

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 24, 1907 — WINNIPEG, VANCOUVER

No. 21

THE CANADIAN CONTRACT RECORD

PUBLISHED EVERY WEDNESDAY
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THE C. B. MORTIMER PUBLISHING COMPANY
of Toronto, Limited.

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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
Blacksmith Shop**

Scaled tenders, addressed to the undersigned and
endorsed "Tender for Blacksmith Shop," will be re-
ceived up to 5 p. m. on the 28TH DAY OF JULY,
1907, for the erection of a Blacksmith Shop at North
Bay, Ontario.

Plans and specifications may be seen at the office
of the Commission, 22 Toronto Street, Toronto, and
at the office of the Chief Engineer, North Bay.

A certified cheque for \$500.00 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 tenderers will be returned
to them.

The lowest or any tender not necessarily accepted.

A. J. MCGEE,
Secretary-Treasurer.

Toronto, June 28th, 1907.

Papers inserting this advertisement without
authority will not be paid for same.

CANADIAN

CONTRACT RECORD

Tenders For Railroad Grading

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

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

TOWN OF GALT CEMENT WALKS

Notice to Contractors

Scaled tenders, marked "Tender for Cement
Walks," will be received by the undersigned up to
noon, FRIDAY, AUGUST 2ND NEXT, for the
construction of about 40,000 square feet of cement
concrete sidewalks in the Town of Galt for the current
year.

Specifications and form of tender may be had on
application at the office of the Town Clerk. The
lowest or any tender need not necessarily be
accepted.

JOSEPH McCARTNEY,
Town Clerk.



DEPARTMENT OF RAILWAYS
AND CANALS, CANADA.

TRENT CANAL

ONTARIO-RICE LAKE DIVISION

SECTION No. 5

NOTICE TO CONTRACTORS

Scaled Tenders addressed to Alex. J. Grant, Super-
intending Engineer, Trent Canal, Peterboro, and
endorsed "Tender for Trent Canal," will be received
until 4 o'clock on WEDNESDAY, 27TH 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 Superintending 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, 13th July, 1907.

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

Asphalt Pavement and Sewer

Tenders will be received at this office up to 4
o'clock on

Thursday, August 1st,

for about 12,000 square yards of asphalt (any brand),
and about 7,000 lineal feet of Cement Kerb and Gut-
ter, also for the laying of a 12 inch Glazed Tile
Sewer, about 3,500 feet in length.

A. O. GRAYDON,
City Engineer,

ALD. R. F. MATTHEWS,
Chairman No. 2 Committee.
London, Ont.

Town of Campbellford

POWER DEVELOPMENT

At Middle Falls
ON THE TRENT RIVER

Scaled tenders are required for Rock Cutting, Con-
crete Work, Turbine Wheels, Generators and about
2½ miles of Transmission Line. Plans and specifi-
cations may be seen after July 26th, at the office of
the Engineer, JOHN S. FIELDING, C. E., CON-
SULTING ENGINEER, 14 Toronto Street, Room
12, Toronto. Tenders to be in by 12 o'clock noon,
AUGUST 15TH, addressed to W. J. Doozee, Esq.,
Mayor of Campbellford.

The lowest or any tender not necessarily accepted.

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

TENDERS FOR

City Hall CALGARY, ALBERTA

Scaled 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 tenderers 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. SPEARMAN, C. E.,
Chairman Public Works, City Engineer.

W. M. DODD, Esq., Architect.
July 16th, 1907.

[FOR ADDITIONAL ADVERTISEMENTS FOR TENDERS SEE NEXT PAGE]

To Pump Contractors

Sealed tenders will be received by the City Clerk, Calgary, Alta., until 12 o'clock at noon on **MONDAY, THE 29th DAY OF JULY INST.**, for supplying and erecting on foundation to be built by the City, one Turbine Pump, direct connected to a 150 H. P. motor, mounted on same base and supplied with necessary starting box. The pump to have a capacity of 2½ million gallons in 24 hours when pumping against a head of 231 feet.

For further particulars apply to the City Engineer's office, Calgary.

Contractors to state the date they will undertake to have above machinery erected and ready for use. The lowest or any tender not necessarily accepted.

R. E. SPEAKMAN,
City Engineer.

TENDERS

Sealed tenders marked "Tenders for Sewer Drain", will be received by the undersigned until 12 o'clock, noon, on **TUESDAY, THE 30th DAY OF JULY, 1907**, for the supply of all material, machinery, tools, labor &c., for the construction of a sewer drain in the Village of Finch, including appurtenances (estimated cost \$3131.73).

The total length of pipe required will be 2,052 feet, as follows:

1,144 feet eighteen inch pipe,
513 feet fifteen inch pipe,
395 feet nine inch pipe.

The following appurtenances will be required:
Six catch basins, three manholes, one lamp hole and protection to lower end of pipe.

Plans and specifications may be examined and forms of tender secured at my office in the Village of Finch or at the office of Magwood & Walker, Civil Engineers, Cornwall.

A certified cheque or cash deposit equal to 5 per cent. of the tendered price to accompany each tender.

The Municipal Council of the Village of Finch reserves the right to accept the lowest or any tender or to reject any or all tenders.

JAMES R. SIMPSON,
Clerk, Village of Finch.

Finch, July 16th, 1907.

TENDERS FOR ARCH BRIDGE

Sealed tenders, addressed to the Clerk, County of Grey, will be received up to 6 p. m. of **SATURDAY, AUGUST 3rd**, for the construction of a Reinforced Arch Bridge over the Potawatimi River, Owen Sound.

- 1.—Reinforced Cement-Concrete Arch Bridge, 45 feet span, 465 cu. yards.
- 2.—Filling of approaches, 480 cu. yards.

An accepted bank cheque for 5% of tender, payable to the Treasurer, County Grey, must accompany each tender, the same to be forfeited if the successful tenderer decline the contract or fail in the performance thereof, and to 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 the Clerk or Engineer.

JOHN RUTHERFORD,
County Clerk.
R. McDOWALL, C. E.,
County Engineer.

TENDERS FOR BRIDGE

Sealed tenders, addressed to the Warden, County of Bruce, will be received up to 6 p. m. of **SATURDAY, AUGUST 3rd, 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 c-c, 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 McDOUGALL,
Warden County of Bruce,
R. McDOWALL, C. E.,
County Engineer, Owen Sound.

CONTRACTS OPEN.

SUDBURY, ONT.—The Bank of Montreal will erect a new block in this town.

INDIAN HEAD, SASK.—Plans for the new station call for a brick and stone building 125 by 33 feet.

NEWCASTLE, N.B.—A new fish hatchery is to be erected near hear by Mr. J. Sheasgreen at a cost of \$5,000.

PORT ELGIN, ONT.—A grant of \$8,000 has been made to the town for the erection of a public library building.

HULL, QUE.—Excavation work has commenced in connection with erection of building for the Bank of Montreal.

SOURIS, MAN.—The Town Council have recently taken tenders for construction of about 12,000 square feet of cement walks.

STRATFORD, ONT.—The International Snow Plow Co. will install a plant for the manufacture of steel box and flat cars.

GUELPH, ONT.—A new steam heating plant and ventilating system is to be installed in St. Joseph's Hospital at a cost of \$7,000.

SASKATOON, SASK.—A site has been acquired and plans have been prepared for the Masonic Temple to be erected at a cost of \$20,000.

NIAGARA FALLS, ONT.—The citizens are considering the acceptance of a grant of \$12,000 to be used in erecting a public library building.

GRANTON, ONT.—The ratepayers of Biddulph Township have defeated a by-law which provided for erection of steel bridges at a cost of \$4,000.

WELLAND, ONT.—The Town Council will likely engage Wilis Chipman, C. E., Toronto, to prepare plans for a complete sewerage system.

INGERSOLL, ONT.—The Town Council have under consideration a proposition submitted by an American firm to establish a new industry here.

NEW GLASGOW, N.S.—J. Roy, Town Clerk and Treasurer, wants bids up to August 6th for purchase of \$60,000 4½ per cent. 30 year debentures.

EDMONTON, ALTA.—R. R. Hoffmann, of Chicago, and A. T. Raynsford, of New York, have been in this city with a view to establishing a brick plant.

BATHURST, N.B.—An exhibition association has been formed here and the necessary property is being negotiated for on which to erect suitable buildings.

