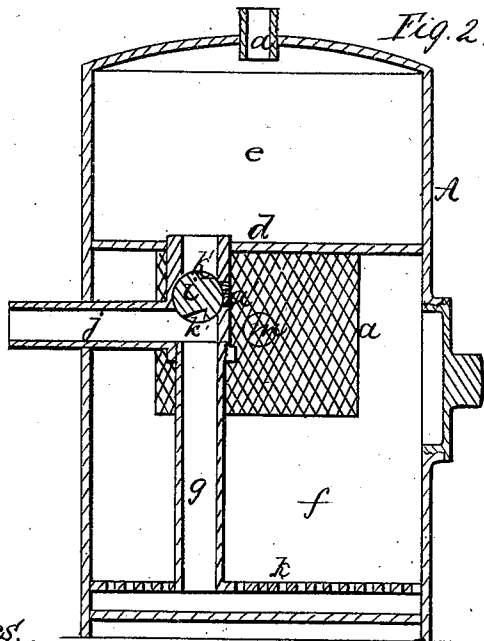
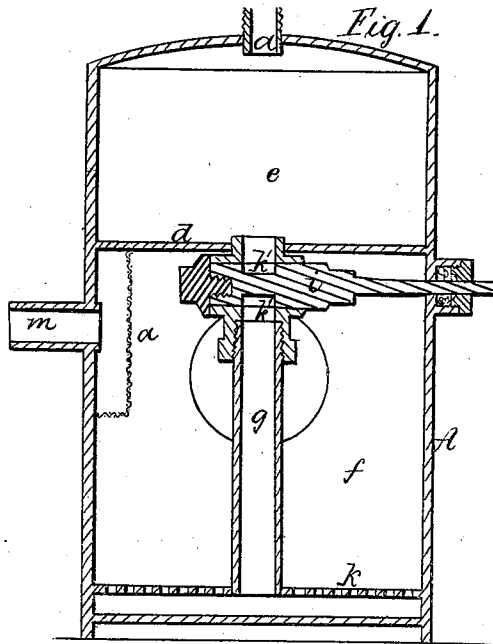


*I. H. Clark.*

*Fire Extinguisher.*

*N<sup>o</sup> 99, 291.*

*Patented Feb. 1, 1870.*



*Witnesses,  
Geo. D. Loring.  
Fred. Curtis.*

*Inventor,  
I. H. Clark*

# United States Patent Office.

ISAAC H. CLARK, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 99,291, dated February 1, 1870; antedated January 20, 1870.

## IMPROVEMENT IN APPARATUS FOR EXTINGUISHING FIRES.

The Schedule referred to in these Letters Patent and making part of the same.

To all to whom these presents shall come :

Be it known that I, ISAAC H. CLARK, of Boston, in the county of Suffolk, and State of Massachusetts, have made an invention of a new and useful Device for Extinguishing Fires; and do hereby declare the following to be a full, clear, and exact description thereof, due reference being had to the accompanying drawings, making part of this specification, and in which—

Figures 1 and 2 are vertical sections of an apparatus embodying the principle of my invention.

The object of my present invention is to produce a fire-extinguisher, which may be carried and operated by one person as a portable engine, or which may be combined with a force-pump fire-engine, or street-hydrant, or water under pressure, as the case may be, being equally effective under any of these conditions.

The invention consists in the employment of a closed vessel or reservoir, divided into two compartments, for receiving the two chemicals or constituent parts, which, when united, form the carbonic-acid gas, which is the agent employed to extinguish fires, the communication between the two chambers being regulated and controlled by a valve of peculiar construction, and the lower chamber provided with a discharging-orifice or pipe, the whole being as hereinafter explained.

In the drawings above mentioned as illustrating my invention—

A denotes a cylindrical vessel, made of a strength sufficient to withstand considerable internal pressure, such vessel being closed at top and bottom, and provided at the former with a filling-orifice, *a*, the lower chamber also being furnished with a water-inlet orifice, as shown at *c*.

