W. H. CAREL.

FUSIBLE LINK.

APPLICATION FILED AUG. 2, 1916.

1,239,878. Patented Sept. 11, 1917.

FIG. 1.

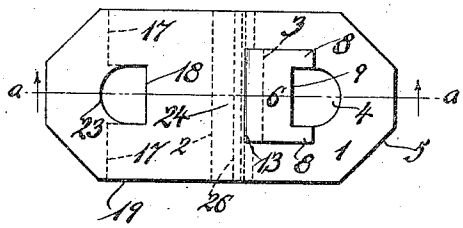


FIG. 2.

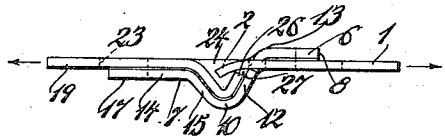


FIG. 3.

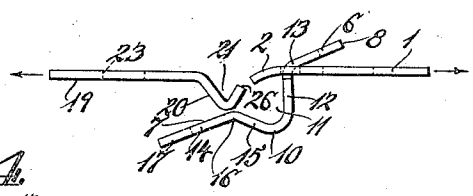


FIG. 4.

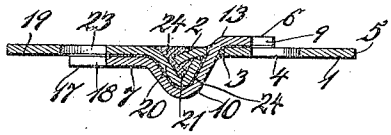


FIG. 7.

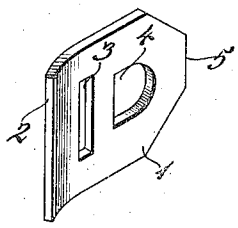


FIG. 5.

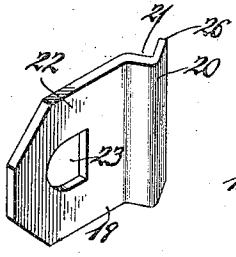


FIG. 6.

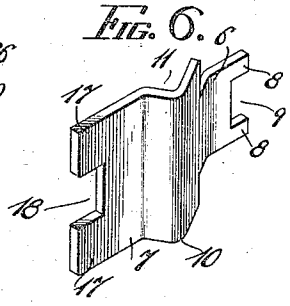


FIG. 8.

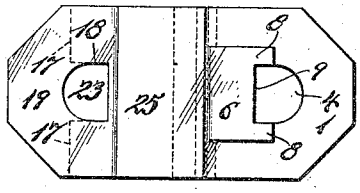
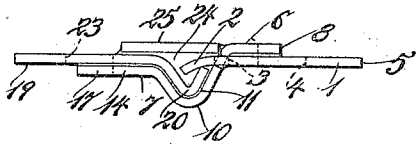


FIG. 9.



Witnesses

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FUSIBLE LINK.

1,239,878. Specification of Letters Patent. Patented Sept. 11, 1917.

Application filed August 2, 1916. Serial No. 112,701.

To all whom it may concern:

Be it known that I, WILLIAM H. CAREL, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Fusible Links, of which the following is a specification.

My invention consists of an improved fusible link and is especially serviceable as a tension link for preventing separation of the retaining members of sprinkler heads such as are used in connection with fire-extinguishing systems.

Prior to my invention, a number of different fusible links were placed on the market, but in most instances, the constructions of these links are such as to produce an undue amount of drag or friction between their coactive members, said drag and friction being detrimental and often interfering with the quick release of the several members, thereby preventing the proper operation of the sprinkler heads or other elements to which they are attached. Other of the fusible links made prior to my invention are so constructed as to make their manufacture costly and their assembly and attachment tedious.

One of the objects of my invention is to provide a fusible link comprising a number of parts normally held together by solder, and which, when heated to a pre-determined temperature, will quickly and positively separate with practically no drag between the parts.

Another object of my invention is to provide a link of the above described type which will be of simple construction and can be quickly and easily manufactured and assembled.

Another object of my invention is to provide a fusible link which will be strong, durable and efficient in service.

These objects and other advantageous ends which will be described hereinafter, I attain in the following manner, reference being had to the accompanying drawings in which—

Figure 1 is a top plan view of my improved fusible link assembled and ready for use.

Fig. 2 is a front elevation of the link shown in Fig. 1.

Fig. 3 is a front elevation showing how the several elements separate when the solder is melted.

Fig. 4 is a section on the line *a*—*a* of Fig. 1.

Figs. 5, 6, and 7 are perspective views of elements of my invention shown separated and without any solder thereon.

Fig. 8 is a view of similar nature to Fig. 1, showing a plate secured thereto, and serving to prevent corrosion of the main body of solder, and

Fig. 9 is a front elevation of Fig. 8, showing said plate covering the main body portion of solder.

Referring to the drawings, 1 is a plate which is curved inwardly at one end, as shown at 2. This plate has a slot 3 adjacent the curved end 2, and a hole 4 between the slot 3 and the end 5.

