

CANADIAN CONTRACT RECORD

*A Weekly Journal of Engineering, Public Works,
Tenders, Advance Information and Municipal Progress*

This Paper Reaches Every Week the Town and City Clerks, Town and City Engineers, County Clerks and County Engineers, Leading Civil Engineers and Contractors throughout Canada, and Purchasers of Municipal Debentures.

VOL. 18.

TORONTO, MONTREAL — OCTOBER 23, 1907 — WINNIPEG, VANCOUVER

No. 34

THE CANADIAN CONTRACT RECORD

PUBLISHED EVERY WEDNESDAY
As an Intermediate Edition of the Canadian
Architect and Builder.

THE G. H. MORTIMER PUBLISHING COMPANY

of Toronto, Limited,
Subscription Price, \$5 per annum, payable
in advance,
United States, \$5.00 per year

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should give prompt notice of same. In doing so
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lishers of any irregularity in delivery of papers.

Classified Index of Advertisers, Page 15.

DEBENTURES FOR SALE

VILLAGE OF GRAND VALLEY LOCAL IMPROVEMENTS

Sealed tenders will be received by the undersigned
up to 8 o'clock p.m. on FRIDAY, THE 1ST DAY
OF NOVEMBER, 1907, for the purchase of
\$3,775.60 Debentures, at 5 per cent., payable in
twenty equal annual payments of \$202.81.
Further particulars from undersigned.
No tender necessarily accepted.

WM. MCINTYRE,
Clerk, Grand Valley.

TENDERS FOR 15 Miles of Water Pipe

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

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

Debentures for Sale

TOWN OF UXBRIDGE

Sealed tenders will be received by the undersigned
up to 8 o'clock p.m. on FRIDAY, THE 25TH DAY
OF OCTOBER, 1907, for the purchase of \$25,000.00
4 per cent. debentures, payable in twenty years, re-
loan to the Palmer Piano Company, Limited.
Particulars from the undersigned.
No tender necessarily accepted.

J. W. GOULD, Clerk.

CALGARY, ALTA. STREET RAILWAY SYSTEM

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

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

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

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

Separate tenders, will be received for each of the
above.

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

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

The lowest of any tender not necessarily accepted.

R. E. SPEARMAN, C. E.,
City Engineer.

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

FOR SALE

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

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

FOR SALE

1 Merriman Screw Gang Stone Saw 5 ft. x 5 1/2 ft.
x 10 ft., nearly new
1 "MYLES" Concrete Block Machine nearly new
with 250 Wooden Pallettes
M. BEATTY & SONS, Limited,
Welland, Ontario.

City of Port Arthur

Sealed tenders addressed to the undersigned will
be received up to 5.30 p.m. of FRIDAY, NOVEM-
BER 1, 1907, for the construction of a bridge across
McVicar's Creek on Algoma street.

Further instructions as to specifications and ten-
ders must be received from the Corporation En-
gineer.

The lowest or any tender not necessarily accepted.

J. McTIGUE,
City Clerk.

The London Water Works

TENDERS FOR

CONDUIT

Sealed tenders will be received by the undersigned
up to 5 p.m. MONDAY, NOVEMBER 4TH, for the
completion of a conduit six hundred feet in length.

Plans and specifications may be seen at Moore &
Henry's office, Albion Building, London, Ont.

Lowest or any tender not necessarily accepted.

F. J. DARCH,
Chairman.

JOHN M. MOORE,
Engr. & Supt.

City of Winnipeg

Point du Bois Hydro-Electric Development.

Tenders for second hand Bridge
crossing Pinawa Channel.

Sealed tenders addressed to the Chairman of the
Board of Control, will be received at the office of
the undersigned up to noon on FRIDAY, FIRST
NOVEMBER, 1907, for one second hand, single
track, through truss, steel Railway Bridge, 125 ft.
to 165 ft. single span. The bridge must be in good
condition and be able to safely carry a ten-wheel
locomotive with 24 tons on a rigid wheel base of 14
feet 10 inches, followed by a rolling load of 3,000
pounds per lineal foot of track.

Tenders must give full description of bridge,
stating age, condition, name of manufacturer, lo-
cation, type whether pin connected or riveted,
clearance width and height, and weight; and if
possible shall be accompanied by stress diagrams,
blue print drawings and photographs

Prices to be f.o.b. Lac du Bonnet Station, C.P.R.,
Manitoba. Canadian Customs paid, if any.

Each tender must be accompanied by an accepted
cheque payable to the order of the City Treasurer, or
cash deposit for a sum equal to 5% of the total a-
mount of tender, 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,
if called upon to do so. The lowest or any tender
not necessarily accepted.

M. PETERSON,
Secretary.
The Office of the Board of Control, Winnipeg,
October 19, 1907.

[FOR ADDITIONAL ADVERTISEMENTS FOR TENDERS SEE NEXT PAGE]

Wanted Position

As Foreman or Inspector of Sewers or Concrete work of any kind; accustomed to plans and profiles. address Box 116, CONTRACT RECORD, Toronto.

Debentures for Sale

Village of Elmira

Sealed tenders will be received by the undersigned up to 8 o'clock p.m. on FRIDAY, THE 8TH DAY OF NOVEMBER, 1907, for the purchase of \$7,000.00 4 1/2 per cent Debentures, payable in twelve years, re loan to the "Elmira Interior Woodwork Company, Limited"

Particulars from undersigned.

No tender necessarily accepted.

J. H. RUPPEL, Clerk.

CONTRACTS OPEN.

LONDON, ONT.—A large addition, to be commenced next spring, is being planned for the McClary foundry.

BERLIN, ONT.—A large addition is to be built to the Jacob Y. Shantz & Sons' button factory.

MITCHEL, ONT.—A by-law was recently carried to loan \$10,000 to the Mitchell Woolen Mill Company.

KAMLOOPS, B.C.—It is reported that Chas. Schnoter, of Vancouver, is about to open a cigar factory here.

EDMONTON, ALTA.—W. R. McGeorge has just commenced the erection of a large brick block on First street.

REGINA, SASK.—A. J. Osment, of Indian Head, is contemplating the building of an up-to-date opera house in this city.

SASKATOON, SASK.—The members of Knox church have decided to erect a new building west of the C.N.R. track.

WELLAND, ONT.—Negotiations have closed with the Page-Hershey Pipe & Tube Company for their location in this town.

CASCADE, B.C.—Joseph Genelle, formerly of the Yale-Columbia Lumber Company, will shortly start upon the erection of a saw-mill at this place.

SYDNEY, B.C.—The Gulf Lumber Company's plant has been acquired by Mike Carlin, who will make extensive additions to the mill.

SIMCOE, ONT.—Plans for the proposed Government buildings have been approved and the contract will likely be let next month.

KENORA, ONT.—The ratepayers have approved of a by-law to raise \$75,000 for the completion of the water-power development work.

ROSTHERN, SASK.—A by-law will be submitted to the ratepayers on October 28th, to raise \$10,000 for the completion of the town hall.

ST. JOHNS, QUE.—The college of St. Marie de Manoir which was recently destroyed by fire at Marieville is to be rebuilt in this town.

KELOWNA, B.C.—The sanction of the ratepayers has been obtained on by-laws to raise \$40,000 for water works and electric lighting plant.

NEW GLASGOW, N.S. The Standard Drain and Pipe Works, whose premises were recently destroyed by fire, have decided to rebuild at once.

STRATFORD, ONT.—A branch factory of a large Indiana concern will likely be erected opposite the Globe-Wernicke Co's building at a cost of \$15,000.

SMITH'S FALLS, ONT.—The high school authorities have decided to have plans prepared for a new building and are at present negotiating for a site.

OTTAWA, ONT.—The school board committee are considering a proposition to erect a new building at Bayswater for the accommodation of the separate school children.

AYLMER, ONT.—The Thames Valley Oil & Gas Company, have made a proposition to the town in connection with a proposed supply of natural gas for heating and lighting purposes.

LONDONDERRY, N.S.—It is rumored that plans have been prepared and a site selected for the erection of a car wheel factory, the building of which will be put in hand next spring.

HAMILTON, ONT.—Tenders are invited by S. H. Kent City Clerk, up to November 7th, for \$120,000 four per cent 30 year debentures and \$30,000 four per cent 20 year debentures.

STRATHROY, ONT.—Fred Gelinas, Secretary, Department of Public Works, Ottawa, wants tenders up to November 5th, for the erection of an armory in this town. Specifications at local post office and at the department.

ALBERNI, B.C.—It is reported that Arthur Hebden, of London, Eng., was recently looking over ground in this vicinity with a view to the erection of a \$500,000 smelter for the Southern Cross Mining & Smelting Company.

PETERBORO, ONT.—Recent building permits include—W. Taylor, brick veneer dwelling, Bethune street, \$1,800; Thos. J. Moore, brick veneer dwelling, George street, \$1,600; E. Manning, brick veneer dwelling, George street, \$2,000.

LACHINE, QUE.—The ratepayers have voted in favor of accepting the offer made by English capitalists to build locomotive works here at a cost of \$3,000,000.—We understand that negotiations are in progress for the opening up of a quarry close to the town.

