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CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL OF PUBLIC WORKS, TENDERS, ADVANCE INFORMATION AND MUNICIPAL PROGRESS

EVERY THURSDAY

This paper reaches every week the Town and City Clerks, Town and City Engineers, County Clerks and County Engineers, Purchasers of Municipal Debentures and leading Contractors in all lines throughout Canada.

VOL. 6.

AUGUST 8, 1895

No. 27.

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Notice to Contractors

Tenders will be received by registered post, addressed to the City Engineer, Toronto, up to 11 o'clock a.m. on WEDNESDAY, AUGUST 21ST, 1895, for the following works:—

CONCRETE SIDEWALKS

On Adelaide Street, north side, from Yonge to Bay Street.

On York Street, east side, from Wellington Street to Rossin House lane.

On Isabella Street, both sides, from Jarvis to Sherbourne Street.

Specifications may be seen and forms of tender obtained on and after Monday, August 12th, 1895, at the office of the City Engineer, Toronto.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 5 per cent. on the value of the work tendered for up to \$1,000 and 2½ per cent. on the value of the work tendered for over that amount, must accompany each and every tender, otherwise it will not be entertained.

The tenders must bear the bona fide signatures of the contractor and his sureties or they will be ruled out as informal.

The lowest or any tender not necessarily accepted.

DANIEL LAMB,
Chairman Committee on Works.

Committee Room, Toronto, August 6th, 1895.



NOTICE TO CONTRACTORS

Tenders will be received by registered post, addressed to the City Engineer, Toronto, up to 11 o'clock a.m. on WEDNESDAY, AUGUST 21ST, 1895, for the following works:—

TRACK ALLOWANCE

On Station Street, from York Street to Simcoe Street. (Scoria setts.)

On York Street, from Station Street to Front Street. (Granite setts.)

On Simcoe Street, from Station Street to Front Street. (Granite setts.)

Specifications may be seen and forms of tender obtained on and after Monday, August 12th, 1895, at the office of the City Engineer, Toronto.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 5 per cent. on the value of the work tendered for up to \$1,000, and 2½ per cent. on the value of the work over that amount, must accompany each and every tender, otherwise it will not be entertained.

The tenders must bear the bona fide signatures of the contractor and his sureties, or they will be ruled out as informal.

The lowest or any tender not necessarily accepted.

DANIEL LAMB,
Chairman Committee on Works.

Committee Room, Toronto, August 7th, 1895.

CONTRACTS OPEN.

MERRITTON, ONT.—The Riordan company intend enlarging their machine shop.

PERTH, ONT.—The proposed system of waterworks for the town is estimated to cost \$30,000.

GRANBY, QUE.—Plans are now being prepared for the new factory for the Empire Tobacco Co.

STRATFORD, ONT.—Mr. Powell, architect, of this city, is preparing plans for the new English church at Tilbury.

BERLIN, ONT.—It is reported that a local capitalist intends erecting a building for the Young Men's Christian Association.

CARBERRY, MAN. Proposals for the purchase of \$11,000 school debentures are invited until the 15th inst. Address B. A. Huckell, Sec.-Treas.

BELLEVILLE, ONT.—The Board of Education are considering the erection of a new school.—Debentures will be issued by the Council for the Bridge street sewer.

RENFREW, ONT.—Tenders are invited by the Board of Education until the 8th inst. for an addition and alterations to the High School. Address, G. W. McDonald, Chairman.

ALEXANDRIA, ONT.—As a result of the failure to secure water by boring artesian wells, the council have decided to submit a by-law to the electors to borrow \$23,000 to build a stand pipe, put in mains and hydrants, etc., to pump water from the

Back river. The vote will be taken on the 9th inst.

KINGSTON, ONT.—Archbishop Cleary has purchased the Merchant's bank building here for a school or residence.—A representative of the firm of Edward P. Alis & Co., of Milwaukee, was recently in the city for the purpose of negotiating for the erection of smelting works here.

GUELPH, ONT.—M. O'Connor is circulating a petition for signatures, to be presented to the City Council, requesting that immediate steps be taken to provide a system of sewerage.—John Day, architect, is receiving tenders this week for the erection of a double dwelling house for Thomas Blanchfield.

ACTON, ONT.—Beardmore & Co., tanners, are about to erect a large brick warehouse and fire-proof hide house at the G. T. R. station. The present buildings of the tannery will also be considerably enlarged.—Cheyne & Cheyne are considering the installation of an electric light plant for lighting the town.

