P. ALLEN.

AUTOMATIC SPRINKLER.

APPLICATION FILED SEPT. 20, 1918.

1,298,152.

Patented Mar. 25, 1919.

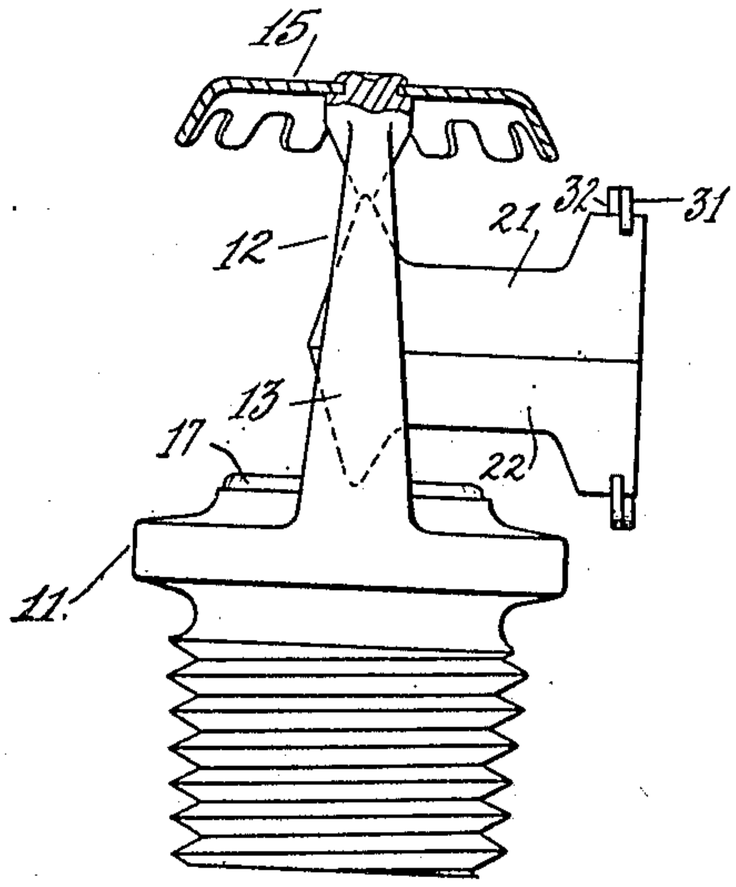

Fig. 1

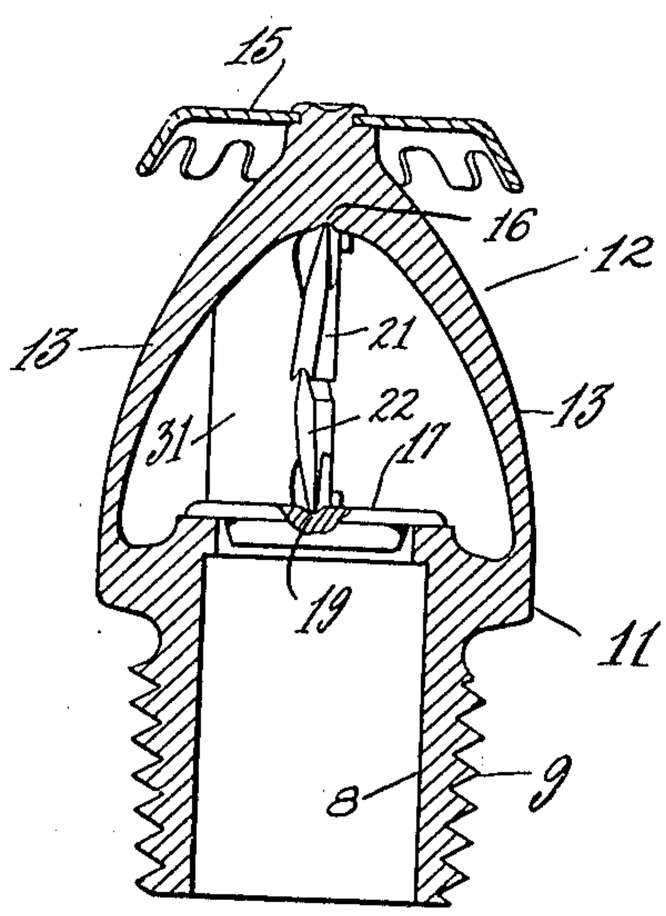

Fig. 2.

