

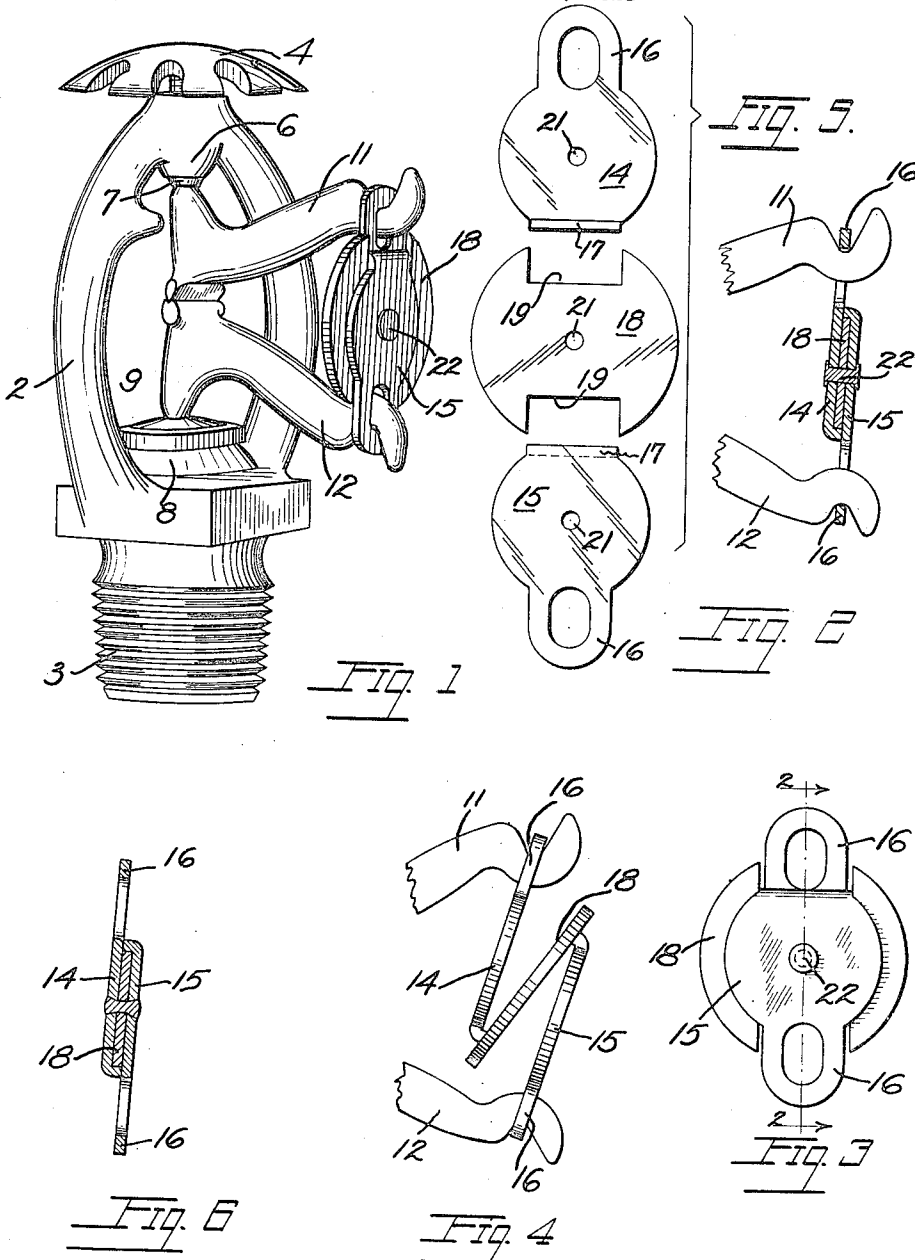
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SPRINKLER HEAD

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UNITED STATES PATENT OFFICE.

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SPRINKLER HEAD.

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To all whom it may concern:

Be it known that I, OSWALD J. LUBBOCK, a citizen of the United States, and a resident of Alameda, in the county of Alameda and State of California, have invented a new and useful Sprinkler Head, of which the following is a specification.

My invention relates to automatic sprinkler heads for use in fire prevention systems and especially to tension links for such heads. One of the objects of the invention is the provision of a tension link for use in the lever type of sprinkler head characterized by the major portion of the stress tending to open the link being carried by a direct metal to metal contact, the remaining small portion being carried by the fusible solder element of the link. Another object of the invention is the provision of a link of the class described characterized by certainty of operation and a snappy quick release at the critical temperature.

My invention possesses other objects and features of advantage some of which, with the foregoing, will be set forth in the following description of my invention. It is to be understood that I do not limit myself to the showing made by the said description, as I may adopt variant forms of my invention within the scope of the claims.

Referring to the drawings, Fig. 1 is a perspective view of a complete sprinkler head embodying my invention. Fig. 2 is a vertical sectional view taken longitudinally thru the link and showing the ends of the levers. The plane of section is indicated by the line 2—2 of Fig. 3. Fig. 3 is a plan view of the assembled link detached from the balance of the structure. Fig. 4 is a side view of the separated parts of the link as they would appear at the moment of opening. Fig. 5 is a plan view of the separated parts of the link in the order in which they are assembled. Fig. 6 is a view similar to that of Fig. 5 but showing a modified form of fusible rivet.