SANFORD, MAN.—H. Grids, Secretary-Treasurer Municipality of Macdonald, wants bids up to August 3rd. for purchase of \$13,725 municipal debentures.

DAUPHIN, MAN.—The Canadian Northern Railway will erect a new roundhouse as well as make other improvements to their property in this town.

HAMILTON, ONT.—Plans are being prepared by Stewart and Witton, architects, this city, for a \$75,000 structure for the Canada Steel Goods, Co., Limited.

ST. JOHN, N. B.—It is possible that the Public School Board may decide to build a two story building containing six school rooms and an exhibition hall on the Weldon site.

SHAWBRIDGE, QUE.—The management of the Boys' Farm and Training School have decided to have plans prepared at once for the buildings which they purpose erecting here.

MAGOG, QUE.—A. Tourigny, Town Secretary-Treasurer, will receive tenders up to July 25th for construction of extensions to the waterworks system. Plans at Secretary-Treasurer's office.

PEMBROKE, ONT.—The Town Council have passed a by-law to borrow \$10,000 for local improvements.—The Grand Trunk Railway will shortly commence the erection of a new station.

DALHOUSIE, N.B.—Senator Edwards, of Ontario, and several other capitalists have arrived here to investigate the possibilities of establishing large mills in the Bay des Chaleurs country.

PORTAGE LA PRAIRIE, MAN.—A plant for the manufacture of illuminating gas from straw is to be established in this city. The site for the buildings has already been secured from H. Stephens.

NORTH LANCASTER, ONT.—A. J. Macdonald, Municipal Clerk, wants tenders up to July 29th for construction of two concrete abutments and steel superstructure. Plans at Clerk's office.

ST. THOMAS, ONT.—The by-law granting a \$50,000 bonus for the establishment of a plant for the manufacture of railroad cars has been carried. Work on the buildings is to be commenced at once.

FERNIE, B.C.—The Minister of Militia and Defence, Ottawa, has communicated with the local authorities advising them that he has given instructions for the erection of an armory in this town.

SELKIRK, MAN.—A by-law is to be submitted to the ratepayers for the purpose of raising \$11,000 by debentures for the rebuilding of the Central school and erection of a two-room school in the south ward.

LA TUQUE, QUE.—Preparations are under way here for the construction of mammoth pulp mills at Berlin, N. H. Railway contracts have already been made for the shipment of 6,000 cars of pulp per year.

SWIFT CURRENT, SASK.—The C. P. R. are making extensive improvements to yards here. \$550,000 is to be expended in erecting new round house, station and other buildings, yard improvements, etc.

LONDONDERRY, N.S.—It is understood that the Montreal Pipe Co. will install a plant for the manufacture of car wheels.—The Londonderry Iron & Mining Co. intend erecting a number of workmen's cottages.

ROSTHERN, SASK.—Nobles and Anderson, architects, Prince Albert, Sask., want bids up to July 31st for erection of the City Hall building. Plans at Town Clerk's office and also at the office of the architects.

BERLIN, ONT.—Plans are being prepared for the reconstruction of St. Jerome's Roman Catholic College. Excavation work has already been commenced for the foundations of the first wing, which will cost \$80,000.

SHERBROOKE, QUE.—The ratepayers will vote on a bylaw on July 26th. to provide for the granting of concessions to the E. & T. Fairbanks Company, of St. Johnsbury, Vt., to establish their Canadian factory in this city.

MELITA, MAN.—A bylaw will be submitted to the ratepayers on August 3rd. providing for an issue of five per cent. 20 year debentures to cover cost of constructing and repairing sidewalks and drains and improving streets.

FINCH, ONT.—J. R. Simpson, Village Clerk, wants bids up to July 30th for construction of a sewer, the estimated cost of which is \$3,131.73. Plans at the Clerk's office and with Magwood & Walker, Civil Engineers, Cornwall.

THOROLD, ONT.—The Board of Trade have passed a resolution asking the Town Council to submit a by-law to the people to guarantee a loan of \$3,000 to the Caldwell Bit & Tool Co., in con-

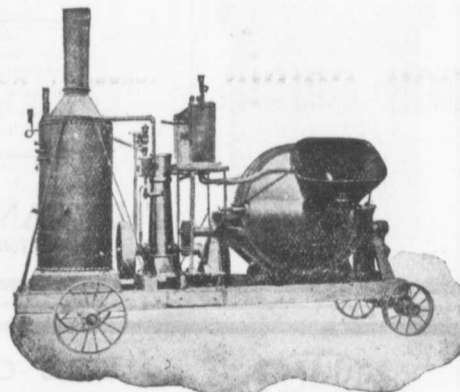
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to turn out a batch of concrete
with the

SMITH MIXER

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**The Best
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All Kinds
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Concrete Work**



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sideration of their plant being established here.

NELSON, B.C.—W. W. Beer wants bids up to August 5th for erection of Methodist church. Plans may be seen at Mr. Beer's office.

REGINA, SASK.—F. J. Robinson, Deputy Commissioner of Public Works, this city, wants tenders up to July 31st for excavation of about 7,000 cubic yards of earth. Plans and information can be obtained from the above named official.

TRURO, N. S.—D. Pottinger, General Manager Intercolonial Railway, Moncton, N. B., wants bids up to July 31st for erection of a brick stores and office building in this town. Plans with Local Station Master and Chief Engineer, Moncton.

OWEN SOUND, ONT.—The Chairman Board of Works wants bids up to July 26th for construction of cement-concrete sidewalks and gutters and supply of sewer pipe. Plans and specifications at offices of the Town Clerk and Town Engineer.

CHELSEA GREEN, ONT.—The Wilcox Hardware Mfg. Company contemplate installing a large molding plant.—There is also some talk of a large plow works being erected here, but no definite information in this regard has yet been made public.

ST. CATHARINES, ONT.—L. K.

Jones, Secretary Department Railways and Canals, Ottawa, will receive tenders up to July 31st for the substructure of new bridge over Welland Canal, this city. Plans with Superintending Engineer Welland Canal, this city.

BRANDON, MAN.—F. Gelinus, Secretary Department of Public Works, Ottawa, invites tenders up to August 8th for erection of armoury building in this city. Plans at office of the above named department and with the caretaker of the Dominion Public Building, this city.—A two-storey addition is to be made to the Empire hotel building.

WINDSOR, ONT.—S. Lusted, City Clerk, will receive tenders up to August 8th for the purchase of the following debentures: \$20,000 4 per cent. 20 year, macadam pavement; \$10,000 4½ per cent. 20 year, waterworks; \$49,480.40 4½ per cent. to year, local improvement.

VICTORIA, B.C.—An extension is to be built to the local post office.—J. F. Shadforth, an English iron-master, has been in this city endeavoring to interest capital in the establishment of a large iron and steel plant on Vancouver Island. The amount he requires is about \$2,000,000.

MEDICINE HAT, ALTA.—E. Roberts, Secretary-Treasurer S. D. No. 76, wants bids up to August 1st. for purchase of \$10,000 five per cent. school district

debentures.—It is understood that the Provincial Government have purchased a site for the proposed court house to be erected here.

PIPESTONE, MAN.—A Pitt, Secretary-Treasurer Pipestone School District, wants tenders as follows: Up to July 29th for erection of addition to Public School building. Plans with J. W. Crawford, this village; up to July 31st for purchase of \$3,000 five per cent. twenty year school district debentures.

LETHBRIDGE, ALTA.—Geo. Whelen, Secretary-Treasurer Lethbridge Woollen Company, Limited, wants tenders up to August 15th. for purchase of \$40,000 five per cent 20 year company debentures, guaranteed by the City of Lethbridge.—The Waterton Land and Power Company will erect a saw and planing mill here costing \$40,000.

BARRIE, ONT.—A. J. Leslie has presented a proposition to the Town Council regarding the erection of a sash and door factory in the town. The proposed building would be 300 by 80 feet.—It is understood that the Dymont Foundry Company are negotiating with the Town Council relative to establishing their works here.

