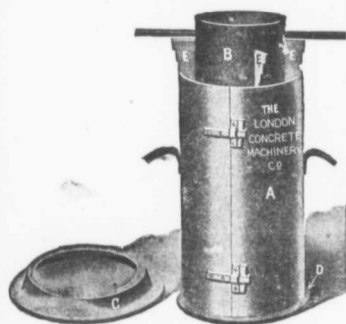


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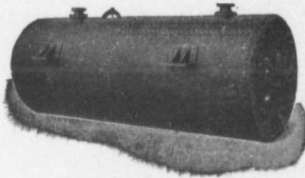
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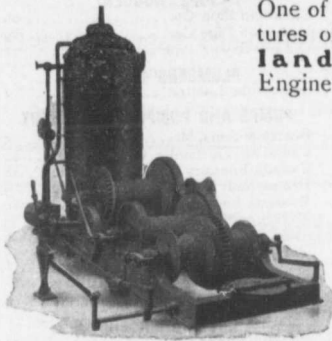
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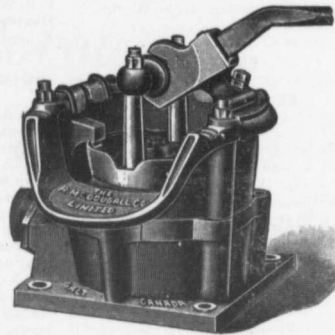
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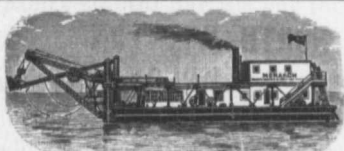
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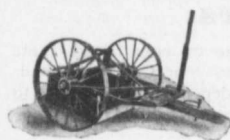
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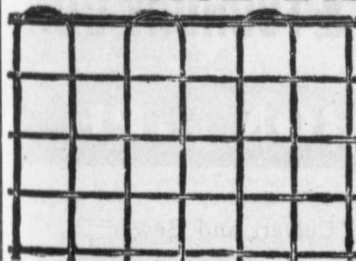
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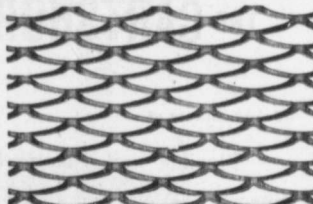
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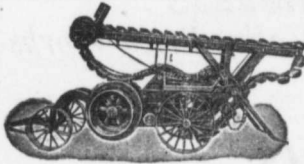
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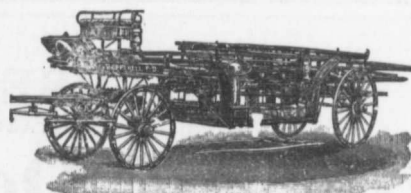


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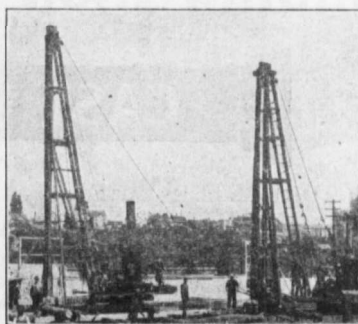
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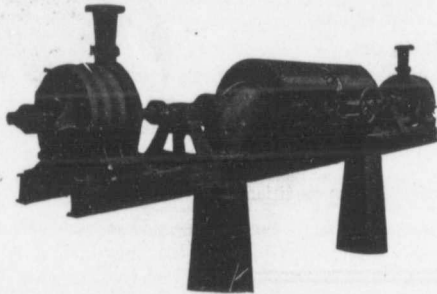
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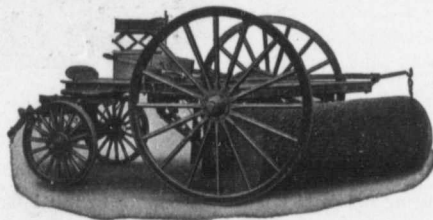
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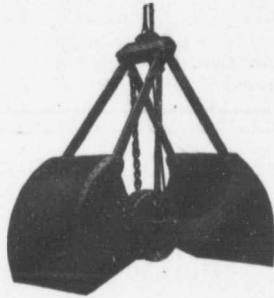
Studebaker Sprinkler
(PATENT IMPROVED)

Does not clog or get out of order. Greatest width of spray. Can be graded from driver's seat to any volume. We also make an **IMPROVED VERTICAL SPRAY** for pavements

GEO. HEAMAN, MANUFACTURER - LONDON, ONT.

BUCKETS

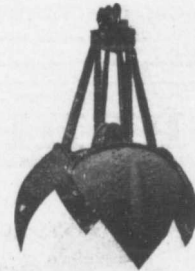
For all classes of work



CLAM SHELL BUCKET

CLAM SHELL and ORANGE PEEL BUCKETS

For handling
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mud, ballast, city refuse,
broken stone, ore,
etc., etc.



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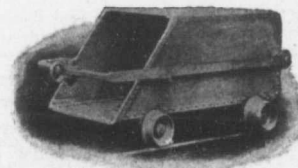
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AUTOMATIC SELF DUMPING SKIP

We furnish complete designs and estimates on hoisting and derrick problems. Write for full information.

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Brick Layers and Concrete.

Some of the actions of labor unions, more especially of the labor unions connected with the building industry, are incomprehensible to people possessing average common sense, and evince a determination on the part of their authors not only to impede all progress but to turn things backward in many instances. The opposition of the drivers of stage coaches and the stable men at roadside inns, to the railroad, as a substitute for the stage coach, has become proverbial, as an instance of the short-sightedness of established interests in the face of improvements; it is altogether outdone by the action of an American labor union which has announced the determination of its members to do no bricklaying or mason work on concrete foundations more than eight inches in thickness, after January 1, 1908. The professed ground for this action is that the use of concrete for foundations, in place of masonry, is decreasing the amount of mason work, although attempts have also been made to establish a claim that the concrete foundations are unsafe, as a reason for the determinations arrived at.

Scientific test and practical utilization on a large scale have established the absurdity of any such assertions, and the importance concrete has already assumed in construction work, especially where the greatest stability is indispensable, ensure its continued and probably greatly increased em-

ployment, the dictum of a labor union to the contrary notwithstanding. The decision of the union has so far not been promulgated as an ultimatum, and it is to be hoped that its originators will recognize the folly of their position before the date appointed for its going into effect, and by this means relieve themselves of the ridiculous position in which such action on their part would place them.

Highway Improvements.

There has been presented to the Ontario Legislature by the Hon. Dr. Reaume, Minister of Public Works, the twelfth annual report on "Highway Improvement" in Ontario. The report consists of 110 pages and deals exhaustively with the question of good roads. The country roads of Ontario are now costing for maintenance more than \$2,000,000 a year in money and statute labor. That is the actual expenditure, but in addition there is a tremendous toll of time and energy wasted in traveling over bad roads. Were it possible to utilize in road improvement this tribute of time, energy and inconvenience now paid to bad roads the result would be marvelous. Damage to horses, vehicles and harness, the half loads that are drawn in wet seasons, the business trips that cannot be taken, loss by inability to reach market when prices are high, the injury to or total loss of fruit, dairy and garden produce—these and the many other inconveniences from bad roads handicap Ontario farming to an extent which it is impossible to estimate.

The progress annually being made in highway improvement is, however, substantial and encouraging. Over 40 per cent. of the province to which the highway improvement act is applicable has established and is constructing improved systems of leading roads. The total expenditure on country systems to date has amounted to \$1,137,664.19, of which the Provincial Government has contributed \$365,218.74. The systems established comprise 2,550 miles of road. Were country systems established throughout the province on the same ratio, there would be about 6,000 miles to be permanently constructed.

Bridge construction is a department of road building in which permanency is being sought. In place of timber structures, so largely used in the past, steel and concrete are being employed.

"Statute labor has done much for the roads of Ontario," says the report. "It is an excellent system under certain conditions, but these conditions no longer exist. Statute labor is to-day, in older Ontario, recognized by all progressive citizens as unsuited to modern conditions."

The Labor Situation

The February number of the Labor Gazette deals at some length with the unemployed problem. It says in part:

"In the Maritime Provinces employment is about as usual during the present winter, except in the lumbering industry. In portions of New Brunswick and Prince Edward Island conditions are more active than in past years. In Quebec and in Eastern Ontario also, though the amount of employment is less than last year, no widespread stagnation is apparent. The number of unemployed from other than seasonal causes is perhaps largest in the various cities of Ontario west of Peterborough and south of the Georgian Bay, and in British Columbia.

"The Northwest Provinces, though with a larger supply of labor than in 1906-7, have experienced an exceptionally mild winter, which allowed outside operations to be continued to an unusually late date. The prevailing dullness is almost wholly attributed to the financial stringency, which, by curtailing credits, has caused a falling off in production since the month of November, especially in manufacturing and lumbering."

Fifty Cents per Hour.

An agreement has been made in Toronto between the stonemasons and bricklayers and their employers whereby the present rate of wages, 50 cents per hour, will continue until May 1st, 1911.

Keep a Goin'.

If you strike a thorn or rose,
Keep a goin'.
If it hails or if it snows,
Keep a goin'.
'Taint no use to sit and whine
When the fish ain't on your line,
Bait your hook and keep on tryin',
Keep a goin'.

When the weather kills your crop,
Keep on goin'.
When you tumble from the top,
Keep on goin'.
S'pose you are out of every dime,
Getting' broke ain't any crime,
Tell the world you're feelin' fine,
Keep on goin'.

When it looks like all was up,
Keep on goin'.
Drain the sweetness from the cup,
Keep on goin'.
See the wild birds on the wing,
Hear the bells which sweetly ring,
When you feel like singin' fine,
Keep on goin'.

Bonuses for Industries.

The Ontario Government are clearly under an obligation to protect local municipalities from the evils of the bonus system, says the Toronto "Globe." Many municipalities are now laboring along under loads of debt incurred by listening to persuasive arguments of the bonus-seeker, strengthened by some local leaders of thought either directly interested or led by delusive hopes. These loads of debt are effectual obstacles to the natural development that would otherwise take place. They make taxation unnecessarily and unreasonably high and living expenses heavy, thus robbing the small municipality of its only compensatory advantages compared with those of large centres of population. In spite of the record established by experience the local bonus is still popular, and there is such a strong drift in its favor that the Government may grow weak in the performance of their duty.

