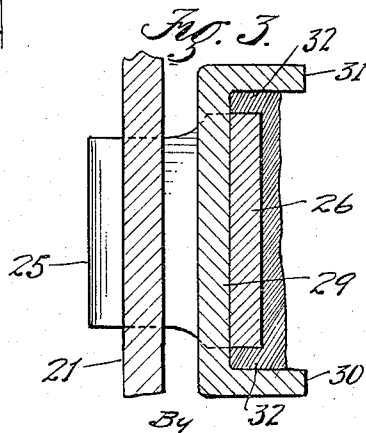
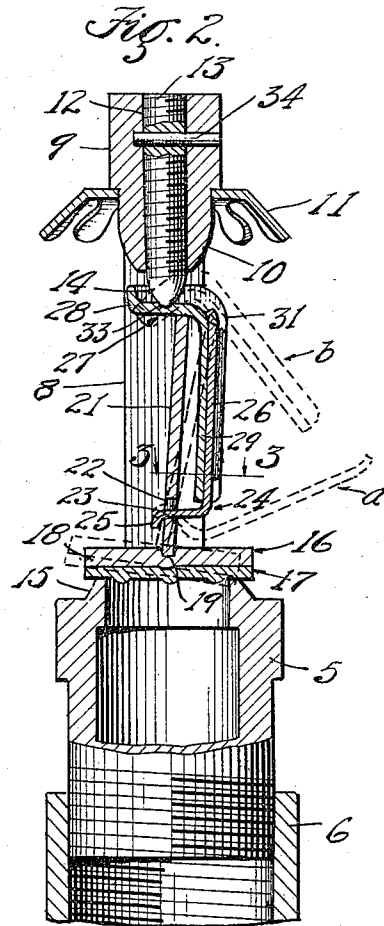
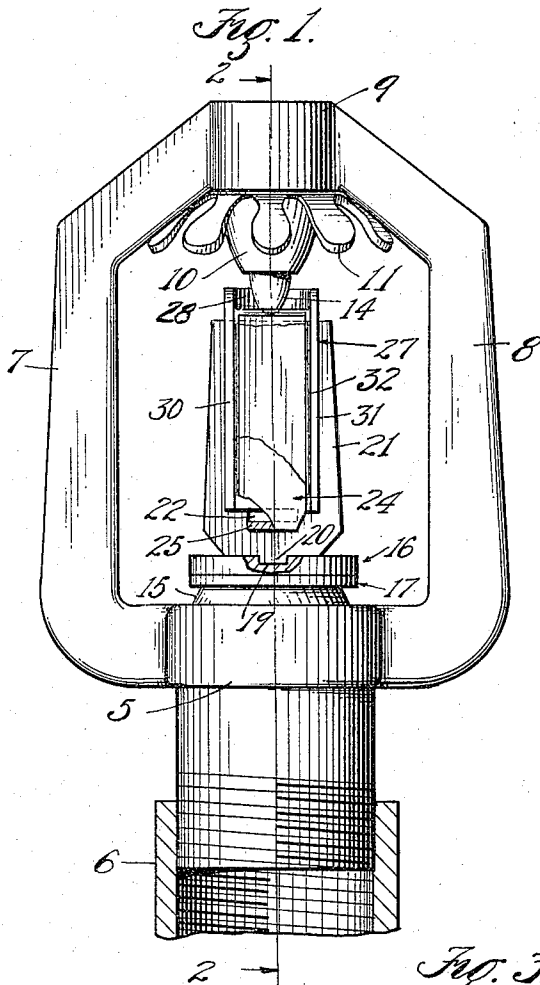


R. F. BOWER.
FUSE NOZZLE.
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FUSE-NOZZLE.

1,165,313.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RALPH F. BOWER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented new and useful Improvements in Fuse-Nozzles, of which the following is a specification.

This invention relates to a fuse nozzle.

It is the object of this invention to provide a fuse nozzle for sprinkler heads which are particularly adapted for use in automatic sprinklers in fire-extinguishing systems.

A further object is to provide a fuse nozzle of the above character in which the nozzle is sealed by a fuse locked closure in such manner that excessive liquid pressure within the nozzle will not open same, but which is sensitive to heat so as to quickly open when subjected to a predetermined degree of temperature.

Another object is to provide a fuse with means for locking a nozzle closure against displacement, in which the fuse is not subjected to excessive strain, and so arranged as to be quickly acted on by a rise of temperature to a predetermined degree to suddenly open the nozzle to release the nozzle closure locking device.

