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. 17. TORONTO, MONTREAL — OCTOBER 10, 1906 — WINNIPEG, VANCOUVER No. 31

THE CANADIAN CONTRACT RECORD
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Sealed Tenders Wanted

For Dunnville Water Works Debentures

Tenders will be received by the undersigned up to the 22ND DAY OF OCTOBER, 1906, for the purchase of thirty debentures aggregating $6,000.00 drawing 4½ per cent from the date this by-law shall take effect, viz., 20th day of June, 1906, in accordance with By-law Number 6. A D 1906, of the Town of Dunnville, Ont

The Council reserve to themselves the right to reject any or all tenders.

J. W. HOLMES, Clerk.

TOWN WATER WORKS

SEALED TENDERS

will be received by the undersigned for the Iron piping, Hydrants, etc., and labour to lay the piping, etc., required to carry out the scheme of the proposed extensions of the water mains as follows:

1050 ft. 6 inch Piping.
4300 ft. 4 inch Piping.
5 Hydrants, 9 Tees, and 4 Cut-offs.

Total length of trenching about 5,350 feet. Parties tendering may offer for the whole job or may put in separate tenders, one for the piping, hydrants, etc., and the other for the trenching and laying the pipes, etc. complete. For further particulars apply to the undersigned. Tenders to be delivered on or before 5 o'clock p. m. 15TH OCTOBER, 1906, and no tender necessarily accepted.

A. J. REYNOLDS, M. D.,
Chairman Fire and Water Committee.
Mount Forest, October 3rd, 1906.

The partnership of J. U. Bordua & Co., dealers in cement, etc., Montreal, has been dissolved.

TENDERS WANTED

$3,500 Debenture Bonds For Sale

Tenders will be received up to SATURDAY, OCTOBER 13TH, 1906, addressed to G. M. Farrington, Mayor, for the purchase of Public School Debentures of the Town of Picton, in amount $3,500. Full particulars furnished on application. Address

R. A. NORMAN,
Clerk Town of Picton.

THE BOARD OF EDUCATION

TENDERS WANTED

Sealed tenders, addressed to the Secretary-Treasurer of the Board, will be received until

FRIDAY NOON, OCTOBER 12th, 1906,

for the several trades necessary in the erection of a

High School Building in Riverdale

also for the enlargement of

Rosedale Public School

and for re-constructing

Building on Pembroke Street

for manual training class.

Specifications may be seen and all information obtained at the offices of the Board, City Hall. Each tender must be accompanied by the deposit mentioned in the said specifications and forms of tender.

The lowest or any tender will not necessarily be accepted.

W. C. WILKINSON,
Secretary-Treasurer.
H. SIMPSON,
Chairman of Committee.

Chantigny & Morency, contractors, Montreal, have dissolved partnership.

A new plumbing business in Welland, Ont., is being operated by Griffiths & Grass.

A plumbing business has recently been started in Strathcona, Alta., by C. V. Houghton.

The Canadian Westinghouse Company, Hamilton, Ont., have been awarded a big contract to build electrical machinery for the Yukon Consolidated Engineering Goldfields Company.

CONTRACTS OPEN.

STAR CITY, SASK.—O. Haney intends erecting a new residence on Main street.

PORT HOPE, ONT.—The Y.M.C.A. are considering the erection of a new building.

FORT WILLIAM, ONT.—A large addition is to be built to the McKellar hospital.

BOLTON, Ont.—The Imperial Bank are considering the erection of a new bank building.

ROSTHERN, SASK.—The Massey-Harris Co. purpose erecting a large brick warehouse here.

WEYBURN, SASK. — J. Mitchell, postmaster, intends erecting a new building, cost $5,000.

PRINCE ALBERT, SASK.—The Massey-Harris Co. intend building a warehouse here.

BRANDON, MAN.—The City Council are considering alteration to the city hall cost $50,000.

BANFF, ALTA. — Rattray & McDougall have secured a site on which a new hotel will be erected.

EBURNE, B. C.—The B.C. Market Co. are calling for tenders for the construction of a new abattoir.

PRESTON, ONT.—Harry Marshall intends erecting a brick residence on the new survey, Breslau Park.

KEMPTVILLE, ONT.—It is expected that a new public library building will be erected here, cost $3,000.

HUMBOLDT, SASK.—The establishment of a brewery here is being considered by some of the residents.

BATHURST, N. B. — It has been decided to repair the bridge between the town and the I. C. R. station.

NEWMARKET, ONT.—W. Hutt intends erecting a double house, corner Millard ave. and Joseph street.

ARCOLA, SASK.—A company has been formed to erect a new grist mill here. John Lees is interested.

CALGARY, ALTA. — An Eastern company are considering the erection of a match factory here to cost $50,000.

MONCTON, N. B.—J. Edington, city engineer, has taken tenders for construction of pipe sewer in Archibald street.

CHESLEY, ONT.—The by-law to guarantee a loan of $15,000 to the Chesley Bedstead Company has been carried.

PORT ARTHUR, ONT.—F. Lee, Division Engineer, has taken tenders for erection of a new C. P. R. station here.

ST. JOSEPH DE LEVIS, QUE.—Soundings are being taken for a site for a

new dock, which it is expected will soon be built here.

KENORA, ONT.—J. T. Brett has purchased a site on First street for a new residence, for which plans are being prepared.

GODERICH, ONT.—A by-law will be voted on to loan $50,000 to establish a large factory here for an American company.

FORT FRANCIS, ONT.—Plans and specifications of electric light system are being prepared by John Galt, C. E., Toronto.

CARMAN, MAN.—The by-law to raise $1,500 by debentures for erection of a new school in Stephenfield district has been carried.

LADNER, B. C.—The School Trustees have endorsed the petition to the Government for a new school building on the Scott road.

THOROLD, ONT.—The report of Willis Chipman, C. E., Toronto, on a waterworks system here has been adopted, cost $80,000.

BARRIE, ONT.— Strathy & Esten represent a syndicate of local capitalists interested in the establishment of a street railway in town.

ST. BONIFACE, MAN.— Tenders for construction of pavement on Kitson and Horace streets, Oak Park, will soon be called.

DUNDAS, ONT.—It is understood that the Cataract Power Company are looking for a site here for a car building and repair shop.

RAINY RIVER, ONT.—John Galt, C. E., Toronto, is preparing plans and reports for waterworks, sewerage and electric light for the town.

TORONTO JUNCTION, ONT.—The Toronto Presbytery have authorized the purchase of a site in the north west part of the town for a new church.

