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 — OCTOBER 2, 1907 — WINNIPEG, VANCOUVER No. 31

THE CANADIAN CONTRACT RECORD
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Sealed Tenders

will be received on or before TUESDAY, OCTOBER 15TH, for the various trades required in the erection of a High School building for the Board of Education at Oakville, Ont. Drawings may be seen at the office of C. A. Bradbury, Oakville, or

R. B. McGIFFIN, Architect,
59 Yonge Street, Toronto.

TENDERS FOR 15 Miles of Water Pipe

Sealed tenders addressed to the Chairman of the Board of Control for supply of approximately 15 miles of assorted water pipe, delivery of same to commence about May 15th, 1908 or as soon as navigation opens, will be received at the office of the undersigned up to noon on FRIDAY, NOVEMBER 15TH, 1907. Specifications and forms of tender may be obtained at the office of H. N. Ruttan, City Engineer, Winnipeg. Each tender must be accompanied by an accepted cheque payable to the order of the City Treasurer or cash deposit for the sum called for in the form of tender supplied, which will be subject to forfeiture in case of failure on the part of the successful tenderer to enter into a written contract with approved surities if called upon to do so. The lowest or any tender not necessarily accepted.

M. PETERSON,
Secretary.
Board of Control Office,
Winnipeg, Sept. 25th, 1907.

Debentures for Sale

Village of Elmira

Sealed tenders will be received by the undersigned up to 8 o'clock P.M. on MONDAY, THE 7TH DAY OF OCTOBER, 1907, for the purchase of $7,500.00 4½ per cent. Debentures, payable in twelve years, re loan to the "Elmira Interior Woodwork Company, Limited."
Particulars from undersigned.
No tender necessarily accepted

J. H. RUPPEL, Clerk.

CALGARY, ALTA. STREET RAILWAY SYSTEM

Sealed tenders addressed to S. J. Clarke, Esq., Chairman of Public Works Committee, Calgary, Alta., will be received until 12 o'clock at noon on FRIDAY THE 1ST DAY OF NOVEMBER next.

(a) For the construction of about 12 miles of St Car track and overhead trolley work in the City of Calgary.

(b) For building a steel bridge with concrete abutments over the Elbow River in the City of Calgary.

(c) For 6 semi convertible cars with electrical equipment &c.

Separate tenders will be received for each of the above.

An accepted bank cheque, payable to the City Treasurer for 5% of the amount of the bid, must accompany each tender.

Plans, specifications and forms of tender can be obtained upon application at the City Engineer's Office, Calgary.

The lowest of any tender not necessarily accepted.

R. E. SPEAKMAN, C. E.,
City Engineer.

City Engineer's Office,
Calgary, Alta., Sept. 24th, 1907.

FOR SALE

2 Cableways, 750 feet span, and 20 three-yard Steel Skips, all practically as good as new. Apply

M. L. QUILLINAN,
Imperial Bank Chambers,
Niagara Falls, Ont.

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1 Miles Concrete Block Machine, nearly new, with 250 wooden pallettes.

M. BEATTY & SONS, Limited,
Welland, Ont.

12-INCH PIPE SEWER

Tenders will be received by the undersigned up to 7 P.M. ON SATURDAY, THE 5TH OCTOBER, 1907, for building a Sewer on Jackes Avenue and Yonge Street.

Specifications, etc., can be examined at the York Township Hall, 108 Victoria Street, in Confederation Life Building, Toronto. Any tender not necessarily accepted.

P. S. GIBSONS & SONS,
York Township Engineers,
Willowdale,
21st September, 1907.

CONTRACTS OPEN.

LISTOWEL, ONT.—Plans have been prepared for the erection of a new depot for the C.P.R., estimated cost, $10,000.

SELKIRK, MAN.—Tenders will be received up to October 15th by H. W. Newton for iwenty school district debentures, $550 each, 5 per cent.

MOOSE JAW, SASK.—It is reported that the C.P.R. are contemplating the expenditure of $80,000 upon work connected with their yards here.

CLINTON, ONT.—The ratepayers have approved of a by-law to raise $53,000 for the installation of waterworks and for fire protection purposes.

LUMSDEN, SASK.—A waterworks system, the cost of installing which it is reported will not exceed $12,000, is in contemplation by the Council.

MAPLE CREEK, SASK.—Votes of the ratepayers will be taken on October 4th on a by-law to raise $15,000 for the completion of the waterworks.

PORT ELGIN, ONT.—A by-law will shortly be submitted to the ratepayers for raising $20,000 by debentures for the rebuilding of Denny's bridge.

GRAVENHURST, ONT.—Votes of the ratepayers will be taken on October 4th on a by-law to loan $5,000 to the Canadian Steel Specialty Co.

ELMIRA, ONT.—J. H. Ruppell wants tenders up to October 6th for $7,500, 4½

per cent., 12 year debentures for loan to the Elmira Interior Wood-Work Co.

ST. CATHARINES, ONT.—At a recent meeting of the City Council a by-law for granting a franchise to the Falls Power Co. received its first reading.

WOODSTOCK, ONT.—The Committee have practically decided upon the plan for the new municipal building which it is proposed to erect at a cost of about $50,000.

CAMPBELLTON, N.B.—The Chairman of the Finance Committee, W. H. Miller, will receive tenders until October 8th for $25,000, 5 per cent. water and light debentures.

UXBRIDGE, ONT.—On October 4th the ratepayers will vote on a by-law to loan $25,000 to the Palmer Piano Co. for the purchase of a new site and for the erection and equipment of a factory.

NELSON, B.C.—According to O. O. Winters, General Superintendent of the G.T.P., a contract will be let within a few months for the first B.C. section of the proposed transcontinental road.

BRACEBRIDGE, ONT.—A. C. Salmon invites tenders up to October 9th for $5,000, 20 year public school, $10,000, 30 year waterworks and $7,000, 20 year street improvement debentures.

BOUNDARY FALLS, B.C.—Extensive enlargements which, when completed, will give their smelter an added capacity of several hundred tons a day will shortly be undertaken by the Dominion Copper Company.

LETHBRIDGE, ALTA. — On October 29 the ratepayers will vote upon by-laws to raise $13,500 and $12,000 to meet expenses incurred in the erection of the isolation hospital and for extensions to the waterworks respectively.

MEDICINE HAT, ALTA.—A new company, which will likely be known before long as the Canadian Brick Company, Limited, have purchased a location opposite Pruitt's brickyard, where they will install a plant having an initial capacity of 20,000 a day.

ST. JOHN, N.B.—Tenders will be received up to October 8th by Fred Gelinas, Secretary, Department of Public Works, Ottawa, for alterations and additions to the Military Stores Building. Plans at office of D. H. Waterbury, Custom House, and at the Department.

LONDON, ONT. — The National Light & Manufacturing Company, now applying for a charter, have secured a large building on Talbot street, which they will utilize as a factory.—The City Engineer, A.O. Graydon, wants tenders up to October 3rd for sewer construction on Rectory street and Hamilton road.

STRATHCONA, ALTA.—Under the supervision of Cyrus Eaton, of the International Heating Company, of Cleveland, Ohio, the erection of a $100,000 plant will shortly be commenced. The project is to manufacture artificial gas from straw for the supply of this city and Edmonton, both of which cities have given a franchise to the company.

HULL, QUE.—The Council have decided to repair the Gatineau bridge and to erect a toll-gate thereon, taking a fee from all users of the structure. The bridge will probably be leased for a term of years to private enterprise.—M. L. Aubert of Montreal was recently making investigations with a view to establishing a biscuit factory in this city.

PETERBORO, ONT.—The Trustees of the Baptist church have decided to install a new heating system in their building and tenders will shortly be taken. —Tenders are invited by the Bishop of Peterboro up to October 14th for the erection of a stone church and sacristy on Romaine street. Plans at the office of the Diocesan Architect, J. E. Belcher, C.E.

BRANDON, MAN.—In response to their advertisement for a site for the new court house, the Council received twenty-six offers, from which five were selected and forwarded to the government, who will make the final choice.—Negotiations are under way for the establishment of a company which is just being formed to exploit and manufacture a new harvesting machine known as the "shocker."

AYLMER, ONT.—To obviate the delay of waiting for a by-law to be submitted in January a number of citizens have come forward with bonds as a guarantee for the Condensed Milk Co., in consequence of which the factory building has commenced.—In all probability a new shoe factory will shortly be located here, favorable propositions having been submitted by a prominent manufacturer of St. Louis, Mo.

