2 Sheets--Sheet 1.

A. GRAY.

Chemical Fire-Extinguisher.

No. 161,504. Patented March 30, 1875.

FIG. 1.

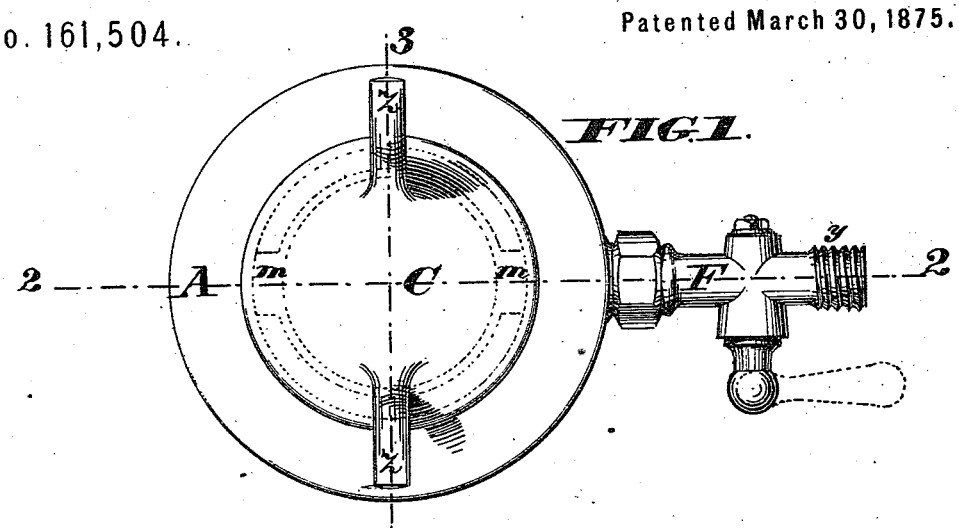
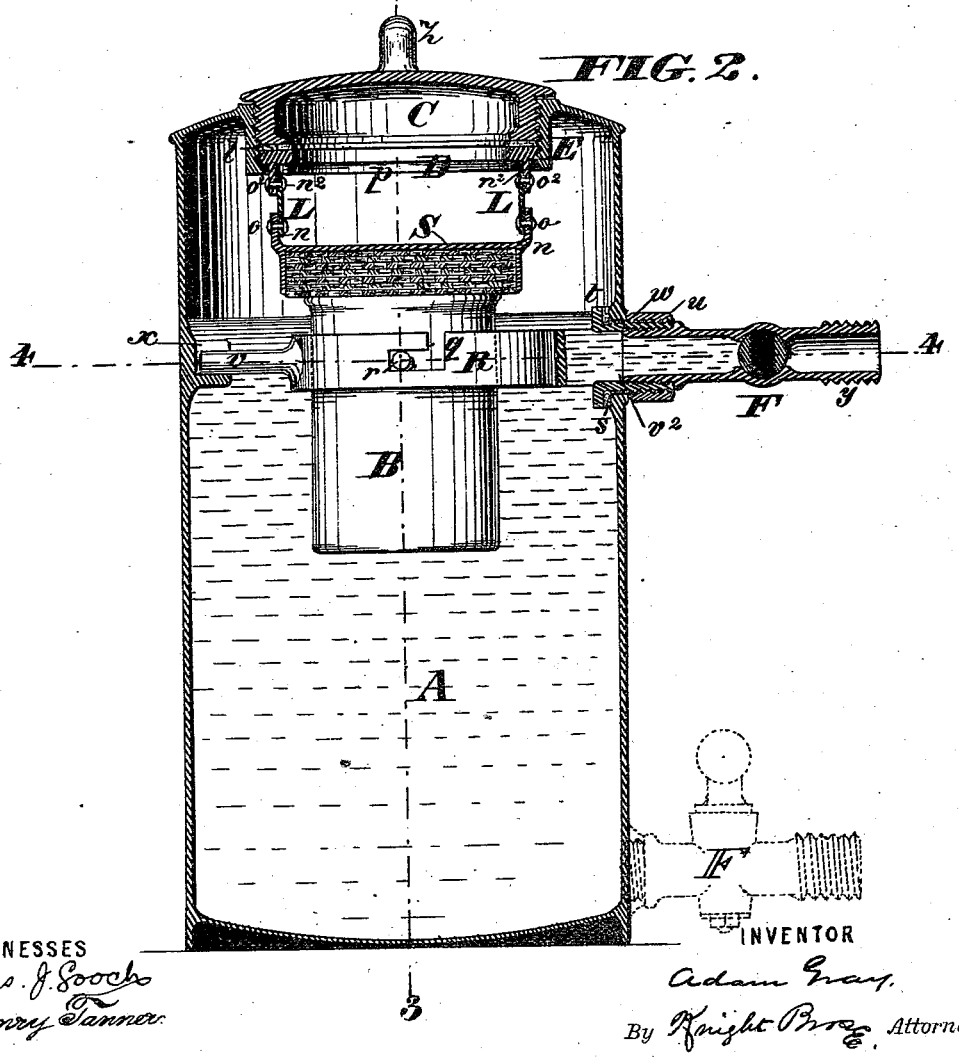


