J. B. Van Dyne,

Fire Extinguisher.

No. 109976. Patented Dec. 6. 1870.

Fig. 3.

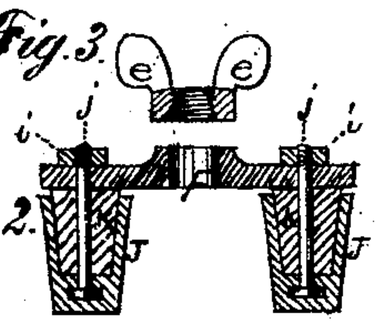


Fig. 2.

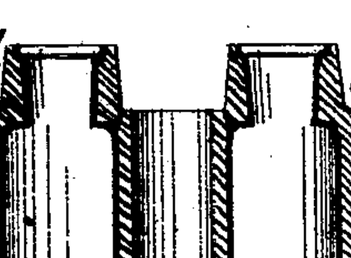


Fig. 1.

Fig. 7.

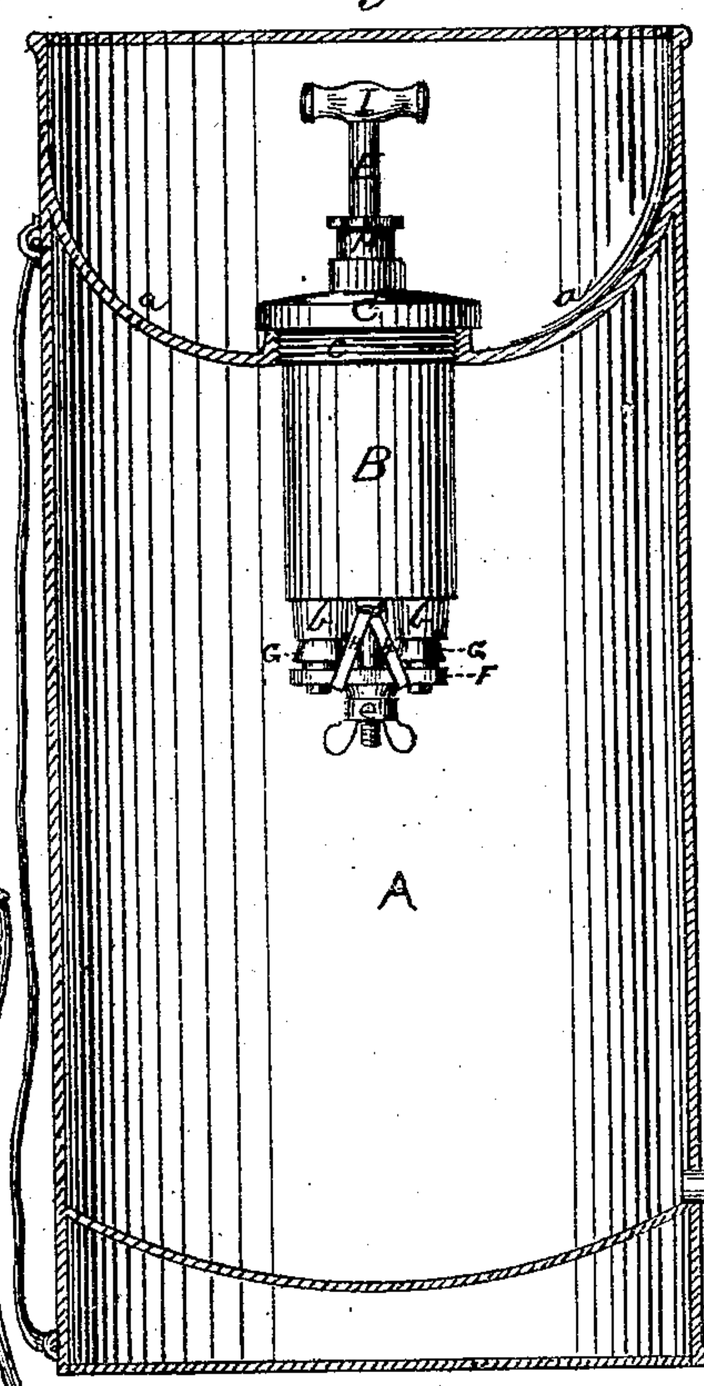


Fig. 5

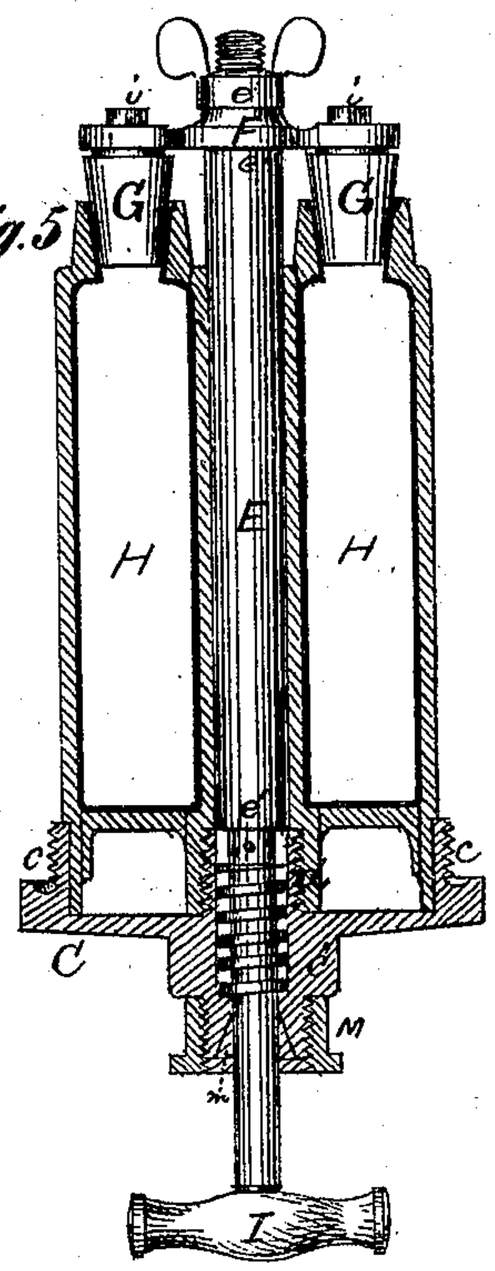


Fig. 6.

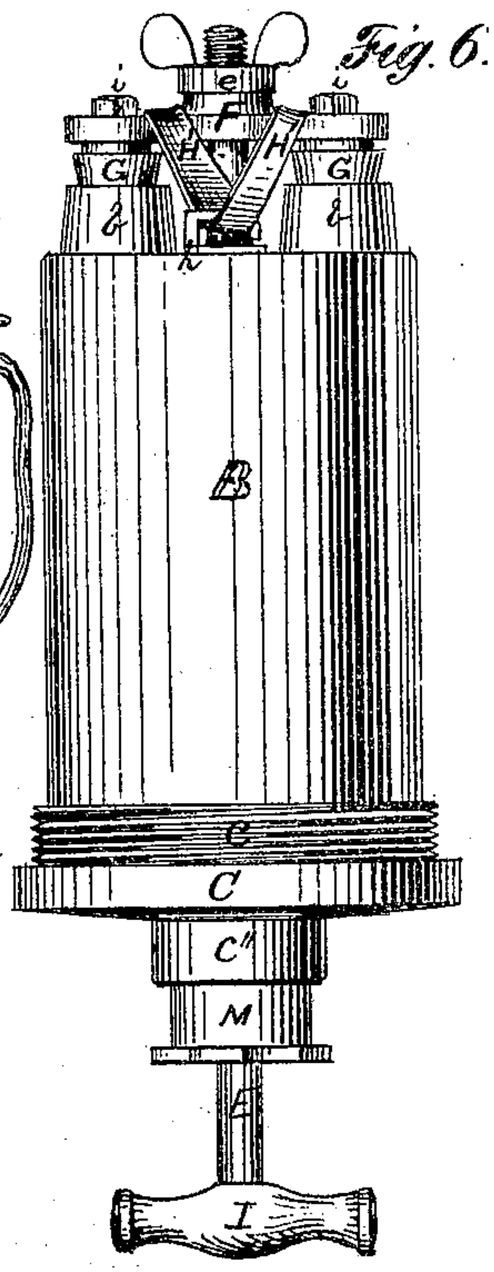
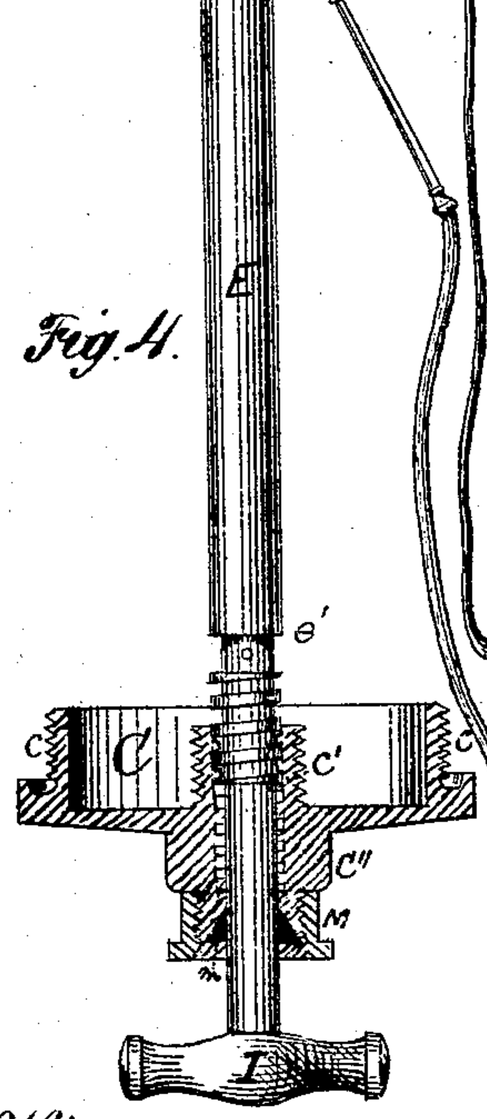


