

CANADIAN CONTRACT RECORD

*A Weekly Journal of Engineering, Public Works,
Tenders, Advance Information and Municipal Progress*

This Paper Reaches Every Week the Town and City Clerks, Town and City Engineers, County Clerks and
County Engineers, Leading Civil Engineers and Contractors throughout Canada,
and Purchasers of Municipal Debentures.

VOL. 18.

TORONTO, MONTREAL — JULY 31, 1907 — WINNIPEG, VANCOUVER

No. 22

THE CANADIAN CONTRACT RECORD

PUBLISHED EVERY WEDNESDAY

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of Toronto, Limited,

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in advance.

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should give prompt notice of same. In doing so
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lishers of any irregularity in delivery of papers.

**Classified Index
of Advertisers.
Page 15.**



**Temiskaming and North-
ern Ontario Railway
Commission**

**TENDERS FOR OFFICE,
MINING ENGINEER**

Sealed tenders, addressed to the undersigned, and
endorsed "Tender for Office, Mining Engineer," will
be received up to 5 p. m. on the 28TH DAY OF
AUGUST, 1907, for the erection of an office for Min-
ing Engineer at Cobalt.

Plans and specifications may be seen at the office
of the Commission, 25 Toronto Street, Toronto, and
at the office of the Chief Engineer, North Bay.

A certified cheque for \$400.00 must accompany
each tender.

The successful tenderer must enter promptly into
a contract and furnish security for the amount of
\$1,000.00 for the due completion of same.

Cheques of unsuccessful tenders will be returned
to them.

The lowest or any tender not necessarily accepted.
A. J. MCGEE,
Secretary-Treasurer.

Toronto, July 22nd, 1907.
Papers inserting this advertisement without
authority will not be paid for same.

CANADIAN

Tenders For Railroad Grading

The undersigned is prepared to let, in sections,
good earth work, between St. Mary's and Embro,
Ontario.

JOHN E. WEBB, Contractor,
Union Bank Building,
Toronto, Ont.

Town of Campbellford

POWER DEVELOPMENT

At Middle Falls

ON THE TRENT RIVER

Sealed tenders are required for Rock Cutting, Con-
crete Work, Turbine Wheels, Generators and about
2 1/2 miles of Transmission Line. Plans and specifi-
cations may be seen after July 26th at the office of
the Engineer, JOHN E. FLETCHER, C. E., CON-
SULTING ENGINEER, 15 Toronto Street, Room
15, Toronto. Tenders to be in by 12 o'clock noon,
AUGUST 15TH, addressed to W. J. DOSSIE, Esq.,
Mayor of Campbellford.

The lowest or any tender not necessarily accepted.

E. C. WEST,
Clerk of the Corporation of the
Town of Campbellford.



DEPARTMENT OF RAILWAYS
AND CANALS, CANADA.

TRENT CANAL

ONTARIO-RICE LAKE DIVISION

SECTION No. 5

NOTICE TO CONTRACTORS

Sealed Tenders addressed to Alex. J. Grant, Super-
intending Engineer, Trent Canal, Peterboro, and
endorsed "Tender for Trent Canal," will be received
until 16 o'clock on WEDNESDAY, 31ST AUGUST,
1907, for the works connected with the construction
of Section No. 5, Ontario-Rice Lake Division of the
Canal.

Plans and specifications of the work can be seen on
and after this date at the office of the Chief Engineer
of the Department of Railways and Canals, Ottawa,
at the office of the Superintendent Engineer,
Trent Canal, Peterboro, Ont., and at the office of
Mr. H. P. Bell, Division Engineer, Campbellford,
Ont., at which places forms of tender may be
obtained.

The lowest or any tender not necessarily accepted.

By order,
L. K. JONES,
Secretary.

Department of Railways and Canals,
Ottawa, 15th July, 1907.

Newspapers inserting this advertisement without
authority from the Department will not be paid for it.

CITY OF FREDERICTON DEBENTURES

Sealed tenders, marked "Tender for Fredericton
Debentures," will be received by the undersigned
until AUGUST 25TH, 1907, for City of Fredericton
Water Debentures, running for forty years from
August 1st, 1907, issued in sums of \$50,000 each,
bearing interest at a per cent payable half yearly.
Tenders to state the price and amount each applicant
will take.

The City reserves the right to reject any or all
bids or to accept any bid.

For further particulars apply to

I. R. GOLDING, City Treasurer,
Fredericton, N. B.

TENDERS FOR BRIDGE

Sealed tenders, addressed to the Warden, County
of Bruce, will be received up to 6 p. m. of SATUR-
DAY, AUGUST 31ST, 1907, for the construction of
a Bridge at the Village of Scone.

1. Two Cement Concrete Abutments, 185 cubic yards
and 440 cubic yards of filling in approaches.
2. One Steel Bridge, 75 feet span \times 16 feet clear
roadway, steel joists, floor on present bridge to
be used, live load 80 lbs. per square foot, with
moving load of 8 tons on axles 6 foot centres.

An accepted bank cheque for 5 per cent, of tender,
payable to the Treasurer, County of Bruce, must
accompany each tender, the same to be forfeited if
the successful tenderer decline the contract or fail in
the performance thereof and will be returned in case
of non-acceptance.

The lowest or any tender not necessarily accepted.
Plans and specifications may be seen at the office
of Dr. Crow, Chesley.

FRANK McDUGALL,
Warden County of Bruce,
R. McDOWALL, C. E., Allanford,
County Engineer, Owen Sound.

TENDERS FOR

City Hall

CALGARY, ALBERTA

Sealed tenders in bulk and separate addressed to
the City Clerk, and endorsed "Tenders for City
Hall," will be received until 5 o'clock p. m. on
THURSDAY, THE 8TH DAY OF AUGUST
NEXT, for the erection and completion of the new
City Hall, in accordance with the plans and specifi-
cations prepared by W. M. DODD, Esq., Architect.
Tender for each trade to be accompanied by an
accepted bank cheque for 5 per cent, payable to the
City Clerk, which will be forfeited if the successful
tenderer fails to enter into a contract when requested
to do so. The cheques of unsuccessful tenders will
be returned when the contract is awarded.

The contractor whose tender is accepted will be
required to furnish a satisfactory bond for thirty
thousand dollars.

Plans and specifications can be seen, and all in-
formation obtained at the Builders Exchange in
Montreal, Toronto, Winnipeg, Vancouver, and at
the Architect's office, Alexander Corner, and at the
office of the City Engineer, Calgary.

The right is reserved to reject the lowest or any
tender.

S. J. CLARKE, Esq., R. E. SPEAKMAN, C. E.,
Chairman Public Works, City Engineer.
W. M. DODD, Esq., Architect.

July 16th, 1907.

[FOR ADDITIONAL ADVERTISEMENTS FOR TENDERS SEE NEXT PAGE]

Debentures for Sale

Sealed tenders will be received up till MONDAY, AUGUST 12TH, 1907, for the purchase of \$26,000.00 Public School Debentures of the Town of Oshawa, dated September 1st, 1907, bearing interest at 5 per cent. per annum, and repayable at the office of the Treasurer, Oshawa, in 30 equal annual installments of Principal and Interest.

The highest or any tender not necessarily accepted.
THOS. MORRIS,
Town Clerk.

Tenders Wanted

Sealed tenders addressed to the undersigned and endorsed "Tenders for Parish House," will be received until 5 p. m. on THURSDAY, THE 8TH OF AUGUST, 1907, for the various trades in the erection of a Parish House and Sunday School Building on Woodbine avenue, Norway, Ont.

Plans and specifications may be seen at the office of the Architect. The lowest or any tender not necessarily accepted. Tenders not in on time will be rejected.

CHAS. F. WAGNER, Architect,
48 Toronto Street.

The Royal Institute of British Architects, London.

Examination for Admission as Associate.

An examination for admission as Associate of the Royal Institute of British Architects, London, will be held in Toronto, from the 14TH to 21ST of NOVEMBER, 1907.

Full particulars and all information regarding this examination can be had by applying to F. S. BAKER, Honorary Secretary for Canada, Traders Bank Building, Toronto.

CITY OF BRANTFORD

CEMENT CONCRETE SIDEWALKS

Sealed tenders, addressed to Samuel Suddaby, Esq., Chairman of the Board of Works, in care of the City Clerk, Brantford, Ont., will be received till 12 o'clock noon on

THURSDAY, AUGUST 8TH,

for the construction of about 45,000 square feet of Cement Concrete Sidewalks.

Plans and specifications may be seen at the office of the City Engineer, from whom instruction to bidders and forms of tender may be received.

No tender necessarily accepted.

T. HARRY JONES,
City Engineer.

City Hall, Brantford, July 30th, 1907.

CONTRACTS OPEN.

BEACHVILLE, ONT.—A new public school building is to be erected in this village.

ROTHESAY, N.B.—Plans are being prepared for an addition to the school building.

ELMWOOD, MAN.—The Methodist congregation are considering the erection of a new church.

NELSON, B.C.—W. W. Beer desires tenders by August 5th for erection of a Methodist church here.

MOOSEMIN, SASK.—It has been definitely settled that a \$50,000 provincial jail will be built here.