The municipalities know in a general way that every increase in population and in wealth due to the establishment or enlargement of local industries makes an increase in the cost of local government. The aggregate necessity for taxation will be found to keep a close relation to the aggregate population and the aggregate

value of taxable property. If one big establishment escapes its fair contribution, either by a free site at municipal expense, tax exemption, free water, power, or other favor, it necessarily throws an unfair burden on other industries. The specious argument that this is but a small amount individually still does service, but the other industries and stores feel not the average but the aggregate in the shrinkage of their business and the increase in their municipal burdens. It is the boot-strap lift on a small scale, and the universal disappointment in results has not impressed the needed lesson on the public.

Building in London.

London, Ontario, real estate men report that there has been a decided boom in the house-renting business, and that from present indications houses will be a scarce article in the spring. "Two weeks ago," said one engineer, "I had forty houses on my list. Now I have only seven. All small houses are picked up as rapidly as they come into the market. There is a good demand, too, for houses from \$20 to \$25 a month. I have had a great many inquiries for house of that kind, and several that had been empty during the winter are now filled. There seems to be a large number of people starting in the boarding house business, and they all want houses with many bedrooms. Quite a number of inquiries also are coming in from outside, and I should judge that there will be a good many people move into the city as soon as the winter is over."

B.C. Building Increasing.

Building activity in Victoria, B.C., is said to be rapidly on the increase. Up to February 21 more permits were issued than during the entire month of January. The permits for that brief period totaled \$56,575, as against \$54,625 in January. Just outside the city limits there is also much building going on. In Oak Bay, for instance, many new houses have been commenced since the beginning of the year, while in Esqui-

mal and other directions there is a corresponding activity.

Carpenters Anxious About Wages.

A mass meeting of the United Carpenters of Toronto was held in the Labor Temple last week. After a long session it is understood that a committee was appointed to meet their employers in regard to the securing of an agreement from May 1st, of this year. The union went on strike for a week in the summer of 1906, and finally settled with a new organization of employers at a minimum wage of 33 cents an hour. The carpenters claim that they are fully as skilful tradesmen as the bricklayers and that they are handicapped by the kits of tools that they have to buy.

Owing to the shortage in the number of building permits issued at the City Hall this year, as compared with several previous years, unrest is felt in some quarters, tradesmen fearing that an attempt would be made to reduce their wages. But since the Builders' Exchange have come to an agreement with the masons and bricklayers the other unions in the building trades are anticipating no trouble this spring.

Montreal's Bad Streets.

It is reported as very probable that actions will be taken against the Montreal City Council by cartage companies by reason of the wretched condition of the streets. Mr. E. E. Belcourt, manager of the Shedden Forwarding Company, has stated that his company had put up with Montreal's bad streets for many years and that the directors were in favor of suing the city for \$20,000 damages.

Representatives of the Canadian Transfer and Dominion Transport Companies said that if the Shedden people took action against the city they were practically certain to follow suit.

Everybody dig up. We will all feel better—who wants special favors anyway

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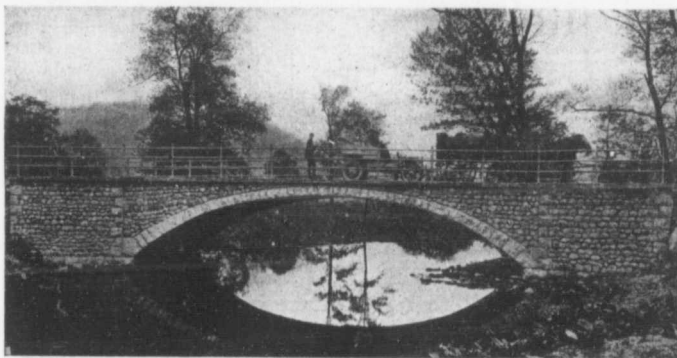
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An Inexpensive Concrete Bridge.

At Suffern, N.Y., is located the concrete bridge, for the illustration and description of which we are indebted to "Concrete." It is a good type of bridge for use in country districts, owing to its ease of construction and low cost. The bridge has a span of 58 feet and the roadway is 22 feet wide. Reinforcement consists of 1 inch plain bars and expanded metal, so placed as to give great strength and stiffness. All the materials for the bridge, except the cement and steel, were easily found at the very site of the construction. Owing to the comparative smallness of the job,

seated on a continuous brick foundation wall 12 inches thick and 14 feet high, which originally had a 12 by 24 inch stone footing. The subway excavation comes so close to the wall that in order to prevent danger of undermining or settlement it was necessary to carry the supports for the latter down below sub-grade. The building was, however, so light that it was unnecessary to provide a heavy continuous high foot wall for it and in order to economize excavation, sheeting, bracing and concreting, a plan was devised for supporting it on a heavy longitudinal continuous girder supported at the extremities on the new foundation walls for adja-

tended from end to end of the trench and rested at the ends on the already constructed walls for underpinning of the adjacent buildings. The mould was built without a bottom, the earth in the bottom of the trench being leveled and smoothed to receive the concrete, a 4 inch layer of which was spread in it and leveled. On this concrete, while still fresh, were arranged five 1 inch rods 20 feet long, reaching from the intermediate piers to both ends, at each of which there was placed a set of three 15 inch I-beams 6 feet long carrying permanent longitudinal needles made with 12 inch I-beams 10 feet long to support the party walls of the adjacent buildings. The mould was then completely filled with concrete having corresponding 1 inch rods embedded in the upper part of the beam over the centre pier. This affords abundant security for the wall, acts as a retaining wall and obviated considerable expensive work in excavation and sheeting.



CONCRETE BRIDGE, COST \$4,000.

it was thought best to mix the concrete by hand, and a mixture of 1:2:5 was used. The bridge was designed and built by the F. R. Long Company, Hackensack, N.J., who report that it cost about \$4,000.

Supporting a Foundation Wall on a Reinforced Concrete Girder.

(From the "Engineering Record")

Among the buildings in danger of settlement or undermining by excavation for Bridge Loop for the subway system of the Public Service Commission of New York were three small three storey buildings at Nos. 170, 172 and 172 1-2 Canal street. They have a continuous frontage of 48 feet, and the second and third storey front walls are supported by second floor lintel beams carried on the party walls on cast iron columns with their bases

cent buildings and in the centre by an intermediate pier.

The front of the building was accordingly supported temporarily on eight needle beams composed of single 12 by 12 inch timbers and double 15 inch I-beams 20 feet long inserted in holes cut through the foundation walls in the vertical lines of the columns. Continuous lines of 8 foot sheeting were driven by hand on each side of the wall, a trench was excavated under the whole length of the wall and the old stone and brick foundations removed. At the centre point of the wall a pit was excavated 6 feet 8 inches square at the top and 4 feet square at the bottom, and carried down to subgrade of the subway with three sets of hand-driven sheeting. The pit was completely filled with 1:3:6 concrete, on which were supported the side pieces of a mould 5 feet deep and 2 feet wide which ex-

Obituary.

Thomas T. Simpson, president of the Canadian Engineers, Limited, Ottawa, with offices in the Bank Street Chambers, died last week from paralysis. He was about 35 years of age and was married only about two years ago. Mr. Simpson was formerly of Galt, Ont., but for two years past had practised his profession in Ottawa. Last spring he did a considerable amount of survey work in the Larder Lake district.

A well known Ottawa contractor, Mr. James White, died on Sunday last after an illness of only three days. He was 56 years old. Mr. White was formerly a member of the Ottawa City Council, past president of the Ottawa Reform Association, and for two years president of the Central Canada Exhibition, retiring only a few weeks ago for business reasons.

He built the rifle ranges at Rockcliffe and Bedford Basin, and three months ago secured a 60-mile contract on the Transcontinental Railway in Eastern Quebec.

Heating System in the New Factory of Jenkin's Bros., Limited, Montreal.*

The new factory of Jenkins Bros., Limited, at Montreal, consists of a main building and office about 203 feet by 54 feet, a storage room 36 feet by 63 feet 6 inches, a brass foundry

main is run overhead, straight from the power house wall and across to the foundry building. Over the passage it is suspended from wire cables stretched be-

The size of the main and its branches is shown on the plans.

The manner of running the steam and return risers is shown in the sectional drawings, Figs. 2 and 3. They are fastened to the wall. The steam risers are drained into the return system by means of drip loops, as shown

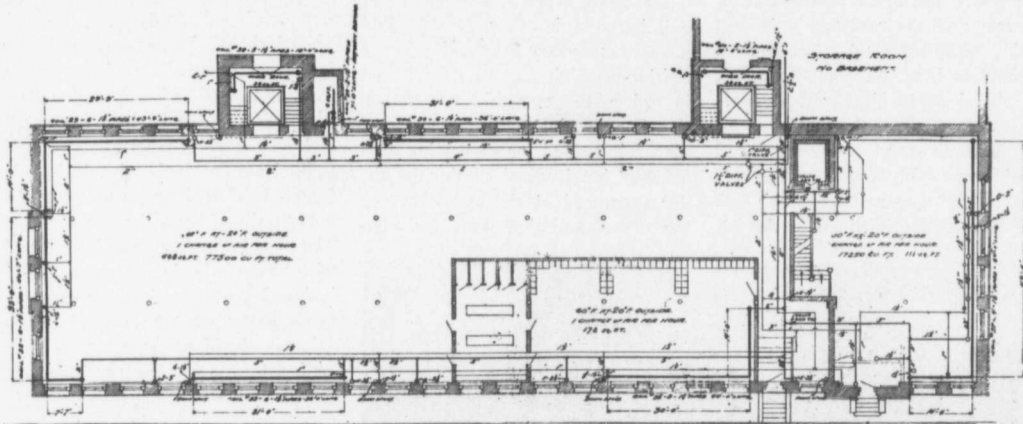


FIG. 1.—BASEMENT OF MAIN BUILDING.

