No. 723,161. PATENTED MAR. 17, 1903.

C. W. KERSTETER.

SPRINKLER HEAD.

APPLICATION FILED MAY 10, 1902.

NO MODEL.

Fig. 1.

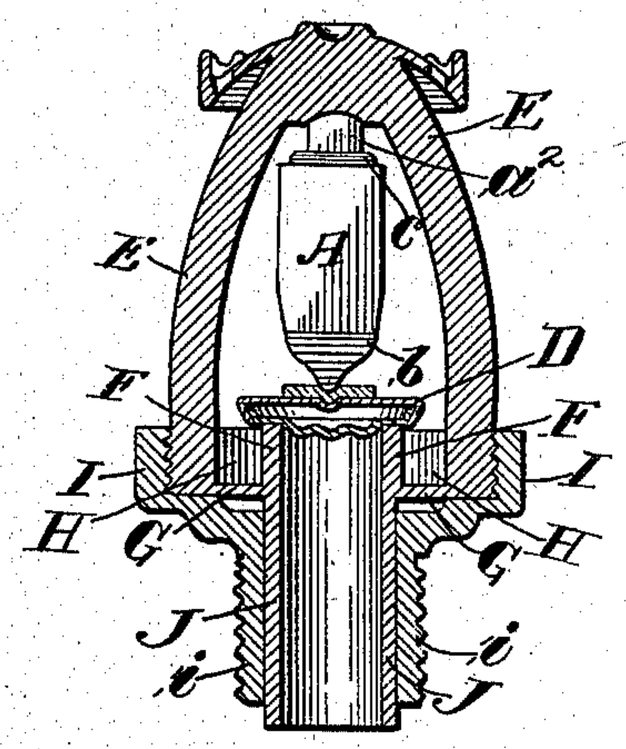


Fig. 2.

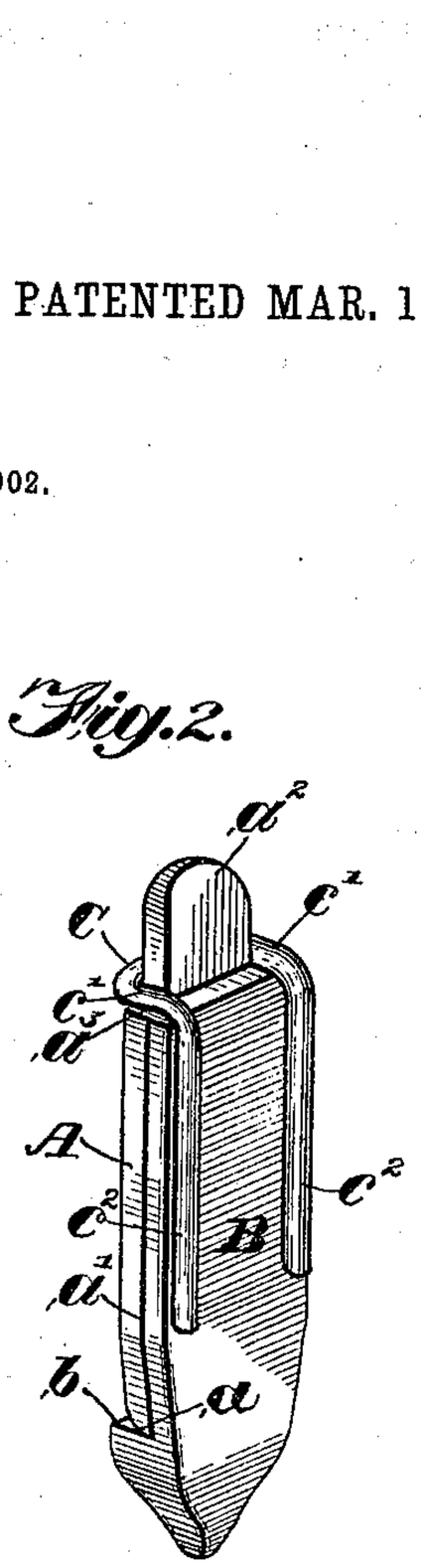


Fig. 3.