CARMAN, MAN.—A. Malcolmson wants tenders up to November 8th for a 93 foot span Pratt truss steel bridge with concrete abutments, to be built across the Boyne river. Plans at Mr. Malcolmson's office and at the Department of Public Works, Winnipeg.

CALGARY, ALTA.—Hon. W. S. Cushing, Minister of Public Works, was recently looking over buildings in Brockville, Ont., with a view to embodying some of the features in the new Alberta hospital for the insane which it is proposed to erect some sixty miles south of Edmonton.

CAMPBELLTON, N.B.—Announcement is made by Thomas Malcolm, the prominent railway contractor, that arrangements have been made for the immediate construction of the contemplated inter-provincial bridge across the Restigouche River. The structure will be 3,330 ft. long and will cost in the neighborhood of \$600,000.

ST. PAUL DE JOLIETTE, QUE.—Fred Gelinas, Secretary, Department of Public works, Ottawa, wants tenders up to November 28th, for the construction of an ice pier in L'Assomption River. Specifications at office of J. L. Michaud, Resident Engineer, Merchant's Bank Bldg., Montreal, of the local postmaster and at the department.

HULL, QUE.—The Gatineau bridge has been leased to J. Cousineau at \$1.00 a year rental, the principal condition being that \$1,500 be spent on repairs to the structure before it is opened to the public.—It is reported that the council have come to an agreement with the Canadian Industrial Development Company, which will mean another new industry for the city.

WEYBURN, SASK.—The Municipal Council are vigorously pushing preliminary work for the contract of a reservoir pump station and stand pipe at a point three and one-half miles out of the town and the surveyor's plans are almost completed. The consulting engineer will be here to pass on the project, and as

soon as it is endorsed, work will be pushed as rapidly as possible. 1908 will see a splendid system installed and an excellent supply of water. Tenders will be taken as soon as matters are definitely settled.

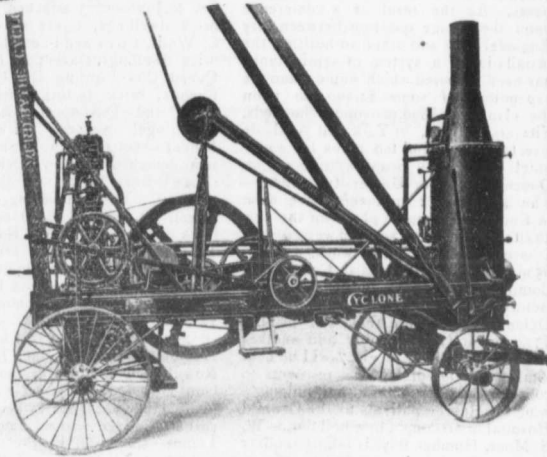
MONTREAL, QUE.—At a recent meeting of Council it was decided to take tenders shortly for the gas and electric light supply to the city, tenders to be received until December 1st and to be accompanied by an accepted check of \$50,000.—A new catholic school, to be known as the Salaberry school, is to be erected at the corner of Montcalm and Beaudry streets at a cost of \$120,000.—The Chamber of Commerce have submitted a report to the government urging the speedy construction of a dry dock. A special statute was passed in 1898 granting \$750,000 for this purpose but nothing was effected beyond a few preliminaries.—Desjardins & Co., have purchased a large property on St. Denis and Dorchester streets at a cost of \$46,000. It is their intention to erect a large factory and store next spring.—A movement has been started by the Montreal Congregational Council with a view to raising \$50,000 for church extension. A site for a new building has already been selected by the Point St. Charles committee.

VANCOUVER, B.C.—The increasing demands made upon the General Hospital necessitate the building of a large new wing and the directors are now devising means of raising the required sum of \$75,000.—Arrangements have nearly been completed for building the Second Narrows bridge, and it is expected that tenders will shortly be taken. Work will begin in the spring.—The Eastern Townships Bank are contemplating the erection of a new building in this city and also the establishment of branches at Fernie and Keremeos.—Coleman-Spencer & Co. are contemplating the erection of a saw mill and logging railroads at Emily Lagoon, at a cost of \$500,000.—Recent building permits include: Longhead & Evans, frame dwelling, Lansdowne, \$2,800; G. E. Williamson, frame office, Richard street, \$1,700; G. L. Grindler, frame dwelling, Eighth street, \$1,500; M. Wilkinson, repairs Palace stable, Seaton street, \$1,500; M. Wilkinson, brick stable, Pender street, \$4,500; Bauer & Roberts, frame dwelling, Seventh avenue, \$1,300; D. A. Acorn, frame dwelling, Charles street, \$2,500; Hudson's Bay Stores, alterations, Georgia street, \$6,500; Sam Sing, frame store, Harris street, \$2,000; J. J. Hanna, frame cottage, Westminster avenue, \$1,250; J. E. Wright, frame dwelling, Tenth avenue, \$3,600; O. H. Bush, rough cast dwelling, Granville street, \$1,500; J. C. Christian, excavate basement, Pender street, \$1,100; J. Johnston, frame dwelling, Cornwall street, \$3,500; J. H. Botholomew, frame dwelling, Seventh avenue, \$2,300; J. A. Chisholm, frame dwelling, Bismarck street, \$1,800; Thos. Viner, frame dwelling, Napier street, \$2,550.

WINNIPEG, MAN.—The power committee have asked the Board of control to take tenders for 500 tons of rails for the tram line to point du Bois.—Recent building permits include: A. Simons, residence Nassau street, \$3,000; J. Robertson, alterations to stable, James and King streets, \$5,000; W. Porcher, frame dwelling, Tweed and Stadacona, \$1,000.—There is a movement among the local authorities towards taking tenders in the near future for an incinerator plant, which it is urged that the city will require next summer.—In connection with the power development at Point du Bois, a bridge will likely be built across the Pinawa channel, at the street railway plant at Lac du Bonnet, and tenders taken shortly for its construc-

DRILLS

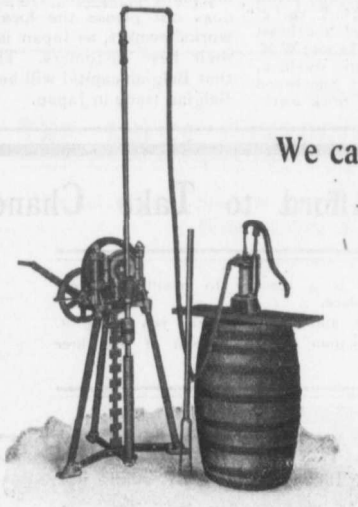
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MONTREAL

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tion.—The Secretary of the Board of Control, M. Peterson, is taking tenders this week for the erection of a pump house at Elmwood; also for supply of a large quantity of rails for Point du Bois development.

TORONTO, ONT.—It is reported that a new site has been selected for the Woodbine race track and that the present grounds will be cut up for building purposes.—As the result of a conference upon the sewage question between City Engineer Rust and other authorities, the installation of a system of septic tanks has been proposed which would mean the expenditure of some \$2,500,000 upon the plant and \$80,000 upon the beds. Fitzgerald Bros., of York and Adelaide streets, have submitted plans for a new hotel which they propose to erect on Queen street, near University avenue.—The government engineers have been instructed to prepare plans for the new 400 ft. channel to the south of western gap. It is estimated that the work will cost \$50,000.—The Standard Contracting Company, Ltd., have purchased a new factory building corner St. J. and Defoe streets, where they will install a \$33,000 plant and possibly add another two stories.—On October 27 will be held a mass meeting of Hebrew residents to consider the question of either building a wing for Hebrew patients to the General Hospital or erecting a new building.—W. S. Moss, Humber Bay, is taking tenders this week for the erection of a two roomed brick school building near Lambton. Plans at offices of Herbert G. Paul, Architect, 395 College street.—Recent building permits include:—R. P. Powell, pair 2 storey and attic semi-detached brick dwellings, Bloor street and Manning avenue, \$8,000; R. C. Vaughan, pair 2-storey and attic semi-detached brick dwellings, St. George street, \$6,000; R. C. Vaughan, pair 2 storey and attic semi-detached dwelling, Madison avenue, \$6,000; W. Mormann, 2-storey brick dwelling, Ridout street, \$5,000; Imperial