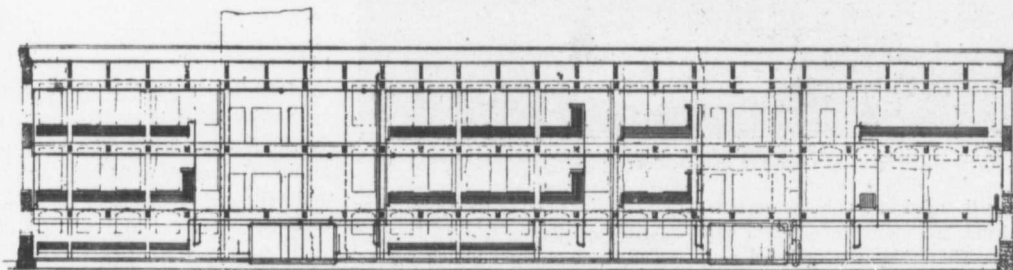


FIG. 2.—LONGITUDINAL SECTION OF MAIN BUILDING LOOKING NORTH.

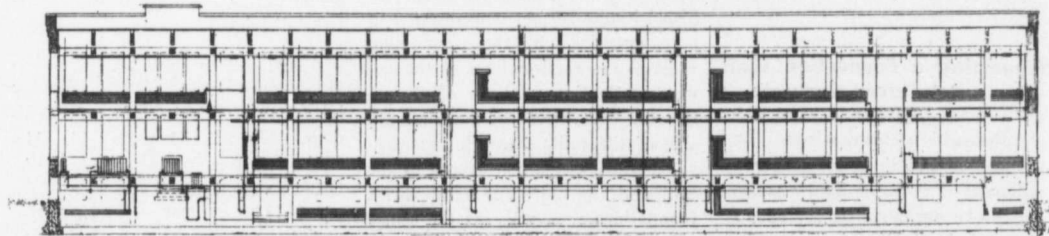


FIG. 3.—LONGITUDINAL SECTION OF MAIN BUILDING LOOKING SOUTH.

dry 107 feet 5 inches by 63 feet 6 inches, a small pattern vault, and an engine and boiler house 54 feet 10 inches by 38 feet 8 inches.

In heating these buildings a vacuum system is employed. The heating

*By Courtesy of the "Engineering Review."

tween the two buildings, a distance of 20 feet. Inside of the foundry building the main is hung from the floor and the floor girders. It is run through the foundry and casting storage buildings and the basement of the main building as shown in Fig. 1.

in Figs. 2 and 3.

The returns are run as shown in the drawings and are equipped with differential valves at the points indicated on the drawings, a globe valve and dirt strainer being placed in front of each differential valve.

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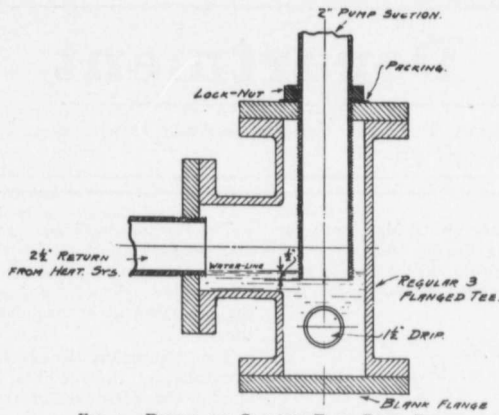


FIG. 4.—DETAIL OF SECTION T IN PUMP PIT.

than the return at that point is also carried over the door, as shown in Figs. 2 and 3.

The returns from the main building, except the basement, are run near and about one foot below the steam mains.

The returns from the casting storage building and from the foundry building are run on the wall above the top of the foundations.

The main return pipe is run from the basement of the main building to the power house, underground. It is inclosed in a box 6 inches square inside, made of 2 inch plank. This box is laid just below the bottom of the

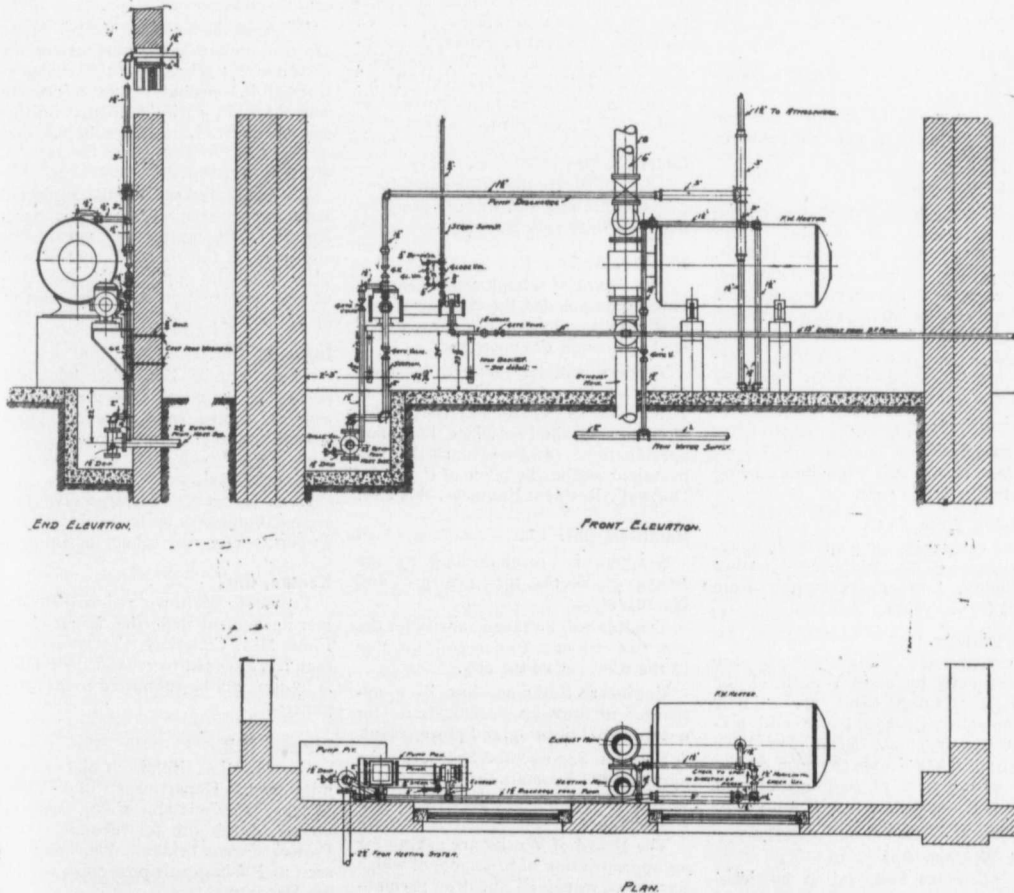


FIG. 5.—VACUUM PUMP CONNECTIONS AND DETAILS.

The returns from the coils in the basement of the main building are kept separate from the rest of the system, and all run on the walls under the coils, as shown in Figs. 1, 2 and 3.

They enter the main return pipe from above and through a check valve. Where the returns are carried below their proper grade, as in passing under a door, a pipe one size smaller

concrete floor in the casting storage building and continued at the same depth across the foundry building. Outside of the buildings the top of

(Concluded on page 20.)

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Contracts Department

News of Special Interest to Contractors, Engineers, Manufacturers and Dealers in Building Supplies.

CONTRACTS OPEN.

Alvinston, Ont.

A. S. Code, County Engineer, wants tenders up to March 6th for the construction of various bridges in Brook township, Lambton county. Further particulars and specifications on application.

Beamsville, Ont.

A by-law providing for the extension of the waterworks will likely be submitted to the ratepayers.

Bradford, Ont.

The Simcoe county council have instructed their engineer to report upon the county roads for construction and repair. \$7,000 has been set aside for this purpose.

Brockville, Ont.

J. B. Gaughn is said to be promoting a scheme to build an electric railway along the banks of the St. Lawrence from Prescott a distance of sixteen miles. In this connection it is thought that a street railway and a summer pleasure park may be established in this town. British capitalists are said to be interested in these projects which involve an expenditure of \$1,500,000.

Bulyea, Sask.

There is talk of a large hotel being erected here this year.

Carleton Place, Ont.

The ratepayers have approved a by-law granting the Waterloo Knitting Company, Limited, exemption from taxes for ten years.

Fort Frances, Ont.

Several new improvements are contemplated by Supt. Wilcox, of the C.N.R. Among these are a new Union station, round house and machine repair shop. Soundings have also been taken across the arm of the lake with a view of building cement piers and erecting a steel bridge to replace the present trestle work.

Fort William, Ont

\$35,000 has been raised by local Presbyterians towards the erection of a new church and a committee have been appointed to secure plans.

Fredericton, N.B.

C. H. LaBillois, Chief Commissioner, Department of Public Works, will

receive tenders up to March 9th for rebuilding the Fraser bridge over the Bay du Vin river. Plans and specifications may be obtained at the Department.

Glace Bay, N.S.

Fred Gelinis, Secretary, Department of Public Works, Ottawa, wants tenders up to March 24 for construction of road protection work at this place, according to plan and specification to be seen at offices of E. G. Millidge, Resident Engineer, Antigonish, N.S., and C. E. W. Dodwell, Resident Engineer, Halifax, N.S., on application to the local postmaster and at the Department.

Goderich, Ont.

The Doty Engine Company have purchased a site and will at once start work on their new factory.

Halifax, N. S.

The Board of school commissioners have recommended the erection of two new school buildings on sites at Oxford street and Chebucto road.

Tenders will be received by Fred Gelinis, Secretary, Department of Public Works, up to March 13th for alterations to the Post Office. Plans and specifications can be seen at the Department and at the office of C. E. W. Dodwell, Resident Engineer, this city.

Hamilton, Ont.

\$44,380 is recommended by the Board of Works for gas, arc and Nerst lamps.

Tenders will be called shortly for the erection of a new \$6,000 police station in the west end of the city.

Engineer Sothman has been appointed to draw up specifications for a municipal lighting and power plant.

Between \$40,000 and \$75,000 is the approximate estimate for the erection of the new Technical school now being considered.

