

(No Model.)

W. ESTY.
AUTOMATIC SPRINKLER OR FIRE EXTINGUISHER.
No. 532,269. Patented Jan. 8, 1895.

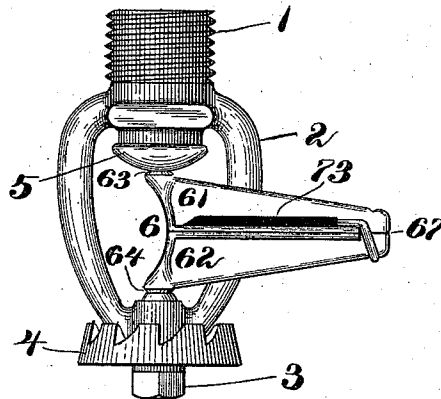


Fig. 1.

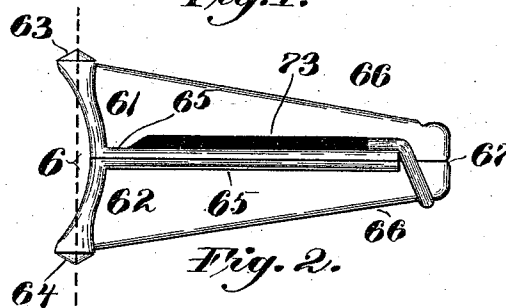


Fig. 2.

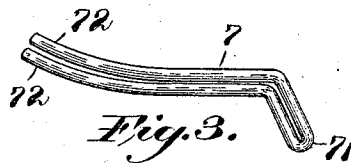


Fig. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM ESTY, OF LACONIA, NEW HAMPSHIRE.

AUTOMATIC SPRINKLER OR FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 532,269, dated January 8, 1895.

Application filed July 21, 1894. Serial No. 518,255. (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 Sprinklers or Fire-Extinguishers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to automatic sprinklers or fire extinguishers, and more particularly to devices of the same general class as that which is presented in my application for Letters Patent of the United States filed on or about January 25, 1893, Serial No. 459,676.

In the accompanying drawings I have represented my present invention as applied to a sprinkler or automatic fire extinguisher of the construction which is represented in the said application, but, as will be evident, the invention is capable of being applied also without change or departure in principle to automatic sprinklers or fire extinguishers of a variety of other constructions.

Practical experience with automatic fire extinguishers or sprinklers containing fusible joints, that is to say, those in which a valve is secured in place by the employment of a solder or other material which is fusible at a comparatively low temperature and hence in case of a fire is melted by the heat of the latter and thus releases the valve, has developed the fact that there is a tendency for the parts which are held in place by the solder or other fusible material 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 open, partially or wholly, and permit the escape of water. This yielding results from the so-called "creeping," under the strain exerted by the pressure of the water, of the solder or other fusible material which is employed to hold the valve in place. The object of my invention is to obviate this creeping and thereby to guard against and prevent the parts from yielding in such manner as prematurely to permit the valve to open and the water to escape.

The invention consists in an improved form of safety-device which I have contrived for the purpose of preventing the valve from

opening save in the presence of a degree of heat which is sufficient to fuse the solder or other fusible material by which the valve is 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 of the accompanying drawings shows a sprinkler or fire extinguisher having my present invention applied thereto, the said sprinkler or fire extinguisher being of the construction which is presented in my application for patent aforesaid. Fig. 2 is a view showing in detail the valve-support of said sprinkler or fire extinguisher, with the safety device applied thereto. Fig. 3 is a view in perspective showing the safety device detached.

At 1 in the drawings is a threaded nozzle, which preferably is formed in one piece with a yoke-shaped frame 2, in the lower end of which frame 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 mounted loosely on the stem of the screw 3, between the head of the said screw and the lower end of the frame 2, and is free to turn around the said stem under the action of the stream of water issuing from the nozzle when the latter is open. 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 that is 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 is held in place by a valve-support designated 6.

Various forms of valve-supports have been contrived and used heretofore, and my present invention is capable of being employed with many of them without material change

and without departure from the spirit of the invention. In practice, I prefer to employ the form of valve-support that is shown in the drawings, and accordingly I have shown
 5 the safety device combined therewith. The said valve-support is interposed between the under surface of the valve 5 and the upper end of the screw 3, short conical projections
 10 63, 64 that are formed on the said valve-support, and 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
 15 screw, respectively.