Bank, 2-storey brick bank building, King and Sherbourne streets \$22,000; R. E. M. Donagh, 2½-storey brick dwelling, Concord avenue, \$2,800; J. Dudgeon, 2½ storey brick storage, Queen and Cameron streets, \$2,000; T. Luchioni, 2-storey brick dwelling, Lansdowne avenue, \$2,500; F. R. Perkins, 3 attached 2-storey roughcast dwellings, Bartlett avenue, \$4,000; M. K. K. & Johnson, 3 attached, 2½ storey brick dwellings, Grace street, \$9,000; C. Willis, 1 pair semi-detached 2 storey brick dwellings, Davenport road \$6,000; Queen City Printing Ink Company of Canada, brick factory, corner B-shop street and Davenport road, \$8,000; C. Pringel, 2-storey brick dwelling, Ridout street, 4,000; J. S. Sharpe, 1 pair semi-detached 2 storey brick dwellings, Grace street, \$5,600; A. G. Saunders, 2-storey brick dwelling, Havelock Street, \$3,500; A. B. Diner, 2-storey brick dwelling, Yarmouth Road, \$2,500; Thomas Kell, 1 pair semi-detached roughcast dwellings, Lewis street, \$2,000; Henry Berch 3-storey hotel, north-east corner Queen & Parliament streets, \$23,000; H. Huison, 1 pair semi-detached 2-storey and attic brick dwellings, Humbolt avenue, \$6,000; The Toronto Rowing Club Limited, alterations to club house, King street east, \$7,000; W. C. Huison, 2½ storey brick dwelling, corner College street and Montrose avenue, 5,000; C. E. Proctor, 2-storey and attic brick dwelling, Markham street \$3,500; Samuel Grier, 3 detached 1-storey roughcast dwellings, Jones avenue, \$1,000; Salvation Army, addition, Broadview avenue, \$3,000; T. G. B. G. H. 2½ storey brick dwelling, Admiral road, \$6,500; S. Peat, 2 storey roughcast store and dwelling, corner Jones and Baird avenues, \$1,000; F. P. Solomon, pair 2-storey brick veneered and roughcast dwellings, Russell avenue, \$2,200; W. H. Wehley, 2-storey and attic dwelling, Verdere avenue, \$5,000; Smallwood Bros., 9 attached 2 storey brick dwell-

ings, Brock avenue, \$8,100.—A proposition is under the consideration of the Musical Protective Association for the erection of Headquarters on their property at Simcoe street.—The Watson Smith Mfg. Company have bought Logie Bros. planing mills at Howland avenue where they will make extensive alterations and additions.—H. F. McNaughton, Secretary, Public Works Department, gives notice that the time for receiving tenders for the heating, plumbing etc., at the new Normal schools has been extended to November 4.—Tenders are invited by Fred Genias, Secretary, Department of Public Works, Ottawa, up to November 5th, for alterations to the post office building; specifications at office of Thomas A. Hastings, Custom House, and at the department.—The city engineer has recommended pavement construction on Seaton Square, Franklin ave. and Empress Crescent, at a cost of \$13,635.—It is proposed to erect a large smelter and establish other industries on a tract of land at Ashbridge's Bay, for which M. Kenz e & Mann are now negotiating with the city.

RAPID CITY, MAN.—Tenders will be received by W. C. Kent, Secretary Treasurer, up to November 1st, for \$2,700, five per cent 20 year debentures.

GREENFIELD, ONT.—William M. Donnelly is taking tenders this week for the construction of a stone foundation under Baitie's Corners cheese factory.

The "Companie Internationale d'Orient" and two important banking firms of Charleroi, France, will establish a large glass manufacturing plant in Japan. The enterprise does not please the local glassworks' owners, as Japan is one of their best customers. They say that Belgian capital will help to kill Belgian trade in Japan.



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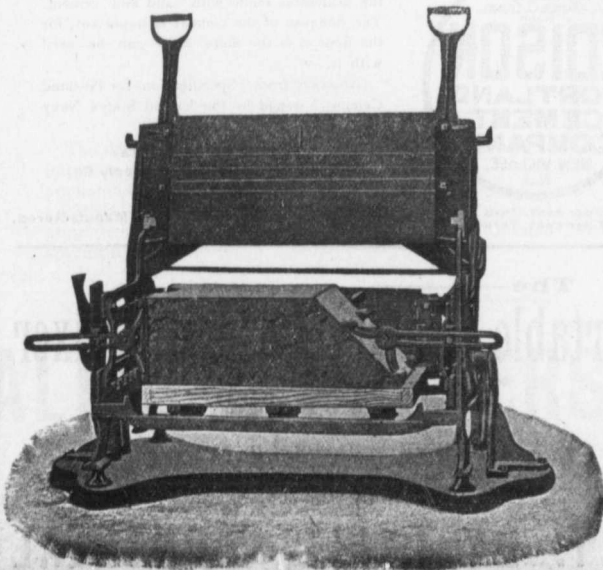
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Let us tell you how the "Miles" will pay for itself over any other machine in three months' operation.

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Niagara Falls, - Can.

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T. A. CHADBURN, 242 St. James Street,
MONTREAL.

CONTRACTS AWARDED.

LISTOWEL, ONT.—The contract for the Elma street bridge has been placed with Fraser & Eickler.

PARRY SOUND, ONT.—Pratt & McDougall, of Midland, Ont., were the successful tenderers for the new dock at the gas plant.

QUEBEC, QUE.—The contract for the new water works system at Notre Dame has been awarded to Madden & Son, at \$94,000.

WELLAND, ONT.—The Page-Hershey Pipe & Tube Company have awarded the contract for a large mill to the Berlin Construction Company.

MEDICINE HAT, ALTA.—Arthur Burns, of this city, has obtained the contract for the new armory, at about \$160,000—The successful tenderer for the erection of quarters for married non-commissioned officers and men, was J. McDiarmid, at \$40,000.

OTTAWA, ONT.—The Thornton-Smith Company, of Toronto, were the successful tenderers for the work of carrying out the extensive decorations to the Russell House. —The Iroquois Iron Works, at \$14,800, were the successful competitors for the municipal asphalt plant. The Warren Asphalt Paving Company of Boston, also tendered at \$17,200.

WINNIPEG, MAN.—The city engineer has secured the contract for building the Elmwood fire tanks, at \$2,700—Tenders for local improvements, estimated to cost nearly \$100,000, were recently called for, but none were submitted and the Board of Control have recommended that the work be done by day labor.—The Board of Control have closed the contract with Kelly Bros., of Kenora, for the construction of the Redwood bridge.

PETERBORO, ONT.—J. E. Hayes has been awarded the contract for the concrete abutments of the new steel bridge over the Ouse River, Asphodel township, at \$1,104.50. Other tenderers were Bogue & Buchanan, \$1,515.00; D. Conroy, \$1,400.00; D. McFarlane, \$1,400.00; J. Baskin, \$1,250.00; J. Robson, \$1,300.00. Dixon Bros., of Campbellford, obtained the contract for the steel work at \$1475.00, other tenderers being Ontario Bridge Co., \$1,855, and Hamilton Bridge Co., \$1,770.

TORONTO, ONT.—In connection with the new Bank of Hamilton, corner College street and Ossington avenue, Denison & Co., architects, 18-20 King street west, have awarded the following contracts: masonry, Thomson Bros., \$11,085; carpentry, A. B. Coleman, \$7,000; painting, Gould & Malcolm, \$720; plastering, Dancy Bros., \$1,500; plumbing & drainage, Keith & Fitzsimmons, \$1,150; Steel work, Reid & Brown, \$644; sheet metal, R. Ormsby, \$1,410; office fittings, Rogers & Son, \$1,500; marble work, Jas. Roberts & Co., \$265.

FIRES.

Building of Rhodes' steel block, Amherst, N.S., loss \$25,000.—Buildings of Fawcett Manufacturing Company, Sackville, N.B., loss \$3,000.—Premises of Dawson & Hyndman, Henderson & Bullen, P. Burns, Bijou Theatre and post office building at Edmonton, Alta.

RUBBING INTERIOR VARNISH WORK.

When the architect specifies that the hard wood finish shall be rubbed to an egg shell gloss he means that it is to be rubbed with oil and flour pumice stone until the natural luster of the varnish has been removed. Why is the operation not thus definitely stated by the architect? What is the difference between an egg-shell gloss, and a

dead finish. None whatever. In very cheap jobs there will be no rubbing to a dull finish at all, but a flattening varnish, so called, will be used; this varnish is made to dry without gloss. It is no more than it pretends to be, a cheap finish.

Simple as the operation of rubbing a varnish seems to be, it is one that requires extreme care and skill in the doing. The expert will use oil with the pumice stone, but the man who is not an expert had better not use oil, for the reason that unless the varnish is hard-dry, and which it never is, at least not on new work, he will rub up the varnish, the oil softening the varnish and causing it to give way in small spots; the water rubbing is the safest for him, for instead of softening the varnish it really tends to harden it. The operation is substantially as follows: Have a shallow dish of fine flour pumice stone, using the best, for there is an American variety that will scratch and is not good for fine work. It is usual to mix some water with the pumice, in the dish, but it may also be used dry, soaking the piece of felt in water, then dipping into the dry powder. Rub lengthwise of the wood, and with an even and not hard pressure, be very careful to not rub too hard at the edges, where it is liable to cut through.

Start at one side of a panel, say, and gradually rub over to the opposite side, rubbing no more in one place than in another. Once in a while you will need to dip the felt in the pumice, and be careful to not let the rubber become dry. Use plenty of water and pumice,

which is not costly. After rubbing a while clean off with a wet rag and examine the surface; a little practice will determine when the varnish has been rubbed enough. Be careful to not rub too much, as this decreases the coating of varnish, impairing the wear; rub only enough to remove the gloss from the varnish. After having rubbed enough and cleaned off the surface with plenty of clear water, using sponge and chamois, a semi-gloss may be restored, if desired, by rubbing with a little crude petroleum oil, or with linseed oil, though the rock oil is the better. Rub this dry and you have a fine egg-shell gloss.—Journal of Modern Construction.

