(No Model.) 2 Sheets—Sheet 1.

F. & R. W. GRINNELL.

AUTOMATIC FIRE EXTINGUISHER.

No. 399,519. Patented Mar. 12, 1889.

Fig. 1.

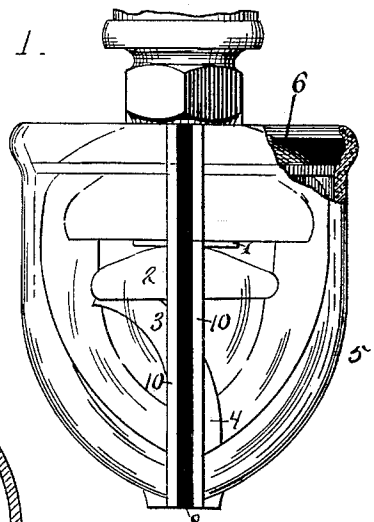


Fig. 3.

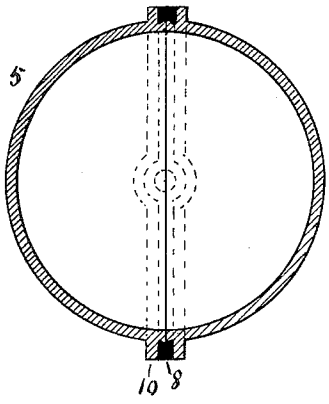


Fig. 4.

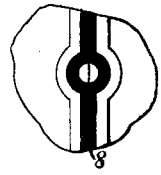


Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

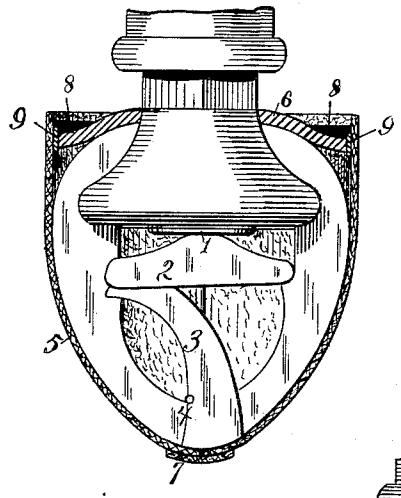


Fig. 6

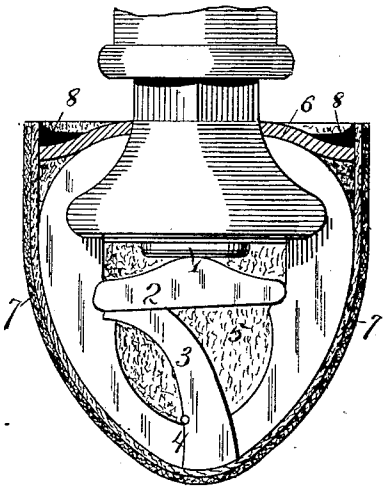
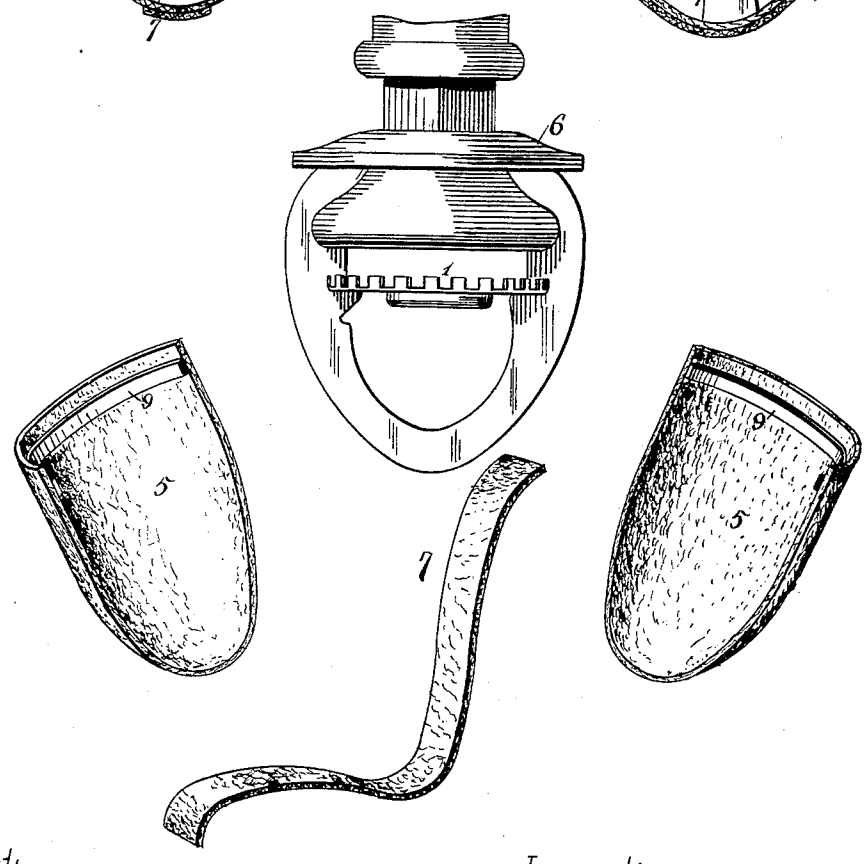


