

(No Model.)

2 Sheets—Sheet 1.

E. H. ASHCROFT.

AUTOMATIC FIRE EXTINGUISHER.

No. 346,571.

Patented Aug. 3, 1886.

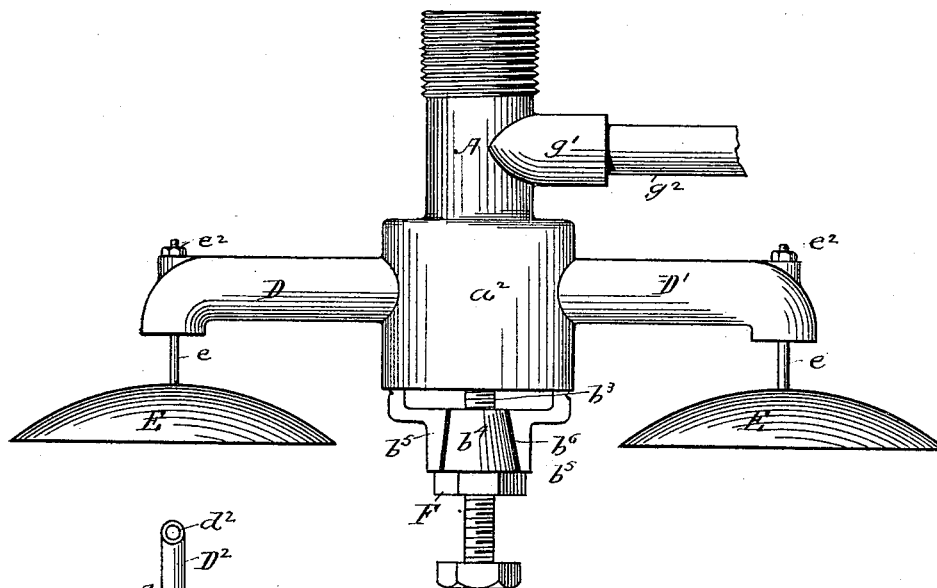


FIG. 1.

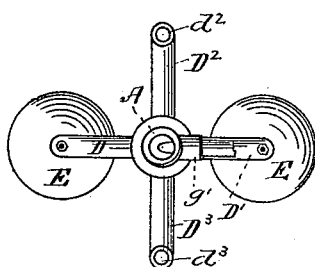


FIG. 3.

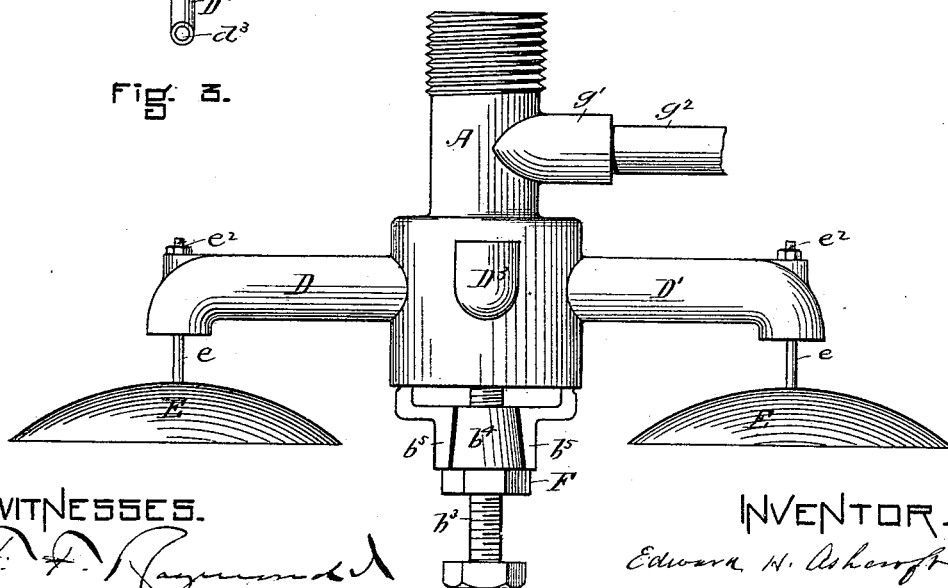


FIG. 2.