The Board of Works are asking for an appropriation of \$294,000, of which \$250,000 would be spent on permanent road work.

At a recent meeting of the Herkimer street Baptists plans were submitted for a new church to cost \$20,000. Construction will be started when a sufficient sum has been subscribed.

The Burlington Beach commissioners are seeking authority to borrow \$20,000 for the construction of a waterworks system and \$20,000 for the improvement of the public park at the Beach.

The Champion Road Machinery Company, of Philadelphia, have purchased the premises of the former Good Roads Machinery Company and it is expected that a big plant will be established here.

It is said the separate school board are contemplating the purchase of the Picton street school. If this deal goes through it is probable that a modern school building will be erected on the site on the St. Lawrence school.

Hintonburg, Ont.

The estimated cost of the projected subsidiary system of sewers is \$41,839.61. The matter has yet to be approved by the board of control and council, but no opposition is anticipated and construction will likely start at an early date.

Ingersoll, Ont.

The Board of Education have appointed a committee to secure information in regard to a site for a new school building for ward one.

Kamsack, Sask.

E. C. Lawrence, Secretary-Treasurer, wants tenders up to April 14th for \$5,000 twenty-year school debentures.

Kenora, Ont.

Provided the town renew their former agreement with the Maple Leaf Flour Mills Company, the latter concern have agreed to rebuild their mill. A by-law will be submitted to the ratepayers.

Lincoln, N.B.

C. H. La Billois, Chief Commissioner, Department of Public Works, Fredericton, wants tenders up to March 9th for rebuilding the Patrick Owens bridge. Plans may be seen at Rushagornis post office and at the Department.

London, Ont.

Tenders for the new isolation hospital will be called for at once. The contracts will call for the completion of the building by October 1st.

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Morris, A cou ing will \$12,500.

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City Architect Nutter is engaged upon the plans for the enlargement of the Lorne avenue school and also for the intended improvements in the Talbot street school. In the latter building a water system will be installed and several changes made in regard to the heating.

Medicine Hat, Alta.

J. E. Howson, proprietor of the American hotel, will demolish the present structure and put up a 3-storey red pressed brick hotel costing a approximately \$16,000.

Minnedosa, Man.

A waterworks and power system are projected and a 600 H. P. electric plant may be installed this season.

Montreal, Que.

The Street Railway Company are reported to be considering large extensions this season in the construction of new lines in the suburbs. It is understood that among the extensions proposed by the company is that of the Back River line eastward, to Bout de l'Isle, where connections will be made with the terminal system.

The Montreal Park and Island Railway are reported to be planning considerable improvements to their line.

George Janin, Superintendent of the Water Works, is taking tenders up to March 24 for the supply and erection of a 12,000,000 gallon steel pump for the low level pumping station. Address bids to L. O. David, City Clerk.

Tenders are invited by L. K. Jones, Secretary, Department of Railways and Canals, Ottawa, Ont., up to March 10th for 35,000 barrels of Portland cement to be used on the Quebec canal. Specifications may be obtained at office of Superintending Engineer of Quebec Canals, this city.

Tenders will be received up to March 10th at the office of L. O. David, City Clerk, for about 65,000 lineal feet of straight and 5,000 lineal feet of curved 6-inch by 20-inch curbstone. All bids must be accompanied by samples and the contract calls for the immediate delivery of the curbstone at the rate of 500 to 1,000 lineal feet per day.

Morris, Man.

A court house and municipal building will be erected here at a cost of \$12,500.

New Westminster, B. C.

The Dominion Government are being asked to carry out the construction of channel improvements as recommended by Engineer Le Baron.

W. P. Fowle, late manager of the Fraser River sawmills, now in partner

ship with R. E. Nevins, will shortly commence building a large sawmill almost directly opposite the Fraser River mills at Bon Accord. In addition, it is stated that representatives of one of the most prominent lumber and sawmill concerns of Anacortes have been in the city negotiating with a view to purchasing a site for the erection of a mill on the south side of the Fraser river.

Nokomis, Sask.

The Nokomis hotel will be rebuilt on a larger scale this spring; estimated expenditure, \$12,000.

Notre Dame de Grace, Que.

L. Descarries, secretary-treasurer, invites tenders up to March 14th for construction of main outlet sewer for this town. Specifications and further particulars to be obtained on application.

Ottawa, Ont.

The directors of the International Portland Cement Company are reported to be seriously considering plans for doubling the capacity of their plant.

F. Gourdeau, Deputy Minister of Marine and Fisheries, wants tenders up to March 9th for the construction of a steel ice breaking steamer, to be delivered at Charlottetown, P. E. I. Plans and specifications may be obtained at the Department.

L. K. Jones, Secretary, Department of Railways and Canals, wants tenders up to March 10th for supply of 35,000 barrels of Portland cement, to be used on the Quebec canals. Specifications at office of Superintending Engineer of Quebec Canals, 2 Place d'Armes Square, Montreal, Que.

Paris, Ont.

45,000 will be expended this season in the erection of a new public school.

Picton, Ont.

The High School Board are negotiating for a grant of \$24,714, the amount estimated by architect Newlands as being necessary for the completion of the new Collegiate Institute.

Representatives of the St. Lawrence Dairy Produce Company, Limited, of Morrisburg, Ont., have been interviewing local dairy men with a view to the establishment of a butter factory. It is proposed to install the central plant in this locality at a cost of \$15,000.

Peterborough, Ont.

The council will seek legislation to advance \$30,000 to any company that will take over and operate the plant of the William Hamilton Company. In the event of this authority being withheld, a by-law to provide a \$30,-

000 loan and fixed assesment for any company will be submitted to the rate-payers.

Port Stanley, Ont

The proposed system of waterworks will not be installed this year owing to the high rate of taxation prevailing.

Renfrew, Ont.

Fred Gelinus, Secretary, Department of Public Works, Ottawa, will receive tenders up to March 13th for the construction of a public building in this town. Plans to be obtained at the Department and on application to the local postmaster.

Restigouche, N.B.

The Northern New Brunswick & Eastern Quebec Railroad Company are planning the erection of a bridge 3,500 feet long to cost \$600,000.

Rogersville, N.B.

Tenders will be received by C. H. La Billois, Department of Public Works, Fredericton, up to March 9th for rebuilding the Collet Settlement bridge over Main Barnaby river. Plan and specification may be seen at the Department, Fredericton, and at the store of J. L. LeBlanc, this place.

Sedgewick, Alta.

The farmers and others of this locality are considering the establishment of a creamery here this season.

Selkirk, Man.

The Selkirk Canning Company is being organized with a capital of \$40,000. Among the proposed directors are Mayor Simpson, William Robinson and Robert Bullock of this town; D. J. Dyson and J. D. Windrum of Winnipeg. A suitable building will be erected.

St. Catharines, Ont.

The local Board of Trade are trying to interest other municipalities in a scheme for deepening and enlarging the Welland Canal and recommendations for this work will likely be forwarded to the Dominion Government.

St. Lambert, Que.

The Waterman Pen Company have secured a site in this town for the erection in the near future of a five storey brick and stone factory.

St. Peters, N. S.

An extension of the railroad will be built from this place to Louisburg, N. S., a distance of 31 miles, and construction will be put in hand in the spring. Particulars may be obtained from G. E. Johnson, this town.

Stratford, Ont.

The water commissioners have decided to meet the shortage in the

present supply of artesian well water by establishing a mechanical filtration plant of 1,500,000 gallons daily capacity at an estimated cost of \$15,000, which amount will be raised by the issue of thirty-year debentures.

St. Thomas, Ont.

Estimates will likely be prepared by the city engineer for the erection of a Meldrum incinerator in connection with the light, heat and power plant.

Recent developments indicate that a contract for Niagara power will likely be made with the hydro-electric commission, in which case \$35,000 will be raised by debentures for the erection of a distributing plant.

Summerberry, Sask.

J. A. M'Cowen, Secretary-Treasurer, will receive tenders up to April 1st for \$10,000 twenty-year 6 per cent. school debentures.

Sussex, N.B.

C. H. Billois, Chief Commissioner, Department of Public Works, Fredericton, invites tenders up to March 23rd for building the concrete substructure and approaches of Apohaqui bridge over the Kennebecasis river. Plan and specification may be seen at the departmental offices, Fredericton, and at office of Ora P. King, this town.

St. Anne de Beaupre, Que.

A number of Montreal capitalists have united to form a new railroad, the Quebec & Saguenay, to establish connection between this town and Tadousac, a distance of 120 miles. The concern is capitalized at \$5,000,000. Construction will be started this year.

Toronto, Ont.

The Home Bank have purchased a site corner of Dundas and Union streets for the erection of a branch bank.

The building of a new fire hall at Toronto Junction is considered urgent and the present outlook is that something will be done in this respect as soon as the weather will permit.

John Stark & Company, real estate agents, have put through the sale of two lots on College street near Clinton. It is reported to be the intention of the owner to erect three stores and dwellings on the property.

At the monthly meeting of the Industrial School Board held recently, Superintendent Ferrier recommended a number of important improvements including alterations to buildings, construction of new barn and stables, remodeling of the sewerage system, installation of a telephone system and the purchase of a new engine. The Provincial Secretary will be asked for \$20,000 for this work.

At a recent meeting of the property committee of the Board of Education it was decided to set aside \$25,000 for the purchase of a lot for the proposed High School in the northwest section of the city. An amendment to strike out the recommendation for the addition of six rooms to the Harbord Collegiate Institute was lost and in all probability this work will now be carried out at an estimated cost of \$60,000.

