July 25, 1933. A. LOEPSINGER 1,919,235

SPRINKLER HEAD

Filed Jan. 22, 1932

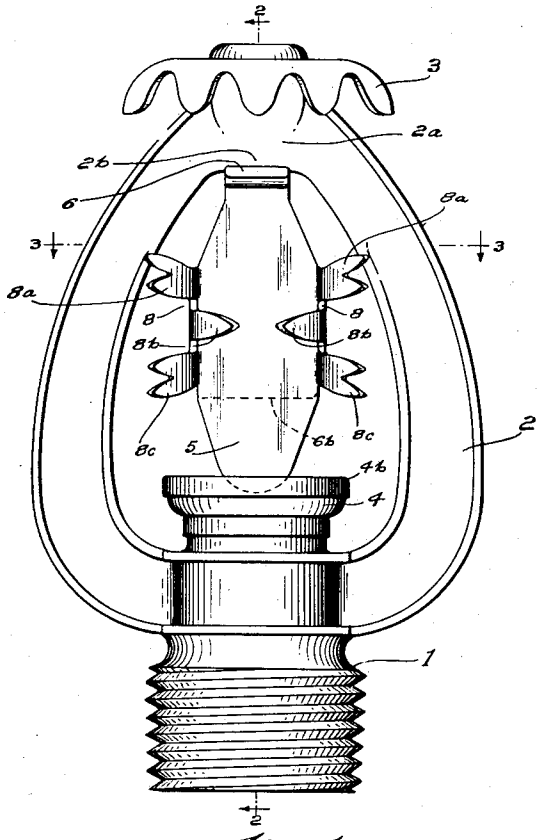


Fig. 1

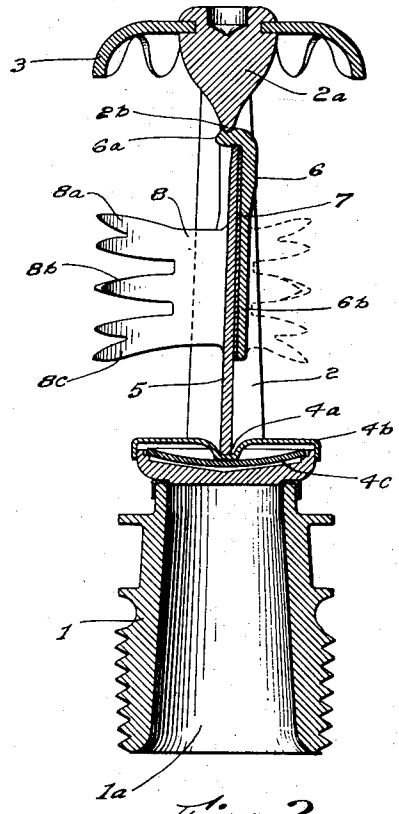


Fig. 2

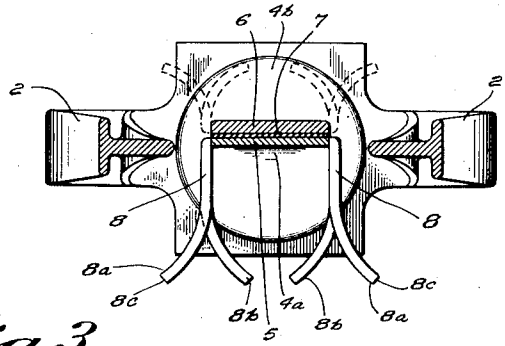


Fig. 3

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UNITED STATES PATENT OFFICE

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SPRINKLER HEAD

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This invention relates to improvements in sprinkler heads. More especially it relates to automatic heads of the type employing fusible material as the heat responsive element.

In practically all heads of the type under consideration it is customary to provide a system of levers or some form of linkage whereby the holding power of the fusible material may be sufficiently multiplied to resist the forces constantly tending to open the sprinkler. In some heads these levers or linkages project to one side of the body and are in great danger of being dislodged or injured by objects passing near them. To avoid this danger it has long been recognized as a material advantage to place the strut members as near to the axis of the sprinkler as possible. This arrangement, however, has resulted in the fusible material itself being somewhat shielded by the body of the sprinkler from the currents of heated air rising from a fire.

