No. 792,343. PATENTED JUNE 13, 1905.

R. W. NEWTON.

AUTOMATIC SPRINKLER.

APPLICATION FILED DEC. 31, 1897.

Fig. 1.

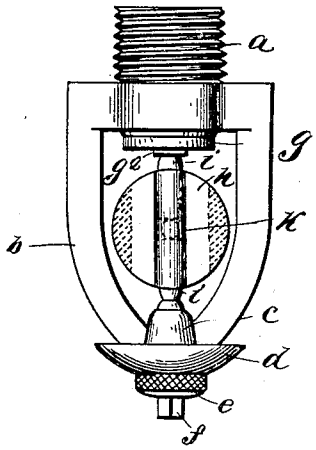


Fig. 2.

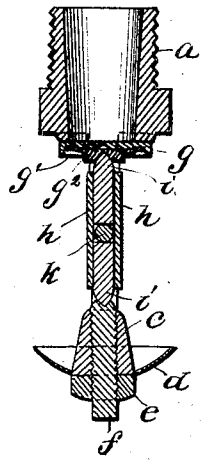


Fig. 3.

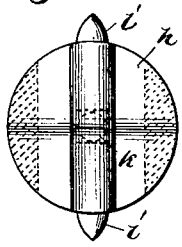


Fig. 4.

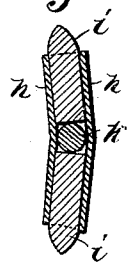


Fig. 5.

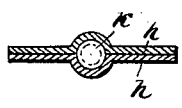


Fig. 6.

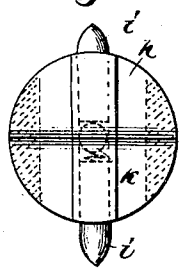


Fig. 7.

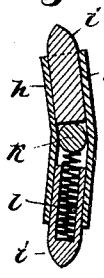


Fig. 8.

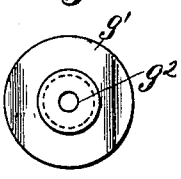
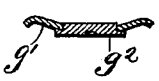


Fig. 9.



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No. 792,343. Patented June 13, 1905.

UNITED STATES PATENT OFFICE.

ROBERT W. NEWTON, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO GENERAL FIRE EXTINGUISHER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

AUTOMATIC SPRINKLER.

SPECIFICATION forming part of Letters Patent No. 792,343, dated June 13, 1905.

Application filed December 31, 1897. Serial No. 667,375.

To all whom it may concern:

Be it known that I, ROBERT W. NEWTON, of the city and county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Automatic Sprinklers, (for which I have obtained a patent in Great Britain, No. 12,774, dated June 10, 1896, and in France, No. 262,020, dated December 9, 1896;) and I do hereby declare the following specification, taken in connection with the accompanying drawings, forming a part of the same, to be a full, clear, and exact description thereof.

This invention relates to improvements in automatic sprinklers wherein valves are normally held against their seats by struts or arms, which, being disrupted or displaced, allow the valve to be removed from its seat at the outlet-opening of the discharge-nozzle, so that the water discharged from the nozzle will strike a deflector supported in front of the nozzle, be deflected and broken up into spray, and distributed over a large area to extinguish an incipient fire and prevent the spreading of the fire.

One object of the present invention is to make the automatic sprinkler more sensitive to heat and more prompt in opening at the first rise in temperature caused by the breaking out of a fire.

Another object of the invention is to construct the struts so that on the weakening of the solder the strut will be disrupted and the valve released by the inherent resiliency of the structure independent of the force exerted by the internal pressure; and a further object of the invention is to secure a more even distribution of the water over a larger area than is possible with the distributers heretofore in use.

The invention consists in the peculiar and novel construction of the automatic sprinkler and the combination of the parts by which the struts holding the valve will be disrupted on the weakening of the solder by forces inherent in the structures.

Figure 1 is a side view of my improved automatic sprinkler, showing one form of my improved struts. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a side view, Fig. 4 a vertical sectional view, and Fig. 5 a horizontal sectional view, of one form of my improved strut for holding the valve. Fig. 6 is a side view, and Fig. 7 a vertical sectional view, of a modified form of the same strut. Fig. 8 is a top view, and Fig. 9 a sectional view, of a spring used in connection with the valve of the sprinkler.