Recent building permits include:—Walter Colwell, pair of 2-storey, semi-detached brick dwellings, Concord avenue, 5,400; T. W. Dutton, 2-storey and attic brick dwelling, Luxton avenue, \$3,500; H. S. Mara, 7 attached 2-storey brick veneered front and roughcast dwellings, corner Clinton street and Barton avenue, \$9,500; N. B. Grandin and J. Deacon, pair 2½-storey semi-detached brick dwellings, Concord avenue, \$5,500; R. S. Richardson, pair 2-storey brick dwellings, Dovercourt road, \$4,000; S. S. De Forest, 2½-storey brick dwelling, Muir avenue, \$2,800; Richard Barrett, 2-storey brick dwelling, Palmerston avenue, \$3,500; G. J. Gee, 2½-storey brick dwelling, Major street, \$4,000; Edmund Elliott, pair 2-storey semi-detached brick dwellings, Olive avenue, \$3,300; John Hillock & Company, Limited, addition to factory, George street, \$2,200; John Avison, 2-storey brick dwelling, Margueretta street, \$2,900; Arthur Wilkinson, pair 2-storey and attic semi-detached brick dwellings, Margueretta street, \$5,500; G. E. Case, pair 2½-storey semi-detached brick dwellings, Have-lock street, \$6,000; L. Mazza, pair 2-storey and attic semi-detached brick dwellings, Lippincott street, \$3,000; Isaac Broadway, 2-storey brick carriage factory, corner Queen street and Gwynne avenue, \$6,000; Frank Ham, pair 2-storey semi-detached brick dwellings, Hamburg avenue, \$5,000; W. S. Walker, 2½-storey brick dwelling, Bloor street, \$4,000; E. Elliott, 2 pair 2-storey semi-detached brick dwellings, Olive avenue, \$8,000.

Vancouver, B. C.

The C.P.R. have offered a site in South Vancouver, corner of Ontario street and Bodwell road, for the projected civic jail.

H. B. Watson, architect, has prepared plans for a 5-storey hotel building to be erected on Hastings street by H. D. Wright, of Seattle, at an estimated cost of \$75,000.

A new company, capitalized at \$50,000, has been organized by S. Martin and a site has already been secured at Coal Harbor.

T. H. Kirk has obtained a permit for the new buildings of the Dominion

laundry to cost \$5,000. Other permits include: S. O. Turner, frame dwelling, Eighth street, \$3,000; A. L. Teetzel, frame store and apartment house, Granville street, \$6,500; Alex Bethune, frame store and dwelling, Granville street, \$3,000; Daly Investment Company, frame tenement, Richards street, \$2,500; H. Isomura, frame rooming house, Powell street, \$2,500; J. A. Coldwell, frame tenement, Pender street east, \$2,500; Lena Carson, frame dwelling, Cordova street, east \$2,800; D. M. Stewart, reinforced concrete building, Richards street, \$30,000; A. Arkle, frame dwelling, Fourth street, \$2,000; H. L. Jenkins frame additions, Nelson street, \$3,500; E. E. Penzer, frame tenement, Powell street, \$3,200; A. McDonald, frame tenement, Carl Place, \$2,000; Irad S. Burton, frame dwelling, Fifth avenue, \$2,000; J. A. Kilpatrick, frame store and dwelling, Fifth avenue, \$1,500; James Astell, frame apartment building, Pacific street, \$3,000.

Victoria, B. C.

Extensive paving work will be put in hand this year. Approximate cost, \$35,000.

The Victoria Yacht Club are considering the erection of a new club house to cost \$3,500.

Welland, Ont.

It is understood that an amalgamation has been effected by the Robertson Machinery Company and an American firm who will merge their Canadian interests with the Welland company. This may result in considerable extensions.

Windsor, Ont.

Henry D. Symmes, of Niagara Falls, Ont., has been granted a natural gas franchise by the city. It is stipulated that 20 miles of pipe must be laid by February 1st, 1909.

Winnipeg, Man.

Soundings were recently taken for the projected G.T.P. bridge across the Red river, between this city and St. Boniface.

Hooper & Walker, architects, this city, are preparing plans for an addition to the St. Joseph orphanage on Portage avenue.

Tenders will be received by Fred Gelinus, Secretary, Department of Public Works, Ottawa, up to March 20th for the erection of an examining warehouse in Winnipeg. Plans and specifications may be obtained on applications to J.C. Greenfield, Superintendent of Public Buildings, this city, and at the Department.

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A sum of considerably more than a million dollars is likely to be expended on local improvement works this season.

Darling & Pearson, architects, will shortly take tenders for the construction of the new building to be erected on Portage avenue by the Bank of Nova Scotia at an estimated cost of \$250,000.

M. H. McLeod, General Manager, Canadian Northern Railway Company, this city, states that contracts for the erection of the union depot and hotel for the C. N. R. and G. T. P. will be awarded by April 1st.

M. Peterson, Secretary, Board of Control, wants tenders up to March 10th for supply of water pipe, hydrants and specials for high pressure fire service waterworks system. Specifications may be obtained at office of H. N. Ruttan, City Engineer.

A 2,500,000-gallon turbine pump with electric motor is required for the city waterworks, and M. Peterson, Secretary of the Board of Control, will receive tenders for supply of same up to March 24th. Specifications at office of H. N. Ruttan, city engineer.

Mr. Peterson will also receive tenders up to March 9th for construction of various sewers according to specification at office of city engineer.

Woodstock, Ont.

The fire committee will purchase a new hose wagon at a cost not to exceed \$500.

It is stated to be the intention of the Board of Education to erect a new eight room building in the west end of the city.

CONTRACTS AWARDED.

Hamilton, Ont.

The contract for cement for 1908 has been awarded to the Portland Cement Company at \$1.63¾ per bag.

Winnipeg, Man.

The C. S. Hill company have secured the contract for the construction of bridges at Cross Lake and Green Lake.

Vancouver, B.C.

The contract for the large six-storey block to be erected by Martin and Robertson has been awarded to W. Hepburn, of this city. Architects, Parr & Pee.

Bids.

Toronto, Ont.

The City Engineer has recommended the acceptance of the John Inglis Company's tender, at \$147,530, for the 15,000,000-gallon pumping engine and the same company's tender of \$52,700 for the 6,000,000 gallon pumping engine.

Fires.

Factory of Ottawa Paint Works, Ottawa, Ont.; loss \$17,000.

Royal Hotel building, Campbellton, N. B., property of William Sproule; loss 25,000.

New Companies.

Ontario Limestone and Clay Company, Limited, Belleville, Ont., incorporated, capital \$50,000. Incorporators, F. R. Lingham, L. E. Allen, S. Masson and J. W. Walker, all of Belleville.

La Compagnie Vichy-Canada, Limited, Montreal, Que., mineral water manufacturers, capital \$49,000. Incorporators, G. W. St. Arnaud, A. Guilbault and J. C. Lamothe, all of Montreal.

Gillette Safety Razor Company of Canada, Limited, Montreal, Que., capital \$250,000. Incorporators, K. C. Gillette, and J. G. Rote, of Brookline, Mass., A. A. Bittnes and J. A. McCullough, of Montreal, and others.

Lyman's, Limited, Montreal, Que., incorporated to manufacture and sell proprietary medicines and scientific apparatus, capital \$100,000. Incorporators, Arthur, W. E. and A. C. Lyman, and G. P. Watt, all of Montreal.

Coon's De Marvel Company, Limited, Toronto, Ont., incorporated to manufacture electrical instruments, capital \$40,000. Incorporators, W. R. Bird, R. Verity, A. F. White, T. H. Wilson and C. A. Thomson, all of Toronto.

Personal.

A. W. Robinson, C.E., Montreal, Que., has been commissioned by the Egyptian Government to superintend important irrigation work on the Nile and left New York last week to enter upon his duties.

City Engineer Lindsay, of Guelph, Ont., is going to Belleville to take up a similar position in that city. Many applications for the post were received from all parts of Canada and Mr. Lindsay is to be congratulated.

Business Notes.

William Topp & Company, plumbers, Granby, Que., have registered.

John Gauthier & company, lumber dealers, D'Israeli, Que., have dissolved.

Rochon & Bousquet, brick contractors, Montreal, Que., have dissolved.

The Fraser Davidson Lumber Company, Limited, Moose Jaw, Sask., have obtained a charter.

The Truro Foundry & Machine company, Truro, N. S., has been reorganized with a capital of \$100,000. Among the provisional directors are William J. Kent, lumberman; Andrew J. Campbell, barrister, Truro, and Ernest Crowe, lumberman, of Clifton.

Alberta's Provincial Undertakings.

A keynote of progress runs through the annual report of the Alberta Department of Public Works, recently presented by Hon. Mr. Cushing. More roads, more villages, more districts, more towns, more engineering projects, and an altogether greater volume of business transacted than in any previous year, show something of the development of the western province.

During the year the department dealt with 296 bridges, of which 258 were new structures; 13 new steel bridges were constructed, three of which were of considerable size. One of these was over the Old Man river, running north from Pincher Creek to Summerview; one of 125-foot span over Willow Creek, north of Macleod, and the third of 125-foot span over the north fork of Sheep river, west of Okotoks. There is a large bridge under construction over the Bow river at Calgary; one over the Bow river near Gelichen; over the Red Deer, west of Penhold; over the south fork of Sheep river, west of Okotoks, and over the South Saskatchewan at Medicine Hat.

A considerable amount of work was done on the improvement and extension of the main roads, particularly north and northwest of Edmonton.

Nine public buildings were erected:—the normal school at Calgary; court house at Cardston; court house at Wetaskiwin; terrace administration building, legislative hall, legislative stable, and cottage buildings at Elksland. The normal school at Calgary and the court house at Cardston will be completed in 1908.

Plans have been prepared for the following:—court house at Calgary, court house at Edmonton, cold storage building at Calgary and land titles building at Calgary.

Five hundred and ninety-nine miles of telephone lines were put in operation during the year, and eighteen exchanges placed in commission.

In the steam boilers department there were two prosecutions for violation of the act, and one engineer was deprived of his certificate for neglect of duty. Three hundred and seventy candidates presented themselves for examination, of whom only 76 failed, and of these 22 were given provisional certificates.

Heating System in the New Factory of Jenkin's Bros., Limited, Montreal.

(Continued from page 15.)

the box is 2 feet below the surface of the ground. The return terminates in a suction T located in a pit adjoining the power house. The manner of making this T is shown in Fig. 4.

The pipes, including mains, returns and heating coils, have a uniform slope in the direction of flow of quarter inch in 10 feet.

