

Toronto Engine Works

J. PERKINS CO.



Toronto,

OFFICE AND WORKS:
Princess and Front Streets.

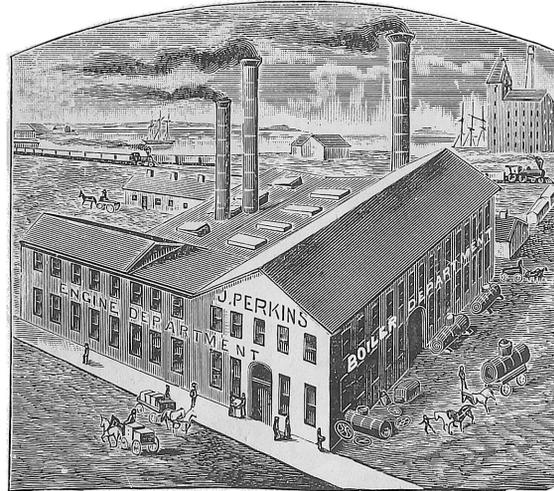
Canada.

CATALOGUE No. 2
HYDRANTS, TANKS AND VALVES

TORONTO ENGINE WORKS

J. PERKINS CO.

FIRE HYDRANTS
STOP AND CHECK VALVES
WATER TOWERS
VALVES FOR ALL PURPOSES



PORK PACKERS
AND
SOAP MANUFACTURERS
TANKS

OFFICE AND WORKS:
PRINCESS AND FRONT STREETS

TORONTO, CANADA.

ESTABLISHED 1871
TELEPHONE 779

THE BINGHAM PRINTING CO., TORONTO

Introduction.

 **I**N INTRODUCING to our numerous patrons a Catalogue devoted to Fire Hydrants, Valves, Water Towers, Tanks, etc., separate from our Engine Catalogue, we are trying to fill a long-felt want, realizing in the composition of such, that to publish all we manufacture, and all the information desired, would require a much larger book than we now present. Those not finding in this the required information, will confer a favor by writing us, giving full particulars of requirements. A prompt reply will be cheerfully given.

WE desire to call special attention to the Hydrants and Valves manufactured by us. Making as we do a greater variety for water-works purposes than any other manufacturers at present, our prices will always be found as low as the class of goods we make will warrant, but are not intended to compete against inferior articles of a much lighter build at lower prices.

OUR Hydrants, Valves, etc., wherever introduced are giving the Highest Satisfaction throughout Canada. All goods are thoroughly tested and inspected before leaving the works, carefully and promptly shipped, and we guarantee all work as represented and failures on the part of any work to perform all we claim will be met in a satisfactory manner.

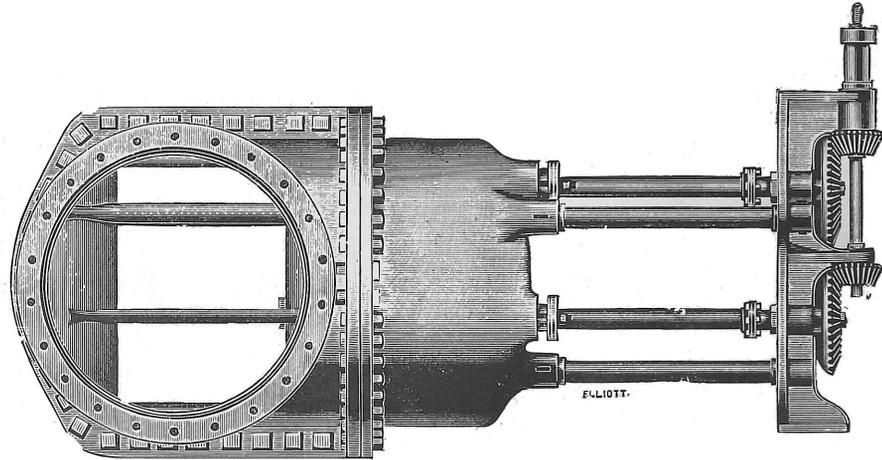
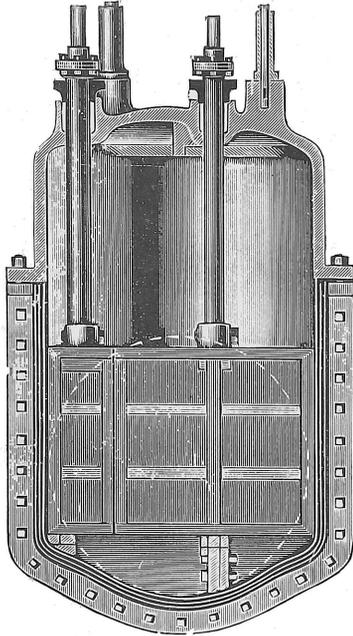
APPENDED to this book will be found information regarding Fire Streams, Insurance, etc., which we trust will be found interesting. Returning thanks for past favors, we hope, by continued careful and prompt attention, to merit a continuance of the confidence reposed in us.

Yours faithfully,

JOHN PERKINS CO.

Double Gated Horizontal Stop Valve.