The slot 3 provides an opening through which is passed a hinge-tongue 6, the latter forming a projection on a plate 7 and is bifurcated to provide prongs 8. The space between these prongs provides a recess 9 of a width substantially equal to the width of the hole 4. The plate 7 has a projecting portion 10 which is substantially V-shaped and provides a transversely extending groove 11.

The leg 12 of the projecting portion 10 intersects the tongue 6 at an angle, said angle being defined by the slightly rounded portion 13 so that after the tongue 6 has been passed upwardly through the slot 3, the curved portion 13 will form a hinge with the portion of the plate which is adjacent the slot 3, so that plate 7 will readily swing and hinge on the plate 1.

The plate 7 has its opposite end portion 14 extending in a plane which is substantially parallel with a plane including the tongue 6 as clearly shown in Figs. 2, 4, and 9, so that the leg 15 of the projecting portion 10, in the construction illustrated, is slightly shorter than the leg 12, the intersection of the end portions 14 and 15 being in the form of a curve 16, substantially identical with the curved portion 13.

The end portion 14 is bifurcated to pro-

vide prongs 17, said prongs 17 forming a recess 18 which is substantially similar to the recess 9.

A third plate 19 has its end 20 shaped in the form of a projecting V-shaped portion which provides a transversely extending groove 21. This projecting end portion 20 is designed to fit within the V-shaped groove 11 of the plate 7, as clearly shown in the drawings, and the free end of the curved end portion 2 of the plate 1 projects and fits within the groove 21, when the several plates are in their assembled position. The opposite end 22 of the plate 19 is provided with a hole 23, which is substantially identical to hole 4 in the plate 1, and is of substantially the same width as the recess 18.

It will be understood that the holes 4 and 23 serve as openings into which tension members of any description may be inserted, said link serving to normally prevent a spreading movement of said tension members.

Solder 24 is placed between the several plates, as clearly shown in Figs. 2, 4, and 9, the greater portions of the solder being within the groove 11, and surrounding the curved end 2 of the plate 1 and the leg 12 of the plate 7.

As shown in Figs. 8 and 9, a plate 25 covers and is secured by the solder 24 so as to prevent gases or the like from corroding or eating the solder, the greater portion of the solder between the plates being protected by the plate throughout the width thereof.

In Figs. 8 and 9, the elements with the exception of the plate 25, are of the same construction as the elements contained in Figs. 1 to 7 inclusively, and in said Figs. 8 and 9, I have given these elements the same reference numerals, and it will be understood that my fusible links, if desired, may be used without the plate 25 if the location in which it is positioned is free from acids or gases which tend to corrode or eat the solder.

If tension is placed upon the link in the direction of the arrows shown in Fig. 2, the construction and assemblage is such to normally resist such tension. However, if the several plates and solder are heated to the fusible temperature of said solder, the solder will melt permitting the plates 1 and 19 to move in opposite directions. The fact that the plate 7 is hinged permits said hinge plate to quickly open, and provide sufficient space between the lower surface of the curved portion 2 and the inner surface of the leg 15 of the plate 7, for the projecting V-shaped portion 20 to quickly and positively free itself from the plates 1 and 7, as clearly shown in Fig. 3 of the drawing.

With this construction, it is readily seen that there is practically no drag between the several parts because the portions 14 and 15 move outwardly to quickly free all portions of the plate 19, and the plate 19 presents line contacts which assist and accelerate said pivotal or hinged movement between the plates 1 and 7.

Furthermore, by having the end 2 of the plate 1 projecting within the groove 21 of the plate 19, it requires comparatively little longitudinal movement between the plates 1 and 19 before they completely separate. In other words, by having the free end 26 of the plate 19 fitting within the crotch 27 provided by the inner surface of the curved end 2 and leg 12 of the plates 1 and 7 respectively, this crotch will be quickly widened by the opening hinge movement of the plate 7.

The prongs 8 and 17 of the plate 7 tend to straddle the tension members which are projected through the holes 4 and 23 and thereby add to the strength of the link by preventing lateral movement of the several plates with respect to each other.

The several plates may be made of metal which can be readily shaped, and the parts may be easily constructed at a comparatively low cost.

As illustrated, the greater portion of the plate 7 is between the curve 13 and the end 14 so that the increased weight of this portion over the weight of the tongue 6 causes the end portion 14 of the plate 7 to quickly open and thereby quickly provides sufficient space for the end 20 of the plate 19 to pull away from said plates 1 and 7.

My improved link is usually placed in a substantially vertical position when attached to a sprinkler head or the like, but it will be understood that it may be advantageously used in any other position.

While I have described my invention as taking a particular form, it will be understood that the various parts of my invention may be changed without departing from the spirit thereof, and hence I do not limit myself to the precise construction set forth, but consider that I am at liberty to make such changes and alterations as fairly come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A fusible link comprising two members hinged together, one of said members being bent to provide a substantially V-shaped groove, said other member having a free end bent into said groove and spaced therefrom to provide a crotch, another member having its extreme end bent to fit within said groove and to project into said crotch, and fusible material for holding said members in said positions, substantially as described.

