

H. P. TANK.
AUTOMATIC SPRINKLER.
APPLICATION FILED FEB. 15, 1911.

995,498.

Patented June 20, 1911.

Fig 1

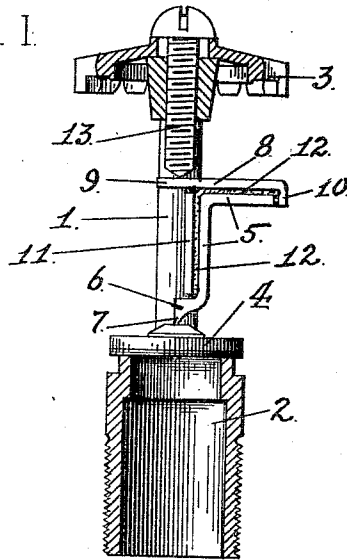
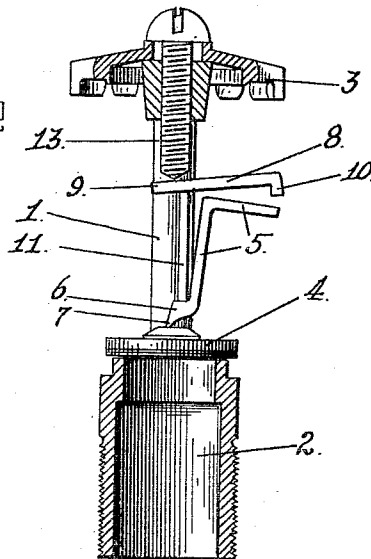


Fig 2



Witnesses
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Inventor
Henry P. Tank
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his Attorney.

UNITED STATES PATENT OFFICE.

HENRY P. TANK, OF ALAMEDA, CALIFORNIA, ASSIGNOR OF THREE-TENTHS TO LOUIS B. KRIEGER AND FOUR-TENTHS TO BURT L. DAVIS, BOTH OF SAN FRANCISCO, CALIFORNIA.

AUTOMATIC SPRINKLER.

995,498.

Specification of Letters Patent. Patented June 20, 1911.

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To all whom it may concern:

Be it known that I, HENRY P. TANK, a citizen of the United States, residing at Alameda, in the county of Alameda and State of California, have invented certain new and useful Improvements in Automatic Sprinklers, of which the following is a specification.

My invention relates to the class of automatic sprinklers used in connection with fire-extinguishing apparatus. These sprinklers in their common form comprise a frame provided with an outlet pipe to be screwed into the fittings of the pipe system. The frame carries in its top a deflector which scatters the water directed against it by the outlet pipe. The outlet pipe is normally closed by a cap, and this cap is held closed by a strut which lies between it and a pressure screw above. The strut is one composed of separable members, which are normally united by fusible solder, the arrangement being such that when the solder melts under a stated rise in temperature, the strut will fly apart under the water pressure and thereby release the cap and effect the opening of the outlet pipe to the stream of water. The essentials of a strut of this nature are maximum strength to resist pressure when said strut is normally a unit; extreme instability of said strut when the solder is melted; and adaptability to fly apart instantly and thoroughly to get out of the way and allow the cap to get out of the way before the pressure of the issuing stream.

To secure these essentials is the object of my invention; and to this end my invention consists in the combination with this type or class of automatic sprinkler of the novel strut which I shall now fully describe and claim by reference to the accompanying drawings in which—

Figure 1 is a sectional view of my automatic sprinkler showing its normal position. Fig. 2 is a view showing the strut in the act of flying apart.

The sprinkler here shown consists of a frame 1, having its base formed as a water outlet pipe 2 externally threaded for connection with the fittings of the pipe system. The frame carries at its top a deflector or water scatterer 3. The top of the sprinkler outlet pipe 2 is covered by a cap 4 which when held in place confines the water. These parts are, in general, those of well known

types of sprinklers adapted for use in connection with fire-extinguishing apparatus.