NOTES.

The lumber firm of Barry Bros., Pictou, N.S., have dissolved.

G. Marcotte, contractor, of Montreal, has assigned; creditors meet October 24.

The assets of Thomas C. Lidstone, the Montreal builder, whose assignment was recently reported, are to be sold on the 28th inst.

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(Abstract from "Specifications for Portland Cement," issued by the United States Navy Department, June 12, 1905.)

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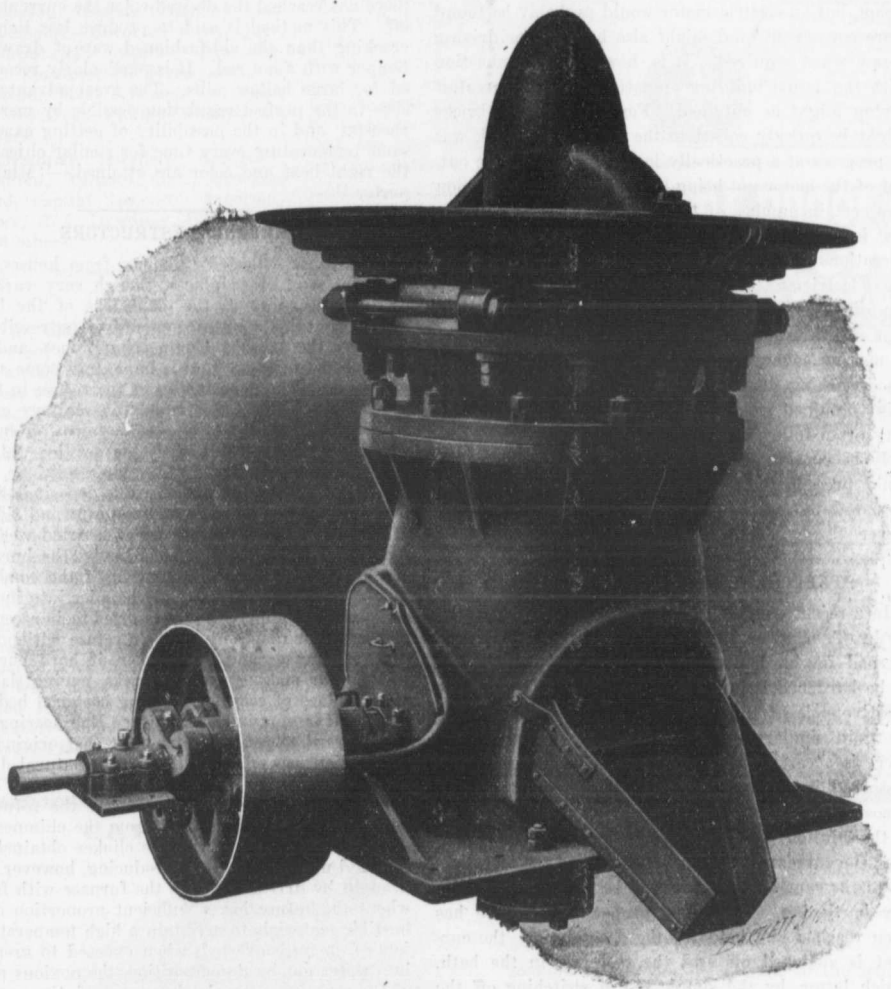
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ELECTRIC POWER IN BUILDING.

There still remain many possible fields for electrical power practically untouched. One of these is in connection with the erection of new buildings. Where mechanical power is required—for example, in working mortar mills, etc.—recourse is usually had to steam, but an electric motor would probably be found more convenient, and might also be used for driving a saw when required. It is, however, in connection with the actual building operations that the greatest saving might be obtained. For example, the bricks might be quickly raised to the level where work was in progress at a practically insignificant cost, the output of the motor not being limited by any trade union to a certain number of bricks per day. Probably the best instance of the use of electric power in building operations is recorded in a recent issue of the "Western Electrician." In the case referred to over 1,500 h.p. of electric motors is being employed in the erection of a large building in Chicago. Motors are used in making concrete, and for derricks, belt conveyors, wood-working machinery, etc., the necessary current being obtained from the street mains. Electric mains very often follow new buildings, but there would possibly be considerable benefit to all concerned if they could precede them, provided the builders could be educated to see the advantages of cheap adaptable power.

STEEL HARDENING BY ELECTRICITY.

In a recent issue of *Le Genie Civil*, there is described by T. Garnier a comparatively new and simple method for hardening steel by electricity. The tool to be hardened is put in electric connection with the positive pole of the battery or other source of current; in similar connection with the negative pole, there is a cast iron tank full of carbonate of potash dissolved in water. The current is regulated by a rheostat. The tool is plunged to the desired depth in the solution, just as for hardening in the usual manner; the current is then switched on and the tool heated to the same degree as would be required in ordinary hardening. When the proper temperature has been reached and held for the desired time, the current is switched off and the tool left in the bath, which latter, by the simple act of switching off the current, is at once converted into a hardening bath.

Another method, which permits of hardening places on the surface of pieces, where the dipping process would not accomplish the desired object, is local heating with the electric arc. Here the tool or other article is laid on a copper block, and an ordinary arc carbon held in a safety holder; the electric connections with holder and block being made, the carbon pole is touched to the piece to be locally hardened. Of course the heating is both intense and local; the work piece is at once plunged into the ordinary bath, and when one

place is hardened the next may be heated, and so on. The electric current may also be used to draw the temper of a hollow object. Instead of using a red-hot iron rod to plunge in the bore, a cold rod is employed, which is used as a resistance in the circuit of a secondary current of about 2 volts tension. The temperature of the iron rod gradually rises, and when the work piece has reached the desired color the current is shut off. This method is said to produce less liability to cracking than the old-fashioned way of drawing the temper with a hot rod. It is particularly recommended for large hollow mills. The great advantage consists in the perfect regulation possible by means of a rheostat, and in the possibility of getting exactly the same temperature every time for similar objects, once the right heat and color are attained.—"Mining Reporter."

REFUSE DESTRUCTORS.

The refuse collected in towns from houses, shops, factories, and other places, though very variable in quality according to the conditions of the locality, always contains a certain amount of putrescible matter, says the *London Engineering Times*, and therefore when tipped on land is liable to become a source of disease. The deposit also of the refuse in the sea, though much less objectionable on sanitary grounds, can only be resorted to by seaside towns, or by towns conveniently connected with the sea by water carriage; and except under favorable conditions, accompanied by special precautions, this deposit is liable to be brought on to the shores by storms and tidal currents, and to create shoals, unless carried well out to sea and in deep water. Accordingly, the burning of the refuse in furnaces to get rid of the combustible portions, and to convert the remainder into innocuous clinker has been increasingly resorted to in recent years by towns for disposing of their refuse without creating a nuisance; and the clinker, if hard enough, is utilized for making mortar, bricks, paving slabs, and also in place of coke for forming bacterial beds. Mr. Vernon Harcourt, in his "Sanitary Engineering," says, with regard to refuse destructors, that originally the combustion was effected slowly with natural draught, at a temperature which was inadequate to destroy thoroughly the offensive portions of the refuse; and noxious fumes were emitted from the chimney, occasioning a nuisance; whilst the clinker obtainable was soft and unsaleable. By introducing, however, forced draught by driving air into the furnace with fans, or, where the refuse has a sufficient proportion of combustible materials to maintain a high temperature, by jets of steam converted, when exposed to great heat, into water gas by decomposition, the noxious portions of the refuse are completely consumed, the gases passing up the chimney are inoffensive, and a hard vitrified clinker is produced, with a temperature that can be maintained at 1,600 degrees F., and may rise to over 2,000 degrees F. Town refuse has been roughly estimated to consist, on the average, of one-third of combustible matter by weight, one-third of moisture, and one-third of incombustible matter converted into clinker; and though its actual composition varies considerably in different towns, there is generally a sufficient proportion of cinders in the refuse to enable its combustion to be effected at a high temperature without the addition of fuel for the purpose.



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Boston Abestos Company, Limited, Sacre—Coeur de Jesus, Que., incorporated, capital \$300,000. Incorporators, A. Normandin, of Boston, Mass., Joseph Loranger, of Montreal, Philippe Bolduc and others.

Dewdney Jewellery Company, Limited, Toronto, Ont., incorporated, capital \$40,000. Incorporators, A. I. Dewdney, E. J. Elliot and others.

NOTES.

The Canadian Rand Company, Limited, of Montreal, have opened up a Show room at 11 St. Nicholas street where they display a complete line of Air Compressors, Rock Drills and Imperial Pneumatic Tools. A small stock of repair parts will also be carried in stock for convenience of local customers. This is the only place in Montreal where such a stock is displayed and it should add an impetus to the already immense sale of Rand Mining machinery.

A remarkably interesting engineering operation has lately been in progress in Brooklyn, New York. A large brick theatre building, having walls ninety feet high, has been lifted from its foundation, turned squarely round, and moved three hundred feet to a new site. To turn

it, the exact centre of the floor was ascertained, and with this as a hub a series of small steel rollers were laid on a prepared platform, and then the building resting on steel beams, was allowed to settle down on the rollers. With jack-screws on two diagonally opposite corners pushing in opposite directions, the structure was then turned as if on a pivot. The moving of brick buildings is common but this is said to be the largest and heaviest structure that has ever been put bodily on new foundations.