The vacuum pump is located in the

by 3 inches, and waste valves 2 1-2 inches and 3 inches, respectively, are placed in the branch steam mains in the basement of the main building, which supply the office and draughting room radiators to provide for heating these radiators with live steam when the factory is not running. These tees and valves are indicated in Fig. 1.

The heating coils are constructed of 1 1-4 inch wrought iron pipe. Manifolds, or branch tees, are used except where return bend coils are indicated.

RADIATORS INSTALLED.

Height.	Sections.	Valve.
38 inches	8	1 inch
38 inches	12	1 inch
32 inches	15	1 1-4 inch
32 inches	15	1 1-4 inch
32 inches	15	1 1-4 inch
38 inches	14	1 1-4 inch
38 inches	14	1 1-4 inch
38 inches	4	3-4 inch
38 inches	19	1 1-2 inch
38 inches	19	1 1-2 inch

The radiators are set 3 inches from the wall.

The radiators were manufactured

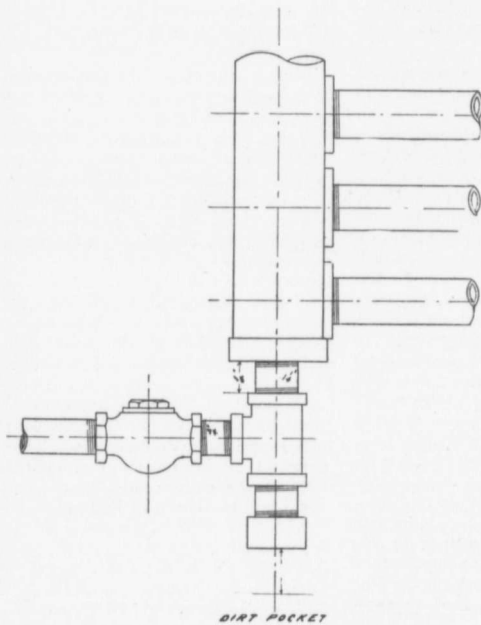


FIG. 6.

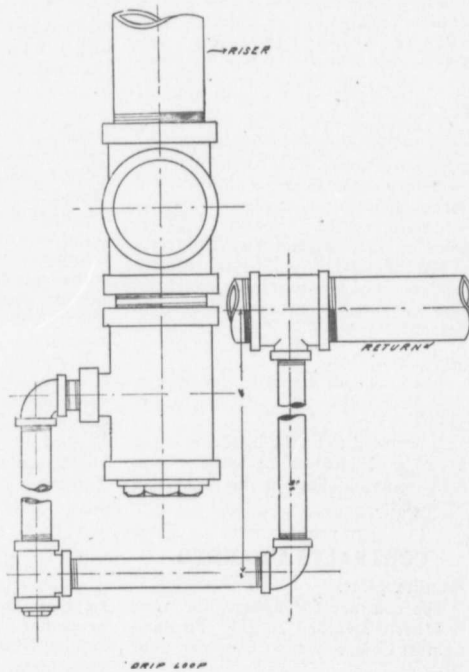


FIG. 7.

engine room, and is piped to the suction T on the main return pipe, delivering the drips into the delivery tank, and through it into the feed water heater.

A plan and section of the vacuum pump and feed water heater is shown in Fig. 5.

A 6 inch by 6 inch by 6 inch T and 6 inch gate valve are placed in the steam main just inside the power house wall, to provide for the use of live steam, which is supplied through a reducing valve.

T's 2 1-2 inches by 2 1-2 inches by 2 1-2 inches, and 3 inches by 3 inches

The wall coils are mounted on hook plates. The top of the coils are 1 inch below the line of the window sills, except in the basement of the main building, where the bottom of the coils are 18 inches from the floor. Overhead coils are hung in a horizontal plane, on pipe hanger rolls, so as not to interfere with workmen on the floor.

A dirt pocket, made as shown in Fig. 6, is placed on the drip connection of each coil, but not on the radiators, with the size of radiator valve used on each. The drip valves are all standard 3-4 inch bodies.

by the Dominion Radiator Company. The vacuum system installed is known as the Positive Differential System of Steam Circulation.

The drawings and specifications were prepared by Barton & Carpenter, consulting engineers, 90 West street, New York. James Ballantyne, Montreal, did the steamfitting.

Building permits, totaling \$136,700 and including 36 dwelling houses, were issued by the Toronto City Architect's Department between February 12th and 25th.

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Pattern Makers at Toronto.

Toronto has been selected for the meeting of the American Foundrymen's Association, and the allied organizations during the second week in June. Prospects are excellent for a goodly showing of patternmaking equipment and in the way of technical papers and other inducements there will be much to attract the progressive patternmaker. Most men gain an idea of the size of anything

by the area occupied and the weight of material handled. The Cleveland exhibit occupied a little less than 25,000 square feet of floor space, and represented over 300 tons. The Philadelphia exhibit occupied about 45,000 square feet of floor space, and represented nearly 500 tons of material. At Toronto there will be available 121,000 square feet of floor area. From present indications this will not be any more than is required, as the orders for space thus far received

have practically all been for increases over the amount used last year.

The exhibit facilities include Exhibition Park, of 102 acres, upon which stand some thirty buildings, arranged for exhibit purposes. Among these are three buildings including a large auditorium in connection with the Dairy Building, which seats 1,500 people, and which will serve as a meeting hall for all of the allied organizations.

M^cGREGOR & M^cINTYRE

LIMITED

67 to 91 Pearl Street, Toronto, Ont.

Structural Iron Works

Beams, Channels, Tees, Angles, Chequered Plates, etc., in stock. Fire Escapes, Sidewalk Doors, Iron Stairs, etc., etc.

Sole Agents for

Duplex Hangers and Goetz Post Caps, Wall Boxes, Etc.

PHONES: 7248
7249

ESTIMATES FURNISHED

Protect Against Dampness

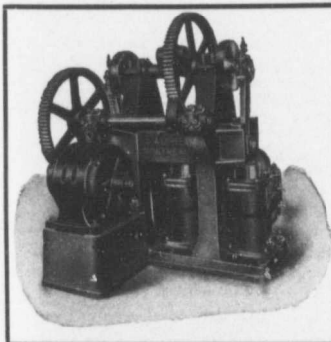
by painting the inside of your exposed walls with Esco Waterproofing. This material penetrates below the surface and forms a permanent waterproofing.

AGENTS WANTED

Circulars and full Information furnished on application.

EADIE-DOUGLAS COMPANY

22 St. John St., Montreal

**"LAURIE"
Power
Pumps**FOR
General Water Supply
Municipal Water Works
Mine Pumping, etc.

Write for Catalogue

**LAURIE ENGINE
AND
MACHINE CO.
Limited
MONTREAL**PARMELEE & NICHOLSON,
Toronto Agents,
GUILFORD & SON,
Halifax Agents.**SEWER PIPES**Salt Glazed and
Vitrified.TRUE TO SIZE
IMPERVIOUS TO WATER
WILL NEVER DISINTEGRATESizes manufactured and
always in stock:
4-inch to 24-inch.CHIMNEY TOPS PLUE LININGS WALL COPING. Ask for Price
List & Discount
Telephone (Toronto Connection): Park 1809. Post Office: SWANSEA.**THE DOMINION SEWER PIPE CO., LIMITED**
(THE INDEPENDENT COMPANY)

WORKS AND OFFICE: SWANSEA (NEAR TORONTO)



CONTRACTORS FOR
**STEEL HIGHWAY
BRIDGES,
CONCRETE ABUT-
MENTS,
REINFORCED CON-
CRETE FLOORS,
ETC.**

ONTARIO BRIDGE COMPANY

34 VICTORIA STREET, TORONTO, ONT.

**Well Drilling
Contractors**

Equipped with the most modern machinery for drilling Water, Oil, Gas or Salt Wells, to 50 or 5,000 feet in depth, any diameter from 4 to 12 inches.

Tests made for foundations, such as—Building Bridges, Trestle Work, Canals, etc.

WALLACE BELL
275 Laval Ave., MONTREAL, CAN.References from the largest Manufacturing
Companies, and Financial Institutions
in Canada.

TENDERS AND FOR SALE DEPARTMENT



DEPARTMENT OF RAILWAYS AND CANALS

QUEBEC CANALS

Notice to Dealers in Cement

Sealed tenders, endorsed "Tender for Cement," will be received by the undersigned, at 10 o'clock on TUESDAY, MARCH 10TH, 1908, for the supply of 35,000 barrels of Portland Cement, for the use of the Quebec Canals.

Specifications and forms of tender can be procured at the office of the Superintending Engineer of the Quebec Canals, No. 2, Place d'Armes Square, Montreal, on and after Tuesday, the 25th February.

Contractors are requested to bear in mind that tenders will not be considered, unless made strictly in accordance with the printed forms, and in the case of firms, unless there are attached the actual signatures, the nature of the occupation, and place of residence of each member of the firm.

An accepted bank cheque for the sum of \$2,000 made payable to the order of the Minister of Railways and Canals must accompany each tender, which sum will be forfeited, if the party tendering declines entering into contract for the work, at the rates stated in the offer submitted.

The cheque thus sent in will be returned to the respective contractors whose tenders are not accepted.

The lowest or any tender not necessarily accepted.

The advertisement dated the 20th February, 1908, is hereby cancelled.

By order,
L. K. JONES,
Secretary.

Department of Railways and Canals,
Ottawa, February 27th, 1908.

Newspapers inserting this advertisement without authority from the Department will not be paid for it. 10

Tenders for Furnace for Bolton School

Sealed tenders will be received by the undersigned up to TUESDAY, APRIL 7TH, 1908, for installing a furnace for heating and ventilating in Bolton Public Sch. 07—four rooms. Furnace to be suitable to the requirements of the building and to be placed in position during the summer vacation, 1908.

Lowest or any tender not necessarily accepted.

JNO. MACDONALD,
Secretary of Board, Bolton, Ont. 10

Municipal Bridges.

"Concrete and steel, two materials which represent great strength and durability, are now commonly employed throughout Ontario in the construction of highway bridges," is a statement dwelt upon at some length in the twelfth annual report on highway improvement presented to the Ontario Legislature last week.