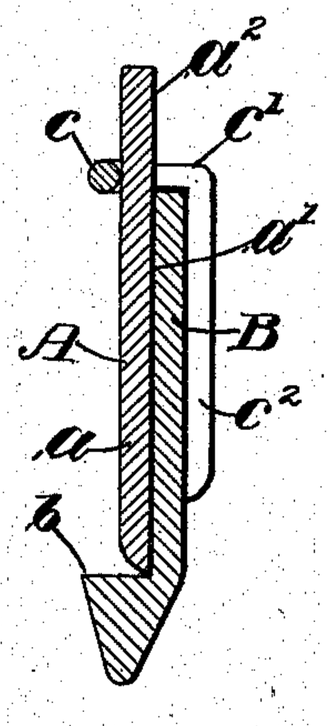
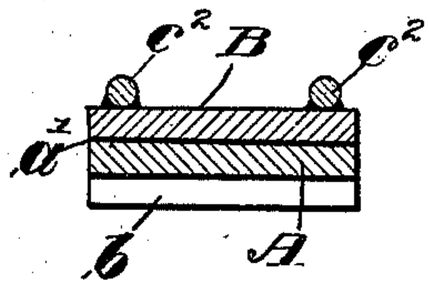


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES W. KERSTETER, OF CHICAGO, ILLINOIS.

SPRINKLER-HEAD.

SPECIFICATION forming part of Letters Patent No. 723,161, dated March 17, 1903.

Application filed May 10, 1902. Serial No. 106,723. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. KERSTETER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sprinkler-Heads for Automatic Fire-Extinguishers, of which the following is a specification.

The present invention relates in part to a sprinkler of the "strut" type, in which the cap of the nozzle is held in place by a composite strut arranged between it and the yoke of the sprinkler; and the object of this part of the invention is to provide a strut of improved construction. The strut is composed of two overlapping parts, which for the sake of distinction will hereinafter be designated by the terms "post" and "lever," respectively. The lever has near one of its ends a shoulder upon which the end of the post bears, and the post at the opposite end of the strut projects beyond the end of the lever, their overlapping portions being secured together by some suitable means, preferably by an interposed film of solder. The parts are so constructed that the point of contact between the end of the post and the shoulder of the lever is at one side of a straight line passing through the strut from one to the other of the points of contact at its opposite ends, so that when the overlapping parts are freed from restraint the pressure of the post upon the offset shoulder of the lever will tend to rock the lever and move its overlapping portion away from the post.

A strut having the above-described characteristics is not new, nor is it new to provide such a strut with a key made of hard metal which contacts with the outside faces of the post and lever and is soldered to them.

The present invention, so far as the construction of the strut is concerned, consists of a hard-metal key, preferably made of a piece of wire bent to provide a portion which lies against the outer face of the projecting portion of the post, a portion which crosses the planes of the post and lever extending over the end of the lever, and a portion lying against the outer face of the lever, the key being secured in place by solder. Some of the advantages of a key thus constructed and arranged are that it is of simple construction, that it is easily put in place, and that under normal conditions, while the soldered joint remains intact, and that it has a high holding efficiency.

The invention relates in part also to the construction of the sprinkler-frame, including the seat for the cap and the means by which said seat is supported. The object of this part of the invention is to simplify the construction, minimize the number of parts, and increase the stability and efficiency thereof. In carrying out this part of the invention the yoke is rigid with an annular diaphragm having a marginal flange, and this diaphragm is integral with an annular flange which provides a seat for the cap and also with an annular flange which projects into a coupling having threaded engagement with the distributing-pipe of the system and having also threaded engagement with the marginal flange of the diaphragm. This feature of the invention is applicable to sprinklers generally, whether of the so-called "strut" type or of any other type.