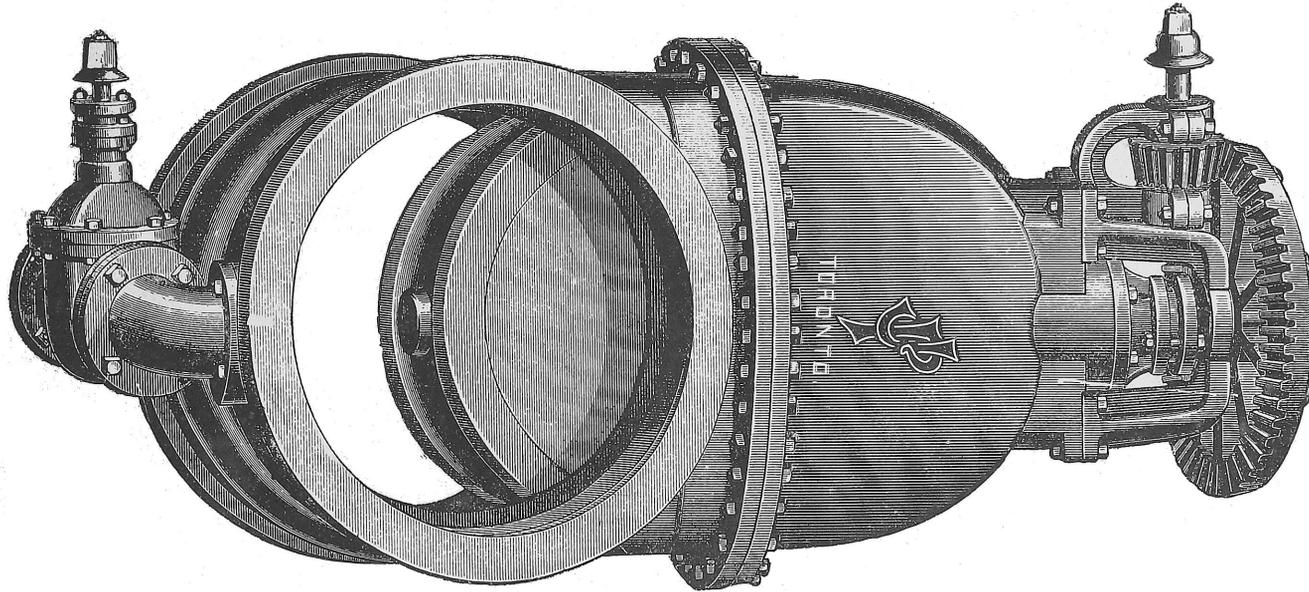
Taken From Our 36-inch.



THESE Double Slided Stop Valves are particularly well suited for heavy pressures in pipes of large diameter. The arrangement of the two slides operated by bevel gearing enables the operator to first open the small gate, which, relieving the pressure immediately, facilitates the opening of the larger gate. The packing gland and screw tubes being of the best yellow brass, and the various working parts being bushed with the same material, the valve is not liable to get stiff and unworkable. The faces, which are double, are also of the best yellow brass, are securely fastened to slide blocks by screwed brass pins. They are so constructed as to readily adjust themselves to the pressure from either side. We claim superiority over other makers of this style of valve, in the strengthening of various parts and a greater area of water way. These valves as made by us are now in successful use by the city of Toronto. Prices on application.

36-inch Horizontal Stop Valve.

With By-Pass.

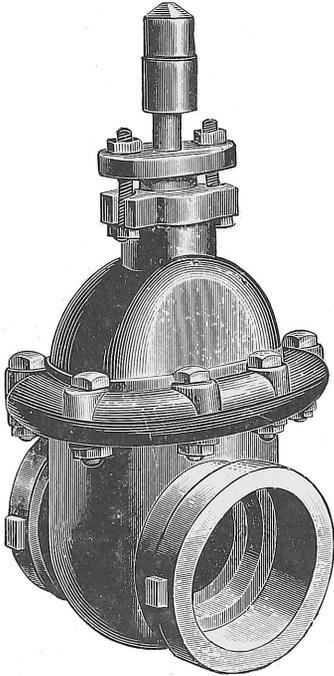


WE CONSTRUCT this Valve either with or without By-Pass; to work either vertical or horizontal as may be required. All Faces are Brass, dove-tailed and rolled in. Spindle is also of Brass; the Wedge is in one piece, taper in form, and so constructed as to readily adjust itself to the pressure from either side. These Valves are built for heavy pressure and wherever placed have given every satisfaction.

Patterns for 20, 24, 30 and 36 inch.

PRICES ON APPLICATION.

Our Standard Stop Valve.

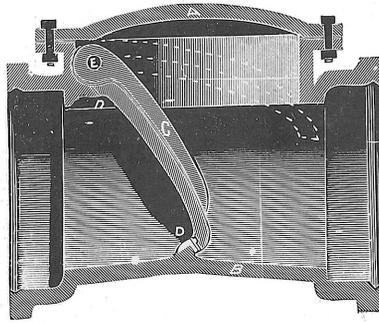


THIS CUT represents our Standard Stop Valve, well and favorably known to all the principal water-works in Canada. Brass Faces and Brass Spindle and Nut. Faces all dove-tailed and rolled in; Heavy Castings; guaranteed test, 300 pounds.