FREDERICTON, N.B.—C. H. La Billois, Chief Commissioner of Public Works, wants tenders up to October 14th for rebuilding the Christie Mill Hill bridge, Queensbury, N.B. Specifications with Jessie Clarke, Springfield, N.B., and at the Department; and up to the same date for rebuilding the Moorehouse bridge, Queensbury. Specifications with A. C. Whitehead, Upper Queensbury, and at the Department.

CALGARY, ALTA.—S. J. Clarke, Chairman of Public Works Committee, invites separate tenders up to November 1st for constructing about 12 miles of street car track and overhead trolley work; building steel bridge with concrete abutments over the Elbow River, and supplying 6 semi-convertible cars with electrical equipment. Specifications at City Engineers Office.—Dairy Commissioner Marker is preparing plans for a new storage building for the government creameries.

PORT ARTHUR, ONT.—The City Engineer is taking tenders this week for water installation on Wilson street, also for bitulithic pavement on Arthur street, from South Water to Court street.—J. McTeigue wants tenders as follows: Up to October 5th for excavation and sewerage work on Wilson street and Machar avenue, up to October 5th for the construction of a bridge across MacVicar's Creek, Algoma street, and up to October 7th for paving work on Arthur street and Lincoln street. Specifications with the Corporation Engineer.

WELLAND, ONT.—The site for the new post office had been finally decided upon at Ottawa, the Government awarding the town $6,000 for the entire market square location. The building will likely be of pressed brick with a tower in the southwest corner.—A favorable report upon the armoury scheme having been submitted by Superintending Engineer Weller, Mr. Butler, Deputy Minister of Railways and Canals, has intimated his intention of personally inspecting the site at an early date. The estimated cost of the proposed building is $10,000.

VICTORIA, B.C.—W. W. Northcott, purchasing agent, invites tenders up to October 14th for the supply of valves, lead pipe and brass goods as per specification.—The Building & Grounds Committee are arranging with W. Ridgeway Wilson, architect, for the modification of his plans for the new Victoria west school so as to bring the cost of the building within the appropriation.—At a meeting of the Hospital Directors it was decided to install a heating system in the children's ward. Tenders will shortly be taken for the construction of a basement under this ward.—At a general meeting of the Y.M.C.A. it was announced that a committee had been working all the summer organizing a campaign to raise $100,000 for a new building.—Chas. Cowen, of Seattle, has purchased property at Oak Bay upon which he will shortly build a fine bungalow residence.

WINNIPEG, MAN.—The chairman of the Board of Control, will receive tenders until November 15th for the supply of about fifteen miles of water pipe. Specifications at office of H. N. Ruttan, City Engineer.—It is reported that the plans for the new C.N.R. depot have been passed by the authorities, and that the work of construction will be commenced this fall.—Recent building permits include: J. Mount, residence, 61 McAdam avenue, $2,500; N. Geslasson, two residences, Wellington and Home, $6,000; McFarlane & Lyndhurst, dwelling, Fawcett and Maryland, $4,500; H. Bliss, frame dwelling, Victor and Ellice, $2,800; T. R. Mayotte, frame dwelling, Cathedral and Aikins, $1,800; Dr. R. J. Blanchard, stable, rear 288 Broadway, $1,600; Salem Reformed church, Burrows and Andrews, $10,000; J. E. Wilson, frame dwelling, Sherbrooke and Sargent, $3,000.—Tenders are invited up to October 4th by G. G. Teeter, architect, for erection of superstructure of Salem Reformed Church, corner Burrows avenue and Andrews street. Plans at architects's office.

VANCOUVER, B.C.—Robert Cassidy has obtained a permit to erect a six storey stone and brick building corner of Granville and Hastings streets; estimated cost, $60,000.—The Mayor has received a letter from the Coops Piano Company of Boston, Mass., who will likely move their factory to this City after the settlement of the Oriental questions.—Recent building permits include: Yuen Chung, brick block, Hastings street, $20,000; John Storey, frame dwelling, Tenth avenue, $2,000; Geo. C. Coulson, Thirteenth avenue, $3,000; C. M. Merritt, frame addition, $2,000; H. E. Almond, frame dwelling, Nelson street, $3,500; J. C. McGillivry, frame dwelling, Melville street, $3,500; A. D. Mahoney, frame dwelling, Fourth avenue, $1,800; L. D. McKay, frame dwelling, Alberni street, $2,000; Walter Debou, frame dwelling, Tenth avenue, $2,300; A. Greenwood, frame dwelling, Scott street, $1,800; J. A. Jackson, frame dwelling, Eighth avenue, $3,000; H. Walker, frame dwelling, Keefer street, $2,000; John Coughlan & Son, frame shop, Sixth avenue, $7,500.

TORONTO, ONT.—Recent building permits include: Edward Thomas, 2 storey brick dwelling, Fern avenue, $2,400; J. G. McConkey, pair 2 storey semi-detached brick dwellings, Howard Park avenue, $4,000; Bailey & Whitehead, 2 storey and attic brick dwelling, Euclid avenue $2,800; A. Nelson, 4 attached 2 storey brick dwellings, Clinton street, $6,000; Kidney & McKelvey, 2½ storey brick dwelling, Thames avenue, $3,500; A. R. Boyle, 2 storey brick dwelling, Geoffrey street, $3,000; Thos. Fitzgerald, 2½ storey brick dwelling, Sorauren avenue. $3,000; R. C. Bustard, pair 2 storey and attic semi-detached brick dwellings, Admiral crescent, $7,000; A. J. Strathey, 4 storey brick store, Queen street, $12,000; Salvation Army, brick hall, Davenport road, $4,500; N. H. Brady, 2 detached 2 storey brick dwellings, Galley avenue, $6,000; S. M. Sims, 2 storey brick store, Church street, $3,000; W. D. Hutson, 3 attached 2 storey brick stores, College street, $7,000; D. E. Startup, 2½ storey brick dwelling, Shaw street, $4,000; Ed. Eldridge, alterations, Foxley street, $2,000; A. Wilson, brick garage, Beaumont road, $2,000.

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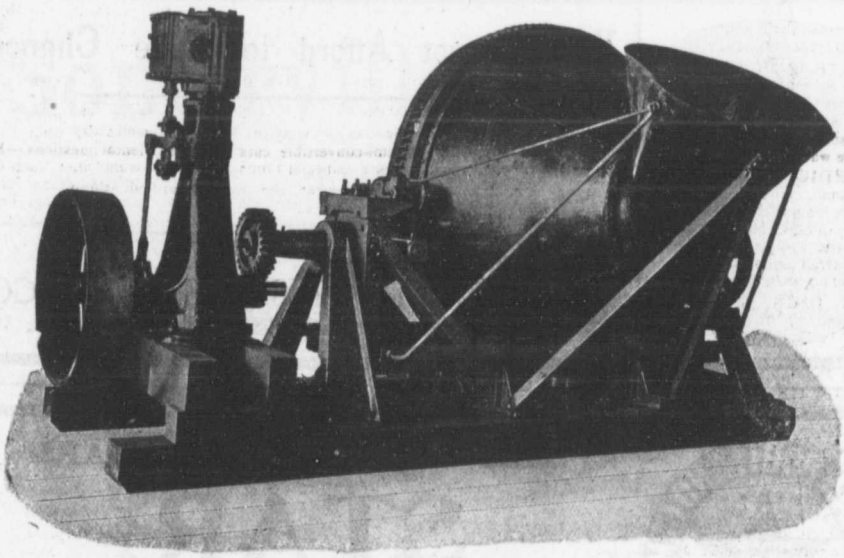

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OTTAWA, ONT.—Tenders are invited by Newton J. Ker, City Engineer, up to October 16th for the supply of an asphalt and bituminous paving plant. Specifications at City Engineer's Office, City Hall.—Fred Gelinas, Secretary, Department of Public Works. will receive tenders up to October 8th for alterations and additions to the M l tary Stores Building, St. John, N.B. Plans at the Department or at the office of D. H. Waterbury, Custom House, St. John. —Plans for the new G.T.R. hotel and depot have been finally approved by the Government. The building must be commenced within three months and completed within two years.—Recent building permits include:—C. W. Kendall, brick veneer dwelling, Sweetland avenue, $2,000; Taylor Lackie & Crain, Collegiate institute, stone and brick addition, $222,900; Ed. Robillard, iron clad double dwelling, St. Andrew street, $1,800; C. H. Cochrane, alterations to factory, Wellington street, $1400; J. J. Carroll, brick veneer dwelling, Rochester street, $2,500; H. A. Bate, brick veneer dwelling, Wilbrod street, $1,000; James Hill, brick veneer dwelling, Rosebery avenue, $2,500; James Hill, brick veneer dwellings, Roseberry avenue, $3,000; Wm. Flegg, double solid brick dwelling, Davison street, $2,4000; Thomas Dean, three brick veneer dwellings, Preston street, $5,000; A. Boyer, brick veneer dwelling, St. Andrew street, $1,100; Jules Chartrand, brick veneer shop and dwelling, St. Andrew street. $1,500; S. J. Davis, double frame dwelling, Isabella street, $2,400; S. J. Davis, double brick veneer dwelling, Russell avenue, $2,600; Davis and Hill, four brick veneer dwellings, Mutchmor street, $10,000; Isaac Crowie, double brick veneer dwelling, First avenue, $4,600; F. L. Campbell, three brick front iron clad dwellings Somerset street, $1,800; C. J. Neate, brick shop and dwelling, John street, $4,000.—Tenders will be received up to October 25 by Fred. Gelinas, Secretary, Department of Public Works, for building an extension to the wharf at Southampton. Plans at office of J. G. Sing, Engineer in Charge, Confederation Life Building Tor.; H. J. Lambe, Resident Engineer, London, Ont.; from the Local Postmaster and at the Department.