CAMPBELL FORD, ONT.—The Town Council have instructed John S. Fielding, C.E., consulting engineer, 15 Toronto street, Toronto, to proceed with



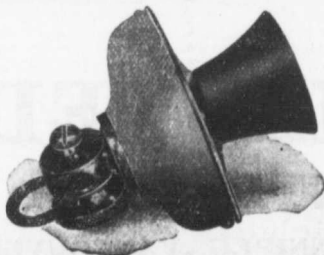
You Cannot Afford to Take Chances

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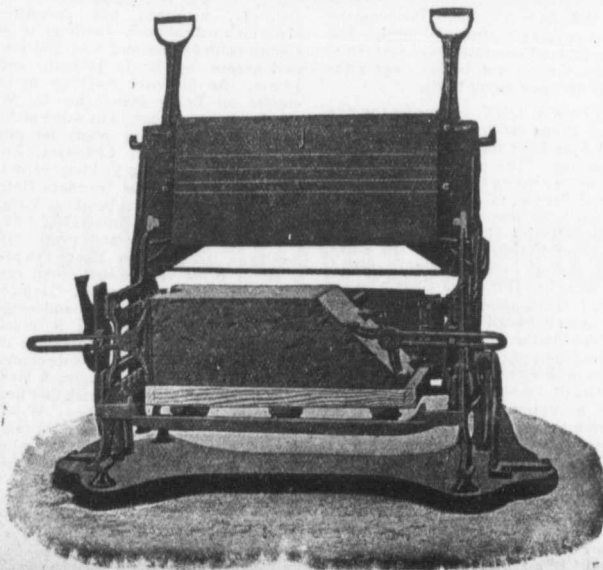
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Water Table, Gable, Circle, Angle, Chimney, Cornice, Pier Blocks, etc.

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the plans of their power development at Middle Falls. Tenders will be called for shortly, and the work will include rock cutting for raceway, concrete powerhouse and wheel pits, wheels and generators for about 2,000 h.p. and about 2¼ miles of transmission line.

FORT WILLIAM, ONT.—The C. P. R. have under contemplation the erection of a coal handling plant here at a cost of \$1,250,000. Three sites are in view.—The Fort William Building and Realty Co., Ltd., have purchased lots on which dwellings will be erected at once.—Mr. Murray has received word from his associates in England to go ahead with a five-story building on the corner of May street and Victoria avenue. A contract to have the old buildings now occupying the property moved to other vacant property owned by the same syndicate has been made.

PETERBORO, ONT.—F. Adams, City Treasurer, will receive tenders up to August 10th, for purchase of following city debentures: \$29,999.84 four and one-half per cent. 20 years; \$63,043.95 four per cent. 30 year.—A. J. Grant, Superintendent Engineer, Trent Canal, this city, will receive tenders up to August 7th for construction of section No. 5 of the Ontario Rice Lake division of the Trent Canal. Plans at Mr. Grant's office and with H. P. Bell, Campbellford, Ont., and Chief Engineer Department Railways and Canals, Ottawa.—The Bank of Ottawa have purchased the store next to their present premises with a view to enlarging their offices.

LONDON, ONT.—The new Isolation Hospital buildings, of which there will be three in number, will be erected near Victoria Hospital, at a cost of \$50,000 in all. The Ontario Government's hygienic institute will be located near the hospital on Ottawa—Avenue. It has been learned through T. Knott, real estate agent, that negotiations are on at present, to establish a large malleable iron works in the southeast end of the city. Several local men are behind the project.—H. F. McNaughton, Secretary Public Works Department Ontario Government, Toronto, wants bids up to July 26th for alterations to the Normal school in this city. Plans at the above Institution and at office of the Public Works Department.

WINNIPEG, MAN.—Steps are being taken to erect a Roman Catholic church at Winnipeg Beach.—The C.P.R. have signified their intention to double-track their main line between this city and Brandon. The work is to commence at an early date.—The Winnipeg branch of Dr. Gator's Benevolent Society have decided to erect a building to cost \$50,000.—J. H. Howden, Minister of Railways, Telephones and Telegraphs, this city, wants tenders up to July 27th, for building subway required in the Manitoba Government Telephone System in Winnipeg. Plans at office of Railway Commissioner, this city.—A by-law is to be introduced in the City Council to issue debentures for \$50,000 for the purpose of erecting an abattoir.

FREDERICTON, N.B.—The Department Public Works, this city, wants tenders as follows: Up to July 22nd for rebuilding Beach bridge, Queen's Co. Plans with J. L. Beach, Hunter's Home, Queen's Co. Up to July 22nd for rebuilding Alward Brook Mouth bridge, Queen's Co. Plans with R. H. Corey, New Canaan, Queen's Co. Up to July 22nd for rebuilding Viennese bridge, Northumberland Co. Plans with R. Murray, M.P.P., Chatham, and H. Bourque, Rogerville, Northumberland Co. Up to July 29th for rebuilding Crow Harbor bridge, Charlotte Co. Plans with M. Harding, Seely's Cove, Charlotte Co. Plans for all the above

mentioned works may be seen at the office of the Department of Public Works, this city, as well as with the several parties named above.

CALGARY, ALTA.—Owing to the fact that the tenders received for the erection of the City Hall, were much in excess of the estimate, the Public Works Committee have instructed the architect to alter the specifications in order to lower the cost. The Committee will then call for new tenders.—Several leading educationists of the west are agitating the establishment of a large university somewhere in the west to serve the three most westerly provinces. They are approaching the Provincial Governments in turn in regard to the matter.—A building permit has been granted to A. C. Sparrow to erect a three-storey stone and brick veneered apartment house at a cost of \$55,000.—The City Clerk wants tenders up to August 8th for erection of a new city hall. Plans at office of the architect, W. M. Dodd, this city, and at the office of the Builders' Exchange in Montreal, Toronto, Winnipeg and Vancouver.

VANCOUVER, B. C.—It has been announced that ex-Alf. Cook will erect a modern 10 storey brick and steel office building on Alexander street.—The City Council are considering the submission to the ratepayers of several money bylaws which will probably total upwards of \$300,000.—Reports are current that the V. W. & Y. railway will shortly commence constructing the grades to the proposed bridge over the Second Narrows. Acting under instructions from the company, Col. Tracy, C. E., has already commenced test borings on the site of the structure. It is said that the company will build a bridge to carry its proposed traffic only, but of such design that a bridge for general purposes could be added when necessary. The plans for such a bridge are understood to have been passed by the Railway Commission.—It is probable that McGill College authorities will call for competitive plans for the buildings which they propose erecting.—C. E. Cartwright, Division Engineer C. P. R., this city, has taken tenders for erection of station, freight shed and oil house at Kamloops.—J. W. Gordon, acting for a local syndicate has purchased the Johnston-Kerfoot block on Cordova street. It is the intention of the new owners to add a storey to the building.—J. Coughlan & Sons have acquired a large site and will erect thereon a building 65 by 120 feet. The company will manufacture structural steel.—The Civic Bridge Committee have decided to replace the present bridge over False Creek by a new swing bridge.

OTTAWA, ONT.—Plans for the new Grand Trunk station and million dollar hotel have been filed with the Railway Committee. The plans contemplate a terminal station on the site of the present Central Station, to cost \$250,000. The hotel will be just to the north of the station, abutting the east bank of the canal and Rideau street on the north, and is planned in a semi-gothic style.—The reconstruction of the Church of the Sacred Heart is to commence shortly. The new edifice will be much larger than the one destroyed by fire last June.—Mayor Scott, of this city, is in communication with General Manager Hays, of the Grand Trunk Pacific, in connection with a project to build an hotel on Nepean Point. Several prominent local capitalists are also behind the scheme.—F. Gelinas, Secretary Department Public Works, this city, wants tenders up to August 7th, for construction of an addition to Rideau Hall. Plans at office of the above named department.—The following building permits have been issued: David Matthews, three brick ve-