FACES.—The Faces all being rolled in is an advantage. Our friends will do well to consider in comparing prices with other makers, who put their Faces on by cheaper methods. It is well to bear in mind the impossibility of amalgamating together, in the castings, two metals of unequal expansion.

From 3 to 36 inches inclusive.

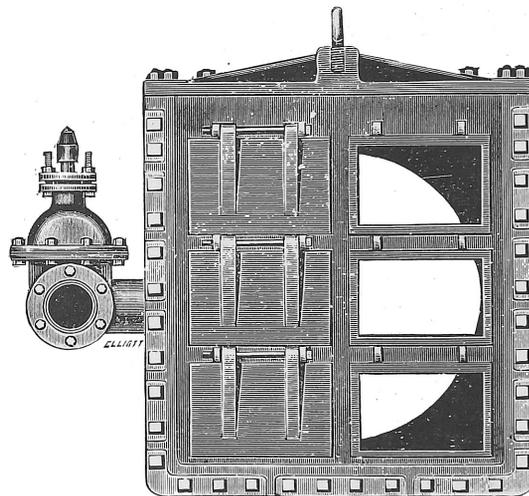
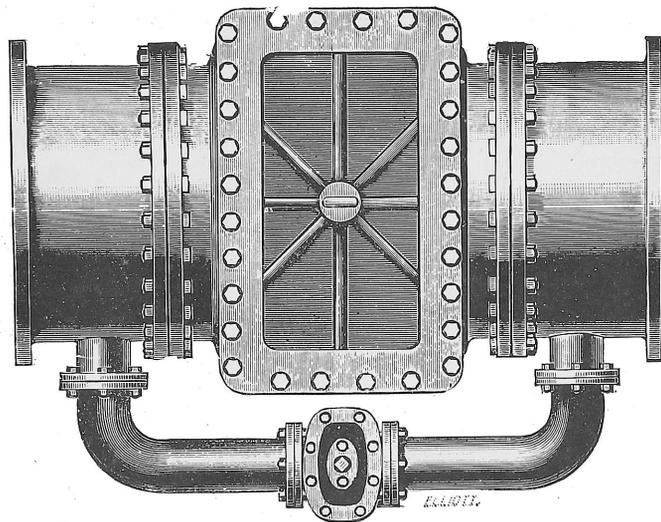
Check Valves.



THIS REPRESENTS the Standard Iron Body Check Valve as made by us. The Valve faces, *D D*, are Brass. The box in which *E* works is also brass; the gate, *C*, can be taken out by removing the cover, *A*.

From 6 to 24 inches.

For 24 inches and Upwards we Recommend our Improved Check.



View Taken from 36-inch Improved Check.

Made From 24 inches Upwards.

PRICES ON APPLICATION.

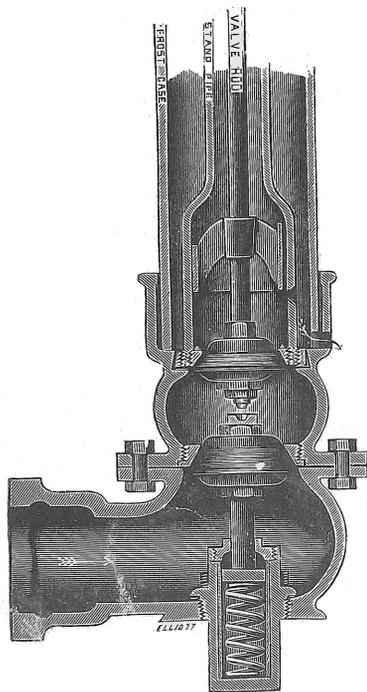
Improved Large Check Valves.

THE preceding cuts represent our large Check Valve, constructed with ~~or~~ without By-Passes, or with or without Loose Spigott, Socket or Flanged Ends.

We claim this valve has no equal. It was designed by ourselves, as the result of years of practical observation and study of the requirements of Check Valves generally. A specially commendable feature of this Valve is the great area of water way, being 10% more than the pipe. The view shown was taken from a 36 inch, which we make with 6 gates. All faces are made of the best brass, fastened with brass screw pins. By removing the cover easy access is attained. All joints are machine-faced and packed with a packing of our own special make. Several of these valves are in use in the Dominion, and are giving the greatest of satisfaction.