The use of these materials has grown out of the increasing scarcity and cost of suitable timber, the cheap-

Young man with commercial business experience and financial training has about \$5,000 to invest in partnership with some experienced contractor engaged in railroad, dredging or similar construction work. Reply will be considered confidential. Address J. G. W., CONTRACT RECORD, Toronto. 11

TO CONTRACTORS.

Sealed, whole and separate bids will be received by the undersigned up to MARCH 20TH, 1908, for the work of erecting a Banking House in Windsor, Ontario. Plans and specifications may be seen at the offices of the Architects, on and after March 8th. The right is reserved to reject any or all bids.

CARRERE & HASTINGS
and
EUSTACE G. BIRD,
Architects.

Toronto Office: 828 Traders Bank Bldg.

St. Michael's School Belleville

Tenders addressed to the Rev. D. A. Twomey, Belleville, will be received up to noon, of MONDAY, THE 9TH OF MARCH, 1908, for the erection of a school building for St. Michael's Parish, Belleville. Plans and specifications may be seen at the residence of the Rev. D. A. Twomey, Belleville, or at the office of the Architect, Colborne P. Meredith, Ottawa, on and after Monday, the 2nd March. The lowest or any tender not necessarily accepted. 9

DEBENTURES FOR SALE

Tenders will be received by the undersigned up to SATURDAY, THE FIFTEENTH DAY OF FEBRUARY, A.D., 1908, for the purchase of Twelve Thousand Dollars (\$12,000) worth of debentures of the said Town of Aylmer bearing interest at the rate of six per cent. per annum running for a period of twenty years. Interest and Principal payable in equal yearly sums of \$1,046.22.

JUNIUS BRADLEY,
Town Clerk,
Aylmer, Ontario, 8

TENDERS FOR SUPPLY OF TURBINE PUMPS

Sealed tenders addressed to the Chairman of the Board of Control for supply of turbine pump of a 2,500.000 Imperial Gallon capacity with electric motor for City Water Works will be received at the office of the undersigned up to 12 O'CLOCK NOON ON TUESDAY, MARCH 10TH, 1908. Specifications and form of tender may be obtained at the office of H. N. Ruttan, City Engineer, Winnipeg. Each tender must be accompanied by an accepted cheque 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 Contractor to enter into a written contract with approved sureties it called upon to do so. The lowest or any tender not necessarily accepted.

Board of Control Office, M. PETERSON,
Winnipeg, Feb. 24th, 1908. Secretary.

Debentures For Sale VILLAGE OF ELMIRA

Sealed tenders will be received by the undersigned up to 7 o'clock p.m. on the 6th DAY OF APRIL, 1908, for the purchase of \$7,500 4 per cent. Debentures, payable in twelve years, re loan to "Elmira Interior Woodwork Company, Limited," and \$25,000.00 4½ per cent. Debentures payable in thirty years, re Waterworks. Particulars from the undersigned. No tender necessarily accepted.

JOHN H. RUPPEL, Clerk. 14

FOR SALE.

One 7 x 12 Beatty Hoisting Engine with swinger, and stiff leg derrick with clam shell attachment, also one 7 x 12 Beatty Hoisting Engine, one Beatty swinger and one set of stiff leg derrick irons. All in first-class condition. For particulars address

THE CADWELL SAND & GRAVEL CO.
Windsor, Ontario. 13

POSITION WANTED.

Foreman Re. strictly sober, desires position in charge concrete foundations, excavations, sewers. Handle men to advantage, conversant with plans and profiles. Address Box 385 CONTRACT RECORD. 11

CITY OF SHERBROOKE.

Debentures For Sale

Sealed tenders will be received by the undersigned up to noon of FRIDAY THE TWENTIETH DAY OF MARCH, A.D., 1908., for the purchase of ONE HUNDRED AND SEVENTY THOUSAND DOLLARS (\$170,000.00) worth of twenty-five years annuity debentures of the City of Sherbrooke bearing interest at five per centum per annum. Interest and Principal payable in half yearly payments of FIVE THOUSAND NINE HUNDRED AND NINETY THREE DOLLARS AND EIGHTY SIX CENTS. On the 2nd October and April in each year.

Tenders to be marked "Tenders for debentures." For copies of by-laws and other information apply to the undersigned.

F. J. GRIFFITH,
Secretary-Treasurer. 12
Sherbrooke, 27th February, 1908.

Tenders Wanted

for the flooring of the third story of Nelson school building, also for furnishing Desks for the said School House. Plans and specifications may be seen at the office of T. Clark King, Architect, Lacombe, Alta., up to noon FEBRUARY 20TH, 1908. The lowest or any other tender not necessarily accepted.

T. CLARK KING, Architect,
Lacombe, Alta. 9

ening and improving of steel and concrete, and the greater strength and durability supplied by the latter materials.

Bridges are subjected to a much greater strain to-day than they were a few years ago, and this feature is likely to become greater rather than less. Traction engines with threshing outfits, weighing six and eight tons, are commonly seen on the highways. That steam road rollers weighing ten to fifteen tons will be generally used

in the course of a few years is a certainty. Motor wagons and trains are a possibility in connection with farm traffic, such as will be a matter for early consideration. The bridges being built to-day must be strong for present traffic, and future needs can not be overlooked, except as a very short-sighted policy.

A very slightly increased expenditure will supply much greater durability than is ordinarily sought. We of to-day owe much to our forefathers

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who opened the early roads, cleared the farms, and rendered possible the advanced Ontario as we find it. It is for us to build for the future, and in bridge building there is possible much that is creditable—much that may be discreditable.

In many municipalities practically all small waterways are made with concrete tile. As greater capacity is required, concrete arches, or culverts with concrete walls and flat concrete covers are used. Arches prevail for the smaller types of bridges, offering strength and better appearance. As greater span is required, concrete abutments and piers, with steel superstructure, are employed.

In durable and well-built bridges is an opportunity for work of a monumental nature, that should not be lost. Permanent bridges now being erected may be made enduring structures of good architectural type, such as will be creditable to their builders for centuries. Concrete has endured the ages, and no better was ever manufactured than that which is now being made. It is for councils to see that the design and workmanship are as reliable as the materials they are using. Materials of a temporary na-

ture may be made to answer temporary needs. But materials of a durable and permanent character should be so used that posterity will admire them.

The life of the ordinary wooden bridge rarely exceeds ten years. Formerly a much better class of timber could be had than is now obtainable. Repairs are needed every year, and the cost of these, in sending men and material for necessary details of maintenance, to put in a new stringer or post, etc., very soon runs up a bill equal to the original cost of the bridge. Steel bridges require attention to maintenance in the matter of painting, tightening, putting in new rivets, but this can be done periodically, and in a comprehensive manner, so that the cost of repair is not made up of time wasted in going to and from the work with men and material for trifling defects. By using steel stringers, concrete floors, and concrete abutments, a large measure of durability is attained.

LIFE OF STEEL BRIDGES.

Structural steel as now used is practically a new material. It is little more than seven years since it has wholly superseded wrought iron. No

structural steel highway bridges have been erected long enough to determine their life. In any event, the life is dependent upon the quality of the bridge. Light or otherwise inferior structures, put up by incompetent makers, have failed within a year, or have required stiffening and strengthening. Municipalities cannot exercise too much good judgment in seeing that the steel bridges built by them are of sufficient strength, of good design, and properly finished in matters of detail. Steel is more durable than iron. One of the oldest iron highway bridges in Ontario is a 150 foot span in Elgin County, built in 1878. While not as heavy as present practice requires, it is still in good condition after being in use 30 years.

While the life of steel bridges has not been fully determined, yet present knowledge would indicate that, for ordinary highway service, with proper strength of construction and subsequent attention, they may be expected to last for from forty to fifty years. Under railway traffic the life is short, as the strain is greater, and the corrosive effect of coal smoke is very destructive.



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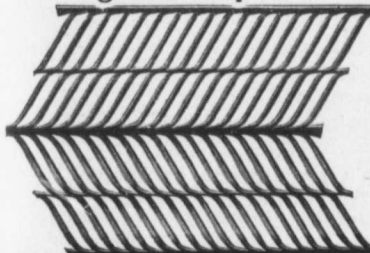
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ENGINEERING ADVICE REGARDING BRIDGES.

Councils when erecting steel bridges should secure competent engineering advice. Councillors cannot be expected to judge as to the qualities of a steel bridge, as they can of timber, with which they are all familiar. For steel and concrete bridges they are fully justified in obtaining proper engineering advice—in fact, a council is not justified in doing otherwise. Steel bridge design requires a mathematical training such as only engineers possess.

It has been a not uncommon error that, with false ideas of economy, councils have accepted tenders for a steel bridge because of a saving of ten dollars in first cost, when the more expensive bridge was better value by hundreds of dollars. A poor steel bridge is dear at any price. The fee of a competent engineer will frequently double the life of the bridge.

An engineer's services in the erec-

tion of steel bridges will usually consist of:—

(1) The examination and measurement of the site of the bridge, changing the location if advisable.

(2) Preparation of plans and specifications and taking tenders for abutments and piers.

(3) The preparation of specifications for the steel superstructure, with such plans as may be required.

(4) Preparation of notice or advertisement calling for tenders for steel superstructure, so arranged that all companies will tender on a uniform basis.

(5) Scrutiny of the plans and tenders submitted by the bridge companies, and advising council as to the most satisfactory.

(6) The inspection and final acceptance of the bridge upon completion.

(7) Such inspection of the bridge during construction as its size and importance may render advisable.

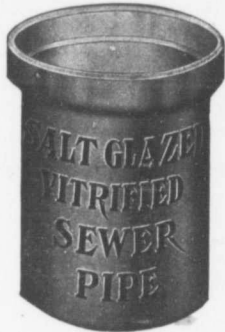
To be concluded in next week's issue.

Repairing Frosted Walks.

The following method has been found to give satisfactory results in cases where concrete walks have peeled after being injured by frost:

Remove the affected surface thoroughly and flood the old concrete with warmed water, making it thoroughly moist. Treat this moistened surface with a wash of neat cement and water. Then lay a new top layer of 1:2 sand, and you should secure good results, if especial care is taken to protect the work from the frost. This may be done by covering the new work as soon as it is completed with three or four inches of manure, sawdust or shavings, and covering this layer with heavy canvas or tarpaulin.