CONTRACTS AWARDED.

PORT ARTHUR, ONT.—W. E. White & Co., this city, have secured the contract for building a new Registry office.

WOODSTOCK, ONT.—Erection of farm house for Hospital for Epileptics: M G. Morrison and D. Quinn, Thamesville.

SAULT STE MARIE, ONT.—The contract for the erection of the new Registry office has been let to J. R. Scullard.

REGINA, SASK.—Contract for building a 45 mile line from this city to Bulyea has been awarded to John Bradley, estimated cost, $800,000.

MONCTON, N. B.—We understand that the large Pennsylvania contractor, James A. Corbett, has secured the subcontract from the G. T. P. for the Moncton section of their line.

MONTREAL, QUE.—J. B. Pauze the contractor for the new Montreal jail has let the following sub-contracts:—Excavations and foundation, Martineau & Prenoveau; heating, Garth Co.; steel work, Phoenix Bridge Company.

MOOSE JAW, SASK.—The contract for the diversion of Thunder Creek and for the grading of the main line has been awarded to Riddell & Cline. A feature of the work is the construction of a large canal, the making of which will involve the removal of some 50,000 yards of earth.

GALT, ONT.—The following contracts have been awarded in connection with the new Sunday school for Knox church: —Masonry, J. S. Webster, $9,337; Carpentry, A. McAuslan, $7,649; plastering, Wm. Mogg, $1612; painting, E. Radigan.

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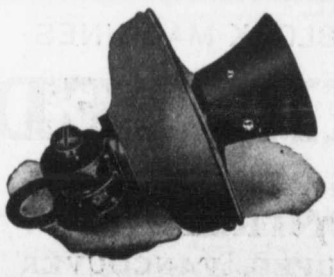

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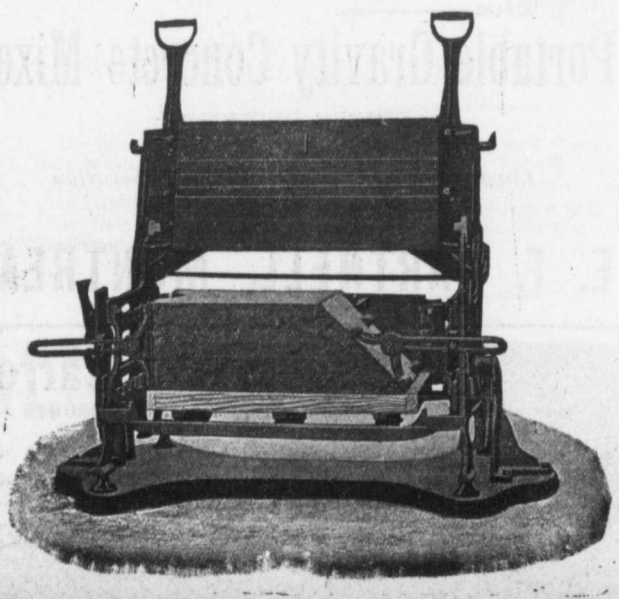

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$912: roofing and slating, Allen & McKenzie, $928.

FERNIE, B.C.—Harry Oldland of this city has obtained the contract for the construction of the new septic tank at $5,510. Other bidders; Campbell & Gray, Fernie, B.C. $6,375; M. Kerr & Co., Fernie, B.C., $6,960: Hugh MacDonald, Victoria, B.C., $8,950; Wriggleswith & Todd, Fernie, B.C., $9,030.

LONDON, ONT.—The contract for bricking in the new boilers at Spring Bank has been awarded to J. Garrett at $405. Other bidders were: Sing & Beer, $450 H. Hammett, $479, and H. Hayman, $483.—Two tenders were received for the dredging of the river below the dam: L. A. Boss, $2,000; D. Oliver, $2,100. The work was given to Contractor Boss.

FIRES.

Dunn's mill and wharf at Grand Bay, N. B, loss $25,000 —Buildings of Prince Albert Co. and Union Trading Co., Prince Albert, Sask., total loss $10,000. —Farm buildings of William Hooper, Chelsea, Que., loss, including stock, $15,000.—Wa dorf hotel, Winnipeg Beach, Man., estimated loss $10,000.—Hotel building of William Sutherland, Elskino House, Stoney Creek, Ont., loss $3,000.—Bakery of C Docile, Ladysmith, B.C., loss $1,200.

CORROSION OF STEEL RAILS.

There seems little possibility at first sight of this being an important consideration, because of the wear and tear imposed on rails by the constant traffic; but in tunnels, and sometimes in the open, gases so affect the steel in rails as to make the question of protection a matter of much urgency. In the case of tunnels, protection has been afforded by brushing the rails with a thick lime-wash periodically, this preparation being found to neutralize the sulphuric acid gas with which tunnels are saturated after a number of years. With regard to the question of metallic sleepers, they are generally coated with Angus Smith's solution. When prepared in this way they answer very well except in salt soil. Mr. Elliott Cooper, at the discussion above referred to, said he once visited one of the colonies in order to report on the state of the railways, and found a very serious condition of affairs. On one side of the island the rails and the steel structure generally, painted in the ordinary way—the steel rails, of course, not coated at all—were wonderfully preserved. But on the other side of the island, 30 or 40 miles away, the corrosion was remarkable. The webs and flanges of the rails had deteriorated very seriously, and the loss of weight from corrosion was much more than from wear. All rails for this particular place are now coated with a black varnish.—Engineering Times, London.

NEW CONCRETE SEWER.

A new style reinforced concrete sewer is expected to be on the market in a short time. It is proposed to construct pipe of 24-inch diameter and up by this method, the sections having a length of four feet and being reinforced by hoops of T-iron and longtitudinal rods of one and one-quarter inch and three-sixteenths inch twisted steel bars, the latter being so placed in the cement shell that the ends in each section come opposite the lap over those of adjacent ones to which they are fastened by keys driven through slots, thereby making the longitudinals practically continuous.

The joints are so constructed that the lower half, which is not readily accessible from the outside, is filled with cement from the inside, and the upper half is cemented from the outside, thus permitting the making of a perfect joint.

The maker claims that this pipe can be used for water transportation as well as for sewers, and that a water pressure of 40 pounds has been applied to a pipe 36 inches in diameter to demonstrate this fact. The pipe is made on wooden forms so treated as to prevent any concrete sticking to them.

Wm. D. Clark, contractor, of Chesley, Ont., has assigned to Wm. H. Slee.

Lachevitiere & Robert, engineers, Montreal; Dussault & Co., contractors, Levis, Que., and Kelly Bros. & Co., contractors, of Winnipeg, have dissolved.

NOTES.

Building permits were issued in Montreal during the month of August to the amount of $507,555.

Thos. C. Lidstone, contractor, of Montreal has assigned; creditors meet October 7. Caisse & Lapointe, contractors, same city have dissolved. J. Grant & Co., builders, Montreal, have registered; Dussault, Etienne & Co. contractors, of Levis, Que.; have registered; also the White River Lumber Co. of St. Casimir, Que.; also Gincherear & Lamonde, contractors, and Jobidon & Guavel, contractors, both of the city of Quebec. Joseph Garnean & Co., builders &c., of North Ham, Que., have dissolved.

