

IMPROVED
FIRE PROTECTION
FOR
CITIES AND TOWNS.

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MEDAL AND DIPLOMA AWARDED
BY THE
INTERNATIONAL JURY, CENTENNIAL EXHIBITION,
PHILADELPHIA, SEPTEMBER 27, 1876.

IMPORTANCE OF FIRE PROTECTION.

THE value of property destroyed by fire in the United States in the year 1875 was \$86,328,035; on which there was insurance amounting to \$43,631,700. During the first six months of the present year, the insurance companies sustained losses, amounting in the aggregate to \$26,000,000. Statements like the above, taken from the daily papers, show the value and importance of a device, which will, in any degree, decrease the heavy burden that losses by fire entail upon the entire community. Property destroyed by fire is so much capital lost; and while the payment of the sum insured may, in part, remunerate the owner of the property, yet it does not restore or make up any of the actual loss. The money paid is but a part of that previously contributed by the insured to the companies in which they hold policies.

So firmly have the authorities of some towns been impressed with the importance of a means of adding to their security against fire, that, in arranging for a water supply, the protection it might be made to give, appeared to them so valuable, that such a necessary feature of a complete system as a store reservoir has been dispensed with, even where there were eligible sites for their construction conveniently located, and the system of water supply adopted which promised the best protection against fire. In most cases direct supply works have cost more to construct than a complete system, with ample store reservoir, and they always cost more to maintain and operate, and have seldom fulfilled the promises made for them.

The numerous devices for extinguishing fires by chemical apparatus now in use, depending either upon projecting carbonic acid gas upon the fire, or water mixed with that gas, have done good service in the incipient stages of fire; but when the flames have advanced beyond the apartment in which they may have originated, or an entire edifice is on fire, water

IMPROVED FIRE PROTECTION,

Patented, Dec. 31, 1872; Jan. 11, 1876.

H. P. M. BIRKINBINE, Engineer, No. 152 S. Fourth Street, Philadelphia.

Plate I.

Town Plot with Water Works, Pipe Lines, and Fire Hydrants.

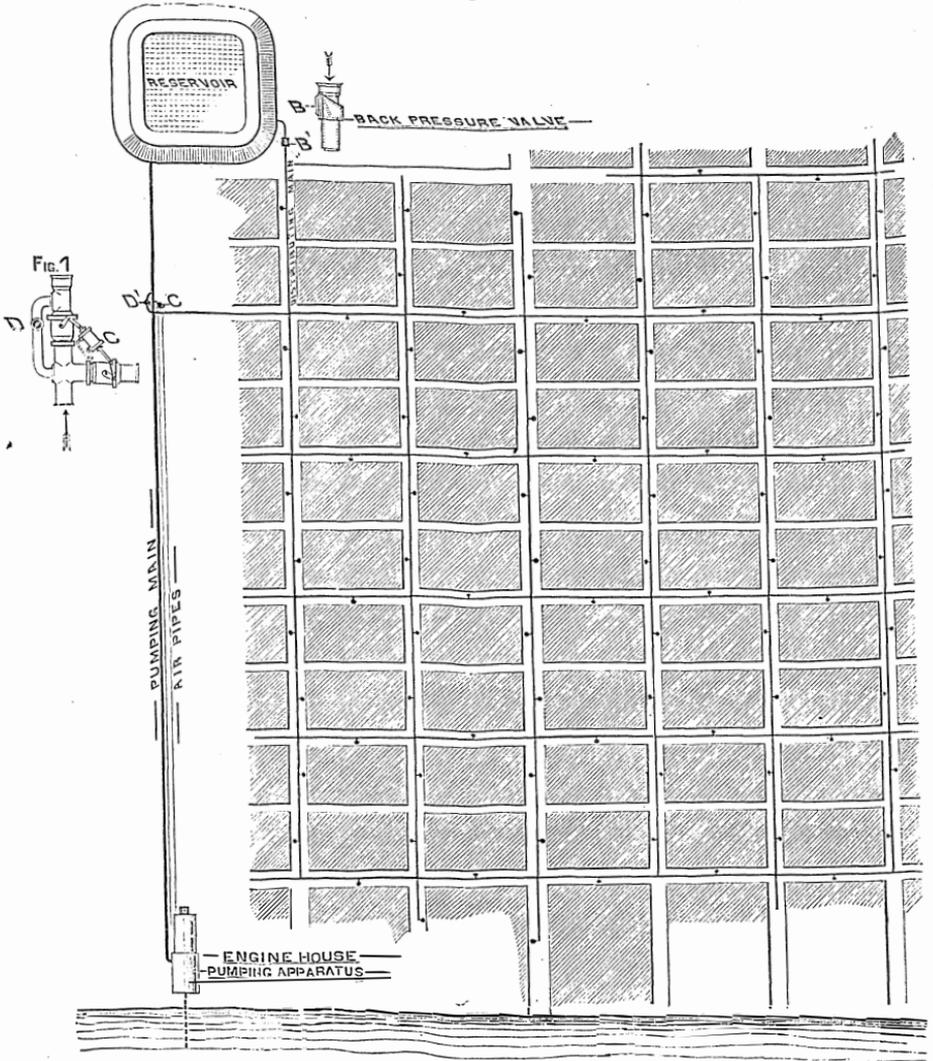


Fig 1. Reversing Apparatus. B. Back Pressure Valve. C. Operating Cylinder.