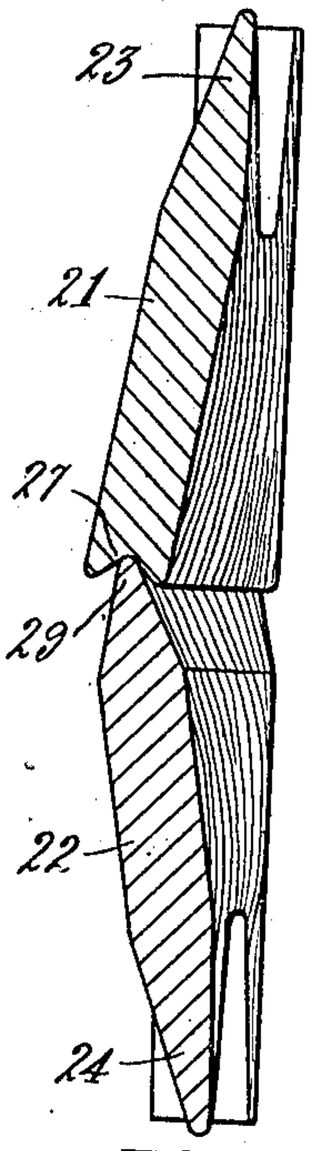

Fig. 6.

