

THE

Patent Water & Gas Pipe Company,

OF

JERSEY CITY, N. J.

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Incorporated under the General Manufacturing Laws of the  
State of New Jersey.

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Officers :

McREE SWIFT, President,  
NATHAN STEPHENS, Vice President.  
RUSH NEER, Secretary and Treasurer.  
McREE SWIFT, Engineer and Superintendent.

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New York:

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1875.

# C I R C U L A R .

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THE PATENT WATER AND GAS PIPE COMPANY OF JERSEY CITY, N. J., have been engaged for the past thirty years in laying their pipe in numerous towns and cities throughout the country.

The pipe is formed of sheet iron by machinery; and riveted into cylinders of any required diameter. The gauge or thickness of iron being adapted to resist the head of water—or hydrostatic pressure—to which the pipe may be subjected.

It is lined by machinery, with mortar made of *hydraulic cement*, and laid in a bed of mortar made of the same material, the entire outside being perfectly covered with the mortar. The cement soon becomes indurated, and perfectly protects the metal from the action of air or water, and consequently, prevents either corrosion or incrustations, and enables the pipe to deliver the water to the consumer as pure as it is at its source.

The sections of pipe are connected by means of a sleeve over the joints, made large enough to allow a filling of mortar between the pipe and the sleeve, the whole being also covered externally with mortar, thereby making the joints stronger even than the rest of the pipe.

To secure additional protection from corrosion, in cases where by accident or carelessness the wrought iron cylinders have not been properly insulated in the cement mortar, we have recently adopted a bath of asphaltum, specifically prepared and applied to the wrought iron cylinders before they are lined with cement.

In addition to this coating of asphaltum, the improved ball and socket joint for pipes of small diameter, and the concave sleeve with cast iron thimble at joints, for those of large diameters are now used; and render the pipe as now manufactured by this Company the most desirable, durable and economical water conductor known.

With reference to the value of the asphalt coating referred to, the following extracts from the reports of the Chief Engineer, Rochester Water Works, of January, 1874, are pertinent:

"The Spring Valley Water Co. of San Francisco convey their city supply over a distance of seventeen miles in two lines of sheet iron pipe, thirty inches in diameter, under heads of water, of 100, 200 and 250 feet.

"One line 6000 feet long, having been in use ten years, was taken up and relaid in another place, and seemed in as good condition as when first put down. These pipes are merely wrought iron shells, coated with asphaltum."

Mr. Hermann Schussler, the Engineer of the above Works, says that "pipes of 22 inch diameter, well coated inside and out, which were laid in 1861, were lately examined by me, after 12 years working, revealing the fact that they were sound throughout, the iron under the coating having the same blackish blue face as when it left the rolling mill. We have adopted them everywhere outside our city environs."

By our process of lining and covering the cylinders with cement after the asphalt coating, we are enabled to use lighter *thickness used in California* gauge of iron, and also to keep the water as pure as ever.

It is a matter of much satisfaction to the Company, to state, that notwithstanding the opposition it has encountered from interested parties, and the natural aversion of the community to any radical change in an article which has long been in general use, the pipe has steadily gained favor with the public, so that upwards of seventy towns and cities have adopted this system for their water distribution and continue to use it in extensions. The pipe has now been used for upwards of thirty years, and a large portion of the business of the Company consists of extensions of pipe previously laid. The operations of the Company gradually extended, and in 1871 the quantity of pipe laid exceeded 860,000 feet, of diameters varying from 24 inches to service pipe—and under hydrostatic pressures due to 275 feet head and less.

The following extracts and testimonials, from engineers who have had the opportunity to judge of the merits of the Wrought Iron and Cement, as compared with cast iron pipes, show the peculiar claims of this pipe; its superiority, efficiency and durability, and its *great economy*, both in the first construction of the work and in subsequent repairs.

*Extract from the REPORT OF W. S. WHITWELL, ESQ., (former Chief Engineer of the Cochituate Water Works, Boston, Mass., and also Chief Engineer of the Jersey City Water Works, New Jersey,) to the BOARD OF WATER COMMISSIONERS OF PLYMOUTH.*

\* \* \* "The next question was, the kind of pipe to be used.