Fig. 4.



Witnesses:
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Wm. Wagner.

Inventor:
Jacob B. Van Dyne

UNITED STATES PATENT OFFICE.

JACOB B. VAN DYNE, OF COVINGTON, KENTUCKY.

IMPROVEMENT IN FIRE-EXTINGUISHERS.

Specification forming part of Letters Patent No. **109,976**, dated December 6, 1870.

To all whom it may concern:

Be it known that I, JACOB B. VAN DYNE, of Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Fire-Extinguishers; and I do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawing, making part of this specification, and to the figures and letters marked thereon.

This invention relates to an improvement on my fire-extinguisher patented July 12, 1870; and consists in the peculiar construction and arrangement of the cartridge containing the acid-bottles, the construction of the stoppers of these bottles, and the construction and arrangement of the operating-plunger, and has for its object the production of a more secure and complete cartridge—one that is capable of being easily inserted and removed from the reservoir, and which is provided with stoppers impervious to the action of the acids contained in the acid-bottles.

In the accompanying drawing, Figure 1 represents a longitudinal vertical section of the cartridge of my improved fire-extinguisher, with the plunger and stoppers removed. Figs. 2 and 3 represent similar views of the stoppers and the thumb-screw of the plunger. Fig. 4 is a side elevation of the operating-plunger and a sectional view of the cartridge-cap. Fig. 5 is a longitudinal vertical section of the cartridge with the plunger and stoppers inserted. Fig. 6 is an elevation of the cartridge complete; and Fig. 7 is a longitudinal vertical section of the reservoir, with the cartridge inserted and hose attached.

Similar letters of reference indicate corresponding parts.

The casing or reservoir A is made of any suitable material strong enough to withstand the pressure to which it may be subjected, and may be of any suitable form, preferably that of a cylinder. The top *a* of the reservoir is made concave, and is placed below the casing sufficiently far to admit of the apparatus being stood on its head without any of its parts coming in contact with the ground. In the center of this concave top is a circular opening for the admission of the cartridge, which is secured therein by its cap C, the screw-threads *c* on the outside of the same entering corresponding threads in the sides of said opening.