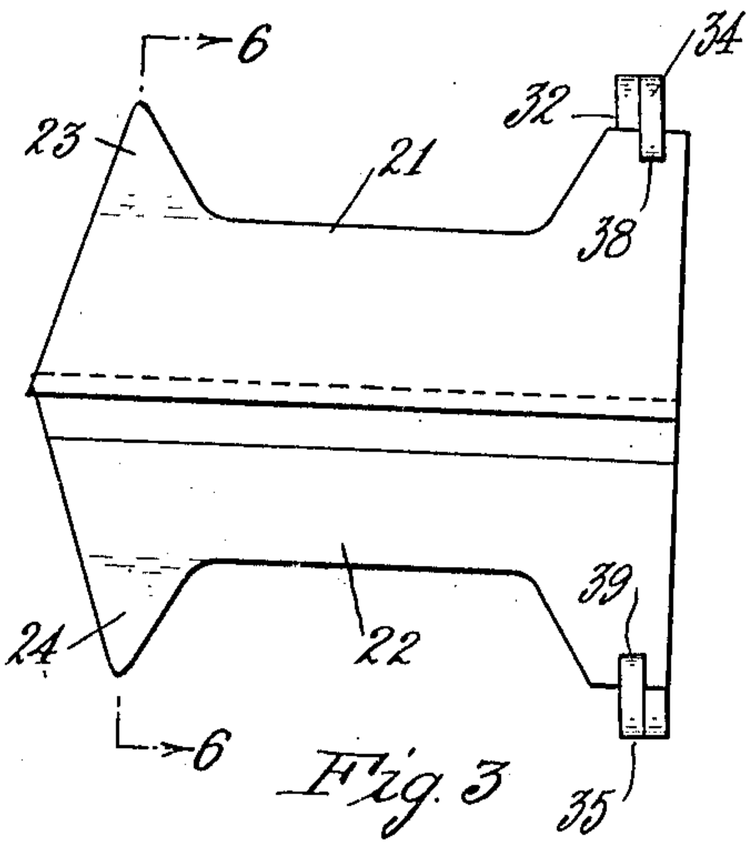

Fig. 3

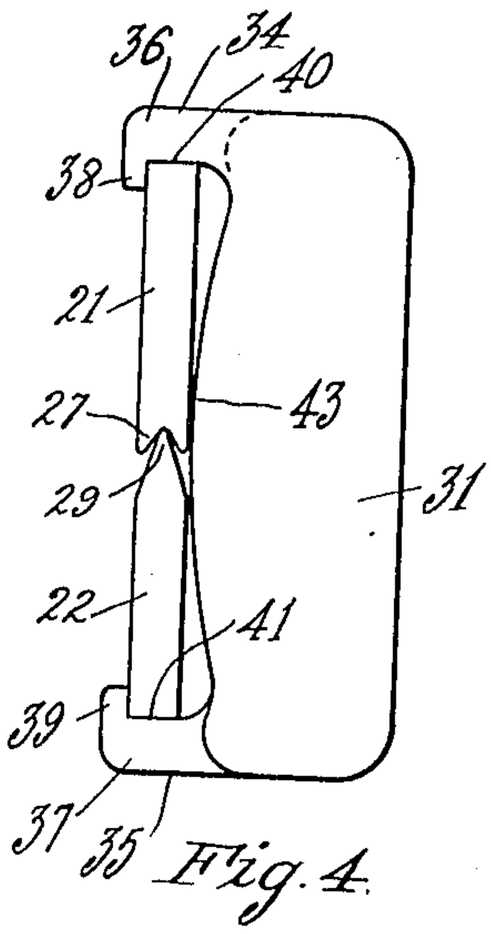

Fig. 4.

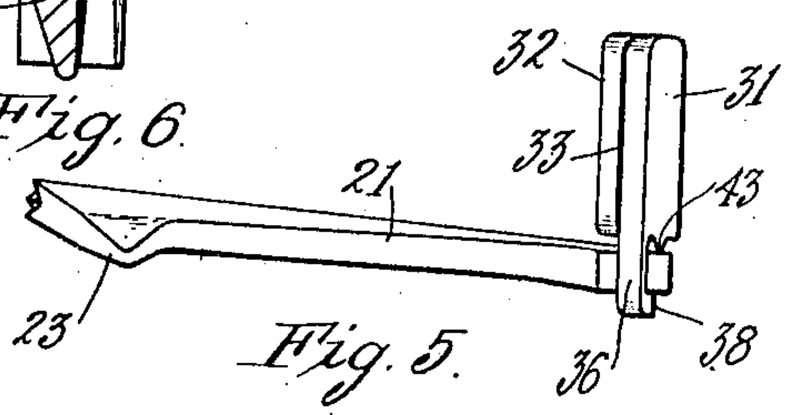

Fig. 5.

Inventor:
Philip Allen,
By Horatio E. Bellows.
Attorney.

UNITED STATES PATENT OFFICE.

PHILIP ALLEN, OF PROVIDENCE, RHODE ISLAND.

AUTOMATIC SPRINKLER.

1,298,152. Specification of Letters Patent. Patented Mar. 25, 1919.

Application filed September 20, 1918. Serial No. 254,928.

To all whom it may concern:

Be it known that I, PHILIP ALLEN, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Automatic Sprinklers, of which the following is a specification.

My invention relates to fire sprinklers automatically releasable by a high temperature.

The essential objects of my invention are facility in resetting the released parts; adaptability of repair by a millwright or other person, and permitting resoldering of the link elsewhere than in engagement with the sprinkler frame; to endure a maximum resistance to the hydraulic pressure on the valve; to assure a complete discharge of the plates from the frame at a predetermined temperature; and to attain these ends in a simple, strong and inexpensive structure.

My invention consists essentially in employing torsional means for resisting the hydraulic pressure upon the valve. Invention further consists in attaining the enumerated objects by such parts and such combinations of parts as fall within the scope of the appended claims.

In the accompanying drawings which form a part of this specification—

Figure 1 is a side elevation of a sprinkler embodying my invention,

Fig. 2, a vertical central section of same showing the valve in side elevation, and partially broken away,

Figs. 3, 4, and 5, a side elevation, an end elevation, and a plan, respectively of the locking members, and

Fig. 6, an enlarged section on line 6—6 of Fig. 3.

