W. O. TEAGUE.

FUSIBLE LINK.

APPLICATION FILED JUNE 28, 1917.

1,300,046. Patented Apr. 8, 1919.

Fig. 1.

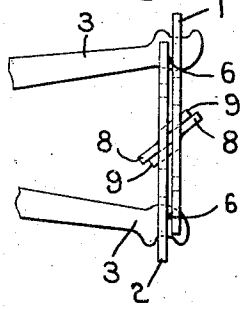


Fig. 2.

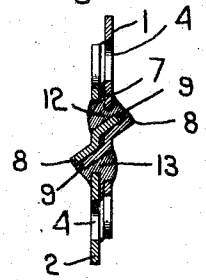


Fig. 3.

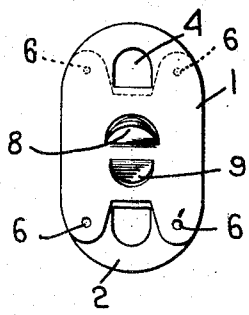


Fig. 4.

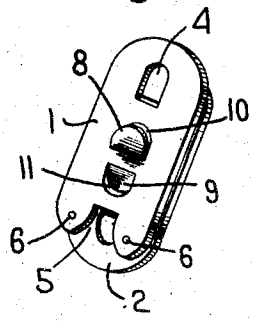


Fig. 5.

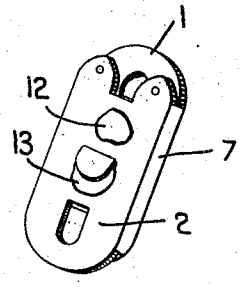
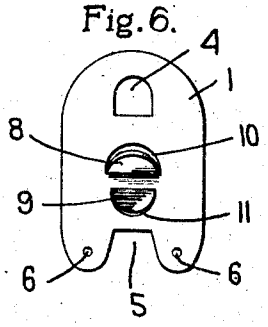


Fig. 6.



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UNITED STATES PATENT OFFICE.

WALTER O. TEAGUE, OF BROOKLINE, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO FIRE PROTECTION INSURANCE SECURITIES COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION.

FUSIBLE LINK.

1,300,046. Specification of Letters Patent. Patented Apr. 8, 1919.

Application filed June 28, 1917. Serial No. 177,566.

To all whom it may concern:

Be it known that I, WALTER O. TEAGUE, a citizen of the United States, residing at Brookline, county of Norfolk, State of Massachusetts, have invented an Improvement in Fusible Links, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates broadly to links of that type employed in conjunction with automatic sprinklers for fire extinguishing apparatus. These link parts are positively held together, against force tending to their separation, by a fusible metal. So held, these links retain their assembled relation until the temperature adjacent the sprinkler rises to a predetermined degree at which the fusible material is melted and the parts separate.

An object of this invention is to provide a link which will be positive and sensitively certain in action and will be capable of normally exerting sufficient tensile strength without danger of separation and release of the sprinkler system.

Another object of the invention is to provide a construction in which a positive separation of the link members will instantly take place when the temperature in the vicinity of the link is raised sufficiently to cause the melting of the fusible material which serves to secure the link members in assembled relation.

Another object of the invention is to provide a fusible link which shall comprise a minimum number of parts of a form which may be cheaply and readily manufactured.

Other objects of the invention will more fully appear from the following description and the accompanying drawings and will be pointed out in the annexed claims.

In the accompanying drawings there is illustrated a selected embodiment of this invention in which:

Figure 1 is a side elevation of the link in operative position, the lever arms being broken off and the fusible material being omitted for the sake of clarity of illustration;

Fig. 2 is a longitudinal medial section of the link;

Fig. 3 is a front elevation of the link;

Fig. 4 is a perspective view of the link before the fusible material has been applied;

Fig. 5 is a perspective view of the link showing the face opposite that shown in Fig. 4, and with the fusible material in place;

Fig. 6 is a front elevation of one of the members forming the link.

In this preferred embodiment, the link is composed of two members 1 and 2. These members are identical in shape and configuration and, when placed in superposed relation and so retained by a fusible substance, form the complete link.

As the members are alike, it will be necessary to describe but one. For example, the member 1 is of an elongated flat form and has means at one end for engaging one of the lever arms 3 of the sprinkler. Such engaging means is here shown as an aperture 4 which is preferably formed adjacent one end in the medial axis of the link. The opposite end of the link is preferably cut away or otherwise formed with a recess 5. When the link members are in assembled form they have an inversely and oppositely disposed position so that each aperture 4 is opposed to a recess 5. Such structure permits each lever arm 3 to project through an aperture in one member.

Means are provided and are preferably formed on each body surface so that the superposed members may be held a definite distance apart and thus govern the thickness of the fusible substance placed between the two members. For this purpose there are shown pairs of small points 6 punched out adjacent each apertured end of each member. These four points serve to define the space between the body portions of the assembled link members which is occupied by a fusible substance such as metallic solder 7.

In order to render the link of sufficient tensile strength to resist the forces exerted by the lever arms 3 of the sprinkler head tending to separate the link members, cooperative engaging means are provided on each member. In this embodiment, these cooperating means comprise bearing lugs 8 and 9 which are preferably formed integrally with each link member.

These bearing lugs 8 and 9 are preferably formed by being struck outwardly from the

body portions of the metallic members and preferably on the longitudinal axis or medial line of the elongated members but the precise number and location is not essential so long as they function as herein set forth. As shown in this embodiment, these bearing lugs are bent at an acute angle to the plane of their respective body portions and project from opposite sides thereof. This striking out process leaves apertures 10 and 11 in each body portion respectively beneath each bearing lug. One bearing lug on each member extends therefore across the space defined by the points 6 and within the adjacently presented opposed aperture of the other member.

