

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

Covers damaged/
Couverture endommagée

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

Cover title missing/
Le titre de couverture manque

Coloured maps/
Cartes géographiques en couleur

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

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

Bound with other material/
Relié avec d'autres documents

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

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.

Additional comments:
Commentaires supplémentaires:

Coloured pages/
Pages de couleur

Pages damaged/
Pages endommagées

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

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

Pages detached/
Pages détachées

Showthrough/
Transparence

Quality of print varies/
Qualité inégale de l'impression

Continuous pagination/
Pagination continue

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

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

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

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

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

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

Vol. 32.

TORONTO, APRIL 17, 1896.

No. 8.

Canada Chemical Manufacturing Co.

Manufacturers of

Sulphuric, Nitric, and Muriatic Acids Commercial and Chemically Pure. Mixed Acids for Explosives. Liquid Ammonia, Glauber Salts, Copperas, Muriate of Tin, Tin Crystals, Acetic Acid, Nitrate Iron, Bisulphite Soda, Acid Phosphate for Baking Powders and General Chemicals. Fertilizers, etc.

LONDON
ONT.

ANILINE LIZARINES
DOMINION DYEWOOD & CHEMICAL CO.
TORONTO
PRODUCTS OF
The Farbenfabriken vorm. F. Bayer & Co.
DOMINION DYEWOOD & CHEMICAL CO.
SOLE AGENTS FOR CANADA TORONTO.

HENRY PORTER

Oak Leather Tanner and
Manufacturer of....

..PURE OAK TANNED..

Belting

Lace Leather, Goodyear Welting, Bag and Colored Shoe Leather, Carriage Furniture and Patent Leather, Oak, Sole and Harness Leather.

434 to 442 Visitation St., Montreal

HAVE YOU TRIED FLEXIFORT? THE BEST BACKING - - YET - -

No Stretch. Polished, Hardened and Tempered Steel Wire. Requires no Re-drawing on. Never Grows Hard. Impervious to Oil. Out-wears Leather. Samples and Prices on application.

THE J. C. McLAREN BELTING COMPANY

Factory, Montreal

22 FRONT EAST, TORONTO

CHARLES F. CLARK, Pres. EDW. F. RANDOLPH, Treas.
ESTABLISHED 1819.

THE BRADSTREET MERCANTILE AGENCY

THE BRADSTREET COMPANY - Proprietors
NEW YORK

Operate in the principal cities of the United States, Canada, the European Continent, India, and in London, England.

The Bradstreet Company is the oldest, and the strongest organization of its kind in the world, with wider ramifications, with all its vested in the business, and it examines every year for the collection of information, than any similar organization in the world. Toronto Offices:-

36 Front St. E., and 27 Wellington St. E.
C. IRVING, Superintendent

THE GUTTA PERCHA & RUBBER CO.
HOWARD ST. OF TORONTO LTD. C. CANADIAN SECTY.
PRES. & TREAS. W. W. WILSON

WAREHOUSE & OFFICE 61 & 63 FRONT ST. W. TORONTO.

THE.....

Walkerville Malleable Iron Co., (Limited)

Manufacturers of..

REFINED AIR FURNACE

Malleable Castings

ALSO LIGHT GREY IRON CASTINGS

WALKERVILLE, ONTARIO.

PATENTING

Validity and Scope of Patents Investigated.

Canada Life Building, 46-52 King St. W., Toronto

Unusual, Manu-book on Patents and Trade Mark Law Free on Application.

IRVING, OUT & MAYBEE

SOLICITORS of and EXPERTS in
PAMPHLET ON PATENTS SENT FREE

Patents

J. C. IRVING, J. EDW. MAYBEE, Moch. Eng.

103 Bay Street, Toronto

Tetlow's English... **CARD CLOTHING**

Fancy, Worsted, and Mohair Yarns

MILL SUPPLIES
LARGEST STOCK IN CANADA

Wools, Camel Hair, Noils, Peruvian Cotton

ROBT. S. FRASER,

3 St. Helen Street
MONTREAL

When we read
or hear of

: : HULL : :

We naturally
think of

**E. B. Eddy's
Matches.**

R. C. Jamieson. A. T. Higginson.

R. C. JAMIESON & CO.

Manufacturers of

VARNISHES AND JAPANS

Importers of Oils, Paints, Colors, Turpentine,
METHYLATED SPIRITS

Shellacs, Rosins, Glues, Gold Leaf, Bronze, etc.

Office—13 ST. JOHN ST.

Factory and Warehouse—

23 to 29 ST. THOMAS ST., MONTREAL

THE PARIS ELECTRO-PLATING CO.

Manufacturers of

Stove Trimmings, Organ and Piano

Trimmings, also all kinds of

Brass and Nickel Plating Done

Paris Station, - - Ontario

Largest Manufacturers

of STEEL and BRASS

STAMPS in Canada

PRITCHARD

& ANDREWS

OTTAWA, ONT.

Rubber Stamps

Stencils, Seals, Etc.

SEND FOR PRICES

BROWN & CO.

Manufacturers of

Square and Hexagon

HOT PRESSED NUTS

PARIS, - ONT.

SMITH WOOL STOCK CO.

219 FRONT STREET EAST, TORONTO

Makers of **WOOL STOCK, SHODDIES, Etc.**

All lines of Grate, Woolen Rags, Carbonizing and Neutralizing, Buyers of Wool Pickings, All lines of Hard and Soft Waste.

Advertise in . . .

The Canadian

Manufacturer

McARTHUR,

CORNEILLE & CO.

Manufacturers

.. AND ..

Importers . . .

310-316 St. Paul Street

.. AND ..

147-151 Commissioners Street

MONTREAL

OFFER AT CLOSEST PRICES

PURE OLIVE OIL

WINTER PRESSED LARD OIL

EXTRA FINE SPINDLE OIL

And a full Assortment of Other
Lubricating Oils,

GREASES, MILL SOAPS, ETC.

.. ALSO ..

CHEMICALS, DYE STUFFS

DYE WOODS, EXTRACTS, ETC.

SOLE AGENTS IN CANADA FOR

St. Denis Dyestuff & Chemical Co., Paris

A. Poirrier, President.

Aniline Colors, Archil Extract, Cachon de
Laral, Etc.

British Alizarine Co., London

Paste and Dry Alizarine.

Stamford Manufacturing Co., New York

Dyewoods and Extracts.

Coignet & Co., Paris

Glues, Gelatines,
Etc.

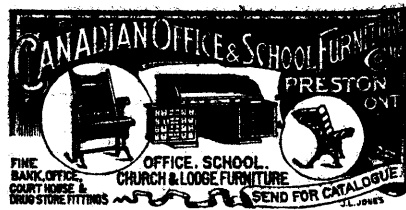
Watson, Walker & Quickfall, Leeds

Indigo Extracts.

Millerton, Tannin Extract Co.

Hemlock Extract.

Maintain Large Stocks, fully assorted, and
will always be pleased to furnish
quotations and samples.



WM. BARBER & BROS.

GEORGETOWN, ONT.

Manufacturers of

BOOK AND FINE PAPERS

THE TORONTO PAPER MFG. CO.
CORNWALL, ONT.

Manufacturers of...

Engine Sized Superfine Papers

White and Tinted Book Papers

Blue and Cream Laid and Wove Foolscaps, Ac
count, Envelope and Lithographic
Papers, etc.

F. W. HORE'S SONS

HAMILTON, ONT.

Manufacturers of . . .

WHEELS, Wheel Materials, Shafts, etc.

W. H. STOREY & SON

ACTON, - - ONT.

Manufacturers of . . .

Fine Gloves and Mitts

In Every Variety and Style.

MOCCASINS



For **IRON FENCING,**
BANK and OFFICE RAIL-
INGS and All kinds of
IRONWORK . . .

Address . . .

Toronto Fence & Ornamental Iron Works

73 Adelaide Street West, Toronto.

**Steam
Traps**

Pipe Machines

Buffing and Polishing Lathes

Strapping Machines

Shafting Hangers

G. T. Pendrith

MANUFACTURER

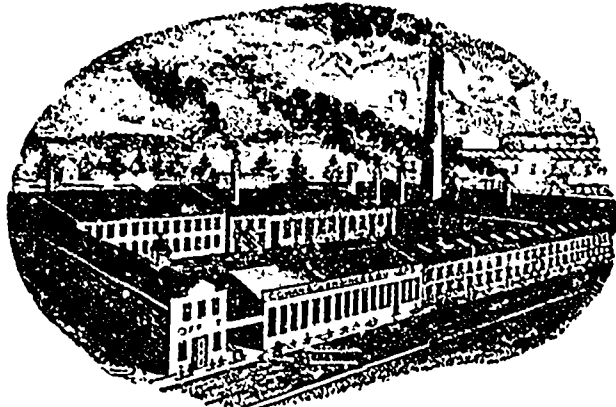
73 to 81 Adelaide Street West

TORONTO

CORRUGATED IRON
 ROOFING & SIDING.
FIREPROOF
 WRITE FOR CATALOGUE
THE PEDLAR METAL ROOFING CO.
 OSWAWA ONT.

COWAN & CO., GALT, ONTARIO
 Manufacturers of
Woodworking Machinery

Copliiss and
 Slide Valve
 ENGINES.
 BOILERS.



MOFFAT'S
 Patent
 Heaters.
 Saw Mills.

Old Wood Tools, Engines
 and Boilers, taken as part
 pay on new We have on
 hand a number of

Rebuilt Wood Tools which we offer at low prices
 and most favorable terms.
Engines and Boilers WRITE FOR
 Terms, Prices and Catalogue.



HAMILTON, CAN.

Catalogue on Application.

The Pulsometer
 STEAM PUMP

OFTEN IMITATED BUT
 NEVER EQUALLED

•••
 The best and most efficient
 steam pump for gene-
 ral Mining, Quarrying,
 and Contractors pur-
 poses.

•••
 Heavy or Critty Liquids
 Handled without
 wear.

•••
 Descriptive Catalogue
 with prices, furnish-
 ed on application.

•••
PULSOMETER
 Steam Pump Co.
 New York



A. R. Williams Machinery Co.

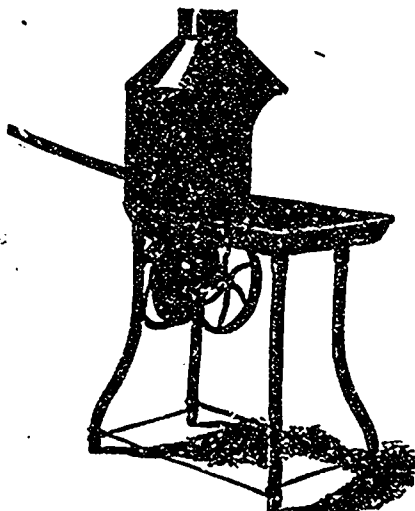
Toronto and Montreal,
 Selling Agent for Canada.

The Sturtevant
 IMPROVED PORTABLE FORGES

TWENTY-FIVE SIZES AND STYLES

HAND POWER AND BELT POWER **Hand Blowers**

FOR FORGES



The Sturtevant
 STEAM FANS

For BOILER FIRES

FORCED OR INDUCED DRAUGHT

MANUFACTURED BY

B. F. STURTEVANT CO.
 Boston, Mass., U.S.A.

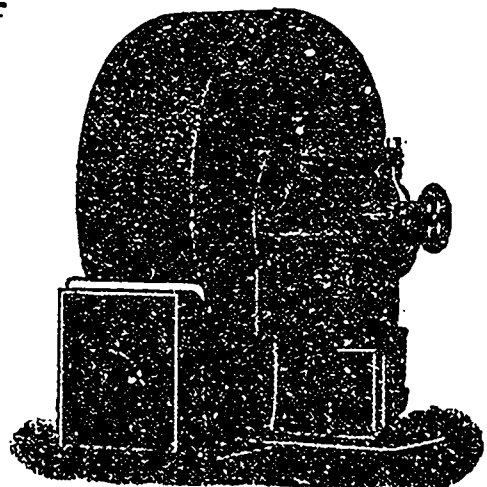
The STURTEVANT

Blowers
 and Exhausting

FANS

Known as the Monogram Pattern,
 For Blowing Boilers and Fires, Ex-
 hausting Dust and Gases.

SEND FOR CATALOGUES



A. R. WILLIAMS MACHINERY CO., General Canadian Agents, Toronto, Brantford, Montreal.

Above
all

COMPETITORS

Coal is money, why not save it by using the

T.J.C. INJECTOR

the most economical boiler feeder in the world.

20 Per cent.

saved in coal over any other make. Absolutely automatic. Easily attached. Applicable to all kinds of boilers.

NOT EXPENSIVE

Will outwear any other make and is simple in construction. It is easy to operate, and is the most powerful feeder in the world.

The T. J. C. Injector

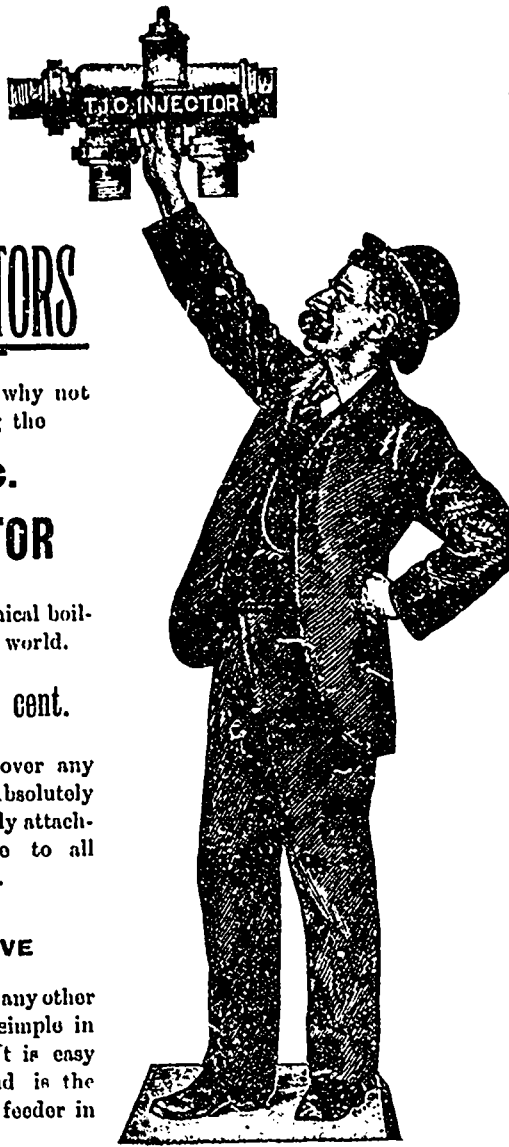
is the best because you cannot possibly go wrong with it. With high or low steam the result is equally satisfactory.

It combines the utmost simplicity with perfect efficiency, and any boy can operate it.

PRICE LIST :

No.	Price.	HORSE POWER.
7.....	\$ 7 00	4 to 8
10.....	7 00	8 to 16
15.....	10 50	16 to 40
20.....	15 00	40 to 72
25.....	22 50	72 to 120
35.....	39 00	120 to 220
45.....	45 00	220 to 300

HAMILTON BRASS MFG CO.
LIMITED
HAMILTON, - ONT.



BENT RIM WOOD SPLIT PULLEYS

← REID'S PATENT →

The Strongest, Lightest and Best Belt Surface in the World



No Glue, no Nails in Rim, like Segment Rim Pulleys, to be affected by Steam Dampness or Moist Temperature.

Every Pulley Guaranteed

The Reid Bros. Mfg. Co., Ltd., TORONTO ONT.

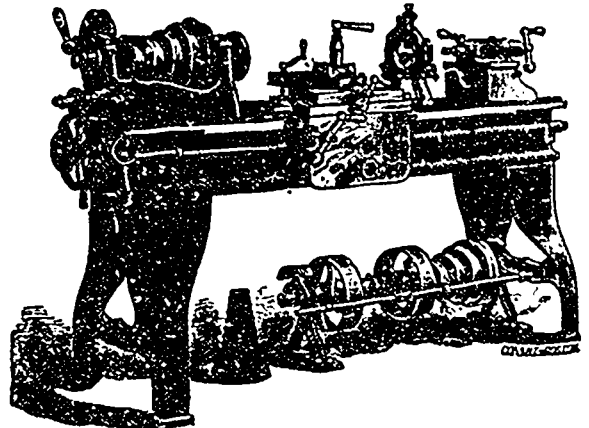
← ESTABLISHED 1850 →

Robert Gardner & Son

Manufacturers of

FINE TOOLS, LATHES, PLANERS

Shafting, Hangers, Pulleys, etc.



Nazareth, Brennan and Dalhousie Streets, MONTREAL

HAIR

"CAMEL"

BELTING

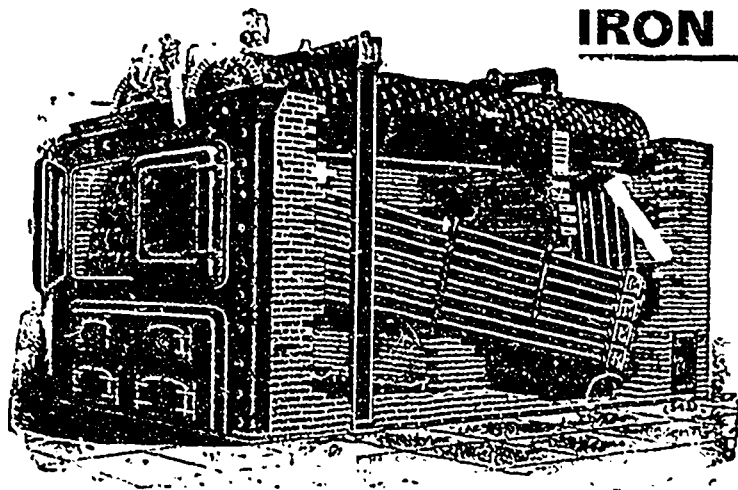
W. A. FLEMING

57 St. Frs. Xavier St. MONTREAL | 3 Front St. East TORONTO | Victoria Chambers OTTAWA

An Advertiser may occupy this space at the rate of 75 cts. per issue.

The Caldwell Standard Water Tube Boiler

THE BEST WATER TUBE BOILER IN THE MARKET.



IRON FOUNDERS

BOILER MAKERS

**MACHINISTS
ENGINEERS, Etc.**

General and Manufacturing Agents in Canada for the famous Worthington Pumps, Hydraulic Machinery, Water Meters, Water Works Supplies and Condensers.

Worthington Pumps are unequalled for Efficiency and Economy.

JOHN McDOUGALL

CALEDONIAN IRON WORKS, Office, Cor. William and Seigneurs Sts., Montreal

ANDREW ALLAN
President

J. O. GRAVEL
Secretary-Treasurer

F. SCHOLLES
Man.-Director

J. J. MCGILL
General Manager

Canadian Rubber Company

(TORONTO)

OF MONTREAL

(WINNIPEG)

Capital, - - - - - \$2,000,000.00

.....MANUFACTURE ALL KINDS OF.....

RUBBER HOSE Made with our Patent Process Seamless Tube

Rubber Valves, Packings, Gaskets, Etc.

Superior Quality **RUBBER BELTING** the following Grades :

"Extra Star"

"Extra Heavy Star"

"Fine Para"

"C. R. Co. Stitched"

"Forsyth Patent" Seamless

First Quality RUBBER BOOTS and SHOES

Western Branch : Cor. Front & Yonge Sts., Toronto

J. H. WALKER, Manager

ALBERT MANUFACTURING CO.

Manufacturers of the well known **HAMMER BRAND**

**CALCINED
PLASTER**

....AND....

Patent Rock Wall Plaster

HILLSBOROUGH, N.B., - CANADA

Law Bros. & Co.

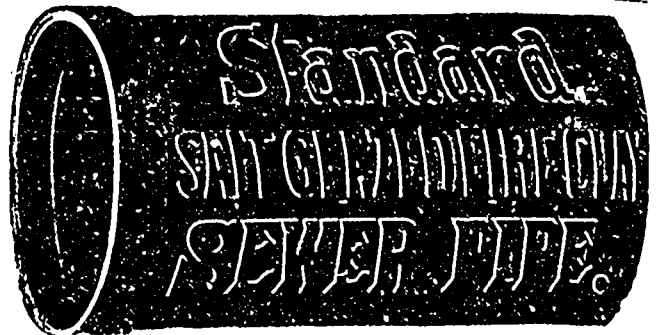
Founders and Machinists

OTTAWA, - - ONTARIO



**HYDRANTS, VALVES,
WATERWORKS SUPPLIES
SPECIALS.**

Also **CASTINGS** of every description.



THE STANDARD DRAIN PIPE COMPANY, ST. JOHN'S, P.Q.

Manufacturers of Salt Glazed Vitrified Sewer Pipes, Double Strength Railway Culvert Pipes, Inverts, Vents, and all kinds of Fire Clay Goods.

The Standard Drain Pipe Co of St. John's, P.Q., Ltd. W. C. THOMAS President.

REGISTERED.... BRAND

The Samson Brand IS A HIGH GRADE OF

Portland Cement.

..UNIFORM.. ..FINELY GROUND.. ..RELIABLE.

Quality equal to the best English and German Brands. Manufactured by the

Owen Sound Portland Cement Co., Ltd.
SHALLOW LAKE, - ONTARIO.

Over 39,000 BARRELS Sold

During 1895, and not a single complaint as to quality.

For Prices and further information address the Manager at Works, Shallow Lake, Ont., or

JOHN LUCAS, 377 Spadina Ave., Toronto, Ont.
Correspondence Solicited.

The Goldie & McCulloch Co., (Limited)

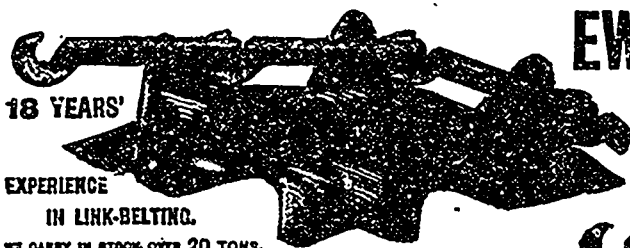
GALT, - - ONTARIO

MANUFACTURERS OF

Steam Engines, Boilers, Water Wheels

Flouring and Saw Mill Machinery, Wood Working Machinery, Wool Machinery. Fire and Burglar Proof Safes, Vault Doors. Wood Rim Split Pulleys, Friction Pulleys, Friction Clutch, Couplings, etc.

"Dumfries Foundry," Galt, Ontario, Canada



18 YEARS'

**EXPERIENCE
IN LINK-BELTING.**

WE CARRY IN STOCK OVER 20 TONS.

POWER TRANSMISSION MACHINERY.

BELTING, CABLE, ROPE OR LINK-BELTING.
CABLE CONVEYORS FOR LONG-DISTANCE CONVEYING,
STEEL SCREENS, McCULLY ROCK CRUSHERS, STEEL
PULLEYS, GRIP PULLEYS, SHAFING UP TO 28 FEET LONG.

Send for New Link-Belt Catalogue—just out of press.

WATERLOO, BRANTFORD, CANADA.

EWART LINK-BELTING

STANDARD STEEL CHAINS AND SEVERAL SPECIAL CHAINS FOR

ELEVATING AND CONVEYING MACHINERY

FOR HANDLING MATERIAL OF ALL KINDS



FOR.....
RAILWAY AND CONTRACTORS' SUPPLIES

..SEND TO..

J. BROWN MFG. CO.
(LTD.)

BELLEVILLE, - ONT.

BRIDGE BUILDERS, ENGINEERS,
BOILER MAKERS, MACHINISTS AND FOUNDRYMEN

Manufacturers of

Frogs, Diamond Crossings, Switches, Hand Cars, Lorries, Velocipede Cars, Jim Crows, Track Drills, Sump-pumps, Hall Cars, Double and Single Drum Hoists, Etc.

NOTICE.

Manufacturers and Capitalists Patent Acts of 1872, and Amendments, Section 23.

NOTICE is hereby given to all persons desirous of practicing the invention in the manufacture of Aluminum and Alloys thereof, for which certain letters patent of the Dominion of Canada were granted on June 11th, 1889, to Chas. Martin Hall, assignor to the Pittsburg Reduction Co., to wit, Nos. 31,512, 31,513, 31,514, 31,515, 31,516, 31,517, and also the invention in aluminum alloys and manufacture thereof, for which certain letters patent of the Dominion of Canada were granted on July 20th, 1892, to John W. Langley, assignor to the Pittsburg Reduction Company, to wit, No. 39,102, that the undersigned is prepared to grant licenses upon reasonable terms under each and all of same letters patent, and otherwise place the patent inventions in possession of the public in accordance with the provisions of the above recited act.

Communications to the undersigned may be addressed to 701 Ferguson Building, Pittsburg, Pa., U.S.A.

(Signed) The Pittsburg Reduction Co.

ASSIGNEE.

JAMES W. PYKE.

....MERCHANT IN....

IRON AND STEEL

BOILER PLATES

AND TUBES

WROUGHT IRON

STEAM AND GAS PIPE

COTTON WASTE

STEEL FORGINGS

35 ST. FRANCOIS XAVIER ST.

MONTREAL

Exhaust Steam UTILIZATION TO EFFORT Economy

OR INCREASE OF POWER—AND HOW?

Before Buying any type of Feed-Water Heater and Purifier, or Separator for Steam and Oil,

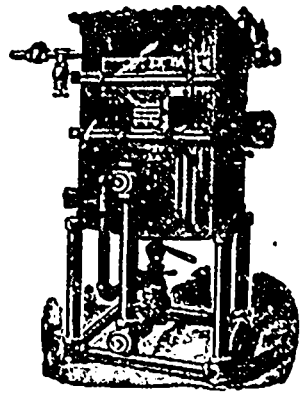
Consider Tests the efficiency, simplicity, construction and prices, of those we manufacture. and complete information forwarded by request upon the

Webster "Vacuum" Feed Water Heater and Purifier, and Separators for live and exhaust steam.

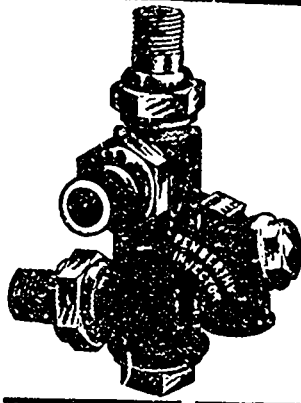
Guarantees and efficiency fully established by suitable trial, and hundreds in use throughout the United States and Canada.

Also the **Williams System of Steam Heating**, without back pressure on engines—guaranteed. Can be attached to existing plants with great economy.

MANUFACTURED BY



DARLING BROTHERS, 112 Queen St., Montreal



The World-Renowned

PENBERTHY

Automatic Injector

90,000 IN USE IN THE UNITED STATES 25,000 IN USE IN CANADA

What Better Recommendation Do You Want?

Penberthy Injector Co.

WINDSOR, - CANADA

EAGLE FOUNDRY | Established ..1820..

GEORGE BRUSH

14 TO 34 KING AND QUEEN STREETS. - - MONTREAL

Maker of

STEAM ENGINES, STEAM BOILERS, HOISTING ENGINES, STEAM PUMPS

Circular Saw Mills, Bark Mills, Shingle Mills, Ore Crushers, Mill Gearing, Shafting Hangers and Pulleys.

SAFETY ELEVATORS AND HOISTS FOR WAREHOUSES, ETC.

HEINE SAFETY STEAM BOILERS.

BLAKE "CHALLENGE" STONE BREAKER

The Attention

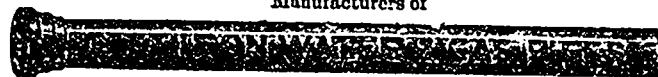
OF WOOLEN MANUFACTURERS IS CALLED TO

THE TORRANCE PATENT SELF-ACTING BALLING MACHINE

and positive Creel feed for Wool cards. The latest, best and only feed on the market that will make yarn positively even. These machines are built by The Torrance Mfg. Co., Harrison, (East Newark), N.J., U.S.A., for the States, and by The St. Hyacinthe Mfg. Co., St. Hyacinthe, Que., Canada for the Canadian market.

DRUMMOND-McCALL PIPE FOUNDRY CO. (Ltd.)

Manufacturers of



"Specials," Hydrants, Valves, Etc.

OFFICES:

New York

Life

Building, .

Montreal

WORKS

Lachine,

Quebec..

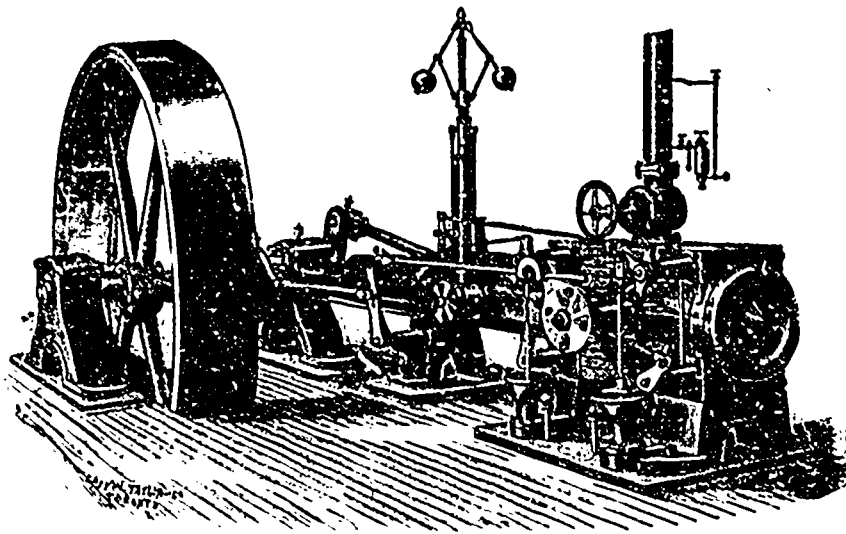
JOHN INGLIS & SONS

Marine
Engines

Corliss and
Armington
and Sims
Engines

Pumping
Engines and
Condensers

Flour Mill
Machinery



Marine,
Stationary
and Water
Tube Boilers

Tanks,
Shafting,
Pulleys.

All Kinds
Castings, in
Iron and
Brass.