WELLAND, ONT.—A new church building is to be erected here by the Disciples congregation.

STRATHCONA, ALTA.—Work will shortly be commenced on an addition to the Strathcona Brewery.

FORT WILLIAM, ONT.—J. Edgar Rutledge is this week taking tenders on plumbing of five dwellings.

BRIDGETOWN, ONT.—The Traders Bank have purchased a site on which to erect a branch bank.

GATINEAU POINT, QUE.—The School Board have decided to erect a new school on the Main street.

HALBRITE, SASK.—The Roman Catholics of this district have decided to erect a new church building here.

FONTHILL, ONT.—J. P. Romp wants bids up to August 1st for construction of 12,150 ft. of concrete sidewalk.

COBALT, ONT.—The Cobalt Concentrators, Limited, are asking for tenders for erecting a concentrating mill here.

ELGIN, MAN.—The ratepayers of Whitewater Municipality have decided to take steps to construct a telephone system.

BLAIRMORE, ALTA.—It is announced that the Rocky Mountain Cement Co. will establish a large cement plant here.

ST. THOMAS, ONT.—T. S. Poole desires tenders by August 3rd for erection of a brick store, corner of Ross and Locust street.

BRANTFORD, ONT.—It has been announced that the Western Counties Electric Company will erect a new building in this city.

WEYBURN, SASK.—The ratepayers will vote on a by-law on August 15th to provide \$50,000 for construction of a waterworks system.

VERNON, B. C.—A site for the new post office and customs building has been selected at the corner of Eighth street and Barnard avenue.

GLACE BAY, N. S.—The Sydney & Glace Bay Railway Co. have decided to locate their central power station and car barns at this place.

MOOSE JAW, SASK.—The boiler capacity at the power house is insufficient and the question of installing additional boilers is under consideration.

FORT FRANCES, ONT.—Building operations will shortly commence on the buildings of the Manitoba Peat Works which were damaged by fire three weeks ago.

VIRDEN, MAN.—J. F. P. Menlove, Secretary-Treasurer Municipality of Wallace, has invited tenders for purchase of \$50,000 4 per cent. 20 year debentures.

FERNIE, B. C.—Surveys are being made for the construction of the Southeast Kootenay Railway, and work will be commenced as soon as the location is completed.

ROSTERN, SASK.—Work has commenced on the new flour mill of the Rostern Flour Mills Co., which will be 32 x 60 feet, with engine room annex, cost \$18,000.

WEST BRIDGEFORD, SASK.—T. S. Edgar, Secretary-Treasurer will receive tenders up to August 6th. for purchase of \$1,600, 8 per cent. school district debentures.

MILLERTON, N. B.—Randolph Crocker, Secretary School Trustee, will receive tenders up to August 7th for building a new school house. Plans at James Robinson's store.

PORTAGE LA PRAIRIE, MAN.—At the December Municipal elections a by-law will be voted on for the issue of an additional \$50,000 of debentures for extension to the waterworks.

DALHOUSIE, N.B.—The ratepayers have decided to accept the proposition of the Caspacia Trading Co. to establish lumber, shingle and pulp mill in this town at a cost of a \$1,000,000.

BRIERCREST, SASK.—Walter Hillson, Secretary-Treasurer, wants tenders for painting Sunny Hill Schoolhouse, for calcimining inside walls, and for putting in a cement foundation.

RATHWELL, MAN.—It has been decided to postpone for the present the establishment of a waterworks system,

the lowest tender being considerably higher than the engineer's estimate.

NORWAY, ONT.—C. F. Wagner, architect, Toronto, will receive tenders up to August 8th for erection of parish house and Sunday school building in this village. Plans at office of the architect.

SANDWICH, ONT.—It is again reported that the United States Steel Corporation have completed arrangements for the erection of a mammoth plant here, and that ground will be broken this fall.

HAMIOTA, MAN.—A by-law to issue debentures for \$4,000 to build a fire hall, and another to raise \$4,000 for building an addition to school, will be submitted to the ratepayers on August 3rd.

NORTH TORONTO, ONT.—The Bank of Montreal have secured an option on property corner Kensington avenue with the intention of erecting their new building instead of corner of Eglinton avenue.

AMHERSTBURG, ONT.—A vote of the ratepayers will be taken August 7th on a by-law to purchase and install a new compound duplex pump in the water works building at an expenditure of \$2,500.

MAGOG, QUE.—F. Gelinat, Department of Public Works, Ottawa, will receive tenders up to August 8th for erection of a public building in this town. Plans at the office of the Department and at local post office.

LACHUTE, QUE.—F. Gelinat, secretary Department of Public Works, Ottawa, invites tenders up to August 7th for erection of public building in this town. Plans at offices of the Department and with Local Postmaster.

REGINA, SASK.—It is expected that Professor P. E. Nohb, of the architectural faculty of McGill university, will visit Regina this week to make final arrangements in connection with the competition for the design of the new parliament buildings.

PORT ARTHUR, ONT.—The City Clerk has given notice that steps to quash the by-laws to issue \$70,000 of debentures for school buildings in Wards 2 and 3, and \$68,450 for school improvements in Ward 1, must be made within three months.

HEALEY'S FALLS, ONT.—Messrs. Connor, Clarke & Monds, consulting engineers, of Toronto, are making a report on the development of the Falls for the Northumberland & Durham Power Co. The question of transmitting the power to Kingston is being considered.

BELLEVILLE, ONT.—A. J. McCrodon, Chairman Fire Committee, wants bids up to August 1st for repairs to fire hall.—Tenders are invited by J. H. Anderson up to noon of August 1st for alterations to the Grier street school building. Plans prepared by Walter Alfred, architect.

MITCHELL, ONT.—Schierholtz, Son & Co., Waterloo, have been in communication with the Town Council relative to the establishment of a furniture factory in this town. The company agree to erect buildings costing about \$35,000, one of which will be 50 x 100 feet and 4 storeys high.

LONDON, ONT.—A Mr. Donald, of Chicago, is said to have bought two acres of land at Cheslea Green on which to erect a large plough factory.—W. F. Sheppard, architect, has completed the plans for the proposed headquarters building of the W.C.T.U.—McMahan, Granger & Co. may build a new warehouse.

FREDERICTON, N.B.—I. R. Golding, City Treasurer, wants bids by August 25th for purchase of debentures.—C. H. LaBillois, Commissioner of

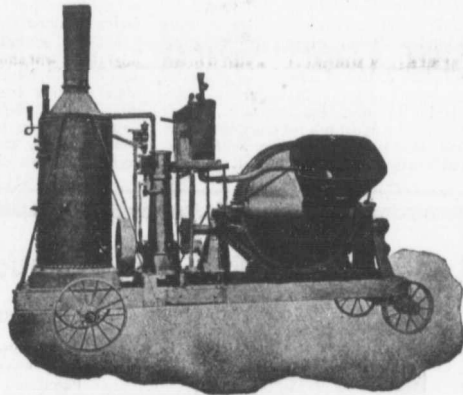
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Made in Several Sizes and Many Styles

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MUSSENS LIMITED

Head Office: MONTREAL

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Public Works, will receive tenders up to Monday, August 5th, for building Erbs Landing wharf, in parish of Kingston, King's County. Plans at Public Works Department, at office of Hon. Wm. Pugsley, St. John, and the Kingston Post Office.

VANCOUVER, B.C.—The Great Northern Railway have signified their intention of carrying out extensive improvements to their property in this city.—The Council of South Vancouver have decided to install a waterworks system.—Richard T. Godman will build a new mill between Point Atkinson and the Narrows.—Wm. McQueen, City Clerk, will receive tenders up to Wednesday, August 28th, for supply of cast iron pipe.

EDMONTON, ALTA.—John Stocks, Deputy Minister of Public Works, will receive tenders up to July 31st. for the steam heating, plumbing, electric wiring, plastering, and galvanized iron work on a terrace building in this city. Plans on application to M. Calder, Superintendent of Public Works, Calgary.—The Alberta Biscuit Co., of Calgary, have decided to establish a biscuit factory in this city, at a cost of upwards of \$100,000. I. S. G. Vanwart, of Calgary, is President of the Company.—The City Engineer has prepared plans for water and sewerage systems in the East and North end, to cost approximately \$66,000.

SASKATOON, SASK.—F. J. Robinson, Deputy Commissioner of Public Works, Regina, will receive tenders up to August 3rd for erection of Court House in this town. Plans at the offices of the Department and with Storey & Van Egmond, architects, Regina.

ST. JOHN, N.B.—The Department of Public Works, Ottawa, are preparing plans for additions to be made to the Ordnance Stores Building, this city.—D. Pottinger, General Manager of Intercolonial Railway, Moncton, N.B., invites bids up to August 6th for erection of flour shed in this city. Plans with local stationmaster and at Chief Engineer's

office, Moncton.

VICTORIA, B.C.—W. W. Northcott, City Purchasing Agent, will receive tenders up to September 3rd for supply of 5,000 feet of 6 inch and 15,000 feet of 4 inch cast iron pipe. Specifications may be obtained from the purchasing agent.—Hooper & Watkins, architects, have prepared plans for stone Methodist church to be built at Nelson.—The Board of School Trustees are considering the question of a site for the Victoria West school.—A by-law to provide for the raising of \$5,000 for a survey of the Sooke watershed and the laying of a pipe to the fair grounds has received its first reading in Council.

