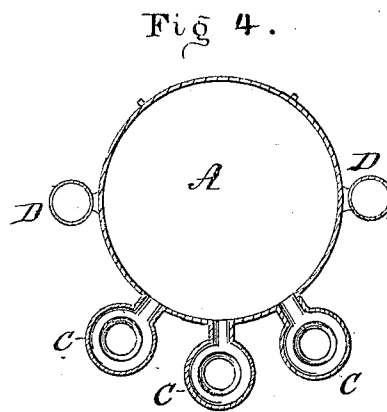
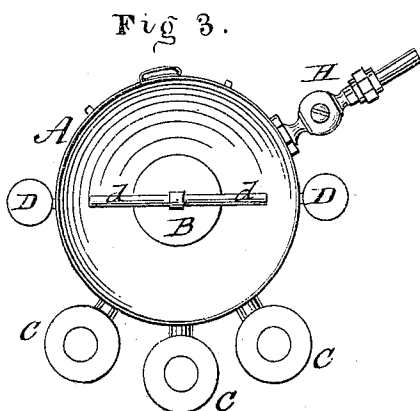
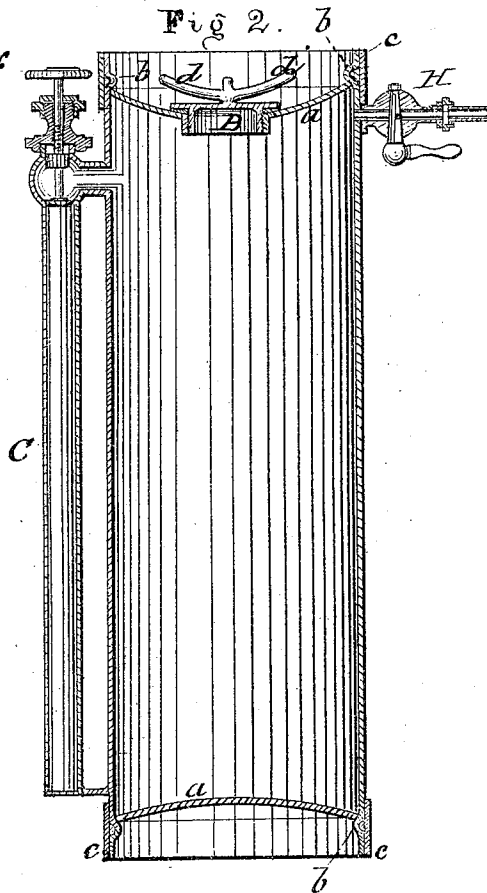
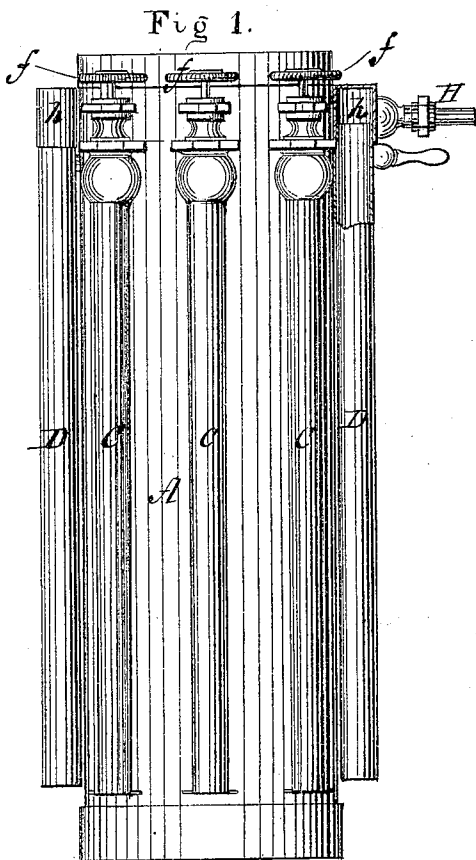


J. H. STEINER.
Fire-Extinguishers.

No. 141,825.

Patented August 12, 1873.



Witnesses.

H. H. Dodge.
N. S. Miller.

Inventor.

John H. Steiner
By his attys
Dodge & Son

UNITED STATES PATENT OFFICE.

JOHN H. STEINER, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF HIS
RIGHT TO LLOYD CANADAY, OF ALBANY, NEW YORK.

IMPROVEMENT IN FIRE-EXTINGUISHERS.

Specification forming part of Letters Patent No. 141,825, dated August 12, 1873; application filed
June 23, 1873.

To all whom it may concern:

Be it known that I, JOHN HENRY STEINER, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain Improvements in Fire-Extinguishers, of which the following is a specification:

My invention relates to that class of fire annihilators or extinguishers which consist of a vessel charged with water and with chemicals to produce carbonic-acid gas, which latter is ejected, together with the water, by its own pressure. The invention consists in providing the apparatus with two or more charges of chemicals, so arranged that after one charge is exhausted the machine may be quickly recharged for further use; and in certain details of construction, as hereinafter explained.