ENGINEERS, BOILER-MAKERS ^{AND} MILL BUILDERS

14 STRACHAN AVE., TORONTO, ONT.

Pulleys! - Pulleys!

THE

Dodge Wood Split Pulley Co.

TORONTO, - ONTARIO

MANUFACTURERS

Wood Split Pulleys, Split Friction Clutch Pulleys

FRICION CUT-OFF COUPLINGS, ROPE DRIVING, Etc.

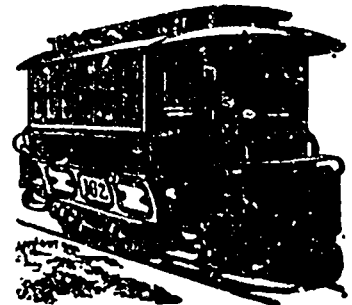
.....SEND FOR 1896 CATALOGUE.....

DODGE WOOD SPLIT PULLEY COMPANY

Office, 68 KING ST. WEST, TORONTO

PATTERSON & CORBIN Fine Electric Cars

.. OUR SPECIALTY ..



ST. CATHARINES, - ONTARIO

HORSE AND TRAIL CARS OF EVERY DESCRIPTION

THE IMPERIAL OIL COMPANY, LTD.

HIGHEST AWARDS AT THE WORLD'S FAIR, CHICAGO, UPON

Lubricating, W. W. Illuminating Oils, Paraffine Wax, etc.

WE MANUFACTURE ALL GRADES OF OILS, GREASES, SOAP STOCKS, CANDLES, WOOL STOCKS, LEATHER AND TANNERS' OILS, FUEL GAS, MACHINERY, CYLINDER OILS, Etc.,

And Solicit opportunity to compete against any Oil on the Market.

Write for Prices and Samples.

THE IMPERIAL OIL COMPANY, (Ltd.), Head Office, - PETROLEA, CAN.

....BRANCHES....

HALIFAX, N.S. HAMILTON, ONT. QUEBEC, QUE. LONDON, ONT. TORONTO, ONT. WINNIPEG, MAN. ST. JOHN, N.B.
GUELPH, ONT. MONTREAL, QUE. CHATHAM, ONT. PETERBORO, ONT. VANCOUVER, B.C. MONCTON, N.B.
STRATFORD, ONT. KINGSTON, ONT. WINDSOR, ONT.

DOMINION BRIDGE CO.

(LIMITED)

MONTREAL AND LACHINE LOCKS, P.Q.

Steel Bridges for Railways and Highways,
Steel Piers and Trestles, Steel
Water Towers and Tanks, Steel
Roofs, Girders, Beams, Columns,
for Buildings.

A Large Stock of....

ROLLED STEEL BEAMS, JOISTS, GIRDERS
CHANNELS, ANGLES, TIES, Z BARS
AND PLATES ALWAYS ON HAND

IN LENGTHS TO THIRTY-FIVE FEET

Tables, giving Sizes and Strength of Rolled Beams
on application.

Post Office Address, - - MONTREAL.

J. H. MCGREGOR, Agent, Canada Life Building
TORONTO, ONT.

THE CANADIAN MANUFACTURERS' ASSOCIATION

ALBERT E. KEMP, President.

J. J. CASSIDY, Secretary.

GEORGE BOOTH, Treasurer.

Secretary's Office, Room 66 Canada Life Bldg.

KING STREET WEST, TORONTO

Tel. 1274.

THE OBJECTS OF THIS ASSOCIATION ARE:

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

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

To maintain Canada for Canadians.

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

Manufacturers desiring to hold meetings for the promotion of their business are invited to avail themselves of the Board Room of the Association for the purpose, which is offered to them free of charge.

J. J. CASSIDY, Secretary

NORTHEY MFG. CO. LTD.
TORONTO, - ONTARIO
Steam and Power

Pumps
 & HYDRAULIC
 MACHINERY

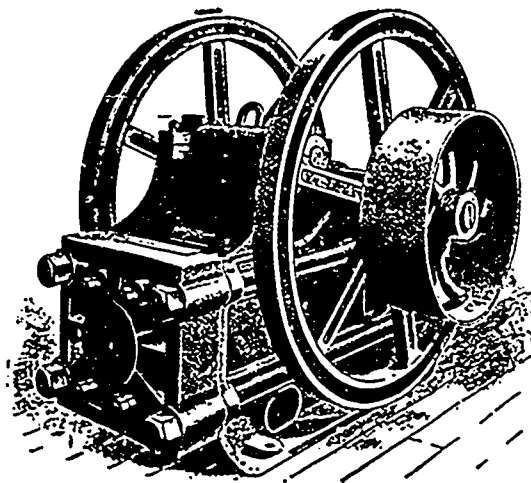
**FOR
 ALL
 DUTIES**

DODGE'S

GIANT

ROCK

CRUSHER



FOR

MINES

QUARRIES AND

CONTRACTORS

Manufactured
 by . . .

Ingersoll-Sergeant Drill Dept., MONTREAL

The Electric Storage Battery Company
 PHILADELPHIA, PA.

Solo Manufacturers of . . .

- The Chloride Accumulator -

STORAGE BATTERIES

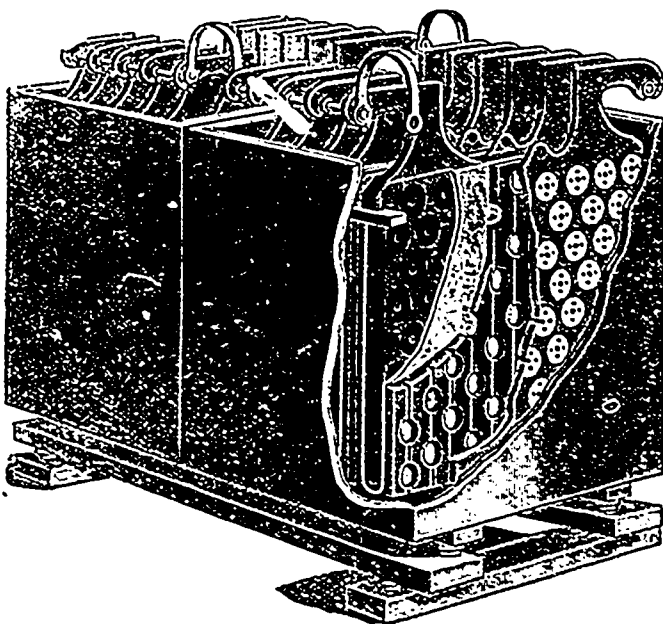
Of any size for use in
 connection with

Central Lighting Stations
 Tramway Traction
 Train Lighting
 Yacht Lighting
 Electrotyping
 Telegraph } Systems
 Telephone }
 Kinetoscopes

Electrical Ry. Power Plants
 Carriage Traction
 Carriage Lighting
 Electric Launches
 Electroplating
 Police } Systems
 Fire Alarm }
 Phonographs

BRANCH OFFICES

New York.....66 Broadway.
 Boston.....333 Exchange Bldg.
 Chicago.....309 Dearborn St.
 Baltimore.....215 North Calvert St.
 San Francisco.....15 First Street.
 Elec. Launch Co., Morris Heights, N.Y.
 Canadian Factory, W. A. Johnson Electric Co., 31 York Street, Toronto.





ESTABLISHED IN 1880.

PUBLISHED ON THE FIRST AND THIRD FRIDAYS OF EACH MONTH

J. J. CASSIDY, - - - - - Editor

SUBSCRIPTION - - \$1.00 per year.
ADVERTISING RATES SENT ON APPLICATION.

The Canadian Manufacturer Publishing Company, Ltd.

Room 66 Canada Life Building, King St. W., Toronto.

J. J. CASSIDY, - - President and Treasurer.

J. C. GARDNER, - - Manager and Secretary.

OFFICERS OF

THE CANADIAN MANUFACTURERS' ASSOCIATION

President,	ALBERT E. KEMP.
First Vice-President,	JAMES P. MURRAY.
Second Vice-President,	JAMES KENDRY.
Treasurer,	GEORGE BOOTH.
Chairman Executive Committee,	R. W. ELLIOT.
Chairman Tariff Committee,	W. K. McNAUGHT.
Secretary,	J. J. CASSIDY.

SECRETARY'S OFFICE: Canada Life Building, King St. W., Toronto.

WOOLEN MANUFACTURERS' ASSOCIATION

President,	B. ROSAMOND, M.P.
Vice-President,	JAS. KENDRY.
Secretary,	J. J. CASSIDY.

KNIT GOODS MANUFACTURERS' ASSOCIATION

President,	JOHN PENMAN.
Vice-President,	J. HEWTON.
Secretary,	J. J. CASSIDY.

CARPET MANUFACTURERS' ASSOCIATION

President,	JAMES P. MURRAY.
Vice-President,	ROBERT DODDS.
Secretary,	J. J. CASSIDY.

CLOVE MANUFACTURERS' ASSOCIATION

President,	W. H. STORRY.
First Vice-President,	JOHN MACLAREN.
Second Vice-President,	A. R. CLARKE.
Secretary,	J. J. CASSIDY.

REPRESENTATIVES TO

TORONTO INDUSTRIAL EXHIBITION ASSOCIATION

R. W. ELLIOT.	GEORGE BOOTH.
W. K. McNAUGHT.	SAMUEL MAY.
J. J. CASSIDY.	

REMOVAL.

On May 1st proximo the offices of the CANADIAN MANUFACTURER and of the Canadian Manufacturers' Association will be removed from Canada Life Building, where they have been domiciled for several years, to more commodious and convenient quarters in McKinnon Building, corner of Melinda and Jordan streets.

Our friends are most cordially invited to visit us in our new home. The location is central, and the passenger hoists are in excellent working order.

Come and see us.

THE TARIFF.

One of the evils of a high tariff is that it keeps the manufacturers of the country continually looking to the Government either to obtain special favors for themselves or to prevent their business from being injured by the granting of special favors to others. The impression is created that industry rests upon an artificial basis of law, and that if any of the props be withdrawn the edifice will totter. This state of feeling makes for unsound politics and unsound business conditions. Of course every manufacturer ought to take an intelligent interest in public affairs and in the prosperity of the country in which he makes his living. But it is sound policy to minimize his private interest in legislation, to make him feel that he has nothing to fear and nothing to hope from it except in common with his fellow-citizens, that he has no reasons for supporting this law or opposing that except such reasons as he can frankly avow and publicly maintain. Industrial self-reliance is the goal which a tariff reformer should keep steadily in view.—The Globe.

The Globe should have said that industrial self-reliance is the goal which every manufacturer and every advocate of the National Policy should keep steadily in view, because the chief aim and object of the National Policy, and every manufacturer who believes in it is to attain to that industrial self-reliance. It is not true that manufacturers continually look to the Government either to obtain special favors, or favors of any kind. As The Globe and every one else knows, the object of the National Policy is to build up manufacturing industries in Canada, thereby to make us industrially independent, as far as possible, of all other countries, for such articles and things as we could advantageously produce for ourselves. Before the adoption of the National Policy we had no firmly established iron industry, or woolen industry, or cotton industry, or agricultural implement industry, or stove and general foundry industry, not to mention a hundred other industries that have sprung into existence under the aegis of that policy, and that probably never would have materialized if it had not been that those who invested their capital in them did so believing in the good faith of the country and of the Government, pledged to the encouragement of them. The pledge of the whole country was given that those who would invest their capital in these manufacturing industries should not be despoiled of their wealth. That was one side of the contract. The other side of it was to the effect that capital should be invested, factories erected, and Canadian labor employed in the production of articles necessary to the comfort and welfare of the country, and that the amount of protection afforded by the tariff should indicate as near as might be the difference between the cost of production in Canada and in other countries. In considering this phase of the contract it had to be taken into the account not only the interest bearing value of the capital invested, but also the greater cost of machinery and supplies, as well as the lack of technical knowledge and experience on the part of the Canadian workmen to be employed. As far as the agricultural element was concerned the expected result would be to reduce the number of producers of food products, thus enhancing the value of whatever the farmer might have to sell, and increasing the number of consumers, with the same effect. Without doubt the National Policy has done this. The farmers were willing that at the first they should pay more for what they bought, because of the tariff, believing that later, when the inducements offered by the National Policy had caused the multi-

plication of manufacturing industries, the competition among them would so reduce prices that the element of the greater price would become eliminated. In this they have not been deceived, for they well know that about everything that they find necessary to their comfort and welfare can be produced in Canada at as low cost as it can be imported for. It is true that in many lines the tariff gives Canadian manufacturers the benefit of the home market; and it is also true that in the same lines domestic competition has brought prices down to a scale that could not possibly be lower even if free trade prevailed.

The Globe asserts that the impression prevails that our manufacturing industries rest upon an artificial basis, and that if the props be withdrawn they will totter; and that this condition makes for unsound politics and unsound business conditions. Is this correct? Protection in some form or another has existed in human society beyond a time when history became a recorder of facts. It is to be seen everywhere and in every sentient thing, and it is nowhere more forcibly and emphatically expressed than by the mother when she shields her child from any impending or apparent danger. We find parental government protecting the home brood against the encroachments of the intruder. We find the local government protecting its interest against the incursions of the stranger. We find the law protecting the just against the outrages of the unjust—protecting the innocent against the machinations of the vile. We find it guaranteeing peace, justice and independence among those who made the law, as against those who would stir up strife and contention. The grand old meteor flag represents the highest conditions of protection imaginable, for go where he may, even to the uttermost ends of the earth, the protection of the British flag guarantees to the one who may be entitled to it the backing of the greatest Empire on earth in the defence of his rights and privileges. Why should we not have protection? Why should the foreigner and stranger, who may pay taxes in his own country, but certainly not in this, be allowed to bring or send his products into Canada for sale in full, free and unrestricted competition with the products of Canadian labor? It is the duty of the mother to shield her child from danger. It is the duty of the parental government to protect the home brood against the encroachments of the intruder. It is the duty of the law to protect the just against the outrages of the wicked. It is the duty of those who bear the flag—who represent the power and glory of the Empire—to protect those who may be entitled to its protection. It is equally the duty of government to protect the industries of the people of the country against the encroachment of the people of any other country.

As the Globe says, every manufacturer ought to take an intelligent interest in public affairs and in the prosperity of the country in which he makes his living; and of course all classes of the community should do the same thing; but it is exceedingly unkind and unjust for it to intimate, nor is it born out by the fact, that his private interests are magnified in legislation, or that all that he has and is was not obtained by methods in no manner antagonistic to the welfare of the whole community. All that the manufacturer asks or hopes for, but which he does expect and demand, is that he shall receive from the state quite as much protection and consideration as other classes of the community. This protection may come in

different ways and exist in varying forms. The Globe itself as a great Canadian newspaper has, as such, protection against the competition of other great newspapers published in other lands and places. The lawyer has protection in strict laws that prevent a foreign lawyer competing with him in Canadian courts. The physician enjoys protection of similar character. The architects are clamoring for protection, as a guild against all other architects who will not become members of that organization. The carpenter and stone and brick mason, and the laborer who digs ditches and builds sewers, have protection, in that houses and sewers cannot, for obvious reasons, be imported from foreign countries; and those who operate street cars, and railroads, and telegraph and telephone lines; and those who do our street lighting are protected in their industries by laws that absolutely prevent competition.

It is all well enough for The Globe to tell us that industrial self-reliance is the goal which tariff reformers should always keep steadily in view, by which it means that because the manufacturer asks that his industries be protected the same as the industries and callings of all other classes of the community are protected, he is not self-reliant—that he depends upon the enforcement of laws created specially in his favor and at the sacrifice of the general good. The finely drawn theories of Cobden, Bright, Principal Grant and other impractical dreamers, which have been adopted by The Globe, have had their day, and, having been rejected by every other nation of the earth, are now being disregarded and set aside by Britain, the only country that ever lent a listening ear to them. Protection is the watchword of all advanced and advancing nations to-day.

BEARING FALSE WITNESS.

THE CANADIAN MANUFACTURER is apparently of opinion that the Spectator can see nothing good in a Grit government and nothing bad in a Tory government, and proceeds to give this great family journal a talking to about its partisanship. We hasten to return good for evil by explaining that THE MANUFACTURER is not a partizan publication. It goes in for the National Policy in Dominion elections, and helps Sir Oliver Mowat in local elections. The fact that Sir Oliver Mowat does all he can—sends out an army of government employes, bull-dozes the liquor license holders, sends his ministers on stumping tours, uses the patronage of the government, promises jobs to all and sundry, and uses the whole strength of the Ontario Government machine against the National Policy cuts no figure with THE MANUFACTURER. In Ontario election campaigns THE MANUFACTURER opposes the Conservatives, insults and derides them, tells them that not one cent of the manufacturers' money will aid them, and then imagines that all it has to do when the Dominion elections come on, is to say, "Now, boys, put your shoulder to the wheel, and hurrah for the N. P." It is a mighty good thing for the N. P. that THE CANADIAN MANUFACTURER is so insignificant that the electorate pays no attention whatever to it.—Hamilton Spectator.

Don't bear false witness, dear Spec., as you are doing. It is a long way from the truth to say that this journal helps Sir Oliver Mowat in local elections, and we challenge our contemporary to point out one article, or sentence, or line or word ever published in these columns that could be so construed. The Spectator not only bears false witness against this journal, but it bears false witness against Sir Oliver when it says that he always uses the whole strength of the Ontario

Government against the National Policy. Sir Oliver may be a very bad man in sending out an army of government employes to bull-doze the liquor sellers and all that sort of thing, as the Spectator says he does, but when he offers a bounty of a dollar per ton upon every ton of iron made in Ontario from Ontario ores, he is keeping close company with the National Policy and those who made and support it. If giving Sir Oliver credit for doing this makes THE CANADIAN MANUFACTURER an enemy of the "Tory Government" as the Spectator suggests, why then those who are offended may make the most of it. This journal is not a hanger on or beneficiary of either political party, but a warm and ardent supporter of the National Policy and of the interests of Canadian manufacturers. To say that the Spectator bears false witness against this journal is putting it very mildly, when it alleges that in Ontario election campaigns THE MANUFACTURER opposes the Conservatives, or insults and derides them. To say so is to utter a wilful and deliberate falsehood; and our offer of considerable wealth to the Spectator, made on a previous occasion when it first gave circulation to this untruth, remains open. It is ridiculous, too, to assert that this journal tells or has ever told the Conservatives that not one cent of manufacturers' money will aid them in any Ontario election. This is another Spectator falsehood that it can make money by substantiating. This journal does not hold or control the purse strings of any manufacturer, neither has it ever sought to influence any manufacturer in Ontario politics. Abuse is not argument; and the Spectator is not helping the Conservative party by abusing this journal and bearing false witness against it in the interest of a few disgruntled, second-rate, would-be politicians who would like to bleed the manufacturers.

CONFEDERATION NOT TO BE SMASHED.

One of the most pungent rebukes that has come under our observation to the oft-uttered demagogical talk about the disruption of the Dominion if certain things do or do not happen, indulged in by politicians, is the following by "Mack," in Saturday Night:

Nearly thirty years have gone by since Confederation was accomplished—almost one-third of a century. To-day, from one end of Canada to the other, from the north to the south, from the east to the west, there is spread a population of millions to whom Confederation is not now, and never has been, an experiment. All those under thirty years of age feel inherently that the Dominion of Canada is as stable, as immutable, as indivisible as any country on earth. They cannot comprehend a Canada other than the federated Canada in which they were born, and they associate in their minds the conditions that immediately preceded Confederation, with the French regime, the troubles of '37, and the other phases of our formative growth that belong exclusively to times past and gone forever. Not only is that great half of the population which is under the age of thirty years—this hopeful and potential half—imbued with a spirit that would make the "smashing of Confederation" impossible, but as men only attain full citizenship at the age of twenty-one, we find that every man in Canada at or under the age of fifty belongs to the post-federal era. When they reached man's estate they found Confederation an accomplished fact. This means that those who regard the thing as an experiment, who feel it to be a contract entered into and termin-

able on due notice, are the men who are above fifty years of age. The efficacious majorities; the energetic multitudes who dominate politics, the men who transact the bulk of the country's business, who control and direct its commerce, bear its burdens and produce its wealth, are men unfamiliar with any other condition than that which exists.

Some great incalculable force plays a part in the work of nation-making and renders it impossible for any man or group of men in a fit of pique to cause the wheels to turn backwards. This great force may be nothing more nor less than the upgrowing of a new generation with a sentiment that is new and suited to the progress that has been made. Old men may wag their heads and say gloomy things, and campaigners who love strong phrases may talk of Confederation being smashed into its original fragments, but they are talking the jargon of a past time. The Dominion can be disrupted by nothing short of a revolution, and to this danger we are no more exposed than the most secure empire, kingdom or republic in the world. A voluntary union which has been preserved long enough for a new generation to almost entirely replace the old, is a union no longer based upon a signed parchment, but is indissoluble. Whatever of error time may cause to be discovered in the relations of any part of the people to the great bulk of the people, must be borne with while possible, and rectified if needs be, but if any attempt is made to disintegrate the Dominion the New Generation must speak out to the old men who pore over documents and regard Confederation as merely a contract in law. We must speak out and say that the experiment which they inaugurated in 1867 was a success and that God and nature have ratified it since, have taken it out of their hands, and that two or three millions of new Canadians decline to recognize any right or authority, written or unwritten, specifically set forth or cleverly implied, that would under any circumstances sunder this Dominion into its original parts. Inequalities should be adjusted; accommodation should be made for conditions that were not foreseen, but the thing that binds us all is a compulsion to hold the country together and make it great and good though we do it illegally, rather than destroy it, or submit to its destruction, by legal conformity to the sentiments and contracts of our fathers.

MR. EDWARD FARRER AND RECIPROCITY.

During the present week Mr. Edward Farrer, late editor of The Toronto Globe, appeared before the Ways and Means Committee of the United States House of Representatives at Washington, and delivered himself of the following argument showing why Canada cannot possibly live without reciprocity with that country. Mr. Farrer said:—

During the last few years Canadian imports from the United States have grown, while those from Great Britain have fallen off. The imports from the United States for the fifteen years 1881-1895 were \$752,000,000; the imports from Britain during the same period \$638,000,000.

American iron and steel is displacing British in the Canadian market, and there is a growing call for American machinery, and other manufactures, which are, in many cases, better adapted than British to Canadian conditions and requirements. With a liberal reciprocity treaty favoring American manufactures, there can be no doubt that the imports from the United States would rapidly increase, to the benefit alike of the Canadian farmer and the American

artisan. The protective tariff in Canada has not fulfilled expectations. The home market is small numerically and scattered over a vast area. Hence the cost of selling and shipping goods is exorbitant, and the cost of manufacturing them high, because manufacturers are unable to specialize their labor and machinery for the production of special lines. It happens, also, that coal is found only at the extremities of the Dominion, in Nova Scotia and British Columbia, 4,000 miles apart.

The percentage of increase in the population of the Dominion between 1881 and 1891, with protection in force, was only 11.76 or less than the percentage in an old an overcrowded community like England and Wales, and not half as great as the percentage in the United States. It cannot be doubted that the slow progress of Canada is due in great part to her economic disabilities. The Liberal party thinks that these and other questions affecting the welfare of the two countries might be placed upon a satisfactory basis by means of a general scheme for closer commercial intercourse. They do not discuss the question of political union in their platforms or in their speeches before the public, and have nothing to say on that subject. But they do think that both the United States and Canada would be benefited by the adoption of more intimate trade relations.

It is well to bear in mind that although Mr. Farrer may not now hold the announced position of editor of *The Globe*, yet his views and sentiments, as above set forth, are in full accord with those that were from day to day proclaimed in *The Globe* during the time of his editorship thereof, and also ever since he became divorced from that journal a few years ago for reasons that need not now be explained, but which are yet quite green in the memory of its readers. Now that Imperial federation is taking tangible shape in the mother country, on the basis of preferential trade within the Empire, *The Globe* and its friends, both in Canada and the United States, are showing renewed activity in combatting that growing sentiment by again setting forth their arguments in favor of reciprocity with the United States and tariff discrimination against Britain.

NEWFOUNDLAND AND THE EMPIRE.

A phase of the discussion brought about throughout the world by the recent speech of Mr. Joseph Chamberlain, before the Canadian Club in London, and the circular he addressed to the administrators of government in the various British colonies designed to elicit information bearing upon inter-trade between the several branches of the Empire with the view of promoting increased mutual commerce within the bounds of the Empire, is the production of a brochure written and compiled by Mr. James Murray, of St. Johns, Newfoundland, late a member of the House of Assembly of that Province, a copy of which Mr. Murray has kindly sent to this journal, and from which is condensed the following facts.

The Newfoundland tariff seems to be classified under seven schedules, and the imports of merchandise into that Island in 1890 were as follows:—

Table.	Articles.	Value.	Duty.
No. 1.	Liquors and Tobacco..	\$173,886	\$244,854.46
" 2.	Foods	3,125,669	532,288.85
" 3.	Clothing, etc.	1,471,941	362,357.78
" 4.	Fishing Materials....	334,985	29,989.32
" 5.	Constructive Materials	433,619	78,716.85
" 6.	Miscellaneous.....	208,042	67,523.98
" 7.	Free List.....	488,982	
Totals.....		\$8,237,124	\$1,315,731.24

This table and others were compiled for the purpose of showing the proportion of annual imports into Newfoundland derived (1), from the United Kingdom and other parts of the British Empire exclusive of Canada; (2), from Canada; (3), from the United States, and (4), from other foreign countries.

The year 1890 was selected for the purposes of the writer because the trade statistics of that year show the commerce of a normal year, the great fire of 1892 that destroyed so large a part of the city of St. Johns, and other incidents rendering the statistics since 1890 not entirely representative of the commerce of the Island.

The classification of the table explains itself. Table No. 1 is intended to include articles of luxury, and takes in confectionery and vinegar. Tables No. 2 and 3, in connection with No. 6, contain all the articles upon which duties are imposed in which the great body of the population is interested, namely, food, clothing, house furnishing, etc. Table No. 4 relates entirely to the fisheries; No. 5 to trade and manufactures; No. 6 to articles that could not conveniently be included in other classifications, and includes kerosene or coal oil, and No. 7 relates to articles upon which no duty is levied.

Analysis of tables given show the origin of imports into the Island as follows:—

Table.	U'k'd K'gd'm except Canada.	Canada.	United States.	Foreign Countries.	
No. 1.....	\$90,280	\$44,551	\$31,622	\$4,430	
" 2.....	629,370	1,705,144	787,096	4,057	
" 3.....	1,196,714	151,994	122,359	874	
" 4.....	130,588	35,593	65,627	113,117	
" 5.....	163,133	175,443	92,444	2,599	
" 6.....	100,103	27,058	80,322	559	
" 7.....	162,575	251,425	45,098	26,881	
Totals..		\$2,472,763	\$2,394,211	\$1,227,568	\$152,582

It will be seen that the direct trade with foreign countries is quite small, but without doubt a proportion much larger than that of the annual imports into the Island are really the growth and produce of foreign countries, although they find their destination indirectly through Great Britain. A large part of the imports of teas, coffee, cocoa, fruit, sugar, etc., are in this category, but as far as the traffic is concerned and the tariff, they are the same as British products.

None of the articles enumerated in table No. 1 were the products of the United States except leaf tobacco. In food products nearly all the beef and pork, and about half the flour, which might have been supplied by Canada, went from the States, also a portion of the kerosene oil, some of the anthracite coal, some pitch and tar, some cotton duck canvas and some particular styles of boots and shoes, hardware and cotton goods.

Mr. Murray makes a very remarkable statement in saying that Newfoundland is absolutely dependent upon the United States for \$750,000 worth of food supplies every year—that the articles involved cannot be had elsewhere—that they constitute the almost total supply of animal food consumed by the great body of the people, and that they are produced at a minimum of cost by the United States. He thinks it possible that in time the British portions of the Western continent will be able to supply the Island with substitutes for these American products, but at present it cannot do so; and any attempt to interfere with the natural market, meaning the United States, now available to Newfoundlanders abroad would only augment the price to consumers without really

benefiting the producing countries. In our opinion Mr. Murray is far astray in his conclusions, for there are no sufficient reasons why Canada should not supply all the food products alluded to by him as coming from the United States, and at quite as low prices. Canada sends what Mr. Murray calls "animal food" to Great Britain in competition with the United States, where prices are equal, and of course Newfoundland can be supplied with the same articles at the same prices. It is a far-fetched statement that Newfoundland is "absolutely dependent" upon the United States for \$750,000 worth of food supplies every year, or that they cannot be had elsewhere. It is also overstraining his argument for Mr. Murray to say that at the present time Canada is not able to supply Newfoundland, with a population perhaps not much greater than the Canadian cities Toronto or Montreal, with \$750,000 worth of food supplies a year now going there from the United States. It is discounting the facts very greatly.

It is shown that the imports into Newfoundland in 1890 were:

From the United Kingdom.....	\$2,110,545
" other British ports, except Canada.....	362,218
" Canada	2,394,211
Total.....	\$4,866,974

Practically this amounts to about \$5,000,000 out of a total into the Island of \$6,250,000; so that with the exception of some \$150,000 worth imported from foreign countries other than the United States, the whole of the Newfoundland trade is placed between the British Empire and the United States. Dividing the total trade into five approximately equal portions, the United States gets one portion and the British Empire the other four, of which Canada gets two, or double the trade with the United States.

The following shows the volume of both the imports and the exports of the Island from and to British ports:

Imports from the United Kingdom and other British ports, except Canada	\$2,472,763
Imports from Canada.....	2,394,211
Total.....	\$4,866,974

Exports to the United Kingdom.....	\$1,500,382
Exports to Canada.....	627,718
Exports to other British ports.....	434,308
Total.....	\$2,562,408

Excess of imports over exports.....	\$2,304,566
-------------------------------------	--------------------

The balance of trade between Newfoundland on the one hand and Canada and the United States on the other in 1890 was as follows:

Imports from Canada	\$2,394,211
Exports to Canada.....	627,718
Balance.....	\$1,766,493
Imports from United States.....	\$1,127,568
Exports to United States.....	449,995
Balance.....	\$677,573

It is interesting to note the names of the different articles as they are classified in the Newfoundland tariff, as appears by the imports into that Island in 1890.