In the accompanying drawings, which are made a part of this specification, Figure 1 is a sectional elevation of a sprinkler-head embodying the invention. Fig. 2 is a perspective view of the strut. Figs. 3 and 4 are respectively a longitudinal and a transverse section of the strut.

The strut is made up of a post A, a lever B, and a key C. The lever has near one of its ends a shoulder b, upon which one extremity a of the post bears, and the overlapping portions of the post and lever are preferably secured together by an interposed film of solder a'. The point of contact between the end a of the post and the shoulder b of the lever is at one side of a straight line drawn through the points at opposite ends of the strut, with which it has contact with the cap D and the yoke E, respectively, so that when the parts are freed the portion of the lever which overlaps the post will move away from said post, as indicated by the arrow. The portion a^2 of the post which projects beyond the end of the lever is reduced in width, as shown in Fig. 1, and this reduction extends somewhat past the end of the lever, so that the shoulder a^3, resulting therefrom, is within the end of the lever or, in other words,

between the end of the lever and the shoulder *b* thereof. The object of this is to provide clearance for the key C, which comprises a portion *c*, lying against the outer face of the projecting portion a^2 of the post, portions *c'*, which form angles with the portion *c* and cross the planes of the post and the overlapping portion of the lever, and portions c^2, which form angles with the portions *c'* and lie against the outer face of the lever, the key being secured in place by solder.

The seat for the cap D preferably consists of an annular flange F, which is rigid, with an annular diaphragm G, having an annular marginal flange H, which is preferably threaded on its exterior to engage corresponding threads of the flange I of a coupling, which is also threaded at *i* for connection with the distributing-pipe of the system. The yoke E is rigid with the diaphragm G, the yoke, the diaphragm, the seat for the cap, and the flange of the diaphragm being preferably made of a single piece of phosphor-bronze or other metal that will answer the requirements. The diaphragm is preferably made sufficiently thin to give it a slight degree of elasticity, so that, while rigidly connected, there will be a slight relative movement between the seat for the cap and the far side of the yoke, against which the strut bears. This is advantageous in all types of sprinklers, and especially where the cap itself is without any elasticity. I prefer, however, even with the elastic diaphragm, to give the cap a certain degree of elasticity, and this is preferably done by making it of the well-known cellular form. Regardless of the elasticity of the diaphragm the annular flange F, rising from it and providing a seat for the cap, is of importance, since it enables the locating of the seat considerably above the top surface of the diaphragm, and therefore out of the recess or depression resulting from the marginal flange H, projecting upward from the diaphragm. This is of importance, since if the seat is located in this depression dirt will accumulate at the joint between the seat and the cap, and this may impair the efficiency of the sprinkler.

An advantage incident to making the flange F, the diaphragm G, and the flange H of a single piece of metal is that it dispenses with joints that are apt to become leaky.

J is a tube which is rigid with the diaphragm and projects therefrom and into the bore of the fitting I and serves to complete and make continuous the waterway between the distributing-pipe of the system and the flange F, which in addition to providing a seat for the cap D constitutes the nozzle of the sprinkler.

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

1. A strut for sprinkler-heads having overlapping parts, one projecting beyond the end of the other, and a bent key having a portion lying against the outer face of the aforesaid projecting portion of one of the parts, a portion forming an angle with the portion first aforesaid crossing the planes of the two parts and a portion forming an angle with the portion second aforesaid lying against the outer face of the other of said parts, substantially as described.

2. A strut for sprinkler-heads having a shouldered post and a lever overlapping each other and each projecting at one end beyond the corresponding end of the other, and a bent key having a portion lying against the outer face of the projecting portion of the post, a portion forming an angle with the portion first aforesaid and crossing the planes of the overlapping portions of the post and lever and a portion forming an angle with the portion second aforesaid and lying against the outer face of the lever, the parts being secured together by fusible joints, substantially as described.