FIG. 2.



WITNESSES

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2 Sheets--Sheet 2.

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FIG. 3.

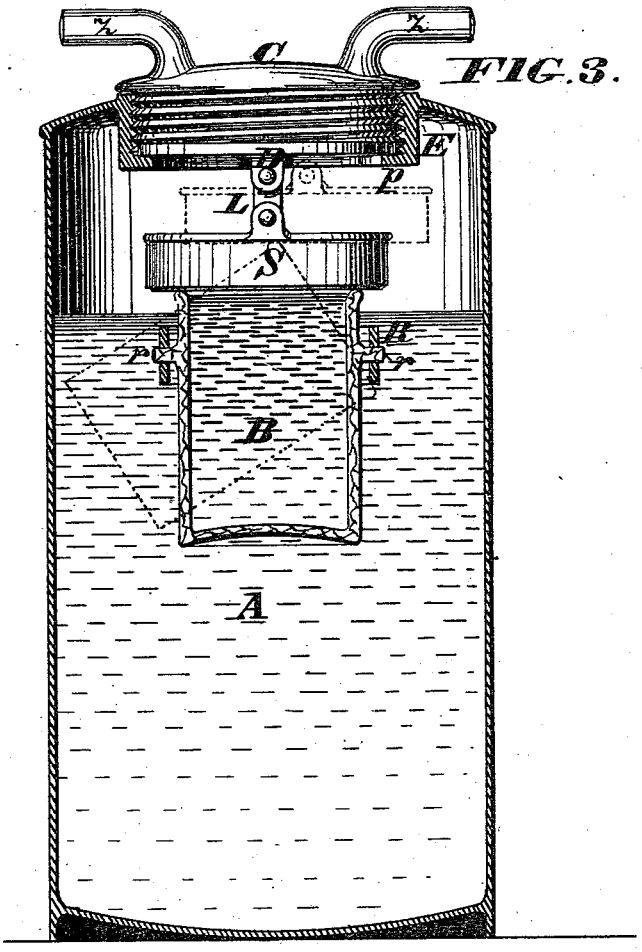
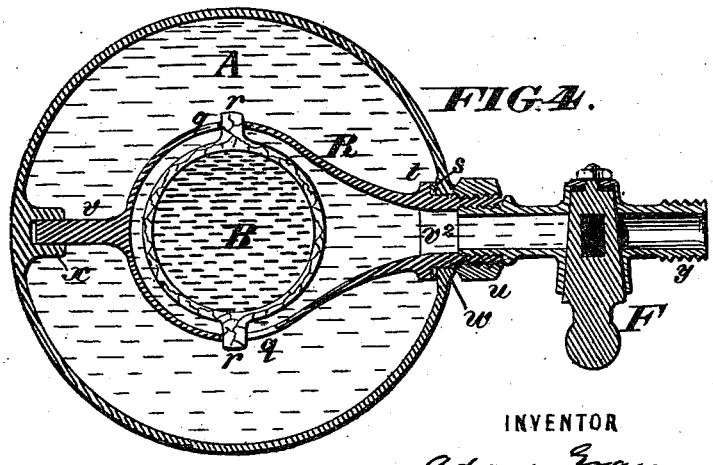


FIG. 4.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN CHEMICAL FIRE-EXTINGUISHERS.