Tables No. 1.—Ale, porter, cider and perry. Wines—champaigne, claret, hock, Malaga, port and Madeira, sherry, red. Spirits—brandy, gin, rum, whisky, cordials. Tobacco and

cigars Tobacco manufactured, leaf, stems; cigars, etc. Vinegar. Confectionery. Average rate of duty, ad valorem, 140 per cent.

Table No. 2.—Animals, live; bacon, hams and sausages; barley and rice; beans; beef; biscuit; bran and malt; butter and substitutes; canned meats; cheese; coffee, cocoa, etc.; eggs; fish; flour; fruits of all kinds including preserves; hay and straw; Indian corn and meal; lard; fresh meat and poultry; molasses; oatmeal and peas; oats, pork; sugar; tea; vegetables of all kinds. Average rate of duty ad valorem, 17 per cent.

Table No. 3.—Cabinet ware, woodenware, etc., candles, carriages, clocks and watches, clothing—ready made, cotton and woolen goods, earthenware, feathers and feather beds, glassware, hardware, harness. India rubber goods, leather goods, matches, medicines and Apothecaries' goods, plate and jewelry, sewing machines, soap, soda, yarns. Average rate of duty ad valorem, 25 per cent.

Table No. 4.—Anchors and chains, blocks, canvas for ships' use, casks and barrels for fish, copper paint, cordage, corks and corkwood, dories and oars, fishing tackle, grease and tallow, heading, ice, masts and spars, oakum, pitch and tar, salt, staves. Average rate of duty ad valorem, 9 per cent.

Table No. 5.—Bagging, brick, blubber, cement, dynamite and gunpowder, electric apparatus, grindstones, iron, lead, leather, licorice, lumber, machinery, nails, oils, except kerosene, paint, pipes, shingles and laths, timber, tin, turpentine and varnish. Average rate of duty ad valorem, 18 per cent.

Table No. 6.—Kerosene oil, bank notes, miscellaneous articles paying twenty per cent. duty, miscellaneous articles paying twenty-five per cent. duty. Average rate of duty ad valorem, 32½ per cent.

Table No. 7.—Free list. Bark, extract of, boiler plate, books, coal, coke, Colonial Cordage Co.'s imports, copper ore, fish—dry, fishing tackle, iron—pig, miscellaneous municipal council imports, post office imports, printing paper, Railway's Co.'s imports, religious articles, specie.

The exports of Newfoundland including Labrador in 1890 were as follows:—

United Kingdom.....	\$1,500,382
Other British ports, except Canada.....	434,308
Canada	627,718
United States.....	449,995
Foreign countries, except U.S.....	3,055,015
Total.....	\$6,067,418

Considerable alterations have been made in the Newfoundland tariff since 1890, and the following schedules, which were adopted by the government of that Island, on June 29, 1895, are now in operation.

Table No. 1.—Liquors and Tobacco.

Item	1. Ale, porter, etc., 35 cents per gallon.
"	2. Wines, champaigne, \$4.20 per gallon.
"	3. Claret, 55 cents per gallon.
"	4. Hock, \$1 per gallon.
"	5. Malaga, 35 cents to \$1 per gallon and 12½ per cent., ad valorem. Note.—The difference in the rate on Malaga wine is for wine costing under and over 80 cents per gallon respectively, at port of shipment. Only the cheaper wines go to Newfoundland.
"	6. Port and Madeira, \$1 65 per gallon.

- Item 7. Sherry and Mauzanilla, \$1 per gallon and 12½ per cent., ad valorem.
- " 8. Red wine, 35 cents per gallon.
All other wines, \$1.10 per gallon and 15 per cent., ad valorem.
- " 9. Spirits—brandy, proof, \$3.20 per gallon.
- " 10. Gin, proof, \$2.60 per gallon
- " 11. Rum, proof, \$2 per gallon.
- " 12. Whisky, proof, \$2.30 per gallon.
- " 13. Undefined, \$3.20 per gallon.
- " 14. Cordials, \$2.20 per gallon.
- " 15. Tobacco, manufactured, including stripped leaf, 30 cents per pound and 5 per cent., ad valorem.
- " 16. Leaf and stems, 30 cents per pound.
- " 17. Stems and snuff, 60 cents per hundredweight.
- " 18. Cigars, \$9 per thousand and 20 per cent., ad valorem.
- " 19. Cigarettes, \$2 per thousand and 30 per cent. ad valorem.
- " 20. Vinegar, 30 cents per gallon.
- " 21. Confectionary, not including ornaments, \$7 per hundredweight.

Table No. 2.—Foods.

- Item 1. Animals, live, oxen, cows and bulls, 20 per cent. ad valorem.
Horses and mares, \$6 each.
Calves, sheep and pigs, 60 cents each.
All other live animals, 30 per cent. ad valorem, except animals imported for stocking breeding purposes, which are free.
- " 2. Hams, tongues, smoked beef and sausages, \$2.65 per hundredweight.
- " 3. Barley and rice, 12½ per cent. ad valorem.
- " 4. Beans, 30 per cent. ad valorem.
- " 5. Beef, pigs' heads, tongues, feet and hocks, salted, \$2.65 per hundredweight.
- " 6. Biscuit, ship 20 cents per hundredweight.
" fancy, 30 per cent. ad valorem.
- " 7. Bran, malt and hops, 12½ per cent. ad valorem.
- " 8. Butter and substitutes, \$3 per hundredweight.
- " 9. Canned meats, 30 per cent. ad valorem.
- " 10. Cheese, \$3 per hundredweight.
- " 11. Coffee, green, 5 cents per pound.
" roasted or ground, 7 cents per pound.
- " 12. Eggs, 7½ per cent. ad valorem.
- " 13. Fish, \$1.50 per quintal.
- " 14. Flour, 25 cents per barrel.
- " 15. Fruits, apples, green, 60 cents per barrel.
Apples, dried, 2 cents per pound.
Currants, raisins, etc., 3 cents per pound.
Oranges, lemons, grapes, nuts, limes and olives, 10 per cent. ad valorem.
Other canned, bottled or preserved fruits 30 per cent. ad valorem.
All other fruits free.
- " 16. Hay, \$1.80 per ton of 2,240 pounds.
Straw, \$1 per ton of 2,240 pounds.
- " 17. Indian corn, 6 cents per bushel of 57 pounds.
Indian meal, 25 cents per barrel.
- " 18. Lard, 30 per cent. ad valorem.
- " 19. Fresh meats and poultry, 1½ cents per pound.
- " 20. Molasses, 7 cents per gallon.
- " 21. Oatmeal and peas, 30 cents per barrel of 200 pounds.
- " 22. Oats, 5 cents per bushel.
- " 23. Pork, \$1.50 per barrel of 200 pounds.
- " 24. Sugar, loaf, cut and cubes, \$5 per hundredweight.
Bastard, granulated, etc., \$3.50 per hundredweight.
- " 25. Tea, 5 cents per pound and 30 per cent. ad valorem.
- " 26. Vegetables, cabbages, \$2 per hundred, potatoes, 5 cents per bushel, turnips, carrots, parsnips and beets, 10 cents per bushel, all other vegetables 10 per cent. ad valorem.

Table No. 3.—Clothing, etc.

- Item 1. Cabinet wares, 35 per cent., ad valorem; musical instruments, 30 per cent.; brooms and whisks, 45 per cent.; other manufactures of wood, 35 per cent., ad valorem.
- " 2. Candles, 35 per cent., ad valorem.
- " 3. Carriages, wagons and sleighs, 35 per cent., ad valorem.
- " 4. Clocks and watches, 30 per cent., ad valorem.
- " 5. Clothing, ready made, 35 per cent., ad valorem.
- " 6. Cotton and woolen goods, except clothing, ready made, 30 per cent., ad valorem.
- " 7. Earthenware, 30 per cent., ad valorem.
- " 8. Feathers and feather beds, 7 cents per pound.
- " 9. Glassware, 30 per cent. ad valorem.
- " 10. Hardware, general, 30 per cent. ad valorem.
- " 11. Harness, 35 per cent. ad valorem.
- " 12. India rubber goods, 30 per cent. ad valorem.
- " 13. Leather goods, 30 per cent. ad valorem.
- " 14. Matches, 35 per cent. ad valorem.
- " 15. Medicines, 20 per cent. ad valorem. Apothecaries' goods, 30 per cent.
- " 16. Plate and jewelry, 30 per cent. ad valorem.
- " 17. Sewing machines, 10 per cent. ad valorem.
- " 18. Soap, 30 per cent. ad valorem.
- " 19. Soda, bicarb. 20 per cent. Washing, 30 per cent. ad valorem.
- " 20. Woolen goods—stockings, shirts, drawers, etc., made by hand, 35 per cent. ad valorem.
- " 21. Yarns and worsteds of all kinds, 10 per cent. ad valorem.

Table No. 4.—Fishery Materials.

- Item 1. Anchors, chains, cables, copper and composition metal for ships, including bars, bolts, sheathing and nails of same materials, 10 per cent. ad valorem.
- " 2. Blocks, 35 per cent. ad valorem.
- " 3. Canvas, sail cloth and tarpaulin for ships' use, 10 per cent. ad valorem.
- " 4. Casks, second hand, empty, under 45 gallons capacity, 45 cents each, over 45 gallons, \$1.45 cents each. Herring barrels, 25 cents each
- " 5. Copper paint, 30 per cent. ad valorem.
- " 6. Cordage, 10 per cent. ad valorem.
- " 7. Corks and corkwood, 10 per cent. ad valorem.
- " 8. Dories and dory oars, 25 per cent. ad valorem.
- " 9. Fishing tackle, 10 per cent. ad valorem.
- " 10. Grease and tallow and palm oil, 7½ per cent. ad valorem.
- " 11. Heading, 12½ per cent. ad valorem.
- " 12. Ice, 30 per cent. ad valorem.
- " 13. Masts and spars, not manufactured, 12½ per cent. ad valorem.
- " 14. Oakum, 10 per cent. ad valorem.
- " 15. Pitch, tar, resin and raw turpentine, 10 per cent. ad valorem.
- " 16. Salt in bulk, 20 cents per ton.
- " 17. Staves, undressed, 12½ per cent., manufactured, 40 per cent. ad valorem. Second hand, manufactured, \$1.40 to \$5.75 per hundred.

Table No. 5.—Constructive Materials.

- Item 1. Bagging and brin, for biscuit, 10 per cent. ad valorem.
- " 2. Brick, 10 per cent. ad valorem.
- " 3. Blubber, 30 per cent. ad valorem.
- " 4. Cement, 10 per cent. ad valorem.
- " 5. Dynamite and gun powder, 30 per cent. ad valorem.
- " 6. Electric machinery, 10 per cent. ad valorem.
- " 7. Grindstones, 30 per cent. ad valorem.
- " 8. Iron, hoop, bar, bolt, sheet, plate, pieces, etc., 10 per cent. ad valorem. Old iron, pig iron and strips for manufacture of nails, free.

- Item 9. Lead, 30 per cent ad valorem.
- " 10. Leather, 25 per cent. ad valorem.
- " 11. Licorice paste, 30 per cent. ad valorem.
- " 12. Lumber, rough, \$3.50 per thousand feet, other lumber \$5.00 per thousand feet.
- " 13. Machinery, 10 per cent. ad valorem. Special, free.
- " 14. Nails, wrought, 10 per cent, cut and wire, 35 per cent. ad valorem.
- " 15. Oils, except kerosene, palm, 7½ per cent., Oleen and other butter oils and olive oil, 10 per cent. ad valorem. For preserving fish, free. All other oils except kerosene, 30 per cent. ad valorem.
- " 16. Paints, 30 per cent. ad valorem.
- " 17. Pipes, 30 per cent. ad valorem.
- " 18. Shingles and lathes, 60 cents per thousand.
- " 19. Timber, 60 cents per ton.
- " 20. Tin plates, block and sheet, 10 per cent. ad valorem; cans 40 per cent.; all other 40 per cent. ad valorem.
- " 21. Turpentine, raw, 10 per cent.; spirits and varnish, 30 per cent. ad valorem.

Table No. 6.—Miscellaneous.

- Item 1. Kerosene oil, 6 cents per gallon.
- " 2. Bank notes, 30 per cent. ad valorem.
- " 3. Miscellaneous, 30 per cent. ad valorem.

Articles not specially rated, and not included in the free list, are subject to an ad valorem duty of 30 per cent.

The following articles are subject to special rates of duty as follows:—

- Item 1. Bookbinder's tools and implements, including bookbinder's cloth, marble paper and paper board, imported direct by bookbinders for use in their trade, and not for sale, 10 per cent. ad valorem.
- " 2. Diving apparatus, fishing tackle, not anglers, machinery belting of any material, plaster, and live poultry, 10 per cent. ad valorem.
- " 3. Cut nails and spikes of iron or steel, pressed nails and spikes of iron or steel, casks in which dry goods are imported when fit to hold liquids, 35 per cent. ad valorem.
- " 4. Cans, tin, imported in a manufactured condition for hermetically sealed goods, including the cases in which they are contained, 40 per cent. ad valorem.
- " 5. Brooms and whisks manufactured of corn, 45 per cent. ad valorem.

Table No. 7.—Free List

The following imports are exempt from the payment of duties:

- Item 1. Articles imported for the use of the Governor; for the official use of Foreign Consuls; for use of the St. John's Municipal Council; for religious purposes, and not intended for sale; and army and navy arms, clothing and provisions.
- " 2. For the encouragement of Agriculture. Agricultural implements and machinery; plants, trees and shrubs; live stock for breeding purposes when imported by agricultural societies; manures and seeds.
- " 3. For the encouragement of literature, science and art. Printed books, pamphlets, maps and charts; printing presses, printing papers, type and all other printing requisites; type writing machines; music, written or printed; scientific instruments and apparatus, including globes, when imported for use in schools, colleges, etc., works of art, namely, engravings, paintings and stationery not for sale; natural history specimens.
- " 4. For manufacturing interests. Bark for tanning, boiler and ship plates of iron, carosene, chrolo di nitro bensole, nitre of ammonia, chair cane or reeds, corn for broom making, cotton yarns and

raw cotton, cotton seed oil, olive oil, boracic acid, acetic acid and preservative, when for preserving fish or making fish glue; coke, dyestuffs, hemp, hemp yarn, coir yarn, sisal, manilla, flax and tow, herring barrel hoop, iron or hoop steel, splayed, punched or nosed, and cut in lengths not to exceed sixty-eight inches, hides raw, sheathing materials for vessels, zinc, copper and composition metal, nails, paper and felt, ores for making copper paint and as flux, parchment or wax paper for wrapping boneless fish, patent machinery for new industries including gas engines, pig iron, nail strips of iron, zinc or brass, and steel strips for making cut nails, sulphuric acid for manures, twines for nets, raw wool.

- Item 5. For mining: cranes, derricks, fire clay and fire brick, rock drills, rolling mills, separators and crushing mills, imported by miners for mining purposes.
- " 6. Miscellaneous bait, coals outside of St. John's, Harbor Grace, Carbonar and Placentia, donations of clothing for charitable purposes; immigrants' household effects, working tools and implements, and all other passenger's baggage, fish and fish oils of British catch and cure, junk, old iron, copper and composition metal, oysters and clams in the shell, refuse rice, sand, wheat.

CANADIAN INDUSTRIES AND FINANCES.

BY GEO. D. GRIFFIN.

There is agricultural, industrial and financial depression in Canada. If not as serious as in other countries it certainly is unnecessarily so. Those who say there is not, lack the information and consequent wisdom and understanding through which alone a correct knowledge of the situation can be secured. I shall furnish data not heretofore colated to enable the attentive reader to secure a more comprehensive and perfect insight in regard to the origin of this depression, and the necessity for remedial legislation to secure deliverance. The information will prove that there are other factors than tariff changes, and far more important, which underlie this great national problem, some of which in part have caused the much deeper and more widespread depression in the United States.

A few years ago the London Times asked "What is the matter with Canada; it appears to be living on borrowed money;" and it is only a few months since the London Economist stated that "Canada owes abroad from \$800 to \$1,000 millions." Some eight or nine years ago the Economist showed that then we owed about \$700 million to Britain, the income tax from loans to Canada proving the amount.

It is time that Canadians should ask, why is this so; why, in a country free from war, and practically free from the burden of an army, navy, ambassadors and consuls, have not earned a living in the fairest and one of the most productive countries on the face of the earth; and that a people who, in the aggregate, excel those of all other lands in general intelligence, energy, enterprise and stamina, have, on the average as stated in the Economist, borrowed from \$800 to \$1,000 per family? There are those who will say, look at all our railroads, canals, and other public works. Let all such investigate thoroughly and they will find that all these works have not, for construction, cost within one or two hundred million dollars of as much as our debt to Britain in 1895, and practically we do not own any of them.

It is manifest that this national problem demands immediate attention from every voter, from every member of parliament, from every pastor of every church, and from every editor in Canada. They cannot too speedily set about to educate the people to the fact that, for want of right legislation, Canada has been endeavoring to prosper upon skim milk while the foreigner fattens on the cream of the earnings.

The statistical data so fully reported in the returns recently published by the Dominion government in the 1895 Year Book, makes it possible, with prior government returns in my possession, to colate and present data covering the forty-five years from 1850, and to thus furnish the information necessary to secure a correct understanding of the leading causes which have so deeply submerged the prosperity of Canada in what is fast becoming a financial bottomless abyss of bonds, mortgages, notes and other unpaid liabilities, not one of which should, at the farthest, be older than

for the current year. If the people had been able to annually pay for what they purchased, debt and multiplied waves of depression would have been unknown in Canada.

The data I shall furnish proves that if the importers had given to Canadians the work they have given to foreigners, and which they paid for with Canadian gold, Canada would not owe a dollar to-day. It also proves that the interest Canada has paid upon the ever increasing debt for shoddy and other fraudulent goods imported, which would have been dear as a gift, and for which Canada got no value, Canada would have been able to build and own all the railroads, canals and other public works which now directly or indirectly belong to others, and through which Canada is annually drained of the cream of its earnings and made subject to depressions and industrial uncertainty.

FOURTEEN MILLION DAYS' WORK IN 1893 GIVEN TO THE U.S.

Factor No. 1.—The returns in the 1895 Dominion Year Book show that while tens of thousands of producers in Canada were out of work in 1893, the importers bought from the United States \$14,297,848 of goods for home consumption in excess of what the U. S. took of Canada, and for which Canada paid in gold borrowed from Britain. That sum divided by 300, the full working days in a year, and the reader will see that during the whole of 1893 the importers kept employed in the United States at \$1 per day an army of 47,656 producers, while there was an army of the same number in Canada earnestly entreating for work. The importers in their industrial ignorance rejected them and described them as over-producers. The importers who thus defamed the Canadian were too blind to see that it was their over-importations of the over-productions of the United States which together was destroying their customers and themselves, and is the origin of most of the failures. The importers sold these excess imports to the Canadian producers whom they had deprived of work and thereby of the ability to pay for them. The Year Book furnishes the proof. For the year 1893 the business failures amounted to \$14,762,572, or about \$500,000 in excess, as it no doubt would be, of the amount of work of which the importers deprived their Canadian customers. This is cause and effect. It is an object lesson to the importers, and a ready answer to those who so ignorantly denounce the Canadian for over-production, which there cannot be so long as there is over-importations.

SEVENTEEN MILLION DAYS' WORK GIVEN TO THE U.S. IN 1894.

The Year Book shows that the imports for "home consumption" from the U.S. in 1894 were \$17,224,160 in excess of what they took of Canada. That means that while the importers of these goods virtually refused work to their Canadian customers they for the whole year of 1894 employed an army of 57,410 working in the U.S. producing over-productions for those in Canada whom they deprived of work, and indirectly forced Canada to borrow the gold in Britain to pay their workmen in the United States. The failures in Canada for the year were \$17,724,633, or, as in 1893, about \$500,000 more than the amount of work of which the importers deprived their customers. Thus cause and effect again.

The Year Book, page 664, also states that "sixty-two per cent. of the failures were due to lack of capital." That is as the above data shows for want of capital to feed and clothe and shelter the army of 57,410 Canadians producers and their families deprived of work and means of living by the Canadian importers. This is cause and effect again. No mystery here. It is manifest that the importers caused the depression and failures of 1893 and 1894.

THIRTEEN MILLION DAYS' WORK GIVEN TO THE U.S. IN 1895.

The official returns for 1895 show that the imports from the U.S. in 1895 in excess of the exports were \$13,336,845, to pay for which Canada had to borrow the gold in Britain used to pay the army of 44,456 that the importers employed in the U.S. producing these over-productions, and depriving of work an equal number in Canada. This is the way these importers believe to be the right way to build up and prosper Canada.

THE EFFECT ON CANADIAN FARMERS.

British statistics prove that in agricultural production each worker provides six with a living. In recent returns of the Scotch fisheries it was proved that each man and boy directly and indirectly furnished a living for eleven souls. The record kept by a firm of manufacturers in a village in New York state showed that each dollar paid out for wages turned over eleven times, the same as in the Scotch fisheries; that is, furnished a living for eleven through the supplies required from farmers, gardeners, butchers, bakers, grocers and those of other occupations benefited.

For the past three years the Canadian importers have on the average constantly employed an army of 49,509 producers in the United States, which, at the lowest of the above data of six to a producer, furnished a home market to farmers and gardeners in the

U.S. for a population of 266,736 souls, or more than the total population of Toronto and Hamilton, and thereby the Canadian importers deprived Canadian farmers and gardeners of a home market for a similar number, and the business men contingent thereon of the business of a city nearly one-half larger than Toronto. Is it any wonder so many wholesale and retail business men have failed during the past three years, and any wonder that so many farmers, always more or less dependent upon the home market, have found it so uncertain and developing so slowly with the importers so ignorantly undermining it and themselves. The imports into Toronto alone in January, 1896 were \$1,864,743, of which one-third at least could have been made in Toronto, and that third would have given 20,000 producers in the city \$1 per day for the month. And as usual one of the leading papers of the city drew attention to these imports and the duty paid on them as an evidence of returning prosperity to the country. The logic of their ignorance is that the more you buy and the less you earn the more prosperous the country will be, agreeing with the Toronto Globe in October, 1864, when it stated that "the country that does not over-import will go to ruin." For forty-five years at least Canada has been over-importing. Have the importers made Canada rich?

BUSINESS FAILURES IN TWENTY-ONE YEARS.

The Year Book shows that the over-productions of foreign countries imported from 1873 to 1893 inclusive were over \$544,000,000, and that the reported failures during this twenty-one years taken from the Mercantile Agencies' returns, which go no further back in the Year Book, were over \$340,000,000. Every business man of experience knows that the unreported failures will bring up the total to the sum of the excess imports of the over-productions from foreign countries. All of such excess required in the country could have been produced in Canada by Canadian producers. For that twenty-one years the Canadian importers kept employed in other countries an army of 80,600 producers 300 days in the year at \$1 per day producing for their 80,600 Canadian customers whom they deprived of work and of ability to pay for their purchases. The natural result has been that all down these twenty-one years a large number of the importers have failed and with them an army of their customers. The number of these for the ten years from 1885 to 1895—the report does not go further back—was 15,903. The average sum of each failure was about \$7,000. If we estimate the same amount for each of the failures of the remainder of the twenty-one years the sum reported in round numbers would be 32,000, which, added to those for the other ten years, makes a total of about 48,000 in twenty-one years. On the average each of these represent a family of five, or 240,000 souls, and at the very least we must for their employees and their families estimate as many more, or a total population of 480,000 souls deprived of their rightful means of livelihood. This is a population nearly equal to one-fifth the population of Ontario beggared and deprived of employment and means of a living in that period through the business ignorance of the importers, who are continually asserting that these financial disasters are due to over-production in Canada.

The average amount of interest paid on these excess imports at five per cent is \$13,600,000 annually, and for the twenty-one years is about \$285,000,000. The sum is more than sufficient to in that period build and equip two first-class railroads from Montreal to Vancouver, and for which Canada to-day has not a cent to show except the want of wisdom of our importers who believe their over-importations a blessing to Canada.

This data is not an argument against importing—imports are a necessity, but should never exceed the exports to pay for them, for, in proportion as they do, debt and interest are the result, and the more the exports exceed the imports the more prosperous the country will be.

During the past year a well-known Toronto importing firm of hardware and other lines, made it a point to secure their supplies as much as possible of Canadian manufacturers, and were astonished at the amount they could purchase of Canadian manufacturers. If every importer would do likewise there would be work for tens of thousands in Canada now out of work. And the banks would have extra gold to the amount in their vaults in place of so much doubtful paper of their customers.

(Concluded in next issue.)

Looking over the landscape last night, Wilfrid Laurier got his eye on the bright glow of the smelting works at Huckleberry Point. "Ah!" said he unto himself, "you may shine a little while longer, my bright friend, but when I get into power I'll throw the iron duty off, and you will close your bright eyes forever, my beloved child of the accursed National Policy!"—Hamilton Spectator.

The soot ejected by a smoke stack weighs more than is commonly supposed. The stack of a German sugar factory had been provided with a soot catcher. Six days afterwards the soot was removed, and it was found that during this time 6,700 pounds had accumulated. The stack of such a factory is estimated to throw out during the period of the year, during which it is in operation, the enormous quantity of 200 tons of soot.

With regard to the use of flax straw as fuel in the electric light plant at Watertown, S.D., Mr. H. V. Peterson, manager of the electric light works, writes to the Electrical Engineer as follows:—

“Our location here, so far from the coal fields of Iowa and Illinois, results in transportation charges being so great as to prohibit the use of coal in this business with profit. Soft coal will cost from \$3.50 to \$6.50 per ton on cars here for the various qualities, from Iowa slack to the high-grade Eastern coals; and wood ranges from \$3 per cord for soft wood to \$4 for hard on cars. We can buy flax straw in abundance delivered at the plant for \$1 per ton, and consider that two tons of straw is equivalent to a ton of the best coal. We have no especial arrangement for using the straw. The same furnace and boiler are in service, as when burning any other fuel, only that we have constructed sheet iron chutes to the furnace doors with flaring approaches. By keeping the chutes full of straw and gradually working it into the furnace as consumed, we avoid the necessity of constantly opening and closing the furnace doors. The straw is delivered to us loose and burned in that same condition. It, of course, requires pretty close attention, yet, after all, does not burn away as rapidly as one would suppose. The fiber in the straw makes an intense heat.”

Mount Bischoff is one of those mineral deposits which has made Australia famous in the mineral world. It is geologically interesting, inasmuch as the mine shows a curious combination of all the different types of tin deposits; and it possesses a general interest from the magnitude and success of its operations. The Australian Mining Standard, in a recent description of this mine, says there are fifteen batteries of five stamps each from which the pulverized material runs into spitzlutton and spitzkasten to be classified. The coarser portion is treated on fifteen pairs of two sieve jigs, the tailings from which pass into ten concave buddles. The fine material is washed on convex slime tables, the tailings from which also run into buddles. In the sheds there are in all twenty-three buddles, twenty-four single slime tables, ten double slime tables, and two triple slime tables. The ore is finally cleaned in boxes and tossing tubs. According to the character of the ore going through, the jigs give from 65 to 75 per cent. of the total yield, the buddles from 4 to 5 per cent. and the slime tables from 15 to 20 per cent. The average assay of the first-class dressed tin is from 68 to 70 per cent. of metal, and of the second class from 60 to 62 per cent. The tin ore is very black, and when a large lump is examined it is found to be made up of a very large number of small crystals matted together. The mine is worked as an open quarry, and the stuff knocked down is taken to the dressing sheds at Waratah by a railway and small locomotive. Since the com-

mencement of operations about 5,500,000 tons of material have been reduced by sluicing and crushing combined, of which 560,350 tons have gone through the battery, the tin ore produced being 44,560 tons up to October 19, 1894. This is equal to 7.94 per cent dressed tin from the crushing dirt, and 0.81 per cent. from the total stuff treated. At present the average yield is from three to three and a half per cent. of tin oxide.

THE PREFERENTIAL TRADE PROBLEM.

When the British and Colonial Chambers of Commerce meet in London in June next, the most interesting problem which they have to discuss will be that of preferential duties between this country and its Colonies. Since the question was first raised, certain events have occurred which bring it nearer solution. There has been a marked increase in foreign competition, which, after making considerable progress in the home markets, has invaded the Colonies. We do not say that the exports of any foreign country are at all to be compared as regards manufactured goods to the volume which leaves the ports of the United Kingdom, but their progress is undoubtedly made in a far greater ratio than any increase that has taken place during the last twenty years in the exports of Great Britain. In the iron trade especially, the Belgians and Germans have won a large share of the Indian imports at the expense of this country; and German, Belgian, French and American manufactures are being actively pushed in other Colonial and neutral markets. The subject has attracted the attention of Mr. Chamberlain, who has issued a circular asking for information, which should be in the pigeon-holes at the Colonial Office. Soon after the issue of this circular came the Message from the President of the United States, which at one time seemed likely to lead to hostilities. It was followed by the passage of a bill by the House of Representatives, adding largely to the United States tariff, a bill which the Senate has had the good sense to reject. After this the country was startled by the position of the British at Johannesburg, and the efforts made to relieve them, which unveiled the designs of the German Government to obtain some form of Protectorate in the Transvaal, where already its subjects have a marked preference bestowed upon them in everything relating to concessions and trade contracts. These events led to the feeling that in future the British Empire must be more thoroughly prepared to defend its possessions, and that we must do more for the Colonies if we expect them to help us.

Among the points which have been put forward for the development of greater commercial adhesion between the United Kingdom and its Colonies are preferential tariffs. The greater proportion of the Colonies of France, Portugal and Spain, are kept open only to French, Portuguese or Spanish products; and it has been suggested for some years that we should treat our Colonies in a similar manner. The reply to this has been two-fold. So long as our treaties with Germany and Belgium exist, so long are we debarred from allowing preferential treatment to be given to British goods, as against those from Belgium or Germany. The second difficulty concerns our Colonies themselves. Unless a quid pro quo is given them in return for preferential treatment to British goods, they will, it used to be said, avoid such a policy, and if this country were

to offer them preferential treatment, as against imports from other parts of the world, we should be “letting in the thin end of the wedge of protection,” and at the same time offending the foreign countries who, at present, buy the greater portion of British manufactured goods. This to our politicians appears far too large an item for the British electorate to swallow, and hence with such a proviso, all idea of carrying out the idea of commercial federation must be relegated to the dim and distant future. As a practical commercial nation, we cannot drive away trade with foreign countries to secure a problematical advantage in our Colonies. We should also be handicapping many classes of manufacturers who must obtain cheap raw materials, which the Colonies could not supply in sufficient abundance, at least, for some years to come. This would mean an increase in the price of raw materials and of food stuffs of nearly every kind; and the question arises whether any increase in the exportation of manufactured goods to the Colonies would compensate us for the certain loss which we should incur as regards foreign imports and exports.