3. A strut for sprinkler-heads having a shouldered lever, a post bearing at one end upon the shoulder of the lever and at the other end projecting beyond the end of the lever, and a bent key having a portion lying against the outer face of the projecting portions of the post, a portion forming an angle with the portion first aforesaid and crossing the planes of the post and lever, and a portion forming an angle with the portion second aforesaid and lying against the outer face of the lever, substantially as described.

4. In a strut for sprinkler-heads, the combination of a shouldered lever, a post overlapping a portion of said lever and bearing at one end against the shoulder thereof, the opposite end of the post being extended beyond the corresponding end of the lever and being also reduced in width, a bent key having a portion lying against the outer face of the projecting portion of the post, a portion forming an angle with the portion first aforesaid and crossing the planes of the post and lever, and a portion forming an angle with the portion second aforesaid and lying against the outer face of the lever, the parts being soldered together, substantially as described.

5. A strut for sprinkler-heads having a shouldered lever, a post overlapping the lever and bearing at one end against the shoulder thereof, the other end of the post being extended beyond the corresponding end of the lever and reduced in width from its extremity to a point between the shoulder and the end of the lever, and a bent key having a portion lying against the outer face of the projecting portion of the post, a portion forming an angle with the portion first aforesaid and crossing the planes of the overlapping portions of the post and lever, and a portion forming an angle with the portion second aforesaid and lying against the outer face of the lever, the parts being fusibly united, substantially as described.

6. A strut for sprinkler-heads having a lever, a post overlapping a portion of the lever, said post bearing at one end against the le-

ver and being extended at the other end beyond the corresponding end of the lever, the extended portion of the post being of less width than the lever, and a bent key having a portion lying against the projecting portion of the post, portions forming angles with the portion first aforesaid and located upon opposite sides of the projecting portion of the post and crossing the planes of the post and lever, and portions forming angles with the portions second aforesaid and lying against the outer face of the lever, the parts being fusibly united, substantially as described.

7. A strut for sprinkler-heads having two overlapping parts and a key, said bent key having a portion lying against the outer face of one of said parts, portions forming angles with the portion first aforesaid and straddling said part and crossing the planes of the two parts, and portions forming angles with the portions second aforesaid and lying against the outer face of the other of said parts, the parts being fusibly united, substantially as described.

8. A sprinkler-head having a yoke, a flexible diaphragm rigid with the yoke, an annular flange carried by the diaphragm and having a seat, a cap resting upon said seat, and means having a fusible joint for holding the cap in place, substantially as described.

9. A sprinkler-head having a cap, a seat for said cap, a flexible diaphragm carrying said seat, a marginal flange integral with the diaphragm, a yoke rigid with said marginal flange, and means having a fusible joint interposed between the yoke and the cap for holding the latter in place, substantially as described.

10. A sprinkler-head having a cap, a seat for the cap, a flexible annular diaphragm carrying the seat, a marginal flange integral with the diaphragm, a yoke integral with the marginal flange, and means interposed between the yoke and the cap for holding the cap in place, substantially as described.

11. A sprinkler-head having a cap, a seat for the cap, a flexible annular flange carrying said seat, an annular diaphragm integral with said flange, a marginal flange integral with the diaphragm, a yoke integral with the marginal flange, and means interposed between the yoke and the cap for holding the cap in place, substantially as described.

12. A sprinkler-head having a cap, a seat for the cap, an annular diaphragm carrying the seat, a marginal flange rigid with the diaphragm and threaded on its exterior, a yoke carried by the marginal flange, means interposed between the yoke and the cap for holding the cap in place, a fitting having a marginal flange provided on its interior with threads engaging the threads of the flange aforesaid, and means for securing said fitting to the distributing-pipe, substantially as described.

13. A sprinkler-head having a cap, a seat for the cap, an annular diaphragm carrying the seat, a yoke carried by the diaphragm, means interposed between the yoke and the cap for holding the cap in place, a fitting carrying the diaphragm and having means for connecting it with the distributing-pipe and a tube carried by the diaphragm and projecting into the fitting, substantially as described.

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