M. K. HOPKINS.

FUSIBLE LINK.

APPLICATION FILED SEPT. 21, 1918.

1,308,075.

Patented July 1, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

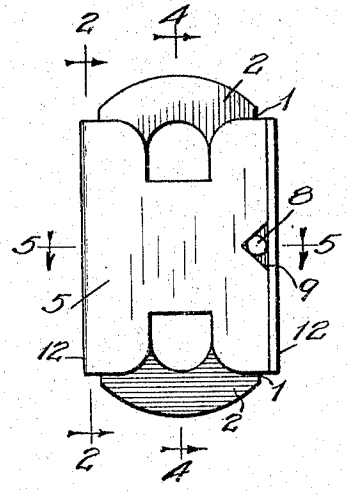


Fig. 2.

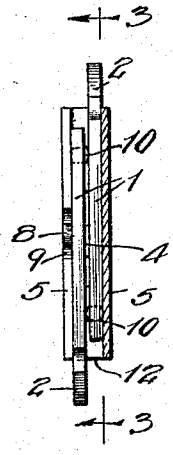


Fig. 3.

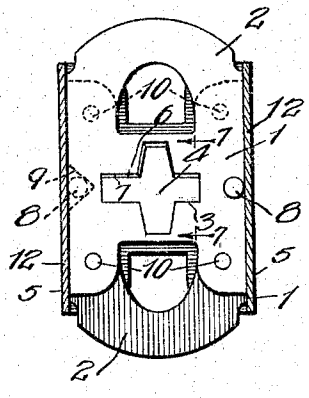
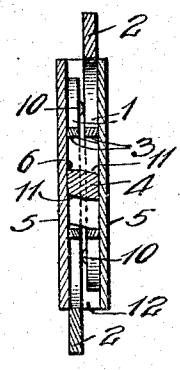


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

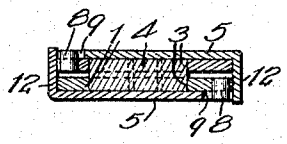


Fig. 6.

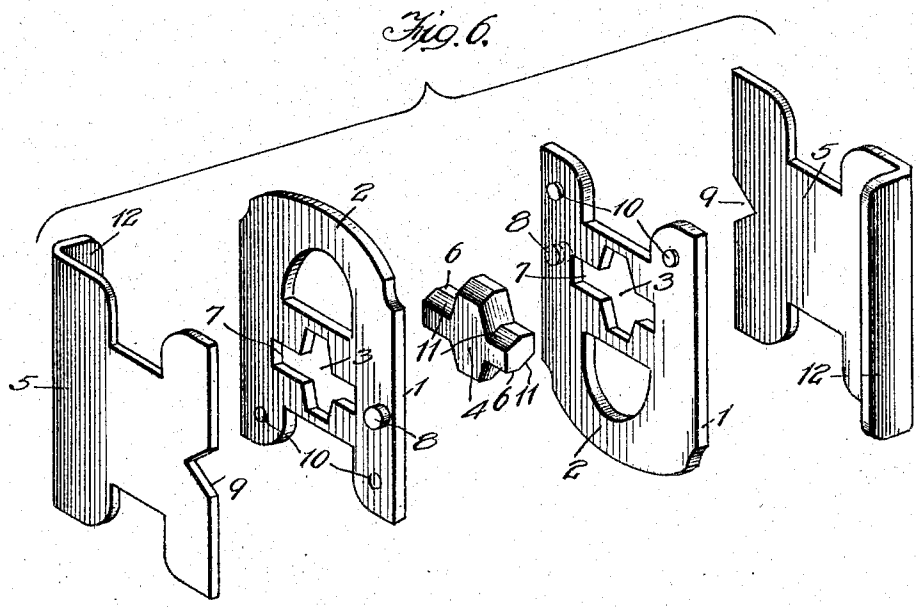


Fig. 7

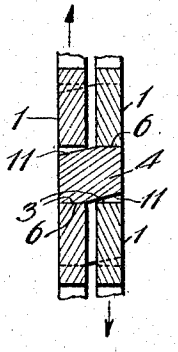
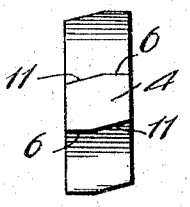


Fig. 8.



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MORTON K. HOPKINS, OF CHICAGO, ILLINOIS, ASSIGNOR TO JOHN L. KENNEDY, OF CHICAGO, ILLINOIS.