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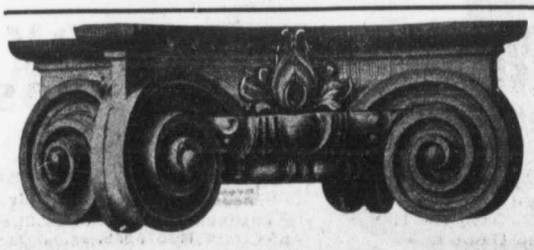

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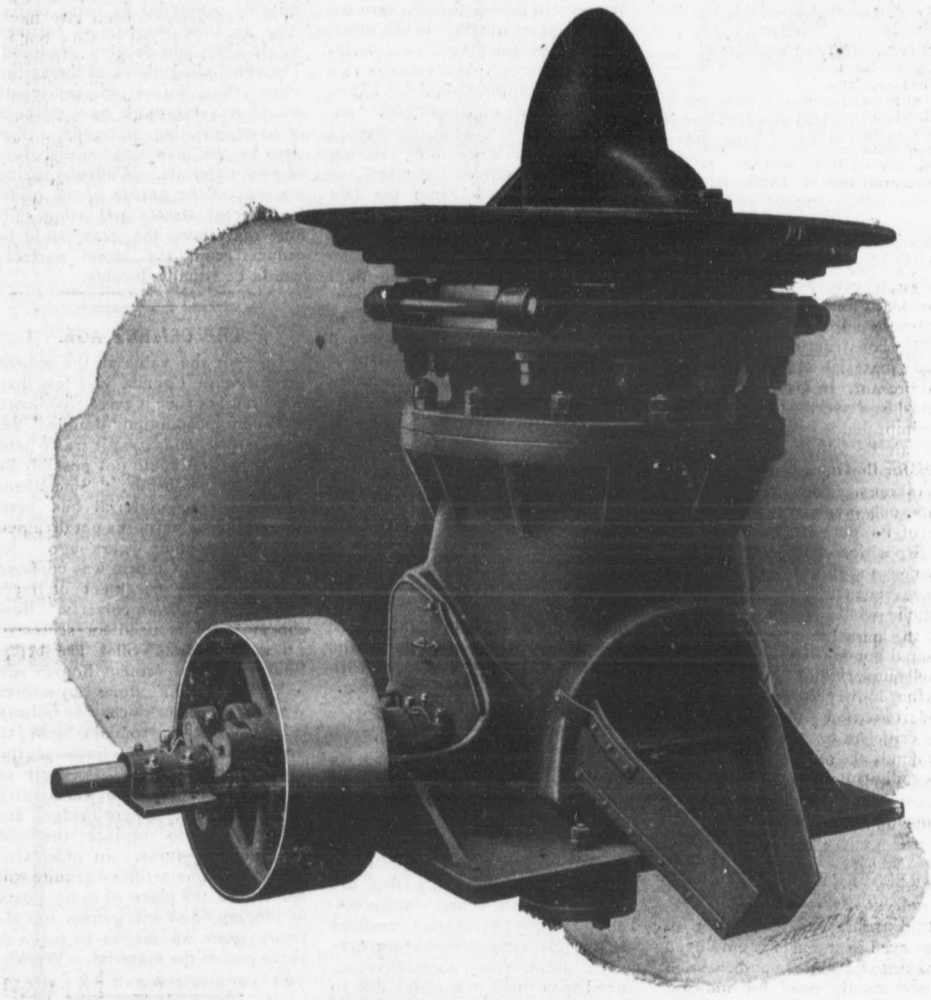
Rock Crushing Plants



The demand for crushed rock is increasing rapidly for railroad ballast, Portland cement, fluxing purposes in smelting plants, "Good Roads," etc. Bulletin 1411 describes the machinery and appliances, including the Gates "K" gyratory breaker shown above, used in MODERN ROCK CRUSHING Plants. Included also are sectional plans of a large number of plants in active operation, from which intending purchasers may get valuable hints in preparing data for plans and specifications.

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VANCOUVER BONDS.

The sanction of the ratepayers was recently obtained upon by-laws authorizing an expenditure of $445,000, but it is probable that the various public works involved will be considerably delayed pending an improved condition in the debenture market. The situation is reviewed by a prominent official as follows:

"As a result of the passage of the by-laws, applications are already being made to the city for the undertaking of certain works. Under these conditions I think it wise that the public should understand the facts of the case plainly. It is absolutely impossible for the city to promise works under these by-laws until the debentures are sold. Macadam roads and sewers need something more substantial than paper for their construction, and that is the only material which the Council has at present. In view of the city's present large overdraft at the bank, it is improbable that temporary relief can be obtained from that source for the inauguration of new undertakings. Hence the Council has its only resource, the sale of some of its debentures. There is an indisposition on the part of many Aldermen to effect a sale at this juncture because it is not thought the public would countenance sales made at the rates now offered for municipal bonds. The public might as well understand plainly, however, that if they force the Council to undertake new works there must be no criticism on their part if the city's bonds are marketed at a point which will probably note the lowest mark at which civic bonds have ever been sold."

THE RECOVERY OF TIN FROM TIN-PLATE.

By far the largest proportion of the tin used in the arts is employed for making tin-plates, and these in turn are mainly used for making the tins in which various comestibles are preserved. The total weight of the tin on the plating is said to average five per cent. of the total weight of the sheet, and there has been in the past great difficulty in recovering this tin by a commercially profitable process, in spite of the high price of the metal. That contained in the solder used in making the joints of the tin can be, and is, recovered by simply heating the tins sufficiently hot to cause the solder to flow; but this process is useless as a means of recovering the rest of the metal. According to the Electotechnische Zeitschrift, however, this feat is now being successfully accomplished at Copenhagen by the Bergsoe process. In this a solution of stannic chloride is passed over the tinned surface, when it takes up further tin forming the stannous salt. The latter is then electrolyzed, the additional tin dissolved is deposited, and stannic chloride reformed. The tins can, it is stated, be treated without requiring a preliminary cleansing. A hole is punched in the bottom of each, and a number are then placed in a basket, in which they remain during the whole of the subsequent treatment. When filled, the baskets are placed in a series of tanks, through which flows a two per cent. solution of stannic chloride. As this solution flows from tank to tank it gradually becomes richer and richer in tin by forming the stannous salt of the metal, as explained above. From the last tank of the series it is raised into the electrolytic vats by a pump constructed entirely of brass, so as to be unacted on by the fluid passed through. Here the stannous chloride is again reduced to stannic chloride, which is returned to the dissolving vats, whence it picks up more tin, to be again regenerated by electrolysis. The process is, therefore, a cyclical one. The tin is deposited in small crystals measuring about 1/50-inch long. Being perfectly pure, it is saleable at the same price as Banca. The energy expended in the electrolysis is said to be 47 kilowatt-hours per ton of the metal recovered. Though, as stated, the process is a cyclical one, the same solution cannot be used for more than three or four rounds of the vats, since it becomes charged with chloride of iron.—Scientific American.

ASPHALT PAVING.

"The developments of asphalt paving have probably done more to change the condition of streets than have any other improvements heretofore," says The Engineering Times, of London. "They are smooth, clean, and noiseless. Their composition varies because the natural asphalt is hardly ever used. Failure has sometimes occurred with these pavements due to the fact that only a limited number of engineers have the time and opportunity to study the subject, and consequently the pavements have not been properly designed for the work they are called upon to do. Generally the foundation has been at fault and very rarely the surface. Sheet asphalt pavements seem to be the most popular, but they have the disadvantage of being slippery. Probably this could be overcome by judiciously choosing the materials used in the wearing surface of the pavement, but there is necessarily a certain amount of slipperiness with any hard and smooth surface. For gradients asphalt block pavements are largely used, the blocks being coarser in composition than the sheet asphalt to enable horses to keep up on them. When newly laid, wood blocks form an excellent pavement, but when wet are exceedingly slippery. Owing to the manifold uses of wood such a pavement is not cheap. And in making estimates it is difficult to predict or foresee fluctuations in its price. It would appear to be a good idea if wood growing in the locality could be used, provided that it could be suitably preserved by tarry materials, as then the cost of carriage would be considerably reduced. The concluding views of the author were that future improvements would arise through new methods of using existing materials, rather than by the invention or discovery of new materials. Whilst by taking account of the nature of the traffic in different streets and using suitable materials, the cost could be reduced and the street surfaces would be equally durable."

THE CEMENT AGE.

In 1891 the value of the cement produced in Canada was less than $102,000; in 1905 it was $2,000,000.

When production doubled between 1901 and 1904 it was feared that a market could not possibly be found for the output. Since then, however, the material has been made to serve purposes not dreamed of three or four years ago. At first its use in Ontario was confined wholly to the basement of farm buildings and drain culverts. Now the material is used for scores of other purposes. Silos are being built of it, and cement houses are as common as stone structures were a few years since. In railway bridge work it promises soon to command the field. Even on the main line of the C. P. R. north of Lake Superior, where the country is not all rock, cement bridges are being built to replace the old wooden structures. In older Ontario this same artificial granite will soon take the place of cedar posts in fencing, and one genius has already gone so far as to make a stove out of the material.—Weekly Sun.