Specification forming part of Letters Patent No. **161,504**, dated March 30, 1875; application filed March 3, 1875.

To all whom it may concern:

Be it known that I, ADAM GRAY, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Chemical Fire-Extinguishers, of which the following is a specification:

This improved fire-extinguisher has a single vertical cylinder or tank, of variable shape, forming a gas-chamber, and containing the alkaline solution, and within this a pivoted acid-bottle, which is tilted or inverted to discharge its contents when the apparatus is to be used. One or more faucets give vent to the gas, and provide for attaching hose.

The present invention consists, first, in the employment or use, in combination with a pivoted acid-bottle, of a stopper which is pivoted above the same, so as to be displaced in the act of tilting the bottle by the movement of the latter.

The invention consists, secondly, in supporting the acid-bottle by pivots or trunnions in a frame having cross-pivots or trunnions, so as to adapt the bottle to accommodate itself to a stopper supported above it.

The invention consists, thirdly, in connecting the pivoted frame of the acid-bottle with the discharge-faucet, so that the acid-bottle can be tilted by turning the faucet; and this movement is made to bring the handle of the faucet valve or key into convenient position for its subsequent use to give vent to the gas.

The invention consists, fourthly, in a mode of pivoting the acid-bottle in its frame, so as to adapt it to be readily removed and replaced.

The invention consists, fifthly, in a peculiar combination of devices for attaching and packing the faucet and the tilting bottle-frame by the same means.

The invention consists, sixthly, in connecting the yielding stopper to its supporting-ring by pivoted vertical links, which afford a solid support while their pivots are in line, and instantly relieve the pressure when deflected by the movement of the bottle.

The invention consists, seventhly, in the employment of a screw-cap and a notched flange within the neck of the tank, in combination with the supporting-ring and pivoted links of the stopper, for applying, securing, and relieving the latter, in the manner hereinafter set forth.

The improved chemical fire-extinguisher is peculiarly simple, and adapted to be manipulated with ease and certainty, while it is free from liability to be rendered inoperative by corrosion or leakage. It is also peculiarly free from liability to be prematurely "charged" by accident.

Figure 1 is a plan view of a small-sized chemical fire-extinguisher, illustrating this invention. Fig. 2 is a vertical longitudinal section of the same on the line 2 2, Fig. 1. Fig. 3 is a vertical longitudinal section on the line 3 3, Figs. 1 and 2, its plane of section being at right angles to that of Fig. 2. Fig. 4 is a horizontal section on the line 4 4, Fig. 2.

The outside or exposed parts of this improved fire-extinguisher are a vertical tank-can, A, constructed of galvanized iron, or other suitable material, and of variable shape; a screw-cap, C, having handles *z*, which may be a casting of brass or iron, and one or more faucets, F, terminating in screw-necks *y*, for the attachment of hose. A single faucet near the top of the can is shown in full lines in the illustration. A second faucet at the bottom is shown in dotted lines in Fig. 2.

In the following description the faucet will refer to the one shown in full lines, which is alone essential to the operation of the apparatus as illustrated.

In line with the axis of the faucet F, on the opposite side of the tank, a pivoted bearing, *x*, is provided, and at the junction of the faucet a concentric circular opening, *w*, is formed. A metallic frame, R, having trunnions v v^2, is mounted in these bearings, and supports a glass bottle, B, to contain the acid. The outer trunnion v^2 of this frame is hollow, and the faucet F is screwed into its protruding end, which is also threaded externally, for the reception of a clamping-nut, *u*. An external flange or collar, *t*, supports a packing-gasket, *s*, of leather, rubber, or other suitable material against the wall of the can on the inside, so as to prevent leakage at this point. A stopper, S, is supported normally in horizontal position above the bottle, and this stopper is,

by preference, composed of a metallic shell inclosing a thick pad of india-rubber, or other elastic packing, which is pressed against the mouth of the bottle to hermetically seal the same. Any leakage into the bottle can thus be effectually precluded.