MOOSE JAW, SASK.—H. Jagger, will receive tenders up to October 15th for heating and ventilating system for King Edward school, South Hill.

AINSWORTH, B. C.—Tenders will be received by the Highlander Mill & Mining Co., up to October 10th for continuation of the Highlander tunnel.

UXBRIDGE, ONT.—John Galt, C. E., Toronto, has been engaged to report on the improvement of the waterworks system for use for domestic purposes.

WOODSTOCK, ONT.—The Canada Furniture Manufacturers, Limited, are seeking a loan from the city to aid in erection of a new factory to cost $150,000.

AMHERST, N. S.—The Maritime Railway, Coal & Power Co. have purchased a site on Park street for a transforming station for their central power plant.

OLDS, ALTA.—The erection of the new firehall and council chamber will soon begin.—The School Board are discussing the erection of a new school building.

OWEN SOUND, ONT.—The Board of Trustees of the hospital are considering the erection of a new building or enlarging the present one. Plans are being prepared.

MIDDLEPORT, ONT.—S. J. McKelvey, township clerk, will receive tenders up to October 16th for purchase of five Onondage township debentures, for $577.44 each.

REVELSTOKE, B. C. — C. E. Cartwright Division Engineer, Vancouver, has taken tenders for construction of a concrete and steel addition to C. P. R. engine house.

MEDICINE HAT, ALTA.—The City Engineer has submitted a plan to the Council for overhead bridge to cost $2,800, and subway under the railroad at Toronto street, cost $7,750.

GORDON, ONT.—A. C. Mailloux, township clerk, will receive tenders up to October 13th for the portion of the Deslippe drain in Anderton township, also for construction of a culvert over said drain.

SASKATOON, SASK.—The Saskatoon Bedding Co. will erect a new factory corner Avenue D and Twenty-third street.—It is reported that the Federal Life Insurance Co. purpose erecting a large building here.

ST. GEORGE, N. B.—Hon. C. H. La Billois, Commissioner of Public Works, favors the erection of a new steel bridge to replace the present one at the foot of the falls.—Young's bridge is also to be rebuilt.

SYDNEY MINES, N. S.—D. C. Macdonald will receive tenders up to October 12th for installation of a sewerage system in District No. 1, of the town.—It is understood that the erection of a new station for the I. C. R. will soon begin.

DOVER SOUTH, ONT.—W. J. Foy will receive tenders up to October 12th for construction of seven steel bridges with concrete abutments on the Boyle drain in Dover township. Plans with above named and with John Welsh, Chatham.

TRACADIE, N. B.—F. Gelinas, Department of Public Works, Ottawa, will receive tenders up to Oct. 20th for construction of a laundry building and septic tank at the Lazaret. Plans at the Department and with Dr. A. C. Smith.

HALIFAX, N. S.—F. Gelinas, Department of Public Works, Ottawa, will receive tenders up to Oct. 15th for construction of a hot water heating system in the Trachoma hospital here. Plans at the Department and with C. E. W. Dodwell, Resident Engineer, this city.

REGINA, SASK.—F. J. Robinson, Department of Public Works, will receive tenders up to October 31st for construction of drain east of section 33, township 36, range 6.—It is understood that the Dominion Government intend enlarging the N. W. M. P. barracks.

GROSE ILE, QUE.—F. Gelinas, Department of Public Works, Ottawa, will receive tenders up to October 20th for construction of a disinfection house, etc., at the Quarantine Station. Plans with Ph. Beland, Post Office Building, Quebec, and at the Department.

LES ESCOUMAINS, QUE. — Gelinas, Department of Public Works, Ottawa, will receive tenders up to October 27th for construction of extension to wharf. Plans with Ph. Beland, Post Office Building, Quebec; C. Desjardins, Post Office Building, Montreal, at the Department and with Postmaster here.

OSHAWA, ONT. — The Electric Light Company here have started work on a new concrete drain, to designs prepared by Jno. S. Fielding, Consulting Engineer. The work will be done by day labor under the company's superintendent.

DELHI, ONT.—Contracts have not been awarded for generators, wheels, etc., for the Delhi Light & Power Company's development, as the company have decided to increase the size of the units. New tenders will be called for by the engineer, Mr. Jno. S. Fielding, C.E., 15 Toronto St., Toronto.

SEVEN ISLANDS, QUE.—F. Gelinas, Department of Public Works, Ottawa, will receive tenders up to October 27th for completion of wharf and approach and removal of sunken crib. Plans with Ph. Beland, Post Office Building, Quebec; with J. C. Tache, Chicoutimi; at the Department and with Postmaster here.

LETHBRIDGE, ALTA. — W. S. Fairfield has taken tenders for the erection of additions to the buildings of the Lethbridge Brewing Co. Jas. A. Macdonald, architect.—It is reported that large machine shops for the C. P. R. are to be erected here.—The Board of Trade are preparing to establish a creamery here, cost $4,000.

PETERBORO, ONT.—John Kemp intends rebuilding his house on Douro street, which was recently burned.—The by-law to aid the Rapid Tool Company to establish a factory here did not carry.—The Coates Manufacturing Company intend erecting a carpet factory near the city. Homes for the operators are to be built adjacent to the factory.—Plans have been prepared for the enlargement of the Southern hotel, George street.

HAMILTON, ONT. — Chas Mills, architect, Canada Life Building, will receive tenders up to October 15th for erection of Terminal Electric station and theatre.—S. H. Kent, City Clerk, has taken tenders for construction of sewers in Picton, Wilson and Herkimer streets and Aberdeen avenue.—Mrs. S. Shaver, will build a brick residence on Hess street, cost $1,800.

LONDON, ONT. — G. Craddock, architect, will receive tenders up to October 12th for erection of a four roomed addition to Chesley avenue public school.—A. O. Graydon, city engineer, has taken tenders for construction of tile sewers in Mary and Egerton streets.—Ald. Matthews and Fire Chief Clark are looking for sites for new firehalls in east and north of the city.—A new residence is to be built on York street for the priest of St. Mary's church.

QUEBEC, QUE.—F. Gelinas, Department of Public Works, Ottawa, will receive tenders up to October 15th for construction of a heating system for the detention hospital at Savard Park. Plans at the Department and with E. M. Talbot, architect.—The G. N. R. intend locating their workshops in the city.—Sir A. P. Caron has been in the city attending to the purchase of a site for the proposed extension to Chateau Frontenac.