My improvement consists of the novel strut by which the cap is normally held to its seat and is released when the necessity arises. This strut comprises three pieces, or members. One, designated by 5, and which may be termed the anchor member is a metal bar of angle section, its vertically disposed leg being formed with an offset foot 6 extending from the leg in a direction opposite to the direction of the horizontal leg of said member. The foot 6 has a toe 7 which bears in a small socket in the center of the cap 4. The second member of the strut, is designated by 8 and may be called the trigger member. It consists of a metal bar which lies immediately above and parallel with the horizontal leg of the anchor member 5. At one end this trigger member projects, as shown by the portion 9, beyond the angle of the anchor member and traverses a line drawn perpendicular to the center of the cap 4; and at its other end said trigger member is bent to form a catch 10 which overlies the extremity of the horizontal leg of the anchor member. The third member of the strut, designated by 11, may be termed the stress distributing or tripping member. It consists of a straight bar, which lies parallel with the vertical leg of the anchor member 5, but to one side of a line perpendicular to the center of the cap 4. At its upper end the tripping member 11 lies under the projecting portion 9 of the trigger member 8, and at its lower end it lies over the top of the foot 6 of the vertical leg of the anchor member 5. Between all the adjacent surfaces of the three members of the strut is fusible solder indicated by 12, so that normally the strut is as one piece.

13 is the pressure screw, which is fitted in the top of the frame 1, and bears with its point in a small holding socket in the upper surface of the projecting portion 9 of the trigger member 8, the point of pressure being in a line with the point of pressure of the toe 7 of the anchor member in the center of the cap 4.

The sprinkler when set normally and ready for operation has its cap closed and held closed against the water pressure in the pipe system, by the intervention of the temporarily integral strut between said cap and the pressure screw 13. When, however,

the surrounding temperature rises sufficiently to melt the relatively low-fusible solder 12, the strut is no longer an integer, but is at once an unstable device which
 5 under the water pressure on the cap must fly to pieces and release the cap. It will be seen that under the condition of the fused solder, the trigger member 8 will tilt using the upper end of the tripping member 11
 10 as a fulcrum and withdrawing its catch end 10 from the extremity of the horizontal leg of the anchor member 5. The pressure of the trigger member 8 on the top of the tripping member 11, continuing during this tilting of the trigger member, has the effect
 15 of causing said trigger member by its bearing on the foot 6 of the anchor member to strain said anchor member over to the right, which strain at the moment of the full release of the catch 10 of the trigger member,
 20 will cause the general and sudden flying apart of the members of the strut, the trigger member flying upwardly and to the left, the anchor member to the right and
 25 the tripping member to the left. Thus, the strut which initially is strong and capable of resisting without bending the pressure put upon it, is, under the proper conditions,
 30 of such marked instability, that its action is sensitive, with the good effects of instantly and thoroughly flying apart thereby fully getting out of the way of the cap and allowing the cap itself to get out of the way,
 35 thus permitting an instant full flow of the water to reach and to be scattered by the

deflector 3. As there is no lagging in the separation of the strut members there is no tendency of the water, escaping in part, to cool and resolidify the solder and thereby prevent the full release of the cap. 40

Having thus described my invention what I claim as new and desire to secure by Letters Patent is—

In an automatic sprinkler of the class described, a separable strut comprising an 45 angular anchor member, having an offset foot on the side of the vertical leg opposite that of the horizontal leg, a trigger member overlying the horizontal leg of the anchor member, said trigger member having its 50 inner end projecting beyond the angle of the anchor member and its outer end formed with a catch overlapping the extremity of the horizontal leg of the anchor member, and a tripping member extending parallel 55 with the vertical leg of the anchor member between the projecting portion of the trigger member and the foot of said anchor member and lying to one side of the line of pressure on the strut, and fusible solder 60 uniting the adjacent surfaces of all the members of said strut.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY P. TANK:

Witnesses:

WM. F. BOOTH,
D. B. RICHARDS.