D. T. PERKINS.
Fire-Extinguisher.

No. 212,322. Patented Feb. 18, 1879.

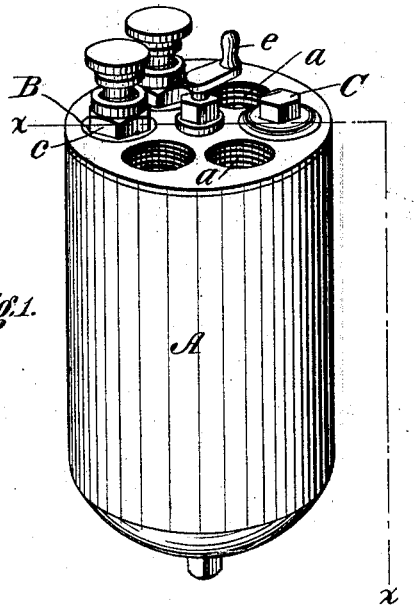

Fig. 1.

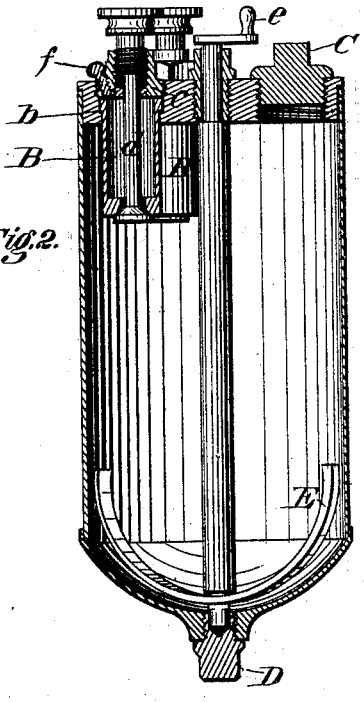

Fig. 2.

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Fig. 3.

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DUANE T. PERKINS, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN FIRE-EXTINGUISHERS.

Specification forming part of Letters Patent No. **212,322**, dated February 18, 1879; application filed September 21, 1878.

To all whom it may concern:

Be it known that I, DUANE T. PERKINS, of Springfield, in the county of Hampden and State of Massachusetts, have invented certain Improvements in Fire-Extinguishers, of which the following is a specification:

My invention consists in providing the body of a fire-extinguisher with a series of detachable acid-chambers extending directly through its end and provided with their own valves, and also in caps for closing the openings from which chambers may be removed, and in a scraper of peculiar form and arrangement, and in an agitator of peculiar construction, all as hereinafter explained.

In the accompanying drawings, Figure 1 represents a perspective view of my improved apparatus; Fig. 2, a longitudinal vertical section of the same on the line *x x* of Fig. 1, and Fig. 3 a plan view of the agitator detached.

The objects of this invention are to permit the continuous use of the extinguisher for a long time, to afford a convenient means of recharging the acid-chambers when exhausted, to prevent the formation of a deposit at the discharge-opening of the acid-chambers, and to secure a thorough dissolution and prevent the settling or deposit of the soda at the bottom of the extinguisher.

In the drawings, A represents the body of the extinguisher, made, as usual, of cylindrical form, and B the detachable acid-chambers, inserted through the top of the body and retained in place by screw-threads on the exterior of their caps or top, which engage in corresponding threads formed in the sides of the openings *a*, through which they are inserted. The number and arrangement of the acid-chambers may be varied according to the size and design of the machine; but in practice I prefer to arrange them radially about the center, as shown. The construction and material of the acid-chambers may also be modified; but, in practice, the construction represented in Fig. 2 is found to be convenient and economical. The chamber consists of an externally-threaded cap or plug and a body or chamber upon which it fits, the chamber or vessel proper being formed with an exterior rim or flange, *b*, at or near its upper end, which rests, when the vessel is in place, upon a corresponding shoulder in the opening *a*, and provided with a cap or top, *c*, threaded on its exterior to permit it to be screwed into the opening *a*. Each acid-chamber B is furnished with a central valve-stem, *d*, extending vertically through it from end to end, provided at its upper end with a milled head or handle by which to turn it, and a threaded portion seated in the cap *c* to cause the raising or lowering of the stem as it is turned, and at its lower end with a downward-opening valve or plug to close or open the discharge-orifice in the lower end of the chamber. When the acid-chambers are to be charged or filled they are preferably removed from the body A, and the stem of each is turned so as to draw up the plug and close the discharge-opening, this operation serving also to draw the cap *c* and the acid-chamber proper closely together, and thus to close the chamber at top and bottom. An opening is formed through each cap *c*, closed by a screw stem or plug, *f*, the acid being inserted through said openings, which are afterward closed by the screw stems or plugs, as mentioned.

