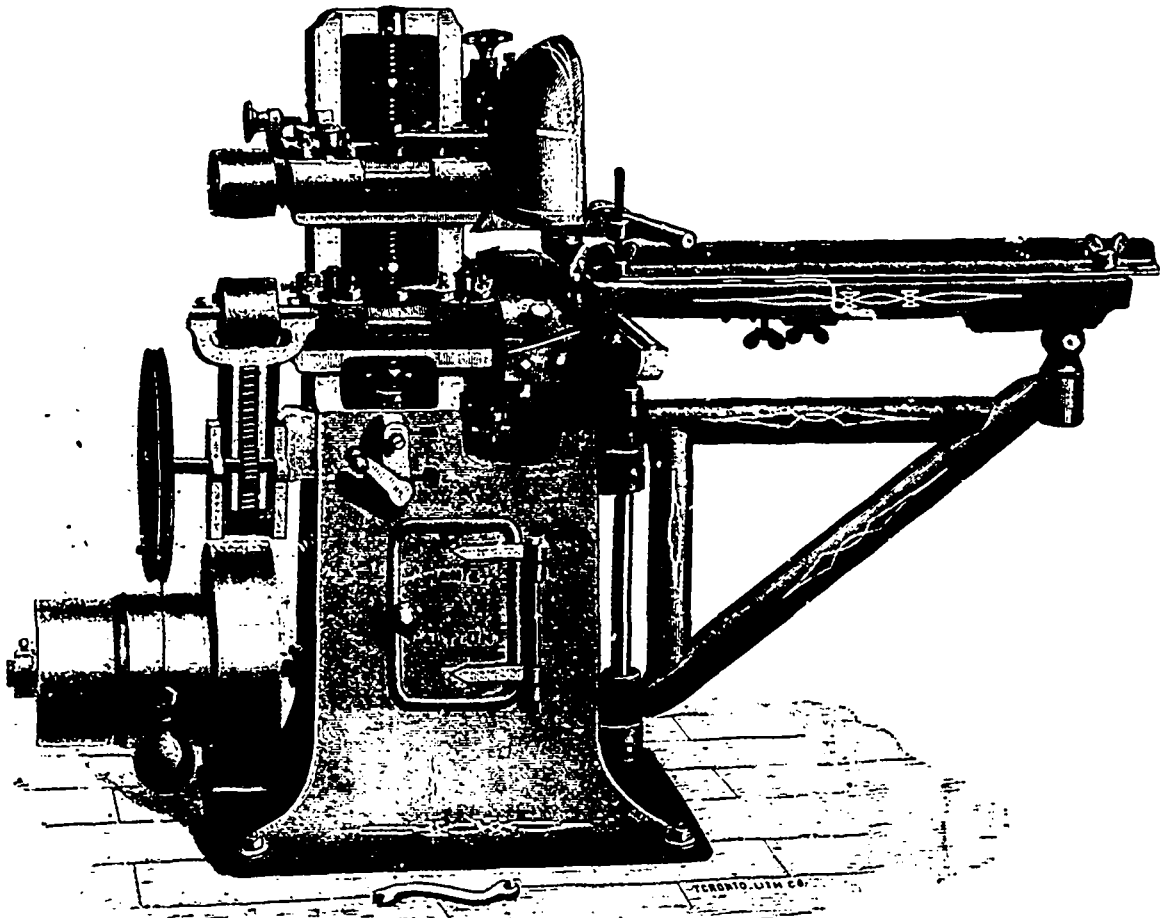


CONSULTING ENGINEERS.
G.C. ROBB, Chief Engineer. A. FRASER, Secy. Treas.
HEAD OFFICE
TORONTO.

ARE YOUR
Boilers
GIVING THE
GREATEST POWER
AT THE
Least Cost?

SIR ALEX. CAMPBELL, K.C.M.G. PRES.
(Lieut. Govr. of Ontario)
JOHN L. BLAIKIE ESQ. VICE PRES.

NEW AND IMPROVED
Pedestal Tenon Machine.



This is an entirely new style of Tenon Machine. The frame is cast in one piece, and the working parts stand solidly on a pedestal, avoiding all vibration.

The Cutter and Cope Heads are connected and are moved all together or separately, as required. The Upper Head and Boxes also adjust horizontally to suit shoulder of tenon, the Cope Knives moving with the Heads to prevent re-adjustment.

A special feature in this machine is the Bed, or Carriage, which is at once light and strong. The outer end works on rollers and is moved very easily.

In cutting the tenon the Bed and Carriage move entirely past the Heads and Cutters, the operator having full control of the work. It has also the advantage of leaving the Heads and Cope Knives clear, and of ready access by the operator.