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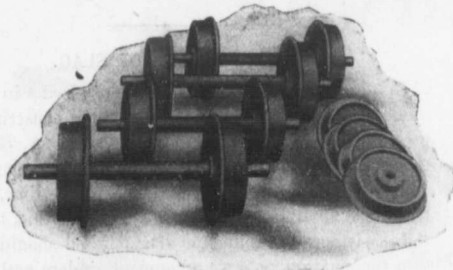
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A NEW HYDRAULIC DREDGE.

A large and powerful machine, in the shape of a new hydraulic dredge, has just been built to the order of the Commissioners of Lincoln Park, Chicago, for work in connection with an extension to the park. The plan is to reclaim from Lake Michigan an area approximately 1,500 feet wide by about a mile long by enclosing it with a stone revetment or breakwater and filling in behind it with material taken from the bed of the lake. For much of the distance the breakwater lies in 18 feet of water and the total volume of fill is about 4,000,000 cubic yards. The breakwater is now partly completed and is made of stone from the spoil-banks of the Chicago drainage canal. A fleet of large scows with several powerful tugs are employed to bring the stone from the canal by way of the Chicago river out into the lake and so to the site of the work.

The conditions surrounding the dredging and filling of this work were difficult and peculiar. Not only was the locality in deep water and exposed to the storms of Lake Michigan, which often rise with suddenness and severity, but the soil to be dredged consisted of the tough blue clay which underlies the Chicago area, compacted by the storms of the lake and mixed with more or less gravel and stones.

The ordinary hydraulic dredge as used on the lakes would therefore be unsuitable, first, because of unseaworthiness, and secondly, because it could only deal effectively with soft material. The usual floating pipe line connected by rubber sleeves and mounted on a number of small scows or floats, would be put out of business with every windstorm, or irretrievably wrecked.

The superior economy of the hydraulic process of dredging and filling, if it could be successfully applied, led Mr. Francis T. Simmons, president, and Mr. R. H. Warder, secretary, to pursue the subject further to see if these difficulties could be overcome, and they therefore commissioned Engineer Robinson to examine and report on the ground, and if possible to design a dredge that could cope with the difficult conditions presented. Mr. Robinson had previously designed and built several large hydraulic dredges, notably the "Tarte," which is employed in dredging clay from the bed of Lake St. Peter in the River St. Lawrence, and which is provided with a special pipe line for withstanding heavy storms. This dredge is of great power and holds the world's record for output, having dredged 750,000 cubic yards in a calendar month and delivered 2,000 feet. The original pipe line of this dredge is still in use after having withstood the storms of five years.

It was, of course, realized that Lake Michigan in its angry moods would be too rough to attempt continuous dredging operations, and that the most that could be done would be to provide a plant of large capacity so that the required output could be made after making allowances for weather interruptions, and also seaworthy enough to increase the working time to the largest possible amount. It should also be designed for safe and rapid picking up of anchorages and pipes line in case of storm and be able to safely withstand any stress of weather when not working.

To meet these conditions Mr. Robinson designed

the dredge now on the work, which was built by the Atlantic Equipment Company, of New York, and put into service in June, 1907.

The hull is of steel, 148 feet long, 38 feet wide, by 10 feet 6 inches deep. The main pump has 30 inch suction and discharge, and the main engines are of the triple expansion marine type of 1,200 indicated horse-power. There are two double-ended marine boilers 11 feet 6 inches in diameter by 18 feet long, with eight corrugated furnaces. The installation of engine room auxiliaries, such as condensing apparatus, pumps, electric light, is most complete and well arranged, the engine room space in fact resembling a small ocean liner.

On the upper deck is a pilot house with large plate glass windows, where are arranged all the levers which control the operation of the dredge. Here are also pressure and vacuum gauges for all purposes, indicating exactly the work that is being done.

The suction pipe is carried by a very strong steel frame, and is fitted with a powerful cutter for digging the clay. This cutter is an improved development of a number of earlier machines and has demonstrated its efficiency by being able to handle the heaviest clay up to the full capacity of the pump. It is 9 feet diameter, and weighs about 9 tons, being formed of eight steel blades of peculiar curvature cast in one piece, and having renewable hard steel cutting edges attached. The mechanism for driving and feeding this cutter is of the most powerful description. The secret of success of this dredge is that the excavation of the stiff clay is done by an efficient cutting tool that will not clog and provided with a powerful feed, the main pump being only employed for transportation of the spoil. A capacity rate of 3,000 cubic yards per hour has frequently been reached in clay, the entire under side of the discharge appearing as continuous slices of blue clay, some of the pieces being from four to five feet long.

BUILDING BLOCKS OF SLAG.

In describing various compositions used in the neighborhood of Havre, France, for the construction of the cheaper class of buildings, Consul A. Gaulin mentions one resembling concrete which is composed chiefly of a mixture of slag, cement and lime, slag being the chief ingredient. It is claimed that to obtain satisfactory results the slag selected should contain the smallest possible amount of cinders and coal. It should first be crushed or sifted and then mixed with the cement and lime. Water is added to complete the mixture, which is afterward placed in special moulds and subjected to heavy pressure. Blocks of various sizes are made out of these moulds, the largest being about 8 inches high, 20 inches long and 10 inches wide, and the most common size measuring 2 1-4 inches high, 9 inches long and 4 1-4 inches wide. The slag from which the smaller blocks are made is crushed much finer than that which forms the large blocks. While this material is not used extensively in the cities, its use is becoming general in the rural districts, as it is quite durable and unquestionably the cheapest building composition to be found in this region.

HOW TO AVOID SMOKE.

The smoke nuisance in the cities is an entirely unnecessary evil, according to Prof. L. P. Breckenridge, director of the engineering experimental station of the University of Illinois and in charge of the steam engineering division of the United States Geological Survey, Washington. Large saving in the coal bills is also a result. The solution, so simple that it can be adopted without much expense by manufacturing plants, only calls for proper combustion. All that is necessary is to have the grate arranged so that the flame from the coal does not touch the bottom of the boiler. This plan produces proper combustion, and the way to do it is to learn the length of the flame and lower the grate to the proper point.

For two years Professor Breckenridge has been operating the heating plant of the University of Illinois without making any smoke. It is a 2,000 horse-power plant, and there was an actual saving of \$5,000 annually. "For three days," said Professor Breckenridge, "we tried to make smoke, but the people standing 1,000 feet from our plant declared it was not in operation, as no smoke appeared. Light a candle and it will burn without smoke. Place a saucer into the flame and there will be plenty of smoke. So it is with the fire under the boiler. Keep the flame from touching the boiler and you have a smokeless condition. Smokeless conditions cannot come, however, so long as there is hand firing. Mechanical stokers must do the work if there is to be perfect combustion."

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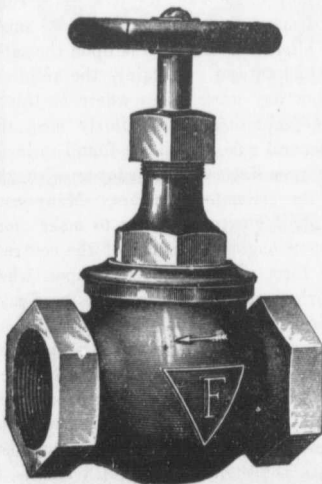
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THE LIABILITIES OF CONTRACTORS

It is one of the commonplaces of commerce that a builder's business is financially one of the most risky that exists. Recognition of this fact comes from the periodically published lists of bankruptcies, in which, however, there is no discrimination between the builder who speculates on his own account and he who acts solely as a jobbing man, and a contractor working under architect's directions. If discrimination into these three classes were practicable, it would probably be found that by far the greater majority of failures take place amongst the speculators, who, more often than not, are small men of limited capital, and sometimes none at all, who are little more than the catspaws of financiers. They are in many instances to be pitied rather than blamed for what eventually happens; but their failures, which are extremely numerous, being classed in the lists with those of other builders who work on different lines, give in the bulk a distinctly wrong impression. There are, in fact, few sounder businesses, from a financial point of view than that of the jobbing builder with a well-established connection, who does repairing work and odd jobs, with occasional small alterations and additions to private premises; preparing his own designs when such are needed, and presenting a bill upon completion without previous arrangement, or, at the worst, submitting an estimate in advance which need not be cut fine through fear of competition. He is under no supervision; but, as a general rule, he finds it to his benefit to produce honest work, and to use sound material. He is well, or, at least, fairly well paid, and year by year there is comparatively little variation in his income. Men of this type, honest and straightforward tradesmen, rarely fail, if they as rarely make fortunes. At any rate, their risks are small.