VANCOUVER, B. C.—The Merchants Bank are planning for the erection of an addition to their building on Carrall street.—The City Engineer considers a new septic tank necessary for Columbia avenue.—The G.T.P.R. are preparing for the erection of a large hotel at Prince Rupert, cost $20,000.—Building permits have been issued as follows: Vancouver Pipers' Society, hall, Seymour street, cost $3,000; F. Goldberg, residence, Keefer street, cost $2,400; W. G. Babcock, residence, Venables street, cost $2,000.

OTTAWA, ONT.—It is understood that the Transcontinental Railway commission will call for tenders in November for construction of about 500 miles of road as follows: Superior Junction, eastward; La Tuque, westward; Quebec, eastward; 200 miles, east and west of Lake Abittibi.—Preparations are being made for enlarging the city hall.—F. Gordeau, Department of Marine and Fisheries, will receive tenders up to October 18th for furnishing condensing machinery for a hopper dredge.

BRANTFORD, ONT.—Building permits have been issued as follows: Verity Plow Co., addition to warehouse, cost $14,290; W. H. Lee, double brick dwelling, George street, cost $2,500; James Long, brick dwelling, Port street, cost $1,400; Charles Coulson, brick dwelling, Victoria street, cost $1,450; Wm. Loudon, brick dwelling, Murray street, cost $1,100; The William Buck Co., two brick dwellings, Darling street, cost $1,550 each; David Spence, cement block

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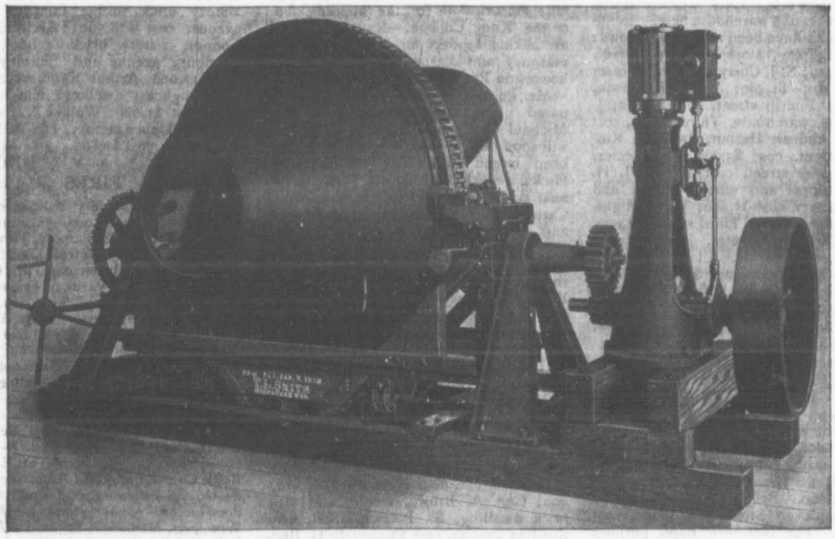

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MONTREAL

dwelling, Mary street, cost $1,200; Charles Churchill, Colborne street, brick dwelling, cost $1,100.

MONTREAL, QUE.—The City Surveyor gives notice of the intention to construct sewers in Marquette, Milton and St. Paul streets.—Jenkins Bros. of New York, valve manufacturers, intend erecting a factory here, cost $200,000.—The Montreal Steel Co. intend erecting a plant 400 by 300.—The Montreal Rolling Mills have plans prepared for a large nut and bolt plant and forging mill.—The Peck Rolling Mills Co. intend removing a portion of their plant to the bank of the Lachine canal where new mills will be erected.—Local and American capitalists are planning for the erecting of a nine story hotel on Dominion square. Jas. McShane, harbor master, is interested.

EDMONTON, ALTA.—K. McKenzie & Co., wholesale grocers, are considering the erection of a warehouse here.—Building permits have been issued as follows: T. B. Stapley, store, Namayo street, cost $2,000; S. J. Curry, dwelling, Fraser street, cost $1,500; J. R. Robinson, dwelling, Fourth street, cost $2,000; J. H. Watts, warehouse, Third street, cost $3,000; Andrew Herbut, dwelling, Kinistino street, cost $3,000; N. Lecier, office, Jasper street, cost $1,000; J. H. Watts, stores and offices, Jasper and Third streets, cost $5,000; W. H. Nightingale, schoolroom, Third street, $1,000; C. F. Cameron, theatre, Jasper street, cost $8,000; W. H. Allen, residence, Syndicate avenue, cost $2,200; W. B. Fullerton, residence, Sutherland street, cost $1,500; H. Gruner, two residences, Block 7, cost $6,700; David Latta, dwelling, Jasper avenue, cost $5,000.

WINNIPEG, MAN. — Contractor Boynjolsson has purchased the property, corner Carlton street and Qu'Appelle avenue, on which it is understood an apartment block will be erected.—The managers of the Keeley Institute have taken a permit for erection of a building, corner Hugo street and Jessie avenue, cost $35,000.—Bell & Galloway will erect a residence on Stradbroke place, cost $12,000.—The Northern Bank purpose erecting a large building in the north end.—St. John's Lodge of Free Masons intend erecting a building, corner Main street and Manitoba avenue.—It is reported that a syndicate of Eastern medical men purpose establishing a consumptive sanitarium at St. Laurient.—The Fire, Water and Light Committee will receive tenders up to October 22nd for supply of water-pipe and specials for the city waterworks.—The Works Committee have this week taken tenders for asphalt pavements on Logan, Alloway and Buell avenues and Victor, Argyle and Kate streets; sewers in Arlington and Powers streets and Sargent ave.; also granolithic walks.—Barton & Holman, architects, will receive tenders up to October 10th for erection of a residence, corner Spadina avenue and Joseph street, for Crotty, Love & Co.—The City Council gives notice of its intention to construct asphalt pavements on Higgins and Henry avenues, Academy road and Isabella street, also a number of granolithic walks and other works.

