(No Model.)

A. L. PITNEY.

FIRE EXTINGUISHER.

No. 441,969. Patented Dec. 2, 1890.

Fig. 1.

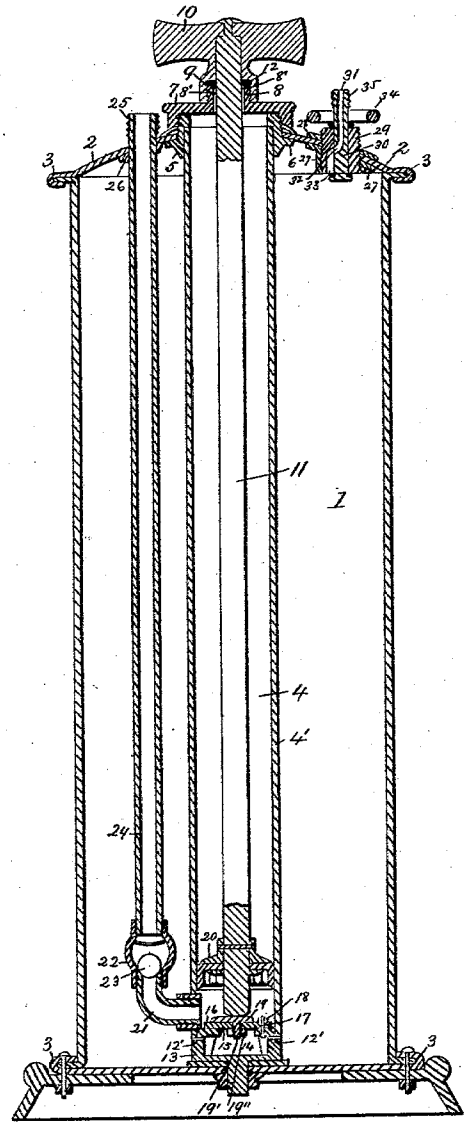
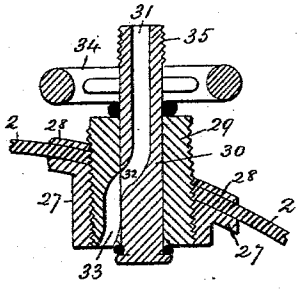


Fig. 2.



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UNITED STATES PATENT OFFICE.

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FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 441,969, dated December 2, 1890.

Application filed February 26, 1890. Serial No. 341,642. (No model.)

To all whom it may concern:

Be it known that I, ALBERT L. PITNEY, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Fire-Extinguishers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates, generally, to fire-extinguishers, and particularly to that class thereof which are known as "chemical fire-extinguishers," which are operated by hand, and which contain compressed air or gas for the purpose of ejecting chemically-impregnated liquids upon fires. In this latter class of extinguishers, after they have been charged for some time, it frequently happens that the air or gas has escaped therefrom, thus rendering them practically inoperative for forcing out the liquids for suppressing fires.

The objects of my invention are to improve this class of fire-extinguishers and to overcome or avoid the objection named and other defects now existing therein, and also to combine therewith improved mechanism for forcing the liquid therefrom, whether or not compressed air or gas is or has been employed therein.

My invention consists in the improved details of construction and arrangement or combination of parts, hereinafter fully disclosed in the description, drawings, and claims.

In the accompanying drawings, forming part of this specification, in which the same reference-numerals indicate the same parts, Figure 1 represents a central vertical section of a fire-extinguisher embodying my invention, and Fig. 2 a central longitudinal section of the inlet-valve for introducing liquid into the vessel and charging the same with compressed air or gas, and also for admitting air into said vessel when the pump is in operation, said valve being shown in position in a portion of the upper head of said vessel.

In the drawings, 1 indicates the receptacle or vessel, which may be constructed of any convenient size and shape and also of any suitable material which will withstand the internal pressure of the charge therein. In the present instance this vessel is represented as a cylinder constructed of sheet metal and provided with sheet-metal heads 2, which may be secured to flanges on the ends of said cylinder by ordinary lap-joints 3 or other suitable means, all joints and seams of the vessel being rendered air and gas tight, as far as is practicable, by soldering or other like fastening means.