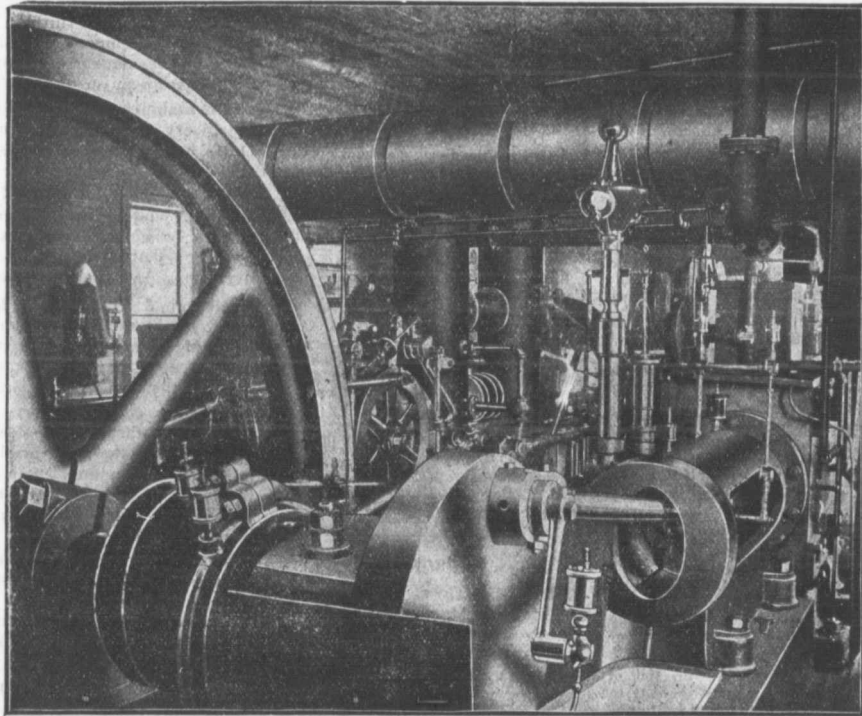
neered dwellings, Albert street, \$4,000; D. O'Connor, Sr., two shops, Bank street, \$12,000; F. L. Pereira, double brick veneered dwelling, Fourth avenue, \$6,000; J. Bonner, frame dwelling, Goulbourne avenue, \$2,500; W. H. Pennock, solid brick dwelling, Stewart street, \$4,000; W. H. Smith, brick veneered dwelling, Second avenue, \$2,800; H. T. Pritchard, brick workshop, Sparks street, \$8,200.—A. McNicholl, Secretary Treasurer Separate School Board, wants tenders up to July 25th for erection of a four-roomed addition to St. Ann's school. Plans at office of the Board and with C. P. Meredith, 193 Sparks street.

TORONTO, ONT.—F. C. Burroughes & Company have purchased 22 feet of property adjoining their premises on Queen street west and will utilize same for the extension of their building.—The newly formed Dominion Pharmaceutical Company have purchased property corner Lombard and Jarvis streets and will erect a factory and laboratory thereon.—The Bank of Nova Scotia will erect a five-storey addition to their building on King street west. Darling & Pearson are the architects.—G. W. Goulock, architect, is preparing plans for the new building to be erected on Adelaide street east by the Canadian Birkbeck Investment Company. The structure will be of stone and steel, fireproof throughout and five storeys high.—The Chairman Board of Control will receive tenders up to July 31st for construction of following works: Asphalt pavements—Ontario street, Queen street to Wilton avenue; Boulevard avenue, Dundas street to 650 feet west; Dupont street, Bathurst street to Kendal avenue; Dupont street, Walmer road to Kendal avenue; Wood street, Yonge to Church streets; Clinton street, Baiton avenue to Yarmouth road. Asphalt block pavement—Strachan avenue, G.T.R. tracks to 612 feet south. Vitrified block pavement—Peter street, Front street to Wellington street. Sewers—Duel avenue, Cuzin street to 220 feet west; Rosedale road, 440 feet north of Park road to Avondale avenue. Also a large number of concrete sidewalks. Specifications may be seen at the office of the City Engineer.—It is reported that Mackenzie & Mann will shortly submit a formal offer to the City Council regarding the establishment on the Ashbridges Bay property of their immense smelter and car shops. The scheme is said to be very extensive and requiring capital of about \$50,000,000.—J. H. Galloway, architect, has completed plans for a pair of brick dwellings to be erected corner of Bedford road and Boswell avenue by E. J. Jackson, cost \$8,000, also for brick dwelling to be erected on Triller avenue for C. W. Chadwick, cost \$4,000. The same architect is now preparing plans for two dwellings for C. W. Chadwick, cost \$6,000.—The following building permits have been issued: New Northern Hotel Co., 3 storey brick hotel building, Yonge street, \$10,000; Love Bros., Ltd., 4 pair 2 storey brick veneer and rough cast dwellings, Logan avenue, \$8,000; 10 pair 2 storey brick veneer and rough cast dwellings, Riverdale avenue, \$24,000; 12 pair 2 storey brick veneer and rough cast dwellings, Langley and Riverdale avenues, \$36,000; R. B. Burkell, 4 attached 2 storey and attic brick dwellings, Arthur street, \$10,000; Langley & Howland, (in trust) 2½ storey brick dwelling, Chestnut Park Road, \$7,500; W. G. Chisholm, pair 2 storey and attic semi-detached brick dwellings, Rusholme Road, \$6,000; F. S. Duff, pair 2½ storey semi-detached brick dwellings, Beatrice street, \$6,000; J. M. Lenaghan, Bedford Park, P.O., 2 storey and attic brick dwelling, \$10,000.—A brick and concrete warehouse is to be erected at 169 York

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Horizontal double acting crank and flywheel plunger pump built by us for Glace Bay, N. S.



Important factors in the selection of this type of pumping engine are simple construction, relatively small in total cost and low expense for maintenance and repairs. This and other similar pumps described in Bulletin 400.

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street by H-pert Bros. at a cost of \$9,000.—E. R. Babbington, architect, is preparing plans for a three-storey brick extension to the factory of the White-Allan Co. at 57 Sherbourne street.

CONTRACTS AWARDED.

PERCY, SASK.—Erection of Presbyterian church: W. Butchart, Arcola, Sask., contractor.

BELLEVILLE, ONT.—Erection of Isolation hospital to cost \$14,000: F. Dolan, this city, contractor.

SARNIA, ONT.—Erection of warehouse for Pere Marquette Railway: Gallagher & Son, Chatham, contractors.

MONTREAL, QUE.—Erection of new Engineering Building for McGill University: Buyers & Anglin, this city, contractors.

CALGARY, ALTA.—The School Board have awarded contract for erection of High School building to McDonald & Roy, at \$68,000.

TILLPURY, ONT.—The Town Council have awarded contracts for construction of sidewalks, to cost \$10,000, to the Pettypiece Silex Stone Co.

WELLAND, ONT.—The contract for straightening and widening the Welland Canal has been awarded to W. E. Pin. The appropriation for the work is \$75,000.

WINNIPEG, MAN.—Kelly Bros. & Mitchell have been awarded contracts for construction of Canadian Northern Railway shops at Fort Rouge. The contract price is about \$200,000.

WOODSTOCK, ONT.—Erection of new Y. M. C. A. building: Masonry, Geo. Adams; carpenter work, Broom & Woodall; plumbing, Whitney Bros.; painting and glazing, J. Maycock.

AMHERST, N. S.—Erection of building for Bank of Nova Scotia: Rhodes, Curry & Co., this town, contractors.—Erection of new station for Intercolonial Railway: Leblance & Co., Moncton, contractors.

MOOSE JAW, SASK.—Erection of addition to King Edward School: Kent & Ault, successful tenderers, \$6,959. Installation of heating system in same building: Moose Jaw Hardware Co., \$2,195.—P. J. McDonald has been awarded contract for the cement basin for the new gravity system of waterworks at \$19,800.

STRATHCONA, ALTA.—Erection of three storey addition, 60 x 32 feet, to Strathcona House, property of J. Beauchamp: Pheasly & Batson, contractors; H. M. & W. A. Whiddington, architects. Estimated cost of work, \$18,000.

OTTAWA, ONT.—The contract for clearing the right-of-way on the Abitibi section of the Grand Trunk Pacific has been awarded to J. B. O'Brien, who will at once start upon the work.—Erection of new Y.M.C.A. building: Peter Lyall & Son, Montreal, successful tenderers at \$217,000.

ROSTOCK, ONT.—The Ellice Township Council received the following tenders for repair of the Whirl Creek drain: R Hanna, \$7,000; McDonnell & Crowley, \$8,973; A. Guhr, \$7,300; A. Hyslop, \$7,143.80; Smith & Bannerman, \$10,397.70; J. Denstet & Zimmerman, \$9,693; Connelly & Nicholson, \$9,328; Crowley & Murray, \$8,618. The tender of A. Hyslop was accepted.