TORONTO, ONT.—Chas. F. Wagner, architect, is taking tenders for erection of brick and stone residence on Dundonald avenue, also for a cottage at New Toronto.—The Board of Education will receive tenders up to October 12th for erection of High school building in Riverdale, enlargement of Rosedale Public school, and reconstruction of a building on Pembroke street for Manual Training class.—The Board of Control will receive tenders up to October 16th for construction of asphalt pavement on Hepburn and Camden streets, Pape and Salem avenues, brick pavement on Windsor street, sewer in Eastern avenue and a number of concrete sidewalks.—C. E. Ireson has purchased the premises of Crawford Bros., corner Shuter and Young streets, on which he intends erecting a twelve story hotel.—Tenders are wanted for brick veneering and plumbing of a house on St. Clarence avenue. Apply to A. Willis, 690 Dufferin street.—Harton Walker, real estate dealer has sold a site on Wellington street, west of Bay for a new warehouse.—National Drug & Chemical Company of Canada have purchased a site on Wellington street west on which they intend erecting a five-story warehouse 60 x 200 feet, cost $50,000.—The W.C.T.U. have definitely decided to erect a new building to replace the Francis Willard Home, cost about $40,000.—The Argonaut Rowing Club wish to erect a club house on Mugg's Landing at the Island.—A committee has been appointed to secure subscriptions for the building fund of the Knox College.—Raynor & Lyall are asking tenders for all trades except masonry and carpentry on a pair of houses on Park road and Collier street.—Mr. Post, architect, Buffalo, has prepared plans for an extension to St. Michael's hospital, building of which will soon begin.—Building permits have been issued as follows: Miss Bessie Hicks, 2-story brick store, Bloor street, near Bartlett avenue, cost $3,000, Miller Cartage Co., 2-story brick blacksmith and paint shop, corner Dupont and Christie streets, cost $2,250; Wm. Davies Co., 2-story brick blacksmith and paint shop, Vine street, cost $4,500; Portch & Witchall, 2-story and attic brick dwelling, St. Anne's road, cost $6,000; M. F. Thompson, three 2-story brick dwellings, 345 Crawford street, cost $7,500; Chas. E. Proctor, pair 2-story and attic brick dwellings, Grace street, cost $5,000; William Bell, pair 2-story brick dwellings, Leslie street, cost $4,000; A. Brockman, 2-story and attic brick dwelling, Balmoral avenue, cost $3,000; J. W. Walker, four 2-story brick dwellings, Bathurst street, near Harbord, cost $10,000; Geo. A. Brown, 2-story and attic brick dwelling, St. Patrick street, near Spadina avenue, cost $3,000; S. G. Redway, 2½-story brick dwelling, Bain avenue, cost $3,500; Thomas Brick, 2-story and attic brick dwelling, 716 Broadview avenue, cost $4,500; Mrs. E. Gidden, 2-story and attic brick dwelling, Concord avenue, cost $3,000; Thomas Jenkins, 2-story roughcast dwelling, brick front, Russett avenue, cost $1,600; J. M. Wilson, 2½-story brick dwelling, 30 Langley avenue, cost $4,750; Gray & Sons, 2-story brick store and dwelling, College street, near Gladstone avenue, cost $3,000; Thomas Henry, 2-story and attic brick and roughcast dwelling, Clinton street, cost $1,800; Dowson & Chipcase, pair 2-story and attic brick dwellings, Davenport road, near Belmont street, cost $5,000; J. Palmer, 2-story brick dwelling, Bloor street near Lansdowne avenue, cost $2,000; Chas. Bulley, 2-story and attic brick dwelling, 33 Withrow avenue, cost $2,000; Miller Cartage Co., 2-story brick stable, Dupont street, near Christie, $10,000; J. J. McKinney, four 2½-story brick dwellings, Grace street, cost $10,000; J. Bishop, Esq., 2-story and attic R. C. dwellings, brick fronts, Markham street, near Barton avenue, cost $12,500; Milligan & Turner, pair 2-story and attic brick dwellings, Palmerston boulevard, cost $7,000; C. Cuttenden, 2½-story brick dwelling, Lynd avenue, cost $3,500; Wm. Saul, 2-story and attic brick dwelling, Davenport road, near Hazelton avenue, cost $2,000; Wm. Donohue, pair 2-story brick dwellings, Wallace avenue, cost $4,000; H. Hoffman, 2-story brick dwelling, Garden avenue, cost $2,600; J. Lochrie, 1-story brick store, Bloor street near St. Clarens avenue, cost $2,500; Mr. Sykes, 3-story brick dwelling, Hayden street, cost $5,000; T. H. Milligan, 1½-story additicn to dwelling, 87 Ossington avenue, cost $2,500; Deeth & Sons, 2-story and attic brick dwelling, Arthur street, near Crawford, cost $2,500; Wm. R. Gregg, 1½-story brick dwelling, Forest Hill road, cost $4,000; Cameron & Campbell, 2-story brick factory, King street, near St. Lawrence, cost $8,000; Hutchins & Burns, 2-story brick apartment house, Spadina crescent, cost $10,000; H. Larkin, pair roughcast dwellings, brick fronts, Dovercourt road, near Van Horne street, cost $3,000; F. Buchanan, 2-story and attic brick dwelling, 655 Huron street, cost $1,800; E. L. Finn, pair 2-story brick veneer dwellings, Dovercourt Park, cost $2,000; W. R. Hunter, 2-story and attic brick dwelling, corner Lindsay avenue and Dufferin street, cost $3,400; Dunlop Rubber Co., 2-story brick rubber factory, Natallie avenue, cost $18,500; Archbishop O'Connor, 2-story brick school, corner Hamburg avenue and Shanley street; cost $11,000; Arthur Kent, 2-story brick and roughcast dwelling, Emerson avenue, cost $1,600; Walker & Parker, 4-story brick shoe factory, 150 Wellington, street west, cost $1,800.

FIRES.

Agricultural Society buildings, Bradford, Ont., loss $2,000.—Atlantic Soap Co.'s works, Don Esplanade, Toronto, loss $6,000.—Bank of Montreal building and several stores, Armstrong, B. C., loss $20,000.—Lumber yards of Fraser Bros., Deschenes, Que., loss $400,000.—Sheds of Ware Co., Hanover street, Montreal, loss $3,500.—Plant of Ontario Grape Growing & Wine Manufacturing Co., St. Catharines, Ont., loss $150,008.—Four story building of Toronto Building Society Wellington, B.C., loss $3,000.—Heap's sawmill at Cedar Cove, B.C., loss $200,000.—Sawmill of F. Hervie, Berriedale, Ont., completely destroyed. — Engine house and adjoining house of Edmonton Brick Co., Edmonton, Alta., completely destroyed.—Planing mill and sash and door factory of Arbuthnot Lumber Co., Winnipeg, Man., loss $25,000.—Annex of J. F. Cairns' store and other buildings, Saskatoon, Sask., loss $10,000.

CONTRACTS AWARDED.

BRANDON, MAN.—Erection of Collegiate Institute building: McDougall & Ireland, contractors, cost $47,878.