Within the last few days the subject has been advanced a stage further by Lord Salisbury's reply to Sir Howard Vincent and the United Empire Trade League, who have memorialized the Prime Minister on the subject of the Belgian and German treaties. They asked that the clause in those treaties preventing British Colonies from levying a lower duty on British goods than upon foreign goods should be denounced. In his reply to this memorial, the Prime Minister states that while he fully recognizes the inconvenient character of the stipulations in question, stipulations which should never again be agreed upon by this country, he is not prepared to give notice for the termination of these otherwise valuable treaties until a definite scheme has been produced offering such probabilities of increased trade within the Empire as would fully compensate for the risk involved. This, it will be observed, is a reply which may place the Government in an awkward position. The Colonial Governments may decide to make a reduction in their tariffs as regards goods of British produce; or to increase the duties on all manufactured goods from Belgium and Germany and other foreign countries. Such a decision, however, could not be carried out as regards Germany and Belgium so long as the treaties exist, but it is just possible that the Colonies may adopt the course indicated, and may do so without insisting on a quid pro quo of any kind from the home country. In that case, the British Government would either be forced to denounce the treaties with the two Continental States, or it would incur the odium of rejecting the overtures of the Colonies for the trade federation of the Empire. The first step for such a union should undoubtedly come from the Colonies, and it would be a move in the right direction if they were to show their willingness to admit British manufactured goods at lower rates than those levied on foreign goods. The Empire Trade League appears to be exerting itself to induce the Colonies to adopt this policy, but it remains to be seen whether its efforts will be successful. Should that prove to be the case, the question will be narrowed down, and our manufacturers will have to consider whether the higher duties which foreign countries may impose upon our exports to them will not be counterbalanced by the greater advantages afforded in British Colonies and possessions. —British Trade Journal.

WOOD PULP

The uses to which wood fibre or pulp can be applied are numerous, and the application of it to new purposes is being constantly developed. The supply of this important material possessed by this country is almost inexhaustible, at least for many years to come, says the Shareholder, and it is to be hoped that all these various applications will be instituted and carried on successfully in this country, in order to reduce as much as possible the export to other countries of the raw material. No one will deny that it is desirable where employment can be given to people in this country, that such employment should be furnished instead of going to other countries to purchase goods manufactured from raw material exported from Canada. Among the most recent applications of this raw material is its utilization to the formation of mouldings to be used in the production of artistic processes in furniture decoration. The Upholsterer in referring to this application says:—"For this purpose the required patterns are designed, and hollow moulds made after them—that is, the wood fibre, while in a soft, gelatinous condition, is forced into these moulds and the moisture then slowly driven out by compressed air, while the meshes of a fine netting hold the pulp in place. Thus the articles can be readily turned out in single pieces, and are completed without further manipulation except to trim and finish off the surface. So peculiarly adapted is this method to the art in question that delicate scrolls, flowers, and all conventional patterns carved out of wood for furniture and cabinets are thus satisfactorily and rapidly produced. With a little glue these ornamental pieces are fixed securely in the desired position, and al-

most perfectly resemble the finest specimens of carved woodwork." We should also think that it could be specially available in the manufacture of ornamental picture frames of all kinds, in which there is quite a large business done in this country. There is no reason why the application of wood pulp to such manufactures should not be attended with economical results to the purchaser and with profit to the producer of the pulp and the manufacturer of the articles. This, we believe, could be done more profitably in this country where the pulp is manufactured than in other countries to which it is exported from this country.

A correspondent of the London Free Press furnishes that paper with the following interesting information:—The customs department, of London, England, have just issued a comparative table, showing the consumption in the United Kingdom alone of India, Ceylon and China teas for the past fifteen years. If you look at these figures you will see the wonderful strides made in the use of British grown teas:—

	India.	Ceylon.	China.
1881..	49,250,000	623,000	159,500,000
1882..	55,000,000	1,523,000	146,000,000
1883..	60,500,000	2,263,000	148,500,000
1884..	61,750,000	3,797,000	139,000,000
1885..	67,250,000	5,361,000	143,000,000
1886..	78,500,000	8,667,000	134,000,000
1887..	86,750,000	15,614,000	119,500,000
1888..	94,500,000	27,879,000	92,500,000
1889..	100,685,000	34,290,000	89,900,000
1890..	100,984,000	50,191,000	69,742,000
1895..	121,000,000	85,000,000	42,000,000

You will see by the above that in the year 1881 the consumption of China tea was

159,500,000 and of India and Ceylon together only 49,873,000, a difference in favor of China tea of about one hundred and ten million pounds, while for the year 1895 China teas only shows 42,000,000, and India and Ceylon 206,000,000, a difference in favor of the British grown teas of one hundred and sixty-four million pounds. The reason given for the enormous expansion in the trade for our teas over China is that they are produced in the best possible manner that British brains and capital can devise, while the latter are still produced and prepared in the same heathenish manner they were fifty years ago. The reason for the increased amount consumed is found in the price at which tea is now sold. It matters not how low the figure is, the quality (unless it is manipulated by the grocer or tea dealer), is always pure—no adulteration whatever. These teas can be sold by retail men at from 25c. to 75c. per pound, the lowest price being as pure as the highest, the difference only in the leaf and flavor. High prices are always paid for teas having a fine, delicate aroma. British grown teas have taken a firm hold on the Canadian market, and their absolute purity should gain an entrance for them into every house.

An interesting experiment is now in progress at the straw paper mill of M. Danthon, near Bourgneuf (Limousin, France). A sixty-five horse power turbine has up to lately been used in running the machinery, but a dynamo of 130 horse power has now been put up, which is driven by electrical force obtained from a power source some ten miles distant. The connection has only just been made, so that it is not possible to give actual results, but no doubt is entertained as to the success of the installation.

ROBIN, SADLER & HAWORTH

[Manufacturers of

OAK TANNED LEATHER BELTING
MONTREAL AND TORONTO.

Orders addressed either to our Toronto or Montreal factory will have prompt care. Goods will be forwarded same day that order is received.

CANADA'S MINERAL PRODUCTIONS.

The annual preliminary statistical table of the mineral productions of Canada prepared by the Division of Mineral Statistics and Mines of the Geological Survey of Canada has been published. It shows the value of the total production in 1895 of minerals, both metallic and non-metallic, at \$22,500,000, of which \$6,370,146 was metallic, and \$15,875,197 was non-metallic, with \$254,657 as the estimated value of mineral products not returned. The total production in 1894 was \$20,900,000, that in 1893, \$19,250,000, that in 1892, \$19,500,000, that in 1891, \$20,500,000, that in 1890, \$18,000,000, that in 1889, \$14,500,000, that in 1888, \$13,500,000, that in 1887, \$12,500,000, and that in 1886, \$12,000,000. From this last it will be seen that the production of last year was the largest in any one year during the past decade, and that there was an increase of \$10,500,000 from 1886 to 1896. The metallic productions last year consisted of copper of the value of \$919,229, gold \$1,910,921, iron ore \$238,070, lead (fine, in ore etc.) \$749,966, mercury \$2,343, nickel (fine in ore etc.) \$1,360,984, and silver (fine in ore etc.) \$1,158,633. The non-metallic productions were.—asbestos \$368,175, baryta \$168, chromite \$1,301, coal \$7,774,178, coke \$143,047, fire clay \$3,492, graphite \$6,150, grindstones \$31,532, gypsum \$202,698, limestone for flux \$32,916, manganese ore \$8,464, mica \$65,000, ochres \$14,600, mineral water \$111,048, moulding sand \$13,530, natural gas \$423,032, petroleum \$1,201,184, phosphate (apatite) \$9,565, precious stones \$1,650, pyrites \$102,594, salt 180,417, soapstone 2,133. The following were the productions of structural materials and

clay products, those marked with an asterisk being estimated — *bricks \$1,800,000, *building stone \$1,200,000, natural cement \$69,482, Portland cement \$111,680, flagstones \$6,867, granite \$90,199, *lime \$900,000, marble \$2,000, pottery \$125,600, roofing cement \$3,153, sands and gravels (exports) \$118,359, sewer pipe \$257,045, slate \$58,900, terra cotta, etc. \$195,123, *tiles \$200,000. The productions of last year exceeded those of the highest amount in any previous year by \$2,000,000, the highest amount in any previous year being \$20,500,000, which was reached in 1891. We have no doubt that the returns for the current year will show a still further increase as the development of the mineral resources of British Columbia is exhibiting great progress and gives promise of active operations during the present year.

THE ORIGIN OF BARK EXTRACT.

Hemlock bark extract has been in use now for over thirty years, and, for a business of its importance, it seems strange that so little has been said of its early history. As a lad, I was employed in the first extract works that proved a successful undertaking, and I think some of my recollections may be of interest.

About 1860 Steers patented a process for making tan bark extract, and offered some for sale a year or two later. He used a leach with a copper bottom and top. Under the bottom was a fire to heat the water or liquor, the steam from which passed up through the bark, coming in contact with the copper top, which was immersed in cold water; the condensed steam, turned to hot water, was re-

turned through the bark to the bottom and was again heated by the fire. This was continued till a strong decoction was obtained, but this extract was too weak to keep for any length of time without fermenting, and also was more or less burned, and much of the tannin in the bark went to waste.

In 1863, John and James Miller, who were operating a large tannery near Montreal, Canada, took liquor from their leach house and evaporated it in open vats, with copper steam pipes, making a solid extract which was put up in boxes. This was an improvement, as the extract could be kept for an indefinite period, and the bark was properly leached.

A year later a factory was built at Upton by the Millers, and the solid extract was shipped to the United States and England. This extract turned the leather very dark, and, being also injured by heat, it likewise proved a failure. The Millers then tried a small vacuum pan, of the old style used for sugar, but the first attempts to boil liquor in this were extremely wasteful, as a great deal boiled over into the condenser and was lost. Then a middle section was added to the pan, giving greater height, and, at length, extract as it is known to-day was made at reasonable cost. The Miller brothers secured a patent on this improved process, and had a monopoly of the business.

Bark at this time was selling at a high figure in Boston, as the war had stimulated the leather trade. The extract was in great demand, but the production was only three barrels per day. It sold at five cents per pound, while bark in Canada brought only \$2.50 per cord. Some of the most prominent tanners in Boston formed a company, secured the Miller patents, and built large works at

JOHN FORMAN

DEALER IN

Electrical Supplies

650 CRAIG STREET, MONTREAL

Correspondence Solicited **Low Prices on everything in the Electrical Line**

Agent, EDISON & SWAN UNITED ELECTRIC LIGHT CO., of London, Eng.

LARGEST MAKERS OF INCANDESCENT LAMPS, Etc.

Agent for THOMPSON Electric Co.'s Advanced Types of **ARC LAMPS**

**FOR DIRECT CURRENT INCANDESCENT CIRCUITS,
STREET RAILWAY AND POWER CIRCUITS,
CONSTANT CURRENT AND ARC CIRCUITS,
ALTERNATING CURRENT CIRCUITS**

**NEW CONSTANT CURRENT AUTOMATIC DYNAMO FOR SERIES ARC LIGHTING
INCANDESCENT DYNAMOS AND MOTORS**

Upton, capable of putting out forty barrels a day. The business increased so rapidly that they put up two additional similar plants inside the next year in other locations, and all this extract was readily disposed of in and around Boston. After some years of prosperity, the depression following the war reduced the demand for extracts, and John Miller went to England to introduce it there. This was a difficult matter, as red leather was unpopular, and, though the mixture of the hemlock extract in the oak liquors greatly lessened the cost without much affecting the color or quality of their leather, it took more than ordinary energy and persuasiveness to get even a trial from the foreign tanners. Among other difficulties encountered should be mentioned that the British Government forbade the use of extracts in making leather for the army until Mr. Miller obtained the privilege of furnishing a body of soldiers with shoes at his own expense. These shoes had oak-tanned uppers, but one of each pair had a hemlock sole and the other an oak sole. Experience proved that the hemlock sole in every instance outwore its mate tanned with oak, and this turned the tide. Large lots of extract were sold at high prices and a permanent business established.

Some years later Miller Brothers bought out their former partners, and erected new works in New Brunswick, which have been in operation for twenty-eight years. The original plant at Upton was carried on for twenty years. The business to-day is managed by the sons of the founders.

Great improvements have been made in all other branches of the business, but the vacuum pan, in some form or another, as outlined in the original patents, is still in general use.—Hide and Leather.

THE GENERAL ELECTRIC AND WESTINGHOUSE COMBINE.

Speaking of the developments of the "patent treaty" between the General Electric and the Westinghouse Companies, and of their dickering with the Fort Wayne Company, the Electrical Review says:—

"There have been many rumors since the announcement of the patent alliance of the General Electric and Westinghouse companies to the effect that other large electrical companies have been requested to enter into this 'electric treaty.' The other companies named have been the Fort Wayne, Siemens & Halsko, Stanley, Walker, etc. It is further stated that the proposition was met with a flat refusal in the case of the last two companies. The negotiation with the Fort Wayne corporation are still in progress, and Judge R. S. Taylor, the company's legal adviser, is now in New York, having arrived from Fort Wayne on Saturday last to participate in the future discussion.

"There were several conferences held last week between Mr. R. T. McDonald, president of the Fort Wayne company, and Mr. Chas. A. Coffin, president, and Mr. F. P. Fish, counsel, and other officials of the General Electric. It has been generally understood that the General Electric company pays \$5,000 per month to the Fort Wayne corporation for certain street railway rights (which preclude the latter from competing in the street railway field), and besides pays a royalty for the use of certain of the Bradley multiphase patents owned by Fort Wayne.

"It is not likely that any agreement can be entered into that would require the harmonious working together of the presidents of the

three great companies this would include, although the pleasant personal relations of Messrs. Coffin and McDonald have never been severed; therefore, if the Fort Wayne corporation becomes a part of the alliance, this will result from its purchase at a good round sum.

"Mr. Chas. D. Shain, of New York city, general eastern agent for the Siemens & Halsko Electric Company of America, said on Monday morning that, to his knowledge, no attempt had been made to bring his company into the combine, although he believed that the combine would take in any one who would come in.

"Meanwhile there are several well backed manufacturing companies in Pittsfield, Cleveland, Chicago, and elsewhere, that are watching the moves on the electrical chessboard with interest and understanding."

The Detroit and Cleveland Steam Navigation Company's steamers are now running daily (except Sunday) between Detroit and Cleveland. When traveling east or west, north or south, try to arrange to take advantage of these luxurious steamers between Michigan and Ohio. If you are contemplating a summer outing, write A. A. Schantz, G. P. A., Detroit, Mich., for illustrated pamphlet, which gives full information of a trip to Mackinac via the Coast Line.

Charlottetown, P.E.I.—New cathedral—Messrs. Paquet and Godbout, of St. Hyacinthe, Que., have been awarded the contract to build the new St. Dunstan's Cathedral at Charlottetown.

The Royal Electric Co'y

MONTREAL, QUE.

Western Office.... TORONTO, ONT.

S.K.C. Two-Phase Alternators

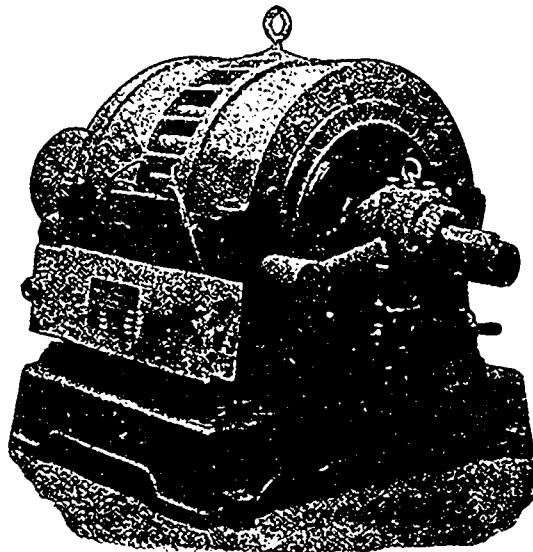
Incandescent Light, Arc Light and Power from same Dynamo and Circuit.

Highest Efficiency

Best Regulation

Slow Speed

Least Attention



S.K.C. 50 Kilowatt Two-Phase Generator

No Collector

No Moving Wire

No Exposed Parts

No Compounding

THE PLANSIFTER

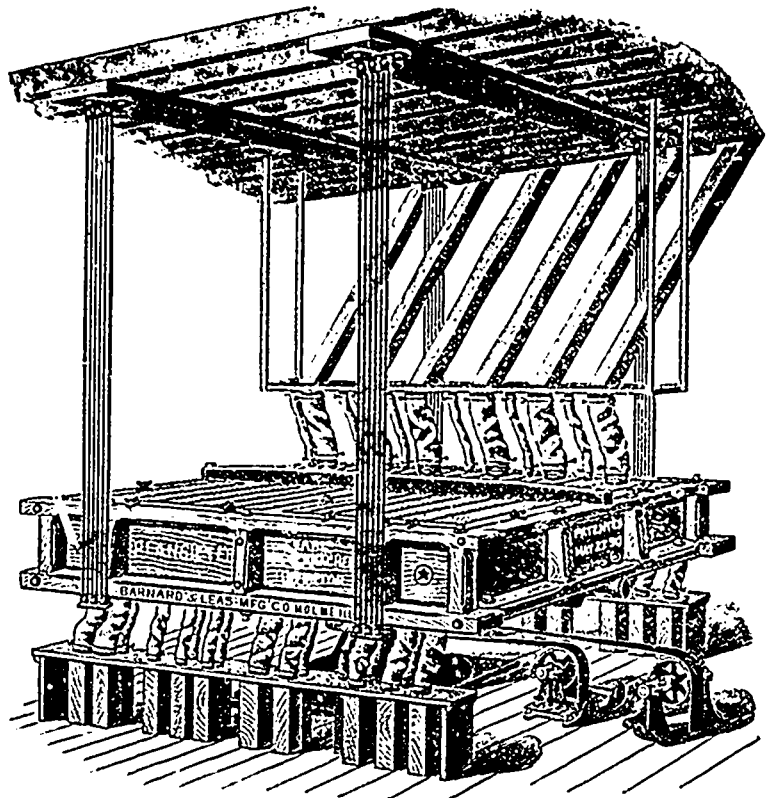
HAS COME TO CANADA TO STAY!

This wonderful Machine will Scalp, Grade off Coarse Middlings, Grade off Fine Middlings, and Bolt the Flour from each Reduction, whether on Wheat or Middlings.

Millers of Canada should awake to the fact that after four years testing in the United States, THE PLANSIFTER is the most popular Scalping, Grading and Bolting Machine, and is being more extensively adopted by Millers than any other. It is still the leading machine in Hungary, where first introduced, and is being rapidly adopted by other foreign countries, with unusual favor.

The Flour made on this system leads all others, and is sought for by bakers and users in preference to that made on other systems.

We have secured the sole right, to manufacture THE PLANSIFTER for Canada from Carl Haggemacher, of Buda Pesth, under his patents.



NO EXPERIMENTING!

We have arranged with the BARNARD & LEAS MFG. CO. of MOLINE, ILLS., U.S.A., who introduced THE PLANSIFTER successfully in the United States, to have the benefit of all their improvements in manufacturing THE PLANSIFTER, and also the benefit of their experience in the arranging and programming of mills of all capacities on the latest and most improved PLANSIFTER System.

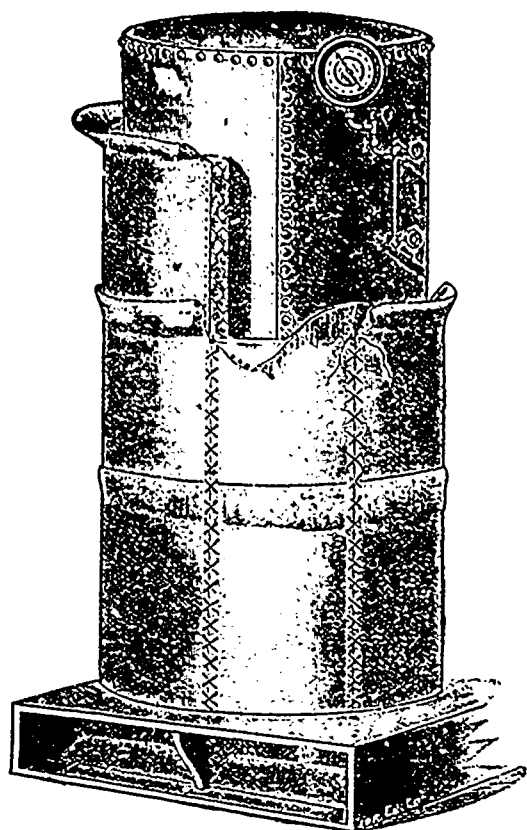
We invite Millers to thoroughly investigate the results of THE PLANSIFTER System and be convinced of its superiority, and that it is bound to supersede all others. A careful enquiry will convince the most skeptical.

Big mills can't afford to do without them, and they do charming work in the smallest mills.

CORRESPONDENCE INVITED, AND WILL RECEIVE PROMPT ATTENTION

WM. & J. G. GREY, 2 Church St., Toronto, Ont.

SOLE LICENSEES AND MANUFACTURERS FOR CANADA



1895.

The Latest Invention in Coal Saving Appliances

“MICA”

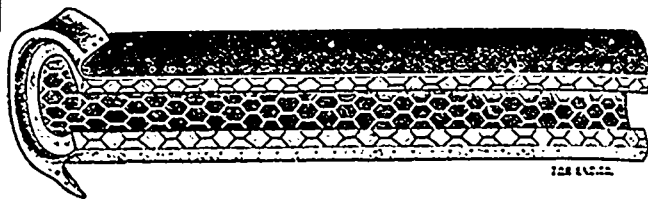
The well-known **Electrical Insulator** successfully adapted as an insulator of **Steam heat. Enormous Saving of Fuel Guaranteed** by the use of Mica boiler and steam pipe covering.

Patented

1894

and

1895



Now being used with great success by the Toronto Street Railway Co., Niagara Navigation Co., Toronto Ferry Co., etc., etc. Has been tested and thoroughly examined by the highest authorities and pronounced the most effective in the market. Impervious to the extremes of heat or cold, damp or vibration. Made in any size mats in any shape. Can be applied and removed as often as desired without injury.

SOLE MANUFACTURERS

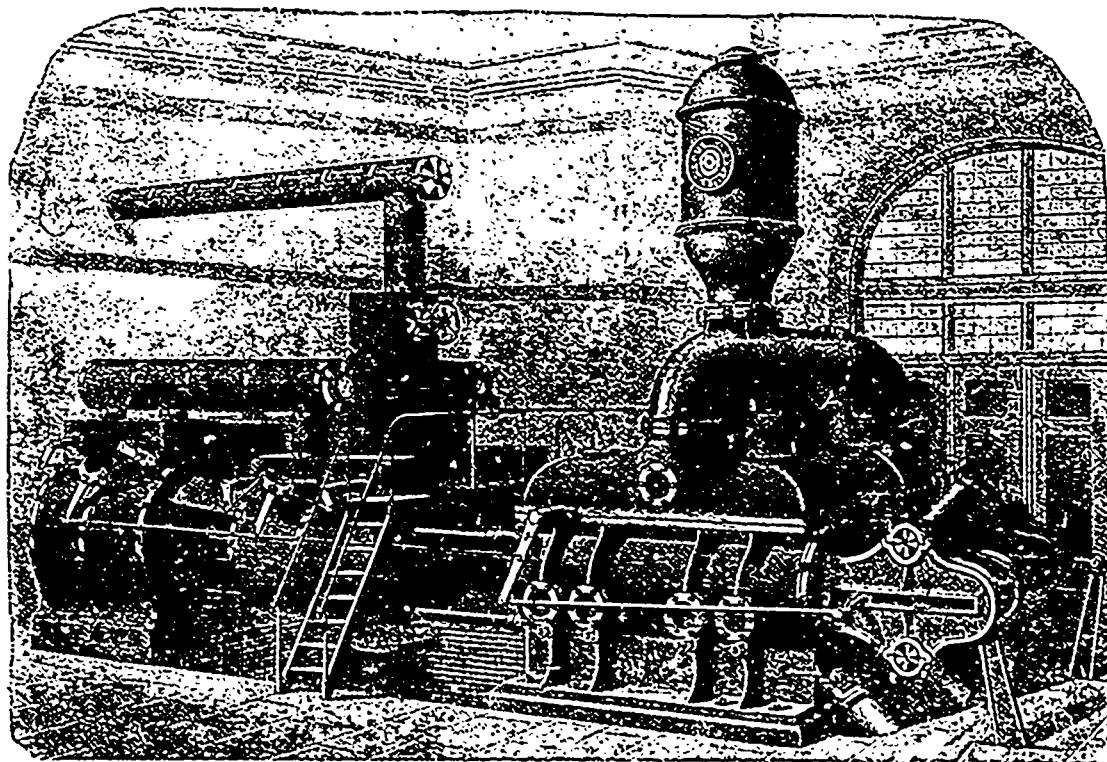
The Mica Boiler Covering Company (Ltd)

9 JORDAN STREET, TORONTO.

JOHN McDOUGALL

CALEDONIAN IRON WORKS,

MONTREAL, QUEBEC



General Agents
in Canada for

THE FAMOUS

Worthington

Pumps

Hydraulic

Machinery

Condensers

AND

Water Works

Supplies

WORTHINGTON PUMPS ARE UNEQUALLED FOR EFFICIENCY AND ECONOMY

CAPTAINS OF INDUSTRY.

The following items of information, which are classified under the title "Captains of Industry," relate to matters that are of special interest to every advertiser in these pages, and to every concern in Canada interested in any manufacturing industry whatever, this interest extending to supply houses also.

If a new manufacturing enterprise of any kind is being started, or an electric lighting plant instituted, or an electric railroad, or a telephone, or a telegraph line is being constructed; or a saw mill, a woolen, cotton, or knitting mill; or if any industrial establishment has been destroyed by fire with a probability of its being rebuilt, our friends should understand that possibly there may be something in the event for them. Do you catch on to the idea?

The starting of any such concern means a demand for some sort of machines, machinery, or supplies, such as steam engines and boilers, shafting, pulleys, belt- ing, lubricants, machinery supplies, wood or iron working machinery, ventilating and drying apparatus; pumps, valves, packing, dynamos, motors, wire, arc and incandescent lamps, and an infinite variety of electrical supplies, chemicals, acids, alkalies, etc. It is well worth the while of every reader of the Canadian Manufacturer to closely inspect all items under the head of Captains of Industry.

Westport, Ont.,—Electric light. W. C. Fredenburg will establish an electric light system.

Digby, N.S.—Electric light plant—An electric lighting plant will be installed in Digby, N.S.

Whitton, Que.—The Whitton Granite Quarry Co., have been incorporated with a capital stock of \$50,000.

An American company has bought property at Dutch Settlement, N.B., and will commence at once quarrying and exporting crystallized plaster on a large scale.

Sherbrooke, Que.—Carpet factory.—Messrs, Talbot, Cockcroft & Harvey, of Elora, Ont., are contemplating the removal of their works to Sherbrooke.

Alex. Gibson, the Nashwaak lumber king, cut twenty-five millions of shingles last season. He intends to manufacture even a larger quantity this year.

Messrs, H. Sorette & Co., Bridgewater, N.S., have received a contract for 900 tons of granite for Scotland, and other large orders are likely to be received from the same place.

Tayte, Meating & Co., of St. George, N.B., have received a contract to furnish 2,000 tons of stone for the State building, New York City.

Owen Sound, Ont.—Water wheels—Messrs. Wm. Kennedy & Sons, Owen Sound, are supplying water wheels, costing \$25,000 to the Hull Electric Railway and Lighting Co., Hull, Que.

Galt, Ont.—Engines—The Goldie & McCulloch Co., Galt, Ont., have supplied a 100 h.p. tandem compound condensing Wheelock engine to the Beaverton Electric Light Co., Beaverton, Ont.

Galt, Ont.—Engines—The Goldie & McCulloch Co., recently supplied two Wheelock condensing engines and boilers to develop 150 h.p. to the Hydraulic Power Co., St. Hyacinthe, Que., for auxiliary power.

Toronto, Ont.—Distillation of by-products—Messrs. J. Butler & Co. have contracted with Consumers Gas Co., Toronto, for their output of coal tar from their gas works. They have acquired the premises at 303 to 309 Front Street East, where they will distill coal tar, benzole, naphtha, carbolic acid, etc.

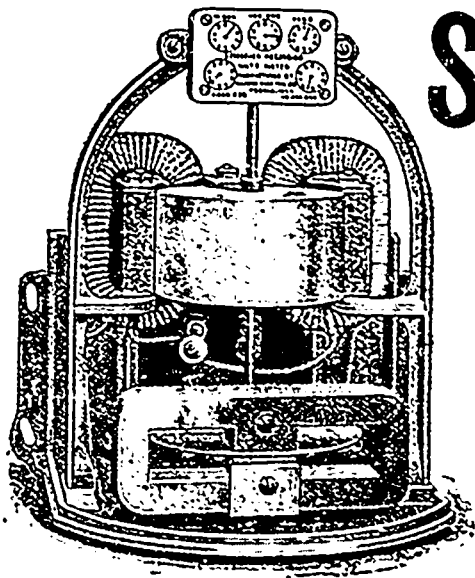
Woodstock, N.B. Carriage factory burned—Chestnut & Hipwell's furniture and carriage factory at Woodstock, N.B., was burned April 7th. Loss about \$7,000.

Moncton, N.B.—Street railway—The Street Railway, Heat & Power Co., Moncton, N.B., is being organized to construct a street railway in that place with a capital stock of \$100,000.

