No. 793,357. PATENTED JUNE 27, 1905.

G. DIEDERICI.

AUTOMATIC SPRINKLER.

APPLICATION FILED AUG. 15, 1904.

Fig. 1.

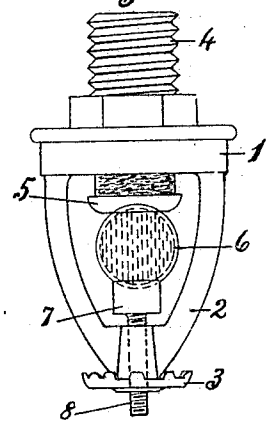
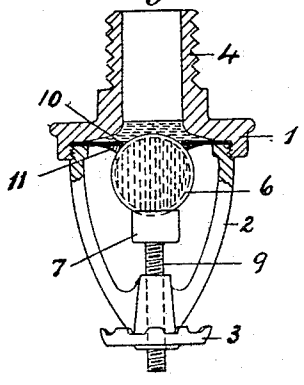


Fig. 2.



Witnesses:
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No. 793,357. Patented June 27, 1905.

UNITED STATES PATENT OFFICE.

GEORG DIEDERICI, OF BERLIN, GERMANY.

AUTOMATIC SPRINKLER.

SPECIFICATION forming part of Letters Patent No. 793,357, dated June 27, 1905.

Application filed August 15, 1904. Serial No. 220,881.

To all whom it may concern:

Be it known that I, GEORG DIEDERICI, a subject of the German Emperor, residing in the city of Berlin, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Automatic Sprinklers, of which the following is a full and exact specification.

The present invention relates to improvements in automatic sprinklers in which glass balls, globes, or vessels containing an expanding fluid or liquid are used as valves or supports for valves in such way that on the outbreak of a fire the increased temperature causes the fluid or liquid to expand and fracture the vessel, ball, or globe in which it is hermetically inclosed, thus allowing the water free egress onto the fire.

The expansive agent hitherto used in glass vessels as described has been mercury, which on being heated expands until it finally splits or bursts the glass vessel in which it is hermetically inclosed. Mercury has, however, the disadvantage that the pressure ceases immediately the slightest split occurs in the glass, which enables part of the mercury to escape, and the consequence of this has been that the glass vessels when used as valve-supports have been frequently only partially destroyed, so that the pieces still held the valve to its seat, or when used as valve the pieces have blocked up the valve-opening, so that the sprinkler could not work.

The object of the present invention is to insure the glass vessel, whether used as valve or support for same, being blown in every case into small fragments immediately the predetermined temperature has been attained, so that the egress of the water column cannot under any circumstances be impeded.

I will explain the method of carrying out my invention with reference to the accompanying drawings, in which—

Figure 1 is an elevation of a sprinkler in which the valve is held to its seat by a glass vessel shown in section and containing an expansive or explosive filling. Fig. 2 is a vertical section of a sprinkler in which the glass vessel containing the expansive or explosive filling is used as valve.

1 is the sprinkler-body, and 2 the yoke, which is provided with a deflecting-plate 3, the sprinkler-body having a threaded inlet 4 for screwing to the water-pipe. In the device shown in Fig. 1 the valve can be of glass or other material, being preferably held in a plate 5, the under side of which is hollowed out for receiving the top of the spherical glass vessel 6. As support to the said vessel from underneath a small block 7, suitably hollowed out, is used, being fastened to or held by a set-screw 8 passing through the apex of the yoke 2. In Fig. 2 the spherical glass vessel 6 is itself made to serve as valve, being held on its seat by means of a set-screw 9 in a similar way to set-screw 8 in Fig. 1. As valve-seat a resilient diaphragm 10 can be used, the edge of the valve-orifice being preferably provided on the valve side with a soft metal 11, so that an air and water tight joint can be obtained by screwing up the set-screw 9.

To carry out the object of the invention, it is necessary that the filling of the glass vessel on being heated should not only expand, but also generate gas, so that the explosion of same can effectually shatter every portion of the glass valve or support. In order to obtain this generation of gas and explosive effect in accordance with the present invention, the glass ball, globe, or vessel is filled with alcohol which is saturated with carbonic acid under pressure at a low temperature. Under the influence of an increasing temperature the alcohol then expands and finally at a given temperature bursts the glass vessel, whereupon the carbonic acid contained in the alcohol, having also been put in very high tension by the heat, is suddenly freed and in its rapid escape has an explosive action which completely shatters every part of the glass ball.

The choice of the degree of cold which is used enables the degree of heat at which the glass ball is to explode to be predetermined within a few degrees.

It is understood that I lay no claim to novelty in the method of using the glass ball as

illustrated for the purpose of making clear the action of the contents of same.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

In an automatic sprinkler, the combination with a sprinkler-body, a set-screw and a flexible valve-seat located within same, of a hollow glass ball having a filling of alcohol saturated while under pressure with carbonic acid substantially as and for the purpose described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

GEORG DIEDERICI.

Witnesses:

WOLDEMAR HAUPT,

HENRY HASPER.