LETHBRIDGE, ALTA. — Residence, corner Burdette and Courtland streets, for C. V. Bennett: R. Virtue, contractor.

PORTAGE LA PRAIRIE, MAN.—$50,000 five per cent. town debentures: Wood, Gundy & Co., Toronto, purchasers.

EDMONTON, ALTA. — Erection of new warehouse on Third street, for Telfer Bros.: R. J. Manson, contractor, cost $17,565.

VANCOUVER, B. C.—Erection of new home on Hastings townsite for Children's Aid Society: N. A. Macgillivray, contractor.

DELORIMIER, QUE.—Drainage of Iberville, Dandurand, Chapleau and Masson streets: T. Charpentier, contractor, cost $23,000.

KAMLOOPS, B. C.—Erection of new school building: Construction work, R. MacKay, $24,675; heating, McLaughlin Bros., Vancouver, $3,285.

OSHAWA, ONT.—Construction of reinforced concrete bridge in the town: R. N. Hill, Toronto, contractor, cost $2,300. Connor, Clarke & Monds, Toronto, engineers.

BATTLEFORD, SASK.—Erection of new building, corner First ave. and Twenty-Second street, for Bank of Hamilton: J. H. Storer, contractor, cost $4,000.

RUSSELTON, ONT.—Construction of Edenvale bridge over the Nottawasaga

river, (reinforced concrete): McMillin & Costain, Toronto, contractors, cost $13,250. Connor, Clarke & Monds, Toronto, engineers.

FORT FRANCIS, ONT.—Construction of waterworks and sewerage system: Labor, A. Shannon; cast iron, D.Y. Stewart & Co., Glasgow; steel water towers, Ontario Wind, Engine & Pump Co.; hydrants and valves, Canada Foundry Co.; tile pipe, Dominion Sewer Pipe Co., Swansea; sewer castings, R. McDougall Co., Galt. John Galt, C.E., Toronto, engineer.

WINNIPEG, MAN.—The Fire, Water & Light Committee have recommended that the tender of Caledonian Iron Works Co. for the supply of two Worthington Turbine Pumps, erected and installed complete, for the sum of $21,063, be accepted.—Erection of Bank of Commerce building on on Lemoine avenue: John Dolmer, contractor. Darling, Pearson & Over, architects.

TORONTO, ONT.—The following tenders were accepted for work on school buildings: Dewson street—Structural iron work, Dominion Bridge Co., $1,740. Phoebe street—Structural iron work, McGregor & McIntyre, $4,253. Grace street—Portable school carpentering, F. Westlake, $780; galvanized iron work, A. B. Ormsby Co., $120, and painting, R. G. Johnston, $65.—New factory building on Sorauren ave., for Chapman Double Ball Bearing Co.: Brick and stone work, Waghorn & Walker; carpenter work, James McKenzie.—The Temiskaming and Northern Ontario Railway Commission have awarded the following contracts for building spur lines: Charlton branch—from a point at or near Englehart to Charlton, eight miles: Canadian Construction Company, Montreal; Haileybury spur—from the main line at Haileybury to a point at or near the wharf, 1¾ miles: McQueen & Hunt, Arnprior; Kerr Lake branch—from the main line at Cobalt to the Kerr Lake region, about four miles: A. Spencer, Niagara Falls.

NEW COMPANIES.

Northern Finance Company Limited, Winnipeg, Man., incorporated, capital $250,000. Promoters, W. Grassie, W. Gray, W. A. T. Sweetman, J.R. Vernon, and K. G. McKillop.

Canadian Property Company, Limited, Toronto, incorporated, capital $100,000. Promoters, E. L. Middleton, W, M. Vale, T. C. Dawson, H. G. Mason and J. C. Whitaker.

Dominion Lumber Company, Limited, Quebec, Que., incorporated capital $825,000. Promoters, E. G. Meredith, C.E. Taschereau, Parent, L. A. Cannon and E.W. Ievers.

Rochester Mining Company, Limited. Toronto, incorporated, capital $40,000. Directors Z. Gallagher, E. N. Wilson, and H. M. English.

FOR FINISHING WALLS.

A rather novel method of finishing the outer surface of a reinforced concrete building was recently adopted in connection with a structure in Knoxville, Tenn., says The Record. The sides of the building have curtain walls of concrete brick, while the front and back walls are of monolithic construction. When the work was completed, the front elevation was treated to a cement solution applied by means of whitewash brushes. The solution consisted of water and cement of the consistency of thin grout, which was strained through cloth to remove any coarse particles that might scratch the concrete surface of the building. The coated surface was given a light and quick rubbing with carborundum bricks until a very smooth surface was obtained. The thickness of the solution prevented it from running off the wall and served as a plaster as well as a dressing. The result is a front of one color, which closely resembles limestone.

SEPTEMBER BUILDING TOTALS.

In Toronto during the past month 421 building permits were issued, the approximate value of which was $902,803, making a total from the beginning of the year of 2,695 permits, valued at $9,566,328. This shows a considerable increase when compared with the same period of last year, the permits for September, 1905, being 261, valued at $877,005; for the first nine months of the year the permits were 2,109, valued at $7,945,784.

In Winnipeg the building permits for September aggregated in value $1,170,000; for the same month of 1905 the value was $781,150.

In Regina September permits were valued at $150,000 making a total for the first nine months of the year of 1,500,000.

Edmonton building permits for the month were valued at $191,696.

Alexis Gagnon and Alderic Quellette, carpenters, Montreal, have registered under the firm name of Gagnon & Quellette.

CEMENT CONCRETE WALKS.

The City Engineer of Toronto in his last annual report says:

In 1905 the high water mark was reached in the construction of concrete sidewalks, 37½ miles having been laid. This is an increase of 6.442 miles, or 20 per cent. over the mileage laid in 1904, and 2.604 miles or 8 per cent. more than was laid in 1903, which, until last year, held the record for the greatest amount of work done under the supervision of this Department.

Only one brick sidewalk was constructed, with a mileage of .037 miles. The total length of permanent sidewalks constructed during 1905, was 37,537 miles and the total length in the City is now 187,206 miles.

The question of coloring the surface of concret walks was investigated, and walks on both sides of Sheridan avenue, north of Dundas street, were colored red and grey, respectively, to test the result. 8¼ pounds of Venetian red to one barrel of cement, and one pound of carbon black to one barrel of cement was used for the purpose, and these quantities were found to give a pleasing tint. It is feared, however, that the color is not permanent, a perceptible fading being already noticeable.