Fig. 7.



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UNITED STATES PATENT OFFICE.

FREDERICK GRINNELL AND RICHARD W. GRINNELL, OF PROVIDENCE, RHODE ISLAND.

AUTOMATIC FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 399,519, dated March 12, 1889.

Application filed March 29, 1887. Serial No. 232,874. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK GRINNELL and RICHARD W. GRINNELL, of Providence, Providence county, Rhode Island, have invented certain new and useful Improvements in Automatic Fire-Extinguishers, of which the following is a specification.

In the protection of a building from fire by an automatic fire-extinguishing apparatus there are sometimes locations where it becomes necessary to protect the sensitive parts of the sprinklers or extinguishers from the corrosive action of acid fumes and the like. It has been found, for instance, that in chemical works, bleacheries, &c., the parts of the sprinkler that are designed to operate upon the occurrence of a fire were so corroded as to render doubtful their prompt and efficient action. In such locations it is only a matter of time for the fusible solder and the other sensitive parts of the sprinkler to be so far consumed as to fall apart and release the water, thereby giving rise to considerable unnecessary trouble and damage.

This invention consists in surrounding the operative parts of such sprinklers with a glass or other non-corrodible globe or casing, sealed in place by a fusible non-corrodible sealing material which will melt or soften when a certain degree of heat is attained and allow the globe to fall away from the sprinkler and permit the latter to operate.

In the accompanying drawings, Figure 1 is a view of a sprinkler and globe, part of the latter being shown as broken away to show the sealing-joint. Fig. 2 is a view of the sprinkler freed from the globe, the parts of the globe being shown as they are falling away. Fig. 3 is a section, and Fig. 4 an under side view, of the globe shown in Fig. 1. Fig. 5 is a vertical section showing a paper cap or globe, and Fig. 6 is a similar view showing another method of sealing. Fig. 7 shows the paper cap separated from the sprinkler.

The invention is shown as applied to a Grinnell sprinkler, though it would not be less useful in connection with other sprinklers.

The sprinkler consists of a water-check, 1, held in place by levers 2 and 3, the latter being locked at 4 by a soldered joint that will give way when the temperature reaches a predetermined point. The invention, however, relates to the cap or globe 5, which may be made of glass, wood, paper, rubber, or any suitable substance that will withstand the action of corrosive gases, and it may be formed in halves, as shown, or in any number of parts, so that it will readily fall away from the sprinkler upon the fusion of the sealing material which holds it together and to the sprinkler.

In the case illustrated in Figs. 1, 2, 3, and 4 we have shown a glass or other vitreous globe or cap made in two parts, held together by sealing material, 8, which is run in between flanges or ribs 10, cast upon the edges of the two halves. At the base of the globe the ribs may diverge around a central stud, as shown in Fig. 4, so as to form a more secure joint. The globe is made in parts, so that it will readily fall away from the sprinkler and allow the hot air to have access to the soldered joint. The advantage of this feature becomes more apparent when it becomes necessary to place the sprinklers upright above the water-pipe, as is sometimes the case.

To facilitate the attachment of the globe to the sprinkler the latter is provided with a collar, 6, around its neck, the globe being placed around the collar and sealed thereto by the fusible material 8. The upper part of the glass globe may be bulged, as shown, so as to enable the sealing material to hold it more securely.

