Sept. 27, 1932. G. I. ROCKWOOD 1,879,509

FUSIBLE LINK

Filed March 4, 1931

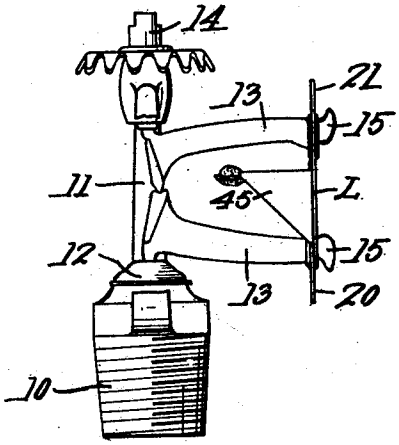


Fig. 1.

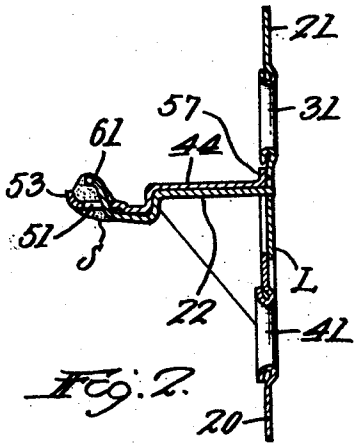


Fig. 2.

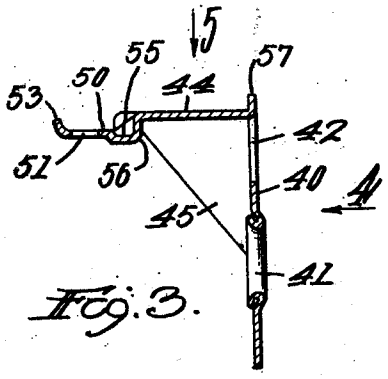


Fig. 3.

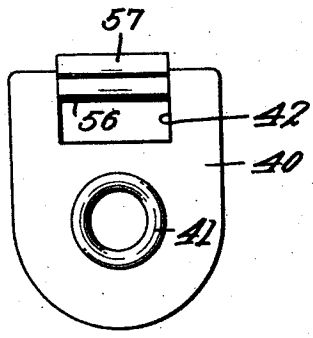


Fig. 4.

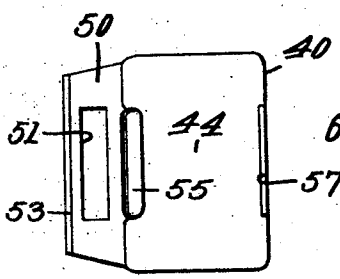


Fig. 5.

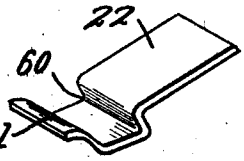


Fig. 6.

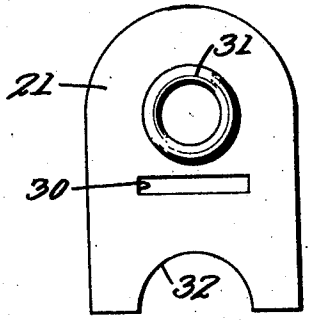


Fig. 7.

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UNITED STATES PATENT OFFICE

GEORGE I. ROCKWOOD, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO ROCKWOOD SPRINKLER COMPANY OF MASSACHUSETTS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

FUSIBLE LINK

Application filed March 4, 1931. Serial No. 520,041.

This invention relates to a fusible link adapted for use in sprinkler heads or for other similar purposes. Such links are held under tension and each such link contains a locking member which is releasable by the melting of a low-temperature alloy or solder which holds the locking member in position.

It is the general object of my invention to improve such fusible links by providing a construction in which the locking member is very firmly secured in position under normal conditions but is very quickly and uniformly released upon a rise in temperature above a predetermined point.

A specific object of my invention relates to the provision of means definitely locating the locking member and for preventing endwise movement of said member during its initial releasing movement.

A further object of my invention is to provide a construction in which the low-melting alloy or solder is in shear rather than in tension.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawing, in which

Fig. 1 is a side elevation of a sprinkler head having my improved fusible link embodied therein;

Fig. 2 is a sectional side elevation of the improved link;

Fig. 3 is a sectional side elevation of one of the tension members;

Fig. 4 is a front elevation of the tension member, looking in the direction of the arrow 4 in Fig. 3;

Fig. 5 is a plan view of the tension member, looking in the direction of the arrow 5 in Fig. 3;

Fig. 6 is a perspective view of the locking member; and

Fig. 7 is a front elevation of a second tension member.

Referring to Fig. 1, I have shown a sprinkler head of a usual commercial type comprising a base 10 threaded for attachment to a sprinkler pipe, an open frame 11 mounted on the base 10, a cap 12 closing a passage through the base 10, and a pair of locking levers 13 interposed between the cap 12 and an adjusting screw 14 by which the pressure on the locking members 13 and cap 12 may be selectively determined. The levers 13 are provided with hook-shaped ends 15 to receive a fusible link indicated generally by the letter "L".