In the drawings, *a* indicates the screw-threaded nozzle of the sprinkler; *b*, an arched frame; *c*, a conical boss forming the keystone to the frame; *d*, a concaved smooth-edged deflector; *e*, the nut engaged with the screw *f*, by which the deflector is secured and which, in connection with the screw *f*, acts as a lock-nut to the screw.

Heretofore the deflectors for automatic sprinklers were provided with serrated edges or with holes through which the water was forced. By a series of practical tests I find that such holes or serrations obstruct the free discharge of the water and that under similar conditions a smooth-edged dished deflector when a central cone is placed into the same will distribute the water more uniformly and over a greater area than a serrated or perforated deflector and will throw the water upward against the ceiling more evenly, the cone *c* and the deflector *d* coöperating to break up the stream into spray.

The outlet-opening of the nozzle *a* is closed by the valve *g*, in a central circular recess of which is placed the spring-disk *g'*, having the central bearing-disk g^2 secured to it. The spring-disk is bent and hardened, so as to form a strong resilient spring which will react when the pressure is released. The strut for holding the valve to its seat engages the bearing-disk g^2 and forces said disk firmly against the valve against the action of the spring, which is thus put under tension. The valve is thus held rigidly to its seat by the strut, and the spring assists in disrupting the strut when a fire occurs.

The strut which bears on the screw *f* and on the bearing-disk g^2 consists, as shown in

Figs. 1 and 2, of two circular disks *h h*, in the vertical axial center of each of which a semicircular groove is formed by bending or stamping the disks. These two disks are secured together by a solder fusible at a low temperature, preferably along the outer edges of the disks, as is indicated in dotted lines in Figs. 1, 3, and 6. Within the tubular opening formed by the two concave grooves, as shown in Fig. 5, the rods *i i* and the ball *k* are inserted so that the ball is in the center, and the pointed ends of the rods *i i* bear against the ball, the valve, and the end of the screw *f*. By this construction the solder is removed from the cooling influence of the body of the sprinkler.

In the modifications shown in Figs. 3 to 7 the plates *h h* are bent on a line transversely to the vertical axis of the strut-rods *i i*, and in Fig. 7 one of the strut-rods *i* is provided with a coiled spring *l*. By these constructions the weakening of the solder by heat and the disruption of the struts are materially hastened and the more prompt release of the valve insured.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In an automatic sprinkler the combination with the nozzle, of the valve for closing the same, a strut for holding the valve to its seat embodying two plates secured together by solder and provided with registering grooves forming a tubular opening, two rods in said opening, and a ball between the adjacent ends of said rods.

2. In an automatic sprinkler the combination with the nozzle, of the valve for closing the same, a strut for holding the valve to its seat embodying two plates secured together by solder and provided with registering semicircular grooves forming a tubular opening between said plates, two rods in said opening, and a ball in said opening between the adjacent ends of said rods.

3. In an automatic sprinkler the combination with the nozzle, of the valve for closing the same, a strut for holding the valve to its seat embodying two rods, two plates secured together by solder and embracing said rods, and a spring in said strut acting to disrupt said plates.

4. In an automatic sprinkler the combination with a nozzle, of the valve for closing the same, a strut for holding the valve to its seat embodying two rods *c c*, two plates secured together by solder and provided with grooves embracing said rods, a ball between the ends of said rods, and a spring in said strut acting to disrupt said plates.

5. The combination, in an automatic sprinkler, with the nozzle, of the valve *g*, the thrust-plate g^2 for engaging the valve, the spring-disk g' surrounding said thrust-plate and a strut constructed to hold the valve to the outlet of the nozzle to close the same.

6. In a strut for holding the valve of an automatic sprinkler the combination with the rods *i*, *i*, and ball *k*, of the bent plates *h*, *h*, whereby the rods are held at oppositely-disposed angles and the rupture of the plates is facilitated.

7. In a strut for holding the valve of an automatic sprinkler, the combination with the plates for holding the parts of said strut, of a spring embodied in said strut acting to disrupt the holding-plates when the solder is weakened by an incipient fire.

8. In an automatic sprinkler, the combination of the following instrumentalities: a nozzle for the dicharge of the water, a frame having at the point opposite the nozzle a conical boss, a smooth-edged concave deflector coöperating with the boss to break up the stream of water and distribute the same over a large area, a valve for closing the nozzle, and a strut composed of pointed rods, disposed at oppositely-inclined angles, held in place by two plates secured together by solder, whereby the water is automatically distributed over a large area on the breaking out of a fire.

ROBERT W. NEWTON.

Witnesses:
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W. H. THURSTON.