Chicoutimi, Que.—Electric railway—The Chicoutimi Electric Co. will construct an electric railway between that place and St. Alphonse.

Amherst, N.S.—Engines—The Robb Engineering Co., Amherst, N.S., are supplying The T. Eaton Departmental Store, Toronto, with two of their Robb-Armstrong engines to operate the pneumatic cash system.

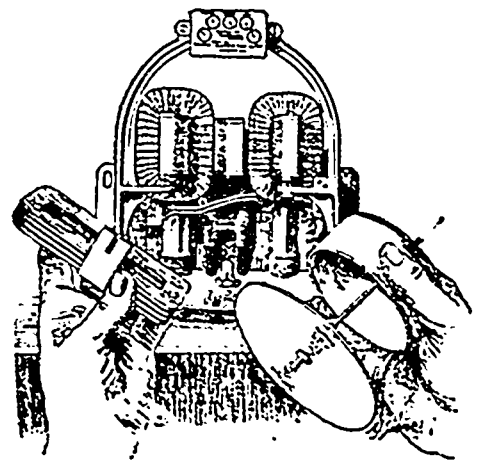
Newmarket, Ont.—Electric light plant—The town of Newmarket will purchase an electric light plant to cost \$8,000.



SCHEEFER METERS

Accurate on 5
and 10 Loads

**NO
BRUSHES**



MANUFACTURED BY....

DIAMOND ELECTRIC CO., Chicago and Peoria, Ill.

A Competitive Test with any other Meter on the Market will assure us of your patronage. Sole Agents for Canada,

**The PACKARD ELECTRIC CO., Ltd., St. Catharines
ONTARIO**

Woodstock, N.B.—The Woodstock Electric Railway, Light & Power Co., are applying for incorporation for the purpose of generating electricity for power and light.

Toronto, Ont.—Pumps—The Northey Mfg. Co. are placing a compound duplex pump of 2,000,000 gallons capacity in the T. Eaton Departmental Store, this city.

Ridgetown, Ont.—Boiler explosion—The boiler in Messrs. Watson Brothers' hoop and stave factory exploded on April 6th, wrecking the building. Loss about \$5,000.

St. Thomas, Ont.—Street railway purchased—St. Thomas Street Railway has been sold to Mr. John Stacey, who will probably electrify it.

A dispatch from Eau Claire, Wis., says "A result of a visit to the Secretary of the Navy by O. H. Ingram of this city, L. Tainter of Menominee and J. G. Thorpe of Boston, the Canadian Anthracite Coal Company, which has two mines near Calgary, N.W.T., will get the contract to furnish the coal for the Pacific-coast squadron of the Navy. The company expects it will have to deliver about 8,000 tons at San Francisco and 4,500 tons at Honolulu, besides large quantities at other points."

The Packard Electric Co., St. Catharines, Ont., who are sole agents for Canada of the Diamond Electric Co., Peoria and Chicago, Ill., of the Schaefer electric meter, have, during the last two months, had that meter in competitive tests, the results of which, they inform us, have given them the trade in every instance. The sensitiveness of the Diamond meter on one and two lamp loads makes it a money saver for central stations.

Toronto — Boiler grates — The Gurney Foundry Co., Toronto, display in their advertisement copy of a letter they have received from Messrs. Warwick Bros. & Rutter, having reference to the volcanic patent shaking grate now in use in the establishment of the latter, recently placed there by the Gurney Co.

Montreal — Feed water heater—Messrs. Darling Bros., Montreal, in their very attractive business card request attention to the merits of the Webster feed water heater and purifier, manufactured by them. They ask that intending purchasers before buying, consider the efficiency and simplicity of their article, and also of their Webster separators for live and exhaust steam. They also speak of the Williams' system of steam heating made by them, which produces no back pressure on engines, and which can be attached to any existing plants with great economy.

Toronto, Ont. Bicycles Mr. G. T. Pen drith, Toronto, Ont., manufacturer of the Sun bicycle has sent us his illustrated catalogue regarding them. These bicycles are described as being strictly high grade, being made in the most thorough manner by experienced workmen; the parts are all steel drop forgings, no stampings or malleable castings being used in their manufacture; the tubing is of the best English make; the cones are made of the best grade of tool steel; the wheel is reinforced throughout; it is a thoroughly serviceable article, built to wear well as well as to look well. Having a large machine shop in connection with his business Mr. Pendrith is able to make nearly all the parts himself thereby saving considerable in cost of construction. Mr. Pendrith says

he makes a specialty of repairing wheels of all makes, having excellent facilities for this class of work.

It may interest our readers to know that The Buffalo Forge Co., Buffalo, N.Y., sell a great many mechanical draft plants by mail, with complete plans for erection, not only in the United States but elsewhere. Their installation is not attended with any complications which an ordinary engineer cannot overcome. This will be readily appreciated by noting the following copy of letter from the Oakland Gas Light & Heat Co., Oakland, Cal.: "Replying to your inquiry of the 7th inst., we take pleasure in saying that the forced draft apparatus sold this Company by you is working satisfactorily in every respect. It has been in constant use for over a year, and has not cost one dollar for repairs or attention." Their shipment to the Oakland concern included 1-80" fan, with double upright enclosed engine, also 1-90" fan and double upright enclosed engine, with 1 patent Stilwell live steam heater and purifier.

Galt, Ont.—Woolen mills.—Wardlaw Bros. have purchased the old Dixon woolen mills, and will commence operations as soon as the necessary improvements have been made.

Lucan, Ont.—Foundry burned.—Halloran Bros' foundry was destroyed by fire April 5th. Loss about \$1,000.

Wellandport, Ont.—Flour mill burned.—Heslop Bros. flour mill was burned April 4th. Loss about \$8,000.

Westville, N.S.—Iron company.—The Westville Foundry & Machine Co. have been incorporated with a capital stock of \$12,000, to carry on the business of iron foundries, etc.

BRUNNER, MOND & CO., (LTD.), Northwich, Eng.

MANUFACTURERS OF

PURE ALKALI

GUARANTEED 58 DEGREES

BLEACHING POWDER AND

CAUSTIC SODA, 70%, 74%, & 76%

Winn & Holland, Montreal

SOLE AGENTS FOR THE DOMINION OF CANADA.

The Strongest and Cheapest Form of SODA ASH for the Manufacture of . .

SOAP, GLASS, PAPER, WOOD PULP AND COLORS

Also for Printers and Bleachers



Wm. J. Matheson & Co., Ltd.

423-425 ST. PAUL ST., MONTREAL

ALSO AT

NEW YORK, BOSTON, PHILADELPHIA, AND PROVIDENCE, U.S.A.

IMPORTERS AND MANUFACTURERS OF

DYE STUFFS NATURAL AND ARTIFICIAL

Works—Long Island City, Port of New York
Main Office—178 Front Street, New York

WE MANUFACTURE AND IMPORT

Every Modern Dye Stuff

Sole U.S. and Canada Agents for
Leopold Cassela & Co., Frankfort-on-the-Main, Germany.
W. C. Barnes & Co., London, England.
Manufacture Lyonnaise de Matieres Colorantes
Lyons, France.
Albany Coal Tar Dye & Chemical Co., Albany, N.Y.

Walkerton, Ont.—Tannery burned.—Thos. Pellow's tannery was burned April 1st.
St. John, N.B.—Cold storage.—E. A. Goodwin will put in a cold storage plant.

Aylmer, Ont.—Organ factory.—J. T. Rowe is about to enlarge his organ factory, and add pianos to his output.

Belleville, Ont.—Casket factory.—Geo. S. Tickell & Son have started a casket factory in Belleville.

Otterville, Ont.—Butter factory.—A. T. Ball will erect a butter factory.

Vernor, B.C.—New elevator.—The Armstrong Flour Mill Association will build an elevator of a 20,000 bushel capacity.

Casselman, Ont.—Brick works.—Baker Bros. are starting a brick factory.

The city council at Nanaimo, B.C., invite tenders for a bridge to connect that town with Newcastle.

Fort William, Ont.—New elevator.—The Canadian Pacific Railway Co. have plans ready for a new 1,500,000 bushel elevator, to be built at Fort William.

Beaverton, Ont.—New machinery.—A. Dobson will place a new engine and boiler in his works.

Keswick, N.B.—Tannery and shoe factory.—W. H. Lawrence will build a tannery and shoe factory.

Toronto.—Rebuilding factory.—Messrs. W. Harris & Co., whose factory was recently destroyed by fire, will rebuild at once on a much larger scale.

Keewatin, Ont.—Flour mill burned.—The Lake of the Woods Milling Co.'s plant was damaged by fire April 4th. Loss about \$4,000.

Kent, N.B.—Spool factory.—Mr. John Bulmer will establish a spool factory.

Messrs. Brodie & Co., Hespeler, Ont., are placing a Cole & Peddie carbonizer in their woolen mills.

Ridgetown, Ont.—Mill destroyed.—Watson Bros' mill was destroyed by a boiler explosion April 6th.

Arnprior, Ont.—Sash and door factory.—Mr. Barnett of Almonte, Ont., will establish a sash and door factory in Arnprior.

Woodstock, N.B. Factory burned.—Chestnut & Hipwell's furniture and carriage factory was destroyed by fire April 7th. Loss about \$7,000.

Hartland, N.B.—New factory.—W. R. Richardson is erecting a wood-working factory. It is almost ready for the machinery.

The Hamilton Bridge Co., has been awarded the contract for the construction of six iron bridges over the Raleigh Plains at \$6,590. The spans run from fifty to sixty-five feet.

Merritton, Ont.—Box factory.—Geo. Wilson, of St. Catharines, Ont., will start a box factory at Merritton.

The London Street Railway Co., have let the contract for a bridge across the river at Wellington street, to the Central Bridge Co. of Peterboro, Ont., the work to be finished this spring.

The Northey Mfg. Co., have shipped to the Dominion Coal Co. two compound mine pumps having respectively a capacity of 800 and 500 gallons per minute, discharging against a vertical head of 600 feet.

J. H. Falconer, B.C., will establish a canning and pickling factory at Seattle.

St. Hyacinthe, Que.—Shoe Leather Co.—The Mosely shoe Leather Co. have been incorporated with a capital stock of \$99,000 to manufacture shoe leather, etc.

Cornwall, Ont.—Street Railway Co.—The Cornwall Street Railway Co. have been incorporated with a capital stock of \$150,000 to operate an electric street railway in that city and vicinity, and to supply electricity for light, heat and power.

Messrs. Wm. Kennedy & Sons, Owen Sound, Ont., are furnishing five sixty-inch new American water wheels to the Hull Electric Railway and Lighting Co., at a cost of about \$25,000.

Ottawa.—Company incorporated.—The Ontario Graphite Co. have been incorporated with a capital stock of \$200,000 to engage in the business of mining, etc.

Lindsay, Ont.—Factory burned.—George Inglis' sash and door factory damaged by fire, April 15th. Loss about \$2,000.

Gananoque, Ont.—Wheels works burned.—The Ontario Wheel Co.'s works were destroyed by fire, April 15th. Loss about \$50,000. They will rebuild at once.

Lake des Isles, Que.—Saw and grist mill.—Mr. Potvin, of Notre Dame Du Lau, Que., will erect a saw and grist mill at Lake des Isles.

Goldie & McCulloch, Galt, Ont., have received the contract for putting in the engine and some other appliances in connection with the artesian well at the Ontario Agricultural College.

Montreal. Company incorporated.—The Smoke Preventer Co. have been incorporated with a capital stock of \$10,000 to manufacture smoke preventers, etc.

BREWERS COPPER WORK

Brewing Kettles, Boiling Coils,
Beer Coolers, Attempartors,
Spargers, etc., etc.

THE BOOTH COPPER CO.,
TORONTO, ONT. Ltd.
Established 1854

AUSTRALIA.

Boswell, Son & Gilbert
CANADIAN MANUFACTURERS' AGENTS
Wynyard Square, Sydney, New South Wales.

All Communications promptly attended to.

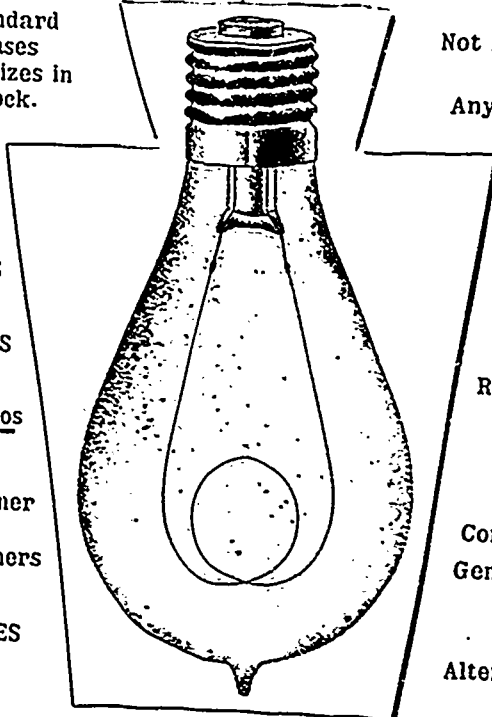
References: { Monzio, Turner & Company, Toronto.
Dominion Suspender Co., Niagara Falls, Ont.

KEYSTONE INCANDESCENT LAMP

FOR MULTIPLE OR SERIES CIRCUITS

Standard
Bases
and Sizes in
Stock.

Not Excelled
by
Any Lamp



ARC
LAMPS
○
MOTORS

Dynamos
○
Wagner
Trans-
formers
○
SUPPLIES

Walker
Steel
Railroad
Motors
and
Direct
Connected
Generators

Alternators

W. A. JOHNSON ELECTRIC CO.'Y
34 YORK STREET, TORONTO, ONT.

The UNITED ALKALI COMPANY, Ltd.

OF
ENGLAND

WILSON, PATERSON & CO.
MONTREAL, Sole Agents

CAUSTIC SODA, 60°, 70°, 74°, 76°, 77°; SODA ASH, all strengths;
SAL. SODA; PURE ALKALI, 58°.

Sulphate of Alumina, Borax, Caustic Potash, Hyposulphite of Soda, Bichromate of Soda, Silicate of Soda, Crystal Carbonate, Coconut Oil, Palm Oil, Castor Oil, Cottonseed Oil, Rosin Oil.

ROSIN OF ALL GRADES. SOAP MAKERS' SUPPLIES
New York Office, 134 Front St.

MACHINERY AND SUPPLIES WANTED.

If any subscriber to THE CANADIAN MANUFACTURER who may desire to purchase any machinery or supplies whatever, and so informs us, we will publish the fact in a conspicuous manner, and will make no charge therefor. These wants will be stated similar to the following:—

WANTED.

WANTED. A. Joyce, Calabogie, Ont. wants address of manufacturers of metal or rubber springs to be enclosed in pen handle.

PARTNER WANTED in Electrical Manufacturing Business. From \$6,000 to \$8,000 required. For full particulars address S. M., care Canadian Manufacturer.

LAURIE ENGINE CO., ST. CATHERINE STREET EAST, MONTREAL
ENGINEERS AND CONTRACTORS

COMPLETE MOTIVE PLANTS, ETC.
IMPROVED **Corliss Engines**

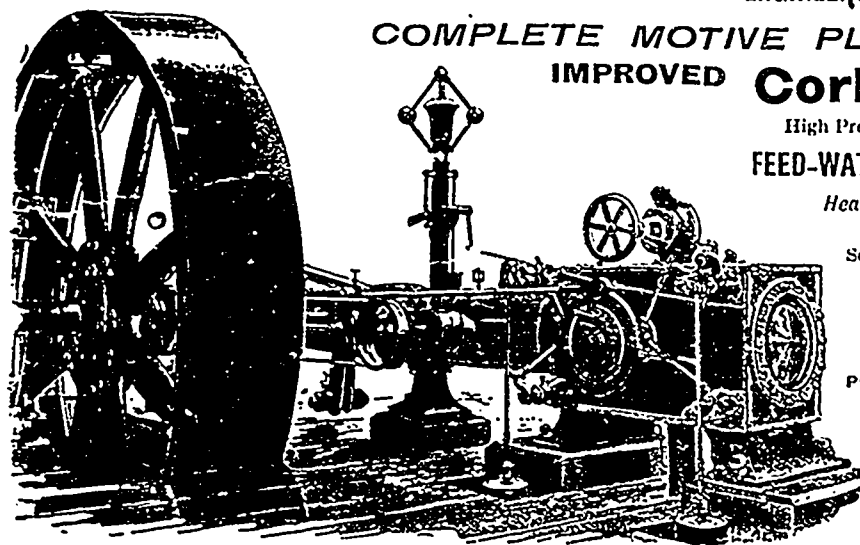
High Pressure, Condensing and Compound
FEED-WATER HEATERS and PURIFIERS
Heavy Fly Wheels a Specialty.

Sole Agents in Prov. of Quebec for

NORTHEY CO. Ltd.

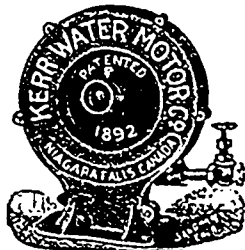
Manufacturers of all kinds of
Pumps, Condensers and Hydraulic Machinery

Sole Agents in Canada for the
**HOLLY GRAVITY
RETURN SYSTEM**



**KERR
WATER MOTORS**

1/8 TO 20 HORSE POWER.



Noiseless Running; Require No Attention, operated with water at a pressure of 30 pounds and upwards.

RELIABLE: Intending purchasers can have our Motors on trial by writing us, stating water pressure available, power required and class of work to be done. Our Motors are sold on their merits. Our prices are low. Write us. Enquiries solicited and cheerfully answered.

Kerr Water Motor Co.,
NIAGARA FALLS, CANADA.

The Toronto Machinery Supply Co.
164 KING STREET WEST

A. J. LINDSAY, Manager.

We invite all parties intending putting in machinery of any kind, or exchanging old for new, to consult our prices and terms before going elsewhere.



We also have a general line of

Second-Hand Machinery

in good condition.

We are not undersold and guarantee satisfaction.

ALGOMA IRON WORKS

SAULT STE. MARIE, ONT.

**Engineers
Founders
AND
Machinists**

**PULP AND PAPER MILL
AND
MINING MACHINERY**

DESIGNED, CONSTRUCTED and
REPAIRED

Woodstock, Ont.—Foundry burned. — Robt. Whitelaw's foundry was damaged by fire April 9th. Loss about \$3,000.

Ste. Anne des Monts, Que.—Mill burned. —Phileas Lovvque's grain mill was burned April 9th.

Toronto.—Wood Manufacturing Co.—The Manitow Wood Mfg Co. are applying for incorporation with a capital stock of \$5,000 to manufacture lumber, etc.

Thessalon, Ont.—Mining Co.—The Algoma Copper Mining Co., have been incorporated with a capital stock of \$1,000,000 to engage in the business of mining, etc.

Goderich, Ont. Furniture Mfg. Co.—The Kensington Furniture Mfg Co. have been incorporated with a capital stock of \$40,000.

Brantford, Ont. — Telephone Co.—The Callender Telephone Exchange Co. are applying for incorporation with a capital stock of \$100,000 to manufacture telephone exchanges, instruments, etc.

The Toronto Electric Motor Co., Toronto, have just built and delivered one of their popular motors to Messrs. John Irwin & Co., electrical engineers, Niagara Falls, New York. This is only one of quite a number of electric motors that the Toronto Electric Motor Co. have recently sold to parties in the United States.

Wm. C. Wilson, Toronto, have sent us circulars having reference to the Rainbow sheet and flange packing, the Eclipse sectional rainbow gasket, etc., manufactured by the Peerless Rubber Co., New York City, which he offers for sale in quantities to suit. The circulars contain testimonials from parties who have used this packing. For further information inquire of Mr. Wilson.

The Goldie & McCulloch Co., Galt, Ont., have sold Wheelock engines to W. H. McEvoy and Colin Wigle, of Amherstburg, Ont. The cylinders are to be 30x13 inches, with condensers.

Messrs. Milne, Coutts & Co., St. George, N.B., are applying for incorporation, with a capital stock of \$25,000, to manufacture granite, etc.

The Victoria Granite Co., St. George, N.B., are applying for incorporation, with a capital stock of \$5,000, to manufacture granite, etc.

The milling business is brisk in Ellerslie, P.E.I.; there are three saw mills and one grist mill running in full blast. Mr. A. A. McCaull's mill is cutting boards. Mr. John England's saw and grist mills are turning out shingles and flour. Mr. Williams' is also turning out large quantities of shingles.

The McEachren Heating & Ventilating Co., Galt, Ont., inform us that within the last month they have shipped dry-kiln outfits of their manufacture to Stratford, Ont., and to Nova Scotia and New Brunswick, and have inquiries extending from Newfoundland to the North-West. They say that the CANADIAN MANUFACTURER introduces them to a large number of users of machinery throughout Canada.

The McKimmon, Dash & Hardware Co., St. Catharines, Ont., inform us that they are now putting in the best and most recent improved machinery for the manufacture of bicycle chains, which they will, in a very few days be prepared to offer to the trade. We are assured that this article will be equal to the very best chain ever made. As far as our information goes, the McKimmon Company are the first in Canada to manufacture bicycle chains for the trade.

BUFFALO AUTOMATIC ENGINES.

The Buffalo Forge Co., Buffalo, N.Y., have sent us their "B" 96 illustrated sectional catalogue of the Buffalo horizontal and upright engines, side-crank and self-contained horizontals with throttling governors, center-crank automatic cut-off horizontals, double and single automatic cut-off uprights, etc., for electric lighting and general refined service, manufactured by them. Regarding this department of their industry, they say:—

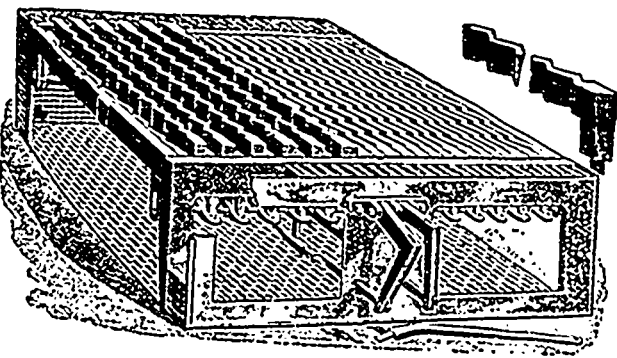
During the past decade the steam engine in its various types has been brought to a remarkable state of perfection. This is particularly noticeable in the matter of speed regulation, which has reached a nicety beyond the most sanguine expectations of a few years ago, and for economy in electrical work this is of paramount importance.

Contiguous with the electrical industry attaining its advanced stages of development, has arisen a demand for engines of high rotative speed, productive of large powers within a minimum space. Such are prime features of the Buffalo automatic. The magnificent office buildings of to-day, replete in their splendid appointments, outfit their power and lighting plants at an expenditure equal in comparison to that bestowed upon any other detail, and fittingly call for the superb finish and nicety of regulation now dominant in the approved and accepted engine types. The mill and manufactory, too, are now considered incomplete without their individual electric light plants of the same superiority.

Attention need hardly be directed to the point that an engine of the highest efficiency a few years since, no longer holds that posi-

THE VOLCANIC PATENT SHAKING GRATE

MANUFACTURED BY THE GURNEY FOUNDRY CO., Ltd., Toronto.



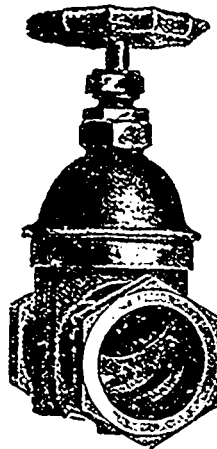
Toronto, November 13, 1895.

THE GURNEY FOUNDRY CO., LTD., Toronto.

GENTLEMEN,—Replying to your enquiry regarding "Volcanic Boiler Grates" that you placed under our steam boiler July 1st last, we beg to say that they have given us the best of satisfaction. Our engineer claims that they are simple, easily managed, and are very economical in the consumption of fuel; also that the construction is the best that he has ever experienced as to the amount of air space through each bar. We have no hesitation whatever in recommending these grates to anyone requiring a first-class steam boiler grate.

Yours truly,
WARWICK BROTHERS & RUTTER.

THE GURNEY FOUNDRY CO., Ltd., TORONTO.



THE WEBBER PATENT
-STRAITWAY VALVE-

For Steam, Water or Gas.

EVERY VALVE TESTED.

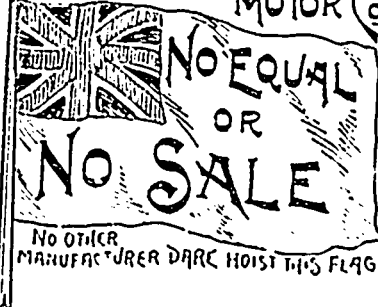
The Kerr Engine Co. Ltd.

WALKERVILLE, ONT.

SOLE MANUFACTURERS FOR CANADA.

SEND FOR PRICE LIST

TORONTO ELECTRIC MOTOR CO



BEWARE
of the
- - PIRATE

A large and pretentious concern doing business in Canada, having no regard for the rights of others, are manufacturing a motor copied, as far as possible, from that made by us, but without the name of the Toronto Electric Motor Co. thereon. Pirates exist in all communities, and the one here alluded to is a big one, sailing under a high-sounding title. The public should be on their guard against the big pirate.

Toronto Electric Motor Co., 107-109 Adelaide St. W. TORONTO



WHY NOT MAKE

A LEADER

...OF...

“Blue Seal”

Cherry Phosphate

It's Great Strength, Superb Flavor, and Absolute Solubility make it a very profitable drink for you, while your customers will be delighted with it. It's sure to be one of the greatest sellers of the season.

Price, \$5.00 a gallon (3 ozs. to the gallon).

DON'T WAIT—ORDER SAMPLE GALLON TO-DAY.

McKEY & CO.

36 Hamilton Street, - - - BOSTON.

Send for Bottlers' Price-List.



tion, so great has been the advance. The up-to-date design, so treated as to eliminate all previous weak points, embody and enhance the good ones, is the engine selected by the careful buyer or specified by his consulting engineer. With this in due appreciation, the Buffalo automatic cut-off engine: are herewith offered as including a greater number of desirable features within the range of powers catalogued than high-speed types obtainable elsewhere.

That these automatic cut-off engines are peculiarly suited for the refined service of dynamo driving, either by belt or direct connection, is apparent. They are extensively employed for central station work, for individual industrial plants, and for private and public structures of all classes. The vertical types are especially valuable for generator service on shipboard.

As to equipment and facilities the works of this concern need only to be visited to indicate that for engine building they are not excelled even by establishments having no other output. New and extensive buildings, new tools of the very best obtainable, and the most advanced appliances, have been provided throughout. Large lots of the various sizes and types are manufactured at a time, all parts being interchangeable. Duplicate engine details are invariably car-

ried in stock, that repairs may be made without delay.

A MODEL CANADIAN BICYCLE FACTORY.

It would be a very young child who could not remember when bicycles in the streets of Toronto or of any Canadian city or town were curious and expensive luxuries. In fact their advent into Toronto as a method of locomotion for other than purposes of pleasure was coincident with the abandonment of horse cars and the adoption of the trolley. To-day the street railway companies find that the use of the bicycle has an exceedingly depressing effect upon their receipts, and it is known for a fact that thousands of men and women travel back and forth between their homes and their places of business on bicycles in preference to riding in the street cars. At the first only young men and youths were to be seen on bicycles, but soon young women and girls fell into line, venturing timidly along the less prominent streets, but now all classes and conditions of men and women have become cycle riders, and are constantly to be seen flying by upon their silent steeds. It is a safe and conservative estimate to make that more than ten thousand bicycles are in daily use in Toronto.

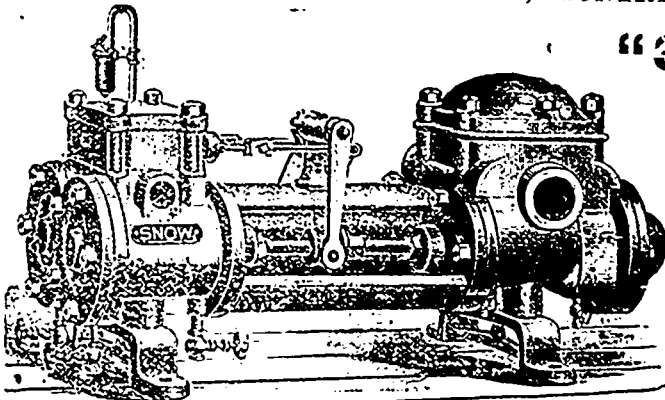
When bicycles first came into use in Toronto about all of them were imported from Great Britain, Coventry, England, being the chief place of production; and in this enterprise the manufacturers in the United States were far behind their English competitors. But not for long, for soon American wheels were to be seen in constantly increasing numbers; and then it was that local mechanics and machine shops began the business of assembling the different parts of bicycles—all imported—and turning out the finished article. It is not surprising that all so-called Canadian wheels were thus constructed. A most important part of a bicycle is the steel tubing composing the frame, and there was no works in Canada for the manufacture of that article; neither were there any factories prepared to turn out the finer parts, all made of tempered steel, necessary in the construction of bikes; and it was only about a year ago that capital, enterprise and skill were united to erect factories for the production of bicycles exclusively.

At this time, however, the tall chimneys of bicycle factories are to be seen in a great many places in Canada, particularly in Ontario, although the steel tubing used in them is imported.

Perhaps the largest and best equipped bicycle factory in Canada is that of H. A.

CANADA MACHINERY AGENCY

321 ST. JAMES STREET, MONTREAL



"SNOW"
 DUPLEX
 STEAM
 PUMPS

FOR EVERY SERVICE

Iron Tools, Wood-Working Machinery

STEAM ENGINES, BOILERS OF EVERY TYPE, SAW MILL MACHINERY, ETC.

CANADA MACHINERY AGENCY, W. H. NOLAN, Manager
 321 St. James Street, Montreal

George White Fraser

C.E., D.T.S., A.Am. Inst. Elec., Eng.

CONSULTING ELECTRICAL ENGINEER

Electric Railways and Electric Light Construction Superintended.