In Figs. 5, 6, and 7 we have shown a paper cap and two modes of sealing it to the sprinkler. Such a paper cap would in certain places be more desirable than a glass one, on account of its greater flexibility and consequent freedom from danger of breakage. It would also have the advantages of lightness and combustibility. A further advantage is found in its adaptability to any irregularities in the form of the sprinkler at the point of attachment. The parts of the paper cap may be sealed together by paper strip 7, fastened by means of the fusible sealing material over the joint between the two halves of the cap.

In Figs. 5 and 7 a metallic strip or ring, 9, is shown as fastened permanently to the paper, and this strip, by being soldered to the

edges of the collar 6, may serve to hold the globe or cap in position. In this case, however, fusible material 8 should be run in over the soldered joint, so as to prevent the corrosion of the same. This soldered joint is independent of and performs a different function from that at 4, it having nothing to do with holding the water.

In Fig. 6 the paper cap is shown as held in place by means of the sealing material 8 alone, the cap being placed in position around the collar 6 and the sealing material run into the annular space between the collar and the upper edge of the cap. In this figure the section is shown through the joint between the two halves of the cap.

The sealing material 8, with which the parts of the globe or cap are held together, and with which the cap itself is held to the sprinkler, should be fusible at or below the temperature at which the sealing-joint at 4 will melt. It should also be non-corrodible, such substances as paraffine, pitch, and the like, being suitable for the purpose.

The sealing material seals the globe hermetically, and as both the globe and sealing material are non-corrosive it is evident that the joint that holds the water in check, as well as the other sensitive parts of the sprinkler, are perfectly protected from the action of corrosive gases. Upon the occurrence of a fire in the vicinity of the sprinkler the heat will cause the sealing material to melt, so that the cap may fall away before the joint at 4 fuses.

We are aware that metal caps have been used with sprinklers; but such caps were not non-corrodible, and therefore do not come within the scope of our present invention. Such caps form no protection to the fusible solder that holds the water in check, and they were not designed so to do. We are also aware that glass has been used to hold the water in check; but such glass was not used as a non-corrodible casing to the sensitive parts of the sprinkler.

Having thus described our invention, what we claim as new is—

1. The combination, with an automatic fire-extinguisher having metallic parts for holding the water in check and releasing the same upon the occurrence of a fire, of a globe made of non-corrodible material secured hermetically to the extinguisher and inclosing the said parts, so as to protect the same from the action of corrosive gases, substantially as described.

2. The combination, with an automatic fire-extinguisher having metallic parts for holding the water in check and releasing the same upon the occurrence of a fire, and having also a base adapted to fit a covering-globe, of a non-corrodible globe fitted air-tight to such base and inclosing the said parts, so as to protect them from the action of corrosive gases, substantially as described.

3. The combination, with an automatic fire-extinguisher, having metallic parts for holding the water in check and releasing the same upon the occurrence of a fire, of a non-corrodible cap or globe inclosing such parts and hermetically sealed with non-corrodible sealing material.

4. The combination of an automatic fire-extinguisher, having metallic parts for holding the water in check and releasing the same upon the occurrence of a fire, with a protecting cap or globe inclosing the said parts and a non-corrodible sealing material closing the joint between the cap and the extinguisher, as and for the purpose set forth.

5. The combination, with an automatic fire-extinguisher having metallic parts for holding the water in check and releasing the same upon the occurrence of a fire, of a non-corrodible cap or globe inclosing such parts and hermetically sealed with a non-corrodible sealing material that will melt or soften at or below the operative temperature of the extinguisher.

6. The combination of an automatic fire-extinguisher with a protecting cap or globe therefor made in parts and sealed together with a fusible and non-corrodible sealing material.

7. The combination of an automatic fire-extinguisher with a non-corrodible cap adapted to cover the same, made in parts and sealed together with a fusible non-corrodible sealing material.

8. The combination, with an automatic fire-extinguisher, of a fibrous composition cap surrounding the same, substantially as set forth.

9. The combination of an automatic fire-extinguisher with a paper cap therefor, a metallic attachment secured to the cap where it will abut on part of the extinguisher, and a soldered connection between the attachment and the extinguisher.

10. The combination of the automatic fire-extinguisher with the paper cap, the metallic attachment secured to the cap, the soldered connection between the said attachment and the extinguisher, and a covering of non-corrodible material over the soldered connection.

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RICHARD W. GRINNELL.

Witnesses:
WALTER H. KNIGHT,
EDWIN P. ALLEN.