WITNESSES.

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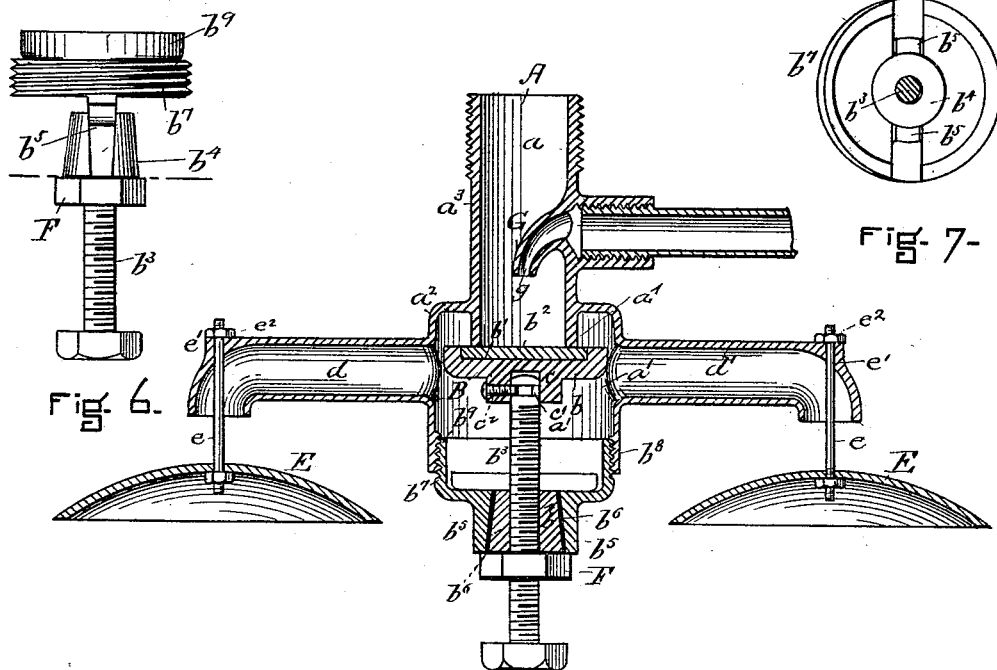


Fig. 6.

Fig. 7.

Fig. 4.

