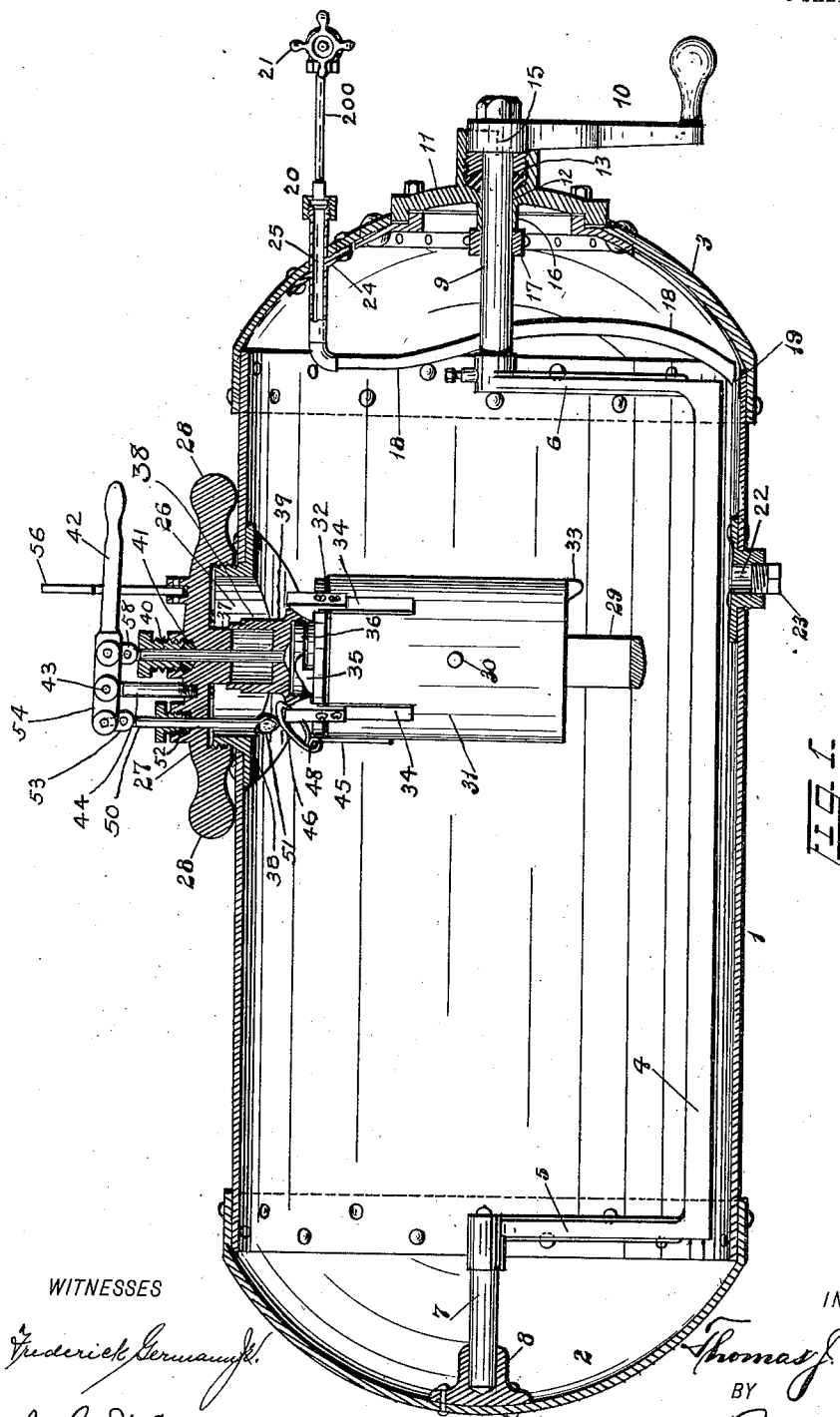


T. J. BEETHAM.
FIRE EXTINGUISHER.
APPLICATION FILED DEC. 1, 1908.

1,004,971.

Patented Oct. 3, 1911.