The contractor stands upon a different footing entirely. Sometimes in a small town he is of necessity a jobbing builder also; but in the larger places he is distinct. Generally speaking, he is a man of capital who deliberately takes great risks, being perfectly prepared to lose heavily here and there, while with keen business acumen he so arranges things that on the whole he stands to make much money. He has, however, a great deal to contend with, and the possibilities of loss are only to be overbalanced by the possibilities of gain in the hands of a thoroughly capable business man. To begin with, almost all his work is obtained upon a competitive basis. We all know the procedure perfectly well. Plans for a house are prepared, quantities are got out, and these have to be priced item by item, keeping in mind the two prominent facts that it is necessary to make a profit and at the same time to produce an estimate which is less than that of any of the other contractors who have been invited to tender; for it is the lowest tender that is almost invariably accepted. As a general rule variation in the tenders is but slight, so thoroughly is the science of estimating now understood; but it may very well happen that a clerical error will place a builder at the bottom of a list and secure him work at what to him is an unremunerative rate. It must always be borne in mind that no two contrac-

tors are quite similarly situated. The possession of suitable plant for a particular class of work or not may make all the difference in the price at which it can be remuneratively done, and it may happen by an undiscerned mistake such as we have just referred to that the builder who is least in position to carry out a particular building at a profit is the one who is called upon to do it. It sometimes occurs, too, that a contractor possessed of large capital, and having many workmen in his employ, finds that times are slack, and is willing to undertake a few small contracts at an unremunerative price, or even at a loss, in order to keep his plant in use and his men employed; for he knows well that if he once dismisses trusted workmen it may be a long while before he can replace them by others as good when the need arises. A single such contractor, competing with the knowledge of others, will lower the estimate price of all; for there are not many who can afford to throw work away. Under such circumstances, all the estimates are cut extremely fine, no margin being left for the many possibilities of loss which are still to be reckoned with during the progress of the work. How serious and how many these are is patent to all who consider the clauses of the R. I. B. A. conditions of contract, which are now invariably used. To begin with, these call upon the contractor to furnish the architect with a verified copy of the original estimate for the purpose of valuing variations and omissions as such occur. There is just a chance that there may be deliberate inaccuracies in this copy, the details being rated on a higher scale than the total warrants; but as this amounts to fraud, it is extremely rarely done. The contractor, as a rule, though a strictly business man who looks after his own interest, is also a strictly honest one, in spite of what is frequently said to the contrary by those who do not know. He probably runs more risks of loss by submitting this detailed estimate than in any other way, for it is, as a rule, unreasonable to demand that he should execute small and troublesome alterations and extras upon the same basis as his general contract. Certainly the architect has power to allow day work prices where he thinks measurement and valuation do not fairly meet the case; but, as a general rule, he will be found to insist upon the latter procedure, in accordance with the schedule which the estimate furnishes. Many contractors are greedy for extras, hoping to make more out of them proportionately than out of the contract itself; but they form a double-edged weapon when they are to be priced at the estimate rates, and may cut greatly against, instead of in favor of, the contractor. Beyond and above this there is an even greater risk which every contractor has to face when he undertakes to do for a lump sum work which must extend over several months or years, and that is the possibility of a rise in the price of materials or labor, over which he has personally no control. This is, it may perhaps be said, a matter for judgment; but who, six weeks ago, for instance, would have foreseen the recent considerable advance in the price of coal? A building contractor at that date might very well have estimated a large amount of steelwork for delivery

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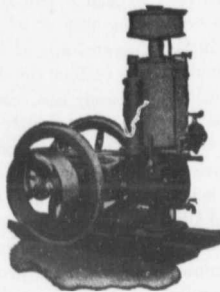
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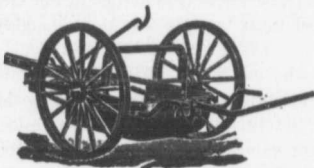
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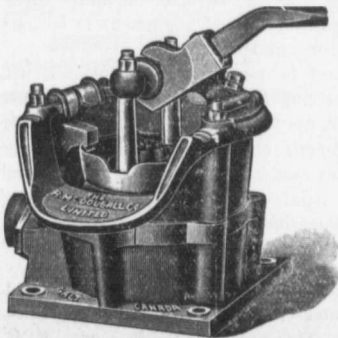
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six months hence at the then market price. But now there is every indication that the price of coal will affect the price of steel, and that a contractor who made such a mistake a few weeks since may be very badly hit when the time comes for him to pay for his steelwork. Of course, it might have been the other way round; and the man of capital reckons upon this, and, balancing one thing with the other, sees that all is right when the average is struck; but the risk is a constantly present one, and a run of such mistakes has occasionally caused the ruin of even well-reputed firms.

Another risk which has constantly to be faced is that of meeting with an architect who is unreasonable, either in his demands for excellency of work beyond that which can fairly be inferred from the contract, or in supplying details of a singularly intricate and costly nature which yet, though grumbled against, cannot be rejected or taken to arbitration. As, however, in every locality builders know the architects' peculiarities, just as the architects do those of the builders, this, on the whole, does not prove to be a very serious matter, a single experience being always sufficient, and an architect's reputation in this respect soon being passed round a neighborhood.

The clerk of works is, perhaps, a more unknown quantity than the architect, for he is not generally named in advance. Whether he will be extremely strict or somewhat lax is to be chanced, and the majority of contractors who do high class work expect absolute strictness rather than leniency upon his part. Other things which a contractor has to bear in mind are his legal liabilities, such as those comprised in various Compensation Acts, and his responsibility for defects, not only in the building which he is erecting, which may occur within a reasonable time of its completion, but for damage to neighboring property, and even to passers-by who may be injured accidentally by any of his workmen when in his employ. Some of these risks are of so constant and serious a nature that they are always covered by insurance, just as is the risk of fire; but others have to be faced. It is impossible to provide for them save by an average allowance for contingencies; but generally no such provision at all is made, and an unlooked-for accident has to be written off as a dead loss. The provision under most contracts for the infliction of a fine for non-completion by a certain date may generally be disregarded as a serious risk. It is certainly not an uncommon thing for completion to be delayed, but usually a sufficiently valid excuse is made to prevent the infliction of the fine, while in almost any case the amount is comparatively trifling. Where it is severe—an exceptional circumstance, such as a theatre, which must be opened at a definite time—it is a known risk against which it ought to be possible to provide.

Taking all these possibilities into account, it is not to be wondered at that the building contractor is exceedingly keen to see that he gets every pennyworth out of his men, and to obtain payment for every trifling thing which is in excess of the actual contract. He runs great risks of financial loss, and he can only balance such risks by so great a keenness for all possible profit as will give him a good chance of making a substantial profit if things go right.—London Building News.

PRIMING COATS FOR METALS.

Boiled oil is very little used as a priming coat for metals at the present time. Yet the number of people who still use it was sufficient to induce Mr. Cheeseman to read a paper on the subject before the American Society for Testing Materials.

It would appear that those who use boiled linseed oil invite corrosion by so doing. We know very little about the chemistry of linseed oils compared with our knowledge of some other oils used in the manufactures. This is probably because there is no recognized standard for the material, due to the changes which take place in the substance itself. In the paint trade the quality of the oil is tested by the amount of oxygen it will absorb. It has been observed that the same sample of linseed oil will absorb widely differing amounts of oxygen, even though the conditions at the various times were apparently identical. And yet it is our best medium for mixing up paint in spite of these apparently undesirable properties.

There have been cases where bridges, which have had a shop coat of linseed oil, have caused much trouble by rusting, and it has been suggested that it is better for the parts to be sent from the shop a little rusty, in which case there would doubtless be little trouble after proper cleaning and painting. The first coat of oil on the metal oxidizes on the surface, absorbs moisture and forms a skin. The portion underneath remains soft and is easily knocked off in transit. The following coats of paint are thereby caused to crack and peel off. The whole trouble lies in the fact that this coat of oil takes many weeks to thoroughly dry.

Most engineers who use boiled oil in this way are of the opinion that it percolates through the scale, dries and arrests the further progress of corrosion. But the experiences gained do not show that the oil bonds the scales together nor to the metal underneath, whilst it gives practically no protection against atmospheric corrosion by weather.

On the other hand the application of a coat of paint is quite as simple as that of a coat of oil, whilst it dries quickly and resists the weather and mechanical injury much better. The blistering of paints is directly traceable to this first coat of oil, because the oil in the subsequent coats of paint softens the underlying layer of oil, and should there be much oil in the earlier coats the trouble is very much aggravated. The time which can be allowed for drying, and whether the painting will be done in the open or under cover, largely influence the choice of a pigment to be used with linseed oil for a primary coat.

Other important factors are the treatment it will have before receiving the second coat, the distance through which it has to be transported, and whether the metal is properly cleaned before it receives the shop coat. In any case it is safe to use a good natural ore, iron oxide paint or a lead paint.—Decorators' and Painters' Magazine.

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THE FIRE PLAGUE.

The country has grown to the point where everything about it is big; its commerce, its products, yes, even its crimes are colossal. Presumably to keep things harmonic we permit our fire waste, our national ash heap, to also be mammoth, incidentally losing sight of the fact, however, that it is, at the same time, idiotic. Our burnt offerings, our national ash pile, could well be called a tribute to the "merciless stupidity of the most enlightened nation on earth"!