18 IMPERIAL LOAN BUILDING TORONTO

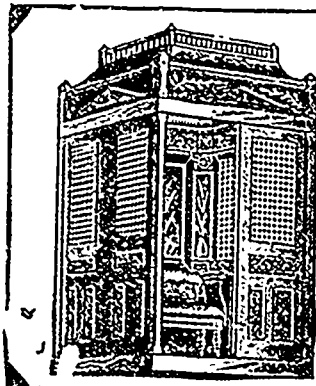
F. H. MASON, F.C.S., Consulting Chemist and Metallurgist
 Analytical Chemist and Assayer may be consulted on all matters pertaining to Chemical Technology and Metallurgy. Analyses of Alloys, Metals and Pigments, Mineral Water, Waters for economic and boiler purposes, and all kinds of chemical products and by-products. Assay of all kinds of ores. The treatment of refractory gold ores and concentrates a specialty. Laboratory, Queen's Building, HOLLIS STREET, HALIFAX, N.S.



Send for Catalogue and Price List to

THE JOHN MORROW MACHINE SCREW CO. INGERSOLL, ONT.

Mfrs. of Set, Cap and Special Screws, Studs, Finishal Nuts, etc.



ELEVATORS

PENSOM ELEVATOR WORKS
 52-54-56 DUKE ST. TORONTO

ELECTRIC HYDRAULIC STEAM & HAND-POWER PASSENGER & GOODS ELEVATORS. DUMB-WAITERS

Lozier & Co., at Toronto Junction, a suburb of Toronto, with city office and sales-room at 169 Yonge street this city.

An accurate idea of the extent of the concern and its equipment, is obtainable from the following:—

On the ground floor of the main building are twenty-eight milling machines; two profilers; one chain riveter; one rim roller; six punch presses; one three-spindle drill; sixteen drill presses; one slotting machine and one chain adjuster, in which each and every cham is tested to sustain a weight of 1,400 pounds. This department is devoted to drilling crank hangers from solid steel forgings, profiling fork-crown forgings and sprocket arms, milling chain blocks, rolling handle bars, etc.

Another department contains dynamos for electric lighting; 200 h.p. steam engine and boilers, fire pump, blower for hot air system, etc. The entire factory is equipped with an automatic sprinkling system actuated from

this department. The capacity of the pump in this department is one thousand gallons per minute. The water supply is obtained from a reservoir containing one hundred thousand gallons, located under the west wing, and a ten thousand gallon tank located fifteen feet above the highest roof. The fire doors between each department are self-closing in case of fire. The fire equipment is of the most modern design, and conforms to the strictest insurance regulations, making a complete fire almost an impossibility. There is also a complete sanitary system of warming the factory; pure air is taken from the outside, and forced by a means of a blower through a system of pipes heated by exhaust steam; the pressure is strong enough to force the heated air through the crevices to the outside, thus creating a constant current of pure warm air through the entire factory.

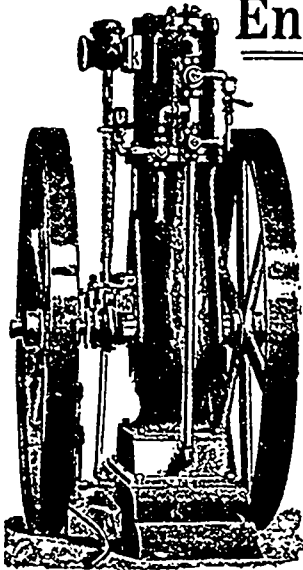
In another department are eight double lathes, and it is here that most of the parts are ground before filing and polishing.

Near the grinding room is a department which contains two drop hammers, two punch presses, two oil forges, one coal forge, three blacksmith's forges, tube swager, hardening ovens and brazing plant. In this department may be seen the first operations of the forged parts such as sprockets, cranks, etc.; also the process of brazing joints, oil tempering, etc.

The polishing room is fitted with sixteen double polishing lathes and every known appliance for bicycle polishing, such as fine emery, Spanish felt, bull neck, wood, vulcanized rubber, compressed leather and walrus-hide wheels. This is said to be the most complete polishing outfit in Canada.

The tool department contains one planer, five shaper, two millers, fifteen lathes, one speed latho, thirty-seven vises, one die-sinking machine, one Universal grinding machine, one cutter grinder, two heavy drill presses, emery grinders, one speed drill, one London machine, etc.

THE ELECTRICAL GAS OR GASOLINE...
Engine



WRITE FOR PRICES AND TESTIMONIALS

J. R. BAIRD

WOODSTOCK, - - - ONTARIO

Firstbrook Bros.

Dovetail and Packing Boxes

Top-Pins, Side Blocks and Cross Arms. Wood Printers, Etc.

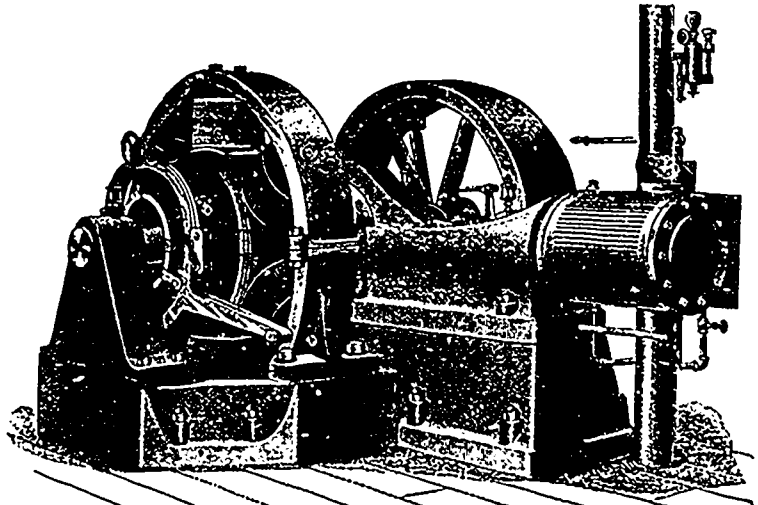
Cigar Boxes. Shipping Cases.

TORONTO, - - - ONTARIO.

Write for Prices

ROBB-ARMSTRONG ENGINES.

Simple, Tandem and Cross Compound.



Correct Design

Superior Workmanship

We highly recommend the Robb Armstrong Engine for direct connection to Dynamo.

Robb Engineering Company (Ltd.)

AMHERST, N.S.

AGENTS-- Canada Machinery Agency, 321 St. James Street, Montreal
William McKay, Seaforth, Ont., Traveller.

Emery Emery Wheels, Grinding Machines, Grinders' Supplies... Quick process and large stock.
WHEN IN A HURRY ORDER OF

The Tanite Co., Stroudsburg, Monroe Co., Pa., U. S. A.
New York, 161 Washington Street.
Cincinnati, 1 West Pearl Street
London, Eng., Thos. Hamilton, 90 Cannon St., E. C.

Leitch & Turnbull

Canada Elevator Works,

Queen and Peter Streets, Hamilton, Ont.

Patent Safety Hydraulic Hand and **POWER ELEVATORS**
Telephone Connection.

.. BABBIT..

USERS OF

Do you wish the Maximum of Satisfaction for the Minimum of Cost

THEN SEE YOU GET

G. Langwell's BABBIT, Montreal, P.Q.

See that the name is stamped on each bar.

Thirty-five tool makers are employed constantly in this department making tools for the manufacture of the different parts of the Cleveland bicycle. This department, in extent necessary only in the construction of a high-grade bicycle, forms its chief expense. Tools made of the best steel have to be graduated to as low as one-thousandth of an inch, which, on account of the accuracy required, have to be constantly renewed. It requires a very high order of intelligence to become a first-class tool maker. The average number of tool makers employed is one to a bicycle per day.

The spoke and tumbling department contains spoke header, spoke roller, spoke bender, two millers, two lathes, tumblers, etc. All Cleveland bicycle spokes are constructed from the best piano wire, are double butt ended, and the thread is rolled on, thus preserving the original strength.

The lathe department contains twenty-one screw machines, ten lathes, three grinders, etc. In this department is seen the first lathe operation on sprockets, axles and cranks, making of nipples, oil cups, etc.

The tool crib contains all special and other tools not in use, an accurate record being kept of the location of each tool, the aggregate value of which is over \$15,000.

The nickel plating department contains three five hundred gallon dynamo tanks.

Inspecting Department.—From five to thirty-eight different operations are required on each part of the Cleveland bicycles. Each part, after each operation, regardless of how minute or ponderous, must pass through the inspection department, where it is rigidly gauged and tested upon special apparatus for the purpose by a corps of competent experts.

To give an illustration. The sprockets are placed upon a fixture that is absolutely accurate—as to the length of sprocket arms, which have been previously tested. The spaces between the sprocket teeth are gauged by a fixture so regulated by a needle that a deviation of two-thousandths of an inch, which is imperceptible to the eye, shows at the point of the needle a deviation of one thirty-second of an inch, and causes the sprocket to be rejected as being defective.

All cones must come to a wrench fit; chair rivets to one-quarter of one-thousandth of an inch; inner links must come to two and one half thousandths of an inch, etc. This perfection of detail is carried to perhaps a greater extent in the manufacture of the Cleveland bicycle than in that of most other makes.

That excellent mechanical authority The American Machinist, concedes the fact, and voluntarily published the following concerning the Lozier bicycle factories:—

"The Loziers make but one quality of cycle, and that is intended to be superlative. I never before saw in any work shop such constant scrutiny of both methods and work produced as that given to matters in the Lozier shops. The result is, of course, high class work, and also of course, very high cost production." This is better understood when it is shown that it requires from ten to twelve expert mechanics to construct a high grade bicycle, and only four equally expert to construct a medium grade.

The automatic screw department contains twenty automatic screw machines of the most modern and finest type. The operations of this department are very interesting. These machines seem almost human in their

The COAST LINE to MACKINAC

.....TAKE THE.....

D. & C.
STEAMERS

TO MACKINAC
DETROIT
PETOSKEY
CHICAGO

2 New Steel Passenger Steamers

The Greatest Perfection yet attained in Boat Construction. Luxurious Equipment. Artistic Furnishing. Decorative and Efficient Service, insuring the highest degree of

COMFORT, SPEED & SAFETY

Four Trips per Week Between

TOLEDO, DETROIT and MACKINAC

PETOSKEY, "THE SOO,"

MARQUETTE AND DULUTH

LOW RATES to Picturesque Mackinac and Return, including Meals and Berths. From Cleveland, \$18; from Toledo, \$15; from Detroit, \$13.50.

EVERY EVENING

Between DETROIT and CLEVELAND

Connecting at Cleveland with Earliest Trains for all points East, South and South-west, and at Detroit for all points North and North-west. Sunday Trips June, July, August and Sept. only EVERY DAY BETWEEN

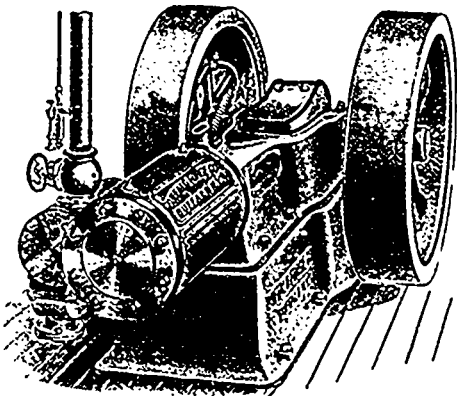
CLEVELAND, PUT-IN-BAY AND TOLEDO

Send for Illustrated Pamphlet. Address.

A. A. SCHANTZ, Detroit, Mich.

The Detroit & Cleveland Steam Nav. Co.

BUFFALO FORGE CO.



AUTOMATIC CUT-OFF ENGINE

Horizontal and Upright Types, for Electric Light and Power Purposes.

DIRECT CONNECTED AND BELTED

1896 Sectional Catalogue furnishes full details.

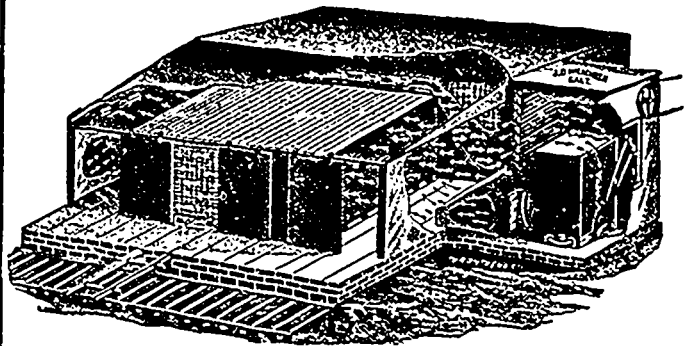
Buffalo Forge Co., Buffalo, N.Y., U.S.A.

BRANCHES:

NEW YORK, CHICAGO, PHILADELPHIA, LONDON, PARIS AND ST. PETERSBURG

McEachren's System of Drying, Heating and Ventilating

Under Recent Patents.



In construction and process of drying this Kiln differs widely from all others in use. They have given entire satisfaction where all others Dry Kilns have failed. They will season More Lumber in a Given Time, with a given heating surface and a given quantity of steam than any other Kiln now in the market. Their construction and mode of operating is such as to season lumber without Case Hardening, Checking or Warping. They work equally well on Lumber Right from the Saw and on Air Seasoned Lumber, the only difference being that one takes a little more time than the other. By a Peculiar Arrangement Found Only in Our Dry Kilns we extract the moisture from the heated air, return it through the heater again and thus preserve the heat passing from the Kiln instead of wasting it as is the rule with all other Blast Kilns.

Ventilating Fans, Shaving Fans, Pressure Fans, all sizes.

BLAST HEATING SYSTEM FOR LARGE BUILDINGS

Little Wonder Boiler and new Hot Water Heating System, half price of usual hot water system. STEAM BOILER CLEANERS, Feed Water Heaters covered by Patents of recent date in Canada and United States.

Second hand Heaters and Fans made by the best American Manufacturers, only in use a short time, for sale at great reduction. Send for Illustrated Catalogue and Prices to

McEACHREN HEATING & VENTILATING CO.

GALT, ONT.

intelligence in performing the different operations, feeding, cutting, backing off, tapping and drilling the different shapes at the same time, without assistance. Here will be seen the manufacture of hubs, cones, ball cups and screw parts.

In the leather department is made the tool

H. W. KARCH

HESPELER; ONT.

IRON FOUNDER and MACHINIST

MANUFACTURER OF

WOOLEN . . . MACHINERY

FULLING MILLS;

CLOTH WASHERS,

WOOL & WASTE DUSTERS

DRUM SPOOL WINDERS,

REELS,

Spooling & Doubling Machines,

Ring Twisters, Card Creels,

Rag Dusters,

Dead Spindle Spooler

(For Warp or Dresser Spools),

Patent Double-Acting Gigs,

Dyeing Machines.

WRITE TO THE

PATON MANUFACTURING COMPANY

OF SHERBROOKE, QUE.,

— FOR —

WORSTED KNITTING

— AND —

FINGERING YARN.

Montreal Office:—409 Board of Trade Building.

Toronto Office:—33 Melinda Street.

bags that accompany the bicycles, also the saddles; the buffing department contains two double lathes for buffing the nickel plated parts; the rough stock room contains steel tubing, rough stock and supplies; in the washing and rubbing room all the parts are cleaned of oil and grease, and the forks and frames rubbed for the process of enamelling.

The enamelling department is equipped with the latest and most approved appliances for enamelling. It contains twelve ovens heated by oil pumped from underground 20,000-gallon tanks 300 feet removed from the building, generated by a pressure of air of forty pounds to the square inch. It also contains six dip tanks, insuring even surface and perfect job. The company manufacture their own enamel.

The finishing department contains six truing jacks, drills, lathes, vises, air pumps, assembling fixtures, etc. All bicycles are here assembled from finished parts, and are rigidly tested and inspected before sending to the crating room.

The investment of Messrs. Lozier & Co. represents a capital of over two hundred thousand dollars expended for Canadian machinery and Canadian labor. For these reasons they do not solicit patronage, but solely on the merits of their Cleveland bicycle. They claim that their cycle is the costliest in the world to construct and combines more distinctive features of merit than other makes. It has successfully invaded the markets of the world, coming in competition with the best of any land. Its reputation is the result of a steady unalterable purpose to manufacture a strictly high grade article.

The works give steady employment to some 500 men and turn out fifty machines a day.

FOR SALE

Two Shaker Willow Dusters

SIZE NO. 2.

Forty-three inch working surface. Made in 1892, but in use less than one month. Address,

Canada Colored Cotton Mills Co.,
Cornwall, Ont.

McEACHREN'S "LITTLE WONDER"

The McEachren Heating and Ventilating Co., Galt, Ont., have sent us an illustrated catalogue descriptive of their "Little Wonder" hot water heater for residences, etc. They inform us that their reasons for their calling it "Little Wonder" are because it is the smallest hot water heater in the market of equal capacity, and that it is a wonder to those who see it that such a small boiler, using such a small quantity of fuel, can heat so large a space and do it so quickly.

Speaking of its use as a basement heater, the catalogue says:—

Instead of the heavy asbestos plastering commonly put on the outside of hot water and steam boilers, The Little Wonder has an open space through which a constant flow of cool air passes, thereby preventing the heating of the cellar, and over-heating and burning parts of boiler.

The Little Wonder does not attempt to hold back or annihilate heat, but to give it out, and the outside radiation common to all

FOR SALE

One 15 K.W., 220 Volt

EDISON MOTOR

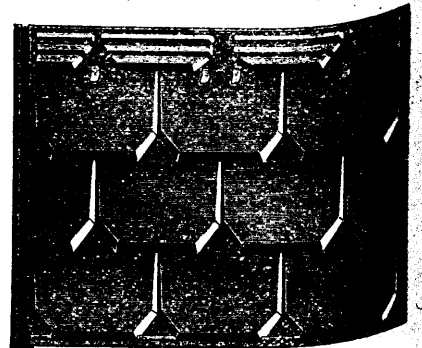
With spare armature for same. This machine is in thorough working order and is offered for sale on account of more power being required.

For particulars apply to

C. W. Taylor,

Business Manager, The Globe, Toronto.

Eastlake Steel Shingles



Beware of Worthless Imitations.

METALLIC ROOFING CO., Ltd.

TORONTO

SOLE MANUFACTURERS.

McLAUGHLIN BROS.

TEASELS

Skaneateles Falls

NEW YORK

BUSINESS ESTABLISHED IN 1833

Welland Vale Manufacturing Co.

LOCK No. 2, ST. CATHARINES, ONT.

Manufacturers of.....

**AXES, SCYTHES, FORKS, HOES
RAKES and EDGED TOOLS**

WM. T. BONNER

415 Board of Trade Building, Montreal, Quebec

GENERAL AGENTS FOR CANADA FOR

Goubert Feed Water Heaters

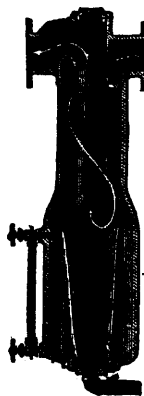
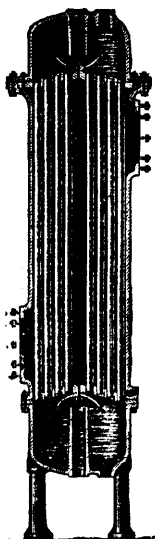
Heats Feedwater to nearly the boiling point by exhaust steam.

ECONOMICAL, EFFICIENT, DURABLE
AND SIMPLE.

All Sizes—50 to 5,000 h.p.

Stratton Separators

Separates entrained water from steam and ensures delivery of DRY STEAM to Engine. Doing away with that fruitful cause of accidents—
WATER IN THE CYLINDER.



boilers is used in heating and ventilating the upper parts of the building instead of over-heating and burning certain parts of the boiler and spoiling the cellar.

In all dwellings heated by the Little Wonder ladies say they never have cold feet. This is due to the constant removal of cold air from the floors and at the same time distributing the heat around the outsides of the rooms, thus keeping the floors warm, which must be an inexpressible boon to children whose tender little bodies are almost constantly near the floor.

Regarding its construction and arrangement as a basement heater, it said of it that it has a little warm air, generally sufficient to heat the room above it. This warm air is not at all like the hot air from furnaces, as the air is never exposed to red hot plates or firepots, consequently the oxygen and hydrogen gases are not interfered with, nor their proportions changed. Where there are basements it is desirable to place the boilers in them, as it keeps the dust of coal and ashes out of furnished rooms, as well as giving more room and uninterrupted space in the living rooms, and besides being

an excellent hot water boiler, the Little Wonder provides a complete ventilating system.

The boiler is provided with an inner jacket or steel lining, which completely envelopes the entire boiler and fire-place. Outside of this steel jacket is an outer jacket, composed of a lining of bright tin, a heavy sheet of asbestos, and an outer covering of galvanized iron.

This outer jacket is sufficiently large to provide ample ventilating space between the two. The heat, radiating from the inner jacket, causes a rapid upward circulation of air, which is supplied through a convenient pipe. This pipe may receive its supply of air from off the floor, or be used for taking foul air from any of the rooms and discharging the same into a foul air duct or other place where it will be harmless, or for the same purpose of taking fresh air from outside the building, heating the same moderately, and discharging it into the rooms to be heated.

Of course this heater is adapted for use in a great many different ways from that here indicated, all of which are explained in

the pamphlet, for further information regarding which apply as above.

DIAMINOGENE BLUES BB AND G.

Under the denominations of Diaminogeno extra, pat., and Diaminogeno B, pat., manufactured by Leopold Cassella & Co., Messrs. W. J. Matheson & Co., New York and Montreal, put on the market in the beginning of 1895 the first products of a new group of diazotisable dyestuffs, distinguished by their superior fastness to light, which have met with great success for the production of dark blues and blacks.

Messrs. Cassella & Co. have now succeeded in producing two more colors of the same group of dyestuffs yielding bright blue shades to which they call attention under the denominations of Diaminogeno Blue BB, pat., and Diaminogeno Blue G, pat. They claim that none of the diazotisable dyestuffs in the market can surpass these new products with regard to brightness of shade, and as demonstrated by the comparative tests described below they surpass even Indigo in resistance to the action of light and atmosphere.

Kay Electric Manufacturing Co.

255 James St. N., Hamilton, Ont.

Makers of.....

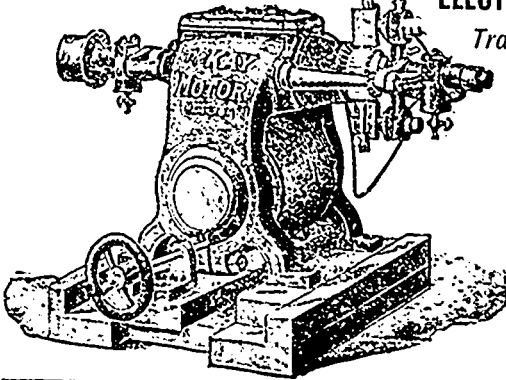
ELECTRIC MOTORS

Transformers

DYNAMOS

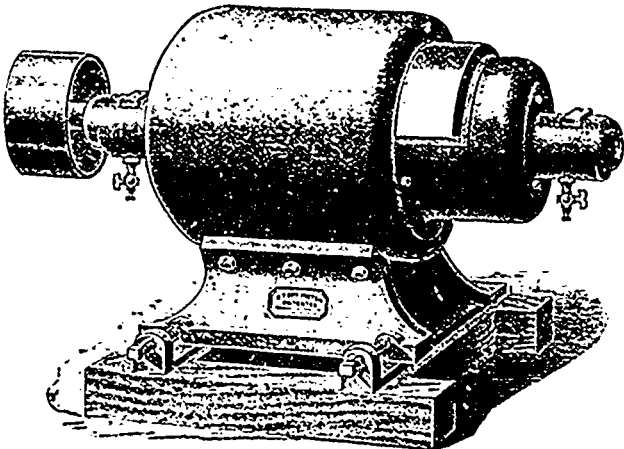
PLATING MACHINES

ETC.



Please let us know your requirements. Write for latest prices and testimonials.

The STOREY MOTOR and DYNAMO



MANUFACTURED BY

The STOREY MOTOR and TOOL CO.

John St. North, Hamilton, Can., and Philadelphia.

Send for Catalogue.

Advertise in the Canadian Manufacturer.

VALVES AND PIPE FITTINGS

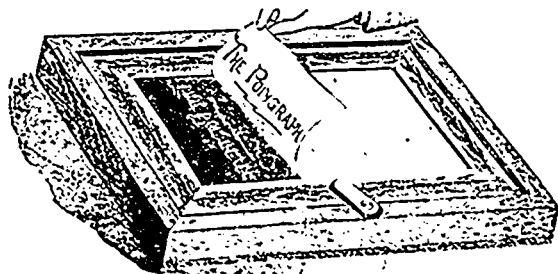
WRITE FOR LATEST PRICES

RICE LEWIS & SON

(LIMITED)

Corner King and Victoria Streets, TORONTO

PERFECTION AT LAST



RELIABLE, NEAT, CLEANLY, CHEAP
THE BEST YET MADE

75 to 150 Copies in Half an Hour

ELEGANT CASE

FINELY FINISHED

SATISFACTION GUARANTEED

Circular and Samples of it Work on application. Write to-day.

Address, **GEO. H. BURLEIGH**, Manufacturer

GANANOQUE, ONTARIO

By combining them with their Diamino Azo Blue R, mentioned below, the diazotising and developing operations may be used for producing all kinds of blues, from the lightest greenish to the deepest reddish blue shades.

Cotton and Linen. Diaminogeno BB and G are dyed with the addition of either twenty per cent. Glauber's salt and some soda (about one-half per cent.) or twenty per cent. Glauber's salt only. (The small quantity of soda is only added to correct calcareous water; a larger quantity would impair the brightness of the shades). The dyestuffs go slowly and evenly on the fibre. For deep shades it is best to use concentrated baths; more than twenty times as much water as the weight of the cotton should never be used.

Direct dyeings of these two colors are of no interest, as the particularly bright shades and the great fastness are only obtained by subsequent diazotising and developing.

The diazotising is done in the usual manner. Developer No. 1 is generally to be used, and only when the Diaminogeno Blues are dyed in combination with Diamino Azo Blue, Naphthylamine-Ether N and Fast-Blue-Developer AD are to be applied.

Fastness to light. In fastness to light the developed dyeings of the Diaminogeno Blues are not only superior to all existing direct dyeing blues, but also to the fastest basic blues, such as Methylene Blue, New-Methylene Blue, etc.

Fastness to washing and milling. In fastness to washing and milling the developed dyeings are excellent and surpass Indigo in

so far as they do not lose in depth of shade by repeated washing. When washed together with white cotton they slightly tinge the latter, but they can nevertheless be used for the majority of piece-goods, same as dyeings done with our other diazotisable dyestuffs.

Even light dyeings exposed for six weeks during the hot summer days of 1895 hardly suffered at all and became only slightly duller, while Methylene Blue faded considerably and Indigo became very much lighter and duller.

Fastness to acids. Developed dyeings of the Diaminogeno Blues interwoven with white wool and treated afterwards in a hot acid bath retain their bright blue shade and tint the wool only very slightly; thus in most cases they can be used in place of Indigo for warps of woolen plushes, men's coatings, etc.

Fastness to rubbing off. In fastness to rubbing off the dyeings are excellent and therefore offer essential advantages as compared with basic blues and especially Indigo.

Discharging. Both tin-crystals and zinc-dust give clear white discharges. For deep shades zinc-dust is preferable.

The Diaminogeno Blues are also of interest for silk in so far as dyeings developed with Developer No. 1 possess an extreme fastness to milling, resisting boiling-off in a hot soap bath without their shade suffering materially when they are interwoven with raw silk, same as the dyeings of our card No. 1583 recently issued.

For dyeing all wool, cotton and wool mixed, and cotton and silk mixed goods

these new products offer no advantages, so that we omit any comments thereon.

As a valuable addition to the Diaminogeno Blues attention is called to their new Diamino Azo Blue R, pat., manufactured by Leopold Cassella & Co., which, although in fastness to light not quite equal to the Diaminogeno Blues, will become of great interest, owing to its beautiful violet blue shade and great tinctorial power, for the production of bright navy blues, especially in combination with Diaminogeno Blue BB for producing full Indigo shades.

Cotton and linen are dyed in the same manner as the Diaminogeno Blues, then diazotised and developed (Direct dyeings offer no advantages in comparison with other direct blues). As developers we recommend Developer No. 1, Naphthylamine Ether N, and Fast-Blue-Developer AD. Dyeings developed with Naphthylamine Ether N give the brightest shades, those developed with Developer No. 1 are nearly equal, while Fast-Blue-Developer AD gives duller and fuller shades.

Fastness to washing, milling, and rubbing off. In these respects dyeings developed with the three developers are fully equal to Diaminogeno Blue dyeings developed with Developer No. 1.

Fastness to light. Dyeings developed with Developer No. 1 or Naphthylamine Ether N are in this respect about equal to those of Diamino Black BH developed with the same developers, such developed with Fast-Blue-Developer AD rank between the aforesaid dyeings and those done with Diaminogeno Blues.

HAMILTON COTTON CO.

HAMILTON, ONTARIO.

**Yarn Manufacturers
Dyers and Bleachers**

Warp Yarns of all descriptions, in Skein, Chain, or on Beams.

Hosiery Yarns in Single or Double; in Cop, Skein or Cone.

Yarns of all kinds for Manufacturers' use.

Twines, Lampwicks, Webhings, Etc.

Dyeing of all colors, including **GENUINE FAST BLACK.**

FRICION FRICION FRICION

BOARD

BOARD

BOARD

Manufactured by **DOMINION LEATHER BOARD CO., MONTREAL**

Proprietors Sault Au Recollet Paper Mills.

ROOFING, SHEATHING AND FLOORING FELT.

AUBURN WOOLEN COMPANY

PETERBOROUGH, ONT.

Manufacturers of Fancy Tweeds, Etc.

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

Penman Manufacturing Co., Ltd.

PARIS, ONTARIO.

Manufacturers of
**HOSIERY, SHIRTS, DRAWERS,
GLOVE LININGS AND YARNS**

Selling Agents: D. MORRICE, SONS & CO., Montreal and Toronto.

ESTABLISHED 20 YEARS.

A. KLIPSTIEN & CO.

122 PEARL ST., - - - NEW YORK.

**ANILINES, DYESTUFFS, AND
CHEMICALS**

Of every variety, of the best quality and at the lowest prices.