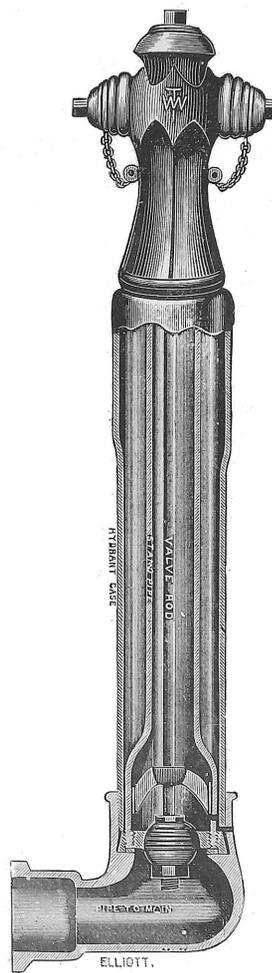
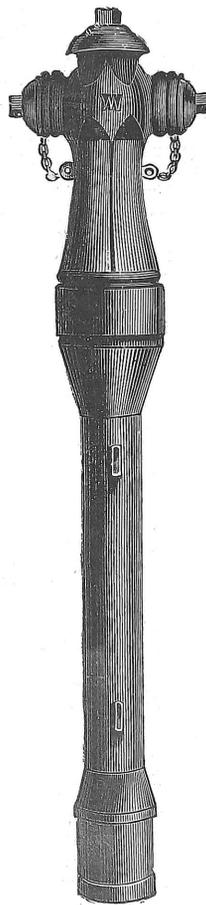
We would respectfully point out to water-works the advantage to be derived from a freer use of Check Valves. In case of bursts or fractures their use cannot be under-estimated. At present we find the Check Valve is not used as freely as it should be.

Double Valve Hydrant.

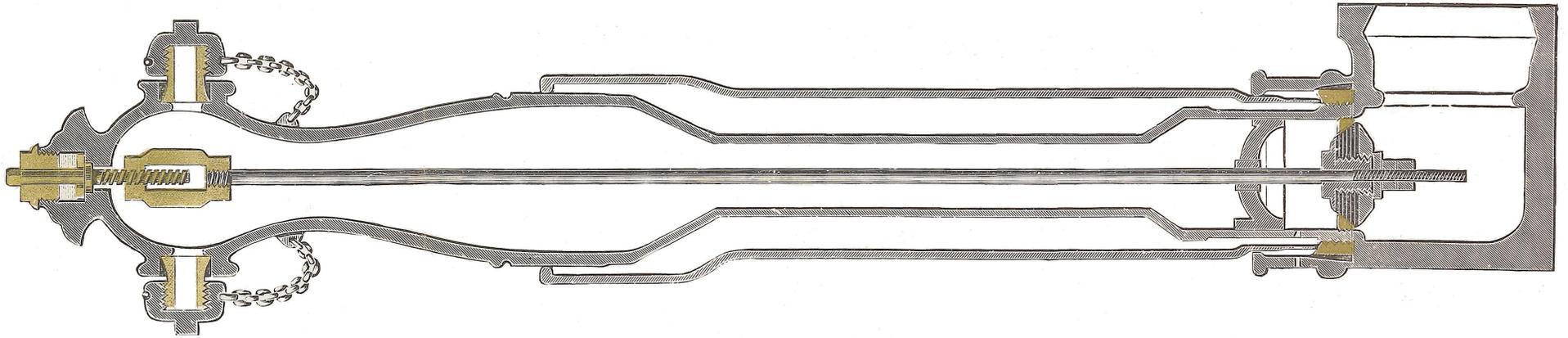


Sole License for Canada.

STANDARD HYDRANT.



Sectional View of Standard Hydrant.



BRASS CAP.
BRASS WASHER.
BRASS SPINDLE.



BRASS BUCKLE.
BRASS NOZZLES.
BRASS SEAT IN FOOT PIPE.

BRASS SEAT IN STAND PIPE.

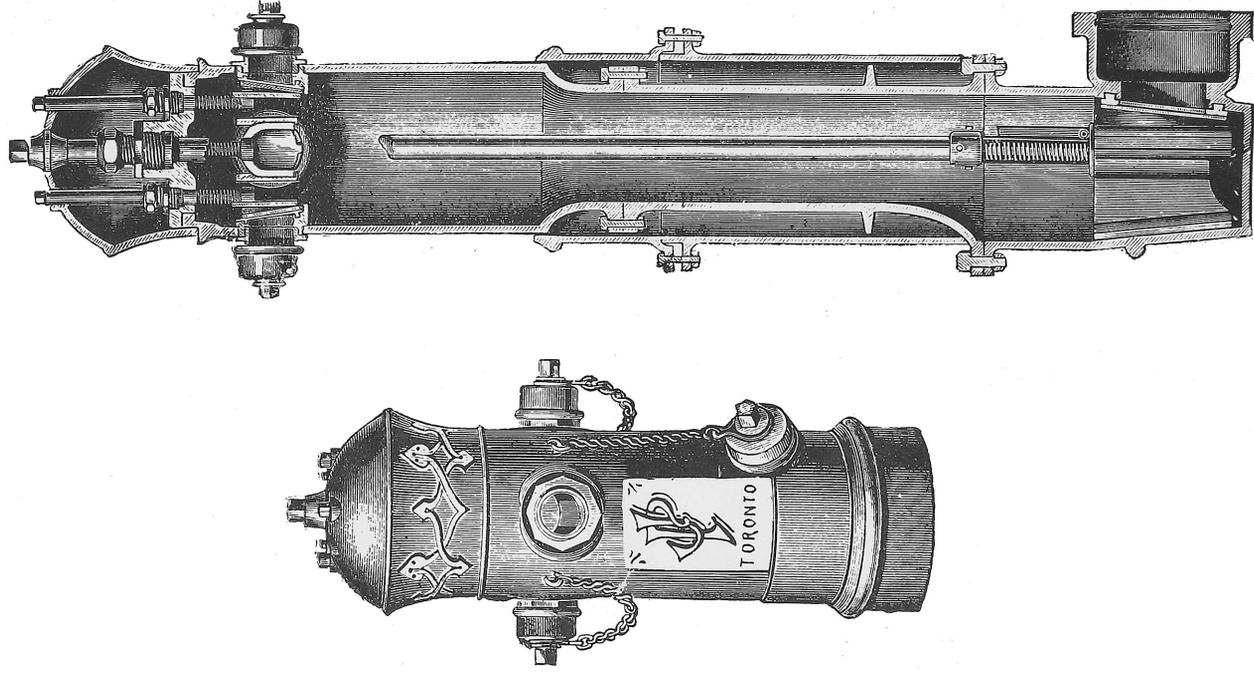
Fire Hydrants.