Within the vessel 1 is located a pump 4, which may be of any suitable construction and arranged in any convenient location, it being in the present instance provided with a barrel 4′, of cylindrical form, which is arranged axially or concentrically within said vessel. The upper end of this pump-barrel is provided with a collar 5, having an external flange 6, and screw-threads above said flange. This collar is seated in a central opening in the upper head of the vessel, and is confined therein by an external cap 7, which is internally screw-threaded and fitted over the externally-screw-threaded portion of said collar, so as to clamp the same tightly in its seat or opening and prevent any escape of the air or gas, a suitable washer being also employed to secure a tight joint. This cap is also provided with a central neck 8 upon its upper surface, which is screw-threaded externally, and over which is placed the recessed lower end 9 of the key 10, said recess being internally screw-threaded to engage the externally-screw-threaded neck 8. This neck is also formed interiorly with vertical ducts or grooves 8′, which, when the pump is in operation and the key 10 is raised or disconnected from said neck, permit the escape of the confined air from the pump-barrel as the piston is drawn upward, and also allow the air to be drawn into said pump-barrel as the piston is moved downward; also through said neck 8 passes the piston-rod 11, which extends outside of the upper head of the vessel and has its upper end suitably swiveled to the key 10, so as to prevent turning of the piston and the consequent wear thereon. A washer 12 is interposed between the upper end of the neck 8 and the upper wall of the recessed lower end 9 of the key 10, for the usual purpose.

The lower end of the pump-barrel 4′ rests upon and is fastened to a shoulder 12′, formed on the outside of the valve-chamber 13, which is suitably fastened to the lower head of the vessel and formed with inlet openings 14 in its sides, which lead to its interior, and with an outlet-opening 15 in the center of its top or upper surface, which forms the seat of the flap-valve 16. This valve is made of any suitable flexible material, and is secured to its seat by means of a headed bolt 17 and a nut 18, which hold it at only one side and permit its body portion to rise and fall. At its center this valve is provided with a disk 19, which is provided with a screw-threaded neck 19′ and a nut 19″ on its under side for holding it in place upon said valve. This disk forms a bearing for the lower end of the piston-rod 11, which projects a short distance below the piston 20 and acts to hold said valve firmly down upon its seat and against the upward pressure of the liquid when acted upon by the compressed air or gas within the vessel.

The piston 20, which may be of any of the ordinary or approved constructions, is secured to the piston-rod near its lower end in any convenient manner; also, just above the valve-chamber 13 and extending from the lower part of the pump-barrel is secured an elbow-pipe 21, which is connected at its upturned end to a valve-casing 22, in which is placed a ball-valve 23, which normally or when down rests upon the end of said pipe.

From the valve-casing 22 extends a vertical discharge-pipe 24, which projects up through an opening in the upper head of the vessel, where it terminates in a screw-threaded end 25, to which a suitable hose or nozzle is to be attached; also, the upper portion of this pipe, just beneath the opening in said head, is provided with a flange or collar 26, which holds it in place and also prevents the escape of air or gas from internal pressure.

A flanged collar 27, having an internally-screw-threaded aperture, is secured in another opening in the upper head of the vessel by means of another collar 28, which is screwed upon the neck of the collar 27 and bears down upon the upper surface of said head, which is thus clamped between said collars and very tightly closed around said opening. In the internally-screw-threaded aperture of this collar is secured an externally-screw-threaded valve-casing 29, which is formed with a central bore 29′, within which is fitted a plug-valve 30, which has a central vertical passage 31 in its upper portion and a short lateral passage 32 at one side of its center, with which the passages 31 and 32 can be made to communicate or register by turning the plug-valve 30 axially, so as to permit the introduction of the liquid and air or gas into the extinguisher, or the communication between said passages can be cut off by turning said plug-valve so that its lateral passage 32 will be out of alignment with the passage 33 in the valve-casing; also, the passages in said valve and its casing are used, when desired, for admitting air into the vessel when the pump is in operation, so as to secure the proper pressure upon the liquid.