The possibilities of using electricity in constructing buildings do not seem to have been realized by the electric power companies to the extent that the subject deserves. While a few have done something in the line of suggesting their power for the use of contractors, they do not seem to have taken hold of the matter with the vigor which produces results. Electric motors could be used for operating concrete mixers, and for hoists for materials for reaching upper floors, and in many other ways quite as effectively as steam engines, while the ease with which connections could be made for the power should be a strong talking point in the matter. It is strange that the electric power companies have not done more in the way of demonstrating the possibilities of their power.—Improvement Bulletin.

GLASS BRICKS.

The demand for hollow bricks and building blocks for house construction has induced glass manufacturers to put hollow bricks on the market, and they promise to be used extensively for novel and artistic effects. The first glass bricks, being solid, proved a failure on account of their cost, but the hollow glass bricks can be made at much less expense. They are lighter and stronger than clay bricks, and are such excellent non-conductors that walls built of them are proof against dampness, sound, heat and cold. The bricks are sealed hermetically when hot, and are placed in walls with a colorless mortar made of special glass.

The Ontario Railway and Municipal Board have received a great number of applications lately for the approval of by-laws and they have issued the following statement upon the subject of municipal loans: "Speaking generally, we are not encouraging applications of this kind during the present stringency of the money market. We are of the opinion that it is a good policy for municipalities to postpone the construction of municipal improvements for some time until the monentary conditions have improved. The present stringency may only be a passing condition, which will right itself in a short time, and in that view it will be well for municipalities to borrow as little as possible at the present excessive rates of interest."

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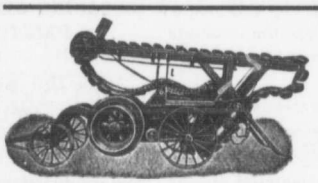
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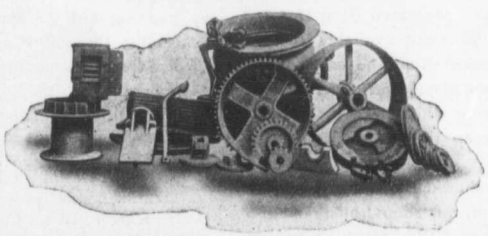
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SUGGESTIONS ON USING CEMENT.

After the materials are selected they should be mixed together dry, until thoroughly incorporated, or in other words, until the mass is of an absolutely uniform color. Water should then be applied and the thorough mixing repeated. The amount of water should be in all cases as great as possible, without causing the material to stick to the moulds when the stone is removed, says the Mississippi Valley Lumberman.

A little more care in the treatment of the face plates of any machine will enable the manufacturer to use a wetter concrete than is usually employed. Only such size batches should be mixed at one time as can be used up within thirty minutes from the time the water has been added. Next comes manufacturing. The concrete should be placed in the mould in small quantities, and tamping should begin immediately upon the placing of the first shovelful, and continue until the mould is full. The material should be tamped with a tamper having a small face, and short, quick, sharp blows should be struck. In faced blocks, the face should be composed of two parts sand and one part of cement, the same being mixed in the manner described

Owing, however, to the excess of cement used in facing, and owing further to the fact that cement is what makes concrete sticky, the facing cannot be used as wet as the balance of the block is made. Great care should be taken to tamp the concrete thoroughly into the facing, so as to unite the two into one solid stone.

In the wet process, the amount of water used is such as will produce a plastic or flowing condition in the concrete, but not enough to wash the cement from the other material. When placing the material in the moulds the entire mould is filled with one pouring.

No stones having transverse ties or webs cracked should be used or even allowed to cure. Should a slight crack occur in moving the green stone, throw the material back and make it over. In no case use a cracked stone in a building. Next follows the very important subject of curing.

All stone made by the medium wet or medium dry process should be made under cover and kept under cover for at least ten days, protected from the dry currents of air. If shed room is not available to store a ten days' output, the blocks should be carried out after the initial set has taken place, and covered with canvas, hay or other covering which will retain moisture and at the same time keep the dry air from circulating around the block.

Under no circumstances should blocks be made under the direct rays of the sun, nor should blocks made by this process be exposed to either sunshine or dry winds while curing.

The blocks should be gently sprinkled as soon as possible after making, that is, just as soon as the cement has set sufficiently that it will not wash. Blocks should be kept wet from ten days to two weeks, and should never be removed from the yard for the purpose of using in a building until they are from 30 to 60 days old. This is very important. A green block will surely crack in the building on account of shrinkage.

In laying cement stone a soft mortar composed of one-half cement mortar and one-half lime mortar should be used. This mortar should be made from fine sand free from stone, and should be buttered on the ends of the stone before laying. The stone should be laid in the mortar and worked down. Do not leave end joints open until after the building is completed, because when the end joints are filled at this time shrinkage in mortar is liable to loosen it, causing the mortar to fall out, leaving openings through the wall.

The spreading of mortar is very important, because if mortar is unevenly spread so that it is thicker under one portion of the stone than under the other, a leverage is created, which under the weight of the wall above is liable to produce a crack in the stone.

In using coloring matter with concrete, the color should always be mixed with the cement dry before any sand or water are added. This mixing should be thorough, so that the mixture is uniform in color. After this mixing the combination is treated in the same way as clear cement.

From the above and other sources a rough and ready rule has been formed, and good practice with good sand would seem to be about as follows:

Cement brick, one in four.

Sewer tile, one in three.

Concrete blocks, one in four, face one in two.

Sidewalk tile, one in four, wearing surface one in two.—Improvement Bulletin.

CLEANING STEELWORK BY SAND BLAST AND PAINTING BY COMPRESSED AIR.

By De Witte C. Webb.†

At the U.S. Naval Station, Key West, Fla., are two large steel coal sheds whose vertical side walls are composed of ¼-in steel plates, and are from 16 to 20 ft. high. The action of heat and impurities in the coal combined with that of the large quantities of salt water used for extinguishing spontaneous combustion fires rapidly corrodes the interior steelwork and necessitates its thorough cleaning and painting every time the sheds are emptied.

Shortly after the writer was detailed to this station his attention was attracted to this subject, and he concluded that the use of a portable sand blast cleaning and spray painting outfit would be very advantageous in point of efficiency and time as well as cost. This idea, meeting with the approval of the Bureau of Yards and Docks, the following outfit was purchased at a cost of $2,090, delivered at the Naval Station:

1 horizontal gasoline engine, about 20 HP.
1 air compressor, capacity about 90 ft. of free air per min. compressed to a pressure of 30 lbs. per sq. in. in one stage, belt connected to engine.
1 rotary circulating pump, belt connected to engine.
1 galvanized steel water tank.
1 air receiver, 18 x 54 ins.

(The above apparatus was all mounted on a steel framed wagon with wooden housing.)

2 sand blast machines, capacity 2 cu. ft. of sand each.
2 paint spraying machines, one a hand machine of ⅔-gal. capacity for one operator, the other of 10 gals. capacity for two operators.
100 lin. ft. of sand blast hose.
200 lin. ft. of pneumatic hose for sand blast machines.
400 lin. ft. of pneumatic hose for painting machines.
100 lin. ft. of air and paint hose for painting machines.
4 khaki helmets, with mica-covered openings for the eyes.
200 lin. ft. of 2-in galvanized iron pipe.

Previously to the delivery of this material, shed "A" had been emptied of coal and the work of clean-

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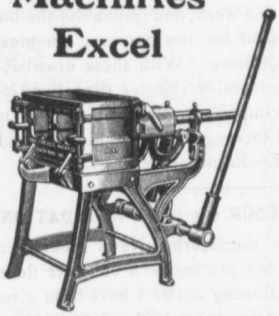

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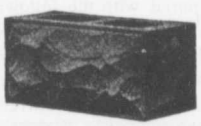

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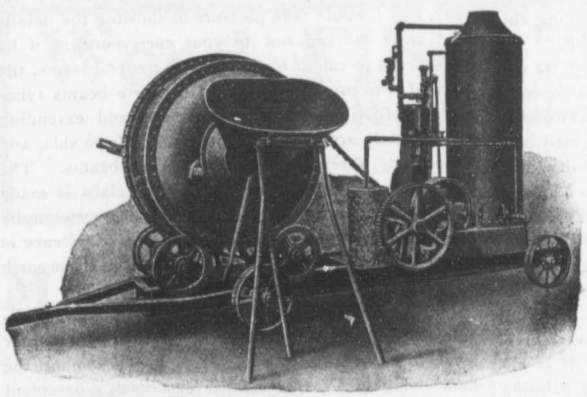

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ng the inside surface of the wall plates was begun in the usual manner. About 7,000 sq. ft. out of a total of 9,000 were thus cleaned at the cost of slightly over 4 cents per sq. ft. On the arrival of the sand blast outfit the hand work was stopped and after a short preliminary trial the machine cleaning was started. The work proceeded rather slowly until the men became accustomed to it, yet the 2,000 sq. ft. of previously untouched surface was thoroughly cleaned and the 7,000 sq. ft. of hand cleaning was all gone over and much improved at a total cost for labor of $97.68 and for gasoline of $16.15. The force consisted of the following :

	Per day.
1 engine tender	$3.04
1 helper (in charge of the work and tending machines)	2.24
2 laborers on machines, at $1.76 each	3.52
1 laborer drying sand, filling machines, etc.	1.76
Total	$10.56

From 10 to 15 gals. of gasoline were required per day of 8 hrs. (costing 19 cts. per gal. here).