The Carriage is so arranged that it cannot tip over the Slides nor be thrown into the Cutters, and is also supplied with extension bar for long stuff, as in all Tenoning Machines.

This Machine is supplied with single or double Copes, as ordered, and for furniture work it is without Copes, and with an adjustable cut-off Saw.

COWAN & CO.

"Galt Foundry" Engine and Machine Works, GALT, ONTARIO, CANADA.

Nova Scotia Steel and Forge Co., Ltd.

NEW GLASGOW, NOVA SCOTIA.

(Only Steel Works in Canada)

MANUFACTURERS OF

Hammered *and* Rolled Steel

MADE BY THE

SIEMENS-MARTIN (OPEN HEARTH) PROCESS.

MARINE, RAILWAY, and MACHINERY Forgings up to 20,000 lbs. weight. MACHINERY STEEL, Round, Square and Flat. MILD STEEL for Rivets, Bolts, Thresher Teeth, Etc.

FLOW BEAMS, SOFT CENTRE AND SOLID STEEL FLOW PLATES, HARROW DISCS, PLAIN AND CUTAWAY, BOTH BLANK AND FINISHED. AGRICULTURAL STEEL CUT TO PATTERN. SPRING, SLEIGH SHOE, TYRE, TOE CALK AND CROW BAR STEEL. STEEL NAIL PLATE.

 *Binder Bars. Z Bars and Special Sections*

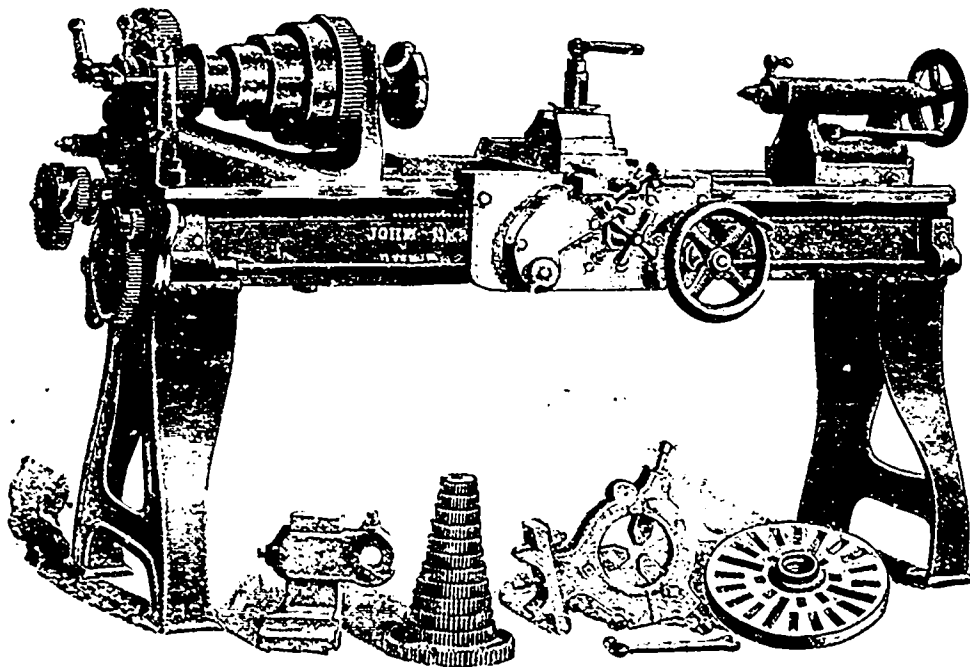
OF EVERY DESCRIPTION

Hay Rake, Cultivator and Harrow Teeth, and Agricultural Springs

Canada Tool Works,

John Bertram & Sons,

DUNDAS, ONT.



16-in. LATHE

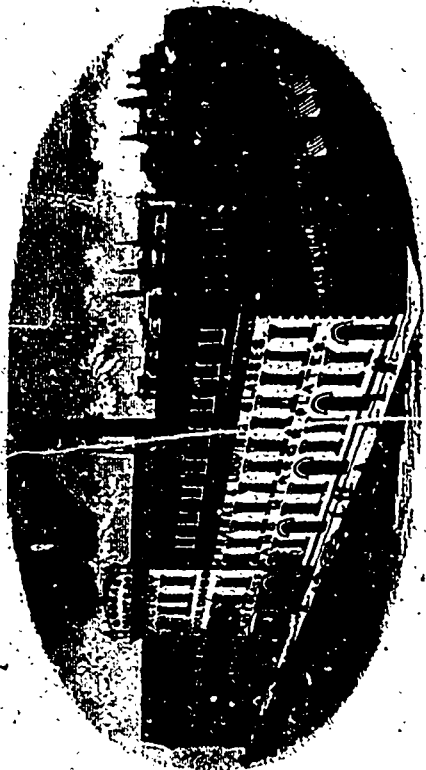
Manufacturers
of
Machinists' Tools
and
*Woodworking
Machinery.*

LATHES,
PLANERS,
DRILLS,
MILLING
MACHINES
PUNCHES,
SHEARS,
BOLT
CUTTERS
SLOTING
MACHINES,
MATCHERS
MOULDERS,
TENONERS
BAND SAWS,
MORTICERS,
SAW BENCHES

Locomotive and Car Machinery, Special Machinery, Price List and Photographs on application.