OUR STANDARD HYDRANT is too well known to require any special comment here. They combine all the necessary features to render them certain and reliable in their operation at all times. The outer casing or frost jacket form a dead air chamber, giving greatest possible security against freezing.

DOUBLE VALVE HYDRANT—This form of hydrant, while possessing all the advantages of our Standard Hydrant, has the great advantage of a double valve, allowing the hydrant to be taken up for repairs without shutting off the water from the district in which it is located. In ordering hydrants, be particular to give measurement of depth of trench, and to send sample nozzle or hose coupling for purpose of getting thread on nozzles correct.

These Hydrants are tested to 300 lbs. before leaving the works.

Our Special Fire Hydrant.



With Independent Valves for each Nozzle.

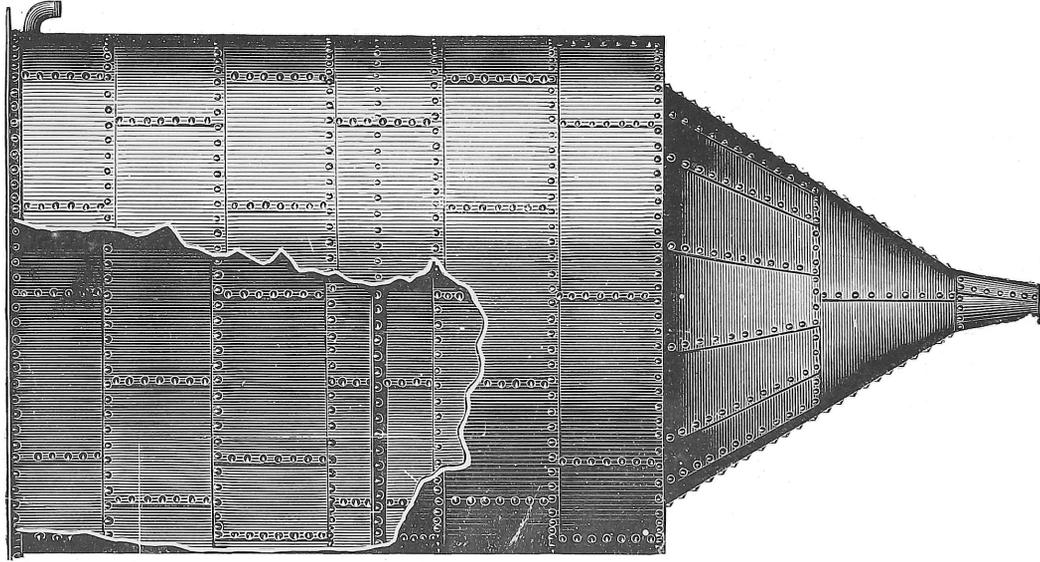
Independent Nozzle Hydrant.

OUR special hydrant is known as the gate hydrant. The gate is tapering upon its face, with a tapering pressure bar on the back. The seats of the gate and pressure bar are of the best yellow brass.

We have introduced this hydrant to meet the growing demand for a hydrant from which a larger number of streams can be taken, and concentrated on a fire at any one point, and yet have each stream under as perfect control as though they were taken from single or separate hydrants; this is accomplished by placing independent valves for each outlet on the inside of the post, each valve being operated by a spindle from the outside independently of the other valves and of the main valve at the bottom of hydrant.

PRICES ON APPLICATION.

Water Tower.