BRANTFORD, ONT.—The Mayor will receive tenders until the 21st inst. for the purchase of \$6,000 of debentures, issued for waterworks extension. The Continental Twine and Cordage Company have under consideration the construction of new works, which it is said will be erected either in Brantford or Hamilton.

FREDERICTON, N. B.—The City Engineer has been instructed to prepare plans and estimate of cost of a complete sewerage system. Some time ago the Messrs. Crafts & Forbes, engineers for the waterworks, recommended a pumping system, and estimated the cost at \$58,000.—Oliver Burden contemplates the erection of a large warehouse.

HULL, QUE.—Steps will likely be taken at an early date to secure the water supply for the town from the main channel of the Ottawa river, instead of from the Brewery Creek, as at present. The matter will be taken up at the next Council meeting, and it is further understood that a sanitary report will be laid on the table from the provincial authority in the same connection.

CHATHAM, ONT.—The School Board have decided to expropriate land required for a new \$30,000 central school, containing fourteen rooms.—The City Council have completed the purchase of the Waterworks Company's plant, and it is likely that a move will at once be made towards abandoning the filter system now in use, and securing a water supply from Lake Erie, which will cost about \$100,000.

QUEBEC, QUE.—The site is being prepared for Mr. Polley's new factory, corner St. Valier and Voltigeur streets. The Women's Christian Association are erecting a two-story wing to their building and introducing hot water heating apparatus at a cost of \$50,000. Mr. H. Staveland has the work in hand.—Engineers are surveying the streets through which the electric railway will pass. The plans will

be made on their report and submitted to the City Engineer for approval, after which work will be commenced.

ST. JOHN, N. B.—G. Ernest Falk, weather, architect, is preparing plans for an addition to the Royal hotel, including an elevator. Work will commence about 1st October.

KINCARDINE, ONT.—W. C. Loscombe, Chairman High School Committee, will receive tenders until the 12th inst. for hot air furnaces and for the ventilation of the High school.

VANCOUVER, B. C.—It is understood that the Kansas City Consolidated Smelting and Refining Company have decided to erect a large smelting plant at Kakusp, in West Kootenay.

ST. CATHARINES, ONT.—W. A. Mittleberger, Treasurer for the town, invites bids until the 14th inst. for the purchase of \$15,000 of consolidated debentures, bearing interest at 4½ per cent.

CORNWALL, ONT.—Tenders for three pairs of lock gates for the new lower entrance locks are invited until the 13th inst., addressed to F. S. Rubidge, at whose office plans may be seen.

LONGUEUIL, QUE.—Tenders are invited until 7 p. m. on the 10th inst., addressed to V. Pigeon, Chairman Water Committee, for the construction of a tail race of 1,700 feet. Plans may be seen at the Council Chamber.

WINNIPEG, MAN.—The School Board is receiving tenders this week for the erection of the Dufferin school. C. H. Wheeler, architect.—The Board of Works have recommended that tenders be called for sewer pipes, estimated to cost \$1,900.—It is rumored that the object of Mr. Hugh Ryan's visit to Winnipeg is with a view to pushing the work of construction on the Lake Manitoba Railway & Canal Co.'s Dauphin road.

ST. THOMAS, ONT.—Tenders are invited by the City Council until noon on Thursday, the 22nd inst., for lighting the streets of the city with electricity. Particulars may be obtained from the City Engineer.—Mr. A. W. Campbell, City Engineer, is preparing plans for a new Queen truss bridge to replace the Dead Falls bridge across the Thames river, in the township of Dunwich, which is 125 feet long and 65 feet high.

HAMILTON, ONT.—Dr. Burns is receiving tenders for steam heating the Hamilton Ladies College.—Architect Stewart has recommended a new roof for the Library building.—A new Salvation Army barracks will be erected in this city this fall. The corner of Rebecca and Hughson streets is spoken of as the probable site.—A meeting of the shareholders of the Hamilton, Grimsby and Beamsville railway, was held last Saturday to consider the advisability of completing the road to Beamsville this year, but the matter was referred to a special committee for a report.

LONDON, ONT.—Tenders are invited by the Librarian of the London Public Library until the 15th inst. for the supply of books required by the Library.—It is reported that a joint stock company is being formed to erect a general slaughter house, with stock yards, cold storage, etc.—John McCrimmon will erect a brick veneered cottage on Maitland street, to cost \$1,000.—The City Council have refused the request of the Board of Education to issue debentures for \$34,000 for school buildings.—S. Baker proposes to erect a new residence to cost \$1,200.—Geo. Oliver is building a \$3,000 residence on Wellington street, north of St. James street.