3 SHEETS-SHEET 1.



WITNESSES

Frederick Hermann
John W. Kamper

INVENTOR

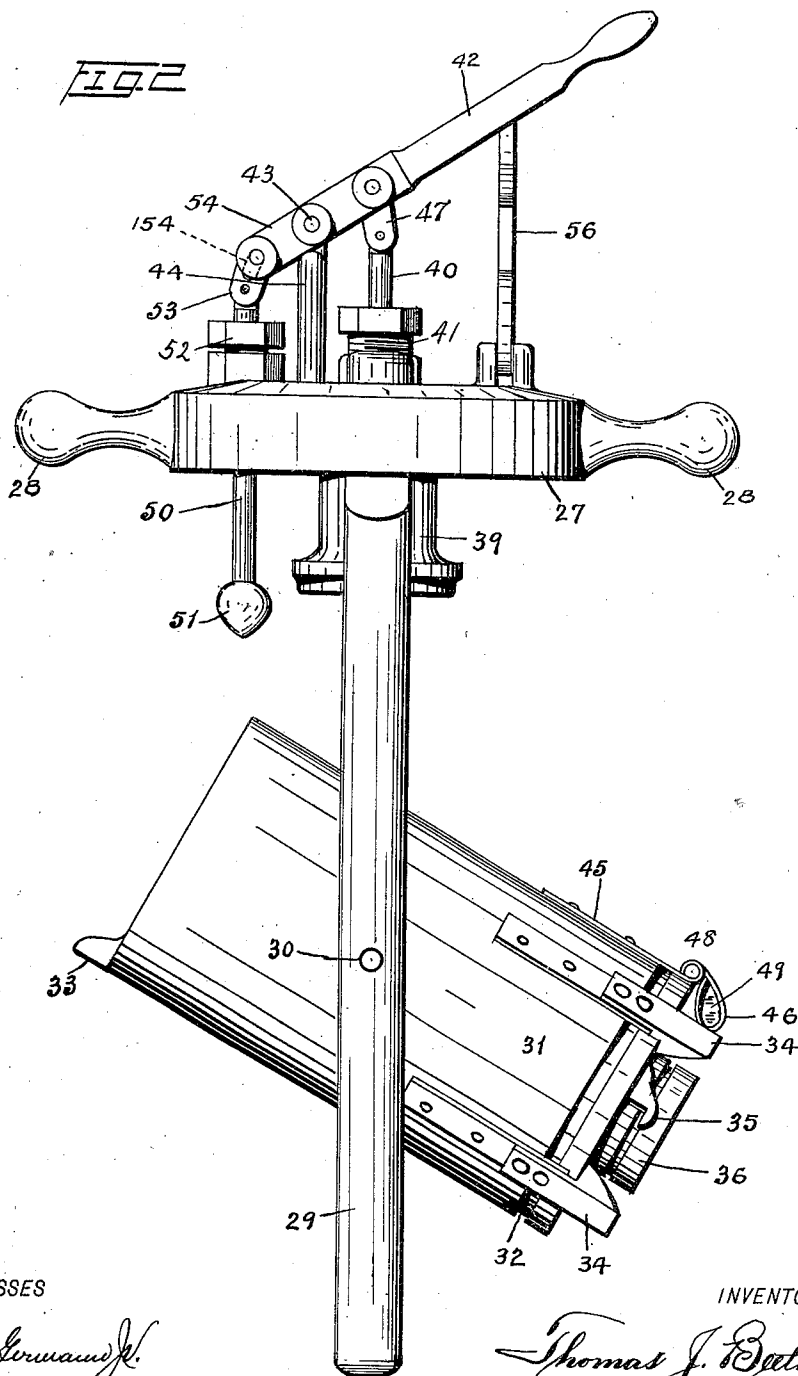
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John W. ...

