(No Model.) 2 Sheets—Sheet 1.

J. H. LYNDE.

AUTOMATIC FIRE EXTINGUISHER AND SPRINKLER.

No. 371,512. Patented Oct. 11, 1887.

FIG. 1.

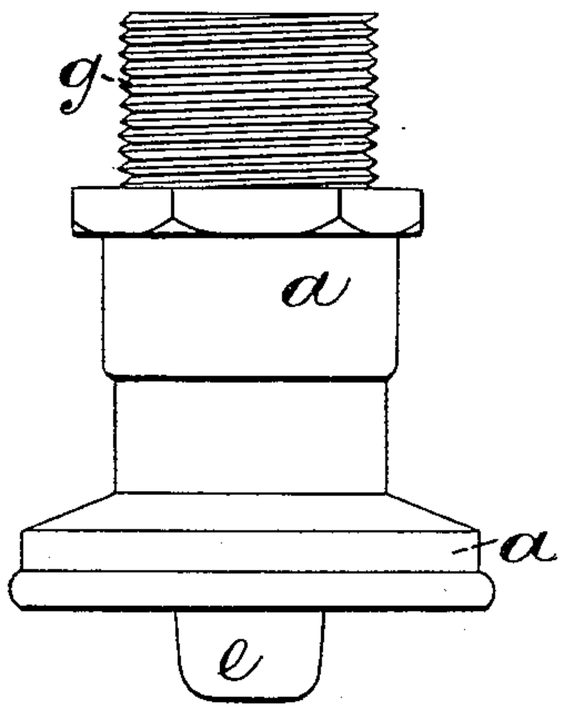


FIG. 3.

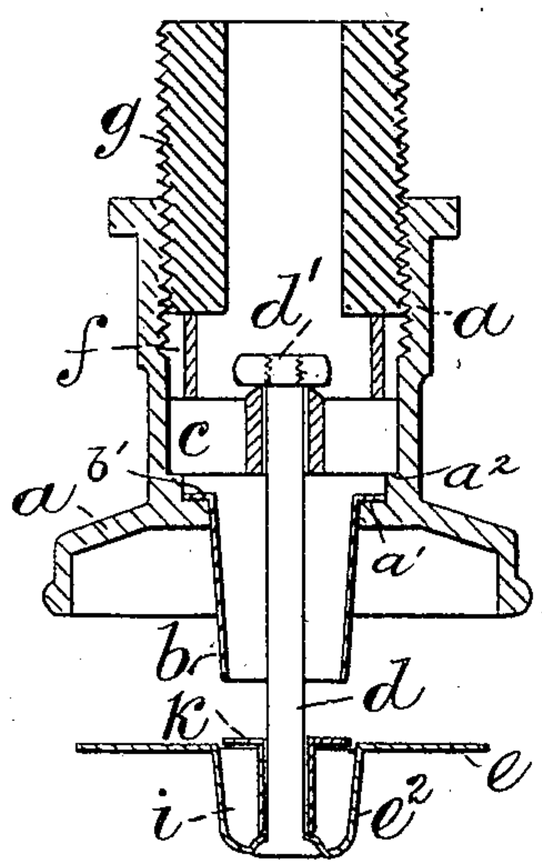


FIG. 2.

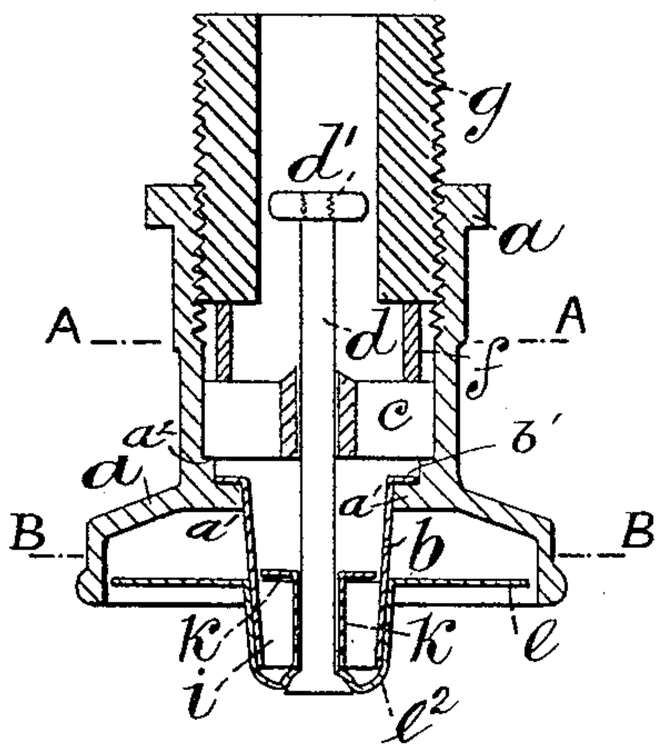


FIG. 4.