OTTAWA, ONT.—The Gatineau Valley Railway Company have finally decided to adopt the Blue Sea Route for the extension of their line to Maniwaki.—The building of a bridge over the Hurdman

road, at the head of the Deep cut, where the O. A. & P. S. line crosses, is to be proceeded with at once. The bridge will be of solid masonry, with four steel girders over the roadway. The width of the bridge will be about 50 feet, and the roadway beneath 32 feet 6 inches.—It is stated as the intention of the St. Anthony Lumber Co. to erect another saw mill during the present year.—The authorities of the Protestant hospital held a meeting last week to consider plans for the new wing to the hospital. It is not probable the new wing will be commenced this season.—J. H. Balderson, Secretary Department of Railways and Canals, is asking for tenders until Friday, the 16th inst., for the supply of 2,500 barrels of Portland cement. Specifications may be obtained at the office of the Chief Engineer.—Tenders are also requested by the above department until Monday, the 19th inst., for the construction of about 300 feet of crib-work in connection with the canal enlargement at Montreal, plans for which may be seen at the Department and at the office of the superintending engineer of the Lachine canal, Montreal.

MONTREAL, QUE.—The trustees of Douglas church are building an organ chamber and sanctuary to their church.—The new college which the School Commissioners of St. Louis du Mile End are building at the corner of Beaubien and St. Eugene streets, will be 110 x 40 feet in size, four stories high and will cost \$25,000. The architect is Mr. Montbriant.—The Road Committee has given notice that it is proposed to construct a sewer on Contant Lane, west of Campeau street.—An effort is being made by the faculty of medicine of McGill University to acquire the Hunt estate on University st., upon which it is proposed to erect an addition to the pathological department.—Archbishop Fabre has received a petition asking that St. Denis ward and Mile End be divided canonically, and that permission be granted to residents of St. Denis ward to erect a church of their own. The request will probably be granted and a new parochial church erected on St. Denis street.—The Road Committee is receiving tenders this week for the construction of a number of sewers.—Permission has been granted by the Dominion Government to the Lachine Rapids Hydraulic Company to construct a dam and power houses along the Lachine rapids, near this city. The company has a capital of \$1,000,000.—Tenders are asked by C. A. McDonnell, 186 St. James street, until Thursday, the 15th inst., for the construction of a brick dust track at the new Shamrock Athletic Association's grounds.

TORONTO, ONT.—The extension of Gerrard street in accordance with a report presented by Mr. Peter Gibson, C. E., was considered by the York County Council at their last meeting. The cost is placed at \$2,300, the greater part of which is for the bridge over the ravines 225 feet and 150 feet in length, on cedar posts. The work will likely be carried out.—New plans for the proposed alterations to Queen street subway have been prepared by the City Engineer. It is now proposed to erect no piers in the centre, but to construct the girders of one span. It is reported that the Railway Committee of the Privy Council will give a decision regarding the subway on August 9th.—The City Solicitor has informed the Council that the city is bound to provide the funds for building the York street bridge, and steps will probably be taken to compel the C. P. R. to at once carry out the work.—The Medical Health Officer has notified the management of Sunnyside Orphanage, to construct a sewerage system for the home. He considers that a drainage system having a settling tank and subsoil irrigation is necessary.—The Council has given notice

that the following works will be constructed: Brick pavement on Dovercourt road, from Queen street to Dundas street, cost \$17,700; macadam roadways on Agnes street, from Yonge street to University street, cost \$2,020; on St. Alban's street, from Yonge street to Queen's Park crescent, cost \$1,670; on Power street, from King street to Queen street, cost \$1,250; on Wilton avenue, from Yonge street to Jarvis street, cost \$2,435; on Wilton avenue, from Sherbourne street to Parliament street, cost \$1,450.—The following building permits have been granted: Toronto Lithographing Co., 3 story bk. factory, n. w. cor. Bathurst and King streets, cost \$25,500. A. W. White, 196 Davenport road, pr. s. d. 2 story and attic bk. dwellings, 43 and 45 Roxborough street, cost \$7,000.

FIRES.

