

(No Model.)

W. ESTY.
AUTOMATIC FIRE EXTINGUISHER.

No. 532,268.

Patented Jan. 8, 1895.

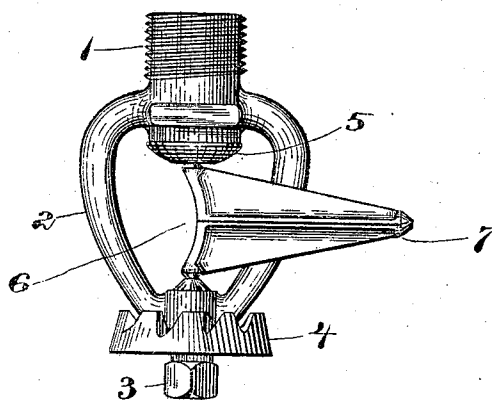


FIG. 1.

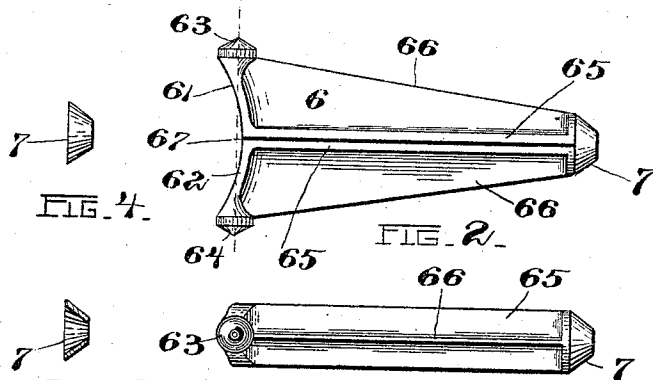


FIG. 4.

FIG. 2.

FIG. 5.

FIG. 3.

Witnesses -

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AUTOMATIC FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 532,268, dated January 8, 1895.

Application filed April 5, 1894. Serial No. 506,411. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ESTY, a citizen of the United States, residing at Laconia, in the county of Belknap and State of New Hampshire, have invented certain new and useful Improvements in Automatic Fire-Extinguishers, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide an automatic fire extinguisher or sprinkler of improved character and construction, and having a novel and improved form of safety-device or coupling for preventing undesired or premature opening of the valve and the unnecessary discharge of water.

There is a tendency in devices of the kind above specified, especially after the lapse of a period of time, for the valve-supporting or retaining devices, when held in their normal position by a solder or metal which is fusible at a low temperature, which is the means usually employed for the purpose, to yield gradually under the pressure exerted by the water upon the interior surface of the valve, so as to allow the said valve to partially or wholly open and permit the escape of water. This results from the so-called "creeping" under pressure of the solder or other fusible material employed to hold the valve-supporting or retaining devices in place.

A leading feature of the present invention is the improved safety-device which I have contrived for the purpose of preventing the creeping from taking place, so as to effectually guard against the release and opening of the valve except in the presence of a degree of heat which is sufficient to fuse the solder or other material by which the valve-supporting or retaining devices are held in place.

The invention first will be described fully in the following description, after which the characteristic features thereof will be particularly pointed out and distinctly defined in the claims at the close of this specification.

Figure 1 in the accompanying drawings shows in elevation the preferred construction of a fire extinguisher or sprinkler embodying

my present invention. Fig. 2 is a view in side elevation of the valve-support detached. Fig. 3 is a view of the said valve-support in plan. Fig. 4 is a view in elevation of the cap hereinafter mentioned. Fig. 5 is a view of the said cap in vertical-section.

At 1 is a threaded nozzle, which preferably is formed in one piece with a yoke-shaped frame 2, in the lower end of which is received the stem of the supporting and adjusting screw 3, the said stem fitting a threaded hole made through the lower end of the said frame 2, and having a pointed end which projects slightly into the opening between the side arms of the said frame. The revoluble distributor or deflector disk 4 is loosely mounted on the stem of the screw 3, between the head of the said screw and the lower end of the frame 2. The nozzle 1 preferably is continued slightly into the space inclosed by the frame 2, and to the end thereof is applied the valve 5, which consists usually of a simple disk resting against the valve-seat constituted by the said end, and which valve, when securely held in place, serves to close the nozzle and prevent the escape of water therefrom. As will be obvious, the nozzle is intended to be screwed into a suitable water-supply pipe. The valve-support is shown at 6. It is interposed between the under surface of the valve 5 and the upper end of the screw 3, short conical projections 63, 64 formed on the said valve-support and which are vertically in line with each other when the parts are viewed in the positions in which they are shown in Figs. 1 and 2, fitting corresponding seats or recesses in the lower surface of the valve and the upper end of the screw, respectively. The said valve-support 6 is formed in two parts 61 and 62, which preferably are made exactly alike in order that they may be cast from the same pattern, and also in order to render the valve-support perfectly symmetrical in shape. These parts are of nearly triangular shape when viewed in side elevation, as will be clear from inspection of Figs. 1 and 2. They also are T-shaped in vertical cross-section, each having the horizontal web 65 the outer side of which