For the painting the coal tar paint originated by Civil Engineer A. C. Cunningham, U.S.N., was used (see Eng. News, July 13th, 1906). This paint was prepared with the following proportions (by volume): coal tar, 4 parts ; kerosene oil, 1 ; Portland cement, 1.

The Portland cement was first well stirred into the kerosene oil, forming a creamy mixture ; this mixture was then carefully stirred into the coal tar. It was freshly mixed as needed and kept well stirred. The cost of this paint at Key West is about 15 cts. per gal. It was found not to be so well suited to the pneumatic spraying machine as oil paint, but worked very well ; though, of course, the machine used considerably more than hand work. In all, on this shed, 64½ gals. of paint were required for 9,000 sq. ft. or about 1 gal. to 140 sq. ft. The force used in painting was the same as in cleaning, with the addition of a laborer, who followed up the painters with a long-handed brush and spread the paint uniformly. The cost of painting this shed was for labor, $18.16 ; for gasoline, $3.80.

On shed "B" a total area of 12,500 sq. ft. was cleaned and painted. This steelwork was covered with a scale nearly ⅛-in. thick and was deeply pitted. The scale and rust was very tough, and extremely hard to remove. On this work it was found economical to keep men ahead of the sand blast with sledges, loosening and shaking off as much of the scale as possible. The labor cost of the whole work of this shed (cleaning and painting) was $460, including the cost of moving, setting up and removing. Gasoline cost $81. A total of 86 gals. of coal tar paint was used, covering about 145 sq. ft. per gal. Total cost of labor, fuel and paint, $553.90, or 4.4 cts. per sq. ft. It is impossible to separate the cost of cleaning and painting on this work, as only small areas were painted at one time, the painting being done by one operator, the other working the sand blast. This was done in order to expose the cleaned steel to the atmosphere for as short a time as possible.

A fine silica sand was used, that being the only kind available except coral sand, which was tried, but found to be too soft. A coarser sand would probably have been more effective. The sand was all saved, dried, and re-used several times. About ½ cu. yd. of fresh sand was required daily. The sand must be kept perfectly dry for this purpose, and there are patented sand driers manufactured. Very good results were obtained on this work, however, by the use of a sheet of boiler plate set up on bricks with a wood fire underneath.

No claims are made of extreme economy in the above work, The extremely thick and tough scale to be removed, the high fuel and labor cost of compressing air simply for this work, and (probably) the lack of the best kind of sand for the purpose, combined to make the work expensive. With these drawbacks it was, however, considerably cheaper than hand work, and what is more important, the cleaning was much more effective and thorough than could possibly have been done by hand.—Engineering News.

CONCRETE FLOOR ON SOFT FOUNDATION.

To an enquiry in Engineering News seeking information regarding the placing of a concrete floor on soft ground, the following answers have been given :

In your issue of Aug. 29, 1907, I note a question by "Construction Company" in reference to laying a concrete floor of a building upon filled ground above 7 ft. of black mud. The condition described is the same as the marsh land at Long Island City, and I know of two factories where the floor was laid as your correspondent proposes that have proved to be failures from settlement of the ground.

In another case, in ground of this character, the wall footings of the building spread apart, owing to the fact that the ground furnished very slight lateral support, and although the bearing piles under the walls were well driven, this spreading outward became so serious as to endanger the structure and necessitated putting in a great number of ties from wall to wall.

A satisfactory solution of the problem of supporting the floor and at the same time tying in the wall footings was made in the erection of a large factory last year, and I would take pleasure in showing the details that were worked out to your correspondent if he would care to call at my office. In general terms, the method is to provide reinforced concrete beams tying the wall footings to the centre piers, and extending continuously across the building from side to side, and supporting a reinforced slab on these beams. The form work for these beams and for the slabs is made by digging trenches and forming the earth between the trenches either flat or arched as desired. If care is exercised, the concrete may be deposited in these earth forms without the use of wooden centering.

In the case of many buildings, it is thought desirable, instead of filling in earth up to the first floor level, to excavate and to provide a low basement, the floor being laid in the manner described, a basement being always serviceable for storage and the first floor being very much drier and more healthful if it has an air space underneath instead of resting directly upon the ground.

Yours very truly,

A. B. Miller, M.E.,

Building Construction.

140 Cedar St., New York, Aug. 31, 1907.

Referring to the inquiry in your issue of Aug. 29, relative to laying concrete floors on the mud of the tidal marshes, I should like to say that the question of

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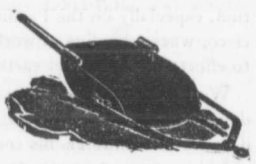

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the upheaval of same through freezing is not as important as they think. If the foundations of the building are deep enough, the frost has no more effect than it would have in a building placed on solid ground. The important feature of such work lies in the necessity for entirely enclosing the area within the foundation walls. The material in question has about the consistency of grout, and unless previously confined will force its way out under the foundations, and as such foundations are usually built on piling, it is often very doubtful whether the space is entirely enclosed. During an experience of over five years in a variety of work with this material, I have found that tamping sand, gravel, ashes or the like will increase the bearing power very considerably. I have found it especially true in setting trolley poles and when sand was used to fill the holes (the sod was undisturbed), they would stand about as well as in a sandy soil. Your correspondent should be sure he has bottom at the required depth, as I have found streaks of sand in varying thicknesses at different depths before arriving to the real bottom, in which case a timber platform was laid on the piling before starting the masonry. If the character of the building contemplated will warrant it, I would suggest putting in piers and building a regular reinforced floor system.

Yours truly, F. D. Hain.

Joliet, Ill., Sept. 2, 1907.

We notice in your issue of the 29th ult. an inquiry from a construction company on concrete floors on soft foundations, and take great pleasure in advising that we have had long experience in this class of construction, especially on the Pacific coast and in San Francisco, where this line of work is very much used owing to efforts to counteract earthquake stresses.

We can assure your correspondent that there is no danger whatever from freezing, and we are confident, if he would reinforce his concrete slab sufficiently, it would counteract any tendency to an upheaval of any sort. We have one large job in San Francisco in the plant of the Western Meat Co., where a very serious problem of mushy foundation caused by seepage water was encountered, and this was successfully overcome by laying a mat of 8 ins. of concrete reinforcement with our wire fabric to take care of the upward pressure. It is now doing this work in splendid shape.

Yours very truly,

American System of Reinforcing for Concrete Construction, W. A. Collins.

189 La Salle St., Chicago, Ill., Sept. 6, 1907.

PUBLICATIONS.

We have just received from Mussen's Limited, of Montreal, the prominent engineering and contracting supply firm, an admirable catalogue of "Kinnear" doors and shutters, for which they are the Canadian agents. The introductory page explains that the booklet is intended to convey a general idea of the uses and applications of the "Kinnear" steel rolling door. We note with special interest the great efficacy of these doors and shutters in resisting fire—a feature so strikingly illustrated in the view given of the San Francisco and other big conflagrations, and we feel that not one of our readers interested in modern construction should be without a copy of this catalogue.

LIGHTNING PROTECTION FOR CHIMNEYS.