MONTREAL, QUE.—Plans have been approved for a new jail to be built at Black river, to cost upwards of \$1,000,000.—The Dominion Car & Foundry Co. have decided to make large additions to their plant. It is said that the expenditure may reach \$2,000, and that the work will be proceeded with at once.—The Road Department have given notice of the intention to construct the following sewers: Sebastopol street, between Leber street and Favard street; Amity Street, from Iberville street to Chapleau street; Beaubien street, from Labelle street to a distance of 110 feet eastwards; Dufferin street north of De Fleurimont street to a distance of 300 feet northward.

NEW WESTMINSTER, B.C.—The Great Northern Railway have agreed to erect a \$50,000 station providing a suitable site is furnished by the city.—The same company contemplate the building of a direct line to Ladner and Port Guichon along the south bank of the river and preliminary work may be started any time.—The owners of the new Russell Hotel have decided to make their building four storeys instead of three as at first intended.—The Dominion Trust Company have decided to add another storey to their office building, corner Columbia and Sixth streets.—The

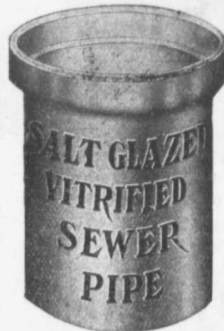
committee of St. Alban's parish church have accepted the plan of Dalton & Eveleigh, architects, for a new church building, on which work will be commenced this summer.

WINNIPEG, MAN.—The Canadian Northern Railway Co. have taken out a permit for the construction of railway shops in Fort Rouge, to cost \$200,000; dimensions of main building, 163 x 572 feet, brick with concrete foundations.—A by-law was shortly introduced in the City Council providing for an issue of debentures for \$30,000 for the purpose of providing public swimming baths.—The Chairman of the Board of Control will receive tenders up to Friday, August 9th, for construction of a sewer on Bird's Hill road.—A by-law may be submitted to the ratepayers to provide \$50,000 for a public abattoir.—The Salvation Army have purchased property at the corner of Main and Pritchard streets on which to build a new barracks.—Recent building permits included the following: Canadian Bag Co., warehouse, Henry avenue, cost \$10,000; W. E. McGaw, residence, Macadam road, cost \$7,000; Canadian Northern Railway Co., terminal buildings, cost about \$200,000; J. Jones, residence, McGee street, cost \$6,000; Nares, Robinson & Black, alterations to block, corner of Main and Logan avenue, cost \$3,000.

TORONTO, ONT.—The Cobalt Concentrators, Limited, 1126 Traders Bank Building, desires tenders for furnishing material and erecting a concentrating mill at Cobalt.—H. Block has purchased property corner of Queen and Caroline streets on which to erect a block of store buildings.—Edward Taylor, pair 2½ storey semi-detached brick dwellings, Hepburn & Concord avenues, \$7,400; J. M. Charlton, pair 2 storey and attic semi-

BLUE LIME STONE RUBBLE FOR SALE

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HAGERSVILLE, ONT. Limited



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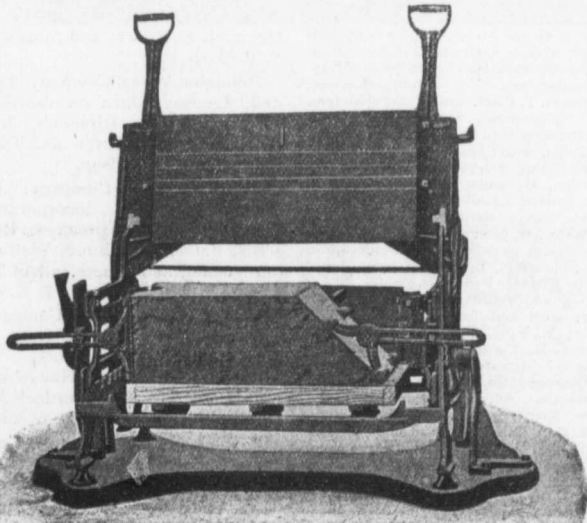
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Makes 40 Different Sizes of Stone in Any Design, as well as the Specials, viz.:

Water Table, Gable, Circle, Angle, Chimney, Cornice, Pier Blocks, etc.

Catalogues and Information Cheerfully Furnished.



This Machine makes all blocks face down—"the only practical way"—allowing of a richer and finer facing, producing blocks that are perfect in appearance and impervious to moisture.

Let us tell you how the "Miles" will pay for itself over any other machine in three months' operation.

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M'fg. Co.**

Niagara Falls, - Can.

Sales Agent for Quebec:
T. A. CHADBURN, 242 St. James Street,
MONTREAL.

detached brick dwellings, Barton avenue, \$5,000; C. McConkey, pair 2½ storey semi-detached brick dwellings, Woodlawn avenue, \$6,500; R. Lambkin, 2 pair 2 storey semi-detached rough cast dwellings, Pape avenue, \$6,400; Chas. Bulley, 5 pair 2 storey semi-detached rough cast dwellings, Withrow avenue, \$15,000; Hunter Rose & Co., 4 storey and casement brick warehouse, Sheppard street, \$40,000; Robt. Hall, pair 2 storey and attic brick and stone dwellings, Jerome street, \$6,000; M. Corner, pair 2½ storey, semi-detached brick and stone dwellings, Manning avenue, \$6,500; M. J. Low, 5 attached 2½ storey brick dwellings, Baldwin street, \$13,000; Smart Bag Co., 2 storey concrete and brick bag factory, Logan and Dickens street, \$32,000; Chas. Howman, 2 detached 2 storey and attic brick and stone dwellings, Balmoral avenue, \$8,000; H. Galbraith, pair 2 storey and attic semi-detached stone and brick dwellings, Grace street, \$6,000; H. H. Snyder, 2 storey and attic brick and wood (stucco) dwellings, Admiral Road, \$6,000; Wm. Clark and Son, 2 storey and attic brick dwelling Margueretta street, \$5,500; Whealy and Curtis, 2 detached 2½ storey brick dwellings, Simpson avenue, \$7,600; C. E. Procter, pair 2 storey brick dwellings, Ossington Ave. \$5,000.

CONTRACTS AWARDED.

PETERBORO, ONT.—Construction of wharf for the Otonabee Navigation Co.: J. Robson, contractor.

PARIS, ONT.—Construction of cement sidewalks: Paris Concrete Co., successful tenderers at 9½ cents per foot.

WINDSOR, N. S.—Erection of new building for the Bank of Nova Scotia: Falkner & Macdonald, contractors.

BELMONT, N. S.—The contract for building a new Baptist church has been given to William Peppard, of Onslow.

BRIDGETOWN, N. S.—Erection of steel bridge for Provincial Government: W. P. McNeil & Company, New Glasgow, contractors.

YORKTON, SASK.—New land titles office: Saskatoon Construction Co., Regina, successful tenderers, cost about \$28,000.

OTTAWA, ONT.—Separate School Board have accepted the tender of Felix McCullough for building addition to St. Ann's school at \$8,224.

LUNENBURG, N. S.—The Oddfellows Music Hall to be erected here under the supervision of L. R. Fairn, architect, Aylesford, N. S., will be built by day labor.

MORDEN, MAN.—Addition to electric light plant: Steam plant, Robb Engineering Co., Amherst, N.S., \$4,216; electric plant, Allis-Chalmers-Bullock, Montreal, \$9,125.

CHATHAM, ONT.—It is announced that the City Council have awarded the contract for installation of electric light plant to the Colonial Engineering Co., of Montreal.

SYDNEY, N.S.—Erection of new jail: F. L. Dixon, successful tenderer, \$18,000. Other tenderers, Falconer & McDonald, \$18,182; Chappell Bros., \$18,620; Rhodes, Curry & Co., \$13,550.

CALGARY, ALTA.—The contract for High school building has been awarded to McDonald & Roy at \$68,000. The original estimate for the building was \$50,000. R. G. Gordon is the architect.

KENTVILLE, N. S.—L. R. Fairn, architect, Aylesford, N. S., has awarded contracts for erection of Kings Co. jail buildings and St. Joseph's Glebe House to Falconer & Dixon, contractors, Sydney, C. B.

CHESLEY, ONT.—The Brant Township Council have awarded contract for concrete abutment at the Fourteenth Concession Bridge to H. Watt at \$3.85 per square yard, and also for abutments for

the town line bridge at \$3.43 per square yard.

VANCOUVER, B.C.—The following contracts have been awarded in connection with pulp mill at Swanson Bay for the Canadian Pacific Sulphite Paper Co.: Excavation and Concrete work, British Columbia General Contract Co.; power dam, pipe line and electric lighting plant, Elliott & McCollum.

MONTREAL, QUE.—W. S. Barstow & Co., engineers and general contractors, of Montreal, New York and Portland, Ore., have been awarded the contract for the extension of the terminal station of the Shawinigan Water & Power Company at Maisonneuve (Island of Montreal), work on which is now under way.