The fusible link L comprises tension members 20 and 21 and a locking member 22. The tension member 21 is a flat piece of sheet metal having a rectangular slot or opening 30 in its middle portion, a reenforced eyelet 31 at its upper end and a recess 32 at its lower end.

The other tension member 20 is also preferably formed from a single piece of sheet metal and comprises an upright portion 40 having a reenforced eyelet 41 and having a rectangular opening 42 of substantial area. The tension member 20 also has a laterally projecting portion 44 and triangular side portions or braces 45. An outer portion 50 of the laterally projecting portion 44 is offset or depressed, as indicated in Fig. 3, and is provided with a rectangular opening 51 (Fig. 5) and with an upturned end flange 53 (Fig. 3).

In its middle portion, an additional part 55 of the lateral extension 44 is depressed to provide a shoulder 56 on the lower side of the extension. A flange or lip 57 (Fig. 3) also preferably extends upward from the upper surface of the extension 44, which is stiffened thereby.

The locking member 22 is preferably formed from a single piece of sheet metal and is offset downwardly at one end to provide a shoulder 60 and is thereafter reversely offset to provide a hook-shaped end portion 61.

When the parts are assembled as shown in Fig. 2, the locking member 22 is disposed underneath and alongside the extension 44, with its straight end projecting through the aligned openings 42 and 30 in the tension members 20 and 21 respectively.

The hook-shaped end 61 of the locking member 22 projects upward through the opening 51 in the end of the extension 44 and is confined therein by a mass of solder S

which surrounds the ends of the extension 44 and the locking member 22 and firmly retains them in assembled relation. The tension members 20 and 21 are also sweated or soldered together.

The link is subjected to a direct endwise tension when in use. Under these conditions, the tension members 20 and 21 cannot separate until after the solder S has melted to such an extent as to permit the locking member 22 to swing away from the shoulder 56. The member 21 will then slip off of the end of the locking member 22, thus releasing the levers 13 or other devices secured by the link.

It should be noted that the solder S is so distributed about the hook 61 that the solder is in shear rather than in tension. The parts cannot be separated except by pulling the hook 61 through the solder S and opening 51.

This disposition of the solder is much more reliable than in certain constructions in which the solder is merely in tension, as it has been found that solder will gradually yield and flow under tension at temperatures substantially below its melting point, whereas it will not yield under shear substantially below its melting point.

It should be also noted that the shoulder 56 on the extension 44 and the shoulder 60 on the locking member 22 cooperate to prevent sliding endwise movement of the locking member 22 to the left, as viewed in Fig. 2, until after a substantial swinging movement of the locking member has taken place. This prevents the possibility of the locking member 22 prematurely slipping endwise out of the tension member 21. The enlarged opening 42 facilitates the circulation of heated air through the tension member 20 and allows the member 22 to swing freely.

My improved fusible link has been found uniformly reliable in practice and very sensitive to a predetermined degree of heat.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:—

1. A fusible link comprising two adjacent tension members having aligned openings, a locking member extending outward substantially perpendicularly to said tension members and with one end of said locking member extending through said aligned openings, fusible retaining means for said locking member, and means to positively prevent outward endwise movement of said locking member transversely of and away from said tension members during initial release movement of said locking member as said fusible retaining means is softened by a rise in temperature thereof.

2. A fusible link comprising two adjacent tension members having aligned openings, a locking member extending outward substantially perpendicularly to said tension members and with one end of said locking member extending through said aligned openings, fusible retaining means for said locking member, and means to insure a swinging releasing movement of said locking member and at the same time to positively prevent outward endwise movement thereof transversely of and away from said tension members as said fusible retaining means is softened by a rise in temperature thereof.

3. A fusible link comprising two adjacent tension members having aligned openings, one of said members having a lateral extension at one side thereof with an opening therein and the other tension member being positioned against that side of said first tension member which is remote from said lateral extension, a locking member mounted alongside said lateral extension and having one end extending through said aligned openings and having the other end offset and extending through the opening in said lateral extension, said locking member being positioned on that side of said lateral extension toward which stress is applied on the other tension member, and a low-melting material filling said opening and surrounding said offset end portion to retain said parts in assembled relation at normal temperature.

4. The combination in a fusible link as set forth in claim 3, in which said lateral extension is provided with a shoulder and in which said locking member is provided with a corresponding shoulder, said shoulders cooperating to prevent endwise displacement of said locking member.

5. A fusible link comprising two adjacent tension members having aligned openings, a locking member supported substantially perpendicular to said tension members with one end thereof extending through said aligned openings and with the other end bent to provide a shoulder and a reversely bent hook-shaped portion, one of said tension members having a laterally extending portion apertured to receive said hook-shaped end portion, and low-melting material disposed in said aperture and about said hook-shaped end portion to retain said parts in assembled relation.

6. The combination in a fusible link as set forth in claim 3, in which said lateral extension is provided with a transverse flange about the upper edge of which the other tension member pivots as said members separate upon release of said locking member.

In testimony whereof I have hereunto affixed my signature.

GEORGE I. ROCKWOOD.