Wm. Zinger's woolen mill at Teeswater, Ont., was damaged by fire on the 2nd inst., the loss being covered by insurance.—Pringle's saw mill at Dobbington, Ont., was burned on Monday last. Loss, \$2,500; partially covered by insurance.—A two-story frame building at Holbrook, Ont., used as a general store and post-office and owned by H. Flood, of Woodstock, was burned on August 4th, partially insured.—John Dawson's residence at Little Current, Ont., was destroyed by fire last week. Loss \$2,000.—A large storehouse at St. Johns, Que., owned by J. G. Molleur, was consumed by fire on the 4th inst. Loss, \$21,000; insurance, \$10,000.—Albert Field's residence at Woodstock, N. B., has been burned. Loss partially covered by insurance.—About forty buildings at Springhill Mines, N. S., were destroyed by fire on the 6th inst. The loss is estimated at \$100,000, with insurance amounting to about \$25,000.

CONTRACTS AWARDED.

HALIFAX, N. S.—The contract for the new freight shed has been secured by R. C. Donald & Co., of Moncton, N. B. The building will be of brick and the contract price is about \$34,000.

PORTAGE LA PRAIRIE, MAN.—The Dominion Government have awarded the contract for the new post office here to Viau & Lachance, contractors, of Hull, Que. The building will be of solid stone and will cost \$25,000.

BRANTFORD, ONT.—John Hall is the contractor for the Watrous Engine Co.'s new buildings. The main building will be 100 x 300 feet; foundry, 80 x 100; blacksmith's shop, 50 x 30; boiler shops, 87 x 100, and pattern shop, 40 x 100, all three stories high.

WALKERTON, ONT.—Thomas Luscombe, of Belleville, has been awarded the contract for the construction of the first section of the drainage system for this town. The length is 3,100 feet, and the price \$2,617.44, exclusive of guiley holes, gully pipes, flush tanks, etc.

LONDON, ONT.—Tenders have been accepted as follows for alterations to Knox church, South London: Ed. Martyn, brickwork; John Davidson, carpentering; Gould & Stratford, plastering; H. & C. Colerick, painting; J. Brockest, galvanized iron; Globe Furniture Co., seating. The work will cost \$3,500.

ST. JOHN, N. B.—Tenders for the erection of St. Jude's church were received as follows: Jas. B. Whipple, \$2,205; Geo. V. Beateay, \$2,288; Andrew Myles, \$2,359; John Drury & Son and L. L. Cassidy. The contract has been awarded to Mr. Whipple. The vestry have decided to build the church in sections, and when the outside is completed, the contract for the interior will be let.

MONTREAL, QUE.—Wm. Hood & Son have been awarded the contract to sink

the necessary beams under the sewer on Notre Dame street at 23 cents per lineal foot. The repairs will cost upwards of \$10,000.—Wm. Davis & Son, of Ottawa, have been awarded the contract for constructing the dam and power houses for the Lachine Rapids Hydraulic Company. The dam will be nearly 5,000 feet in length.

ORANGEVILLE, ONT.—Six tenders were received for the construction of a system of waterworks for the town as follows: Shields & Gowanlock, Toronto, \$37,499.99; Clark & Connolly, Toronto, \$39,390; McQuillan & Co., Toronto, \$39,598; McCarthy & Plummer, \$39,155; James Bowers, \$47,975; A. Farquhar, Toronto, \$45,727. The tender of Shields & Gowanlock has been accepted. The chief engineer is Mr. Wilhs Chipman, of Toronto, whose estimate for the work was \$38,200.

TORONTO, ONT.—At a meeting of the sub-committee of the Board of Works held on Saturday last, the following contracts were awarded: six foot concrete sidewalk on east side of St. George st., from Hoskin avenue to Bloor street, A. Gardner & Co., \$1.04 per lineal foot; brick pavement on Selby street, A. Farquhar, \$2,691; brick pavement on Amelia street, A. J. Brown, \$7,350; asphalt pavements on Victoria street and St. Patrick, to the Construction & Pavement Co., at \$8,393 and \$4,388 respectively; cedar block pavement on Argyle street, D. L. Van Vlack, \$3,245.

NEW COMPANIES.

MONTREAL, QUE.—Canadian Mining and Developing Co., incorporated; capital, \$100,000.

BRANTFORD, ONT.—J. Simpson Manufacturing Co., incorporated; capital stock \$45,000; to deal in carriages, wagons, etc.

TORONTO, ONT.—Swansea Forging Co., incorporated, capital \$100,000; to manufacture and deal in iron, steel and other metals.

MONCTON, N. B.—Mild Brook Mining & Reduction Company, applying for charter, capital \$500,000; to carry on business of Mining; applicants, R. Crosbie, T. B. LeBlanc, S. Crandall, G. B. Lutz, I. N. Wilbur and R. M. Dryden.