ST. THOMAS, ONT.—The Elgin County Council have awarded the following contracts for the rebuilding of the Vienna bridge: Concrete work, O. D. & A. L. Oatman, \$1,995; steel superstructure, Hamilton Bridge Co., \$3,729; steel reinforcement will cost an additional \$200. Other bidders—Concrete work, G. Ponsford, \$2,990; steel superstructure, Petrolia Bridge Co., \$4,140; Ontario Bridge Co., \$3,812.

TORONTO, ONT.—Supply of steel and construction of the Lansdowne avenue subway: Cleveland Bridge & Engineering Company, Darlington, England, successful tenderers at \$53,443.38.—Repairs to Cowan avenue fire station: Galvanized iron and roofing, Forbes Roofing Co., \$177; gas fitting, plumbing and hot water heating, Fred Armstrong Co., Limited, \$1,278; electric wiring, Fiddes & Hogarth, \$58.—The City Council have awarded contract for construction of crib work opposite Exhibition grounds to Peter Arnott at \$34,400.—J. H. Galloway, architect, has awarded contracts for erection of a brick residence for J. L. O'Malley to A. W. Switzer. Cost \$6,000.

CHATHAM, ONT.—Erection of buildings for the Wolverine Brass Co.: J. Piggott & Sons, contractors.—The City Council have awarded contract for installation of electric lighting plant to the Colonial Engineering Co., Montreal, at \$13,000. In connection with the plant a new system of gas engines will be used. Bids were also put in by the following firms: Strouthers Well Co., Warren, Pa., \$13,900, exclusive of dynamo; John McDougall Co., Toronto, \$10,375, including gas producer or dynamo; S. M. Jones Co., Toledo, Ohio, \$13,700, exclusive of dynamo; Canadian Fairbanks Co., Toronto, \$12,300, exclusive of dynamo; Canadian General Electric Co., Toronto, \$10,000, exclusive of dynamo or producer.

FIRES.

Buildings of the Nye Canning Co. and Cotton Shingle Mill Co., Vancouver, B.C., loss \$20,000.—Flour and oatmeal mill of A. A. Bowen & Co., Kemptville, Ont., loss \$40,000.—The Tracy Block, owned by Mrs. A. A. Tracy; two storey building, owned by J. T. G. Carr; three storey building, owned by Keith & Plummer; two storey building, owned by J. D. Shaw; two buildings, owned by W. S. Henderson; two three storey buildings, owned by W. T. Boyer; three storey building and two smaller buildings, owned by H. M. Boyer, at Hartland, N. B., all destroyed. Loss about \$100,000.

PERSONAL.

Mr. Jos. I. Cote, sub-contractor for Messrs. Mackenzie & Mann, was drowned, July 11th, at Key Harbor, 30 miles north of Parry Sound, Ont.

Mr. Peter Larson, a member of the railroad contracting firm of Foley Bros. & Larson and also of the firm of Foley, Lock and Larson, Winnipeg, died at Helena, Montana, on the 12th inst. Deceased held many important contracts in West-

ern Canada and was reputed to be a millionaire.

Mr. Francis Leighton has arrived from Liverpool, England, to assume the position of general manager of the Vancouver Engineering Works, Vancouver, succeeding Mr. Colin F. Jackson. Mr. Leighton was secretary of the corporation for several years, but resided in England.

NOTES.

Bourgeois & Collins, contractors, Three Rivers, Que., have registered.

It has been reported that J. Liikali, contractor, Port Arthur, Ont., has assigned to G. H. Rapsey,

The stock of the Fruitland Brick & Supply Company, Fruitland, Ont., has been advertised for sale by the assignee.

The assignee of the Good Roads Machinery Company, Hamilton, Ont., has advertised the assets of that concern for sale.

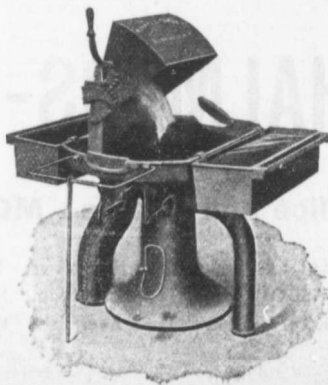
The business of McMillan & Costain, planing mill owners and dealers in builders supplies, East Toronto, Ont., has been taken over by L. A. DeLaplante, Ltd.

Gillespie & Smith and J. Matheson & Co., two firms of contractors, Montreal, have registered, while Acer & Matheson, contractors, of the same place, have dissolved.

Supplementary letters patent have been granted the Provincial Construction Company, changing the name of that concern to the Montreal Suburb Construction Company, Limited.

Mr. Joseph Harvey, well driller, of Greensville, Ontario, is now engaged in the construction of the waterworks wells for the town of Wetaskiwin, Alta. The work was started a fortnight ago.

The plant of the Midland Engine Works, Midland, Ont., is again in operation. The firm is doubling the capacity of the moulding room, and will, during the summer, make large extensions in the other branches of their business.



Down Draft Forges

Add to your smith's pay a certain amount of self respect and satisfaction gained through working in a clean up-to-date shop free from smoke fumes. **Buffalo Down Draft Forges** make a neat efficient forge shop.

Canadian Buffalo Forge Co.
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NEW COMPANIES.

Progress Manufacturing Company, Limited, Montreal, Que., incorporated to manufacture cotton, linen, woolen and other textile fabrics. Capital \$49,000. Incorporators, G. H. Harrower, J. P. Black, J. R. Gordon, W. G. R. Gordon and others, all of Montreal.

Argenteuil Lumber Company, Limited, Morin Flats, Que., incorporated; capital \$90,000. Incorporators, J. E. Seale, and J. P. Middleton, both of Morin Flats, and G. H. Perley, G. A. Scott and Rev. H. Jeckill, all three of Montreal.

Canadian Distilleries, Limited, Winnipeg, Man., incorporated, capital \$1,000,000. Incorporators, W. A. Faulkner, T. A. Emerson, H. A. Wise, W. R. Lewis and G. Cooper, all of Winnipeg.

King Telephone Company, Limited, Temperanceville, Ont., incorporated, capital \$10,000. Directors, T. H. Legge, A. Wells, W. H. Legge, W. H. Glass and G. D. Lockhart.

James Bay Lumber Company, Limited, Toronto, incorporated,

capital \$40,000. Directors, T. R. Parker, L. W. G. Parker, A. M. Miller, T. Reid and C. W. Thompson.

Waskada Gas Company, Limited, Waskada, Man., incorporated, capital \$10,000. Incorporators, G. R. McLean, W. H. Hatham, L. C. Peters, G. E. Knechtel and H. J. Lawrence, all of Waskada.

De Witt Construction & Realty Company, Limited, Montreal, incorporated, capital \$80,000. Incorporators, W. E. Muir, T. W.

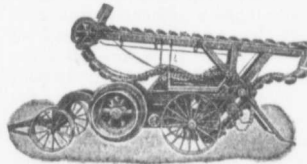
De Witt, F. G. Bush, all three of Westmount, and R. C. McMichael and M. J. O'Brien, both of Montreal.

The Ontario Portland Cement Co., Brantford, Ont., have recently placed orders for two motor and 10 ordinary flat cars, and it is understood they will operate a night service over the Grand Valley Railway tracks between Blue Lake, Brantford and Galt.

THE PRIESTMAN EXCAVATOR AND DREDGER

is used throughout the world. Will do more work with less labor, at a less first cost than any Excavator at present in use in Canada. For particulars write

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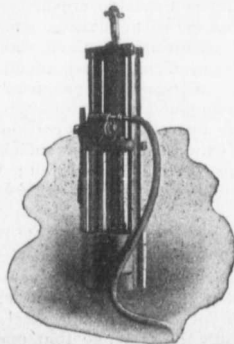
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Reasons!

- They drive more rapidly and more economically.
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- They do not shatter the Pile.
- They can drive pile when the drop hammer cannot.
- They are no wearing out of hoisting lines.
- They drive more piles in a day.
- They usually leave the pile so that it need not be cut off.
- They make sharpening of piles ordinarily unnecessary.
- Our catalog tells a whole lot more. A postal card will bring one.

Georgian Bay Engineering Works
MIDLAND, ONT.