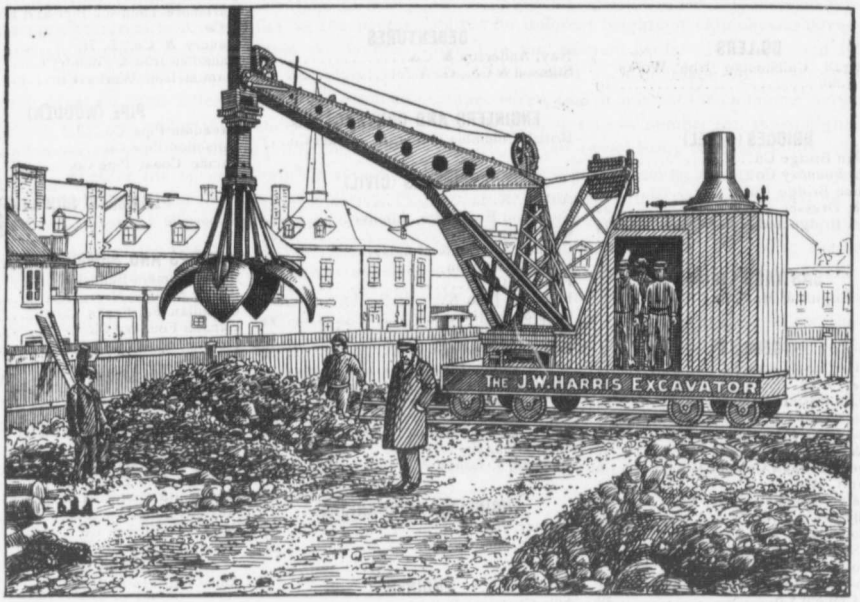
Stantards for lightning protection for power plant chimneys in the Navy Yards have been adopted by the U.S. Navy Department, the proposed means being varied for different heights of chimneys to cover those found in the different yards. It is specified that the conductors shall each be made up of seven No. 10 copper wires, two in number for chimneys between 50 and 100 ft. and four in number for those higher than 100 ft., in all cases being symmetrically disposed around the stack and forming a cage enclosure. They are to be fastened firmly without insulators to the outside chimney surfaces by bronze anchors, the latter being spaced 10 ft. apart and soldered to the conductors at 50-ft. intervals. At the bottom of the stack the conductors connect with 3 ft. x 3 ft. x ⅛-in. copper earth plates buried in the ground below the water line, and at the top to a 1½ x 1½-in. copper ring, to which the discharge tip rods are attached. The latter are of ¾-in. solid copper, 10 ft. in length, spaced 4 ft. apart around the circumference of the chimney cap, each terminating in a two-pointed aigrette. The portions of the conductors near the chimney base are to be protected by a 1½-in. galvanized-iron sheathing, rising 10 ft. above the ground level and extending 3 ft. below it.—Engineering Record.

WATER IN CONCRETE.

The effects of water used in making concrete aroused an animated discussion among German concrete specialists in 1901, and to settle it about ninety-nine tons of test pieces were made up by various parties and sent to Prof. C. Bach, of Stuttgart, for test. This work lasted about four years and the results have recently been published in the Zeitschrift of the Society of German Engineers, says the Engineering Record. The records of the methods of preparing the test pieces and the amounts of water used in mixing the materials were forwarded with the samples. Tests of samples made by the same man under uniform conditions in Prof. Bach's laboratory showed that the smallest amount of water which produced a mixture suitable for ramming gave the strongest concrete, but the highest degree of skill and care was required. Larger amounts of water enabled less competent workmen to produce good concrete and in practical work are an insurance against the injurious effects of varying degrees of moisture in the sand and stone, changeable atmospheric conditions and other factors. These statements, it will be observed, are the same as those made by concrete specialists in the United States, and indicate the extreme care necessary in basing field methods on the results of laboratory experiments by trained workmen. The tests represented work done under a great variety of conditions, and the specimens were representative of good German practice.

British capitalists are busy in the furtherance of a scheme for building a line from Edmonton to Dawson City. The promoters claim that the mineral wealth of the country surpasses that of the Klondike, while the timber resources are unequalled, even in the coast districts. If this project is carried out, England will be brought within fourteen days' travel of the remotest part of the Yukon.

CLASSIFIED INDEX OF ADVERTISERS



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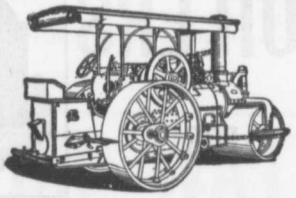

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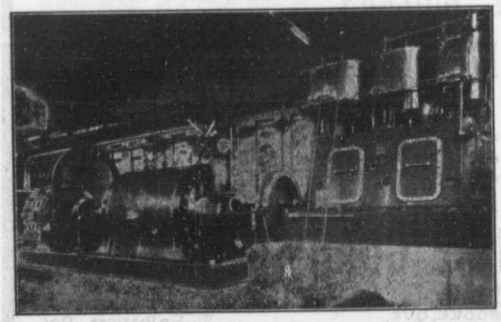

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WELDING OF STEEL.

A new method of steel welding has just been successfully tried in connection with the repairs to the freight steamer Corunna, plying between Montreal and the Upper Lakes, which had its rudder post and shoe broken in an accident in the Cote St. Paul locks recently.

The advantage of this new process is that a break may be welded again without the parts to be mended being removed. In this way considerable time and expense are saved. G. E. Pellissier, an expert from New York, was engaged, and by this new process both breaks have been successfully mended.

After thoroughly cleaning the parts to be welded, a mould was built around the ends, over a wax pattern, a hole being left in the bottom of the mould for the wax to run out later. A powerful gasoline torch was then inserted until the wax was run off and the parts to be welded brought to a red heat. In the meantime a crucible, consisting of a sheet iron shell, was swung over the mould and the charge of thermit steel placed in it. When the hole at the bottom of the mould had been closed up, a teaspoonful of ignition powder was placed on top of the thermit steel in the crucible and touched off with a match. In thirty seconds the reaction had taken place, and the crucible was full of molten steel, at a temperature of 5,500 degrees Fahrenheit. The crucible was then tapped at the bottom, and, flowing into the mould, the superheated thermit steel fused the ends to be welded, amalgamated with them, and made the steel bar as strong as ever.

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The elastic macadam that seems to be proving so satisfactory as tried on Swiss roads is made of tar and gravel, the latter having a coarseness of one to two inches. The liquid is applied to the heated stones in a rotating drum until a considerable coating is formed. The material is then piled under cover and left for eight or ten weeks to undergo fermentation, the process filling the pores of the gravel and lessening the dust from it. A cubic yard of gravel requires only about fifty pounds of tar.

The creditors of the Raven Lake Portland Cement Company meet on October 30, when the re-organization of the company by increased capital and added machinery will be considered.

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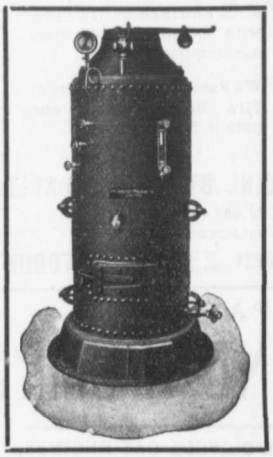

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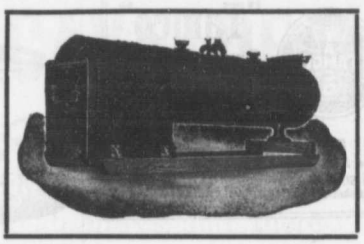

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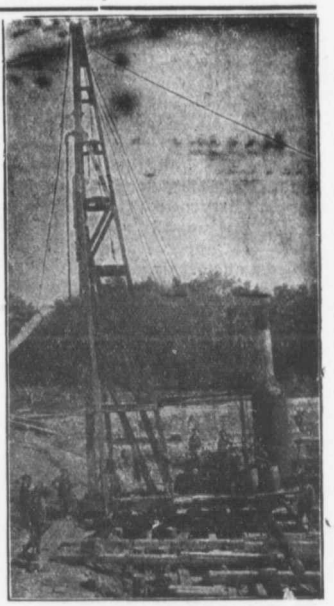

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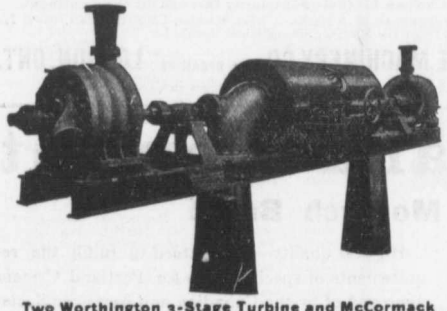

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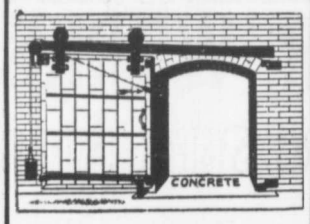
Brandon permits issued so far in 1907 are well over the half million mark, and it is expected that by the end of the season a figure will be reached that will establish a record among the smaller Canadian cities. Eighty-two residences, ranging from $1,000 to $12,000 and totalling $213,500, are the feature of the year. The more expensive structures now building are the G. N. R. depot, the Brandon Collegiate, the Brandon Electric Light Company's addition, the winter Fair building and the addition to the Asylum, while permits have yet to be issued for the hew Armoury, S.A. barracks, C.N.R. depot and the government telephone building.