WINNIPEG, MAN.—The Board of Control have recommended to the City Council that contract for construction of cells in the new police station be awarded to the Western Iron Works at \$10,888.—The Board of Control have accepted the tender of the Canadian Iron & Foundry Co., of Montreal, for supply of 3,000 feet of 6-inch water pipe. The James Robertson Co. will supply 5 tons of half-inch lead pipe.

BATTLEFORD, SASK.—The contract for installation of an electric light plant has been awarded to the James Stewart Co., of Winnipeg, selling agents for the Canadian Westinghouse Co.—The Town Council have awarded contracts in connection with the installation of an electric light system to the James Stewart Co., Winnipeg, selling agents for the Canadian Westinghouse Co.

FREDERICTON, N. B.—The rebuilding of the Salmon River Bridge, Sussex, has been awarded to W. R. Fawcett, of Temperance Vale, York county, the price being in the vicinity of \$3,600. The contract for the Hillsdale bridge, Kings county, has been secured by G. A. Appleby at about \$2,000.—The Provincial Department of Public Works have awarded contract for building of metal superstructure of the two spans of the Fredericton-St. Mary's bridge to the Canada Foundry Co., Toronto, at about \$232,000.

TORONTO, ONT.—The Property Committee of the Board of Education have awarded the following contracts: Alterations to Jarvis Street Collegiate, masons, Wickert Bros., \$3,019; carpenters, F. Armstrong, \$2,872; painters, T. Barriett, \$210; plumbers, Lewis Le Grow, \$340; heat and ventilating, Fred Armstrong & Co., Ltd., \$1,350; furnace for caretaker's cottage, Pease Heating Co., \$105. Jameson Avenue Collegiate, masons, R. Hewitt & Sons, \$240. Enlargement of Grace Street, Pape avenue and Perth avenue schools: Grace street school—Masons, Smallwood Bros., \$8,175; carpenters, Wm. Eaton, \$10,100; plasterers, T. Blackburn, \$1,047; painters, Jas. Phinemore, \$785; plumbers, F. Armstrong & Co., \$850; tinsmiths, Webb & Dunlop, \$850; heating and ventilating, W. F. Rutley, \$2,179; steel and iron construction, Dominion Bridge Co., \$1,516. Pape avenue school—Masons, H. Lucas & Son., \$6,734; carpenters, Walter Davids & Co., \$6,900; plasterers, T. Blackburn, \$725; painters, Jas. Phinemore, \$515; plumbers, Lewis Le Grow, \$273; roofing, Robt. Rennie & Sons, \$889; heating and ventilating, Rutley & Co., \$845; steel and iron work, Dominion Bridge Co., \$483. Perth avenue school—Masons, R. Lucas & Son, \$6,950; carpenters, F. Armstrong, \$10,239; plasterers, Beaver & Co., \$1,275; painters, Jas. Phinemore, \$850; plumbers, Lewis Le Grow, \$385; roofing, and sheet metal work, Geo. M. Boyan, \$990; heating and ventilating, W. F. Rutley, \$945; steel and iron work, McGregor & McIntyre, \$12,185.

BIDS.

LETHBRIDGE, ALTA.—The following tenders have been received for construction of cement sidewalks: Navin

Bros., Medicine Hat, \$15,253.62; Forest City Paving & Construction Co., of Regina, \$16,252.38; M. Reilly, of Lethbridge, \$16,792.92.

FIRES.

Warehouse and storage shed of the Imperial Oil Co. at Brandon, Man., totally destroyed.—Block at Edmonton, Alta., owned by Cameron & Russell, damaged to extent of \$10,000.—Residence of Greig Bros., near Brougham, Ont., totally destroyed.—The planing mill and sash and door factory of W. C. Edwards & Co., at New Edinburgh, Ont., totally destroyed, loss \$250,000.—The Commercial Hotel, Bowen House and two stores at Winchester, Ont., totally destroyed, loss about \$50,000.—Pulp mills of the North River Lumber Co., St. Anne's, N.S., totally destroyed.

NEW COMPANIES.

Toronto Tilbury Oil and Gas Company, Limited, Toronto, incorporated, capital \$750,000. Directors, R. E. Eyre, Elmer E. Wallace, Hugh C. Macdonald, all of Toronto.

Western Navigation Company, Limited, Fort William, Ont., incorporated, capital \$500,000. Directors, James Murphy, William C. Lillie, Hugh McK. Piper, all of Fort William.

Erie Knitting Company, Limited, Danville, Ont., incorporated, capital \$40,000. Directors, John H. Rowe, William Kerr and A. Moir, all of Dunnville.

Art Tailoring Company, Limited, Toronto, Ont., incorporated, capital \$40,000. Directors, William B. Campbell, Elwell Craven, William Foster and others, all of Toronto.

Markdale Furniture Company, Limited, Markdale, Ont., incorporated, capital \$40,000. Directors, W. H. Knack, R. H. Anderson, H. L. Anderson and others, all of Collingwood.

Eugene Dietzgen Company, of Ontario, Limited, Toronto, incorporated, to manufacture drawing instruments, capital \$30,000. Directors, Rudolph C. Brandt, W. K. Hoyer, J. S. Brewes and others, all of Toronto.

Dominion Wheel Company, Limited, Lindsay, Ont., incorporated, capital \$40,000. Directors, John D. Flavelle, John Carew and Thos. Stewart, all of Lindsay.

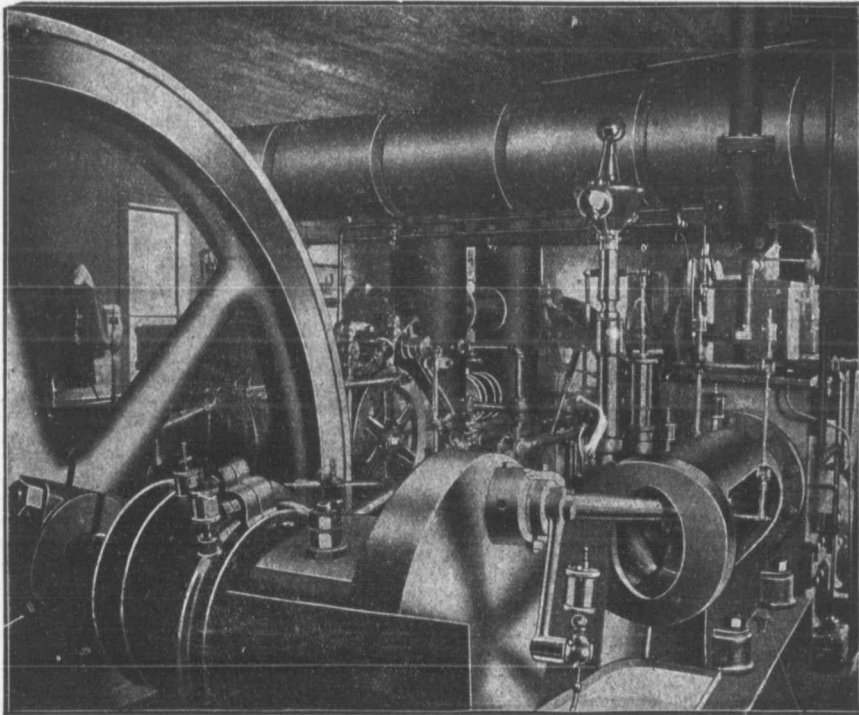
Crown Gas & Oil Company, Limited, Ottawa, Ont., incorporated, capital \$250,000. Directors, Robert N. Bates, A. C. Budd, Wellington Bradley and others, all of Toronto.

New Liskeard Clock Company, Limited, New Liskeard, Ont., incorporated, capital \$40,000. Directors, S. D. Briden, Haileybury, John Armstrong and Murdoch McLeod, of New Liskeard.

People's Mutual Telephone Company, Limited, Bethel, Ont., incorporated, capital \$21,000. Directors, T. A. Crawford, W. H. Sine, A. F. Rightmeyer and others, all of the Township of Sophiasburg, in the County of Prince Edward.

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ASPHALT PAVEMENTS.*

BY CLIFFORD RICHARDSON.

In the construction of the wearing surface of an asphalt pavement, four points must be given consideration. Two of these relate to the grading or relation of the size of the particles of sand to each other, one to the amount of finely powdered mineral matter or filler which is present, and the fourth the character and amount of the bituminous cementing material employed to cement and bind together the sand and filler, which together form the mineral aggregate, so called.

It has been determined by actual experience that the most desirable grading for the sand to be used in making an asphalt pavement is as follows:

Passing 100 mesh,	17%
" 80 "	17"
" 50 "	30"
" 40 "	13"
" 30 "	10"
" 20 "	8"
" 10 "	5"

The present, as near as may be, according to the sands available locally, of about 34% of 100-mesh and 80-mesh grains, as equally divided as may be between the two sizes, is regarded as the first point to be considered in arranging for the mineral aggregate of an asphalt surface mixture.

The presence of a certain amount of coarse grains, of sizes which are retained on a screen of 40 meshes to the linear inch, the larger part being of 30-mesh size, less of 20-mesh size, and but a small part of 10-mesh size, to give to the aggregate the necessary stability and to carry the traffic, must be regarded as the second point for consideration.