The apertures, left in the body portion of each member by the formation of the bearing lugs, permit the fusible solder 7 to run therein. This solder, solidified in these apertures, forms a plurality of transverse rivets 12 and 13 of fusible metal which add to the efficiency of the link.

The bearing lugs and points of engagement of the links by the lever arms of the usual sprinkler head are preferably alined so that the force exerted by the lever arms is in substantially a direct line with these bearing lugs.

When the fusible substance, such as the usual solder 7, is melted, under predetermined temperature conditions, the angled bearing lugs effect a camming function.

The opposed lugs of the assembled members are in immediate contact so that the pull or thrust upon the link is transmitted directly from the face of one bearing lug to that of the opposed lug and so that this camming action takes place between the metal surfaces. The force tending to separate the two members longitudinally, owing to the angularity of the bearing lugs, is partially resolved into a force tending to thrust apart the members in a direction obliquely to the planes of the two members in normal position.

In the preferred construction which is illustrated as an embodiment of the invention each member is provided with a pair of bearing lugs medially alined longitudinally of the member but the invention is not to be restricted in its broader aspect to the number or to the location of the bearing lugs. So also these lugs are shown of generally rectangular shape and of flat contour so that, when the camming action takes place, plane surfaces are in sliding contact; but here again the invention is not to be restricted to the particular shape or contour of the bearing lugs so long as the shape and contour is of a character to effect the described functions.

These bearing lugs provide a linking means which is strongly resistant to the usual lever arm tension at normal temperatures and yet effects a sudden and positive snapping apart of the link members when the predetermined temperature is reached.

The two link members are preferably made of thin metal and are given the flat form shown with the intermediate film of solder. The heat of the surrounding atmosphere or objects may, therefore, readily pass through either flat member directly to the solder. An important feature of the construction resides in the fact that at no point must the heat be transmitted through more than one thickness of the metal in order to reach the solder. This and the thin formation of the links insures a sensitive and certain action of the device in response to the predetermined temperature when reached.

Each link member is preferably, as shown, an exact duplicate of the other and the construction is such that each link is readily cut out and shaped complete by the single action of a pair of dies. Hence the link members are not only of the minimum number necessary to make a complete link, but they are rapidly, easily, and cheaply manufactured.

In order to insure ease of assembling and to eliminate accuracy of finish one bearing lug as 8 is made slightly larger than the other as 9 and consequently the corresponding aperture 10 is slightly larger than the aperture 11. When the pair of members are then assembled the smaller lug on the one enters the larger aperture in the other and vice versa. This not only facilitates the assembling but it also leaves somewhat larger transverse openings or spaces to provide for the transverse rivets 12 and 13 of solder or fusible material.

The contour and area and shape, whether flat or otherwise, of the bearing lugs is not essential although the flat shape illustrated, and the generally semi-circular contour, and the angle of about 60 degrees made with the body of the member have been found to give most excellent results.

The linking structure as a whole is durable and strong under all conditions of service, and is sensitively responsive to temperature changes and functions suddenly at the critical fusion temperature of the solder film which retains the parts together.

It is to be understood that the construction disclosed herein is illustrative but not restrictive and that the same may be modified within the meaning and scope of the claims which follow.

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

1. A fusible link comprising a pair of similar members adapted to be inversely and oppositely disposed and so held together by a fusible substance, each of said members comprising a substantially flat body portion

having means for engaging an arm of a sprinkler head and having a bearing lug formed on said body portion and projecting obliquely therefrom, each of said members being apertured adjacent its lug so that, when the members are assembled, the lug of one member may be inserted through the aperture in the other member and the bearing lugs may contact and a fusible substance forming an intervening film between the members and also a substantially transverse rivet through said apertures.

2. A fusible link comprising a pair of similar members adapted to be inversely and oppositely disposed and so held together by a fusible substance, each of said members comprising a substantially flat body portion having means for engaging an arm of a sprinkler head, a pair of bearing lugs projecting obliquely from the opposite faces of said body portion, apertures in the said body portion opposite said lugs, one lug and its corresponding aperture being respectively larger than the other lug and its corresponding aperture, so that when the members are assembled inversely and oppositely, the smaller lug of each member will enter the larger aperture of the other member, and the smaller lug of each member will contact on its surface with the surface of the larger lug of the other member, means for slightly spacing the body portions of said members to determine the thickness of the intervening film of fusible substance, and a fusible substance in a film between said body portions and in transverse rivets in said apertures.

3. A fusible link comprising a pair of similar members adapted to be inversely and oppositely disposed and so held together by a fusible substance, each of said members comprising a substantially flat body portion having means for engaging an arm of a sprinkler head, a pair of bearing lugs on each of said body portions, each pair projecting obliquely from opposite faces of said body portion, the lugs on the members which project in the same direction forming complementary pairs, each of said members being apertured so that, when the members are assembled, the bearing lug of one member may pass within the aperture in the other member and be positioned in contact with and substantially parallel to its complementary lug, said fusible substance being placed in a film between said members and also in said apertures to form substantially transverse rivets whereby the members may be held together, and projections on the faces of said members which, when the members are assembled, determine the thickness of the film of fusible substance between the members.

In testimony whereof I have signed my name to this specification.

WALTER O. TEAGUE.