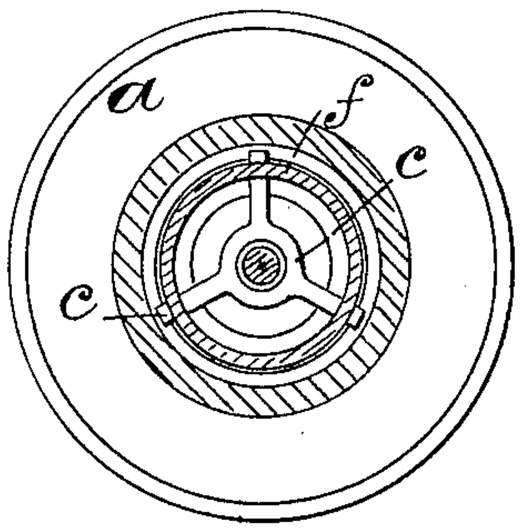
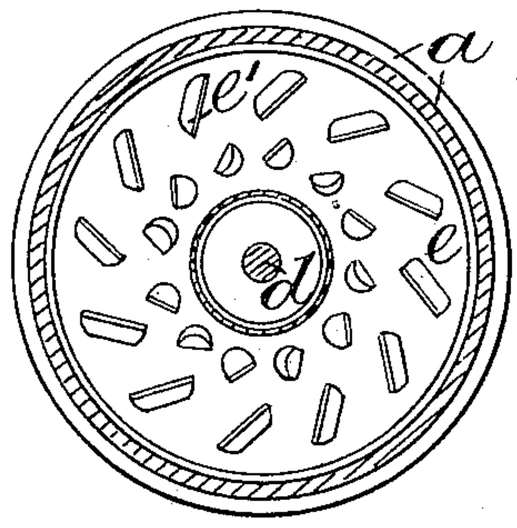


FIG. 5.



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(No Model.) 2 Sheets—Sheet 2.

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AUTOMATIC FIRE EXTINGUISHER AND SPRINKLER.

No. 371,512 Patented Oct. 11, 1887.

FIG. 10.

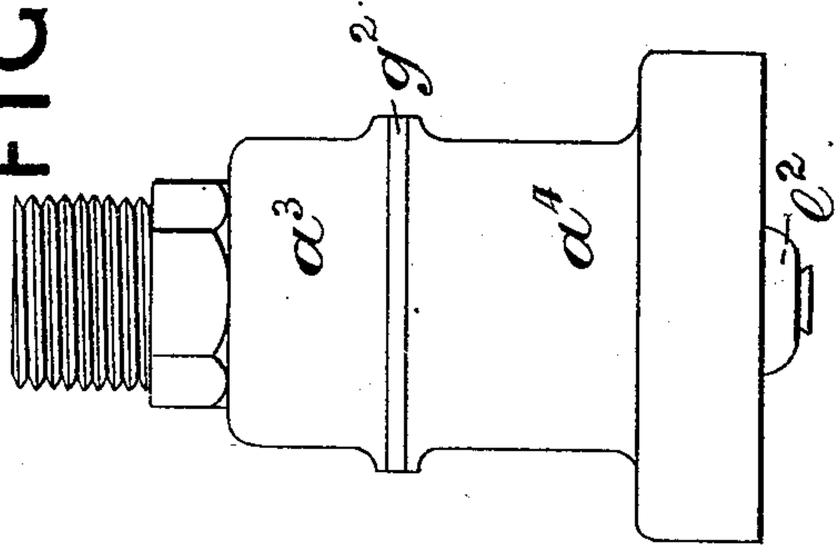


FIG. 11.