The illustrated form of valve-support 6 is composed of two parts, halves, or members, 61 and 62, these preferably being made exactly alike in order that they may be cast
 20 from the same pattern, and, also, in order to render the valve-support perfectly symmetrical in shape. Each of the parts or members 61 and 62 is of nearly triangular shape in outline when viewed in side elevation, as will be
 25 clear from inspection of the drawings. Each part or member also is T-shaped in vertical cross-section, it having the horizontal web 65 extending from its inner end to near its outer end and the vertical web 66 that is joined to
 30 the web 65 at midwidth of the latter. The flat outer sides of the horizontal webs constitute the proximate or meeting faces of the parts or members 61 and 62 throughout the entire length of the valve-support, and these
 35 are of considerable area, they extending from one end to near the other end of the parts or members 61 and 62. Beyond the outer ends of the horizontal webs 65, 65, the edges of the vertical webs 66, 66 are opposed to each other.
 40 The fusible metal or solder 67 which holds together the two parts or members 61 and 62 is applied to the said faces and to the said edge portions or the vertical webs 66, 66 and unites the two halves or members of the valve
 45 support. The described construction of the said valve support secures strength, while it is light and with no heavy or thick mass of metal present at any point, this last being particularly important in the case of the hori-
 50 zontal webs and enabling them to 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
 55 directly outward so as to be exposed fully 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 nozzle as the valve
 60 opens. The meeting faces of the webs 65, 65 terminate at a point a little to one side of the vertical line which passes through the centers of the projections 63 and 64, such point being outside of the said line, as is indicated by the
 65 dotted line in Fig. 2. When the solder or other fusible material uniting the parts 61

and 62 becomes fused and affords opportunity for the latter to separate under the pressure of the water upon the valve 5, such parts will
 70 turn on each other at their base ends as on 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 construction so far set forth is essentially as in my application aforesaid.

The safety-device shown at 7 constitutes a kind of coupling that links together the separable portions of the valve-support, and in addition to engaging with the valve-support it
 80 is bound in place, so as not to yield under any strain tending to open the joint of the valve-support, by solder or other fusible material corresponding with that used for the soldered joint of the valve-support. So long
 85 as the safety device is itself bound in place it relieves the said soldered joint from practically all strain tending to open the same. When, however, the sprinkler or fire extinguisher is subjected to a heat sufficient to fuse
 90 the solder or other fusible material that is employed in making the joint and in binding in place the safety-device, the freeing of the latter affords opportunity for the strain to exert itself in opening the soldered joint.
 95 The safety-device is made with a bend or loop 71 that receives within it a portion of one part or member of the valve-support adjacent to the free extremity of such part or member, and with an arm or arms 72 which I secure
 100 by solder to the other member of the valve-support.

The form of safety-device that is shown is composed of a length of wire, which first is bent into the shape of a long U, and then has
 105 the portion thereof containing the turn or base of the U bent again at almost a right angle. The deflected bend or loop 71 forms a somewhat obtuse angle to the length of the arms. The arms of the safety-device are
 110 shown lying on the outer surfaces of the horizontal web 65 of one of the parts or members of the valve-support, and soldered in place thereon in the manner indicated at 73. The free end or extremity of the other part
 115 or member is shown engaged by the bend or loop 71. As will be obvious, any strain exerted by the said free end as the members tend to separate at their free ends will tend to cause the safety-device to turn around the
 120 end of web 65 as on a fulcrum, but so long as the ends of arms 72 are bound down the safety-device will be prevented from turning, and the strain will be effectually resisted. When, however, the arms are unbound by the fusing
 125 of the solder which holds them in place, the strain will at once turn the safety-device around the end of the web 65 in such manner as to release instantly the two parts or members of the valve-support and leave them free
 130 to separate. Preferably, I make the safety-device of spring wire and give a curve or in-

clination to the arms thereof as clearly shown. In the operation of soldering the said arms in place they are bent or deflected somewhat toward the web 65 so as to straighten them, and thereby are put under strain, but when the securing solder is fused as aforesaid they recover their normal condition by virtue of their elasticity. This tendency to resume their original form assists in freeing the said arms, and clears them from any slight hold that the solder may retain upon them. Thus it secures a prompt and automatic disengagement of the safety device. A notch is formed in the vertical web 66 of each part or member of the valve-support, adjacent to the outer end thereof, to afford a rest or seat for the bend of the safety-device and insure its remaining in proper engagement until the moment of release.

I claim as my invention—

1. An automatic sprinkler having a valve-support provided with a fusible joint, and also having combined with said valve-support a safety-device provided with a bend or loop in positive engagement with said valve-support at one side of said joint, and also provided with an arm at an angle to the portion containing said bend or loop, said arm

overlying a web on the valve-support at the other side of the joint and soldered thereto, substantially as described.

2. The combination with the valve-support composed of the two parts or members 61 and 62, united along their meeting faces by readily-fusible solder, of the safety-device having a loop or bend in engagement with one of said parts or members near to its outer extremity, and also having an arm or arms soldered along the web 65 of the other of said parts or members, substantially as described.

3. The combination with the valve-support composed of the two parts or members 61 and 62, united along their meeting faces by readily fusible solder, of the safety-device, made of spring wire and having a loop or bend in engagement with one of said parts or members near to its outer extremity, and also having a bent or deflected arm or arms soldered along the web 65 of the other of said parts, substantially as described.

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

WILLIAM ESTY.

Witnesses:

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A. M. DINSMOER.