The sprinkler head of my invention comprises a frame 2 of known form provided with a nipple 3 wherewith the head is attached to the water supply pipe. At the opposite end of the frame, a deflector 4, of the usual or any desired type, is secured by a screw which passes thru the boss 6 forming the end of the frame, and terminates in a hollow point 7 lying in the longitudinal axis of the sprinkler.

In the base of the frame opposite the nipple is a valve nozzle 8 upon which the valve cap 9 is seated. The valve cap is formed with a hollow seat also lying in the longitudinal axis of the sprinkler. Means are interposed between the hollow point 7 and the valve cap seat for retaining the valve cap upon its seat under the valve pressure existing in the sprinkler head system. This means is arranged to collapse suddenly to release the valve cap, the parts being snapped clear of the frame, when the critical temperature, at which the sprinkler is designed to operate, is reached.

Opposed levers 11 and 12 of any desired form are interposed between the point 7 and the valve cap, being provided with parts adapted to seat therein in a well known manner. The outer ends of the levers 11 and 12 are notched and connected together by a link, the separation of the parts of which at the critical temperature permits the collapse of the levers and the unseating of the valve cap.

The link comprises two circular plates 14 and 15, each provided with an apertured extension 16 for connection with the notched end of the levers 11 and 12. At the opposite end each plate is extended at substantially right angles to form a short flange 17. Interposed between the plates 14 and 15 in the assembled links is a compression block 18 of substantially the same thickness as the length of the flanges 17 but of materially greater diameter than the diameter of the plates 14 and 15. The compression block is provided with seats 19 on opposite sides thereof adapted to be engaged by the flanges 17. Thus in the assembled links, the plates 14 and 15 are contiguous to the compression block on opposite sides thereof and the stress tending to separate the plates and acting substantially in the longitudinal axis of the link is carried for the most part by the metal to metal engagement of the flanges 17 with the compression block.

Owing to the engagement of the flanges with the block on opposite sides of the line of stress tending to pull the link members apart, a small component of the stress is exerted laterally, tending to a lateral separation of the link members as shown in Fig. 4. In order to resist this small tendency to lateral separation of the link members the contiguous surfaces of the block 18 and the plates 14 and 15, between which it

lies, are united by a thin film of fusible solder. Each of the link members is also provided with an aperture 21 which are alined when the link members are assembled. As additional means for carrying the laterally exerted stress of separation, the fusible solder is also run into the alined apertures to form a rivet 22. The solder is of course of a composition which fuses at the critical temperature characterizing this head. The proportion of the parts is such that the strain on the solder is relatively small and well within its resistance, so that cold flow or premature release of the link parts is improbable.

It is to be noted that the compression block is of larger diameter than the inclosing plates. This is done to facilitate the absorption of heat by the compression block so that the component parts of the links are heated evenly and the interior portions of the rivet 22 reach the fusing point simultaneously with the outer portions. The plates and compression block are preferably formed of relatively thin material for the same reason, that is to facilitate the conduction of heat so that the link as a whole warms up evenly. The broad surface supplied by the form of link shown is for the purpose of giving a greater surface contact for the solder.

When the critical temperature is reached, the film of solder uniting the contiguous surfaces and the rivet 22 fuses and permits the small lateral component of the tension stress to initiate the lateral separation of the link members. Almost immediately the full force of the separating stress is felt and the link parts are drawn apart and snapped clear as the nozzle cap unseats. It is to be noted that once the separating movement has begun, the lateral component rapidly increases so that there is no possibility of catching or freezing of the parts.

In Fig. 6 I have shown a link in which the rivet 23 is of slightly different form. In this form of link the apertures in the outer plate are formed conically so that when the solder is cast in the alined apertures conical heads are formed at each end of the rivet.

I claim:

1. A link for a sprinkler head comprising a pair of plates, each plate having a flanged end, a flat compression block interposed between said plates and having opposite edges engaged by said flanged ends, and a fusible rivet extending thru said plates and block.

2. In a sprinkler head of the lever type, a tension link interposed between the ends of the levers comprising circular plates each having an apertured extension at one end for connection with one of said levers and at the other end an extension at substantially right angles to form a short flange, a flat circular compression block of greater diameter than said plates interposed between said plates and the flanges thereon, and a fusible rivet extending thru said plates and block.

3. In a sprinkler head of the lever type, a tension link interposed between the ends of the levers comprising plates each having an apertured extension at one end for connection with one of said levers and at the other end an extension at substantially right angles to form a short flange, a flat compression block of substantially the same thickness as the length of the flanges separating said plates and having opposite edges engaged by said flanges, said plates and block having alined apertures therethru, and fusible solder interposed between said block and plates and filling said alined apertures.

In testimony whereof, I have hereunto set my hand.

OSWALD J. LUBBOCK.