The strange thing about it all is that so much is said in the daily and periodic press about life insurance abuses, the piccadilloes or more serious offences of state and municipal grafters and all that sort of thing, indeed a wave of reform has made itself felt the country over, but so far little or nothing has been done to reform one of the greatest abuses, the costliest and most murderous of municipal ills from which we suffer—fire. True, millions are spent in actually fighting fire, but a minute's thought is sufficient to convince any one that an attempt at cure is futile. Preventive measures can be the only solution of the matter.

A normal year's losses (and, by the way, there are mighty few normal years, what with Baltimore in 1904 and San Francisco in 1906) mean \$200,000,000 in smoke. At least another \$150,000,000 is spent in alleged fire protection, fire departments, high pressure water plants, etc., beyond which we expend another \$196,000,000 in attempting to get some solace via the fire insurance route. The sum of those figures represents our annual normal cost of fire. In 1905 a phenomenally prosperous and busy year in building, we did in actual construction and repairs of buildings, \$525,000,000. What think you of a nation that wastes as much as it produces? We burn up more property than a half dozen first-class nations put together. Just fire, eliminating insurance, protection and everything else, merely smoke, costs us over \$2.00 per capita a year; the average of all Europe is less than \$0.33 per capita!

Incidentally we have destroyed over 6,000 human lives by fire in one year's time.

But all this is a normal year's record. See what we did in 1906. At no time or place on earth has there been so much building done. We passed the \$600,000,000 mark in construction that year, but what with San Francisco and our "regular fires," we also destroyed over \$500,000,000 worth of property! The cost of our alleged fire protection has also increased and we have gambled with the insurance companies in still heavier amounts than usual, so that our total expenditure for fire must be away in excess of \$700,000,000. It indeed is a cancer eating at the very vitals of our economic structure, a devastating plague. The apotheosis of folly!

Few people realize the degree in which gambling penetrates the business fabric. We see the work of the gambling bug but accept it as a matter of course. Rather than build a little better and thus avoid fire, we have built, to use a mild term, "rottenly," but have sought "protection" from the gentlemen who, banded together in that legitimate spoliation, under the name of fire insurance, have graciously condescended to sit in the game with us and rake in our shekles. We have paid them in premiums since 1860, \$3,622,000,000, or, just in the past ten years, \$1,610,

885,000. In 1905 we carried into the "house" over \$196,000,000 in premiums and got back in salvage for our losses a trifle over \$95,000,000. See how far that solace goes. Take San Francisco as an example; over \$300,000,000 went up in smoke there. The loss in business to the city and to the country generally as a result of that fire very nearly reached \$1,000,000,000; it is costing fully \$12,000,000 to clear away the debris and \$350,000,000, at least, and twenty years' time will be expended to repair the damage. Meanwhile the insurance companies have figured their losses and find that they owe San Francisco \$132,000,000. Surely it was a most unprofitable gamble for San Francisco.

Yet the insurance companies wrote a very low rate on San Francisco because, forsooth, of its excellent fire department. People gauged the requirements of construction thereby and built just as shoddily as insurance regulations would permit. They and the people of the country at large have virtually been seduced into combustible, shoddy construction of buildings under false pretences made by the non-prohibitive rates of the fire insurance companies.

Wood has been another curse of the country. It is almost a blessing in disguise that our forests are well-nigh devastated by our extravagant ruthlessness, because even to the most obtuse it must be evident that the use of wood is no longer economy. A building of steel frame and hollow fireproofing tile, or of structural reinforced concrete protected from fire by tile, costs but a fraction over ten per cent. more in first cost than does the usual frame of wood with wooden joists and studs. The life of such framing is infinitely longer than the old wood affair, the cost of maintenance is less, so is the insurance rate, and, all in all, in a very few years' time, good construction not only means safety, but an actual economy. The enclosing of stairways and elevator wells, the protection of windows and skylights with wired glass, the making of a building fireproof in design costs nothing more in money than the cheap fire traps, but is merely the expenditure of a little intelligence on the part of the architects.

Millions are spent yearly in handling this plague, but only hundreds are doled out in steps to prevent its outbreak.

Looked at fairly, says the American Architect, the leading architectural journal of the country, it is the community at large that is the culprit, since it "suffers" fires to take place, when it really has the power to prevent them. It looks calmly on at the expenditure of millions annually, millions that come out of its own pockets, for the maintenance of imperfectly effective fire departments, and yet, if but half of the money spent in this way had been used in the difference in cost between combustible and incombustible construction, the greater part of our cities would now be indestructible.

It has been the assumption that a real estate improver, as a sane business man, should be able to perceive how much it was to his own ultimate advantage to build an indestructible building. The true theory is that incombustible buildings must be built. It is really immaterial to the taxpayer whether an individual elects to let his building be destroyed by fire, but it is of very real interest to the public that the lives and property of other people shall not be jeopardized

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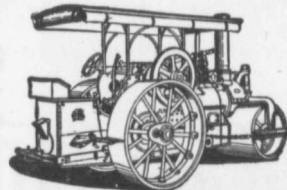
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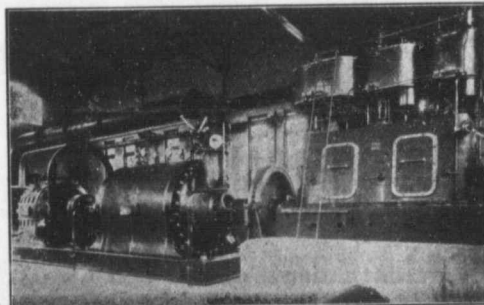
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and destroyed at the same time. It is desirable to substitute unburnable for burnable buildings with the shortest delay possible, since a conflagration may occur any day, and the process can be better accomplished by coaxing than by compulsion.

The one thing for our municipalities to do is to arrange the taxation of property in accordance with the latter's permanency and indestructibility. A fixed rate on ground values and a sliding rate on buildings, the minimum on fireproof buildings and the maximum on fire traps would be perfectly equitable to all. It would put the burden of paying for the maintenance of fire departments upon those who needed the service, and would mean a lessened load of tax on those who are public-spirited as well as business-like enough to build so as to not require such service. It is the one sane municipal solution of the problem, the one way of extracting ourselves from under the yoke of the insurance companies; the surest means of stopping the ravages of the Great Red Plague—Fire.

WIND PRESSURE.

Messrs. Stanton and Bairstow have recently made some experiments at the National Physical Laboratory, London, which bring out a new and practically very valuable fact, namely, that pressure is not the same on large surfaces as on small experimental models. If, for example, a given wind velocity is brought to bear on a square foot of surface it will be 18 per cent. less per square foot than if it were directed on 100 square feet of surface. It was demonstrated, too, that this relation is constant for flat forms, however complicated. A builder or engineer who knows that a structure may be exposed to a wind of eighty miles per hour and that the pressure per square foot as determined by model is, say, x pounds, should allow for his larger construction 20 per cent. extra. The reason for this seems to be the more thoroughly reduced pressure on the lee side of a larger area.

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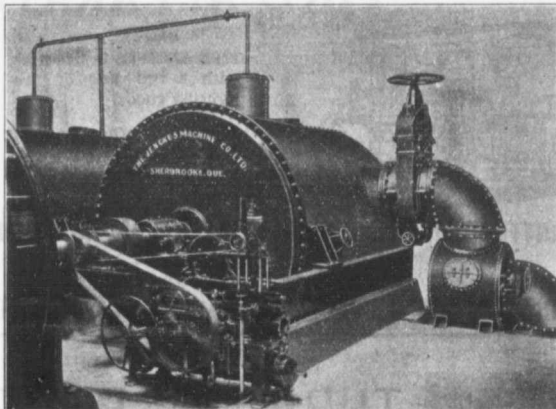
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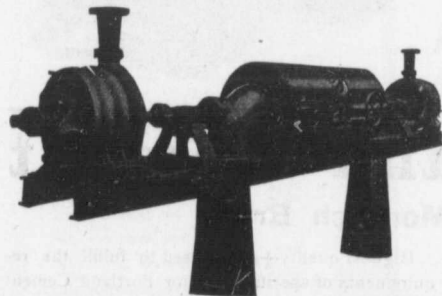
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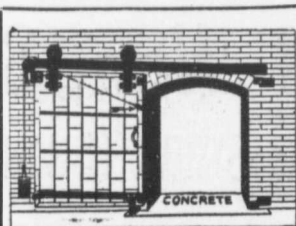
NOTES.

The City Electrician of Vancouver, Mr. McCrossan, has tendered his resignation, and applications for the position will shortly be invited.

We understand that all the power tenders submitted to date at Winnipeg are below the estimate of three and one quarter million dollars. The chairman of the civic power committee believes that the plant will be built at from \$2,750,000 to \$3,000,000.

By the discovery of a flow of natural gas at Wetaskiwin, Alta., the predictions of many citizens have been verified. Local optimists opine that this last development will go a long way towards making Wetaskiwin the foremost city of the West. Whether their ambitions will be realized or not, it is a certainty that the discovery will give a great impetus to trade in this locality.