constitutes one of the meeting faces of the said parts, and the vertical web 66 rising from the said horizontal web at mid-width of the latter. The proximate sides of the webs 65, 65, form flat faces of considerable area, which extend from end to end of the said parts, and the fusible metal or solder 67 which holds together the two parts 61 and 62 is applied to the said faces and unites them. The described construction of the said parts secures strength. At the same time they are light and thin, no heavy mass of metal being present at any point, this being particularly important in the case of the horizontal webs, and they thus heat through quickly so as to insure the speedy fusing of the solder or other uniting material by an increase of temperature. The free end of the valve-support projects directly outward so as to be fully exposed to the influence of ascending heated air, and also so as to be removed from liability to become wetted and chilled by the first jet of water which escapes from the valve as the latter opens. A serious objection to prior sprinklers of this class is the fact that the exposed portion of fusible material or solder becomes entirely incrustated or covered by the products of the corrosion of the metal of the proximate portions of the valve-support, or proximate portions of the other parts concerned in holding the valve in place, that is, by the formation on the metal of the valve-support of verdigris and the like, which is non-conductive so that it prevents the speedy fusion of the solder when a fire breaks out, and also serves to bind the parts together in such manner as to retard or prevent the separation of the parts. In the illustrated device, inasmuch as the solder or fusible metal is exposed only at the edges of the webs 65, 65, and as the edges of these webs are very thin, there is little opportunity for enough incrustation to form over the solder to produce trouble. In consequence of the fact that the proximate faces of the parts 61, 62 are in contact from one end to the other of their length, there are no intervening spaces not filled with solder or other readily fusible metal to become filled with the products of corrosion so as to occasion the binding together of such parts. The meeting faces of the webs 65, 65, terminate at a point a little to one side of the vertical line passing through the centers of the projections 63, 64, such point being outside of the said line, as is indicated by the dotted line in Fig. 2. If the solder or fusible metal uniting the parts 61, 62 becomes fused, so as to afford opportunity for the latter to separate under the pressure of the water upon valve 5, they will turn on each other at their base ends as on a fulcrum, splitting apart from their outermost tips to the said base ends, thus releasing the valve and permitting a full discharge of water from the nozzle.

The foregoing features are all essentially the same as in my application for patent for an automatic fire extinguisher filed January 25, 1893, Serial No. 459,676, in which application I have laid claim thereto, and therefore I do not in the present case claim the same broadly, but only in so far as they are involved in the improvements which I am about to describe.

To guard against the danger of "creeping," as aforesaid, and the resulting premature and undesired opening of the valve and discharge of water, I provide the form of safety-device or coupling which I now will proceed to describe. The tips or outermost ends of the halves of the valve-support are beveled off, and to the beveled tips is fitted a cap 7 having its interior correspondingly beveled. Preferably, the said tips are formed with a slight additional amount of metal therein, and rounded, so that when the halves of the valve-support are put together the outer end of the valve-support constitutes a short cone. To this cone the cap 7, which is made in the form of a conical shell as indicated in Figs. 4 and 5, is fitted as shown, and is secured in place by fusible metal or solder of the character of that which unites the halves of the valve-support to each other. An essential characteristic of the invention is the incline or bevel which is produced on the exterior of the outer end of the valve-support and the interior of the cap. This incline or bevel should be approximately that which is represented, which will enable the cap to exercise the desired restraint upon the halves of the valve-support and prevent the creeping and undesired separation above described so long as the fusible metal remains unfused, and will leave said halves free to separate immediately upon the fusing of the fusible solder or metal uniting the halves 61, 62, and holding the cap on its seat. The application of the cap to the outer extremity of the valve-support enables it to operate most advantageously to restrain the creeping and premature opening of the valves of the valve-support.

Having thus fully described my invention and the best manner with which I am at present acquainted of reducing the same to practice, I claim—

1. An automatic fire-extinguisher having a valve-support made in two pieces united by means of a solder or metal fusible at a low temperature, the free ends of said pieces being beveled or inclined, and having a correspondingly-shaped cap applied to the said beveled or inclined ends and secured thereto by the solder or metal aforesaid, substantially as described.

2. An automatic fire-extinguisher having a valve-support made in two pieces united by means of a solder or metal fusible at a low temperature, the proximate pieces of said valve-support being at one side of a straight line between the bearings of the valve-sup-

port, the free ends of said pieces being beveled or inclined and forming a cone-shaped seat at the outer extremity of the valve-support, and having a cap with corresponding cone-shaped interior fitted to the said cone-shaped end and secured thereon by the solder or metal aforesaid, substantially as described.

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

WILLIAM ESTY.

Witnesses:

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CHARLES W. B. PUTNAM.