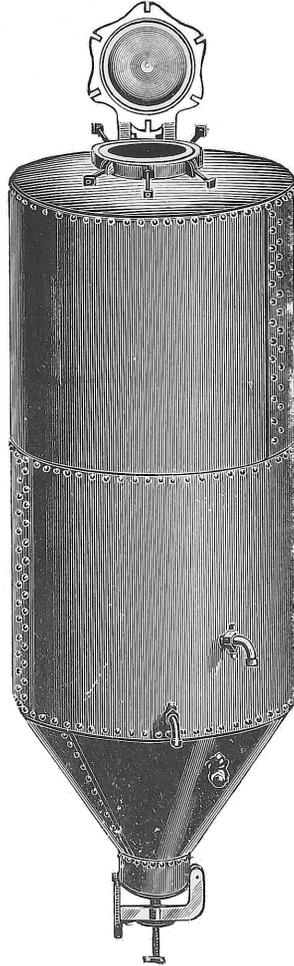
Taken from 16 ft. x 20 ft.

Water Towers.

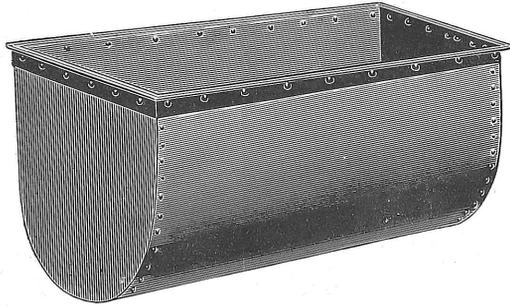
WATER TOWERS, as constructed by us, with conical bottoms, are built in the most approved manner and from the most recent formulas of strength. Our long experience in the manufacture of such, enables us to give valuable suggestions to intending purchasers.

We construct any size required. Erect in position and test satisfactory to the purchaser. The cut shown is taken from tower, 16 ft. x 20 ft., erected on masonry, 30 ft. high. All our towers are figured to give ample capacity.

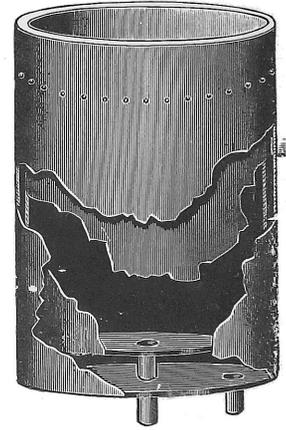
RENDERING TANK.



Lard Cooler.



Steam
Jacket Tank.



Pork Packers, Soap Manufacturers, Etc.

RENDERING TANK.

WE DESIRE to call special attention to this Tank, and the very large and spacious charging door on top, fastening with heavy hinged bolts, making a perfect and secure steam joint and affording rapid access to contents. We point with pride to the fact of being the first makers of this Tank in Canada, obtaining the design for charging door direct from the patentee, and while other firms may have copied our design, they cannot take from us the long experience we have in catering to the various requirements of the trade generally.

The **LARD COOLER** can be made to any particular design; square or oval bottom.

The **STEAM JACKET KETTLE** can also be modified to suit any particular idea and to any capacity. All Tanks requiring to hold a given quantity accurately figured. We also manufacture **SOAP CRUTCHERS, AGITATORS, ETC.**



Engines, Etc.

**MEDAL AND DIPLOMA AWARDED FOR ENGINES,
TORONTO, 1883.**



IN Stationary Automatic Cut-off Engines, we manufacture the “Brown” and the “Ide,” for which we issue catalogue under separate cover. In addition to this we are prepared to quote for, and manufacture, Marine Engines, High Pressure or Compound, or to convert present High Pressure Engines into Compound.

Special machinery of any kind built to design.

Boilers.

WE ARE large manufacturers of Boilers of all styles, Marine or Stationary. These we do not illustrate, the styles and conditions of Boiler requirements being so varied. To parties intending to increase their steam plant, or make alterations of any kind to their present Boiler power, we solicit your enquiries. Give all particulars of your requirements and we will quote you what will give the best satisfaction from the results of long practical experience.

Economic Influence of Water-Works on Insurance Premiums.

THE FOLLOWING TABLE, obtained from the Fire Underwriters' Association, will show at a glance the saving in insurance on a standard factory in a town with all necessary fire protection and water-works, as against the same when no water-works exist or only an inferior fire protection :

	1st.	2nd.	3rd.	4th.
Water-Works, Class A.....	\$0 60	\$0 90	\$1 10	\$1 30
“ “ Class B.....	0 65	0 95	1 15	1 45
“ “ Class C.....	0 65	1 00	1 20	1 50
Steam Engine and Tanks, Class D..	0 80	1 10	1 30	1 60
“ “ “ Class E..	1 10	1 35	1 55	1 65
No Fire Protection, Class F... ..	1 25	1 50	1 75	2 00

We Manufacture and Ship Complete on Wheels Boiler for Thawing Out Hydrants, as called for by the Board.

PRICES ON APPLICATION.

Advantages of Large-sized Pipe Over Small Ones

By this table it will be noted that for every 100 feet of pipe of 6-inch diameter, to discharge 1,000 gallons per minute, will cause a friction of 3.88 pounds; whereas, to discharge the same quantity of water through a 10-inch pipe, it will only be 0.32 pounds.

Stated as a Rule.—Doubling the size of the pipe decreases the friction less at the same velocity one-half.