Another object is to provide a construction whereby the fusible material is so exposed that it will rapidly melt at the predetermined temperature without necessitating the heating of the parts with which it is engaged in order to effect a release of the nozzle closure.

The invention is illustrated in the accompanying drawings, in which:

Figure 1 is a view of the sprinkler head and nozzle in side elevation, with parts broken away. Fig. 2 is a view in vertical section and elevation on the line 2-2 of Fig. 1, as seen in the direction indicated by the arrows. Fig. 3 is a view in horizontal section and plan on the line 3-3 of Fig. 2, with parts broken away.

More specifically, 5 indicates a sprinkler nozzle which is formed of an externally threaded tube adapted to be screwed into a pipe connection 6, leading from any suitable source of water supply; the nozzle 5 being provided with opposed brackets 7 and 8, which are connected at their outer ends to a hub 9, arranged opposite the discharge end of the nozzle 5 and spaced therefrom. The hub 9 is formed with a conical spread-

ing member 10, which extends toward the discharge end of the nozzle 5 concentric therewith, and mounted on the spreading member 10 is a deflector 11, consisting of an annular member formed with a series of serrations or projections extending in divergent relation to the spreading member 10 and adapted to cooperate with the latter to deflect and spread the water discharged from the nozzle 5. The hub 9 is formed with a longitudinal, threaded bore 12, extending axially of the nozzle 5, which threaded bore is designed to receive a screw 13, having a conical or tapered inner end 14. The discharge end of the nozzle 5 is formed with an annular flange 15, on the outer edge of which is seated a closure plate or cap 16, the cap 16 being formed with an inner face-plate 17, preferably made of aluminum or other metal of a softer character than the metal of which the flange 15 is formed, so that when the cap 16 is pressed against the flange 15 under high pressure, the softer metal of the face plate 17 will yield slightly at its point of contact with the outer edge of the flange 15 so as to closely conform thereto and form a non-leakable joint.

The packing plate 18 of the cap 16 is formed with a central depression 19, in which a lug 20 formed on the end of a demountable post 21 is adapted to seat. The standard 21 is formed with an aperture 22 adjacent its lower end, adapted to receive and form a seat for the lower limb 23 of the bent locking arm 24; the outer end of the limb 23 being bent to form a downwardly extending lip 25, adapted to engage the lower edge of the aperture 22, as particularly shown in Fig. 2. The locking arm 24 is formed with a limb 26, which extends approximately at right angles to the limb 23 to a point and terminates adjacent the upper end of the post 21.

Mounted on the upper end of the post 21 is a tripping lever 27, which is formed in the shape of a right angle, with one limb 28 loosely seated on the upper end of the post 21, and its other limb 29 extending downwardly parallel with the post 21 and spaced therefrom intermediate the latter and the arm 26; the lower end of the lever 27 terminating adjacent the limb 23 of the arm 24. The lever 27 is formed of a channel member having outwardly extending flanges 30 and 31, the inner walls of which are spaced a short distance from the vertical edges of the

arm 24. The flanges 30 and 31 form a reinforcement for the lever 27 and also form channels adjacent the edges of the arm 24 for the reception of a solder fuse 32, as particularly shown in Fig. 3. The upper face of the limb 28 of the lever 27 is formed with a depression 33, to receive and form a seat for the tapered lower end 14 of the screw 13.

In assembling the device the cap 16 is seated on the flange 15. The lever 27 is then placed in position on the post 21, with the locking arm 24 extending in contact with the limb 26, and the arm 24 extending in contact with the outer face thereof, with the lower limb 23 of the arm extending through the aperture 22, with the hook 25 thereon engaging the lower wall of the latter. The arm 24 is then connected to the lever 27 by the solder fuses 32, which are run in a molten state in the channels formed between the edges of the limb 26 and the flanges 30 and 31 of the lever 27; the solder being carried over the outer face of the limb 26 so as to present a broad surface of solder to the action of heat. The post 21, with the lever 27 and arm 24 thereon is then placed in position, with the lug 20 thereon in the depression 19. The screw 13 is then advanced to move the tapered end thereof into engagement with the depression 33 and to tighten to such extent as to cause the cap 16 to bear against the flange 15 with considerable pressure. The outer end of the screw 13 is then cut off so that it will lie flush with the end of the hub 9 and prevent its being accidentally loosened. As a means for further insuring the screw against loosening, a pin 34 is driven transversely into the hub 9 and into the screw 13 through a drill hole formed to receive it. The point of pressure of the screw 13 against the limb 28 of the lever 27 is a short distance to one side of the point of the support of the lever 27 on the upper end of the post 21, so that the pressure against the limb 28 will tend to rock the lever to move the limb 29 outwardly from the post 21. This outward movement of the limb 29 is inhibited by reason of the engagement therewith of the upwardly extending limb 26 of the locking arm 24, which engages the post 21 and is secured to the limb 29 by solder or fuse joints 32, as before described.