"Two kinds of pipe were proposed—the cast iron pipe and the iron cement pipe, known as "Ball's Patent." With the latter I had been acquainted for several years, and from its cleanliness, cheapness, and durability, I was much inclined to advise its adoption without any qualification. As a precautionary measure I proposed that a committee of your Board should visit Rockland, in Maine, where these pipes had been in use for nearly two years, to learn there if any objections existed to their use, and if they had answered the expectations that had been formed of them. Your committee returned so well satisfied with the report received of them, that they were adopted without further hesitation.

"The great objection to the iron pipe is found in the rapid incrustation which takes place on the inside of the pipe, and very soon seriously diminishes its capacity; this becomes a matter of much more consequence with the small pipes than with those of a larger size, and while in a thirty-inch pipe the diminution of capacity would be scarcely perceptible for seven or eight years, in a pipe of ten inches diameter, the incrustation of four years would, probably, reduce the capacity one-fifth. The 'iron and cement pipe' is free from this objection; the bore remains always of the same diameter, always clean, and becomes harder and more durable by age. With proper care in selecting the best quality of

cement, in the manufacture of the pipes, and in making the joints, I consider this as the best water pipe now in use for the supply of towns and villages, and it may yet be found to succeed quite as well in large cities.

“The Board have reason to be satisfied with the decision they have made, as they have materially decreased the cost of the work by the use of this pipe, and owing to the care and superintendency of Mr. Bates and Mr. Davee, together with the earnest desire of the Pipe Company to have the work done in a thorough and careful manner, there is every reason to believe that the expense for repairs will be unusually small.

Respectfully submitted,

W. S. WHITWELL,  
*Consulting Engineer.*

*Boston, Feb'y, 1856.*

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CAMBRIDGE, Sept. 28, 1853.

I have examined, somewhat in detail, the pipe manufactured by Ball & Co., for conveying and distributing water. I have repeatedly attended upon their manufacture, and the inspection preparatory to use. I have further attended upon the laying down of the pipes, and observed the mode of imbedding in and coating with cement, the connection of sections of pipe, the piercing for lateral service pipes, and, I believe, all the various processes by which the pipes are fitted for use.

With strict fidelity on the part of the workmen and engineer, the above kind of pipe may be made and laid down so as satisfactorily to fulfill the general purpose of water distribution.

The advantage of the pipes of Ball & Co., are that, after a few days of use, the water is transmitted entirely unchanged; the pipes do not corrode and encrust so as to diminish the service capacity; the strength increases with age; and the cheapness will make it possible to introduce water into places where the cost of cast-iron pipes would leave it impossible.

E. N. HOSFORD,  
*Rumford Professor, Harvard University.*

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ENGINEER'S OFFICE,  
Brooklyn, March 25, 1867.

SIR,—I have examined, at your request, a specimen of wrought

iron and cement pipe of three inches bore, and one of cast iron pipe, of three inches bore; the former laid in 1845, and the latter in 1842, in Washington Street, near the corner of Warne, Jersey City, being part of two lines laid under the track of the New Jersey Railroad, near the turn table, and connected so as to pass the same supply of water. The inspection was made on the ground, March 20th, with the pipe just taken from the trench, and subsequently with the specimens in this office.

The exterior of the cast iron pipe, except at the joint which is most corroded, is in very good condition. The entire interior is coated with tubercles, in some cases separate, but generally in groups, varying from a quarter inch depth on the upper side of the tube to five-eighth inch on the lower. A large proportion of those on the lower side extend horizontally across the tube, reducing its vertical height to two and one-eighth inches, where the upper tubercles occur.

The exterior coating of cement of the wrought iron pipe, I find very solid, requiring considerable effort with a hammer and cold chisel to remove it from the iron tube. The lining has also set very compactly, so that in cutting through the pipe with the chisel, very little was broken away from the edges of the cut. There is a slight discoloration on the lower side of the interior, owing to the sedimentary deposit of its contents, but the entire interior is as perfect in form and smoothness as when first laid down.