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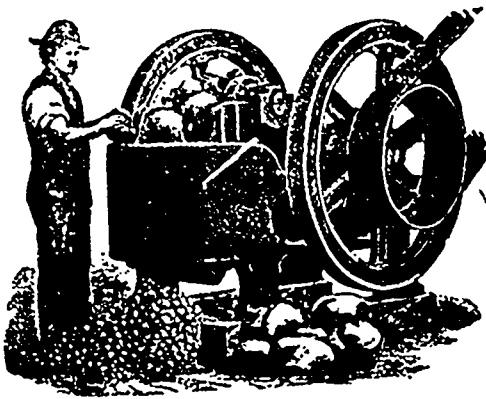
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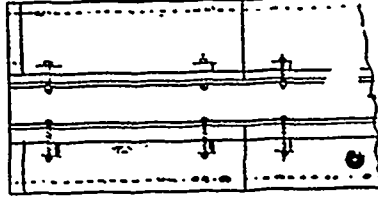
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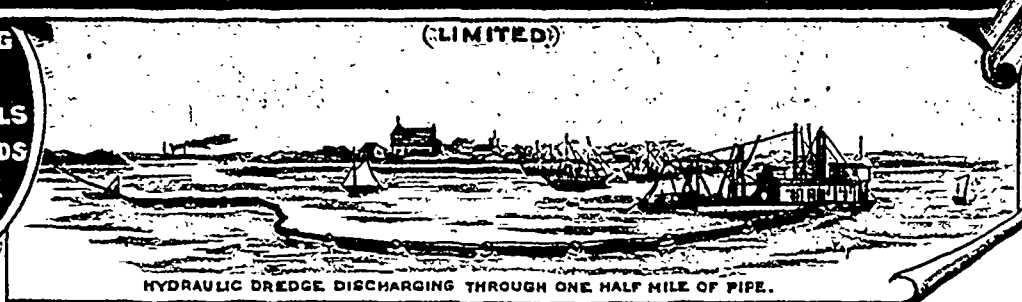
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DYNAMITE FOR PILE DRIVING.

A writer in an engineering journal calls to mind another service of unusual character into which dynamite has been drafted, namely, the driving of piles. Some years ago, the foundations were being prepared for a public building in Buda Pesth, and the preliminary work of pile driving had been finished. It was, however, discovered that a change in construction of the building would be necessary, which would add considerable to its pressure on the foundations. The piles, therefore, had to be driven in further. The expense of bringing a pile driver to bear on each pile for so small amount of work would have been very great, and it was decided to try dynamite. The piles were cut square and capped with a wrought iron plate about 15 inches in diameter and $4\frac{1}{2}$ inches thick. In the centre of this plate was placed a cake of dynamite, 6 inches in diameter and about $\frac{3}{4}$ inch thick. It was wrapped in parchment paper, covered with clay and ignited. The effect of the explosion was equal to that of five blows from a 1,500 pound monkey falling a height of about 10 feet. The iron plates resisted from 20 to 24 explosions.

EUROPEAN BUILDERS' DERRICK.

In some of the most important buildings in France and Belgium, a derrick has been employed that is described as an adjustable balanced derrick that moves along on the ground in or around the building to any required point. It consists essentially of a horizontal platform about 10x17 feet, rolling on a 10-foot track and carrying the hoisting engine and boiler, besides serving as a base for the tower, which is like an ordinary pile-driver frame, from 45 to 100 feet high, and supports on trunnions at the top the centers of two 10"x10"x5' beams, transversely braced 2 or 3 feet apart and strengthened by iron king post and rods in a vertical plane. These crossbeams revolve about their trunnions through about 90 degrees—i. e. from horizontal to a nearly vertical position. The beams thus form at one end a boom overhanging 25 feet, and carrying sheaves for the hoist lines which lead to the engine platform, and at the opposite end a balance arm properly counterweighted. Lines are attached to both ends of the beams and operated by the engine to change its angle, and when the boom reaches its most vertical position its lower end engages guide brackets on the tower that automatically detach the counterweights and prevent shock. The platform is mounted upon a turntable, and has a locomotive attachment from the engine to the wheels, making it self-propelling.

BUSINESS NOTES.

F. McKeown and J. F. Hill (F. McKeown & Co), contractors, Montreal, have dissolved partnership.

The British Columbia Pottery Co.'s plant and assets have been sold to J. G. Claxton, at \$21,000.

A demand of assignment is reported to have been made on Omer Fiechette, contractor, Montreal.