TABLE OF FRICTION-LOSS IN POUND PRESSURE FOR EACH 100 FEET OF LENGTH IN DIFFERENT SIZE CLEAN IRON PIPES DISCHARGING GIVEN QUANTITIES OF WATER PER MINUTE. ALSO VELOCITY OF FLOW IN PIPE IN FEET PER SECOND.

Gallons discharged per min.	3		4		6		8		10		12		18		20		24		30		
	Velo. in pipes per sec.	Fric. loss in pound	Velo.	Fric.																	
100	4.54	1.31	2.55	0.33	1.13	0.05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
200	9.08	5.02	5.11	1.22	2.27	0.17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
300	13.6	11.2	7.66	2.66	3.41	0.37	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	300
400	18.2	19.5	10.2	4.73	4.54	0.65	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	400
500	27.7	30.8	12.8	7.43	5.67	0.96	3.19	0.25	2.04	0.09	1.42	0.04	0.63	0.005	.....	.....	.....	.....	.....	.....	500
750	.....	.....	.....	.....	8.51	2.21	4.79	0.53	3.06	0.18	2.13	0.08	.....	.....	.....	.....	.....	.....	.....	.....	750
1,000	.....	.....	.....	.....	11.3	3.88	6.38	0.94	4.08	0.32	2.84	0.11	1.26	0.020	1.02	0.012	0.72	0.005	0.45	0.002	1,000
1,500	.....	.....	.....	.....	.....	.....	9.57	2.09	6.12	0.70	4.26	0.29	1.89	0.040	.....	.....	.....	.....	.....	.....	1,500
2,000	.....	.....	.....	.....	.....	.....	.....	.....	8.17	1.23	5.67	0.49	2.52	0.071	2.04	0.042	1.44	0.020	0.91	0.06	2,000
3,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8.51	1.11	3.78	0.150	3.00	0.091	2.16	0.047	1.36	0.012	3,000
4,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.04	0.263	4.08	0.158	2.88	0.067	1.82	0.022	4,000
5,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.30	0.408	5.11	0.241	3.60	0.102	2.27	0.038	5,000
6,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7.56	0.588	6.13	0.348	4.32	0.146	2.72	0.048	6,000
7,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7.15	0.472	5.04	0.196	3.18	0.065	7,000
8,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8.17	0.612	5.76	0.255	3.63	0.083	8,000
9,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.47	0.323	4.08	0.105	9,000
10,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7.19	0.398	4.54	0.131	10,000

As determined by experiments in Springfield Fire Department, Massachusetts, by Chief Engineer.

Fire Hydrants.

Table Showing the Mean Velocities of Water Flowing in Uniform Channels.

FALL IN FEET PER MILE.		Hydraulic Mean Depth and Velocities in Inches per Second.													
Fall	Inclination, 1 inch.	1 Inch.	2 Inches.	3 Inches.	4 Inches.	5 Inches.	6 Inches.	8 Inches.	10 Inches.	12 Inches.	15 Inches.	24 Inches.	30 Inches.	36 Inches.	48 Inches.
<i>F. I.</i>															
0 1.	63.36..	.85	1.24	1.55	1.80	2.02	2.23	2.58	2.90	3.19	3.57	4.54	5.09	5.59	6.47
0 6..	10.56.	2.55	3.72	4.62	5.37	6.04	6.65	7.72	8.66	9.52	10.67	13.57	15.21	16.69	19.31
1 0.	5.28.	3.77	5.51	6.84	7.06	8.95	9.84	11.43	12.83	14.90	15.81	20.11	22.53	24.72	28.61
2 6..	2.11..	6.29	9.18	11.40	13.28	14.93	16.42	19.64	21.40	23.51	26.36	33.53	37.57	41.22	47.71
5 0..	1.06..	9.25	13.51	16.78	19.53	21.96	24.16	28.05	31.48	34.59	38.79	49.34	55.28	60.66	70.20
10 0..	53..	13.65	19.94	24.76	28.83	32.41	35.65	41.40	46.46	51.04	57.24	72.81	81.58	89.52	103.60
13 2..	40..	15.98	23.34	28.98	33.74	37.93	41.72	48.44	54.37	59.73	66.99	85.21	95.48	104.76	121.25
17 6..	30..	18.83	27.50	34.15	39.75	44.69	49.16	57.08	64.07	70.38	78.94	100.41	102.50	123.44	142.86
26 4..	20..	23.78	34.72	43.12	50.20	56.44	62.08	72.08	80.91	88.88	99.69	126.80	142.07	155.89	180.41
52 8..	10..	35.66	52.07	64.67	75.29	84.64	93.10	108.10	121.33	133.29	149.50	190.15	213.05	233.77	270.55
66 0..	8..	40.70	59.44	73.81	85.93	96.61	106.26	123.38	138.48	152.13	170.63	217.02	243.16	266.81	308.79
88 0..	6..	48.33	70.57	87.63	102.02	114.70	126.16	146.50	164.44	180.66	202.62	257.72	288.76	316.84	366.68
132 0..	4..	61.67	90.06	111.84	130.20	146.38	161.00	186.97	209.85	230.55	258.58	328.90	368.51	404.35	467.96
264 0..	2..	93.84	137.03	170.18	198.12	222.73	244.98	284.44	319.26	350.75	393.39	500.37	560.63	615.16	711.93
528 0..	1..	142.39	207.92	258.21	300.60	337.95	371.71	431.56	484.40	532.17	596.87	759.17	850.60	933.34	1080.16

Fire Hydrants.