2. A fusible link comprising a member having one of its extreme ends turned in-

wardly, another member hinged to said first member and having a groove into which said inwardly turned end of the first member extends to form a crotch, a third member having a bent portion fitting the groove of the second member and having a free edge extending into said crotch, and fusible means for securing said members in said positions, substantially as described.

3. A fusible link comprising a member having an inwardly bent free end, another member having a groove and being hinged to said first member, the grooved portion of said hinged member and said end of the first member forming a crotch, a third member having a bent projecting end portion normally fitting the groove in said other member, the projecting portion being again bent and terminating in a free edge which fits within said crotch, and fusible means for normally holding said parts together, substantially as described.

4. A fusible link comprising a plate having an inwardly projecting bent end portion and a slot, a second plate having a groove and being provided with a tongue designed to pass through said slot in the first plate, a third plate having a bent portion fitting within said groove of the second plate, the free edge of said portion being again bent and fitting within a crotch formed between said inwardly projecting end of the first plate and the portion of said second plate adjacent said tongue, and fusible material for binding said plates together, substantially as described.

5. A fusible link comprising a plate having an inwardly projecting bent end portion and a slot, a second plate having a tongue designed to extend through said slot, said second plate being provided with a groove which, when the tongue is moved parallel to the first plate, is directly under the inwardly bent end of the first plate, the portion of said plate adjacent said tongue and the inturned portion of the first plate forming a crotch, a third plate having an end portion fitting said groove of the second plate and having a bent free edge fitting within said crotch, and fusible means for holding said plates together, substantially as described.

6. A fusible link comprising a plate having an inwardly bent end portion and a slot, a second plate having a tongue designed to extend through said slot, said second plate being provided with a groove which, when the tongue is moved parallel to the first plate, is directly under the inwardly projecting end of the first plate, the portion of said plate adjacent said tongue and the inwardly projecting portion of the first plate forming a crotch, a third plate having a bent portion fitting said groove of the second plate and having its free edge fitting within said crotch, the portion of said second plate opposite said tongue forming a backing for the third plate, and fusible means for securing said plates together, said tongue acting as a hinge when said fusible means melts, to permit said end portion of the third plate to immediately pull away from said first and second plates, substantially as described.

7. A fusible link comprising a plate having an inwardly bent end portion and a slot, a second plate having a tongue designed to extend through said slot, said second plate being provided with a groove which, when the tongue is moved parallel to the first plate, is directly under the inwardly bent end of the first plate, the portion of said plate adjacent said tongue and the inturned portion of the first plate forming a crotch, a third plate having a bent portion fitting said groove of the second plate and having its free end fitting within said crotch, each of said first and third plates having a hole therein, said tongue and opposite end portion of said second plate being designed to fit against oppositely disposed faces of the first and third plates, and being provided with prongs which extend at both sides of respective holes in the first and third plates, and fusible means for securing said plates together, substantially as described.

8. A fusible link comprising a plate having an inwardly bent end and a slot, a second plate having a tongue designed to hinge within said slot and normally engage the outer surface of said first plate, said second plate having a groove extending adjacent said inwardly bent end of the first plate and being spaced therefrom to provide a crotch, a third plate having a bent portion fitting said groove of the second plate, and providing a groove, said inwardly bent end of the first plate fitting within the groove of the third plate, the free end of said bent portion of the third plate fitting within said crotch, and fusible means for securing said plates together, substantially as described.

9. A fusible link comprising a plate having an inwardly bent end and a slot, a second plate having a tongue designed to hinge within said slot and normally engage the outer surface of said first plate, said second plate having a bent portion providing a V-shape groove into which said bent end of the first plate extends and is spaced therefrom to provide a crotch, a third plate having a bent portion fitting said groove of the second plate and providing a groove, said inwardly bent end of the first plate fitting within the groove of the third plate, the free end of said bent portion of the third plate fitting within said crotch, said second plate having a portion forming a backing for said third plate and engaging the under surface of said third plate, and fusible means for securing said plates together, substantially as described.

10. A fusible link comprising a plate having an inwardly bent end and a slot, a second plate having a tongue designed to hinge within said slot and normally engage the outer surface of said first plate, said second plate having a bent portion providing a groove which extends adjacent said inwardly bent end of the first plate and being spaced therefrom to provide a crotch, a third plate having a bent portion fitting said groove of the second plate and providing a groove, said inwardly bent end of the first plate fitting within the groove of the third plate, the free end of said bent portion of the third plate fitting within said crotch, fusible means for securing said plates together, and a plate forming a covering for the fusible means above said groove in the second plate and the bent end of the first plate, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM H. CAREL.

Witnesses:
T. SEDDON DUKE,
CHAS. E. POTTS.

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