In constructing concrete sidewalks, a length of 80,958 lineal feet of concrete curb was built in place during the year.

During the year 1905, 279 concrete sidewalks were constructed, of which 95 were done by day labor. Of these 5 were ordered by council to be done by day labor, without the formality of calling for tenders. Four were taken from contractors on account of their dilatory methods of work, and the balance, 86 in number, were awarded to the City Engineer, he being the lowest tenderer. On 18 other walks the City Engineer's tender was also found to be lowest, but at the request of the next lowest tenderer he was allowed to do the work, under the supervision of this department, and at the City Engineer's figures, thus effecting a substantial saving to the property owners. The walks constructed under this system aggregate 9.00 miles, as compared with 3.07 miles as constructed in 1904.

In estimating the gain or loss resulting from the day labor system, if we take the lowest local contractor's tender as a basis of comparison on the walks for which tenders were invited, we find an actual gain of $5,356.85 on an actual expenditure of $34,699.03. The total cost of sidewalks constructed under the day labor system during 1905, exclusive of interest on money, was $42,-874.91, as compared with $12,322,-96 in 1904. While the mileage increase by 2.93 times the saving effected increase by 5.09 times when compared with 1904.

NOTES.

The difficulty of surveying deep bore holes has been overcome by photography in South Africa, an apparatus devised by William Helme, of Johannesburg, having given accurate results in that not only the vertical drift of the hole, but also the position of the magnetic needle is recorded. The apparatus consists of a long brass cylinder which contains a small watch, a dry battery, two miniature electric lamps operating in connection with a compass supported on gimbal bearings, and a suspended plumb bob; at a predetermined time the watch makes a contact lighting the lamps, by means of which the positions of the plumb bob and the magnetic needle are photographed on a small disc of sensitized paper.

An ozone plant for water purification has recently been installed at Saint-Maur, near Paris. The water treated is taken from the river Marne and is usually clarified by deposition or filtering through sand, and is then driven through a sterilizer at a uniform rate of flow, in which air, after being impregnated with ozone, is brought into contact with it. The ozone is generated on the system of Frise, the electrified air being cooled to below 25 per cent., which is the temperature most favorable for ozone production. The electric current supply for the ozone production is furnished by an alternating current generator and transformers designed to deliver 40,000 volts alternating, which is driven by the 45 h.p. engine that also operates the 33,000 gallon centrifugal pump handling the water. The results of the process have been very satisfactory, the amount of energy consumed in handling 22,000 gal. of water per hour amounting to 48 h.-p.

CLASSIFIED INDEX OF ADVERTISERS

CEMENT MORTAR AND CONCRETE*

INTRODUCTION.

The many letters received and referred to the Office of Public Roads with reference to the use of cement and the adaptability of concrete for various purposes have made it seem advisable to issue a short bulletin on the subject, in which aproper method of mixing concrete is described, together with a few of the many uses for which concrete is well adapted. No attempt has been made to give a technical discussion of the subject the sole objects being to treat in an elementary way those points in concrete construction which are of particular interest to the farmer.

CEMENT.

The term "hydraulic cement" is applied to one of the most useful materials of engineering construction and one which in recent years has become widely extended in its field of application. Hydraulic cement possesses the property of hardening, or setting under water, in which respect differs from lime, which does not harden except in the presence of air. Thus it is evident that in all places where air is excluded, such as foundations, thick walls, etc., cement mortar should be used instead of lime.

Only two classes of cement will be discussed here—Portland and natural. The difference between these is due partly to the method of manufacture and partly to the condition and relative proportions of the materials employed, which are, generally speaking, limestone and clay. In the manufacture of Portland cement the separate materials are mixed in such proportions as have been found by experience to give the best results. The mixing is done by grinding the materials together in mills, after which the mixture is burned at a very high temperature in kilns, and the resulting clinker ground to an impalpable powder is known as Portland cement. In the case of natural cement the materials used have been already mixed by nature in approximately the correct proportions, being found in the form of a rock which is generally classed as a clay limestone, or a limey deposit technically called calcareous clay. This material is burned at a much lower temperature than Portland cement. When the manufacture has each ingredient absolutely under control and can adjust the proportions to suit all conditions, it is reasonable to expect that a better and more uniform product will result than when the materials are found already mixed. Portland cement is far more extensively employed than natural cement on account of its superior strength, although the latter is frequently used in cases where great strength is of little importance. The superior strength and durability of cement is compared with lime, together with the low price at which it may now be produced, have caused the form to replace the latter in engineering construction to a great extent.

STORING CEMENT.—In storing cement care must be exercised to insure its being kept dry. When no house or shed is available for the purpose, a rough platform may be erected clear of the ground, on which the cement may be placed and so covered as to exclude water. When properly protected, it often improves with age. Cement is shipped in barrels or bags, the size of which usually are as follows :

Bulk and weight of cement in ordinary barrels and bags.

	Per barrel.		Per bag.	
Kind of cement.	Quantity.	Weight (net).	Quantity.	Weight (net).
	Cu. ft.	Pounds.	Cu. ft.	Pounds.
Portland.....	3⅓	380	⅔	95
Natural *a*....	3⅓	300	⅔	75

a Western natural cement usually weighs about 265 pounds per barrel net.

CEMENT MORTAR.

Cement mortar is an intimate mixture of cement and sand mixed with sufficient water to produce a plastic mass. The amount of water will vary according to the proportion and condition of the sand, and had best be determined independently in each case. Sand is used both for the sake of economy and to avoid cracks due to shrinkage of cement in setting. Where great strength is required, there should be at least sufficient cement to fill the voids or air spaces in the sand, and a slight excess is preferable in order to compensate for any uneven distribution in the mixing. Common proportions for Portland cement mortar are 3 parts sand to 1 of cement, and for natural cement mortar, 2 parts sand to 1 of cement. Unless otherwise stated, materials for mortar or concrete are considered to be proportioned by volume, the cement being lightly shaken in the measure used.

A "lean" mortar is one having only a small proportion of cement, while a "rich" mixture is one with a large proportion of cement. "Neat" cement is pure cement, or that with no admixture of sand. The term "aggregate" is used to designate the coarse materials entering into concrete—usually gravel or crushed rock. The proportion in which the three elments enter into the mixture is usually expressed by three figures separated by dashes—as, for instance, 1-3-5—meaning 1 part cement. 3 parts sand, and 5 parts aggregate.