INVENTOR

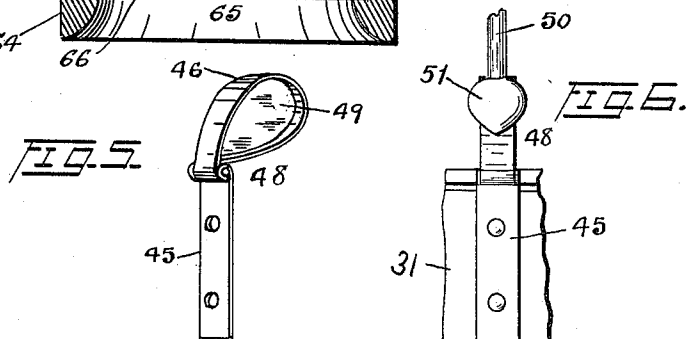
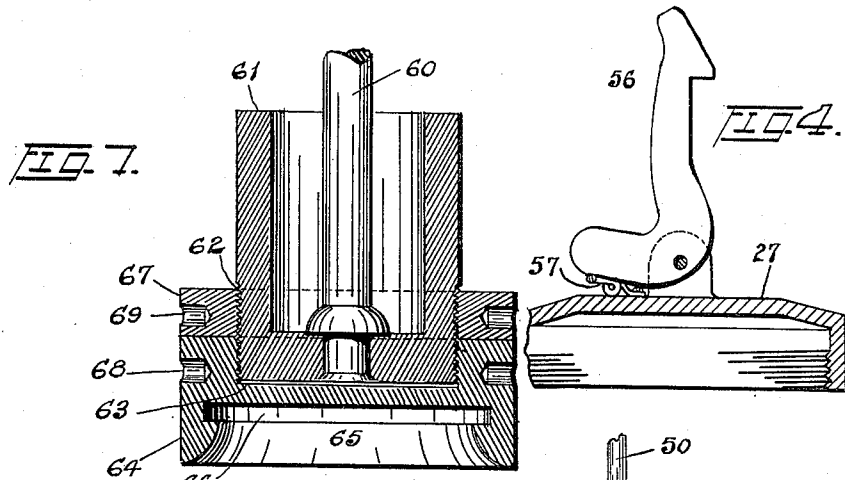
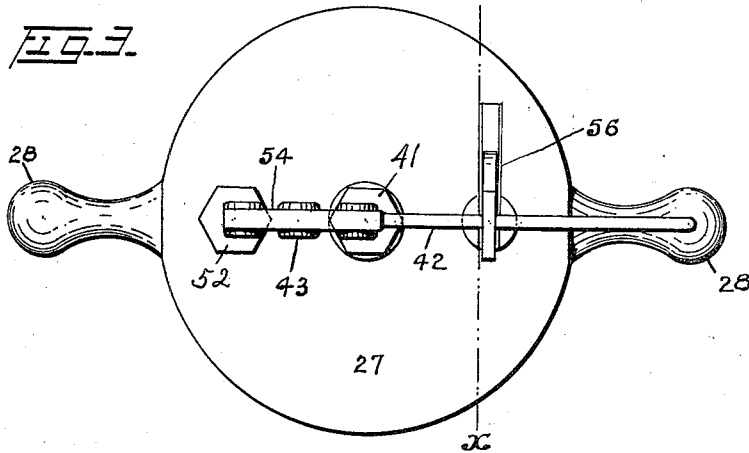
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3 SHEETS—SHEET 3.



WITNESSES
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UNITED STATES PATENT OFFICE.

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FIRE-EXTINGUISHER.

1,004,971.

Specification of Letters Patent.

Patented Oct. 3, 1911.

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To all whom it may concern:

Be it known that I, THOMAS J. BEETHAM, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Fire-Extinguishers, of which the following is a specification.

This invention relates to the tanks of chemical fire extinguishers, and more particularly to the means for releasing and dumping the acid bottle of such tanks. I have shown my improvements as applied to a large tank, such as constitutes an entire piece of chemical apparatus by itself or is mounted upon a hose-wagon to form a combination piece of apparatus common at the present time, but obviously the invention can be applied to tanks of other sizes and forms of all kinds, even down to those of small hand extinguishers.

The objects of the invention are to lessen the number of movements required to release and dump the acid bottle; to thus save time in attacking a fire; to insure certainty and positiveness in the dumping of the acid bottle; to obtain a simple effective construction, which is not liable to get out of order; to secure adjustability, and to obtain other advantages and results as may be brought out in the following description.

Referring to the accompanying drawings, in which like numerals of reference indicate corresponding parts in each of the several figures, Figure 1 is a vertical central section of a chemical tank of my improved construction; Fig. 2 is a side view of the acid bottle carrier detached, showing the acid bottle dumped or overturned; Fig. 3 is a plan of said bottle-carrier; Fig. 4 is a detail view of a certain hasp for the operating handle or lever, taken on line *x*, Fig. 3; Fig. 5 is a detail perspective view of a certain hinged contact piece adapted to be engaged by a plunger to dump the acid bottle; Fig. 6 is a rear elevation, from a view point at right angles to that of Fig. 1, of a portion of said plunger engaging the said contact piece, and Fig. 7 is a vertical sectional view similar to Fig. 1, but on a larger scale, of means for adjusting the closure cap of the said acid bottle.