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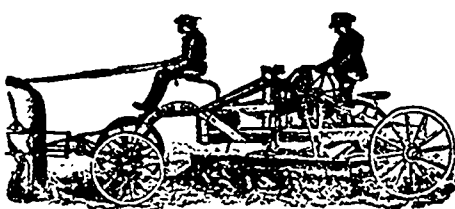
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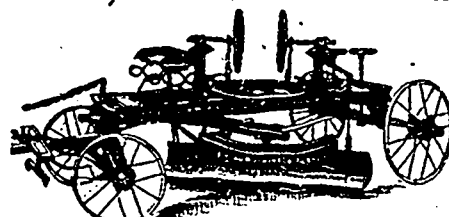
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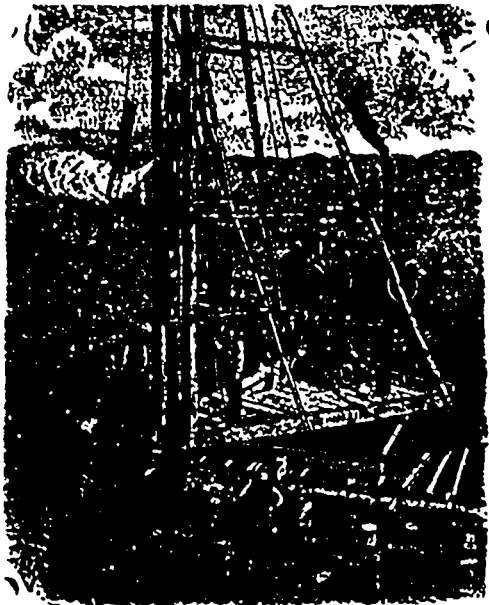
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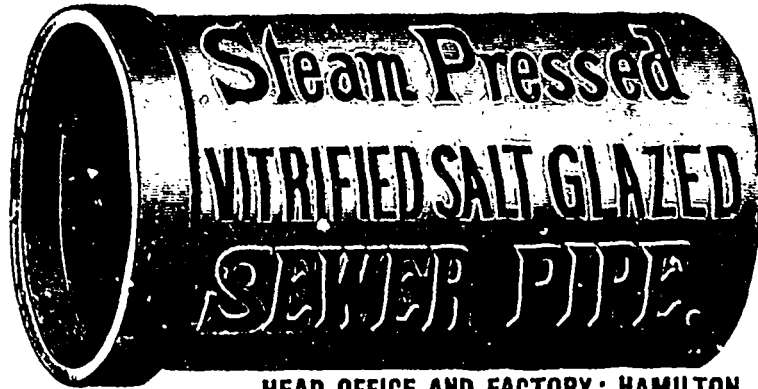
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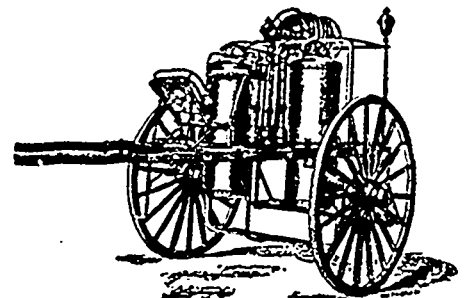
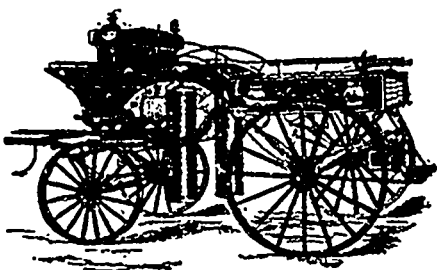
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CAST IRON WATER PIPE.*

(Continued.)

The cupolas for melting the iron differ little from those used in other foundries. The ladle containing the molten metal is handled by the pit crane, and the pouring of the iron must be done rapidly and at a high temperature. In what appears to be a very short time after casting, and while the pipes are still at a cherry red heat, the core spindles are drawn, generally stripping free of sand and of hay rope as they come out. The pipes are taken out while still red hot, and as soon as they are cold enough, are placed in line on the cleaning skids. The flasks are then knocked apart and cleaned up, and the process of moulding for cores and flasks is again begun. Thus, in continuous round, the work of the foundry proceeds, and the output of single pits is often as much as 75 tons, and sometimes more than 100 tons per day of 10 hours.

When the cast iron pipe has been drawn from the mould, it is, in the best modern foundries placed on a long line of skids which is at right angles to the length of the foundry, and the pipes proceed on these skids, one after another, through a course as follows: 1st. Through the cleaning shed; 2nd. To an oven, where they are heated to a temperature of about 500° F. prior to dipping; 3rd. To the dipping tank, where they receive a tar coating; 4th. To the hydraulic proving press; 5th. To the scales, and 6th. To the loading skid, or to the yard if not required for immediate shipment.