DATA ABOUT FIRE STREAMS. As determined by experiments in Springfield Fire Department, Massachusetts, by Chief Engineer.

Height of Column in feet.	Corresponding pressure in lbs. per sq. in.	$\frac{3}{4}$		1		$1\frac{1}{4}$		$1\frac{1}{2}$		$1\frac{3}{4}$	
		Height of jet in ft.	Gallons discharged per min.	Height of jet in ft.	Gallons discharged per min.	Height of jet in ft.	Gallons discharged per min.	Height of jet in ft.	Gallons discharged per min.	Height of jet in ft.	Gallons discharged per min.
10	4.3	9.8	32.8	9.8	58.2	9.9	91.	9.9	130.8	9.9	177.6
20	8.6	19.2	46.2	19.4	82.3	19.5	20.4	19.6	184.8	19.6	252.
30	13.0	28.3	55.8	28.6	100.9	29.	157.2	29.1	226.8	29.2	309.6
40	17.3	37.	65.5	37.5	116.5	38.	182.4	38.3	261.6	38.6	356.4
50	21.6	45.	73.3	46.1	130.8	47.	204.	47.4	292.8	48.	408.
60	26.	52.	80.3	54.4	142.8	55.	223.2	50.2	320.4	57.	436.8
70	30.3	60.	86.8	62.4	154.8	64.	241.2	65.	346.8	66.	471.6
80	34.6	67.	92.6	70.	164.4	72.	258.	73.	370.8	74.	505.2
90	39.	73.	98.4	77.	174.0	80.	272.4	82.	393.6	83.	535.2
100	43.3	79.	103.7	84.	183.6	87.	288.	90.	415.2	91.	565.2
120	52.	90.	113.5	97.	201.6	102.	315.6	105.	453.6	107.	626.4
140	60.6	99.	122.4	109.	217.2	116.	340.8	120.	490.8	123.	668.4
160	69.3	106.	131.2	120.	232.9	128.	364.	133.	524.2	137.	713.5
180	78.	112.	139.1	129.	247.1	139.	373.2	141.	556.1	151.	756.9
200	86.6	116.	146.4	137.	260.4	150.	406.8	158.	588.	166.	798.

Fire Streams Using Leather Hose.

Work Done and Power Required for Fire Streams using Leather Hose and Ring Nozzles.

EFFECTIVE PRESSURE AT NOZZLE.	GALLONS DIS- CHARGED PER MINUTE.	HORIZONTAL DIS- TANCE REACHED BY JET.	VERTICAL DIS- TANCE REACHED BY JET.	PRESSURE IN POUNDS REQUIRED AT HYDRANT OR STEAMER TO MAINTAIN GIVEN EFFECTIVE PRESSURE AT NOZZLE WITH DIFFERENT LENGTHS OF HOSE.									
				100 FEET.	200 FEET.	300 FEET.	400 FEET.	500 FEET.	600 FEET.	700 FEET.	800 FEET.	900 FEET.	1000 FEET.
10	60	49	22	13	17	20	23	26	30	33	36	39	43
20	86	69	42	25	29	34	38	43	48	52	57	61	66
30	105	88	61	36	42	48	54	60	66	71	77	83	89
40	121	105	78	47	55	62	69	76	84	91	98	105	113
50	135	121	92	59	67	76	85	93	102	110	119	128	136
60	148	136	104	70	80	90	100	110	120	130	140	150	160
70	160	140	115	81	93	104	116	127	139	150	162	173	184
80	171	160	124	93	106	119	131	144	157	170	183	196	208
90	181	168	132	104	118	133	147	161	175	189	204	218	232
100	191	174	136	116	131	147	163	178	194	209	225	241	256

As determined by experiments in Springfield Fire Department, Massachusetts, by Chief Engineer.

WE MANUFACTURE

MARINE ENGINES

BROWN AUTOMATIC CUT-OFF ENGINES .

IDE AUTOMATIC CUT-OFF ENGINES, HIGH PRES-
SURE, COMPOUND AND CONDENSING .

FIRE HYDRANTS

STOP AND CHECK VALVES, 3 IN. TO 36 IN. .

SHAFTING AND HANGERS

BOILERS, MARINE AND STATIONARY.

WATER TOWERS, TANKS, ETC.

BREWERS' SCOTCH MASHERS AND MASH TUB
BOTTOMS.

SOAP FACTORY CRUTCHERS, JACKET TANKS,
ETC.

PACKING HOUSE RENDERING TANKS, LARD
COOLERS AND AGITATORS

OIL REFINERS' TANKS

AMMONIA COMPANIES' PLANTS

GAS COMPANIES' GENERATORS, SUPERHEAT-
ERS, CONDENSERS, VALVES, ETC.