In said drawings, the numeral 1 indicates a cylindrical tank, having the usual imperiously closed ends 2 and 3. Extending

longitudinally of said tank inside the same is an agitator 4 adapted to lie close to the bottom of the tank and having arms 5 and 6 at its ends which extend radially to the longitudinal central line of the tank. One of these arms, as 5, has a short shaft or trunnion 7 which is adapted to rotate in a bearing 8 on the end 2 of the tank, while the other arm 6 has a corresponding shaft portion 9, which projects out through the end 3 of the tank and receives a handle 10 by which the agitator is oscillated. This handle 10 is removable.

The bearing of the shaft 9 at the end of the tank is in a central cover 11 which is bolted to an annular frame set in the end 3, after the manner of a man-hole. At its center, this cover 11 has a bearing 12 for the shaft 9, and also provides a stuffing-box 13 for said shaft to prevent leakage. Furthermore, the outer edges of the wall 14 of this stuffing box are recessed, as usual to provide stops 15 to prevent the agitator 4 swinging into contact with the acid bottle. The cover 11 has at its inner side a projecting sleeve 16 to engage a collar 17 fixed on the shaft 9, whereby the agitator is held against outward displacement.

To the upper part of the end 3, which has the handle 10, is riveted the flange 24 of a duct 25 which extends through the end 3. From the inner end of this duct 25 the tube 18 extends to the bottom of the tank and is adapted at its extremity 19 to form an outlet. To the outer end of the duct 25 is coupled, as at 20, any suitable discharge-pipe 200, having valves as 21, to direct and control the stream from the extinguisher.

At the bottom of the tank, or in its lower side, is a drain outlet 22 normally closed by a plug or cap 23. In the top of the tank or its upper side, is mounted the acid bottle carrier, as will next be described in detail.

The top of the tank has an opening in which is inserted an exteriorly-threaded bushing 26, and onto this bushing is screwed a cap 27, said cap being turned by radial handles 28, 28 at opposite sides of itself. The said cap carries a depending rectangular frame 29 within which is mounted by opposite trunnions 30 the cylindrical acid bottle holder 31. This holder is a thin sheet-metal casing adapted to receive the lead bottle 32, and its trunnions 30 are disposed be-

low the center of gravity so as to facilitate tipping. Furthermore, one edge of the bottom of the casing is weighted, as at 33. At its upper edge, the casing or holder 31 has hooked spring fingers 34 adapted to normally engage the top of the lead bottle 32 to hold it in the casing. The lead bottle has lugs 35 to receive the usual handle, (not shown), for handling the bottle when out of the extinguisher, and 36 indicates the neck or mouth of the bottle.

The cap 27 has a central inward projection 37 which telescopically receives the upper guiding end 38 of a closure or stopper 39 recessed at its lower end to fit down over the neck 36 of the acid bottle and imperiously close the same, the flange or annular wall of said recess surrounding said neck to hold the bottle against tipping. This stopper 39 is fast on the lower end of a rod 40 which slides centrally through the cap 27, a packing 41 being provided to prevent leakage. Said rod 40 is moved up and down, to manipulate the stopper, by means of a lever 42 which is fulcrumed as at 43 on a post 44 upon the cap 27 and pivotally connected to the rod by means of a link 47. Obviously by forcing the lever 42 downward, the stopper 39 will imperviously close the acid bottle, as well as hold it in upright vertical position; when the handle is raised, however, the bottle is free to tip over and empty its contents.

To depend upon the action of gravity for tipping over the acid bottle, and especially for starting such movement, is not positive enough, since it sometimes happens that because of corrosion or the like the bottle sticks in its upright position. I have therefore provided the means next to be described for positively dumping the acid bottle.

To the upper edge of the casing 31, at the side opposite that toward which the casing is desired to tip when dumping the acid bottle, I hinge an impact piece 48. This impact piece I have shown as a strip of sheet metal hinged at one end to a straight strip 45 adapted to be secured to the outer wall of the casing, and having its other end curled or bent inwardly beneath itself so that when the impact piece lies upon the top of the acid bottle an outwardly inclined or beveled surface 46 is provided. The said impact piece is pivoted to the casing 31, so that it can be swung out of the way when the acid bottle is to be removed from the casing. Furthermore the impact piece 48 is preferably reinforced by a filling 49 inserted in its loop. In the cap 27 is a second vertical rod or plunger 50, arranged directly above this impact piece 48, and provided at its lower end with a head 51 adapted to engage said beveled impact piece to impel the top of the acid bottle and its carrier laterally and thus dump the same. Where this plunger

rod 50 passes through the cap 27 it is provided with packing 52, and the upper end of the rod is connected by a short link 53 to an extension 54 of the lever 42 beyond its fulcrum 43. Thus as the said lever is raised to unstop and release the acid bottle, the plunger 50 positively pushes said acid bottle over. In order that the plunger 50 shall not operate upon the impact piece until the neck of the acid bottle has been entirely released from the stopper 39, the upper end of the link 53 is slotted, as at 154, to receive the pivotal pin and thus permit a limited lost motion.