—o Fire Hydrants.

D. Safety Valve.

in large quantities, projected with force, becomes the only reliance and protection. The value of force in projecting water for extinguishing fire was illustrated on the grounds of the International Exhibition in Philadelphia, by a portable apparatus carried upon the back of a man, and from which the water was forced by means of air compressed to eight atmospheres. A number of varnish barrels containing shavings saturated with coal-oil, were extinguished without exhausting the water in the apparatus (eight and one-half gallons). It would have required a large amount of water thrown from buckets to accomplish the work done by a few gallons projected with great force. Fire-engines for forcing water, when operated by hand, can only throw a limited amount, and the severe character of labor soon exhausts those operating them. Steam-fire-engines are not reliable, except in large cities where a paid fire department can be maintained, as the engines depreciate rapidly when not in use, are apt to be out of order when most needed, and the time dragging them to the scene of conflagration and getting them into service frequently allows the fire to assume such proportions as to be much more destructive than if sooner brought into service.

FIRE PROTECTION.

To meet all these objections, and at the same time present an apparatus simple and efficient which can be made a part of a complete system of water supply, without in any way interfering with the ordinary operation of the works, is the object of the apparatus described below.

Plate No. 1 represents an imaginary town plot with the water-pipes and fire hydrants shown by lines and dots. An engine-house and reservoir are also shown. At any convenient point the pumping main and the main from the reservoir are connected, and the valves to produce the necessary changes are inserted as shown. These valves are represented in detail by Plate No. 2. The back pressure valve is placed near the reservoir on the supply main. The air compressor is located in the engine-house, and produces the power for working the

valves, by merely allowing water from the pumping main to flow into it, which compresses and expels the air into the operating cylinder. The apparatus is provided with safety-valves to regulate the pressure, and prevent the possibility of bursting the pipes by undue strain.

It is rarely possible or desirable to have the reservoir for the ordinary water supply of a town at such an elevation as to produce a sufficient pressure for fire purposes. An elevation of eighty feet above a town plot will give a very satisfactory distribution, with properly proportioned pipes; but in time of fire there would not be sufficient pressure to project the water to any distance, particularly when a number of hose attachments were made at the same time.

The object of this apparatus is to increase the pressure and amount of water delivered by the fire-hydrants during the time of fire. This can be done to any desired amount, limited only by the strength of the pipe, and power and capacity of the pumping apparatus by operating the valve on the reversing apparatus. As soon as the fire is extinguished, the valves can be changed so that the water is pumped into and supplied from the reservoir in the usual manner. These changes can be made in a moment of time by simply operating the valves of the air compressor in the engine-house, police-station, or any other point, however distant from the reversing apparatus.

Several of these works are now in successful operation. A duplicate of the apparatus forming a part of the Chambersburg Water Works is on exhibition in the Centennial Exposition. This is for ten-inch pipe.

In places where works have been constructed with the Improved Fire Protection, and where new policies of insurance have been taken out, largely reduced rates have resulted.

This apparatus would be of great value, as a fire protection, where

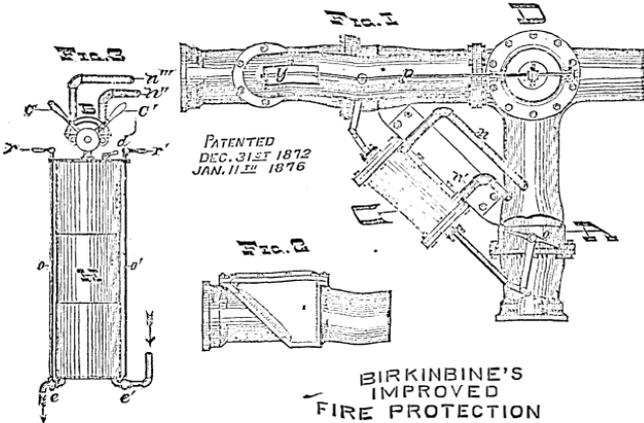
Manufactories, Furnaces, Railroad Shops, Depots, etc.

are supplied by their own pumping-works. With it these establishments will possess the means of extinguishing fires without waiting to haul and put into service fire-engines;

and where steam is always kept up, and watchmen are on duty, as is generally the case in the establishments instanced above, a disastrous fire would be almost an impossibility.

The apparatus can be connected with any water supply pumped through a reservoir or water tower, or with any direct supply works to which a reservoir can be added, thus maintaining the advantages of water held in store and permitted to purify itself in reservoirs for ordinary service, and of a fire protection by direct supply in case of such an emergency.

Plate 2.



PATENTED
DEC. 31ST 1872
JAN. 11TH 1876

BIRKINBINE'S
IMPROVED
FIRE PROTECTION

Fig. 1.
Valve Changing
Apparatus.

Fig. 2.
Back Pressure
Valve.

Fig. 3.
Air Compressor.

C Operating Cylinder.

D Safety Valve.

n, n', &c., Pipes connecting
Compressor & Operating Cylinder.

EXHIBITED AT THE
INTERNATIONAL EXHIBITION,

PHILADELPHIA, 1876.

MACHINERY HALL, South Avenue, fifty paces west
from crank end of Corliss Engine, left hand,
near column B, 46.