Like reference characters indicate like parts throughout the views.

In the form of my invention herein shown it comprises a nozzle or pipe with external threads 9 and a square peripheral extension 11 at its discharge end upon which is the yoke or frame 12 comprising the converging arms 13. Fast to the end of the yoke is a diffusion plate 15. The yoke is preferably provided upon its under side with a notch 16. Resting upon the discharge end of the nozzle is a circular valve 17 of any usual construction, preferably provided with a central notch 19.

It is in conjunction with the described well known parts of a sprinkler head that my invention will be detailed.

A strut or valve holding device retains the valve in its normally closed position at ordinary temperatures, and operates to release the valve at high temperatures. The holding device includes brace plates 21 and 22 of similar contour. These plates, which are of steel, are flat and oblong and are disposed edge to edge at right angles to the axis of the nozzle. The plates preferably have respectively near one end, tapering, laterally projecting, pointed portions 23 and 24, adapted to seat in the notches 16 and 19 respectively. One plate 21 has its inner edge provided with a longitudinally disposed groove 27, V shaped in cross section. The adjacent portion of the other plate 22 is throughout its length preferably beveled or tapered to form an edge 29, V shaped in cross section, which seats throughout its length in the groove 27. The combined width of the plates between the tips of the bearing portions 23 and 24 is greater than the distance between the seats 16 and 19.

A fusibly operative link is in this instance employed to clamp the outer ends of the plates for a purpose to be later detailed. This link comprises two oblong metal plates 31 and 32 fixed face to face with an intermediate layer 33 of solder or other metal of greater fusibility than the material of the plates. The other ends of the plates are provided respectively with laterally extending jaw portions 34 and 35. The latter comprise respectively arms 36 and 37, and inturned fingers 38 and 39, whereby are formed seats 40 and 41 respectively. The inner edge of each plate intermediate its length is provided with a swelled or curved portion 43.

The described parts are assembled as follows: The plates 21 and 22 with the edge 29 seated in the groove 27 have their portions 23, 24, located in the seats 16 and 19. Because the breadth of the plates is in excess of the distance between the seats, the plates assume an angular relation to each other.

In order to exert and maintain a maximum resisting pressure upon the valve 17 the plates thus disposed are subjected to torsion. With pliers or any other suitable tool, the outer portions of the plates are forced into alinement with each other. While the plates are thus held the link is slipped over the alined outer ends of the plates. Thus the plates have their outer ends locked against assuming the angular relation still maintained by their opposite ends between the bearing points. The fingers 38 and 39 prevent outward movement of the margins of the plates, while the body 43 of the link forms an abutment for the inner margins of the plates in an opposite direction, as shown in Fig. 4. The power or energy stored up in the brace plates by virtue of their torsional arrangement and centered upon the valve is sufficiently great to resist an excessive hydraulic pressure. On the other hand this stored up energy insures quick dissipation of the plates and link parts the instant the solder in the latter is fused.

It will be noted that by this construction the link can have its parts soldered together at a point remote from the frame and be applied to the plates at pleasure, which greatly lessens the usual labor of soldering the strut parts when the latter are being mounted.

I claim:—

1. In an automatic fire extinguisher, the combination with the valve and yoke, of brace plates arranged edge to edge engaging the valve and yoke, and means for maintaining the plates under torsional stress.

2. In an automatic fire extinguisher, the combination with the valve and yoke, of brace plates in longitudinal engagement with each other disposed transversely of the yoke and torsional means upon the plates near one end for forcing the opposite ends of the plates against the yoke and the valve.

3. In an automatic fire extinguisher, the combination with the valve and yoke, of two brace plates provided with interengaging inner edges and disposed at lateral angles to each other intermediate the valve and yoke, one of the plates engaging the yoke and the other plate engaging the valve, and a link upon the ends of the plates for clamping the link engaged portions of the plates into a common plane.

In testimony whereof I have affixed my signature.

PHILIP ALLEN.