A hasp 56 is pivoted upon the top of the cap 27 to hook over the lever 42 in its depressed position, and said hasp is normally held in such locking position by means of a spring 57.

In operation, the fireman has only to grasp the lever 42 with his hand, his thumb at the same time pushing back the hasp 56, and raise the said lever 42 as far as possible. This movement unstops the acid bottle, releases the acid bottle, and by means of my improved plunger 50 positively pushes the top of the acid bottle in the direction in which it is desired to tip. There is thus no tendency to displace the acid bottle in any other direction, and there is no strain upon the trunnions on which the acid bottle swings nor upon any other parts.

In Fig. 7, I have shown a construction of stopper or closure for the neck 36 of the acid bottle, which permits of an adjustment vertically so as to always tightly close the acid bottle. To this end, the plunger rod 60 has fixed on its lower end a head 61 which is exteriorly threaded, as at 62, and adapted to screw into a correspondingly threaded recess 63 of the stopper proper 64. This stopper proper has at its under side or end a chamber 65 for the neck 36 of the bottle, and which chamber is radially enlarged at its bottom as at 66, to receive the usual lead and rubber washers (not shown). The stopper can thus be adjusted on the plunger to always fit tightly against the acid bottle, and a lock-nut or collar 67 on the head 61 enables it to be made fast wherever desired. Both the head 64 and lock nut 67 have recesses 68, 69, respectively, for a wrench to turn them.

In assembling the parts of my improved fire-extinguisher, the agitator 4, with its arms 5, 6, and end shafts or trunnions 7, 9, is inserted through the end opening of the tank, and then the cover 11 is put in place. This having been done, the fixed collar 17 on the end-shaft or trunnion 9 is adjacent to the sleeve or hub 16 on the cover, and is adapted to engage the same to prevent outward displacement or sliding of the end shaft or trunnion 9 through the central bearing therefor in the cover. At the same

time the outer projecting end of the said end-shaft or trunnion 9 is free for the stuffing-box 13 and handle 15.

Having thus described the invention, what I claim is.

1. In a fire extinguisher, the combination with a tank, a cap for said tank, an acid bottle, and bottle supporting means on said cap adapted to allow said bottle to tip into inverted position, of an impact surface at the upper part of said bottle inclined to the direction of tipping of the bottle, a rod working vertically through said cap, a stopper for the acid bottle upon said rod, a plunger parallel to said rod and adapted to engage the said impact surface, and means connecting said plunger and rod so that sliding of the rod will cause the plunger to move in the opposite direction.

2. In a fire extinguisher, the combination with a tank, a cap for said tank, an acid bottle, and bottle supporting means on said cap adapted to allow said bottle to tip into inverted position, of an impact surface at the upper part of said bottle inclined to the direction of tipping of the bottle, a rod working vertically through said cap, a stopper for the acid bottle upon said rod, a plunger parallel to said rod and adapted to engage the impact surface, and a lever fulcrumed on the cap and pivotally connected on opposite sides of its fulcrum to the said plunger and rod, whereby sliding of the rod moves the plunger in the opposite direction.

3. In a fire extinguisher, the combination with a tank, a cap for said tank, an acid bottle, and bottle supporting means on the inside of said cap adapted to allow said bottle to tip into inverted position, of an impact surface at the upper part of said bottle inclined to the direction of tipping of the bottle, a plunger working vertically through said cap and adapted at its inner end to engage said impact surface, a rod also working vertically through the cap and having at its inner end a stopper for the said bottle, and means upon the outside of the cap for simultaneously sliding said plunger and rod in opposite directions.

4. In a fire extinguisher, the combination with a tank, a cap for said tank, an acid bottle, and bottle supporting means on the inside of said cap adapted to allow said bottle to tip into inverted position, of an impact surface at the upper part of said bottle inclined to the direction of tipping of the bottle, a plunger working vertically through said cap and adapted at its inner end to engage said impact surface, a rod also working vertically through the cap and having at its inner end a stopper for the said bottle, and a lever fulcrumed on the outside of the cap and pivotally connected on opposite sides of its fulcrum to the said plunger and rod, whereby sliding of either one of said

last-mentioned two parts moves the other in the opposite direction.