When a water pipe is laid in the bed of a street, it must not only conduct water without leaking, but must resist large stresses on the material. There is, first, the static head or pressure of the water, which varies in different systems from a few pounds to over 200 pounds per square inch. Then, there is an added pressure when the flow of the water is suddenly stopped or checked, which is known as water ram, and which is commonly assumed to be about 100 pounds per square inch, in large pipes, and somewhat more in smaller ones. These pressures are from within. In addition to this the pipe has to resist the outside pressure of the earth around it, tending to crush it. This latter force is generally opposed to the other forces which tend to burst the pipe, but must be considered and in some cases specially provided for in designing castings.

A first-class water pipe must not only resist these pressures, internally and externally, at the time it is made, but must continue to do so for a long term of years. The consequences of bursting a large water main in the business district of a

city are most disastrous. In a recent instance the damage to the street and loss of merchandise through the flooding of cellars was estimated at over \$10,000 during the hour or so which it took to close the valve in the main leading to the break. It is for these reasons that it has been the custom for 20 years or more past to have all water pipes for the larger cities inspected and proved under hydraulic pressure, and to require, besides, that the pipe shall be cast from iron, of such quality as to withstand specified tensile and transverse stresses. The work of an inspector charged with such duties is, in many respects, more interesting and makes greater demands on good judgment and experience than any other work which inspectors of material are called upon to perform.

A casting of any kind must be examined with greater care than is necessary for a piece of rolled or wrought metal, because it is not only necessary to examine the surface, but to form a satisfactory opinion of its internal structure. A pipe casting, by reason of its great length and and superficial area, is a specially difficult casting to inspect, as it is a difficult casting to make. The comparatively thin shell may be defective at almost any point and from a dozen or more distinctively different causes.

An inspector in charge of such work always begins his daily task in the cleaning shed, where each pipe, in turn, is examined inside and out, is gauged with calipers to determine the thickness of the shell at each end, and to prove also that the core and mould have been set concentrically. Then each socket must be carefully examined to see that it is free from obstructions or scabs, and that it is round and has the proper clearance for the spigot-end of another pipe to enter. This has to be determined by the use of an inside circular gauge which must pass freely to the bottom of the socket.

At the spigot-end an outside circular gauge is used, which must pass freely over the bead without striking at any point, so as to insure that it will freely enter the socket of any other pipe. A sharp-pointed steel hammer is used freely on any part of pipes where blow holes, or sand holes or cinder pockets are suspected. It may be well imagined that it is no easy or pleasant task to thus examine 30 or 40 great pipes in the course of a morning in the midst of the dirt and dust of the cleaning shed, and in contact with the rough and dirty surface of the iron; but it must be done and thoroughly done.

Let us then start with an inspector at the bell end of a row of pipes and observe how his work is done. First, the bells must be clean and sound. Usually they are cast bell downward, so that they will be sound, but each pipe must be thoroughly examined and tested with a hammer. Second, the inside of the bells must be of correct diameter, truly round, and free from scabs and obstructions, so as to allow all accepted spigots to enter freely and have the required lead room all around. This is determined with a circular gauge referred to above. Very little latitude can be allowed in the inside diameter of the sockets. The outer diameters of the beads on the spigot-ends of pipes are usually but $\frac{1}{8}$ inch less than the inside diameters of the sockets, and as the beads are apt to be large, sockets must measure the full required diameter at all points, but may overrun $\frac{1}{8}$ inch without objec-

tion. The lead space back of the bead varies from $\frac{1}{4}$ inch on small pipes to $\frac{1}{2}$ inch or more on large ones, and must be clear. This is especially true of the recess or so-called lead ring inside of the socket, which is intended to wedge the lead in place, and to prevent it from being forced out under pressure.

Third, cores and moulds must be set concentrically, that is the bells and the pipe barrels adjacent to them should caliper the same thickness all around. It is customary to gauge the thickness at four points, 90 degrees apart, around the circumference. A variation of 1-10 inch plus or minus from the required gauge may be allowed in the thickness of the pipe-shell, provided the weight of the pipe is correct, that is, the eccentricity of the core may be 1-10 inch as a maximum allowance. It would seem as though this were not a difficult requirement to meet, yet a great many pipes are rejected because of uneven gauge, due to the fact that the core has not been properly centred.