For turning or adjusting the plug-valve it is provided near its upper end with a hand-lever or hand-wheel 34; also, at its upper end it is externally screw-threaded, as at 35, for the attachment of suitable connections for charging the vessel.

It is evident that the heads of the vessel, instead of being made of sheet metal, may be cast or made of other heavy metal and suitably secured to the ends of said vessel. Under this construction the collars for confining the pump-barrel, the discharge-pipe, and the inlet or plug valve may be dispensed with and replaced by threaded openings formed directly in the upper head, which, by lessening the number of joints employed, will also lessen the chances of the confined gas or air escaping. It is also evident that, if desired, the discharge-pipe can be extended out through the side of the vessel instead of being projected through the upper head thereof, as shown.

The operation of my invention can be readily understood from the foregoing, but I may further add that when the vessel is charged with the proper amount of liquid and compressed air or gas the lower end of the piston-rod will rest upon the disk 19 and hold the flap-valve 16 down upon its seat. The lower end of the piston-rod is held down upon said valve by the key 10 being screwed fully down on the neck 8; but to allow the liquid to be automatically ejected from the vessel by the compressed air or gas therein said key has to be turned and raised slightly upon said neck, so as to permit said valve to be opened by the pressure of the air or gas upon the liquid, which is then forced up through and out of the discharge-pipe 24. When it is not desired to use compressed air or gas, or when there is not sufficient pressure thereof upon the liquid, the key is screwed entirely off the neck 8, thus permitting the piston and piston-rod to be reciprocated so as to admit the liquid into the valve-chamber 13 and through the valve 16 to force the same out through the elbow-pipe 21 and the valve-casing 22 and to discharge it through the pipe 24. During the operation of the pump a sufficient amount of air is admitted through the ducts 8′ into its barrel to secure its proper action.

Having thus fully described my invention, its capabilities, advantages, and operation, I claim as new—

1. In a fire-extinguisher, the combination, with a vessel for containing liquid and air or gas under pressure, a pump located in said vessel and secured at its upper end to the upper head thereof, and a valve communicating with said pump, of means for regulating the opening and closing of said valve, the same consisting of the lower end of a piston-rod and screw-threaded devices arranged at its

upper end and outside of said vessel for raising and lowering said rod, substantially as described.

2. In a fire-extinguisher, the combination, with a vessel for containing liquid and air or gas under pressure, a pump located in said vessel and secured at its upper end to the upper head thereof, and a valve communicating with said pump, of means for regulating the opening and closing of said valve, said means consisting of the lower end of a piston-rod and a screw-threaded neck and key at its upper end for raising and lowering it, substantially as and for the purpose described.

3. In a fire-extinguisher, the combination, with a vessel for containing liquid and a pump located in said vessel and provided with a piston-rod having its upper end extended outside of the head of said vessel, of a flanged and externally-screw-threaded collar secured to the upper end of the barrel of said pump and in the upper head of said vessel, an internally-screw-threaded cap fitted to said collar and provided with an upwardly-projecting screw-threaded neck, and a key secured to the upper end of said piston-rod and provided with an annularly-recessed and internally-screw-threaded lower end, substantially as and for the purpose described.

4. In a fire-extinguisher, the combination, with a vessel for containing liquid, and a pump located in said vessel and provided with a valve-chamber and flap-valve at the lower end of its barrel and with a piston-rod extended below its piston, of a flanged and externally-screw-threaded collar secured to the upper end of the barrel of said pump and in the upper head of said vessel, an internally-screw-threaded cap fitted to said collar and provided with an upwardly-projecting screw-threaded neck, a key secured to the upper end of said piston-rod and provided with an annularly-recessed and internally-screw-threaded lower end which is fitted over said neck, and a discharge-pipe communicating with said pump, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT L. PITNEY.

Witnesses:
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J. M. POLLARD.