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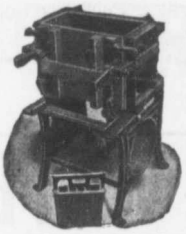

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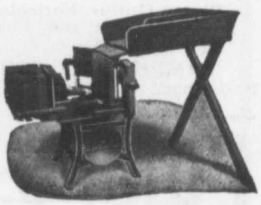

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U. S. GOVERNMENT REPORT ON CONCRETE BLOCKS.

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Concrete blocks, being easily molded to any desired form, will prove to be a far more economical building material than stone, which has to be dressed to shape.

Experience has proved concrete to be a most excellent fire resisting material.

Concrete blocks, being hollow, tend to prevent sudden changes of temperature within an hour, making it cool in summer and easily heated in winter.

The hollow spaces provide an easy means for running pipes and electric wire. These spaces may also be used wholly or in part for heating and ventilating flues.—Bulletin No. 235 U. S. Department of Agriculture.

The American-Canadian Oil Company must indeed have struck a good field at Egg Lake, where they are carrying on operations, if, as it is claimed, during the process of their boring, they have already discovered a tar sand deposit in a sufficient quantity to asphalt an eight-foot roadway around the world.

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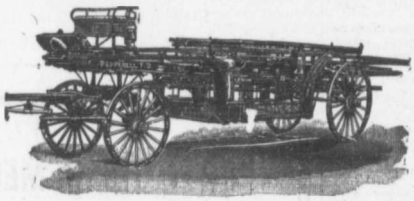
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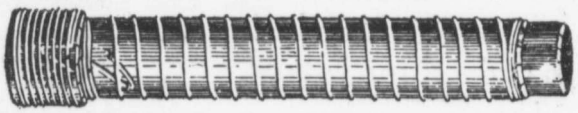

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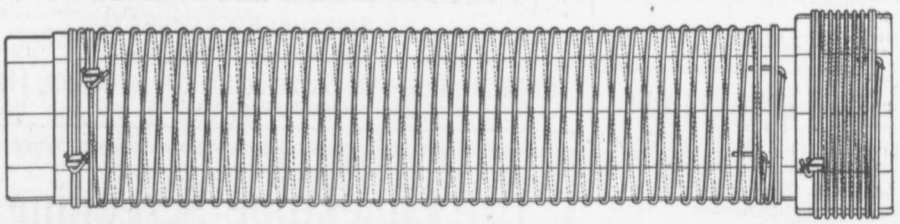

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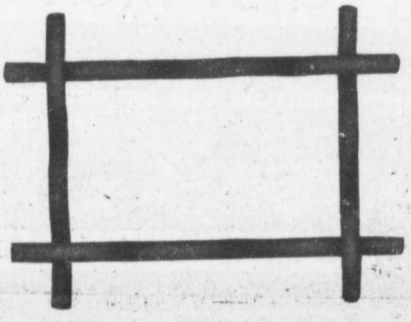

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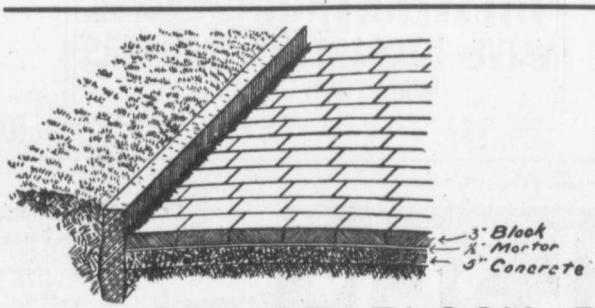

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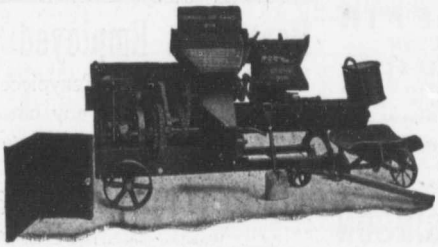

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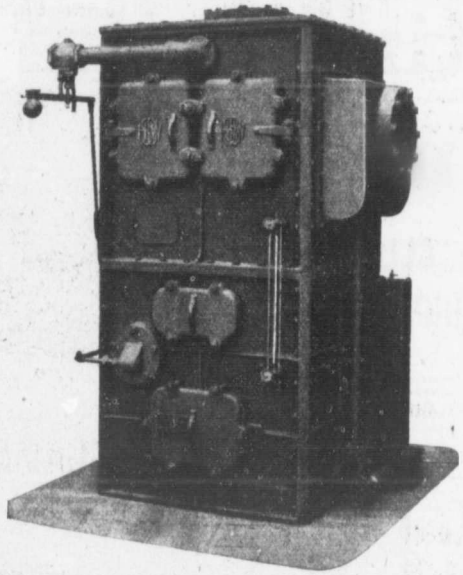

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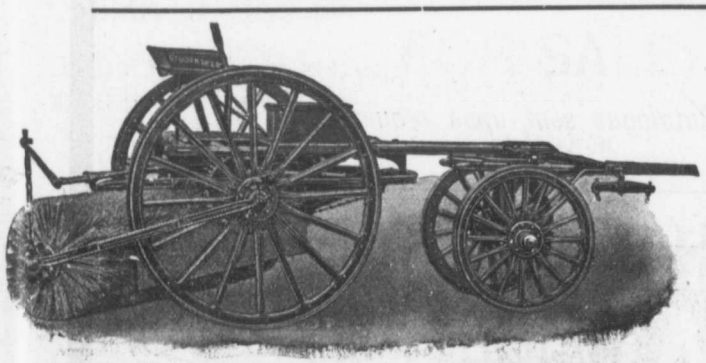

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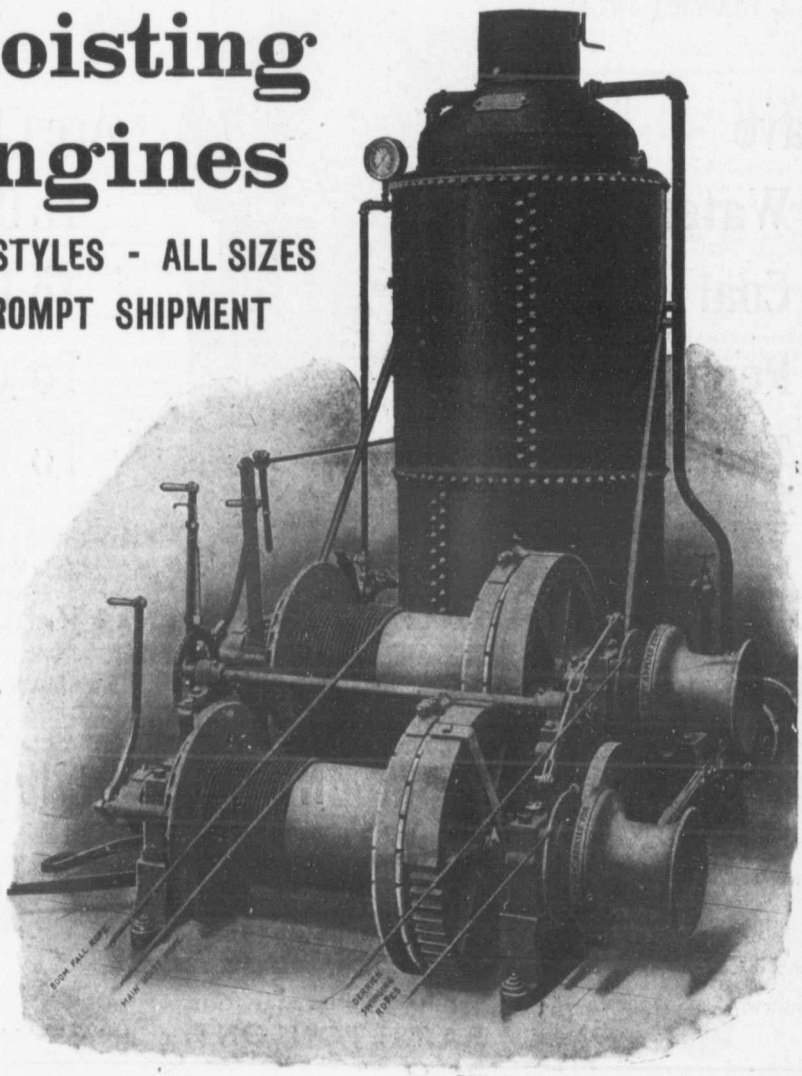

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