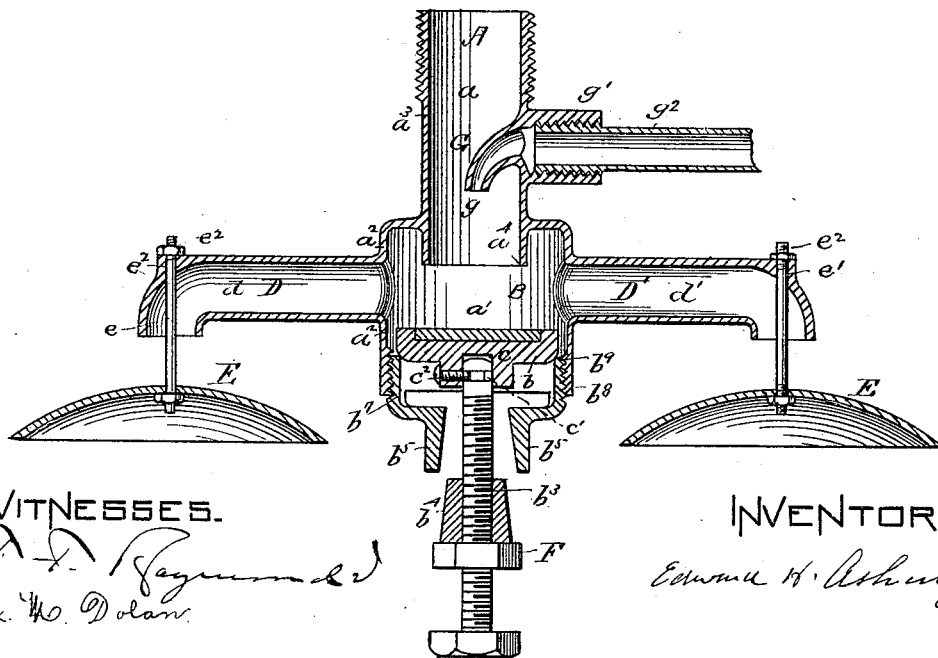


Fig. 5.

WITNESSES.

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UNITED STATES PATENT OFFICE.

EDWARD H. ASHCROFT, OF LYNN, MASSACHUSETTS.

AUTOMATIC FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 346,571, dated August 3, 1886.

Application filed January 8, 1886. Serial No. 187,989. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. ASHCROFT, of Lynn, in the county of Essex and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Automatic Fire-Extinguishers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification in explaining its nature.

The invention relates to an automatic fire-extinguisher consisting of a pipe connected with a water-supply, and having at its end a chamber containing the valve closing the opening of the pipe, which valve is held in place by the fusible metal, the said chamber having one or more passages extending laterally, or in any other direction therefrom, through which the water escapes upon the release of the valve.

It further relates to the construction of the extinguisher, whereby the fusible metal is so placed or located as to be immediately exposed to any increase in the temperature of the room in which the extinguisher is located.

It further relates to the construction of the chamber and valve, whereby the valve upon being automatically released by the melting of the fusible metal, serves to close a hole or passage in the chamber in line with the hole or passage in the water-supply pipe, or with the valve-seat, and so that the water escaping therefrom is caused to leave the chamber by the laterally-extending passage or passages.

It further relates to the use, in a fire-extinguisher, of a steam-injector or steam-pipe arranged to open into the water-supply tube or passage above the valve.

It also relates to various details of construction, all of which will hereinafter be referred to.

In the drawings, Figure 1 is a view in elevation of an extinguisher having two laterally-extending escape-passages. Fig. 2 is a view in elevation of an extinguisher having two laterally-extending passages opening downward, and two laterally-extending passages opening upward. Fig. 3 is a plan view thereof reduced in size. Fig. 4 is a vertical central section of the extinguisher shown in Fig. 1, representing the valve held to its seat. Fig. 5 is a view in vertical section, showing the position of the

valve and parts holding it upon the melting of the fusible metal, and the operation of the extinguisher. Figs. 6 and 7 are detail views of the valve-operating mechanism, reference to which is hereinafter made.

A represents the water-supply pipe, or pipe through which water is conducted from a suitable head or source of supply to the extinguisher. a is the passage therein. The pipe opens at its lower end into a distributing-chamber, a' , within the casing a^2 , which is cast integral with the section a^3 of the pipe, as represented in Figs. 4 and 5, or formed separately, and secured thereto by a screw-thread, as may be desired. The end of the pipe A projects sufficiently into the chamber to form the raised valve-seat a^4 . The chamber a' also contains the valve B, which consists, preferably, of a disk, b , of any suitable metal having a recess, b' , larger than the valve-seat, which is filled with a packing, b^2 , of soft metal or any other suitable material. The valve-disk is held to the seat by means of the screw-spindle b^3 , which passes through the conical nut b^4 . This conical nut is secured to the arms b^5 by means of a thin body or mass, b^6 , of metal or other suitable substance of sufficient holding power or strength which is fusible at a given temperature, and the inner surfaces of the arms are made tapering to permit the quick release of the conical nut upon the softening or melting of the metal or other material, fastening or securing it to the arms b^5 . The arms b^5 extend from the screw-sleeve b^7 , which screws into the sleeve or cylindrical portion b^8 of the casing a^2 of the chamber. This cylindrical section or sleeve b^8 is of sufficient size to receive the valve-disk B upon its release, the disk being forced by the water-pressure to rest upon the shoulder b^9 , formed by the upper edge of the screw-sleeve b^7 . The end of the screw-spindle b^3 preferably is attached to the valve-disk B, as represented in Figs. 4 and 5—that is, its end enters the hole c of the valve-disk, and has a groove or recess, c' , formed about it, which receives the end of a screw or pin, c^2 , the end entering the recess but not locking the disk thereto, so that the spindle may be revolved in moving the valve to its seat without turning the valve. In other words, it forms a swivel-joint. The arms b^5 are made of sufficient width to furnish