MAKING OF CONCRETE CULVERTS

The following is an extract from a very interesting report of the State Highway Commission of Michigan upon the subject of concrete:

Excellent culvert pipe of concrete can be manufactured cheaply in any gravel pit under the immediate direction of the township highway commissioner. The pipes are from two to four inches in thickness, according to diameter, which latter may safely and conveniently reach three feet, in lengths of two and one-half feet.

The implements required are of the simplest kind. The most important are two steel spring cylinders, one to set inside the other, leaving a space between the two equal to the thickness of the finished concrete pipe. By "spring cylinder" is meant such a cylinder as would be formed by rolling a steel plate into a tube without sealing the joint. With the smaller of these cylinders the edges overlap or coil slightly, but are so manufactured that the edges may be forced back and set into a perfect cylinder. With the larger the edges do not quite meet, but may be forced together and fastened. Accompanying these molds are bottom and top rings, which shape the bell and spigot ends of the pipe.

The two cylinders, with joints flush, are set on end, the one centrally inside the other, and on the bottom "ring," which in turn rests on a firm board bottom. The concrete, made of first-class cement, sharp sand and good clean gravel, in the proportion of one part of cement to one of sand and two of gravel, is then tamped firmly but lightly into the space of mold between the two cylinders. If there are sufficient fine pebbles in the gravel to well fill the voids in the larger pebbles no sand will be needed.

The tamping iron used to press the concrete into place is so shaped as to fit closely to the cylinders.

The concrete is allowed to stand in the mold for a short time, when the cylinders are removed; the outer, larger cylinder by removing the clamps and allowing the edges to spring apart. The inner cylinder by removing the fastenings so as to allow the edges to again overlap returning to the shape of a coil. The outer cylinder having thus been made larger and the inner one smaller, they can readily be taken away, and the concrete pipe is then left until thoroughly hardened. For the larger sizes of culvert pipe the two halves of the outer cylinder are usually hinged and can be more carefully removed than when allowed to "spring" from the concrete.

Just such a number of pipe as are actually required for the season's

work need be manufactured; the implements required are inexpensive, and the pipe may be made by the townships for actual cost, which, after a little experience, can be reduced to a very small amount.

If concrete pipe are employed they must be of first-class quality. They must be well shaped, as with sewer pipe, and all the rules for making a good concrete must be observed; that is, the material composing the concrete (cement and gravel) must be of good quality and properly mixed. The making of good concrete is not a difficult matter, but it is sometimes hard to find men who will follow directions. Dirty sand or gravel, too much water, careless and insufficient mixing, neglect to see that the materials are used in the right proportions, are the defects most commonly found. Concrete cannot be mixed like common mortar, and an attempt to do so is far too often made. It is affirmed by cement manufacturers that masons are the greatest offenders in this respect; that it is almost impossible to get them to follow any system other than that to which they have been accustomed in the use of common lime; and that, therefore, an entirely inexperienced but practical man, who will follow directions, will often make the best concrete.

The preparation of the materials which compose the concrete mass is a feature which is overlooked a great deal more than it should be. "Rock Products" is the only publication that has ever suggested the importance of preparing the sand and the crushed rock or gravel which composes the concrete aggregation. Damp sand is not to be recommended when the best results are expected in concrete operations. The cement which is mechanically and chemically perfectly dry seems to insist upon coating little lumps of wet sand which prevents its distribution throughout the mass as it would be distributed if the cement and dry sand were thoroughly mixed together first, and then added to the gravel or crushed rock in the shape of a mixture, which, after being intimately mixed, should then have sufficient water added to make it a workable proposition. The drying of sand in all kinds of concrete operations is as certain to come as the necessity for sufficient tamping has made itself felt; for every failure or partial failure of concrete work is traceable to the neglect of either one or both of these conditions.

It has been proven after several tests that the expansion and contraction of concrete and steel is practically the same, so that under the changes of temperature the combined materials act as one

body. There are no interior stresses produced, either in the concrete or the embedded steel, therefore they do not separate and lose in any degree their combined strength.

There is a natural affinity between concrete and steel which averages about 600 lbs. to the square inch. This adhesion to a very large degree even prevents plain steel rods from slipping through the concrete when properly embedded in it.

The effect of reinforcement with large mesh expanded metal in the concrete is that it enables the concrete in tension to elongate from fifteen to twenty times as much without cracking as plain concrete will do. These facts have been carefully established by researches of practical engineers, who have made a great number of tests of reinforced concrete.

The steel embedded in concrete takes care of the tension stresses and gives the concrete great elasticity, at the same time making it possible to use the full tensile strength of the steel and the immense compressive strength of the concrete.

It has been proven that expanded metal is thoroughly protected by the concrete against corrosion, that it never can rust and disintegrate from the effects of gases, water or electrolysis. Expanded metal has been taken out of concrete after being enclosed for years and found to be in as good condition as the day it was put in.

Fireproof reinforced concrete floors can be used economically for any reasonable span. For floor of large spans and heavy warehouse loads it is better to use the gravel or crushed stone, but for any ordinary purpose such as office buildings, hotel, hospitals, schools etc., cinder concrete is not so heavy and is sufficiently strong. Cinder concrete will weigh about 7 lbs. per inch per square foot of surface. Stone concrete will weigh 10 lbs. for the same size. Centering planks are applied underneath and should remain in place until the concrete has hardened and set sufficiently. Upon these planks or false work, sheets of expanded metal are laid and covered with a layer of wet concrete to the proper or desired thickness. The expanded metal is elevated slightly to allow a thin layer of concrete beneath it. It is thus hermetically embedded in Portland cement and preserved forever from rust or corrosion.

It was proven beyond question in the large and fierce fires in Baltimore, Pittsburg and other large cities, that reinforced concrete stood the most severe tests in conditions of fire and came out victorious and

practically unscathed, while brick, tile and other constructions were completely destroyed.

This fireproofing is accomplished after the furring and studding of a building have been erected and is obtained by making every partition in the house, and space between ceilings, a dead air space.

This is very economically done and the application of this patent for fireproofing partitions and ceilings thoroughly prevents fire from attacking the interior of the partitions, preventing currents of air between the wooden studs which carry the flames up through the building, and out from under the eaves.

The studs are set up 12 or 16 inch centers, 12 inch preferred. They are very easily erected, the lath being applied on both sides of the stud with the projecting prongs, which are made out of No. 14 annealed wire. After being bent down into position the lath is there to stay as long as the building lasts. Both sides are then plastered and finished up with good hard mortar, resulting in hollow partition of any desired thickness from 2½ up to 4 or more inches; leaving a dead air space in the middle of the partition, which makes these hollow partitions more fireproof than any other on the mar-

ket. These partitions will not crumble and fall to pieces after being heated and cold water thrown upon them as tile partitions will. The dead air space acting as a preventative against their destruction.

These are well-known facts, having been proven in different places in America where large and fierce fires have taken place.

A. Belanger & Company, contractors, Lachine, Que., have dissolved, while Mr. W. A. Belanger has registered.

The firm of L. T. Delage & Fils, contractors, St. Medard, Que., has been registered. L. T. Delage and A. Delage are the partners.

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CONSULTING ENGINEER
EARTH LOADED
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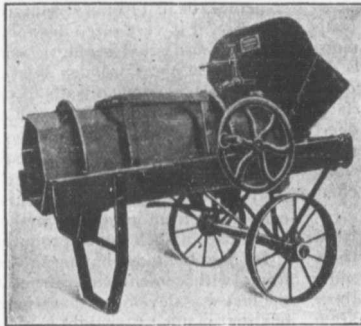
JOSSON CEMENT

Is the Highest Grade Artificial Portland Cement and the Best for High Class Work. Has been used largely for Government and Municipal Works.

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C. I. DE SOLA, 180 St. James Street, MONTREAL

The Hand Power Continuous Concrete Mixer



FOR
Sidewalk and Street Work,
and other classes of work
where but small capacity
is required.

Other Mixers, Hand, Steam,
Electric, Gasoline and
Gravity

E. F. DARTNELL
MONTREAL

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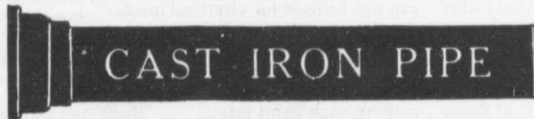
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TESTS REINFORCED CONCRETE.