For supporting the bottle, so that it shall accommodate itself to the stopper S, the bottle is provided with pivotal lugs or trunnions *r*, at right angles to those of the frame R, and to provide at the same time for removing and replacing the bottle with facility, the bearings of these pivotal lugs or trunnions are formed by bayonet-slots *q* in the sides of the frame R, the same opening upward, so as to provide for dropping the bottle into place.

The pivotal lugs may preferably be formed on a metallic frame or envelope, applied to or adapted to receive the bottle. The stopper S is supported by a ring, D, resting on a horizontal internal flange, *p*, at the bottom of the neck E, into which the cap C is screwed. The stopper is connected to this ring by vertical links L, attached by pivotal rivets $o\ o^2$, at their respective ends, to lugs or ears $n\ n^2$ on the stopper and supporting-ring. To accommodate the lugs n^2 on the bottom of the supporting-ring D, and to locate the pivotal rivets $o\ o^2$ in line with or parallel to the axis of the tilting bottle-frame, notches or openings *m* are formed in the neck-flange D, as shown by dotted lines in Fig. 1. The supporting-flange D is located beneath the screw-cap C, and by screwing down the latter the stopper S is pressed against the mouth of the bottle. A packing-gasket, *l*, is preferably interposed between the ring and cap, to form a gas-tight joint; but a ground joint may be employed, if preferred. The omission of the gasket is illustrated in Fig. 3.

The movement of the tilting frame R may be resisted sufficiently by means of the clamping-nut *u*, or its equivalent, to prevent any movement of the bottle accidentally; or a spring-arm engaging with an index-notch, or any equivalent device, may be employed to lock the faucet and tilting frame against turning.

The key or valve of the faucet is preferably provided with a lever-handle, as shown, and is so arranged that the tilting movement brings the handle into convenient position for its subsequent use to give vent to the gas. The lever-handle facilitates applying sufficient force to turn the tilting frame.

Vent may be given the gas at bottom as well as at top, as illustrated in Fig. 2, and any desired number of discharge-faucets may be employed, their number and size of the tank and acid-bottle determining the capacity of the apparatus.

The operation of the improved extinguishing apparatus, as illustrated, is as follows: The faucet or faucets being closed, and the cap C, stopper S, and bottle B removed, a supply of alkaline water is first introduced. The filled acid-bottle is then set in its frame R, the stopper S is introduced above the bottle, and the cap C is applied to press the stopper against the mouth of the bottle and to seal the gas-chamber.

When the apparatus is required for use, the faucet F is turned, and the bottle B is tilted so as to discharge its contents, the stopper S yielding automatically, so as to be displaced by the movement of the bottle, as illustrated by dotted lines in Fig. 3. Without removing the hand from the faucet, another motion opens the vent, and by means of the hose the gas is directed where required.

The following is claimed as new, namely:

1. An acid-bottle supported by horizontal pivots or trunnions, so as to be tilted or inverted to discharge its contents, in combination with a stopper supported above the same by parallel pivots, so as to be displaced by the movement of the bottle, substantially as herein illustrated and described.

2. An acid-bottle supported by pivots or trunnions in a frame having pivots or trunnions at right angles to those of the bottle, to adapt the bottle to accommodate itself to a stopper supported above the same.

3. An acid-bottle mounted in a pivotal frame attached to a discharge-faucet, so that the latter shall constitute its handle.

4. In combination with the acid-bottle B and its frame R, the lugs or trunnions *r* and bayonet-slots *q*, forming pivotal supports, and adapting the bottle to be readily removed and replaced.

5. The combination of the faucet F, the bottle-frame R, having the hollow trunnion v^2 and external flange or collar *t*, the gasket *s*, interposed between the said collar and the wall of the tank, and the clamping-nut *u*, applied to the protruding neck of the bottle-frame, substantially as herein specified, for attaching and packing the faucet and bottle-frame by the same means.

6. In combination with the pivoted acid-bottle, the stopper S and its supporting-ring D, having pivotal ears or lugs $n\ n^2$, and united by vertical links L, adapted to afford a solid support when in line, and to yield laterally when the bottle is tilted, as set forth.

7. The combination of the screw-cap C, the supporting-ring D, having lugs n^2, the notched flange *p* within the neck of the tank, and the vertical links L, for applying, securing, and relieving the stopper, in the manner set forth.

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