The third point is that there shall be present in the mineral aggregate a sufficient amount of impalpable mineral matter which shall pass a 200-mesh sieve, and most of it being finer than 0.05 mm. in diameter, to fill the voids in the sand and give stability to bitumen present, thus permitting of the use of a softer bitumen as a cementing material than would otherwise be the case. In the higher class of mixtures for streets of heavy traffic, this should not reach less than 13%, being regulated to a certain extent by the presence or absence of finer sand, it being possible to use only a smaller amount when this is absent, owing to the balling of the dust in such a case. It is also regulated to a certain extent by the character of the bitumen which is used as a cementing material, some carrying material acting in itself as a filler, as in the case of Trinidad asphalt, and others being so liquid at the temperatures at which the mixtures are made as

to permit of the addition of a larger proportion than can be employed when the bitumen is very viscous at that temperature. The proper use of filler is a very important element in the production of a satisfactory asphalt pavement.

With a proper mineral aggregate assembled, the fourth point to be considered is the amount of asphaltic cementing material which must be used to bind it together into the most stable and resisting concrete mass and the most suitable consistency for this bitumen.

As far as mere amount is concerned, it will be necessary to have enough to coat each grain and to fill the voids between the grains when the aggregate is compacted to the ultimate extent. This amount will depend on several variables: the character of the surface of the grains of sand, the character of the filler, and the viscosity of the bitumen at high temperatures. It has been found by experience that different sands made up of an aggregation of particles of exactly the same size and with the same percentage of voids have different capacities for carrying bitumen, owing to the fact that the film adhering to grains of one kind is much thicker or thinner than that adhering to another having a different surface. With a normal sand of standard grading and a suitable amount of filler, about 10.5% of bitumen, as contained in such asphalts cements as are made from Trinidad or Bermuda asphalt, is required, but with others which are more viscous as much as 12 or even 13% is necessary.

If the four points which have been described have been given the necessary attention, the result will be a satisfactory mixture for the construction of a lasting pavement, if the bitumen is suitable for the purpose and if it is of proper consistency. The best mixtures will have the following composition:

Bitumen,	10.5 %
Passing 200 mesh,	13.0 "
" 100 "	13.0 "
" 80 "	13.0 "
" 50 "	24.0 "
" 40 "	11.0 "
" 30 "	8.0 "
" 20 "	5.0 "
" 10 "	3.0 "

The most difficult problem is that of the street which is to carry the most continuous and heaviest travel. For this purpose a Portland cement concrete at least 6 inches in thickness is necessary, and an even thicker foundation if the sub-soil base is not of the firmest character—that is to say, if the pavement is to be carried over soft ground, a recent fill, or where any particularly unfavorable environment is to be met. Under ordinary circumstances 6 inches of foundation is enough if it is constructed with a high-grade Portland cement, such as is now readily obtained in the

United States, and good hard stone, for which in many instances good gravel may be substituted. Every effort should also be made that proper drainage of the base should be provided to prevent upheaval by frost in northern climates.

Upon such a base 2 inches of close binder, the stone of which should be hard enough to carry the travel without crushing, should be laid as an intermediate course, and on this a wearing surface of standard grading and made with a bituminous cement which consists of a mixture of suitable bitumens, skillfully combined and handled, to the depth of 1½ inches. A thicker surface is unnecessary if it is carefully prepared and laid, owing to the rigid character of the support; thicker ones, 2 inches, being demanded only on open binder and with poor foundations. Where the travel is light the old fashioned and common form of construction may be employed, although it will prove only a momentary economy, and in some residence streets an old stone or brick pavement may be economically and successfully used as a foundation.

NEW TIDAL POWER EXPERIMENT.

The tidal basin at South Thomaston, Maine, has an area of a little more than a square mile, with an average range of twelve feet of tide. The dam and air compressor to be constructed on the plans of Wm. O. Webber are expected to store seventy per cent. of the tidal energy of this inlet as compressed air, and thus to make 5,000 horse-power available for industrial use. As compressed air has been successfully distributed long distances, the leakage being slight, it is proposed to transmit the tidal power through pipes to stone and lime quarries and factories of Rockland and places within twenty miles.

NON-FLAKING WHITEWASH.

To prepare whitewash for fences, buildings, shop interiors, etc., that will not flake and fall off, mix one quart fine Portland cement with about eight gallons whitewash. The cement binds the whitewash to the wood and makes a permanent covering which is unaffected by weather conditions. The small quantity of cement used and the constant stirring necessary to keep the whitewash in good condition for applying, prevents the cement hardening in lumps at the bottom of the pail as might be expected.—Machinery.

Patents have recently been granted to Robt. Balfour on a pile driver and J. Bennett on dumping cars.

* Extracts from a paper read before the New York Section of the Society of Chemical Industry.

THE FATIGUE OF CON RETE.

Writing on this subject in the Proceedings of the American Society of Civil Engineers, Mr. J. S. Van Ornum offers some warnings to the users of concrete. He says :

The adhesive strength of concrete to steel, low in value at best, is undoubtedly severely tried by repeated application and relief of load, and the consequent successive production and relief of the various internal stresses which tax so severely this essential and vital factor of reinforced-concrete design and construction. Passing without comment the acknowledged fact that scale or thick rust will seriously impair the adhesion, it may be said that numerous critical examinations plainly indicated that any rust on the metal (while completely absorbed by the concrete, and so effectively preventing further corrosion) did materially lessen the normal adhesive power of the concrete. The bond was often found lacking opposite the rust discolorations on the concrete, while remaining firm on each side where rust had been entirely absent; and, where the adhesive bond was destroyed in the middle portion of the beam, this destruction habitually terminated in a discolored section, apparently indicating the encountering of an increased adhesive re-

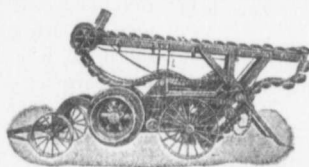
sistance at the cleaner portions of the steel.

Another fact that has escaped deserved attention is the probability that a material excess of water used in mixing the concrete apparently lessens its adhesive power. It is realised that a moderately wet mixture is desirable, in order to prevent voids in the concrete as ordinarily placed, and especially to secure sufficient plasticity to insure a complete filling of the space around and below the network of reinforcing steel; but there seems to be a real danger that the reaction against dry concrete is being carried too far.

An excessively wet concrete not only contains numerous globules of water which, when absorbed, leaves the concrete porous, but these, also, especially weaken the adhesion of the concrete to the steel, because there is a tendency for such water-globules to seek the surface of the reinforcement, particularly on the under side. The weakening of the bond from this cause was evident in certain beams in which the adhesion was noticeably weak, the water cavities being apparent at the bottom and sides of the steel bars.

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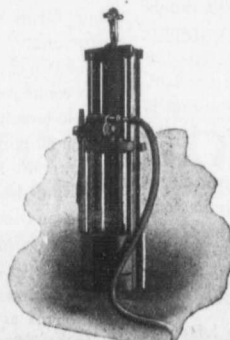
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Electricity as it Affects the Fire Department*

By F. A. CAMBRIDGE, City Electrician, Winnipeg, Man.

In making a few remarks on the above subject, I have divided them under two heads, in one of which I would consider electricity as a possible help to you in your work, and in the other as a possible hindrance.

In using the term "electricity" I will apply it, not only in the sense of its being an agent, performing the varied duties to which we harness it, but also to cover its transmitting and translating mediums; the wires, apparatus and various appliances that we have in daily use and which, properly or improperly installed or handled, renders electricity either a good servant or one capable of working a good deal of mischief.

In considering the helpful agency of electricity, you will naturally give first place to the fire alarm telegraph system. It is interesting to notice from what crude beginnings the present wonderfully accurate and yet simple and complete systems have been evolved.

Previous to the use of the electric telegraph for signalling purposes, towns and cities had to depend upon the alarm bell, rung by watchmen who were supposed to be on the lookout for indications of fire. The approximate locality was, in the larger cities, given by a code of numbers struck on the bells. Fortunately in those days our large cities were not as closely built up as now, nor were the buildings of such dimensions, so that delays of a few minutes were not so likely to mean so much to the fire department as they do now.

In June, 1845, there appeared in the "Boston Advertiser" a letter from Dr. W. H. Channing calling attention to a new application of the electric telegraph, to which heretofore notice had not been drawn, viz., that it could be used as a means of sending in alarms of fire between the different fire stations of the city, as well as striking the alarm on the various church bells.

The matter dragged on until in 1851 Dr. Channing forwarded an elaborate plan to the Board of Aldermen of Boston, being followed by a successful demonstration, resulting in an appropriation of \$10,000 being voted by that city for the purpose of installing the system.

As may be imagined, the boxes and the apparatus were not so well suited to the purpose as those of today, and considerable doubt existed even in the minds of the inventors as to the certainty of the transmitting machinery. Printed directions instructed the citizen as follows:—"Turn the crank within the box, say ten times, not too fast; then wait. If the signal is perfect, you have now registered the alarm. If the alarm has been heard at the central office the operator will indicate the fact to you by striking the number of your district on the small magnet bells in your box. Should you not hear this, turn the crank again, more slowly. Should you not then hear the response, go to another box, and if equally unsuccessful there carry the alarm yourself to the central office."