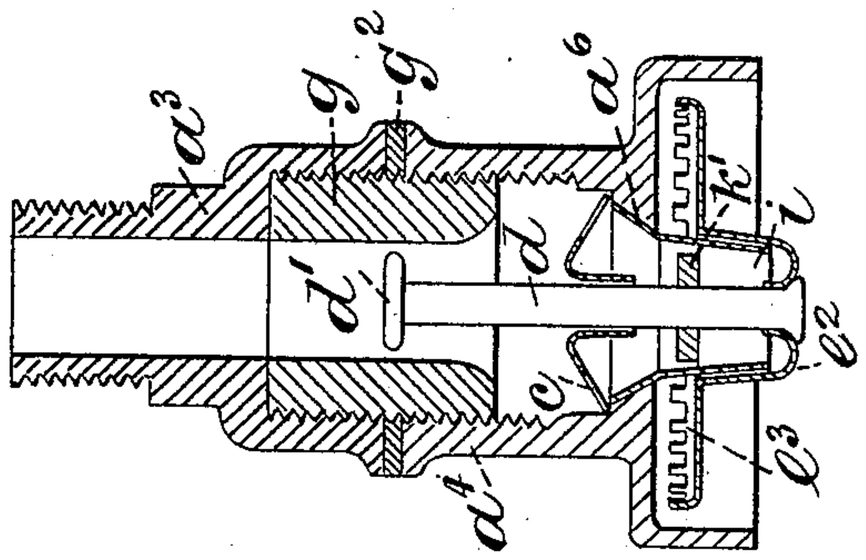


FIG. 8.

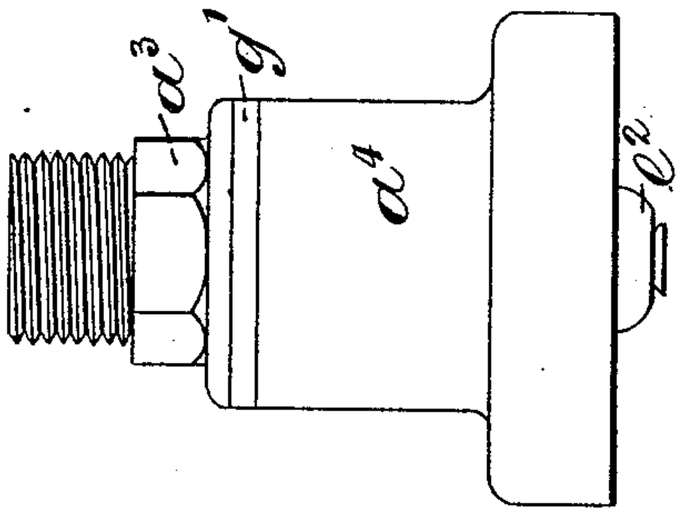


FIG. 9.

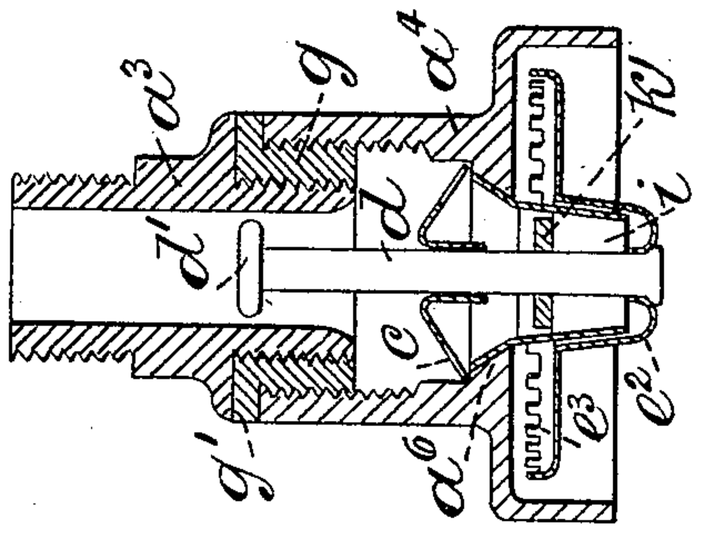


FIG. 6.