The cartridge consists of the casing B, with its legs or external tubes *b b*, center tube D, cap C, plunger E, stirrup F, stoppers G G, thumb-screw *e'*, and rubber band H', with its clevises *h h*. The center tube D runs the entire length of the case B, and forms an annular chamber, running the entire length of the same. This annular chamber is occupied by the two acid-bottles H H, made of strong glass, and segmental in form, which are placed in the case B, so as to surround the tube D, and have their necks to pass into the external tubes *b b*. After being thus inserted the upper portion of the case B is filled with a suitable hydraulic cement, which cements the bottles solidly in the case. The upper end *d* of the center tube D is made wide, and its interior provided with screw-threads to receive the screw *c'* of the cap C, and holds it in position on top of the case B. The screw-plunger E is made larger in its center than at either end, thereby forming the shoulders *e' e'*, the lower one of which drives down the stirrup F, while the upper prevents the plunger from being screwed up out of its seat in the cap C. The plunger E is run down through the center tube D and through the cap C, where the screw-threads on its neck engage with the threads in the center of the cap. The top of the plunger E is provided with the knob I, and its end is threaded, so as to form the screw *e''*, which passes through an opening in the center of the stirrup F, and is provided with the thumb-screw *e*.

The stoppers of the acid-bottles consist of the lead shell J, bolt *j*, and rubber plugs K K. The bolts *j* are provided with heads, (other than round,) and the lead shells J are cast upon them, as shown. The other ends of the bolts *j* pass up through the center of the rubber plugs K K, and pass through holes in each end of the stirrup, and are secured therein by means of the nuts *i i*. It is obvious that as these nuts are turned the rubber plugs K K will be drawn up against the under side of the stirrup F, and swollen out in the lead shells J J. My object in constructing the stoppers in this manner is to render them impervious to

the action of the acid in the bottle by means of their lead shells or coating, and to give the shells a certain amount of elasticity by means of their rubber fillings or plugs K K.

The stirrup F is placed over the mouths of the acid-bottles in such manner that the stoppers G G will enter the same, and be held therein by means of the rubber band H′ and thumb-screw *e*.

The extension *c″* of the cap C forms a packing-chamber, *m*, for the plunger, which is inclosed by the screw-cap M.

When the cartridge is complete, primed, and ready for use, it presents the appearance shown in Fig. 6.

The operation of my invention is as follows: The cartridge being primed by filling the bottles with the acid, and the reservoir with water containing the proper solvents, the cartridge is inserted in the reservoir, and screwed down into the concave top *a*. The plunger E is then screwed down, by means of its knob I, until its lower shoulder *e′* presses against the stirrup F, forces the stoppers out of the acid-bottles, liberating the acids therein, which, combining with the solvents in the reservoir, generates the desired quantity of gas, which forces the chemical water through the faucet N. The apparatus is reprimed by withdrawing the cartridge, unscrewing its cap, removing the discharged cartridge, and replacing it by a fresh one, and the cartridge is reprimed by turning the stoppers to one side and refilling the acid-bottles.

In all fire-extinguishers other than those of my invention, great trouble and care are required to preserve the bottles containing the gas-generating acids, and much delay occurs in priming the apparatus with the same. In my fire-extinguishers the cartridges are always primed, and one can be used while another is being reprimed. They are strong, durable, and free from all liability to injury, and will last as long as any other part of the apparatus.

Having thus fully described the nature and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The cartridge consisting of the case or cup B, provided with the center tube D and external tubes *b b*, constructed and arranged in combination with the acid-bottles H H, in the manner and for the purpose herein set forth and described.

2. The cartridge-cap C, provided with the tubular screw-extensions *c′ c″*, the upper portion of the extension *c″* being beveled on its interior, so as to form the packing-chamber *m*, and provided with the screw-cap M, all arranged and operating as herein set forth, and for the purposes described.

3. In combination with the cap C, the screw-plunger E, constructed and arranged as herein shown, for the purpose of operating the stoppers of the acid-bottles by means of the stirrup F and thumb-screw *e*, in the manner described.

4. The acid-proof stoppers G, consisting of the lead shells J, screw-bolts *j*, and rubber plugs or cores K, connected and operating with the stirrup F, in the manner and for the purpose herein set forth and described.

5. The convex top *a* of the reservoir A, that it may serve as a funnel to assist in filling the same, and admit of the apparatus being stood on its head to protect the cartridge from being disturbed, as herein shown.

In testimony that I claim the foregoing improvement in fire-extinguishers I have hereunto set my hand this 17th day of August, 1870.

JACOB B. VAN DYNE.

Witnesses:
GEO. W. MCGILL,
JOHN W. MCGILL.