These directions were not followed to the letter, it may well be imagined, as excited individuals generally

turned the crank as fast as they could, and not only entirely destroyed the legibility of the signal, but often placed the apparatus out of business.

Gradually the system was improved, the fundamental patents being granted Channing & Farmer in 1857. Various improvements followed in the relays, the shunting of the magnets by the closing of the outside door and, in 1859, for an automatic system in which the central office was dispensed with and all the bells and boxes placed on one circuit. This was called the "village system," on account of its adaptability to small places where the expenses of keeping trained operators on hand would be prohibitory.

Gamewell & Company installed their first successful plant in St. Louis in 1858, that city being the third to adopt the fire alarm telegraph. Mr. Gamewell had fully recognized the necessity (if the new system was to be as widely adopted as he hoped) of perfecting the signal box to a high degree, and to aid him in the work surrounded himself with men of inventive and mechanical skill. Three of these have made their names to be remembered for many years, viz., Messrs. Gardiner, Crane and Rogers. Patent after patent was issued, covering one improvement after another, until to-day the system has been brought to a state of perfection that, given care, and with lines erected as they should be, is well-nigh perfect as a certain and reliable means of transmitting intelligence of the outbreak of that ever-to-be-feared element, fire, to extinguish which you are ever risking your lives. Time being one of the most important elements in the success of your efforts, warrants the use of every means possible to enable you to gain precious minutes, nay even seconds, in arriving at your objective point, and thus through the fire alarm telegraph system electricity is a great help to you.

Electricity is also of considerable advantage in the facility with which the engine rooms can be lighted at a moment's notice. Through its agency not only is the current furnished to illuminate the buildings, but the automatic electric switch at the first blow of the gong turns on the current, while the electric door locks aid you again in saving seconds by facilitating a "hitch up."

Electricity has also been employed to operate numerous forms of automatic fire alarm systems. It is unfortunate, but true, however, that with possibly one or two exceptions these have not proven so reliable as to commend themselves to our favorable notice, the trouble seeming to lie in the corrosion of contacts. A system employing mercury for the closing of the electric current has, however, proven satisfactory, I believe, and deserves to be experimented with.

The auxiliary fire alarm system for the protection of large buildings is a valuable aid, as it enables the occupants to turn in the box from any number of different points and, with the use of the electric annunciator board at the entrance of the building, gives you the particular floor from which the alarm was sent.

The telephone should not be forgotten in enumerating your aids to prompt service. I will not attempt to

*Paper read at the Western Canada Fire Chiefs' Convention, Winnipeg, July 16th, 1907.

discuss the merits and demerits of the telephone as a means of sending in an alarm of fire, simply stating that about one-half of the alarms received in this city are telephone alarms.

All boxes bought by this city for the last year or two are fitted with a telephone jack. It is proposed to equip a number of boxes with this device, and it is hoped that we will, by plugging in a portable phone, be able to furnish the officers of the department with a means of talking to the operator on duty; in this way special calls could be sent in for extra apparatus. The system would also be very useful for testing purposes.

In the development of the various electrical services that form so important a feature in our towns and cities, certain features may be considered as forming a possible hindrance to you in your work. Of these the overhead wiring systems on our streets are certainly a serious menace. While with proper supervision aerial wiring systems may be erected and maintained so as to offer a minimum of danger to the public under ordinary circumstances, still in business districts, where the room for hoisting ladders is limited, the wires are often in your way and in the hurry of hoisting apparatus perhaps their deadly nature is not sufficiently realized. Fortunately in this city our department has so far escaped serious injury through this cause, though I am afraid that before we reach the day when the wires will be placed underground fatal accidents will occur.

In cutting wires that are in the way of the department, the greatest care should be taken not only to protect your own men in clearing the way but to protect the public. A high tension wire cut at one point only and left hanging is liable to not only be within reach of persons on the wet ground but may cross various low tension wires, and through them send the deadly current over scores of wires into a large number of buildings, some of which may be miles from the point of contact. If in these buildings fires were to take place, caused by the high tension current escaping to ground, you might be seriously hampered by having to draw off part of your forces. I would suggest that where it is necessary to cut live wires that two men be set to work simultaneously at opposite ends of the stretch of wiring you wish to cut down—each man cutting the same wire at the same time, starting with the bottom wire and working up to the top. This will be found the safest way of working. The wires should always be cut within a foot of the insulator and the live ends "snubbed" back so as to avoid slacking back. A familiarity with the location of the different wires will also be valuable. If your fire

alarm wires are likely to be affected try and avoid cutting these at all costs.

Interior electric wiring may hamper you by reason of the danger of getting shocks from same, due to your being wet and therefore liable to be good conductors. The Underwriters' Rules require a "service switch" at the point of entrance of light and power wires in every building. Familiarity with location of these will enable you to cut off the current in building affected.

Electrolysis of underground pipe systems is one of the most serious dangers a fire department is exposed to in all cities where electric railways operate, unless sufficient care is taken to prevent its action. I have yet to learn of a city on this side of the Atlantic that took steps early enough to prevent this destructive effect manifesting itself. In some cities the railway companies voluntarily guard against this evil, perhaps not so much to protect the pipes as to save money themselves, as electrolysis of underground pipes to any considerable degree always represents the dissipation of energy in a form that is not likely to yield big dividends.

In Great Britain very stringent rules are laid down by the Board of Trade to guard against electrolysis, and all roads operating are made to conform to certain requirements; the condition of the return system is always under test and must be maintained up to a given value. Had our Canadian cities adopted such rules when incorporating the various street railway companies, much loss would have been avoided, and your most valued ally, the waterworks system, would have been protected from the sometimes slow but in any case certain destructive action that in some instances only manifests itself in a burst of a main and a reduction of the pressure on most important occasions.

I sincerely trust electricity will not so affect any fire department represented here, but will, by its energy being properly directed, always render you good service.

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and a material which is not affected by heat or cold, or the contrary action of hot and cold temperatures at different seasons. For such a paint or material there is unlimited use.

There has in recent years been found in large quantities in Colorado and Utah and in small quantities in England and Scotland an insoluble mineral called Elaterite or "mineral rubber." It is a pure carbon ore with extreme elasticity and adhesive qualities. For a time it remained a useless curiosity until a method was found for combining it (without being ground) with the carrying oils necessary to convert it into a liquid. The ore in its raw state is a non-conductor of electricity and heat makes it only the more adhesive. For this reason it is now used a great deal for the head ends of engine boilers. It is also used on iron work to make it rust-proof.

It has been found that a piece of tissue paper coated with it becomes impervious to water. One of the most interesting uses of it is to waterproof walls. To this end it is best (if a stone wall) to make the surface smooth by a coat of cement and then apply a coat of this Elaterite cement paint, thereby making it perfectly waterproof. Cement, if rich enough, is fairly good as a waterproofing sub-

(Continued on page 14.)

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This is very pleasing to us, but the demand has been so steady that we cannot guarantee immediate shipment to new customers—WE WILL SHIP WHEN WE SAY, but would advise orders to be placed as early as possible in order to avoid disappointment, for we can't ship all at once.

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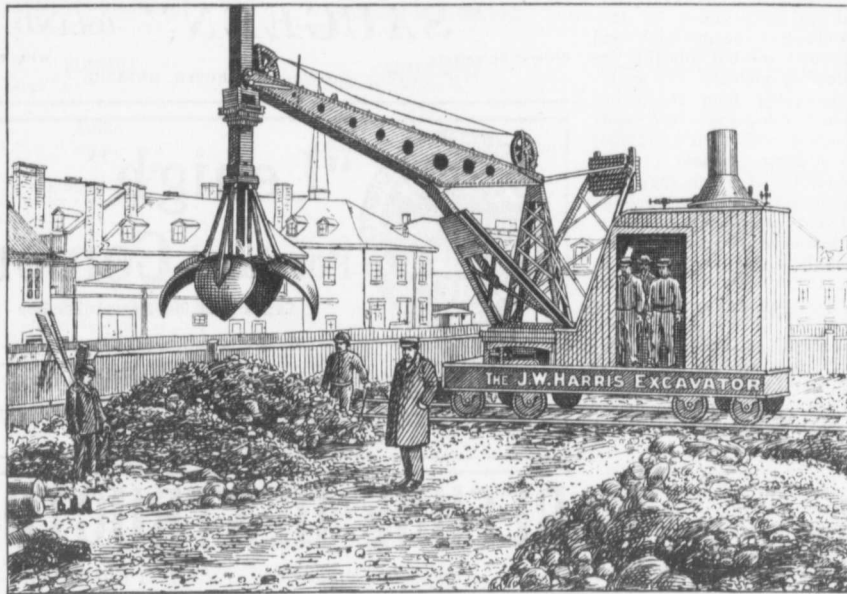
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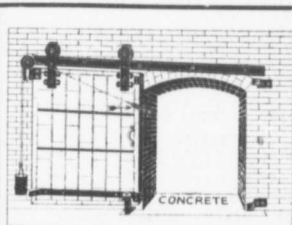
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stance, but it is by no means thoroughly effective and it frequently cracks. Elaterite is, however, elastic and will allow more or less slight shifting of the material used as a ground without affecting its waterproofing qualities. To waterproof the cellar floor the grout should be put down first and made as smooth as possible, a good coat of this Elaterite cement is then applied, on top of which should be put the usual half-inch Portland cement coat for a wearing surface. An interesting experiment with this material is cited by Mr. J. B. Marsh, C.E. He says in part: "Last summer we constructed a reservoir for Charles City, Iowa. The specifications called for a 1-3-5 mixture, which we did not believe impervious to water, and a coat of plaster one-half inch thick composed of one part cement and one part sand to be placed after the walls had set. As soon as it was completed and filled with water, leaks were discovered. To overcome this trouble we used a waterproofing material known as Elaterite cement paint, one coat of which absolutely stopped all leakage."