The results of important tests on reinforced concrete beams which have been carried on in the testing laboratories of the University of Wisconsin for the past four years have been published in a bulletin prepared by E. A. Moritz, of the college of engineering, entitled "Tests on Reinforced Concrete Beams." The bulletin calls attention to the fact that to Rudolph Hartman, formerly instructor in the testing laboratory, belongs the credit of discovering several years ago the fact, now commonly recognized, that the concrete in a beam really cracks much earlier than is shown on the surface. The tests have included investigation of the efficiency of different methods of reinforcing and preventing inclined tension failure and other interesting matters connected with these beams.

The investigation showed that the concrete cracks before evidences of the breaking can be detected with the eye and that after it has cracked, though only minutely, its strength in tension is zero. Comparative tests of reinforced and plain concrete beams at about the same load at which the plain beams fail. It is evident, therefore, that concrete reinforced with steel will not stretch more before cracking than plain concrete, and that consequently the tensile resistance of concrete should not be taken into consideration in reinforced concrete design.

When reinforced concrete first came into general use it was thought that horizontal bars of steel were sufficient, and the peculiar failures which often occurred were usually ascribed to the rods pulling out. The latter idea led to the invention of various forms of deformed bars now on the market. It has been found that even beams reinforced with deformed bars often fail along inclined cracks, and something besides horizontal rods are necessary to prevent such failures. Stirrups have been used extensively to overcome the difficulty, but although they assist in carrying internal stresses to some extent, their use will not always prevent inclined tension failures.

Various tests were made in the laboratory as to the best form of steel reinforcement for concrete. The anchoring of the rods at the ends of the beams, which has been advocated heretofore, did not seem to strengthen them materially. The experiments apparently demonstrated that the cracking in the plane of reinforcement is not due to the pulling out of the rods, but rather to the pulling of the concrete upwards away from the rods, and that it therefore cannot be prevented by anchoring the rods at the ends. In most reinforcement with bent rods, the angle of these rods with the horizontal has been too large, and consequently the adhesive area o-

the rods has been too small. Numerous tests on both large and small beams made in connection with this work have shown that these methods are not effective in preventing inclined tension failures.

WHAT IS NEEDED IN WATER-PROOF CONCRETE.

While concrete has beyond all doubt come to stay, its use for many purposes presents a new problem to architects and constructing engineers.

Its one great fault is its porosity. Liquid containers leak, while moisture penetrates the thickest walls, doing great damage to enclosed contents. For example, it is not unusual when grain is withdrawn from an elevator to find the inner walls covered with germinated grain, while walls of cold storage and other warehouses are frequently covered with a species of fungous growth.

Various materials have been tried to waterproof walls and water-tight tanks. The method quite frequently adopted is to apply hot asphalt or paraffin. This process might be partially successful were it possible to have the surface to be coated heated to a temperature approximating that of the material to be applied. As this is impossible, what is the actual result? The moment the hot coating comes in contact with the cold walls it chills and not only does not penetrate so as to attach itself to the wall, but adheres very indifferently to the surface, so that when used on walls of a tank, especially a brine tank, where the liquid is agitated more or less, it soon commences to peel and as a chain is no stronger than its weakest link, so if a paint commences to peel at one point soon the entire coating is valueless. And when applied to the inner walls of warehouses or elevators, moisture passes through the walls by capillary attraction and soon forces the coating from the inner surface. Even if this material did adhere well when first applied neither one of the articles mentioned will long withstand the disintegrating effect of moisture.

Nor can we use ordinary paint. A linseed oil paint, no matter how pure the materials or how carefully applied, is not durable under these conditions. Strange as it may seem the same requirements obtain in a paint for this purpose as are indicated for electrical insulation. A metallic paint, or a paint or containing metallic pigments or driers, can not be used for electrical insulation because the metals are conductors not only of electricity but of heat and cold, and this action, coupled with moisture, is what soon renders such paint inert.

What, then must we use? First we must have a pigment or gum that is not effected by moisture or

variable temperatures. This gum or pigment must be ground or fused in an oil or liquid that is non-oxidizing. It must contain no driers, certainly none of metallic derivation, nor should it contain any metallic pigments for reasons already given.

Some of the hydro-carbons meet the requirements as to gums and one of the best oils in which to fuse the gums is Chinese wood oil or Tung oil, which is, and has been, the base of the Chinese and Japanese lacquers for centuries past. No one need be told of their durability. These materials are costly as compared with cheap asphalts or oil paints, but results are what we are after, and the cost of application is no greater than that of cheap paints and not as great as the hot asphalt process.

Good paint is not the only requirement. Surfaces to be coated must be perfectly dry and free from all foreign substances, especially rust and scale, when the paint is applied to iron, for the paint that meets concrete requirements is just as good for iron, steel, or any material when it must stand continuous moisture, heat, cold, or variable temperatures.

In using paint for the above purposes at least two coats should be applied, the first to be quite thin so it will penetrate all cracks and orifices, the next coat to be of ordinary consistency, and if both coats have been carefully applied no leakage or moisture penetration need be feared.—Ice and Refrigeration.

CAUSE OF DAMAGE TO CONCRETE STRUCTURES.

By EMORY H. CHASE, in Cement World.

In planning certain kinds of concrete construction, whether in steel-frame buildings with concrete superstructure, or in ordinary reinforced concrete, it is very often desired, in places where great strength is not required, to place wooden boxes at various places in such walls to take up space, save cost of concrete and to lessen weight.

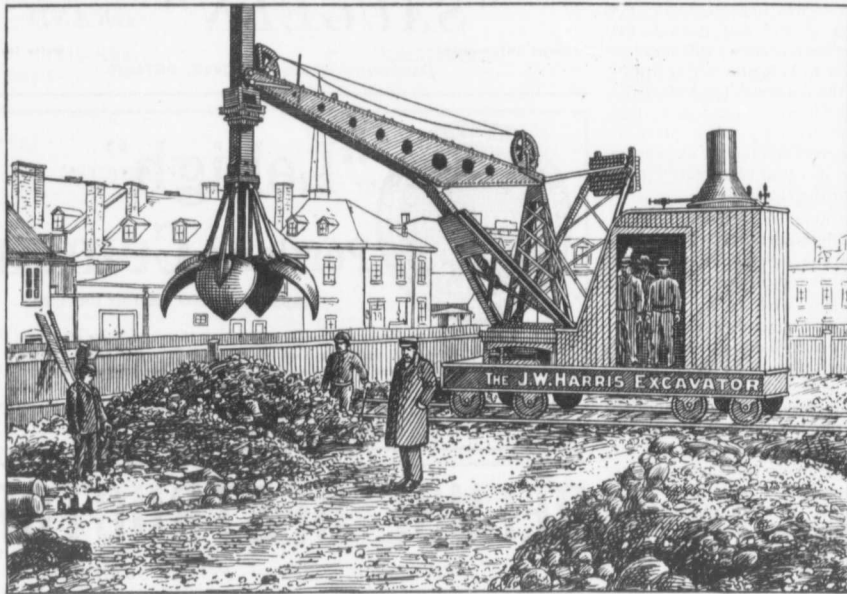
A certain phase of this question has recently come to the notice of the writer, wherein great damage may result from improper methods in the use of such space-producers.

In one building having a steel frame with cement superstructure, the fact was developed that where a box that is not water tight is placed in the concrete, damage is almost certain to result from two causes.

First, such box serves to drain the concrete of all available moisture surrounding it, thus doing the same harm that a leak in a form will do; that is, it deprives the new structure of all fine particles of cement and water necessary to hold the sand and gravel together, and the work is directly weakened as a result.

Second, if the concrete work is

(Continued on page 14.)



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being done late in the autumn, in winter or at any other time when freezing is liable to occur, even after the concrete has become hard, this space-box (I will call it that for want of a better name) will serve as a reservoir to hold the water drained from the concrete, long after the rest of the fabric is hardened; and when the freezing takes place it should be remembered the expansion of water is equal to about 33,000 pounds to the square inch.

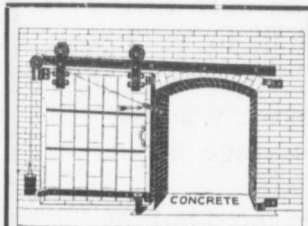
The harm resulting from allowing the more fluid portions to flow away from new concrete before it has set is altogether too often overlooked.