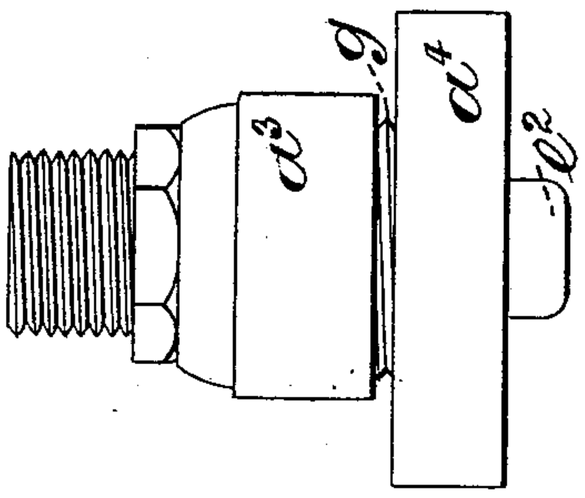
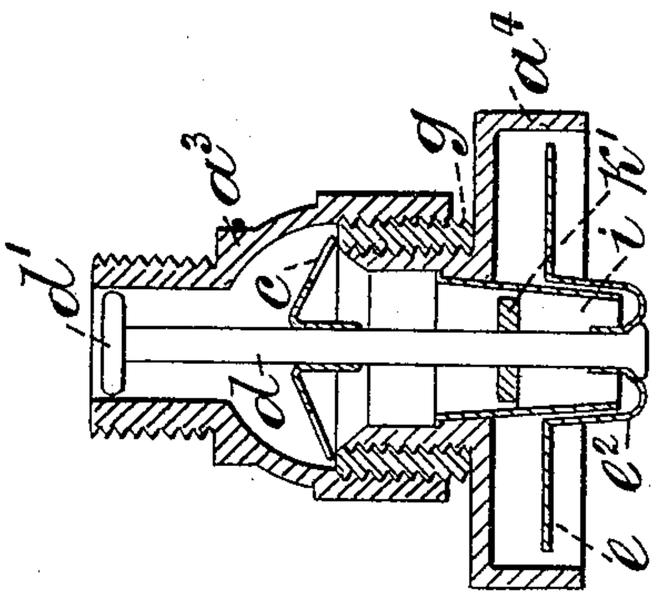


FIG. 7.



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UNITED STATES PATENT OFFICE.

JAMES HENRY LYNDE, OF MANCHESTER, COUNTY OF LANCASTER, ENGLAND.

AUTOMATIC FIRE-EXTINGUISHER AND SPRINKLER.

SPECIFICATION forming part of Letters Patent No. 371,512, dated October 11, 1887.

Application filed October 7, 1886. Serial No. 215,563. (No model.)

To all whom it may concern:

Be it known that I, JAMES HENRY LYNDE, a subject of the Queen of Great Britain, residing at Manchester, in the county of Lancaster, England, have invented certain new and useful Improvements in Automatic Fire-Extinguishers and Sprinklers, of which the following is a full, clear, and exact description.

My invention relates to improvements in automatic fire-extinguishers, commonly called "sprinklers," my object being to render such sprinklers more sensitive and reliable in their action, and to insure the complete separation of the soldered joint or seal of sensitive solder before any water from the supply-pipe is permitted to reach the said joint or seal, and thus prevent any leakage taking place while the solder is fusing.

The invention consists in the construction and arrangement of parts, as will be hereinafter fully described and claimed.

In order that the invention may be fully understood and readily carried into effect, reference is to be had to the accompanying two sheets of drawings, forming a part of this specification, in which similar letters indicate corresponding parts throughout the several views.

Figure 1 is an elevation of one form of automatic fire-extinguisher or sprinkler in which my improvements have been combined. Figs. 2 and 3 are vertical sections of the same. Figs. 4 and 5 are horizontal sections on the planes, respectively, of the lines A A and B B, Fig. 2. Figs. 6, 8, and 10 are elevations, and Figs. 7, 9, and 11 vertical sections, respectively, of some alternative constructions of sprinklers embodying my improvements.

Referring first to the construction of sprinkler illustrated by Figs. 1 to 5, *a* is the metal body or casing of the sprinkler. *b* is a thimble or ferrule formed with a flange, *b'*, which rests upon an annular projection, *a'*, formed in the body *a*, and is secured thereto by ordinary solder. The gallery *c*, which is intended for the support of the nut *d'* of the stem *d*, which is secured, by solder or otherwise, to the deflector *e*, is supported by another annular projection, a^2, formed on the body *a*, and the gallery *c* is held in place by a short tube or collar, *f*.

The short tube or collar *f* is kept in its place by a ferrule, *g*, which has a screw-thread cut upon it, and is screwed at one end into the body *a* until it bears upon the collar *f*. The other end of the ferrule *g* is screwed into a nipple on the water-supply pipe, and a tight joint is made by interposing between the upper part of the body *a* and the nipple a washer or packing of any suitable non-conducting material. The ferrule *g* is made of hard wood—such as lignum-vitæ—compressed paper or cotton, or any other suitable non-conducting substance, and constitutes that non-conducting part which I interpose between the metal body *a* of the sprinkler and the water-supply pipe, to which it is connected.

The deflector *e* is provided, preferably, with fins or projections to insure its rotation when water is discharged upon it, and is formed with a capsule, e^2. The interior of this capsule e^2 is secured to the thimble or ferrule *b* by sensitive solder.

The interior of the capsule e^2 is filled or partly filled with a substance, *i*, which is covered by a washer formed on the upper end of a small tube, *k*, or a washer hereinafter described, and thus the sensitive solder and the water are kept separate.