In the operation of the invention, heat of a predetermined temperature or in excess thereof will act on the fusible solder 32 to first melt the exposed portion thereof on the outer face of the limb 29. The heat acting on the exposed portion of the solder, is rapidly conducted to the concealed portions of the solder forming the binding agent between the limb 29 on the arm 24, and the limb 26 and the lever 27. The limb 29 being spaced from the post 21, permits of a free circulation of the heat around the limb 29, so that the latter may be quickly heated and

assist in the softening of the solder at its point of contact with the limb 29. The moment the solder is sufficiently softened to release the limb 26, the latter will be rocked outwardly by the pressure exerted thereon by the limb 29 and the lever 27; the lever 27 being rocked outwardly on the post 21 by reason of the thrust imposed on the latter by the water pressure in the nozzle 5, bearing against the cap 16, and transmitting a pressure to the limb 28 to one side of its engagement with the screw 13. The limb 26 on being disconnected from the limb 29, drops to the position indicated by the dotted lines *a* in Fig. 2, and permits the free upward movement of the limb 29 and the lever 27 into the position indicated by the dotted lines *b* in Fig. 2. The pressure on the cap 16 will then force the latter and the post 21 outwardly, whereupon the cap 16, post 21, and the lever 27 will become separated and will drop free from the nozzle, so that the water ejected from the latter will be directed against the spreader 11 in the manner common in fire extinguisher heads.

An important feature of this invention resides in so mounting the limb 29 on the lever 27 that a free circulation of heat therearound is insured, and in extending the limb 26 substantially the length of the limb 29 so that the pressure exerted thereon by the lever 27 as transmitted to the latter through the post 21 and cap 16, will be slight in comparison to the pressure in the nozzle 5. By the proportions here shown, a pressure of approximately one hundred and fifty pounds on the under side of the cap 16 will impose a pressure of approximately one and one-half pounds on the limb 26 of the arm adjacent its upper end; the pressure at the lower end of the limb 29 of the lever 27 at its point of engagement with the limb 26 and the arm 24 being substantially opposed by the hook 25 engaging the post 21. By this arrangement a small fuse connection is required, which will readily melt when subjected to heat of a predetermined temperature, thus rendering the device extremely sensitive.

What I claim is:

1. In a sprinkler head, the combination of a nozzle, a cap for closing the same, a post on said cap, a bent lever on said post having a limb extending parallel with the post and spaced therefrom, a bearing for said lever to one side of the point of support thereof on said post, a bent arm carried by said post having a limb extending in front of the arm of said lever and in contact therewith, and a fusible material connecting said arm to the lever.

2. In a sprinkler head having a closure cap, a post thereon, and a spray head arranged opposite the discharge end of the

nozzle, a bent lever supported on the end of said post having a point of contact with the sprinkler head to one side of its support on the post and formed with a limb extending parallel with the post and spaced therefrom, having outwardly projecting flanges on the edges thereof, an arm adapted to engage said post having a limb arranged to extend between the flanges on the lever, said arm being in contact with said lever, and a fusible material forming a connection between said arm and said lever.

3. In a sprinkler head, the combination of a nozzle, a cap for closing same, a post loosely connected to said cap, a lever loosely supported on said post, a bearing carried by the nozzle contacting said lever to one side of its point of support on said post, a bent

arm loosely connected to said post having an upwardly projecting limb adapted to extend in front of a downwardly extending limb on said lever arranged in front of and spaced from said post, flanges on said lever extending on opposite sides of the upwardly projecting limb on the arm and spaced therefrom, and a fusible material arranged in a channel formed between said flanges and the arm, whereby the arm is connected to the lever. 20 25

In witness that I claim the foregoing I have hereunto subscribed my name this 10th day of December, 1914. 30

RALPH F. BOWER.

Witnesses:

EDMUND A. STRAUSE,
MARGUERITE BATES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."