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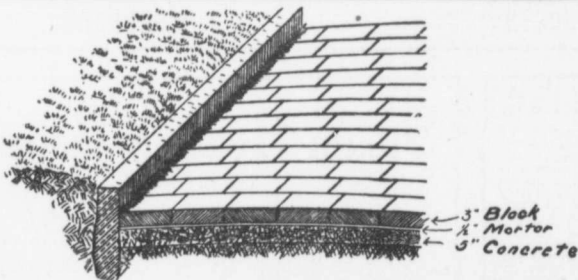
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Heating and Ventilating Inspectors.

A bill has been introduced into the council at St. Louis, Mo., to create the office of heating and ventilating inspector. It is said the proposed department will have jurisdiction over steam and hot water heating ventilation. By this means it is supposed that more equable temperatures will be maintained in the public schools of the city and the danger of disease from impure atmospheric conditions thereby lessened.

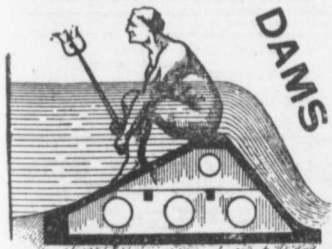
Rapid Railway Construction.

A Winnipeg despatch states that the Grand Trunk Pacific will almost certainly be completed into Edmonton during the coming summer. The company is making every preparation to rush construction, and an effort will be made to surpass the world's record of railway building established by the company last season.

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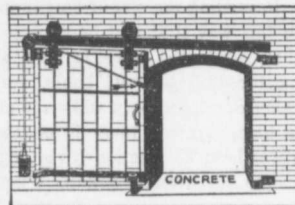
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Electric Welding.

The art of electric welding is comparatively old, so that it seems strange that it is not more frequently made use of in the shop. There are several systems of bringing metal to a sufficiently high temperature to weld it by means of electric currents, each of which has some advantages making it more or less suitable for certain conditions. Yet these are not utilized as often as they should be.

The general opinion seems to be that for electric welding an expensive apparatus is required, and that electrical energy is an expensive agent for producing heat. Neither of these objections to the system is of much weight, for although, for certain classes of work, a more or less elaborate device seems best suited for the character of the work, the regularity of the joint and the rapidly of working more than offset the expense of the machine. Moreover, there are some methods of welding which require nothing more than two watertight barrels, a carbon rod and a source of electric energy. The expense of the equipment is practically nothing, unless it becomes necessary to install a special generator for supplying the welding current.

Regarding the cost of heat supplied in this way it should be remembered that, while the price is high when measured in kilowatt hours, heat is being developed only while the metal is being heated; there is no appreciable loss; no attention is required to keep a furnace at a suitable temperature for welding and heating, and probably the actual cost of the energy used in making a weld would be little, if any, more than that of the heat furnished in a coal forge, if the latter be charged with all the loss taking place when the forge is not in use.

But the electric current may be used for welding and repair work where the ordinary type of forge is useless. Broken and defective castings may be repaired quickly and easily, and thus work which would otherwise be condemned be saved. And the intense localized heat which may be produced by the electric current

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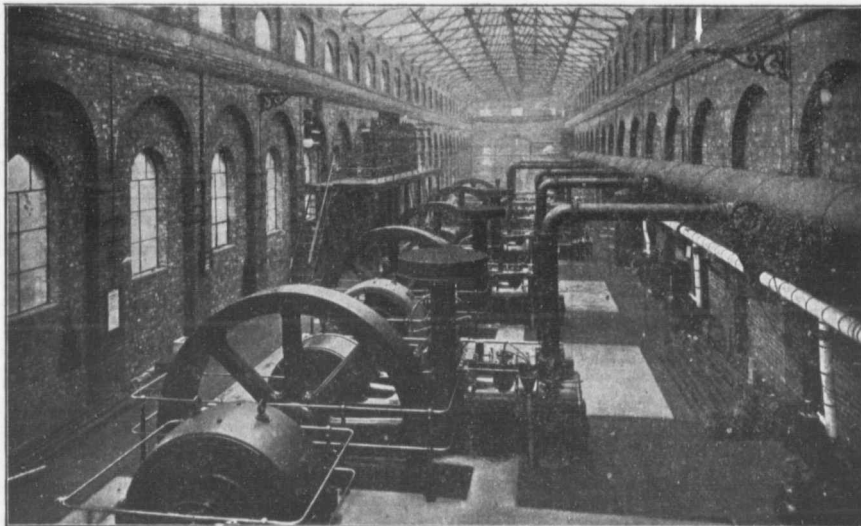
Tests of air leakage around windows were reported by Mr. H. W. Whitten at the recent meeting of the American Society of Heating & Ventilating Engineers. He has found that with a wind pressure equal to 0.1 inch of water outside a window having a 1-32 inch clearing between window frame and sash, 105 cubic feet of air were driven per hour through each lineal foot of such clearance space, while with a 1-16 inch clearance, the leakage was 1848 cubic feet per hour. With other windows, equipped with good metal weather strips and subjected to the same pressure, the leakage amounted to no more than 12 cubic feet per lineal foot per hour. In tests made with a pressure of 1-2 inch of water, which corresponds to a wind velocity of 24 miles per hour, leakages were noted of 179 cubic feet per lineal foot for 1-32 inch clearance, 402 cubic feet for 1-16 inch clearance, and 45.6 cubic feet for the sash with the metal weather strips. With a pressure double that used in the latter case, equivalent to a wind velocity of 48 miles per hour, the leakages were 432 cubic feet, 591.6 cubic feet and 69 cubic feet.

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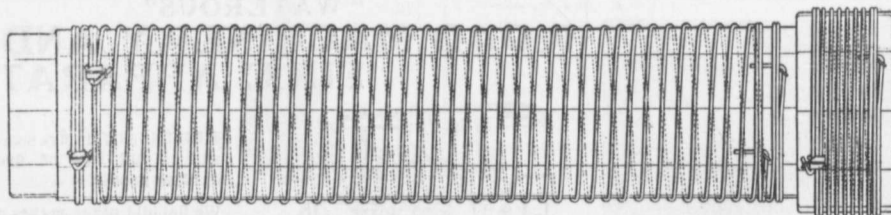
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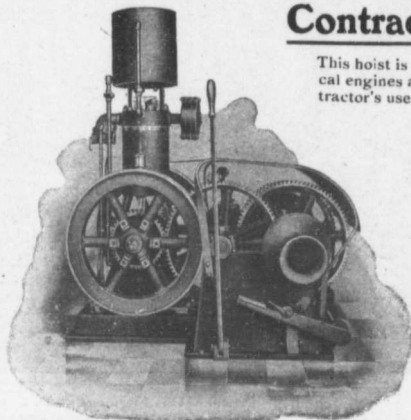
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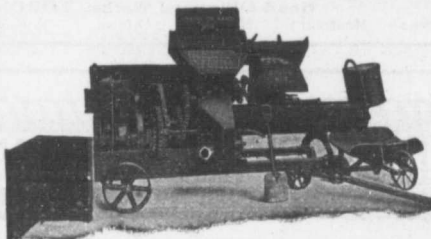
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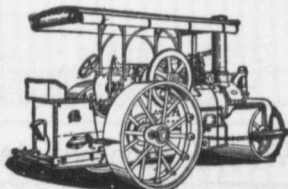
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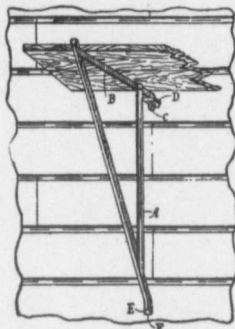
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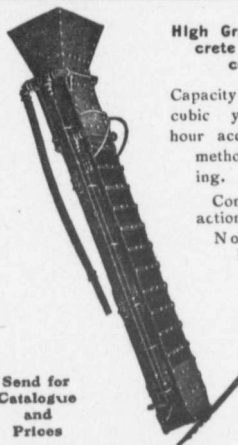
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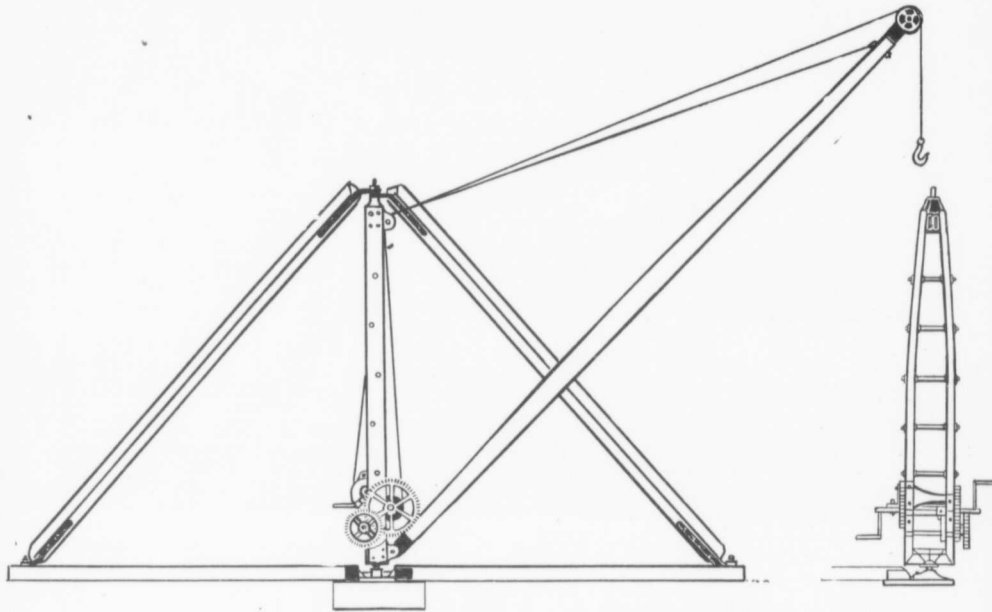
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