Examining the iron (which is about twenty to twenty-two wire gauge,) especially with regard to the joints, rivets and sleeves, I find no traces of oxydization whatever, the iron in these several parts retaining it, freshness of color and perfection of form as if newly laid. (At the time of laying the pipe, a piece of twine, not quite one-sixteenth inch thick, and two feet long, was imbedded in the cement, the preservative influence of which is singularly illustrated in the fact that the twine still keeps its original color, and when tested with a spring balance, stood for some time a regular strain as high as twelve pounds.)

This examination simply confirms, by its clear and forcible testimony, a conclusion at which I arrived on this subject several years ago, having taken pains to study the character of this pipe,

since it first attracted my notice at Albany, in 1847. Cast iron pipe is objectionable, in my opinion, from its costliness and weight, its losses of length at the joint, its discoloration of water by oxydes, its reduction of area by tubercles, and the difficulty of making and *keeping* tight and strong joints; points in which the superiority of the other pipe is clearly demonstrated.

Very respectfully, yours,

SAMUEL McELROY,

*Assistant Engineer Brooklyn Water Works.*

W. H. TALCOTT, Esq.,

*Pres't Water and Gas Pipe Co., Jersey City.*

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OFFICE OF THE GREENWOOD CEMETERY, }  
No. 30 BROADWAY. }

New York, Feb. 10, 1870.

This institution has an 8-inch pumping main of wrought iron and cement pipe, laid in 1853, to raise water about 120 feet, since which time it has worked with entire satisfaction. We have laid large quantities of this pipe for distribution of water in the Cemetery, under various heads. I consider the pipe the best water conductor I know of. It can be made to sustain any required pressure and is superior to cast iron in that it is entirely free from liability to incrustation from rust, and in that the cost is also less.

J. A. PERRY,

*Comptroller.*

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SARATOGA SPRINGS, April, 1873.

#### TESTIMONIAL.

Twenty-seven years ago, last summer, Nathan Stephens and Jonathan Bull put down at this place, some four (4) or five (5) miles of their indestructible wrought iron and cement pipe, for the purpose of supplying this village with pure and wholesome water. Where to obtain this supply, the plan of doing it, and the kind of pipe to be used, were questions of much anxiety and doubt with our inhabitants, and it was finally decided to go to the mountain, some three miles west of the village, collect together, a number of living streams into one general reservoir, and use the pipe above mentioned, to bring the water into and through

the village. As soon as the pipe was extended from the fountain-head to a central point in the village, the water was let in and has continued to flow in sufficient quantity for private uses, to those parts of the village—through which the mains have been laid. The pipe has required but very little repairing during this long period. And indeed if laid below the frost and left undisturbed it will last forever.

During the coldest days last winter it became necessary to take up four or five hundred feet of the main pipe from private grounds, and relay it in the street. Every length was as hard and as indestructible when taken up as the solid rock, and was relaid in preference to another. This test was perfectly satisfactory, as to the goodness and durability of this kind of pipe for any length of time.

Judging from our experience and observation, we have no hesitation in saying that the kind of pipe used in our old Water Works is better and more durable, and will stand as much pressure as the best iron pipe of the same dimensions ever made. The water is purer and sweeter, and the expense of repairs is nothing compared with the cast iron pipe.

J. A. COREY, Ex-Trustee and Pres't of Board.

C. W. MITCHELL, President of Village.

S. B. TERWILLIGER, Plumber.

J. L. BRIGGS, Ex-Supt. and Trustee.

JOHN W. GAFFNEY, Trustee

HIRAM C. TEFFT, Ex-Trustee.

OFFICE OF THE GREENWOOD CEMETERY, }  
No. 30 Broadway, }  
New York, January 20, 1875.

McREE SWIFT, Esq.

Dear Sir :—The experience which we have had of your pipe during the last twenty years imparts to us great confidence in its strength and durability, and induces us to prefer it decidedly to any cast iron pipe which is made. As evidence of preference, we laid in our grounds last year, as you are aware, fifteen hundred feet more of your pipe, and purpose laying several thousand feet additional when the spring opens.

Truly yours,

J. A. PERRY,  
*Comptroller.*