Fourth, the depth in the sockets in the bells must be right. The allowed variation is usually $\frac{1}{4}$ inch short to $\frac{1}{2}$ inch long. It is important to note also that when the sockets are long they are not so long as to make the metal thin at the bottom by extending into the fillet joining the bell with the body of the pipe. In this way each bell is examined in turn by the inspector, keeping tally of good and bad pipes by the numbers cast on them.

(To be Continued.)

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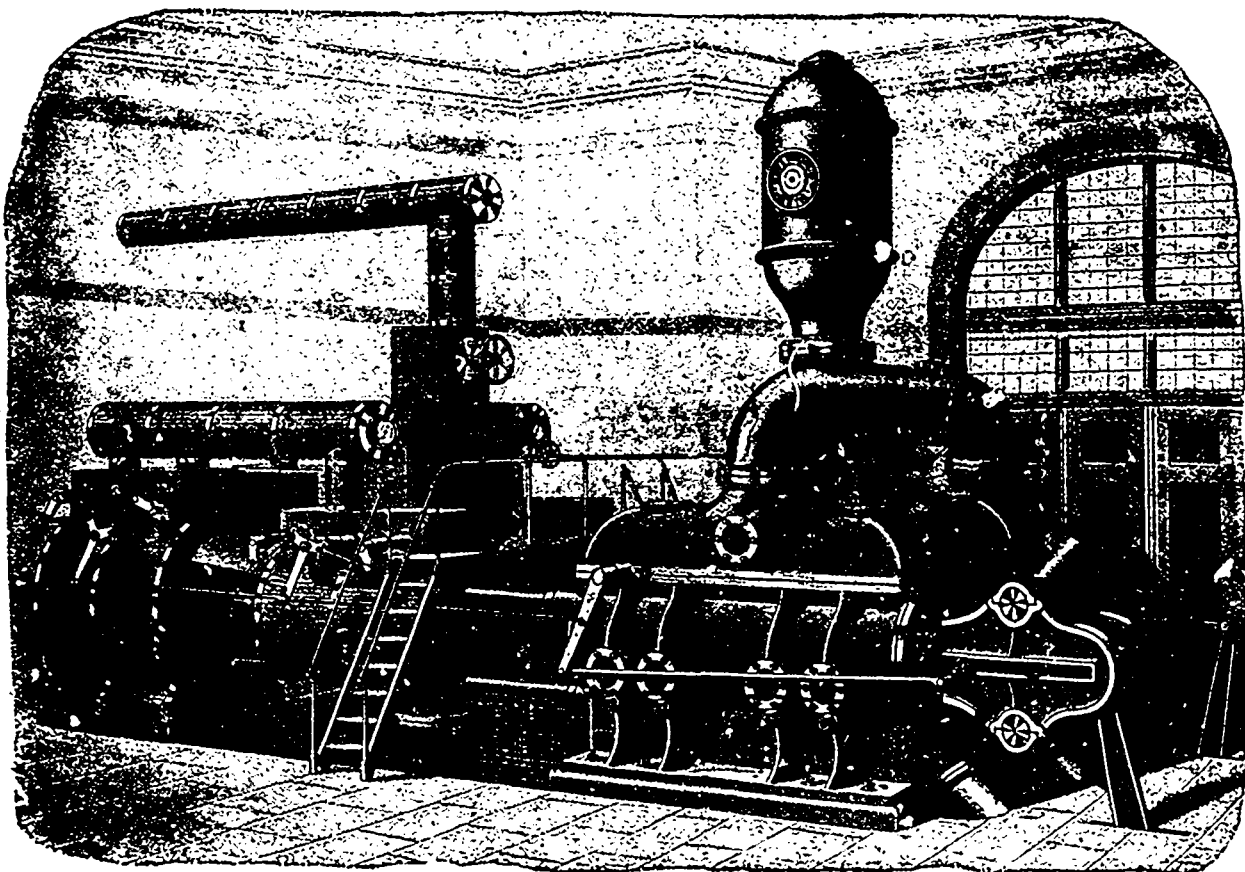
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CONDITION OF THE MARKET.

TORONTO: An advance in several lines of hardware is likely to take place within a month, as manufacturers are asking higher prices. A meeting of the Cut Nail Association was held in Montreal last week, but no change in quotations was made. Plumbers' supplies are in good demand, also Portland cement, which has advanced slightly in price.

MONTREAL: The situation in iron and metals is quiet, but the market is firm, as evidenced by the recent advances in prices. Cement is steady and prices unchanged. An importer reports the sale of 2,500 barrels on western account. The receipts last week were 3,300 barrels, English, and 2,400 barrels, Belgian, while that of firebricks were 60,000.

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