FUSIBLE LINK.

1,308,075. Specification of Letters Patent. Patented July 1, 1919.

Application filed September 21, 1918. Serial No. 255,130.

To all whom it may concern:

Be it known that I, MORTON K. HOPKINS, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fusible Links, of which the following is a description.

My invention belongs to that general class of fusible links in which a plurality of parts are secured together with a suitable solder to form a unitary device, so that upon the temperature reaching a certain point the solder will become melted and the parts automatically separate from one another.

My device is more particularly intended for use with such devices as automatic sprinklers and similar devices in which a valve is held to its seat by levers or equivalent parts maintained in operative position by means of the fusible link.

My invention has for its object the production of a device of the character stated which will be simple and economical in construction and in assembling the coöperating parts, and which will be reliably effective in its operation for the purposes described.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts,

Figure 1 indicates a face view of my improved device with the parts assembled;

Fig. 2 is a sectional edge view taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a partial sectional view taken on line 3—3 of Fig. 2 showing a face view of one of the duplicate locking members;

Fig. 4 is a central longitudinal view taken on line 4—4 of Fig. 1;

Fig. 5 is a central transverse section taken on line 5—5 of Fig. 1;

Fig. 6 is a diagrammatic view showing the several parts separated and located to indicate the manner of their assembling;

Fig. 7 is a partial central sectional view taken on line 7—7 of Fig. 3, showing the key seated on the key aperture when the parts are properly assembled; and

Fig. 8 is an end view of the key.

Referring first to Fig. 6, it will be seen that 1—1 are substantially duplicate plates adapted to lie one upon the other, and each provided with an end extension 2 adapted for engagement with a coöperating part when the link is properly assembled. Each of these duplicate plates has formed therein a key aperture 3. These, in the preferred form, are also substantially duplicates of one another and so formed that when the parts 1—1 are placed one upon the other the apertures will register, forming a complete key seat. 4 is the key member constructed to be loosely seated within the double aperture 3, substantially filling the same, but loosely seated therein in such manner that an end pull upon the parts in the line indicated by the arrows in Fig. 7 will permit the key member to disengage the members 1, permitting them to readily separate. It will be noted that the operating faces of the key are diagonally opposite one another and effectively engage the parts 1 to oppose the effect of the pull thereon. 5—5 are cover plates, so constructed that when the parts 1—1 are brought together and the key positioned therein the two plates will cover the flat sides of the link and the key seat, preventing the accidental disengagement of the key as well as dust, dirt, grease, etc., from becoming lodged in and about the key. As thus arranged with the parts 2 extending in opposite directions and the cover plates in position, a suitable quality of solder is employed to maintain the several parts in such unitary position until they are released by a higher temperature, melting or lessening the hold of the solder.

In the preferred construction the contact of the face of the key with the wall of the aperture is such as to permit a rolling action of one on the other to insure a proper separation. This may be secured by beveling one or both of the non-holding faces of the key as at 11, as clearly illustrated in Figs. 7 and 8, or, the reverse construction of course would apply where the wall of the key aperture is beveled instead. In the preferred construction also, I prefer to make a key substantially the form of a cross as indicated, as it serves to give a more effective bearing for the purpose stated. In this construction I find it convenient in assembling the parts to form one arm of the cross, as at 6, slightly longer or of slightly modified form from the corresponding arm on

the other side so that the parts can only be assembled by bringing the modified arm 6 into alinement with the extension 7 in the aperture for its reception. This insures the parts always being brought together in precisely and exactly the same relation with one another and expedites assembling the parts.

For convenience also in assembling I prefer to provide each of the parts 1 with a slightly extending stud 8, which is positioned on the meeting face of the part. I also form in the free edge of the cover 5 a coöperating indentation 9, which when the parts are properly assembled will contact with the stud 8 and bring the cover into perfect relation with the part 1. In some cases I prefer to provide slight studs or protuberances 10 on the approximate faces of the parts 1, so that when they are brought together these extensions 10 contacting with the approximate face of the coöperating part 1 will serve to slightly space the two apart for the purpose of allowing the solder which unites the two to be perfectly and evenly distributed between the two parts.