Delivery made at New York, Montreal or Hamilton

**WRIGHT & DALLYN, Agents,
HAMILTON, ONTARIO.**

ROSAMOND WOOLEN COMPANY

ALMONTE, ONT.

**FINE TWEEDS, CASSIMERES, AND FANCY
WORSTED SUITINGS AND TROUSERINGS.**

FERGUSON & PATTINSON

PRESTON, - - - ONTARIO.

MANUFACTURERS OF

FINE AND MEDIUM TWEEDS

Guelph Woolen Mill Co., Ltd.

GUELPH, - - - ONTARIO

Manufacturers of

**Underwear, Hosiery, Wheeling, Fingering and Worsteds Yarns
EIDERDOWN FLANNEL, ETC.**

Selling Agents: Donald Fraser, Montreal E. H. Walsh & Co., Toronto

FETHERSTONHAUGH & CO.

PATENT BARRISTERS AND SOLICITORS

ELECTRICAL AND MECHANICAL EXPERTS AND DRAUGHTSMEN

A. HARVEY, C.E. PATENT ATTORNEY

OTTAWA

CANADA.

Cable Address "Invention Toronto." TELEPHONE 2589

Patents Procured in Canada and all Foreign Countries.

Head Office : Canadian Bank of Commerce Bldg, Toronto

Established 1881, with Twenty years Professional Experience in Canada, England and Germany.

OFFICES—Rooms 33 and 34 Central Chambers

Address : Postal Box 1071.

TELEPHONE

Send Circular 48a "How to Obtain a Patent."

Discharging. Diamine Azo Blue developed with Developer No. 1 or Naphtylamine Ether N can be just as easily discharged as the Diaminogeno Blues, while if developed with Fast-Blue-Developer AD it is somewhat inferior in this respect.

For silk it is recommended to develop with Developer No. 1, and according to the shade required to combine in dyeing with Diaminogeno Blue. As the the fastness and method of dyeing, the remarks under Diaminogeno Blue also apply to this product.

Compound shades. Diaminogeno Blue G and BB are especially well adapted for the production of bright light tints, and are recommended for all dark shades mixtures of Diaminogeno Blue BB and Diamine Azo Blue R. This combination which in the accompanying shade card is illustrated by only a few patterns, a large variety of beautiful and useful shades is produced which, owing to the excellent fastness to light of Diaminogeno Blue, will meet almost all requirements.

Diaminogeno Blue G goes a little slower on the fibre than the other two products and is therefore not as well adapted for combinations with Diamine Azo Blue R as Diaminogeno Blue BB.

Besides the application on all kinds of cotton material (loose cotton, cops, yarn, piece-goods), these three new products will also be of interest for linen yarn and piece-goods, as they penetrate the heaviest fabrics, and even in dark shades do not rub off.

How to get the people on the land is a problem of interest not to this country alone, for, surprising as it may be, the Argentine Republic is also troubled with the crowding of the people into towns. The latest from Bahía Blanca (according to the Buenos Ayres "Standard") is, that a great want of hands for the coming clip will be felt this year. "Our population," that journal complains, "seems to be entirely concentrated in the various cities and towns of the Republic. In

Buenos Ayres we have close on 700,000 inhabitants, in Rosario some 100,000; more or less, on a rough calculation, the town population of this country is 2,000,000. This only leaves 2,300,000 hands to do all the work of the fields, to produce and to find wealth and food for the town inhabitants. Government should take this question more to heart, and give every facility to immigrants. Here we are with our flocks ready to be shorn but where are the hands to do the work?"

Wm. KENNEDY & SONS, OWEN SOUND, ONT.

MANUFACTURERS OF
HIGH-CLASS

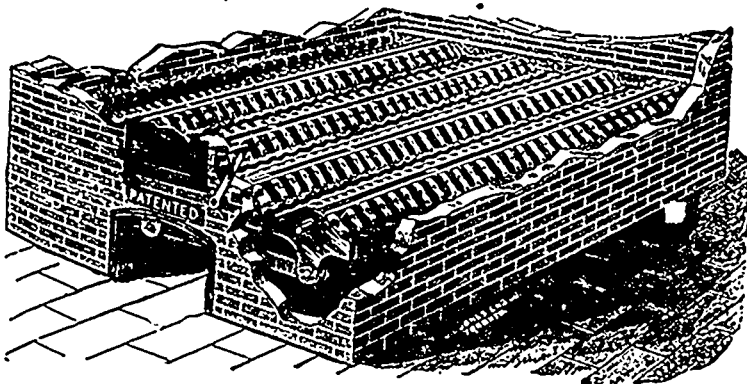
WATER WHEELS,

Electric Water Wheel Regulators,

Machine-dressed Heavy Gearing, Shafting, Etc.

.... PROPELLER WHEELS AND MARINE REPAIRS A SPECIALTY....

NEW TESTIMONY EVERY ISSUE



From the Joliette Paper Mills, Joliette, Que.

We have one set of the Heeson Rocking Grate under one of our boilers, and it is the best grate we have had.

THE HEESON ROCKING GRATE BARS

Will be placed on trial under any boiler in the Dominion for thirty days, at the end of which time, if they are not satisfactory, we will remove them and return the old bars to their place free of expense

—(—)

OFFICE : Mail Building, Cor. King and Bay Sts.

THE HEESON ROCKING GRATE BAR CO. OF TORONTO, LIMITED

JORDAN CHAMBERS 17 JORDAN ST.

W. Kramer
DESIGNER & ENGRAVER
ON WOOD

TORONTO ONT

Babbitt Metal.



BRASS, BRONZE, PHOSPHOR BRONZE, ALUMINUM BRONZE, COPPER, ZINC and ALUMINUM CASTINGS TO ORDER. Large or Small.

Write for Prices... DEAN BROS., 184 Richmond St. West, Toronto

Water for Country Use

THE DOMESTIC PUMP

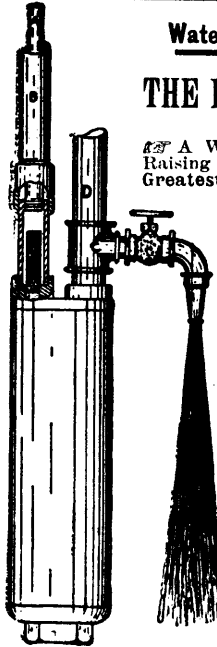
A Wonderful Invention for Raising Water. The Windmill's Greatest Rival.

Used with our New Water Supply System for Country Homes, Hotels, Summer Resorts, also for Irrigation, Railroad Tanks, Stock Yards and Factories. **THIS SYSTEM** Supplies the Conveniences, Comforts and Luxuries of the City for every Country Home.

General Agents wanted for every State. Send for Descriptive Circular.

THE ERWIN HYDRAULIC MACHINERY CO.

58-59 Loan & Trust Bldg. MILWAUKEE, WIS.



BALL CHECK VALVES.
BALL GLOBE VALVES.
BLOW-OFF VALVES FOR BOILERS A SPECIALTY
OIL AND SALT WELL SUPPLIES.

T. Draper
Manufacturer of
Refacers for Globe Valves



Valve Refacer. Seat Refacer.

Jenkins' Valves and Water Taps

Perfectly True Brass Balls

For all purposes—Hollow or Solid.

PETROLEA, ONT.

Haekney Power Hammers

Are superior in many respects to most in the market. Made by

STEVENS, HAMILTON & CO.

Manufacturers of Iron Working Machinery
GALT, - ONTARIO.

Hodgson & Holt Mfg. Co.

(Successors to the ABEL MACHINERY CO.)

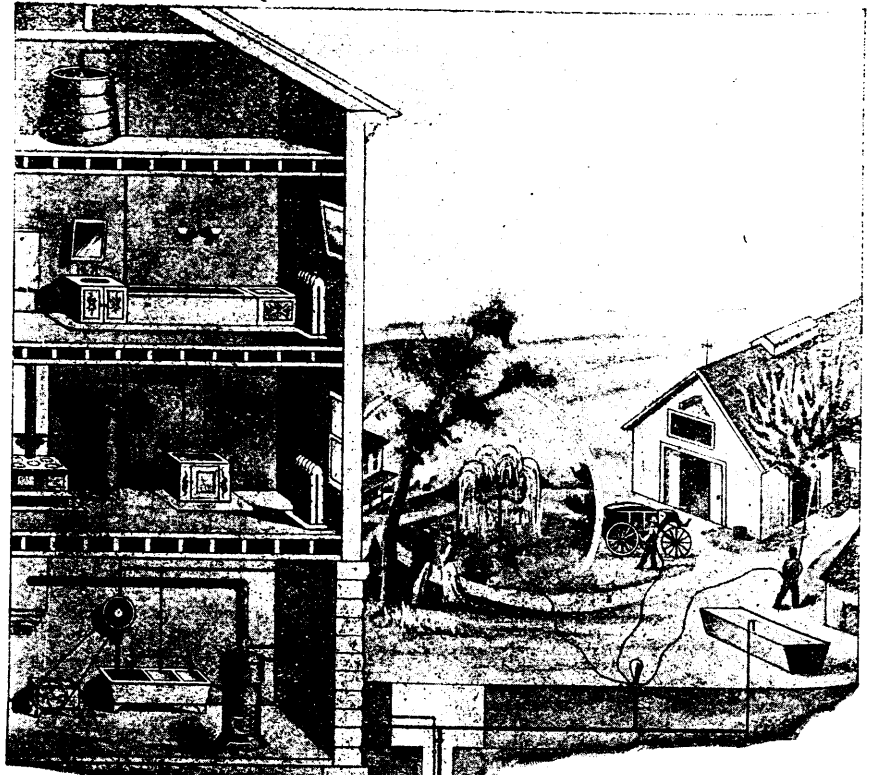
... LACONIA, N.H. ...

Builders of Winders, Steam Presses, Fulling Mills, Seamers & Loopers;

Also Latch Needle Flat and Circular Knitting Machines of all kinds for Hosiery and Underwear. Send for complete Catalogue.

A NEW INVENTION FOR RAISING WATER.

The accompanying illustration represents a new water supply system adapted to be used in the suburbs of cities, country homes, hotels, and summer resorts, which has re-



cently been brought out by The Erwin Hydraulic Machinery Company, Milwaukee, Wis.

This water system is also adapted to furnish water in large quantities for irrigation, city water works, railroad tanks, etc. Wood, coal or oil may be used for fuel, and with it, water for the country home is supplied at an expense of from five to ten cents per week. It is believed that this system will remove one of the chief objections to suburban residences, and will greatly enhance their value.

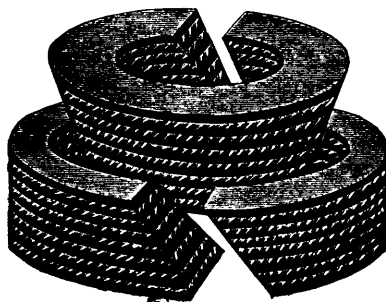
The illustration shows a convenient manner of locating the pump and boiler, by which arrangement the same boiler may be used for heating the house and raising water. If desired, the farmer may use the same boiler for steaming feed for stock.

As a substitute for wind-mills this system affords many advantages.

Wind-mills are not always satisfactory and farmers are looking for something better that is not dependent upon the elements for power. This is claimed to be the only steam pump that can be used in deep tubular wells. It contains no piston, piston-rods, packing or any delicate or complicated parts to wear or get out of order. It requires only about one-half as much steam and fuel as the ordinary piston pump, and about one-tenth as much other jet or syphon pumps, and while the ordinary pumps are limited to a lift of about twenty feet suction, this pump will raise water from tubular wells one hundred feet deep. All its parts are substantial and durable, and require no more attention than an ordinary hydraulic ram.

For further particulars address, The Erwin Hydraulic Machinery Company, Milwaukee, Wisconsin.

Engineers' Favorite Ring Packing



Rainbow Sheet and Gasket, Plumbago, Sheet Rubber, Square Flax, Hard Hydraulic, Soapstone, Asbestos and Metallic Packings.

Magnabestos Pipe Covering, Asbestos Cement, Sheet and Millboard, Finest Lubricating Oils and Grease in the market.

STEAMBOAT, RAILROAD AND MILL SUPPLIES

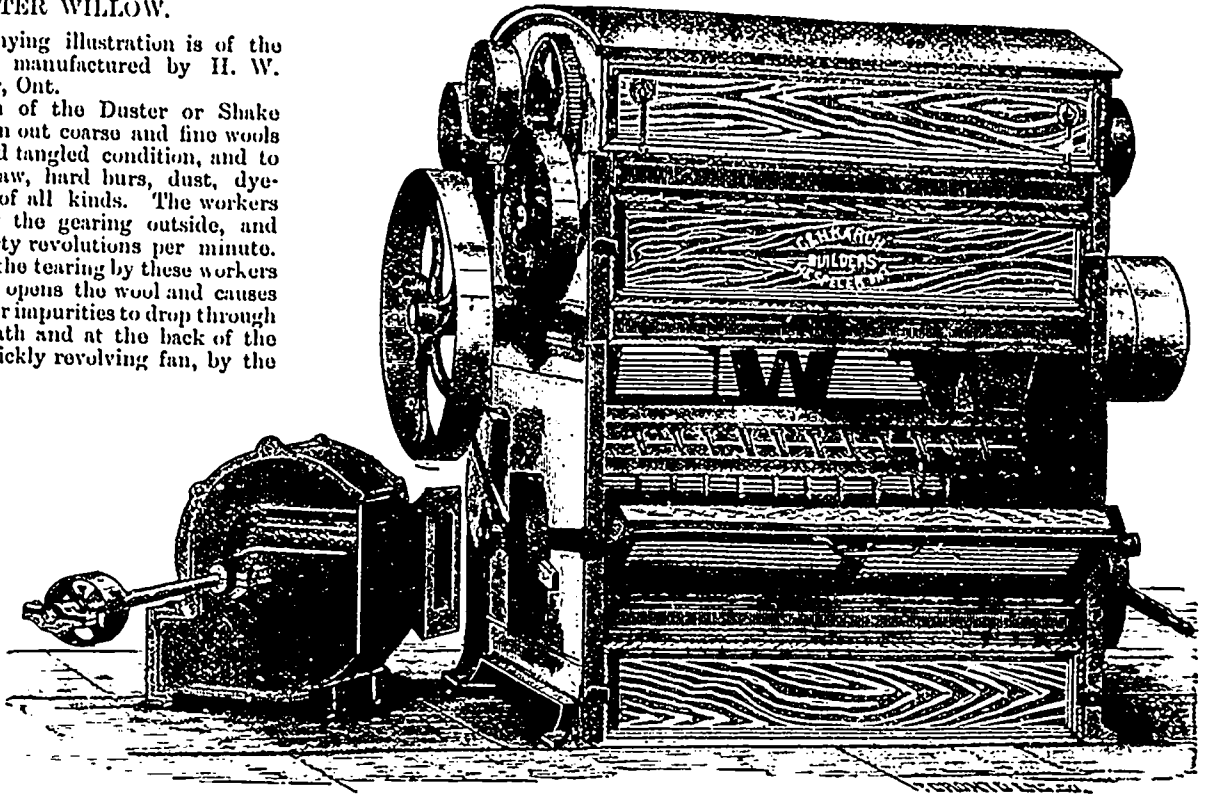
WILLIAM C. WILSON

24 FRONT ST. EAST, - - TORONTO

DUSTER WILLOW.

The accompanying illustration is of the Duster Willow, manufactured by H. W. Karch, Hespeler, Ont.

The operation of the Duster or Shake Willow is to open out coarse and fine wools of its matted and tangled condition, and to free it from straw, hard burs, dust, dyes, and dirt of all kinds. The workers are actuated by the gearing outside, and makes about thirty revolutions per minute. The tossing and the tearing by these workers and the cylinder opens the wool and causes the dust and other impurities to drop through the grates beneath and at the back of the cylinder. A quickly revolving fan, by the current of air it creates, draws away much of the higher refuse through a dust pipe. The wool is not measured nor weighed, but is supplied to the machine by the armful. The driver its condition, the smaller should be the ability put in place, to give free scope for opening the material and freeing it from impurities. It will also clean greasy waste most effectually, and not knob it up as other dusters do. This machine is made in two sizes, No. 1, fifty inch working surface, three workers, six feet high; No. 2, forty-three inch working surface, three workers, six feet high. Mr. Karch informs us



the machine is in use in the following firms: Robinson, Howell & Co., Preston; Waterloo Manufacturing Co., Waterloo; Bryce & McMurrich, Columbus; Barber Bros., Streetsville; John Penman, Paris; William Mackie, Woodbridge; Clay & McCosh, Paris; George Smith & Co., Lambton

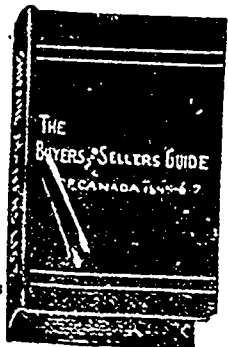
Mills; Trent Valley Woollen Co., Campbellford; Adams & Hackland, Paris; Strathroy Knitting Co., Strathroy; Simcoe Woollen Co., Simcoe; Clayton Slayter, Brantford; George Howe, Brussels; G. A. Cook, Norwich; Stormont Cotton Co., Cornwall; Harvey, McQuestion & Co., Hespeler; Granite Mills, St. Hyacinthe; Sykes & Ainley, Glen Williams; Harris & Co., Rockwood; Canadian Colored Cotton Mills Co., Stormont Mill and Canada Mills, Cornwall; Cobourg Woollen Co., Cobourg; Dominion Blanket and Fibre Co., Beauharnois; Joseph Simpson, Toronto.

IT IS UP-TO-DATE



360 PAGES

CLOTH BOUND



It gives you the address of reputable manufacturers of any article you may want in any line.

If you want Farm Products it gives you the address of reliable merchants in Ontario and Manitoba who handle such products for shipment.

The list of Flour and Feed merchants in the Province of Quebec and Maritime Provinces (who buy in car lots) is carefully compiled and reliable.

The Hardware merchants of the Dominion are in alphabetical order and by Provinces.

It has the best classified list of Lumber Manufacturers ever published for Canada.

Also a General List, alphabetically arranged, for addressing purposes only.

Address: **THE MANUFACTURERS' LIST CO.**
MONTREAL, - CANADA

CONSUMERS GAS METERS Any Size

We make an O. K. METER. You should own one, it will pay you.

JOHN S. MOORE, Dominion Gas Meter Works

1 to 11 Garfield Ave., LONDON, Ont.

Meters of every description repaired.

Established in Canada in 1879.

Reproductions Made for Eight Cents per Square Inch



Half Tones Made Direct from Photos

SPECIALTIES.

Machinery Brushes for woollen and flour mills, jewellers, shoes, breweries, dairies, printers, foundries, and all machinery work; old rollers refiled.

Frank Wehrle & Co.,

Brush Manufacturers,

435 King St. W., Toronto.

CIRCULAR RIB

KNITTING MACHINERY

Superior Quality Reasonable Prices

STAFFORD & BABCOCK

LITTLE FALLS, N.Y., U.S.A.

C. G. ELRICK & CO.

MANUFACTURERS OF

HORN and RUBBER COMBS, Etc.

FACTORY--Sheppard Street, Toronto.
MONTREAL OFFICE--Fraser Building.

CANADIAN PATENTS.

The following patents have been issued from the Canadian Patent Office, from February 1st to February 14th, 1896.

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

Fetherstonhaugh & Co., Bank of Commerce Building, Toronto.

Ridout & Maybee, 103 Bay Street, Toronto.

C. H. Riches, Canada Life Building, Toronto.

A. Harvey, Central Chambers, Ottawa.

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

51,170 Circular knitting machine, The Providence Knitting Machine Co., assignee of Jos. A. Burleigh, Laconia, N.H.

51,171 Stereoscope, Hawley C. White, North Bennington, Vt.

51,172 Machine for cutting can body blanks, Axle Johnson, Oakland, Cal.

51,173 Receptacles for holding coupons, etc., Uriah G. Beck and Warren F. Beck, Almira, N.Y.

51,174 Fountain mucilage holder, Sylvester J. Cripps and John W. Croxall, assignees of Samuel L. Young and James A. Norris, East Liverpool, O.

51,175 Umbrella, Jos. Stark, New York, N.Y.

51,176 Stove, Leonard Meyer, Toronto.

51,177 Explosion engine and method of carrying and volatilizing gases in the same, Thos. Kane, Chicago, Ill., assignee of E. J. Pennington, Racine, Wis.

51,178 Pipe, Chas. W. Foster, Brooklyn, N.Y.

51,179 Saw mill set works, Henry McErmott, Merimette, Wis.

51,180 Gas burner, Chas. Knapp, St. Louis, Mo.

51,181 Ticket holder, Chas. A. Brown, Westfield, N.J.

51,182 Holder for a writing implement and weighing device, Rudolph W. Ries, Germantown, Pa.

51,183 Means for supporting carpet rolls, Charles Taylor, Louisville, Ky.

51,184 Mucilage bottle, Frederick W. Rabner, Brooklyn, N.Y.

51,185 Envelope, Thos. R. Jordan, New York, N.Y.

51,186 Bicycle saddle, Arthur J. Eddy, Chicago, Ill.

51,187 Box lid support, Willmore W. Ferler, Oskloosa, Ia.

51,188 Stamp mill, Isaac B. Hammond, Portland, Ore.

51,189 Truss pad, Julius Brickner and Abraham S. Herr, Tiffin, O.

51,190 Tongue support for sleighs, Erwin W. Anderson, Phinelauder, Wis.

51,191 Machine for teaching the art of bicycle riding, etc., Avard H. Miller, Yarmouth, N.S.

51,192 Curling iron, Geo. M. Pinner and Wm. B. McDonald, Chicago, Ill.

51,193 Appliance for connecting animals to vehicles, etc., Thos. H. Briggs, Bradford, Eng.

51,194 Organ, Geo. W. Scribner and Wm. McIntosh, London, Ont.

51,195 Railway frog, Duncan McPherson, Montreal.

51,196 Heater, Herman Gutschmidt, Jersey City, N.J.

51,197 Rail joint, Henry J. Schmuck, Hamburg, Pa.

51,198 Salt trough, Christopher M. Arther, Bethany, Mo.

51,199 Eyelet, Theophilus King Trustee, Boston, Mass., assignee of Eleazer Kompshall, Sharon, Mass.

51,200 Heating furnace, Thos. Waller, Truro, N.S.

51,201 Car coupler, Lewes C. Packham, Detroit, Mich.

51,202 Washing machine, Neil Kunker, Oregon, Mo.

51,203 Process of making oil compound, Edward G. Kubler and John M. Beck, Akron, O., assignees of Louis Knoche, Hamm, Germany.

51,204 Lawn mower, David Maxwell & Sons, assignee of David Maxwell, jr., St. Marys, Ont.

51,205 Variable gear for foot propelled vehicles, Harmon Gilmore, Simcoe, Ont.

51,206 Road breaking machine, Harry Morrison, Stratford, Eng.

51,207 Washing machine, James L. Weir, Chatham, Ont.

51,208 Furnace feed boiler, Jonathan M. Gillespie, Blandford, Ont., and Bernard Werner, East Zorra, Ont.

51,209 Brake for baby carriages, Henry W. Morgan, Vancouver, B.C.

This Space belongs to

THOMAS PINK, - Pembroke, Ont.

Maker of the Famous

Pink Lumbering Tools and Handles

TURBINE AND CASCADE WATER WHEEL

Adapted to all Heads from

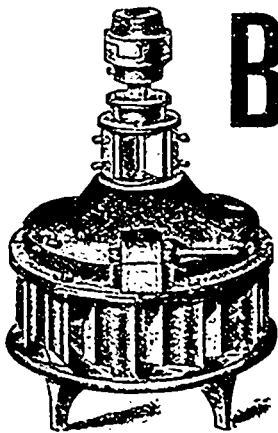
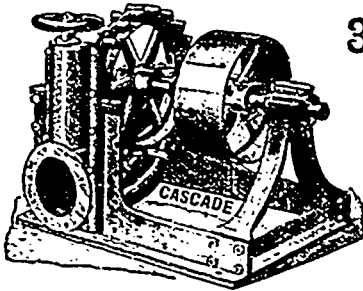
3 Feet to 2000 Feet.

Our experience of 33 YEARS building Water Wheels enables us to suit every requirement of Water Power Plants. We guarantee satisfaction.

Send for a Pamphlet of either Wheel and write full particulars.

JAMES LEFFEL & CO.

SPRINGFIELD, OHIO, U.S.A.



BURNHAM'S

NEW IMPROVED

STANDARD TURBINE

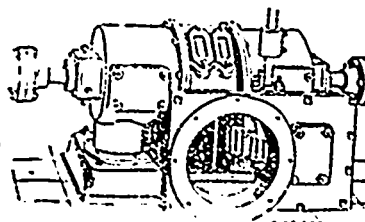
It gives on either a Vertical or Horizontal shaft more power for its price, yields a greater percentage for water used, either with full or part gate drawn, and is the simplest, most durable and best finished wheel made.

Send for Illustrated Catalogue, and state head of water and power required.

BURNHAM BROS., York, Pa.

PERCENTAGE :	
Full Gate, - -	84
3/4 " - - - -	84
2/3 " - - - -	82
1/2 " - - - -	79
1/3 " - - - -	75

"LITTLE GIANT" TURBINE



Built in 17 Standard Sizes and 27 Special Sizes, making a range of 44 different wheels in vertical and horizontal cases.

We solicit correspondence from those interested in developing or improving water power.

One Type of Horizontal.

....ADDRESS....

J. C. WILSON & CO., Glenora, Ont.

51,210 Pneumatic sole and heel, Jos. La croix, Fall River, Mass.	51,224 Advertising device, Henry N. Gros, North Tonawanda, N.Y.	51,240 Process of and apparatus for manufacturing gas, Wm. F. Browne, New York, N.Y.
51,211 Method of weaving rugs, Frederick Bullock and Wm. Douglas, Toronto.	51,225 Process of and apparatus for vulcanizing inner elastic air tubes for pneumatic tires, Fred W. Morgan and Rufus Wright, assignees of E. W. Young, Chicago, Ill.	51,241 Isaac Richardson, Cleveland, O., and Wm. A. Tibbits, South Kirtland, O.
51,212 Speed controlling mechanism, Henry Havelock Cummings and Albert D. Crombie, Malden, Mass.	51,226 Loom for weaving cane, Ford, Johnson & Co., assignee of Edmund Morris, Michigan City, Mich.	51,242 Binder and sheets therefor, Robt. J. Copeland and Henry E. Date, New York, N.Y.
51,213 Milk receiver, Jos. A. Gosselin, Drummondville, Que.	51,227 Centrifugal separator, Orrin B. Peck, Chicago, Ill.	51,243 Coat and jacket supporting device, Arthur F. May and John H. Cartwright, Leicester, Eng.
51,214 Machine for applying adhesive strips to boxes and other articles, Horace Inman and H. A. Inman, Amsterdam, N.Y.	51,228 Centrifugal separator, Orrin B. Peck, Chicago, Ill.	51,244 Automatic safety device for electric circuits, Lewis G. Rowand, Camden, N.J.
51,215 Door, Jos. W. Picard, St. Hyacinthe, Que.	51,229 Hand grenade, Geo. M. Hathawa, New York, N.Y.	51,245 Device to prevent the refilling of bottles, P. Bownley, New York, N.Y., and Robt. Bastin, St. John, N.B.
51,216 Ash sifter, Ovila Cadot, Village de Lorimier, Que.	51,230 Shell fuse, Geo. Maltby Hathawa, New York, N.Y.	51,246 Grease trap, Edward H. Donahoe, Peoria Ill.
51,217 Means employed for transporting loads from one point to another, Ferdinand J. Arnodin, de Chateaufort-sur-Loire, France, and Martin Alberto, Espagne, France.	51,231 Shell fuse, Geo. M. Hathawa, New York, N.Y.	51,247 Fish plate, Anthyme Joseph Roy and Jos. Boucher, Isle Verte, Que.
51,218 Band saw mill, Dempsey B. Hanson, San Francisco, Cal., and The Edward P. Allis Co., Milwaukee, Wis.	51,232 Loom for weaving, John Paysor, Mansfield, Eng.	51,248 Tap, Arthur E. Mears and Wm. H. Last, Surrey, Eng.
51,219 Oil product and process of producing, Edward G. Kubler and John M. Beck, Akron, O., assignees of Louis Knoche, Hamm, Germany.	51,233 Sack filling and sewing machine, Arthur T. Timewell, Chicago, Ill.	51,249 Non-fillable bottle, Wm. C. Sherman, Orlando, Fla.
51,220 Filter, Omar H. Jewell, Chicago, Ill.	51,234 Non-fillable bottle, Daniel Hepp, Chicago, Ill.	51,250 Non fillable bottle, Wm. Murray, Jas. A. Johnson and Jos. Kellow, jr., Laurel Hill, N.Y.
51,221 Driving mechanism, Walter Ames, Toronto.	51,235 Covering for electric wires, Franklin S. Randall, Philadelphia, Pa.	51,251 Root cutter, John Sillick, Culross, Ont.
51,222 Tack machine, Russel Hathaway, Elbridge G. Paul, Cyrus D. Hunt, Fairhaven, Mass.	51,236 Hull of vessels, Gilbert T. Brewet, Hoboken, N.J.	51,252 Seal drill, Evarard P. Ferguson, Arthur, Man.
51,223 Machine for blacking, etc., boots and shoes, Wm. Black, Parish of St. Louis de Gonzague, Que.	51,237 Apparatus for burning coal dust, etc., Colin W. Claybourne, Indianapolis, Ind.	51,253 Loom, Arthur J. Davidson and John McDougald, Westville, N.S.
	51,238 Tension device for wire fences, J. S. E. Jones, Atlanta, N.Y.	51,254 Electrical conductor, John J. McGill and Jas. Battle, Thorold, Ont.
	51,239 Pneumatic tire, Clarence B. Bowlin Burr Oak, Mich.	

ROBERT GRAHAM

Water Wheels
Engines, and Mill
Machinery

Iron Founder and Machinist

OTTAWA
ONT.

A SPECIALTY

THE ...