The substance *i* which I prefer to use consists of paraffine or other allied or suitable substance, or mixture of such substances mixed intimately with some inert material of high specific gravity, such as the compounds of barium or other suitable substance or mixture of substances.

The above-described admixture of substances forms a body or mass of low-conducting power which is solid at ordinary temperatures, but melts at a lower temperature than the sensitive solder used in the seal or joint. It is unaffected by and of higher specific gravity than water, either when solid or melted, and thus retains its position in the capsule e^2, thereby effectually preventing any contact between the water and the sensitive solder before or during the separation of the seal.

The action of the apparatus is briefly as follows: When an outbreak of fire takes place, the heat prevented from escaping by the fer-

rule *g* accumulates in the metal body *a* of the sprinkler and first melts the substance, *i*. The sensitive solder then fuses and the joint separates, the deflector *e* descending until the nut *d'* rests upon the gallery *c*, as shown in Fig. 3. The water then passes downward through the sprinkler and is discharged through the thimble or ferrule *b* upon the washer formed on the tube *k* and the deflector *e*, thereby causing the latter to revolve and to distribute the water evenly under varying pressures.

It is obvious that my improvements may be applied in substantially the same manner to many different constructions of automatic fire-extinguishers or sprinklers—as, for example, those illustrated by Figs. 6 to 11. In each of these alternative constructions the body of the sprinkler is represented as being made in two parts, a^3 and a^4, which are connected together by the ferrule *g*, formed of non-conducting material, as previously described. The part a^3 is screwed directly into the water-supply pipe, and the part a^4 carries the joint or seal of sensitive solder, the metal connection between the two parts a^3 a^4 being interrupted by the non-conducting ferrule *g*.

In Figs. 6 and 7 the gallery *c* is represented as resting upon the ferrule *g*, and instead of the washer formed on the tube *k* a washer, *k'*, is shown resting upon the substance *i*.

In Figs. 8 and 9 the gallery *c* rests upon an annular projection, a^2, as in the first sprinkler, Figs. 1 to 5; but the thimble or ferrule *b* is soldered to a beveled projection, a^6. The non-conducting ferrule *g* is provided with a flange, *g'*, and the deflector *e* is shown with a toothed edge, e^3.

In Figs. 10 and 11 the non conducting ferrule *g* is employed to connect the two parts a^3 a^4 together, as before, and between the two said parts is interposed a packing or washer, g^2, of asbestus or any other suitable non conducting material.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination, with an automatic fire-extinguisher having a fusible seal, of a seal-protecting composition consisting of paraffine and barium placed between the water-space and the said fusible seal, substantially as set forth.

2. An automatic fire-extinguisher and sprinkler, comprising the main or body portion, having the non conducting coupling-ferrule screwed to its upper end and a depending thimble at its lower end, the deflector having a stem supported within the body, and a fusible seal or joint connecting the deflector and the thimble, substantially as set forth.

3. The combination, with a sprinkler, the main or body portion of which has an internal shoulder and a depending thimble open at both ends, and having a flange around its upper end resting on said internal shoulder, of the vertically-movable stem, a deflector having a central depending capsule or depression, to the bottom of which the said stem is secured, and within which said depending thimble projects, and a fusible material between the adjacent surfaces of the thimble and capsule.

4. The combination, with a sprinkler having a depending thimble open at both ends, of a deflector having a central depression or depending capsule into which the thimble projects, a fusible seal between the adjacent surfaces of said capsule and thimble, and a protecting substance fusible at a lower temperature than said seal and placed within said thimble, and a device covering said protecting substance, substantially as set forth.

5. The combination, with the body of the sprinkler having an internal flange, a centrally-apertured gallery resting on the same, a stem passed down through said aperture, a depending thimble, and a washer surrounding the said stem within the thimble, of the deflector having a central depression to which the lower end of the stem is secured and within which the thimble projects, and a fusible seal for the thimble and capsule, substantially as set forth.

6. The combination, with the body of the sprinkler having the depending thimble, of the stem extending down through the same, the deflector having a depending capsule having a central vertical tubular extension receiving the lower end of the rod and provided at its upper end with a washer, a fusible seal between the adjacent surfaces of the capsule and thimble, and a fusible substance within the thimble below said flange and of greater specific gravity than water, the said substance being fusible at a lower temperature than the said seal, substantially as set forth.

The foregoing specification of my improvements in automatic fire extinguishers or sprinklers signed by me this 13th day of September, 1886.

JAMES HENRY LYNDE.

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