Referring to Fig. 7, and particularly to the arrows indicating the pull on the link. it will be seen that as the parts disengage, the key 4 has a tendency to roll out of the aperture in the plates 1. For this purpose I prefer to bevel the non-bearing faces of the key as at 11 as stated, the angle of the bevel being sufficient to secure the proper rolling and accurate disengagement of the parts as stated. I have secured very satisfactory results on the small links for automatic sprinkling devices by forming an angle at from twenty to twenty-five degrees. In any event it should be sufficient to insure the end of the key clearing the wall of the aperture as the parts separate.

It will be noted that the cover plates 5 each have one-right-angular edge extension as at 12, which covers the edge of the link when the parts are assembled.

As thus constructed the link is very reliable in every respect, and the coöperating parts are fully protected from dust, dirt, grease, calcimine, or anything of that nature which might enter into the cracks or crevices, and by reason of long inaction of the device serve to render it unreliable in case of emergency.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:—

1. A fusible link comprising two substantially duplicate plates each provided with an end adapted for engagement with a coöperating part, and each having an aperture formed therein for a key, whereby upon placing the parts one upon the other with the engagement ends extending in opposite directions, the key aperture in the two will register with one another to complete the key seat, in combination with a coöperating key formed to loosely fit within the aperture thus formed, and cover plates each adapted to cover one flat face of the associated plates and the key aperture, whereby upon assembling the parts as described with solder they form an integral link for the purpose stated.

2. A fusible link comprising two substantially duplicate plates each provided with an end adapted for engagement with a coöperating part, and each having an aperture formed therein for a key, whereby upon placing the parts one upon the other with the engagement ends extending in opposite directions the key apertures in the two will register with one another to complete a key seat, in combination with a coöperating key formed to loosely fit within the seat thus formed, and formed to roll outward from the seat in releasing the parts, and cover plates each adapted to cover one of the upper faces of the associated plates to substantially close the key aperture, whereby upon assembling the parts as described with solder between them the whole will form an integral link for the purpose stated, and upon the release of the solder the parts will automatically separate.

3. A fusible link comprising two substantially duplicate plates, each provided with an end adapted for engagement with a coöperating part, and each having an aperture formed therein for a key, whereby upon placing the parts one upon the other with the engagement ends extending in opposite directions the key apertures in the two will substantially register with one another to complete the key seat, in combination with a coöperating key formed to loosely fit within the aperture thus formed and having the non-bearing faces formed in relation to the seat to permit the key to roll outward to release therefrom, and cover plates adapted to cover the flat faces of the link and substantially close the key aperture, whereby upon assembling the parts as described with solder they may form an integral link for the purpose stated.

4. A fusible link comprising two substantially duplicate plates, each provided with an end adapted for engagement with a coöperating part, and each having a substantially cross-shaped aperture formed therein for a key, whereby upon placing the parts one upon the other with the engagement ends extending in opposite directions the key apertures in the two will register with

one another to complete a key seat, in combination with a coöperating key formed to loosely fit within the seat thus formed, the relation of the non-bearing faces of the key and the plates permitting the key to roll outward to release therefrom when the parts are disengaged, and cover plates each adapted to cover one face of the link and substantially close the key seat, and also cover one edge of the link, whereby upon assembling the parts as described with solder they will form an integral link for the purpose set forth.

5. A fusible link comprising two substantially duplicate plates, each provided with an end adapted for engagement with a cooperating part, and each having an aperture formed therein for a key, whereby upon placing the parts one upon the other with the engagement ends extending in opposite directions the key apertures in the two will register to complete a key seat, and each of said parts provided with an assembling guide 8, in combination with a coöperating key formed to loosely fit within the aperture thus formed and arranged to automatically disengage the parts to release the same, and cover plates each adapted to cover one face of the link and one edge, and provided with a coöperating part 9 arranged to engage with the part 8 in assembling the parts, substantially as described.

6. A fusible link comprising two substantially duplicate plates each provided with an end adapted for engagement with a coöperating part, and each having a substantially cross-shaped aperture formed therein for a key, one extension of said aperture being slightly modified from the other, whereby upon placing the parts one upon the other with the engagement ends extending in opposite directions the key apertures in the two will register with one another to complete a key seat, in combination with a coöperating key formed to loosely fit within the aperture thus formed and to automatically disengage from the seat as the plates are released, and cover plates each adapted to cover one flat face of the link and the key seat and one edge of the link, substantially as described.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

MORTON K. HOPKINS.

Witnesses:
CHARLES I. COBB,
JOHN W. HILL.

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