5. In a fire extinguisher, the combination with a tank, a cap for said tank, a frame depending from said cap, and an acid bottle pivoted in said frame by lateral trunnions below its center of gravity, of a beveled impact surface at the upper edge of said acid bottle, a plunger working vertically through the cap adapted to engage said impact surface, a retaining stopper for the acid bottle, a rod for said stopper also working vertically through the cap, a lever fulcrumed upon the outside of the cap between said rod and plunger, and links connecting said rod and plunger to said lever on opposite sides of its said fulcrum.

6. In a fire extinguisher, the combination with a tank, a cap for said tank, a frame depending from said cap, and an acid bottle pivoted in said frame by lateral trunnions below its center of gravity, of a beveled impact surface at the upper edge of said acid bottle, a plunger working vertically through the cap adapted to engage said impact surface, a retaining stopper for the acid bottle, a rod for said stopper also working vertically through the cap, a lever fulcrumed upon the outside of the cap between said rod and plunger, and links connecting said rod and plunger to said lever on opposite sides of its said fulcrum, the link for said plunger having at one of its ends a slotted connection permitting a limited lost motion.

7. In a fire extinguisher, the combination with a tank, a cap for said tank, an acid bottle, and bottle supporting means on the inside of said cap adapted to allow said bottle to tip into inverted position, of an impact surface at the upper part of said bottle inclined to the direction of tipping of the bottle, a plunger working vertically through said cap and adapted at its inner end to engage said impact surface, a rod also working vertically through the cap and having at its inner end a stopper for the said bottle, and a handled lever having a fixed fulcrum upon the outside of the cap, said lever being pivotally connected intermediate of its handle and fulcrum to the said rod and pivotally connected at the opposite side of its fulcrum to the plunger, whereby said rod and plunger are reciprocated in opposite directions by movement of said lever.

8. In a fire extinguisher, the combination with a tank, a cap for said tank, a frame depending from said cap, and an acid bottle holder pivoted in said frame by lateral trunnions, of an impact piece hinged on the outside of said holder near its upper edge and adapted to extend radially inward over the top of an acid bottle in said holder or hang downward against the outside of the holder, and a plunger projecting through the cap adapted to be slid by its outer end to engage

at its inner end said impact piece and tilt the acid bottle holder.

9. In a fire-extinguisher, the combination of a horizontal cylindrical tank having a central aperture in one end, a cover for said end aperture with a central shaft-bearing extending through itself and a hub or sleeve at the inner side of the cover around said bearing and a stuffing box at the outer side of the cover around said bearing, a central bearing on the inside of the other or non-apertured end of the tank, an agitator insertible into said tank through the said end aperture and having opposite end shafts or trunnions one entering the said inside bearing on the non-apertured end of the tank and the other projecting through the central bearing of the cover for the apertured end of the tank, a fixed collar on said last-mentioned shaft or trunnion inside the said cover for the end aperture of the tank, said collar being adjacent to the said hub or sleeve when the cover is in place on the tank and engaging the same to prevent outward longitudinal movement of the end-shaft or trunnion on which it is fixed through the central bearing of the cover, and a removable handle on said shaft or trunnion outside said cover for the end aperture of the tank and stuffing box thereon.
10. In a fire extinguisher, the combination with a tank, a cap for said tank, an acid bottle, and bottle supporting means on said

cap adapted to allow the acid bottle to tip into inverted position, of a hand lever fulcrumed on the outside of said cap, means for locking said lever in a certain position, a plunger rod connected to said lever and extending through said cap, a head upon the inner end of said plunger rod, a stopper for the said acid bottle upon said head and adjustable with respect thereto toward and away from the plunger rod, and means for upsetting the acid bottle.

11. In a fire extinguisher, the combination with a tank, a cap for said tank, a frame depending from said cap, and an acid bottle holder pivoted in said frame by lateral trunnions, of an impact piece hinged on the outside of said holder near its upper edge and adapted to extend radially inward over the top of an acid bottle in said holder or hang downward against the outside of the holder, said impact piece comprising a strip of sheet metal bent into a loop and a filler inside said loop, and a plunger projecting through the cap adapted to be slid by its outer end into engagement at its inner end with said loop of the impact piece to tilt the acid bottle holder.

THOMAS J. BEETHAM.

In the presence of—

FREDERICK GERMANN, Jr.,
RUSSELL M. EVERETT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."