The chambers thus filled are inserted and secured in their respective openings, their lower ends immersed in the water with which the vessel is nearly filled, the greater specific gravity of the acid causing it to flow out readily when the chamber is opened and mingle with the water. By thus arranging the plug to open downward it is less exposed to the acid, and is consequently less liable to become corroded or rusted fast in the event of imperfect coating, while that portion of the stem which is exposed to the acid is not required to pass upward through the cap *c* or its packing, and is therefore not liable to turn hard in opening the discharge-orifice.

One of the openings *a* is furnished simply with a plug or cap, *c*, the removal of which permits the insertion of the soda-charge and the necessary supply of water.

As commonly constructed, fire-extinguishers have the acid-chamber centrally located, necessitating the placing of the agitator on a transverse horizontal shaft, and also requiring the cutting away of the arms or blades thereof at the center to pass by the chamber. This construction allows a portion of the soda to

settle at the bottom of the extinguisher-body and to form a deposit there opposite that portion of the agitator which is cut away.

By my arrangement of the acid-chambers I am enabled to place the agitator on a vertical shaft extending centrally through the machine, stepped at its lower end in the central plug D, and extending out through the top of the machine to receive a crank, *e*, by which it is rotated.

The agitator E is curved or fashioned to conform closely to the interior of the cylinder A at its lower end, and has the leading edge of its flukes or blades beveled off or inclined outward, so that the water shall be continually thrown from the blades toward the center of the machine, thus causing a thorough mingling of the soda and water, and a complete dissolution of the former, while at the same time the blades traveling close to the face of the cylinder act as scrapers to dislodge any adhering particles of soda.

I am aware that a single interior acid-chamber has hitherto been used; and I am also aware that a series of external fixed acid-chambers communicating with the cylinder through suitable openings has also been applied in the construction of fire-extinguishers, and hence I do not claim such; but I am not aware that a series of detachable internal acid-chambers has ever been so employed.

The advantages are apparent, all danger through the handling of acid during the bustle and excitement of a fire being obviated, and the chambers being adapted to be readily and conveniently filled and placed in position.

It will also be observed that in the event of all the acid-chambers becoming exhausted, a fresh supply of filled chambers can be readily substituted and the machine continued in action, the exhausted chambers, if necessary, being carried to a point away from the crowd and excitement, filled, and returned, ready for a second insertion and use. The parts exposed to the acid will of course be coated with or formed of some material not affected thereby.

Having thus described my invention, what I claim is—

1. A fire-extinguisher provided with a series of detachable independent acid-chambers inserted through its end and extending directly into its interior, and with cap *c* for closing the openings from which the acid-chambers may be removed for filling, whereby the apparatus may be varied in capacity and a continued operation secured during the filling of the acid-chambers.

2. In combination with the body having the rounded lower end, the central shaft and the curved scraper having the thin sharp-edged body, as shown.

3. A fire-extinguisher provided with two acid-chambers extending and discharging directly into its top, said chambers being adapted to be used and filled alternately, whereby a continuous operation of the apparatus may be maintained.

4. In a fire-extinguisher, a body provided at the top with two acid-chambers extending and discharging therein, each chamber provided with its own valve and spindle to close the inner end, and with a filling valve or plug at the outer end, as shown, whereby the apparatus may be kept in operation during the filling of either or both of the acid-chambers.

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