A horizontal partition or floor, *d*, divides the vessel A into two chambers *e f*, a vertical pipe, *g*, extending from the floor nearly to the bottom of the vessel, and through a foraminous floor, *h*, fixed within such vessel, and a short distance above its bottom.

The pipe *g* is furnished with a cock or circular gate, *i*, immediately below the floor, such gate having one or more peripheral recesses *k k'* made in it.

A water-inlet or aperture, *j*, is formed in the lower chamber *f*, and in alignment or on a level with the lower part of the gate, and connecting with the upright pipe *g*, and so that a stream or jet of water, flowing through such orifice or inlet, and into the chamber, shall impinge against the gate, and rise with the liquid from the upper chamber, as it is brought round by such gate, the water thus charged being discharged upon the bottom of the vessel A, from whence it rises upward through the foraminous floor *h*, and impinging against the marble resting upon such floor, by this means charging the lower chamber with carbonic-acid gas, which, mingling with the water, is

forced by its own pressure within such water through the outlet-pipe of the apparatus. This outlet is shown at *m*, as situated somewhat near the upper part of the chamber *f*, the entrance to this outlet being protected by a gauze shield, *n*, for preventing entrance into the pipe of sediment or portions of gas-producing material from the chamber.

The foraminous floor is for the purpose of supporting the marble employed in generating carbonic-acid gas, as well as for allowing sediment to collect below.

The operation of the above-described device is as follows:

A quantity of marble or other ingredients, preferably in small blocks or of a granular form, is placed within the lower chamber *f*, through its filling-orifice, the chamber then being partially filled with water, and the orifice tightly closed. A quantity of sulphuric acid is then placed into the upper chamber *e*, through its filling-orifice *a*.

The apparatus is now ready for use; and when used as a portable engine upon a person's back, and a fire is to be extinguished by the use of it, the gate is to be rotated one or more times by means of a handle or crank applied to its shaft, every rotation of this gate allowing a small quantity of acid to be precipitated upon the marble or other ingredient or solution below, thus producing carbonic-acid gas.

The cock of the discharge-pipe is next to be opened, and the water, thus impregnated with gas, issuing from such pipe under pressure, induced by its own expansion or any other force, to be directed upon the flames to be subdued, with an effect now well known and understood.

When used as a portable engine, as last described, the water-inlet pipe is to be closed by a suitable cock. The apparatus, however, by means of this pipe, may be connected to a fire-engine, street-hydrant, or other supply of water under pressure.

Upon opening its cock, the stream of water passes in contact with the circular gate and rotates it, by this means causing a passage of sulphuric acid from the chamber *e*, which, mixing with the water, is discharged with it into the lower chamber *f*, and striking below its foraminous shelf, the marble or other ingredient or solution is charged with gas, the combined water and gas issuing from the chamber through the discharging-pipe, by this means combining the advantages of an ordinary stream of water from an engine with that of the carbonic-acid gas.

The valve may be operated by means of a crank applied to its shaft, or by connecting such shaft to the machinery of a fire-engine or pump.

I would remark that an opening, *a'*, should be made in the body of the cock, surrounding the gate *i*, and opposite the water-inlet pipe *c*, before mentioned, the

object of this opening being to allow of the escape of small quantities of liquid which would otherwise remain in the recesses of the cock, and be carried round by it.

I would remark that the foraminous shelf, although not a necessity, yet serves a valuable purpose, as before explained.

I would also remark that it will be obvious that ingredients or materials, other than those before described, may be employed to produce carbonic-acid gas, but I do not mean to limit myself to the use of any particular ingredients for the purpose aforesaid.

I would also remark that the valve or gate *i*, constructed as above described, will be found useful in

many other localities, or combined with different objects; for instance, for the purpose of feeding supply-water to steam-generators it will be found to serve a valuable purpose, as it allows such water to flow to the boiler, under pressure of the latter, without escape of steam therefrom.

I claim, regulating the passage of liquid or material from the upper to the lower chamber by means of the gate *i*, or its equivalent, substantially as set forth and explained.

I. H. CLARK.

Witnesses:

GEO. A. LORING,  
FRED. CURTIS.