Figure 1 is a side elevation of my apparatus turned upside down, as it is when not in use. Fig. 2 is a vertical central section of the same; Fig. 3, a bottom end view of the apparatus; and Fig. 4, a transverse section of the same.

In constructing my apparatus I first provide a body or vessel, A, of a cylindrical form, having its two ends or heads *a* concave or dished on the outside. Each head or end has its outer edge supported against a bead or flange, *b*, extending around the entire inner face of the cylinder, and formed by indenting the metal from the outside, as shown in Fig. 2. Each end of the body is surrounded by a strengthening-band or hoop, *c*, which covers the groove made by indenting the body to form the flange. By arranging the concave heads to bear under the beads or flanges, and strengthening the ends by the hoops, I render the ends of the body cheap, strong, and tight. The pressure of the gas in the body against the concave heads tends to flatten them out and expand them laterally, thereby causing their edges to engage with increased security and tightness under the beads or flanges. The lateral pressure of the heads due to their expansion is received by the cylinder and strengthening-hoops, and in the direction in which they will resist the greatest strain, so that there is far less liability of the heads giving way than in machines of the usual construction. One of the heads of the machine I provide with an opening

closed by a screw-plug, B, having arms or handles *d*, by which it is turned. The head to which the plug is applied, being concave and arranged below or within the end of the body, serves as a large funnel, and admits of the body being readily filled with water when the screw-plug is removed. The plug is arranged in the lower or bottom end of the body; but when the machine is not in use, and when being charged, it is turned upside down, as shown. The handles *d* of the plug B are curved upward and are made quite heavy, so that when the plug is unscrewed the handles will tip it over edgewise, and thereby open the hole to permit the inward flow of water. By thus weighting the handles I overcome the necessity for removing the plug from the machine, and consequently avoid the trouble and delay which frequently result from the loss or misplacement of the ordinary plugs when charging a machine during the excitement and hurry incident to a fire. The machine, being filled with water containing a proper quantity of bicarbonate of soda, is started by admitting a proper quantity of sulphuric acid, which causes the instantaneous generation of carbonic-acid gas. The gas, mingled with the water, issues with great force through a cock, H, provided for the purpose, as usual.

On the outside of the body A I secure two or more tubes, C, to hold the charges of sulphuric acid, each tube of the proper size to hold one charge. Each tube communicates at its lower end with the interior of the body, and is provided with a cock, *f*, by which the communication may be closed. I also provide the body on the outside with two or more tubes, D, to receive cartridges or packages of bicarbonate of soda. These tubes have no connection or communication with the interior of the body; but each one has a removable cap or cover, *h*, to permit the introduction and removal of the cartridges.

When the machine is first charged one charge or supply of soda is dissolved in the water, and hence the number of tubes D used is one less than the number of acid-tubes, no acid being admitted into the body until the apparatus is required for use.

The body of the machine is filled with wa-

ter containing the single charge of soda, a cartridge of soda placed in each of the tubes D, and a charge of acid placed in each tube C, and their cocks closed. The machine is then allowed to stand in this condition, upside down, until required for use. Being upside down, the valves, plug, and cock are all above the water and acid, so that there is no liability or danger of their corroding and becoming immovable.

As the acid-tubes stand upside down, and have no connection with the interior of the body at their upper ends, there is no chance whatever for the acid to leak into the body and start the apparatus accidentally.

In case a fire occurs and the machine is required for use, it is simply turned right side up, one of the valves opened to allow the acid to enter the body, and the cock opened to allow the escape of the gas and water, as usual. As soon as the charge is exhausted and the body emptied of water, the machine is turned upside down and the plug B unscrewed. One of the soda cartridges is then withdrawn from its tube, broken in two, and the soda poured on the head and into the plug-hole. Water is then poured in until it fills the body, dissolving and washing the soda therein. The plug is then screwed in place, the machine again turned over, and another charge of acid ad-

mitted, and so on repeatedly, until all the charges are exhausted or the fire extinguished.

In case, from any cause, the acid from one tube should not flow into the body when its valve is opened, acid from another may be admitted, so that there is no danger of the machine failing to operate at all, as often happens with those now in use.

It is obvious that the machine may be provided with any suitable number of extra charges, but ordinarily I find two sufficient. The acid-tubes are made of brass or copper, and lined with lead to resist the action of the acid.

Having thus described my invention, what I claim is—

1. A fire-extinguisher provided with separate and independent acid-tubes C, and valves *f* or their equivalents, allowing the introduction of successive charges of acid, as set forth.

2. In combination with the extinguisher having the acid-tubes C, as set forth, the tubes or receivers D to hold the charges of bicarbonate of soda, as set forth.

3. A fire-extinguisher having concave heads *a*, bearing under beads or flanges *b* on the body, as shown.

Witnesses: JOHN H. STEINER.

PHIL. T. DODGE,
JOS. T. K. PLANT.