F. W. Fitzpatrick, of the International Society of Building Inspectors thinks that the possibility of a large fire occurring amongst the "skyscrapers" of New York, resulting in their wholesale destruction, as recently forecast by the President of the Underwriters' Board, is a most remote contingency, and says that if a few more precautions are observed it will be altogether out of the question. After calling attention to the special construction of these buildings and shewing what poor prey a structure of steel frame and tile fireproofing would be for the flames, Mr. Fitzpatrick urges these alarmists to join forces with the engineers and architects in trying to eliminate all defects from the "sky-scraper," rather than try their utmost to bring it under general condemnation.



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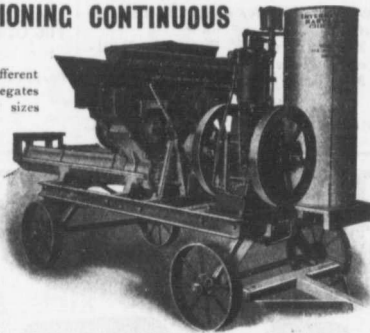
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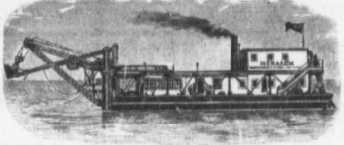
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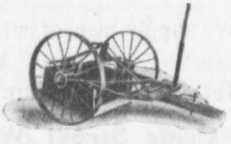
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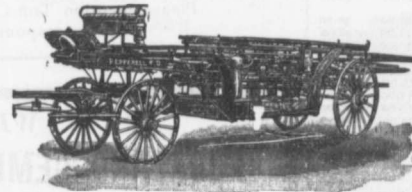
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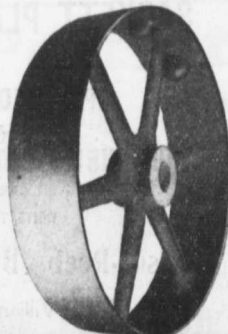
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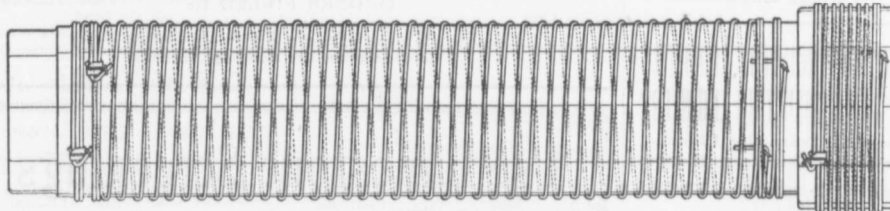
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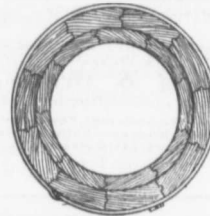
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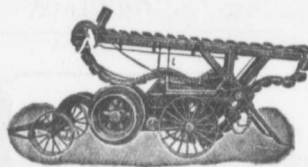
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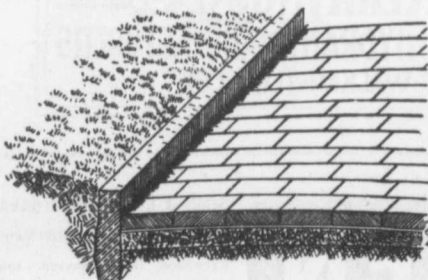
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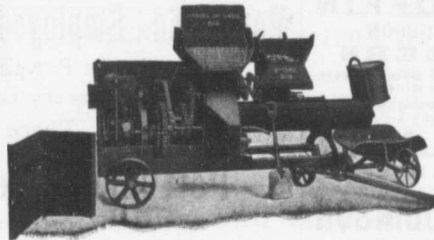
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45 BROADWAY, NEW YORK.

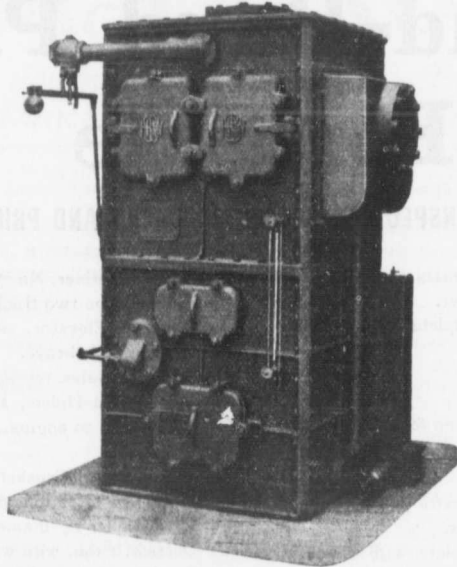
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Preference at Equal Prices and has
exceeded those severe require-
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70,000 bbls. City of Rochester Reservoir.

COCHRANE HEATERS

Utilize Waste Steam to Make Feed Water Hot



Save
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Are Cheap
To Operate
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THE GARTSHORE-THOMSON PIPE & FOUNDRY CO. LIMITED.

Manufacturers of

Flexible and Flange Pipe,
Special Castings and all kinds of
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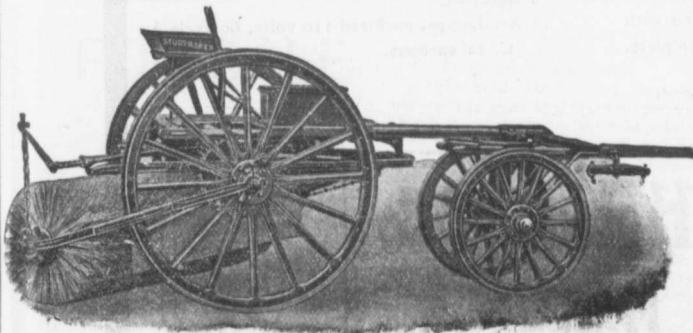
CAST IRON PIPE

3 inches to 60 inches diameter.

for Water, Gas, Culvert and Sewer



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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 . . .

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Stackpole
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Street Sweeping Machine

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of Perfection

Because no sweeper so effectually does the work for which it is designed as "The Studebaker." It sweeps Clean. No sweeper is constructed with the same degree of care and mechanical precision. It Wears Well. "The Studebaker" has the smallest number of working parts, and has less gearing than any other sweeper made. It is free from all unnecessary complications. With reasonable care it does not get out of order. Send for complete descriptive catalogue.

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Second-Hand Plant For Sale

SUBJECT TO INSPECTION BEFORE SHIPMENT AND PRIOR SALE

- 1 Ransome Mixer, No. 3, extra power, 9 x 9 engine, on skids no boiler.
- 1 Ransome Elevator, complete with winch bucket and sheave.
- 2 Ransome Gates.
- 2 Ransome Carts.
- 1 Hand Shear, No. 4 Watson & Stillman.
- 1 Chain Sling.
- 1 Rod Bender.
- 1 Ransome Mixer, No. 3, extra power, 9 x 9 engine on skids no boiler.
- 1 Ransome Elevator, complete with winch, bucket and sheave.
- 2 Ransome Gates.
- 1 Pair Stone Tongs.
- 30 Steel Barrows, No. 2 Columbus, steel tray and wheel.
- 1 Robertson Hoisting Engine 2 drums, 7 x 10 engine, with winch heads, on skids.
- 1 Rod Bender.
- 1 Hand shear, No. 4 Watson & Stillman.
- 1 Revolving Screen, 40" diameter x 16' long, complete, by Austin Mfg. Co.
- 1 Forge.
- 1 Tar Heater, cast iron pot.
- 2 Bolt Cutters, No. 5.
- 1 Bench Vise.
- 1 7½ H. P. Induction Motor for saw.
- 1 No. 8 Bolt Cutter and Threader complete with dies, Wells Bros.
- 1 No. 42 Push Car, roller bearings, Roberts Car & Wheel Co.
- 1 Ransome Mixer, No. 2, 8 x 8 engine with boiler, mounted on one truck, complete.
- 1 Ransome Mixer, No. 3, 8 x 8 engine, 36 x 96 boiler on two trucks complete.
- 1 Ransome Elevator, complete with winch, bucket and sheave.
- 4 Ransome Gates.
- 2 Lidgerwood Hoists, 2 drums, with winch heads, 7 x 10 engine, complete with boiler on skids.
- 1 No. 3, Austin Crusher, complete with elevator. 10 to 12 tons per hour.
- 1 Lawn Roller 24" diameter, C.I.
- 1 Derrick, 1 ton, with winch.
- 1 Derrick, ½ ton, with winch.
- 2 Sets Stone Hooks.
- 90 Steel Barrows, No. 2 Columbus, steel tray and wheel.
- 2 Holland Portable Lights, carbide, complete.
- 1 Bending Machine.
- 1 Hand Shear, No. 3 Hercules.
- 1 Steam Whistle.
- 1 Edison Pump, 3,500 gals per hour, 3" hose complete.
- 1 Bellows, Forge and Anvil.
- 2 Portable Forges.
- 2 1" Benders.
- 1 Tube Blower.
- 2 Rod Benders.
- 1 No. 4 Shear.
- 1 No. 8 Shear, capacity 1½ rd. iron, Watson & Stillman.
- 2 Bolt Cutters.
- 1 Parker Vise.
- 2 Injectors.
- 12 Arc Lamps, enclosed 110 volts, 60 cycle, A. C. 12" carbons.



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