COBBAN MANUFACTURING COMPANY, Ltd.

Factory & Head Office: Toronto.



Cor. Torranley and Hayter Sts.

MANUFACTURERS OF
Mantles, Over Mantles and Mirrors in Finest Hardwoods. Mouldings, Picture
Frames and Looking Glasses. Mirror Plates: British, French, German,
Shocks. Plate Glass Beveling and Silvering a Specialty
CLOSE PRICES. LIBERAL TERMS.

TORONTO.

HEINTZMAN & CO.

MANUFACTURERS OF



**GRAND,
SQUARE,
AND UPRIGHT
PIANOFORTES.**

SEND FOR ILLUSTRATED CATALOGUE.

Warerooms, 117 King St. West,
TORONTO.

GALT MACHINE KNIFE WORKS.

PLANING MACHINE

KNIVES.

STAVE CUTTER KNIVES.

STAVE JOINTER KNIVES.

MOULDING, TENONING

MITREING

SHINGLE JOINTER,

And other irregular shapes.

Chase-box and Veneer, Paper Cutting, Leather Splitting and any special knife made
to order. SEND FOR PRICE LIST, ALL WORK WARRANTED.

PETER HAY,

GALT, ONT.

THE
Polson Iron Works Co.

(LIMITED)

CAPITAL, \$300,000.00.

Iron & Steel Ship Builders & Engineers

HEAD OFFICE, TORONTO.

PRESIDENT, WM. POLSON. MANAGING DIRECTOR, F. B. POLSON

DIRECTORS:

Hon. W. E. Sanford, W. C. Matthews, Jas. Worthington,
D. Graham, A. B. Lee, T. F. Chamberlain,
J. B. Miller, Thomas West.

BUILDERS OF

Iron, Steel, Composite and Wooden SHIPS

Compound and Triple Expansion

MARINE ENGINES

AND

MARINE BOILERS

Hoisting Engines, Pumping Engines, The Brown
Automatic Engines for Stationary Use.

STEAM BOILERS OF EVERY DESCRIPTION,

Ship Building Works and Dry Dock, OWEN SOUND, ONT.
Engine and Boiler Works, Esplanade St., TORONTO.

CHEMICALS

Drugs,
Acids,
Aniline
Colors,
DYE-STUFFS,

OILS.

BELLHOUSE, DILLON & CO.
9 Custom House Square, Montreal.



THE OSHAWA Malleable Iron Co.

MANUFACTURERS OF

MALLEABLE IRON
CASTINGS TO ORDER
FOR ALL KINDS OF
Agricultural Implements
AND
MISCELLANEOUS PURPOSES.

Oshawa, Canada.

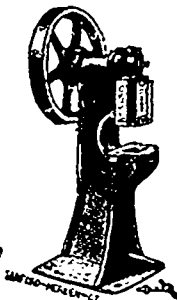
Connor & Anderson,



MANUFACTURERS OF

Presses, Dies

And all kinds of



SPECIAL

MACHINERY

39 Adelaide St. West,
TORONTO, ONT.

M. & L. SAMUEL, BENJAMIN & CO.

HARDWARE

METALS,

Chemicals, and Manufacturers'
SUPPLIES.

No. 30 FRONT ST. WEST, TORONTO
CORRESPONDENCE SOLICITED.

ENGLISH HOUSE:—

SAMUEL, SONS & BENJAMIN,
No. 1 Rumford Place, LIVERPOOL.

SMITH'S FALLS MALLEABLE IRON

WORKS WM. H. FROST

MANUFACTURER TO ORDER OF

Malleable Iron Castings

FOR

Agricultural Implements
AND OTHER PURPOSES.

Also CARRIAGE HARDWARE.

SMITH'S FALLS,
Ontario, Canada.

JAMES LESLIE MANUFACTURER OF

Machine Card Clothing, Loom Reeds,

ENGLISH OAK-TANNED

LEATHER • BELTING

Cotton and Woollen Mill Supplies.

428 St. Paul, cor. of St. Francois Xavier Street,

MONTREAL.