In the great majority of cases cement mortar is subjected only to compression, and for this reason it would seem natural, in testing it, to determine its compressive strength. The tensile strength of cement mortar, however, is usually determined, and from this its resistance to compression may be assumed to be from eight to twelve times greater. A direct determination of the compressivestrength is a less simple operation, for which reason the tensile test is in most cases accepted as indicating the strength of the cement.

MIXING.—In mixing cement mortar it is best to use a platform of convenient size or a shallow box. First, deposit the requisite amount of sand in a uniform layer, and on top of this spread the cement These should be mixed dry with shovels or hoes, until the whole mass exhibits a uniform color. Next form a crater of the dry mixtures, and into this pour nearly the entire quantity of water required for the batch. Work the dry material from the outside toward the center, until all the water is taken up, then turn rapidly with shovels, adding water at the same time by sprinkling until the desired consistency is attained. It is frequentiy specified that the mortar shall be turned a certain number of times, but a better practice for securing a uniform mixture is to watch the operation and judge by the eye when the mixing has been carried far enough. In brick masonry the mistake is frequently made of mixing the mortar very wet and relying upon the bricks to absorb the excess of water. It is better, however, to wet the bricks thoroughly and use a stiff mortar.

GROUT.— The term "grout" is applied to mortar mixed with an excess of water, which gives it about the consistency of cream. This material is often used to fill the voids in stone masonry, and in brick work the inner portions of walls are frequently laid dry and grouted. The practice in either case is to be condemned, except where the conditions are unusual, as cement used in this way will never develop its full strength.

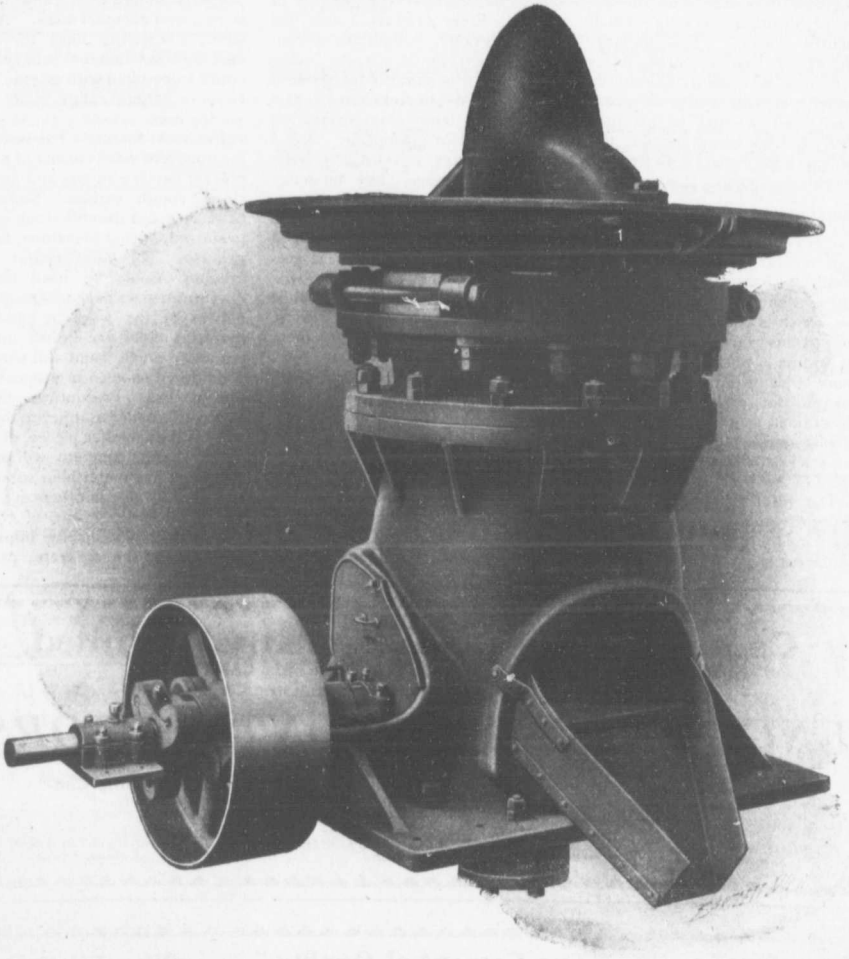
LIME AND CEMENT MORTAR.—L. C. Sabin *a* finds that in a Portland cement mortar containing three parts sand to one of cement, 10 per cent of the cement may be replaced by lime in the form of paste without diminishing the strength of the mortar, and at the same time renddering it more plastic. In the case of natural cement mortar, lime may be added to the extent of 20 to 25 per cent of the cement with good results. The increased plasticity due to the addition of lime much facilitates the operation of laying bricks, and has caused lime and cement mortar to become largely used.

CEMENT MORTAR FOR PLASTERING.—In plastering with cement, a few

*From Bulletin No. 235, issued by the United States Department of Agriculture.

*Sabin, L. C., Cement and Concrete, 1905.

GATES "K" BREAKER



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precautions must be observed to insure good and permanent results. The surface to receive the plaster should be rough, perfectly clean, and well saturated with water. A mortar very rich in cement is rather a drawback than otherwise on account of shrinkage cracks, which frequently appear. The mortar, consisting of two or three parts sand to one of cement, should be mixed with as little water as possible and well worked to produce plasticity. It is essential that the plaster be kept moist until it has thoroughly hardened.

MATERIALS FOR MAKING CONCRETE.

SAND. — In securing sand for mixing mortar or concrete, if it is possible to select from several varieties, that sand should be chosen which is composed of sharp, angular grains, varying in size from coarse to fine. Such sand is, however, not always obtainable, nor is it essential for good work. Any coarse-grained sand which is fairly clean will answer the purpose. If gravel, sticks, or leaves be present they should be removed by screening. The voids in sand vary from 30 to 40 per cent, according to the variation in size of grains. A sand with different-sized grains is to be preferred, because less cement is required to fill the voids. By mixing coarse and fine sand it is possible to reduce the voids considerably.

It is customary to use the terms, "river sand," "sea sand," or "pit sand," according to the source of supply. River sand as a rule has rounded grains, but unless it contains an excess of clay or other impurities, it is suitable for general purposes. When river sand is of a light color and fine-grained it answers well for plastering.

Sea sand may contain the salts found in the ocean. The tendency of these salts to attract moisture makes it advisable to wash sea sand before using it for plastering or other work which is to be kept perfectly dry.