Some may wish to ask how to prevent these space-boxes, or other wooden forms, leaking. In reply I would say there is an oiled paper that can be cheaply obtained, which would help very much when applied as a coating to the cement-side of such forms; especially in molds for floors, roofs, plain walls, etc. Every open crack in a wooden form generally means a weak place in the finished concrete.

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(Continued on page 16.)



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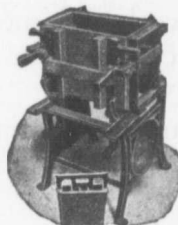
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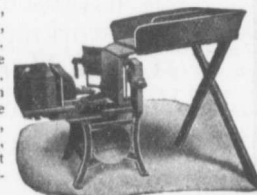
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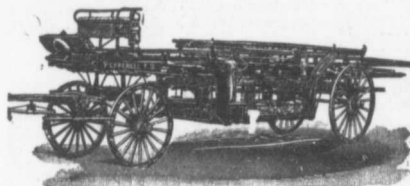
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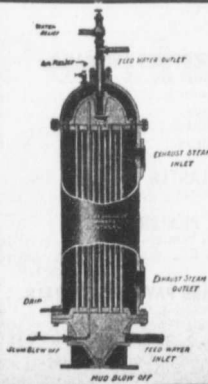
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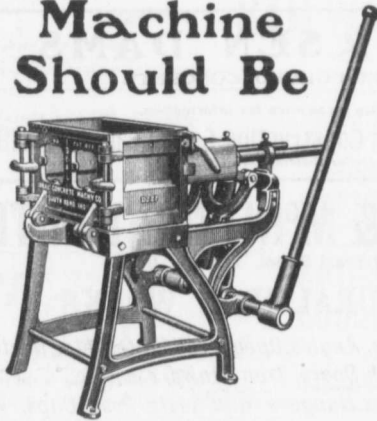
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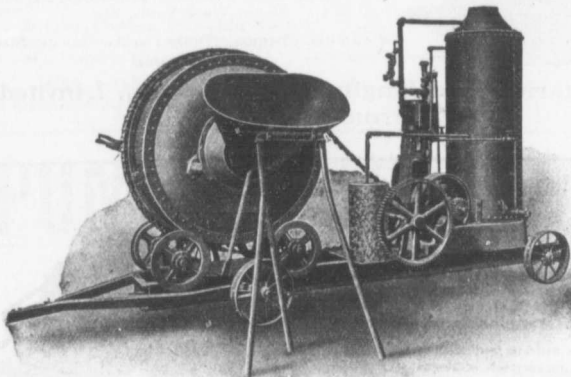
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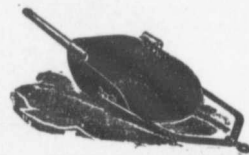
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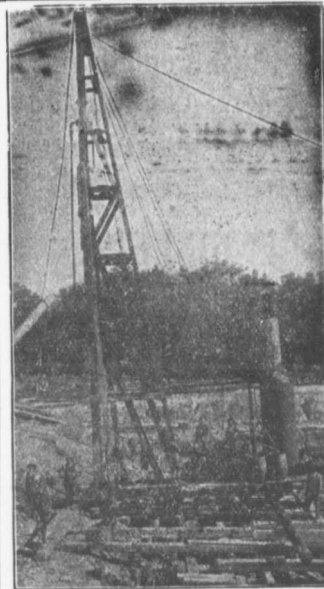
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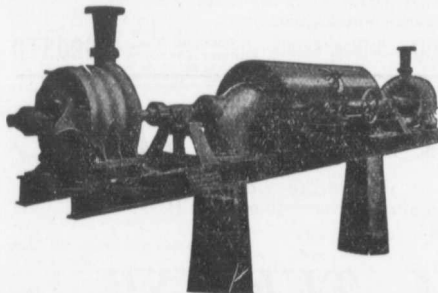
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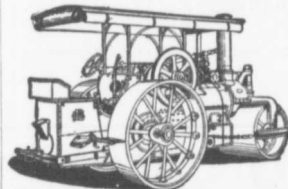
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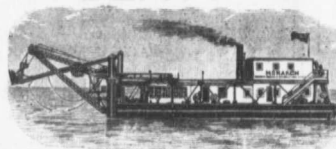
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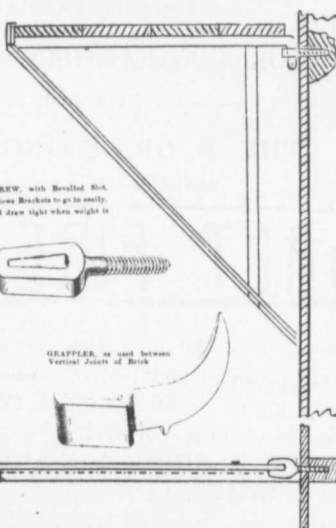
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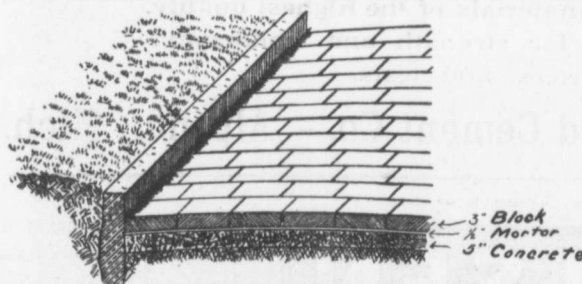
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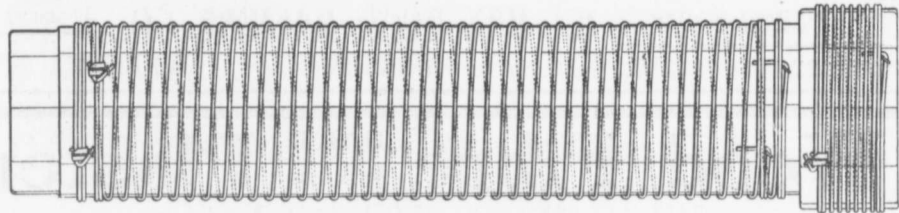
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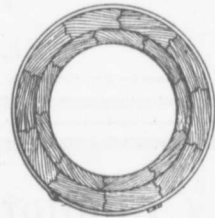
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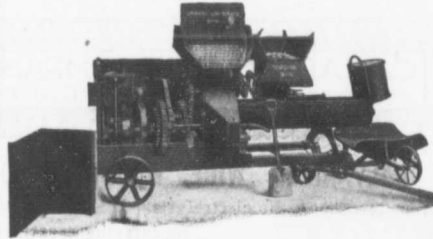
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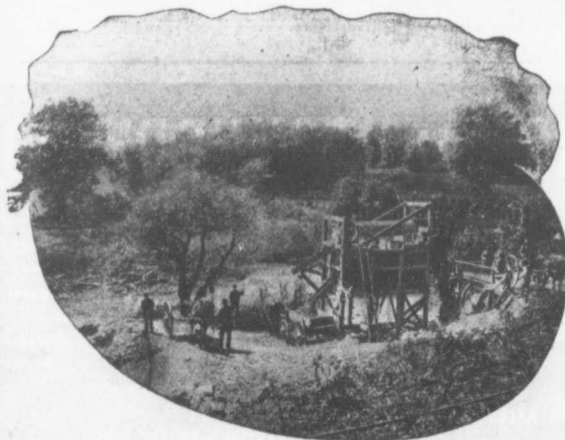
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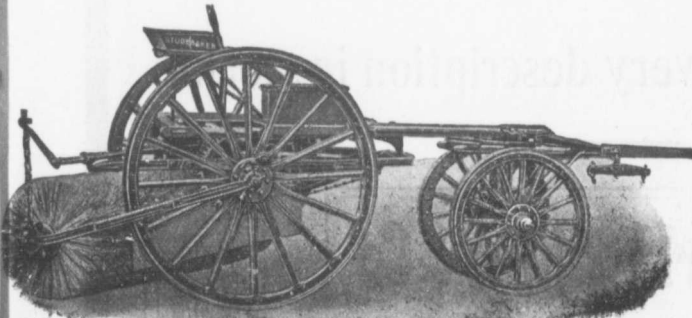
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