There is another mineral that has been used to some extent in Germany, known as Bitumin Emulsion, but little is known of it at present in this country. If it does all that is claimed for it by those who have tested its various uses, it will be invaluable as a waterproofing material. Its usual application is to mix it in certain quantities with cement mortar for plastering the under side of tunnels, the outside of walls, cement floors, etc. There was an interesting experiment with this material on a rocky cliff along the river bank in Minneapolis this

(Continued on page 16.)



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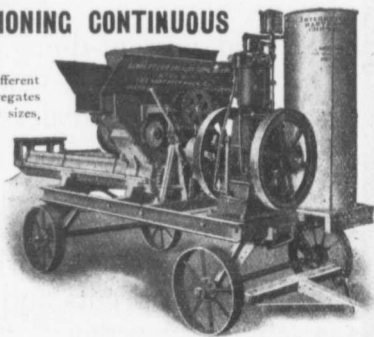
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ACCIDENT INSURANCE Page	DRILLING CONTRACTORS Page	PIPE (CAST IRON) Page
Ontario Accident Insurance Co. 19	Harvey, J. 24	Baxter, Paterson & Co. 9
BLOWERS	DEBENTURES	Canada Foundry Co. 27
Buffalo Forge Co. 8	Nay, Anderson & Co. 21	Gartshore-Thomson Pipe and Foundry Co. 27
BRICK	Stimson & Co., G. A. 19	Gaudry & Co., L. H. 18
Toronto Fire Brick Co. 12	ENGINEERS AND CONTRACTORS	Canadian Iron & Foundry Co. 25
BRIDGES (STEEL)	British Columbia General Contract Co. 20	Stanton Iron Works Co. 11
Canadian Bridge Co. 19	ENGINEERS (CIVIL)	PIPE (WOODEN)
Canada Foundry Co. 27	Aitken, K. L. 23	Canadian Pipe Co. 25
Dominion Bridge Co. 20	Canadian Engineers, Limited. 22	Dominion Pipe Co. 25
Jenks & Dresser. 16	Chipman, Willis 23	Pacific Coast Pipe Co. 25
Phoenix Bridge and Iron Works. 12	Connor, Clarke & Monds. 23	PLUMBERS' SUPPLIES
CASTINGS (IRON)	Davis & Johnston. 22	Somerville Limited. 5
Laurie Engine & Machine Co. 16	Fenson, C. J. 22	PUMPS AND PUMPING MACHINERY
Rogers Manufacturing Co. 24	Fielding, John S. 11-12	Allis-Chalmers-Bullock. 7
CEMENT	Galt & Smith. 18	Canadian Buffalo Forge Co. 4
Alpena Portland Cement Co. 24	Jackson, John H. 23	Canadian Fairbanks Co. 17
Alsen Portland Cement Co. 24	Lea & Coffin. 23	Canada Foundry Co. 27
Baxter, Paterson & Co. 9	Leofred, A. 16	Drummond, McCall & Co. 20
Bremner, Alex. 20	Macallum, A. F. 22	Mussens Limited. 3
Canadian Portland Cement Co. 4	McDougall & McRae. 22	McDougall Caledonian Iron Works Co., John. 19
DeSola, C. I. 12	McDougall & McRae. 22	ROAD MACHINERY
Gray & Bruce Portland Cement Co. 26	Pitt & Robinson. 23	Cameron & Co., Hugh. 20
Hyde & Co., F. 21	Smith, Kerry & Chase. 23	Climax Road Machine Co. 26
Hanover Portland Cement Co. 14	Scott, Wm. Fry. 22	Heaman, George. 27
Lakefield Portland Cement Co. 14	ENGINEERS (MECHANICAL)	Morrison & Co., T. A. 20
McNally & Co., W. 16	Farmer, John T. 24	Mussens Limited. 3
Morrison & Co., T. A. 20	Galt & Smith. 18	Sawyer & Massey Co. 9
Owen Sound Portland Cement Co. 26	ENGINES	ROCK DRILLS
Ontario Portland Cement Co. 16	Allis-Chalmers-Bullock. 7	Allis-Chalmers-Bullock. 7
Raven Lake Portland Cement Co. 21	Cameron & Co., Hugh. 20	ROPE
Stinson-Reeb Builders' Supply Co. 21	Laurie Engine & Machine Co. 16	Dominion Wire Rope Co. 28
Thorn Cement Co. 14	Rogers Manufacturing Co. 24	Greening Wire Co., B. 22
CONTRACTORS' SURETY BONDS	Sawyer & Massey Co. 16	STEEL BARS (CORRUGATED)
United States Fidelity & Guaranty Co. 22	ELECTRICAL APPARATUS AND SUPPLIES	Corrugated Steel Bar Co. of Canada. 12
CONCRETE MIXERS AND MACHINERY	Allis-Chalmers-Bullock. 7	STRUCTURAL IRON AND STEEL
Baxter, Paterson & Co. 9	Canadian Gen. Elec. Co. 27	Baxter, Paterson & Co. 9
Canadian Fairbanks Co. 17	Drummond, McCall & Co. 20	Canada Foundry Co. 27
Dartnell, E. F. 12	Northern Electric & Mfg. Co. 20	Dominion Bridge Co. 20
Goold, Shapley, & Muir. 23	FIRE BRICKS	Jenks & Dresser. 16
Hopkins & Co., F. H. 28	Baxter, Paterson & Co. 9	McGregor & McIntyre. 18
Ideal Concrete Machinery Co. 17	FIRE APPARATUS	Phoenix Bridge & Iron Works. 20
London Concrete Machinery Co. 14	Cameron & Co., Hugh. 20	Taunton, Richard A. 14