Pit sand for the most part will be found to have sharp, angular grains, which make it excellent for mortar or concrete work. Where clay occurs in pockets it is necessary either to remove it, or else see that it is thoroughly mixed with the sand. The presence of clay in excess frequently makes it necessary to wash pit sand before it is suitable for use.

The results of tests made in this laboratory would indicate that the presence of clay, even in considerable amounts, is a decided benefit to "lean" mortars, whereas it does not appreciably affect the strength of a rich mixture.

GRAVEL.—It is important that gravel for use in concrete should be clean, in order that the cement may properly adhere to it, and form a strong and compact mass. As with sand, it is well to have the pieces vary in size, thereby reducing the voids to be filled with mortar. The voids in general range from 35 to 40 per cent.

CRUSHED STONE.—The best stone for concrete work consist of angular pieces, varying in size and having a clean, rough surface. Some form of strong and durable rock is to be preferred, such a limestone, trap, or granite. The total output of the crusher should be used below a maximum size, depending upon the nature of the work in hand. All material under one-eighth inch will act as so much sand and should be considered as such in proportioning the mixture. Precautions must be taken to insure a uniform distribution of the smaller pieces of stone, otherwise the concrete will have an excess of fine material in some parts and a deficiency in others.

Less than 8 per cent. of clay will probably not seriously impair the strength of the concrete, provided

the stones are not coated with it, and may even prove a benefit in the case of lean mixtures. The voids in crushed stone depend upon the shape and variation in size of pieces, rarely falling below 40 per cent., unless much fine material is present, and in some cases reaching 50 per cent. A mixture of stone and gravel in equal parts makes an excellent aggregate for concrete.

STONE VERSUS GRAVEL.—It would appear from tests that crushed stone makes a somewhat stronger concrete than gravel, but the latter is very extensively used with uniformly good results. This superiority of stone over gravel for concrete work is attributed to the fact that the angular pieces of stone interlock more thoroughly than do the rounded pebbles, and offer a rougher surface to the cement. A point in favor of gravel concrete is that it requires less tamping to produce a compact mass than in the case of crushed stone. Then, too, the proportion of voids in stone being usually greater than in gravel, a porportionately greater amount of mortar is required to fill the voids, which means a slight increase in the cost of concrete.

CINDERS.—Cinder concrete is frequently used in connection with expanded metal and other forms of reinforcement for floor construction, and for this purpose it is well adapted on account of its light weight. Its porosity makes a poor conductor of heat and permits the driving of nails. Only hard and thoroughly burned cinders should be used, and the concrete must be mixed quite soft so as to require but little tamping and to avoid crushing the cinders. Cinder concrete is much weaker, both in tenson and compression, than stone or gravel concrete, and for this reason admits only of light reinforcement.

CONCRETE

GENERAL DISCUSSION.—Cement concrete is the product resulting from an intimate mixture of cement mortar with an aggregate of crushed stone, gravel, or similar material. The aggregate is crushed or screened to the proper size as determined from the character of the work. In foundation work, stone or gravel 3 inches in size may be used to advantage, whereas in the case of molded articles of small sectional area, such as fence posts, hollow building blocks, etc., it is best to use only such material as will pass a one-half inch screen. An ideal concrete, from the standpoint of strength and economy, would be that in which all voids in the aggregate were completely filled with sand, and all voids in the sand completely filled with cement, without any excess. Under these conditions there would be a thoroughly compact mass and no waste of materials.

It is a simple matter to determine the voids in sand and also in the

aggregate, but in mixing concrete the proportions vary a great deal, depending in each case upon the nature of the work and the strength desired. For example, in the construction of beams and floor panels, where maximum strength with minimum weight is desired, a rich concrete is used, whereas in massive roundation work, in which bulk or weight is the controlling factor, economy would point to a lean mixture. When good stone or gravel is used, the strength of the concrete depends upon the strength of the mortar employed in the mixing and the proportion of mortar to aggregate. For a given mortar the concrete will be strongest when only enough mortar is used to fill the voids in the aggregate,less strength being obtained by using either a greater or less proportion. In practice it is usual to add a slight excess of mortar over that required to fill the voids in the aggregate.

It is more accurate to measure cement by weight, unless the unit employed be the barrel or sack, because when taken from the original package and measured in bulk there is a chance of error due to the amount of shaking the cement receives. As it is less convenient, however, to weigh the cement it is more common to measure it by volume, but for the reason stated this should be done with care.

The concrete dam for the R. Forbes Company at Hespeler, Ont., has been completed, and after inspection by the engineer, Mr. Jno. S. Fielding, C.E., of Toronto, the reservoir was allowed to fill up. The structure was found to be tight and satisfactory in all respects.

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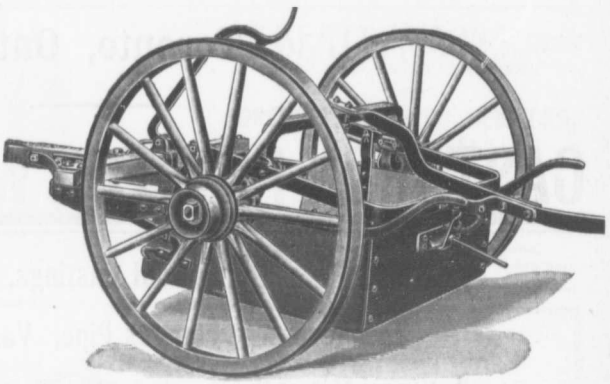

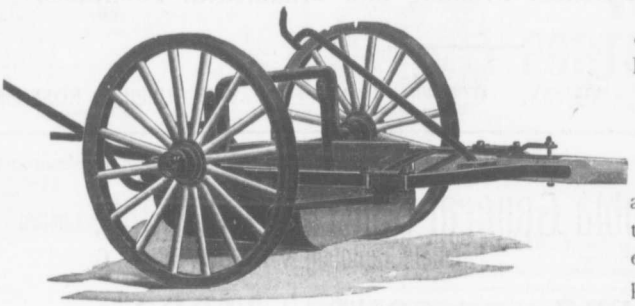

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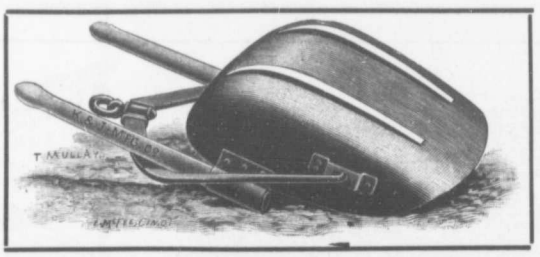

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