proper support or holding-surface for the fusible metal or other material, and preferably are made of brass or other equivalent composition, and they extend downward from the sleeves so as to fully expose the fusible metal to the action of the temperature.

Arranged to extend from the chamber a' are the pipes D D' D^2 D^3 , which have escape-passages d d' d^2 d^3 . The outlets to these pipes may be arranged to extend downward, as in the case of the pipes D D' , or to discharge upward, as in the case of the pipes D^2 D^3 , or to open in any other direction, and I may use one pipe only, or as many as may be deemed necessary or essential.

I have represented as arranged in front of the discharge-outlets of the pipes the water-deflectors E E . These may be of any suitable shape and construction. I have represented them as having a rounded deflecting-surface, as centrally placed in relation to the discharge-openings, and as secured in place to the pipes by means of the rods e , which extend through the discharge-openings, and holes e' in the pipe to receive the nuts e^2 . To prevent the screw-spindle b^3 from being disturbed by jars or by any other means, I have provided it with a lock-nut, F , which is screwed against the under surface of the conical nut b^4 after the valve has been seated. I have also shown means for introducing a jet of steam into the water-supply tube or passage above the valve, comprising a nozzle, G , having an opening, g , within the passage a , extending downward, and through which the steam escapes. A screw-sleeve, g' , extending horizontally from the pipe A , is arranged to receive and hold the end of the steam-supply pipe g^2 . The size of the nozzle g is varied according to the size and force of the jet of steam desired. The steam-jet may be used as an injector to assist in lifting and forcing the water on the release of the valve, or it may be used simply to unite with the water to form a spray.

In practice the cone-nut b^4 is secured to the arms b^5 by a metal or composition or other uniting material adapted to melt or consume at a predetermined temperature, and the valve-

disk B is forced or moved to its seat by the valve-spindle b^3 . The water supply or head is then turned on and the extinguisher is then in condition to be operated upon the melting or destruction of the metal or medium holding the valve in place. Upon such destruction the water-head immediately forces the valve B downward into the lower part of the chamber, closing the opening therein, and the water or water and steam escape through the lateral passage or passages.

It will be seen that by forming a chamber with two or more escape-passages provision for the simultaneous discharge of water or water and steam in a number of directions is obtained, and that the efficiency of the extinguisher is thereby largely increased.

In lieu of the laterally-extending pipes D D' D^2 D^3 the casing a^2 may be provided with holes or perforations, and thereby form in substance a distributing-rose.

I would remark that the steam-jet may be used without water, if desired, and in such case the hole a in the pipe A would simply act as a connection between the steam-nozzle and the chamber a' .

Having thus fully described my invention, I claim, and desire to secure by Letters Patent of the United States—

1. The combination, in an automatic fire-extinguisher, of the steam nozzle or inlet G , the valve-seat a^4 , the valve B , and devices for holding it to its seat, adapted to be released by the fusing of a metal fastening or holding medium at a predetermined temperature, substantially as described.

2. The combination of the water-supply pipe A , the steam-supply pipe having a nozzle within the water-supply pipe, the valve-seat a^4 , and the valve B , held to its seat by a nut, b^6 , secured in place by metal adapted to melt or fuse at a comparatively low temperature, substantially as described.

EDWARD H. ASHCROFT.

Witnesses:

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J. M. DOLAN.