Mussens Limited. 3	McGregor & McIntyre. 18	STONE
Morrison & Co., T. A. 20	Morrison & Co., T. A. 20	Crushed Stone, Limited. 16
Toronto Pressed Steel Co. 18	Seagrave, W. E., 16	Doolittle & Wilcox. 22
Vining Bros. Mfg. Co. 5	HOISTING MACHINERY	Morrison & Co., T. A. 20
CONTRACTORS' PLANT	Allis-Chalmers-Bullock. 7	SHOVELS (STEAM)
Allis-Chalmers-Bullock. 7	Beatty & Sons, M. 21	Allis-Chalmers-Bullock. 7
Beatty & Sons, M. 21	Canada Foundry Co. 27	Beatty & Sons, M. 21
Canada Foundry Co. 27	Georgain Bay Engineering Works. 9	Canada Foundry Co. 27
Harris Mfg. Co., J. W. 13	Hood & Sons, Wm. 19	Hopkins & Co., F. H. 28
Hopkins & Co., F. H. 28	Hopkins & Co., F. H. 28	Mussens Limited. 3
Jenckes Machine Co. 26	Mussens Limited. 3	Rogers Manufacturing Co. 24
Mussens Limited. 3	Rogers Mfg. Co. 24	SEWER PIPE
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Toronto Pressed Steel Co. 18	Canada Foundry Co. 27	Dominion Sewer Pipe Co. 20
Wallington, G. P. 9	Canadian Fairbanks Co. 23	SHOVELS
CONCRETE CONSTRUCTION	Canadian Iron & Foundry Co. 25	Hopkins & Co., F. H. 28
Ambursen Hydraulic Construction Co. 18	Gartshore-Thomson Pipe & Foundry Co. 27	Mussens Limited. 3
Baxter, Paterson & Co. 9	Kerr Engine Co. 24	TELEPHONE SUPPLIES
CONTRACTORS' EMPLOYMENT BUREAUS	McDougall Co., R. 21	Northern Electric & Mfg. Co. 20
North Western Employment Agency. 16	LOCOMOTIVES AND RAILS	TANKS AND STAND PIPES
Reliance Labor Exchange. 18	Canada Foundry Co. 27	Canada Foundry Co. 27
Zarossi, Banco. 26	Gartshore, John J. 19	Ontario Wind Engine & Pump Co. 18
CORRUGATED IRON	Hopkins & Co. 28	VALVES
Metallic Roofing Co. 9	Mussens Limited. 3	Canada Foundry Co. 27
Ormsby, A. B., Limited. 14	Sessenwein Bros. 18	Canadian Fairbanks Co. 17
CRUSHERS (STONE AND ROCK)	PLASTER BOARDS	Canadian Iron & Foundry Co. 25
Allis-Chalmers-Bullock. 7	P. W. St. George. 26	Gartshore-Thomson Pipe & Foundry Co. 27
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Canada Foundry Co. 27	Hood & Sons, Wm. 19	McDougall Co., R. 22
Dartnell, E. F. 12	Russell, John E. 19	WOOD FIBRE PLASTER
Hopkins & Co., F. H. 28	PAVING AND PAVING MATERIALS	Imperial Plaster Co. 26
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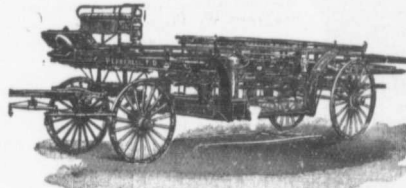
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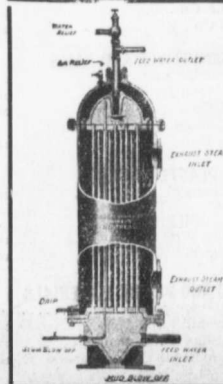
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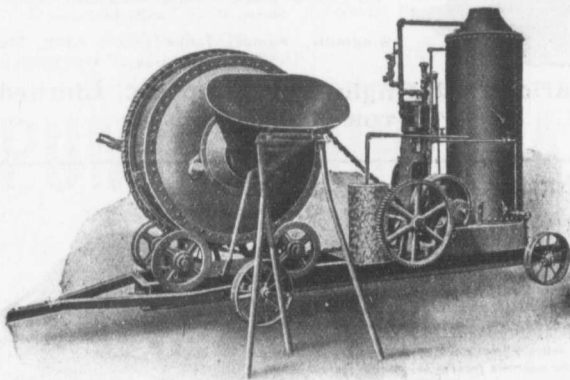
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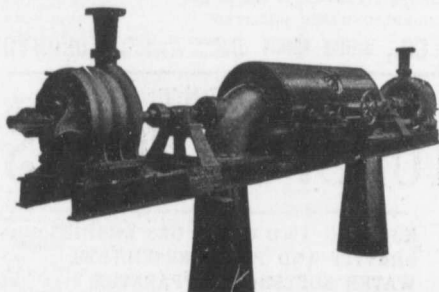
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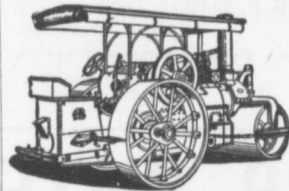
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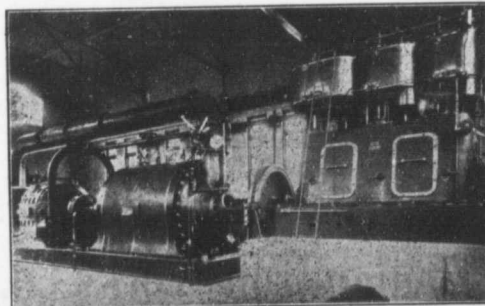
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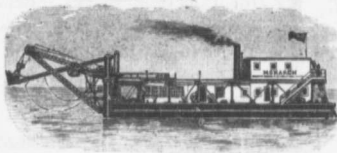
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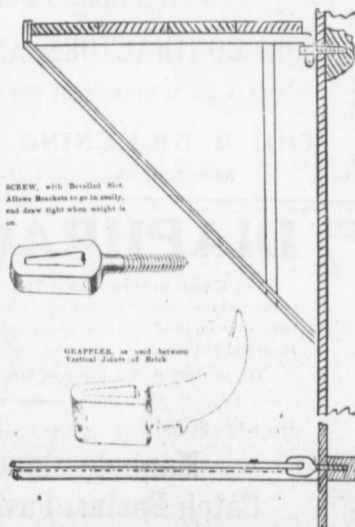
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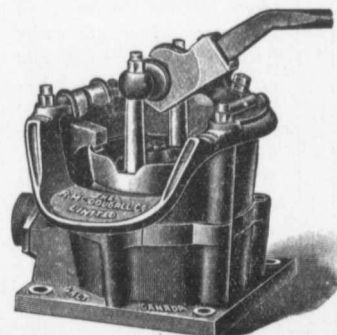
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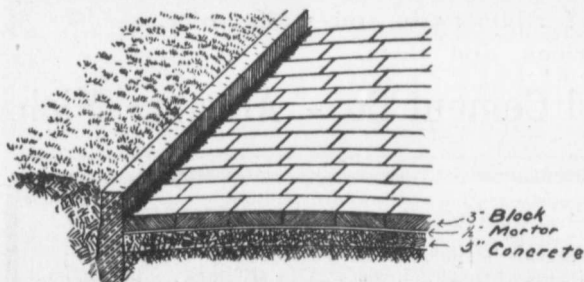
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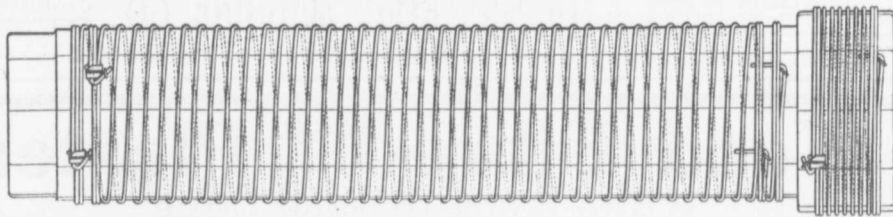
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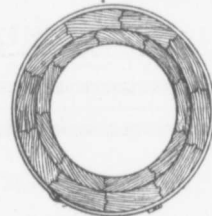
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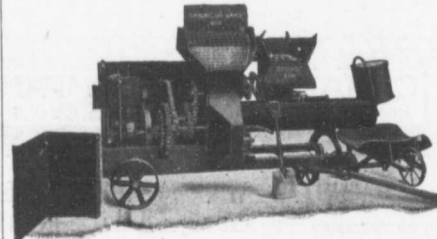
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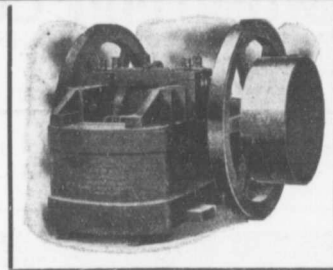
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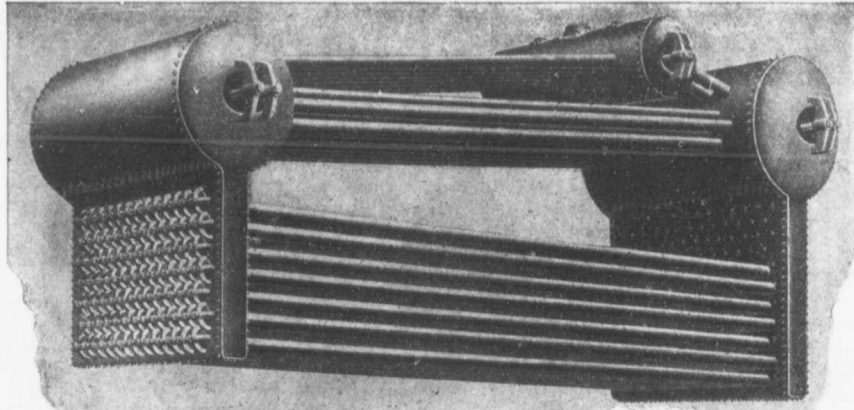
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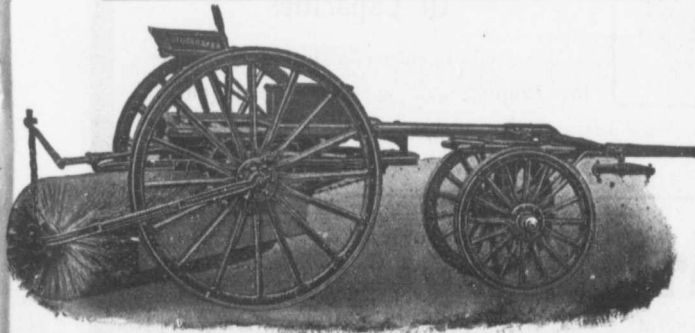
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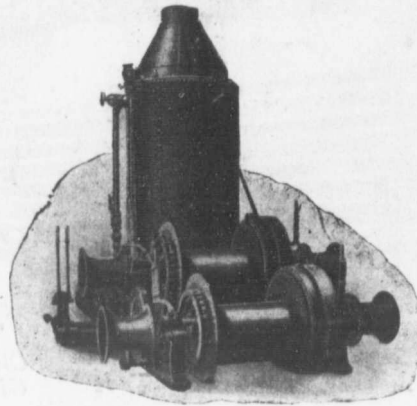
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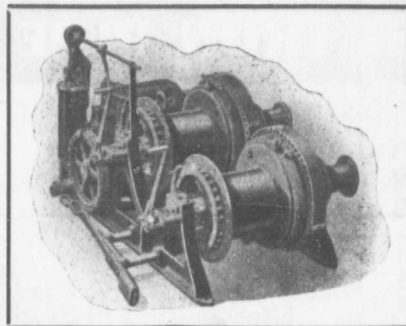
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