Standard Water Wheel

MADE IN SIZES, FROM 6 INCHES TO 84 INCHES DIAMETER.

WHEEL ONE SOLID CASTING.



Cut Showing Wheel Removed from Case.

54 per cent. of power guaranteed in five pieces. Includes whole of case, either register or cylinder gate. Water put on full gate or shut completely off with half turn of hand wheel, and as easily governed as any engine.

Write for Estimates, References and Catalogues of the STANDARD WATER WHEEL, also Milled and Rough Gearing of every size and description, Engines, Mill Machinery, and Electric Power Plants, Latest Improved Band Saw Brazing Tables; Shears and Gammers, also Surface Grinder for Single Saws.

- 51,255 Window sash, Philip S. Riddelle, Woodstock, Va.
- 51,256 Ice creeper, Richard S. Walsh, Quyon, Que.
- 51,257 Table, Geo. Shear and Andrew W. Quinlan, Joliet, Ill.
- 51,258 Street sweeper, Frank C. Curry, Milford, O.
- 51,259 Buckle, Elodie Mounier dit Lagasseo, Montreal.
- 51,260 Boiler, John A. Fish, Melrose, Mass.
- 51,261 Magnetic separator, Henry Arden, Chicago, Ill.

- 51,262 Bottle stopper, Jesso Rosenfeld and S. W. Macky, Baltimore, Md.
- 51,263 Method of detecting grounds, etc., in electric circuits, John F. Kelly, Pittsfield, Mass.
- 51,264 Stone molding tool, James Peckover, Philadelphia, Pa.
- 51,265 Window sash lock, Philip S. Riddelle, Woodstock, Va.
- 51,266 Non-fillable bottle, Alfred M. Riley and J. D. Crory, Washington, D.C.
- 51,267 Syringe, Chas. Ver Treese Pollock, Greenwich, Conn.

- 51,268 Syringe, Chas. Ver Treese Pollock, Greenwich, Conn.
- 51,269 Churn, Wm. H. Curtice, Louisville, Ky.
- 51,270 Gate, Geo. C. Barrett, Cavour, S. Dakota.
- 51,271 Wool dryer, Michael Harding, Simcoe, Ont.
- 51,272 Hano staple, Riley Stoner, Grand Junction, Col.
- 51,273 Non-fillable bottle, Jos. S. L'Hon-medieu, Great Neck, L. I.
- 51,274 Apparatus for producing incandescent light, The Welsbach Incandescent Light Co., assignee of Arthur O. Granger, Montreal, assignee of Chas. E. White, Kansas City, Mo.

- 51,275 Tile and machine for making, Gustav Schulz, Eisleben, Prussia.
- 51,276 Pneumatic tool, Jas. Wolstencroft, assignee of Wm. H. Soley, Frankfort, Pa.
- 51,277 Stove, The Gem City Stove Mfg. Co., assignee of Folkert, Kaempfen, jr., Quincy, Ill.
- 51,278 Drill, Chas. A. Williams, New Whatcom, Wash.
- 51,279 Machinery for manufacturing mouth-pieces for cigarettes, etc., Jos. S. Beeman, Camberwell, Victoria.
- 51,280 Ellipsograph, John A. Caldwell, Vancouver, B.C.

- 51,281 Paddle wheel, John Lefeaux, Swansea, S. W.
- 51,282 Refracto meter, Henry Laurence De Zeng, jr., Geneva, N.Y.
- 51,283 Means for protecting filling and packing vessels, etc., Mark W. Marsden, Philadelphia, Pa.
- 51,284 Chalk line, G. E. John, New York, N.Y.
- 51,285 Envelope, Wm. D. Thomas, Brooklyn, N.Y.
- 51,286 Coin controlled gas vending machine, Wesley Webber, New York, N.Y.
- 51,287 Process of and apparatus for extracting gold from ore, Bertrand Chase Hinman, New York, N.Y.

- 51,288 Envelope, John M. McLeod, Goderich, Ont.
- 51,289 Folding box, etc., Edgar Dredge, London, England
- 51,290 Engine, Geo. H. Chappin, New York, N.Y.
- 51,291 Grain measurer, etc., Gottlieb K. Holbine, Eustis, Neb.
- 51,292 Weighing machine, Francis H. Richards, Hartford, Conn.
- 51,293 Saucepan, Ludovic J. Painter, Chicago, Ill.
- 51,294 Fire extinguisher, Thos. Lacey, Fort Benton, Montana

- 51,295 Disinfector, John C. Thresh, Cheimsford, Eng.
- 50,296 Fire escape, Jacob J. Haller, Westfield, N.Y., and Chas Promenschenkel, Dunkerk, N.Y.
- 51,297 Process of and apparatus for extracting gold, etc., from ore, Louis J. Pelatdn, Paris, France, and Fabrizio Clerici, Milan, Italy.
- 51,298 Tie joint, Wm. Livingstone, Flushing, N.Y.
- 51,299 Permutation lock, Jerome W. Packard and Albert M. Ellis, Boston, Mass.

JOHN ABELL ENG. & MACH. WORKS CO.

**Saw Mills, Roller Mills, Engines, Boilers
Tanks, Electrical Machinery**

DAVIS' CREAM SEPARATORS

"DUPLEX" FEED MILLS
(GRINDING CORN ON THE COB).

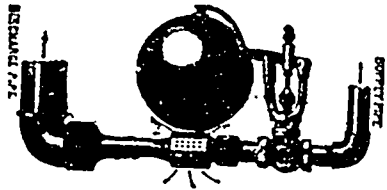
A Fine Second-Hand Gas Engine for Sale.

TORONTO, ONTARIO

THE BRAENDER

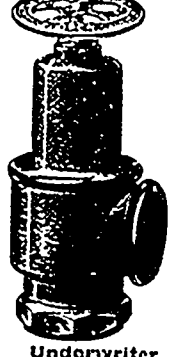
**JET PUMP, WATER ELEVATOR
AND CELLAR DRAINER**

Patented May 8, 1891.



This automatic device for removing water from Cellars, Excavations, Trenches, Wheel pits, or any depression where water accumulates, either from Springs, Surface Water, Leakages, or Tide Water, is so constructed as to be not only reliable at all times, but will, with a very small amount of water under moderate pressure, remove a large body of water and discharge it to a higher level. It will prevent the accumulation of water, and its construction is Strong, Durable, Uncorrosive, and is so simple, that it will last for years without attention. *Send for Catalogues and Price Lists.*

GARTH & CO., AGENTS AND MANUFACTURERS
536 to 542 Craig Street. MONTREAL.



**CROSBY STEAM GAGE
AND VALVE CO.**

Sole Proprietors and Manufacturers of
Crosby Pop Safety Valves, for all kinds of Boilers, Water Relief Valves including
the Underwriter, which is fully approved by the Associated Factory Mutual
Insurance Companies; Crosby Steam Engine Indicators, with Bar
gages - Electrical Attachment, Crosby Improved Steam
Gages, Recording Gages and Patent Gage Testers.
Original Single Bell Chime Whistles.

BRANDEN PATENT PUMP VALVES
CLARK'S LINEN FIRE HOSE AND ADJUSTABLE COUPLINGS
All Kinds of Pressure and Vacuum Gages used in the Various Arts
Gold Medal Paris Exposition, 1889
Ten Highest Awards Columbian Exposition, 1893
Main Office and Works **BOSTON, MASS., U.S.A.**
Branch Offices at New York, Chicago, and London, Eng.

DO YOU WANT A Canoe or Row-Boat?



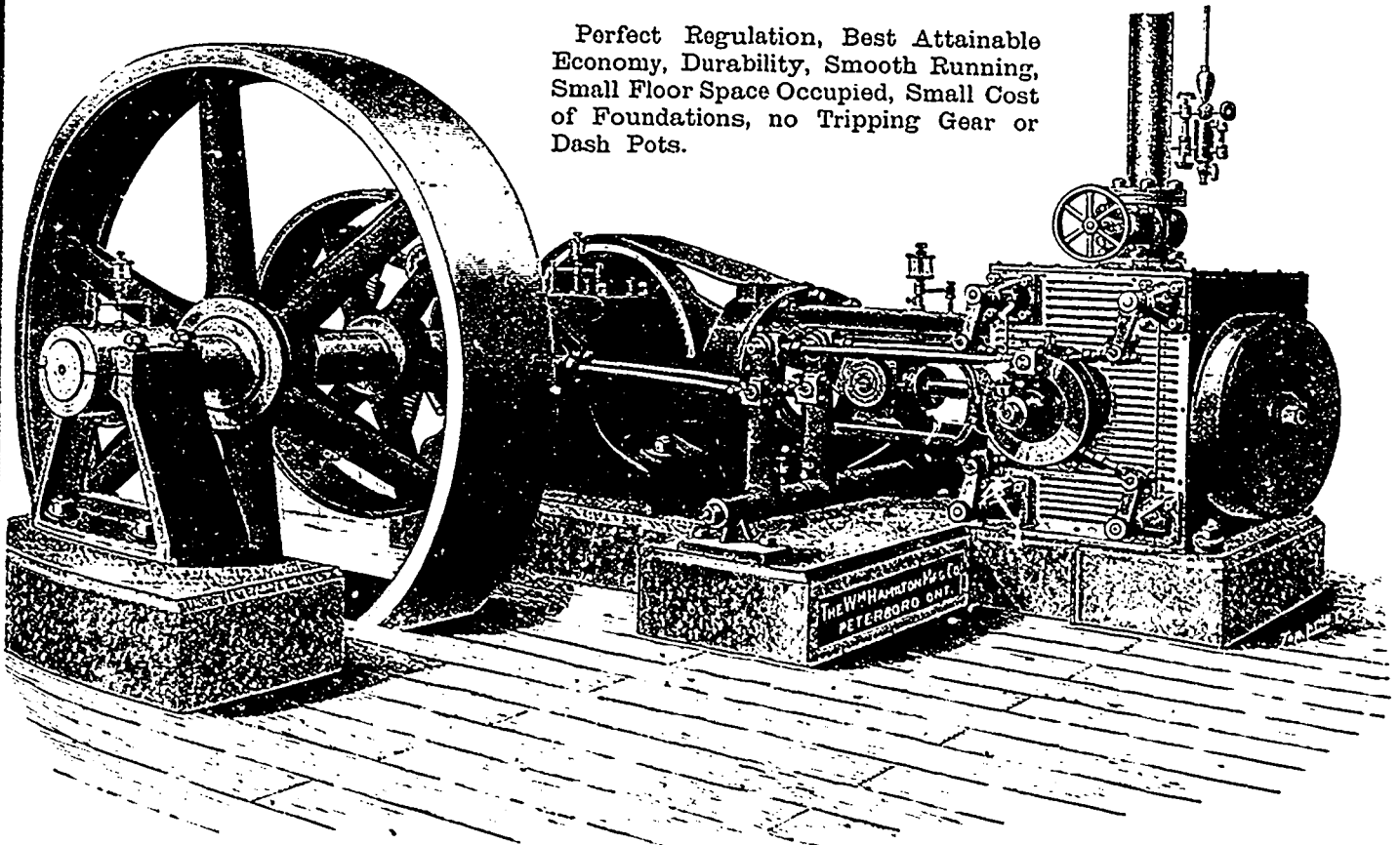
WE HAVE THEM in all sizes, and at prices which should INDUCE YOU TO BUY
The Canadian Canoe Co., Ltd.
BOX 107, ... PETERBORO, ONT.
Send stamp for catalogue and mention this paper.

51,300 Machine for driving nails, Frank F. Stanley, Swampscott, Mass., assignee of Frank Chase, Waterville, Me.	51,310 Extirpator, Adolf Merrel and Arthur Duffek, Prague, Bohemia, Austria.	51,323 Running gear for vehicles, Aaron Kerry, Marysville, Mich.	
51,301 Method of and apparatus for automatically maintaining and regulating the vacuum in cow-milking machines, Jerry E. Harvey and Jos. H. Hoover, Hubbard, Ia.	51,311 Electric railway system, Jas M. Faulkner, Philadelphia, Pa.	51,324 Check rein holder, Myron L. Winans, Waco, Tex.	
51,302 Curd dam, Robt. Wherry, Knowlton, Que., and Alexander W. Grant, Montreal.	51,312 Curtain pole, Park B. Harvey and Cassius F. Harris, New London, Conn.	51,325 Railway spike, Chas. Platz, New York.	
51,303 Frame for cycles, Edward G. Sheward, Upper Norwood, England.	51,313 Oil can, Steward Dunlop, Ashley, Pa.	United States Patents to Canadian Inventors.	
51,304 Bicycle lock, Benj. F. Smith, Bay City, Mich.	51,314 Car coupler, John H. Senger, Cero Gordon, Ill.	Since our last issue, United States patents to Canadian inventors were issued as follows :	
51,305 Fodder shredder, Geo. W. Packer, Rock Falls, Ill.	51,315 Excavator, Alexander McDonald, Cambridge, Mass.	557,131 Fare box, C. T. Lamoureux, Montreal.	
51,306 Smoke jack, Howard B. Waverley and John Holmgvist, Cedar Rapids, Ia.	51,316 Gas engine, The Buckeye Mfg. Co., assignee of John W. Lambert, Anderson, Ind.	557,220 Pupillometer and bridge measure, L. L. Palmer, Toronto.	
51,307 Spring winding means for printing machines, etc., John Burry, Long Island City, N.Y.	51,317 Rail joint, Martin Hubbell, Mount Kisco, N.Y.	557,259 Apparatus for starting engines, John Donnelly, Montreal.	
51,308 Leather measuring machine, Oliver Bresse and Edward Elliott, assignees of E. J. Fortin, Quebec.	51,318 Sash holder, Willard L. Bellinger, St. Johnsville, N.Y.	557,303 Holder for broom-backs, A. Cowperthwait, Montreal.	
51,309 Machine for applying stay wire to wire fences, Ambrose B. Bowen and Geo. H. Miller, Norwalk, O.	51,319 Dredge bucket, Wm. J. Moore, New Westminster, B.C.	557,425 Inkstand, Jas. S. Parmenter, Woodstock, Ont.	
	51,320 Carriage for children, Daniel S. Kendall, Woodstock, Ont.	557,472 Clay disintegrator and stone separator, B. E. Bechtel, Waterloo, Ont.	
	51,321 Hammock, George B. French, Fremont, Neb.	557,477 Combined sad iron and friller, R. A. Boyd, Belleville, Ont.	
	51,322 Ash sifter, Johnson Clench, St. Catharines, Ont.	557,652 Hay and stock rack, W. & E. C. Daniels, Orangeville, Ont.	
		557,848 Electric switch, P. E. Marchand, Ottawa.	
		557,960 Electric propulsion of cars, A. H. Brintnell, Toronto.	

Payne's Improved Corliss Engine

SIMPLE AND COMPOUND

Perfect Regulation, Best Attainable Economy, Durability, Smooth Running, Small Floor Space Occupied, Small Cost of Foundations, no Tripping Gear or Dash Pots.



The Wm. Hamilton Manufacturing Co., Limited
 PETERBORO', ONTARIO. Branch Office, Vancouver, B.C.

THE LONDONDERRY IRON CO., Ltd.

A. T. PATERSON,
President and Managing Director.

JAMES PHYMISTER,
Secretary.

.... 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 Fine Castings,
where the utmost strength is required.

UNSURPASSED IN STRENGTH BY SWEDISH, RUSSIAN
OR AMERICAN CHARCOAL IRON.

Offices: *New York Life Insurance Bldg., Montreal*

Nova Scotia Steel and Forge Co.'y

OFFER

BRIGHT COMPRESSED STEEL SHAFTING

AS PER FOLLOWING LIST:

PRICE LIST BRIGHT COMPRESSED STEEL SHAFTING

EVERY BAR GUARANTEED STRAIGHT AND TRUE TO SIZE WITHIN $\frac{1}{32}$ OF AN INCH.

Nominal Size of Shaft.	Actual Size of Shaft.	Weight, Per Foot.	Price, Per Pound.	Nominal Size of Shaft.	Actual Size of Shaft.	Weight, per Foot.	Price, Per Pound.
1½	1½	4.13	\$0.44	2½	2½	18.91	\$0.04
1¾	1¾	5.01	"	3	2¾	22.59	"
1½	1½	5.91	"	3½	3½	26.60	"
1¾	1¾	7.46	"	3½	3¾	30.04	"
2	1¾	9.83	0.04	4	4	42.33	0.05
2½	2½	12.53	"	4½	4½	53.57	"
2½	2½	15.55	"	5	5	66.13	"

NOTE.—Shafting as per actual size column, up to 3 inches diameter, always kept in stock.

Stock Lengths, 12, 14, 16 and 18 feet.

On orders from stock cut to other lengths, we charge for length from which we cut.

Prices for Special Sizes, varying from list of actual sizes, given above, will be furnished upon application.

All orders filled as per Actual Size column, unless otherwise specified.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

BOXING EXTRA, AT COST.

This is not Hot Polished or Cold Rolled Steel, and will not spring when keyseated.

If your Wholesale Hardware firm cannot supply you write direct to the Works -

NEW GLASGOW, NOVA SCOTIA

PICTOU CHARCOAL IRON CO., LTD.

BRIDGEVILLE, NOVA SCOTIA

Works

BRIDGEVILLE, N.S.

Head Office:

NEW GLASGOW, N.S.

Manufacturers of all Grades of

CHARCOAL PIG IRON

SUITABLE FOR

Car Wheels, Cylinders, Etc.

SUSPENDER BUCKLES

..AND..

WIRE SHAPES OF ALL KINDS

We have put in a complete plant of Automatic Machinery for making above articles.

WRITE FOR QUOTATIONS

McKINNON DASH AND HARDWARE CO.'Y

ST. CATHARINES, ONT.

MACHINE TOOLS

SECOND-HAND LIST OFFERED BY

DUNDAS, **JOHN BERTRAM & SONS** ONTARIO

These Machines have been replaced by New and

Improved Tools

Are in good Repair and will be Sold Cheap.

—
Write for Prices
—

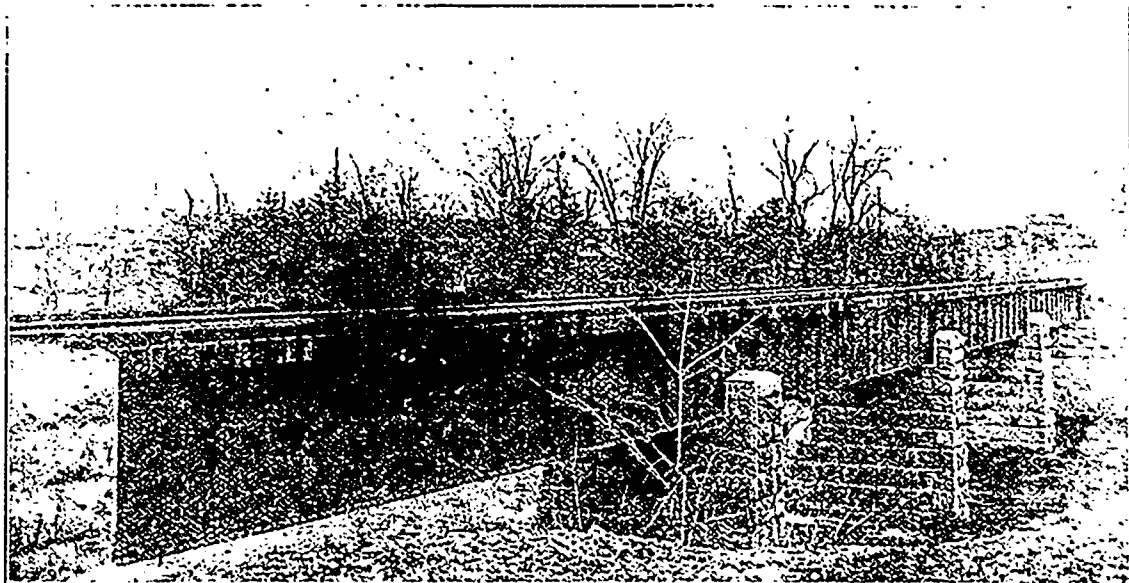
Montreal Office, 321 St. James St.

- 1, 20 in. x 10 ft. Engine Lathe.
- 2, 12 in. Hand Speed Lathe.
- 1, 26 in. x 16 ft. Engine Lathe.
- 1, 14 in. Sq. Arbor Fox Lathe
- 1, 5 ft. 2 in. Break Lathe.
- 1, 30 in. x 8 ft. Iron Planer.
- 1, 20 in. Drilling Machine.
- 1, No. 3 Combined Punch and Shear, 5-8 in. Plate.
- 1, 2,000 lbs. Steam Hammer.

The Central Bridge and Engineering Co., Ltd.

Capital Stock - - PETERBOROUGH, ONT. - - \$200,000.00

Capacity, 5,000 Tons Per Annum



Capacity, 5,000 Tons Per Annum

- - MANUFACTURERS OF - -

BRIDGES, ROOFS, VIADUCTS, PIERS, GIRDERS, TURNTABLES, ARCHITECTURAL WORK, FORGINGS, AND ALL KINDS OF GENERAL ENGINEERING WORK.

Also Law's Patent Surface CATTLE GUARDS and Law's Patent "OPTIMATES" POWER HAMMERS

W. H. LAW - ENGINEER AND MANAGING DIRECTOR.

Galt Machine Knife Works

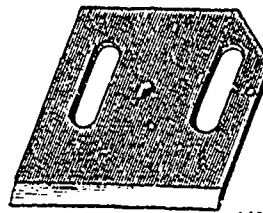


Stave Cutter Knives



Stave Jointer Knives

PLANING
MACHINE
KNIVES



Moulding,
Tenoning,
Mitreing

SHINGLE . . .
JOINTER . . .

AND OTHER IRREGULAR SHAPES.

Cheese 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.

When Were
Your

BOILERS

Last
Inspected?

Consulting Engineers—
G. C. ROBB, Chief Engineer
A. FRASER, Secretary-Treas.

JOHN L. BLAIKIE ESQ.
PRES.

E. W. RATHBUN ESQ.
VICE-PRES.



OF CANADA

Head Office,

TORONTO

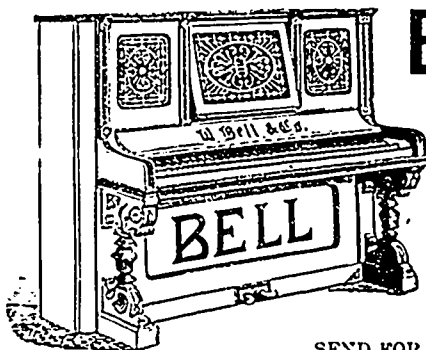
Are You
Sure

THEY ARE

SAFE

AND IN

Good
Condition?



BELL -

HIGH-CLASS
INSTRUMENTS

Used and
Recommended by

Leading . . .
. . . Musicians

SEND FOR CATALOGUE.

THE BELL ORGAN AND PIANO CO., Ltd.

GUELPH, - - ONTARIO

THE WELLINGTON MILLS, LONDON, ENGLAND

- Genuine Emery -

OAKEY'S FLEXIBLE TWILLED EMERY CLOTH.
OAKEY'S FLINT PAPER AND GLASS PAPER.
OAKEY'S EMERY PAPER, BLACK LEAD, ETC.

Prize Medal and Highest Award Philadelphia, 1876, for Superiority of Quality, Skilful Manufacture, Sharpness, Durability, and Uniformity of Grain

....MANUFACTURERS....

JOHN OAKEY & SONS, Ltd., Wellington Mills, Westminster Bridge Road, London, England.

Inquiries should be addressed to

JOHN FORMAN, 650 Craig St., MONTREAL



Galvanized Steel FIRE PAILS

NO HOOPS TO FALL OFF

A Pail that will withstand the action of salt and water.

More fires are extinguished by pails of water than by all other means combined.

They are always ready, simple and effective.

The Official Returns of the New York Fire Commissioners, show that 64 per cent of the whole number of fires were extinguished by pails of water.

Galvanized, Painted Red and Stencilled, or Plain Galvanized and Stencilled.

PRICES ON APPLICATION

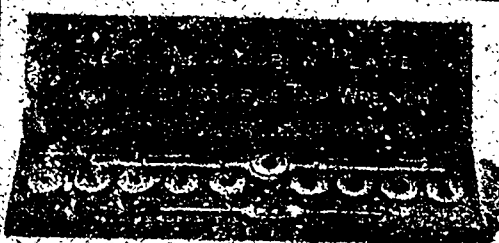
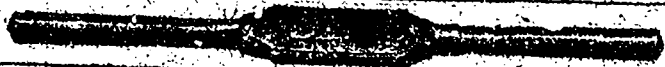
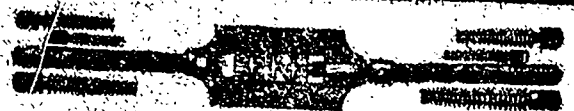
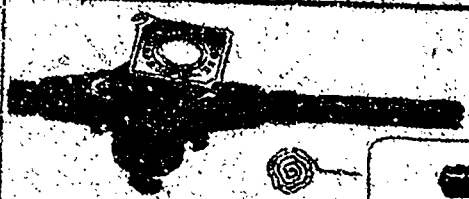
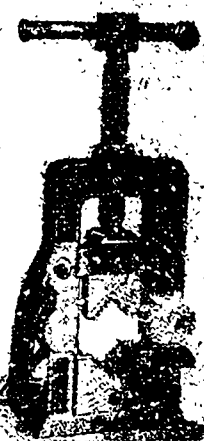
Kemp Manufacturing Co., - Toronto, Can.



No. 550 ONE OF OUR CHEAP DETACHABLE CARRIERS
 FOR SAWMILL, REFUSE, TAN-BARK, ETC.
 OVER 50 SIZES AND STYLES OF CHAINS
 VARYING FROM 25 TO 20,000 LBS. WORKING STRAIN
 SPECIAL ATTACHMENT LINKS FOR ALL PURPOSES. STOCK OVER 20 TONS
 LARGE LINK OF WHEEL PATTERNS. PROMPT EXPONENTS
 PULLEYS, GRIP PULLEYS, SHAFING UP TO 20 FEET LONG
 Get our Quotations on Mill Machinery

**WATERLOO,
 BRANTFORD,
 CANADA.**

Send for NEW CHAIN CATALOGUE (sent out)



BUTTERFIELD & CO.
 ROCK ISLAND, I.O.
 HEROIC SHEW PLATED
 BLACKSMITH STOCKS AND
 SICKS. All kinds of Taps
 Pipe-Stocks, Pipe-Cutters,
 Tap and Dies, Pipe Vices
 All kinds of Tools for Steam
 Water and Gas Pipe

IT LEADS THEM ALL

THE OLDEST THE LARGEST THE SAFEST THE CHEAPEST

Canadian Life Insurance Company is

The CANADA LIFE ASSURANCE CO.

CAPITAL AND FUNDS OVER \$18,000,000

WRITE FOR PROSPECTUS

A. G. RAMSAY,
 President

GEO. A. & E. W. COX,
 Managers for Toronto
 and Eastern Ontario.

JAMES A. CANTLIE & CO.

MONTREAL AND TORONTO.

General Merchants and
 Manufacturers' Agents

CANADIAN TWEEDS, FLANNELS, DRESS GOODS
 KNITTED UNDERWEAR, BLANKETS, Etc.

Represented in Canada:

Z. P. SAVERY & CO.,
 Riddarstaden, Bradford, England.

Als
 ALONZO WOPPS, L. CUPPER SOHN,
 hoch. Germany, Barchfeld, Germany.

WHOLESALE TRADE ONLY SUPPLIED.....

WOOL

A. T. PATERSON & CO.

MERCHANTS

35 FRANCOIS XAVIER ST., - MONTREAL

Represented by MR. DAVID GUTHRIE

The Dominion Cotton Mills Co., Ltd.,

MAGOG PRINTS

A Full Range of

..PURE INDIGO PRINTS..

Is now being shown to the Trade. Ask Wholesale Houses
 for Samples.

All Goods Guaranteed and Stamped "Warranted Indigo Blue."

D. MORRICE, SONS & CO.

SELLING AGENTS

MONTREAL AND TORONTO

USE THE McCASKILL STANDARD VARNISHES

SATISFACTION GUARANTEED

Manufactured by.....
McCASKILL, DOUGLASS &
 Montreal, Que.

AUDITS MADE BY A. O. N. H. H. CHARTERED ACCOUNTANT
 CANADA LIFE BUILDING, - TORONTO

Bellhouse, Dillon & Co.

30 St. Francois Xavier St.

MONTREAL

SOLE AGENTS FOR

The West Indies Chemical Works,

Spanish Town, Jamaica, W.I.,

Logwood Extract

"Alligator" Brand

THE PUREST AND CHEAPEST IN THE MARKET.



The Ontario Malleable Iron Co.

(Limited)

...Manufacturers of.

MALLEABLE IRON

AGRICULTURAL IMPLEMENTS

....AND....

Miscellaneous Purposes

OSHAWA - - ONT.

Sault Ste. Marie Pulp and Paper Co.

SAULT STE. MARIE, ONT.

GROUND WOOD PULP

FOR DOMESTIC AND EXPORT TRADE

BRISTOL'S PATENT **STEEL BELT LACING**

— ONE HUNDRED SIZES —



READY TO APPLY FINISHED JOINT

GREATLY REDUCED PRICES

Is a grand success. Try it and see for yourself.

Saves Time, Saves Belts, Saves Money

SAMPLES SENT FREE

THE **BRISTOL CO.**

WATERBURY, CONN.

SMITH'S FALLS Malleable Iron Works

00000

CAPACITY 2,000 TONS


00000

WILLIAM H. FROST

PROPRIETOR,

SMITH'S FALLS

ONTARIO, CANADA.




Manufacturers of
FINE VARNISHES
Japans—Asphaltums—Shellacs
Maple Leaf Brand Coach Varnishes



J. H. FARR & CO.

Armature Insulating Compound
 Insulating Compound for Weather-Proof Wire, Tube Compound, Mica Paste, etc., etc.
 8 to 16, MORSE STREET
 TORONTO

CARRIER, LAINE & CO.
 LEVIS, P.Q.

ENGINEERS, FOUNDERS, MACHINISTS
 BOILER MAKERS AND
 GENERAL CONTRACTORS

Montreal 147
 Quebec 264