It is among the objects of the present invention to retain all the advantages of the centrally located strut and yet provide for the prompt response of the fusible material when a fire occurs in the vicinity of the head. This is accomplished by providing heat gathering and heat conducting arms on one or more of the strut members and so arranging them that they extend outside the body of the strut in favorable position to be bathed by the passing currents of heated air. With these arms positioned on a strut member which is primarily held in place by compressive forces, the danger of dislodgment or injury is negligible even when the arms receive a rather severe blow.

In the accompanying drawing is shown the preferred embodiment of my invention but this is merely illustrative and the patent is intended to cover by suitable expression in the appended claims whatever features of patentable novelty exist in the invention disclosed.

In the drawing:

Figure 1 is an elevation of a sprinkler embodying my invention;

Figure 2 is an elevation in section as on line 2—2 of Figure 1; and

Figure 3 is a plan in section as on line 3—3 of Figure 1.

Referring more particularly to the drawing the sprinkler body or frame has a nozzle 1, exteriorly threaded for engagement with a supply line carrying fluid under pressure, and a yoke 2 which extends upward from the nozzle and carries a deflector 3 at its top. The throat 1*a* of the nozzle is normally closed by a valve 4 which is held on its seat by a strut interposed between it and the head 2*a* of the yoke.

The form of strut here shown comprises a main member 5 and a lever member 6. The lower end of the main strut member 5 rests in a depression 4*a* in the valve cap 4*b* while its upper end bears against a short arm 6*a* of the lever member 6. This short arm 6*a* engages a depending edge 2*b* on the yoke head and the long arm 6*b* of the lever member it attached to the main member 5 by some fusible material 7 such as solder.

As seen clearly in Figure 2 the entire strut, thus far described, is almost on the center line of the sprinkler. This is desirable because the strut members are protected by the yoke 2 and to some extent by the deflector 3 and nozzle 1. But the fusible material 7 that is between the bars is directly over the valve and nozzle and is appreciably shielded by them from any heated air currents rising from below. Since the material must be brought to the fusing temperature before the strut gives way and permits the valve to open, it is important that this temperature be reached as promptly as possible after a fire has started in the region of the sprinkler.

Accordingly the improved strut here disclosed has heat gathering or heat conducting arms 8 which extend sidewise from the strut members beyond the valve and stem. These arms are preferably provided on the main member 5 because this member has its lower end in the depression 4*a* of the valve cap and its upper against the short arm 6 of the lever member, being thus subjected to direct thrust, and since both its ends are rather securely engaged it is able to withstand any considerable blow delivered on the outstanding arms 8.

The latter are preferably formed integrally with the main member and may be of any desired configuration. The particular shape shown has been found entirely suitable. Each arm has fingers 8*a*, 8*b*, 8*c*, those at the top and bottom being serrated at their ends and curved sidewise in one direction (see Figure 3) while an intermediate finger 8*b* is merely pointed and is curved in the opposite direction. Other arms might be provided on the other bar as suggested in dotted outline in Figures 2 and 3, but these are not deemed necessary.

As the heated air rises and passes the sprinkler it contacts with the outstanding arms and fingers which rapidly and very effectively conduct the heat to the main strut member and thence to the fusible material. In consequence the latter is quickly brought to its fusible temperature allowing the lever member 6 to separate from the main member 5. When this occurs the thrust imposed upon the strut members both by the resilient disk 4*c* of the valve and the pressure of the fluid in the supply line, causes the strut member to be violently dislodged and thrown clear of the sprinkler. The valve is projected from its seat and the sprinkler thus opened for discharge.

I claim:

1. An automatic sprinkler having a hollow stem and a yoke; a valve adapted when seated to close the hollow of said stem; and a strut interposed between said valve and yoke for holding said valve seated comprising fusible material located above said stem so as to be shielded thereby from rising heat currents and heat conducting arms extending beyond the confines of said stem and yoke in position to gather heat from said currents whereby said heat may be imposed upon said fusible material.

2. An automatic sprinkler having a stem with a passage therethrough; a yoke; a valve for closing said passage when seated; and a strut interposed between said valve and said yoke and substantially in alignment with said passage; said strut having a member resting on the valve, another member resting on the yoke and fusible material normally binding said members together; one of said members having heat conducting arms extending sidewise therefrom in position to gather heat and effect its transfer to the fusible material.

3. An automatic sprinkler having a strut for holding the sprinkler closed comprising fusible material located substantially at the axis of the sprinkler and heat conducting arms extending to one side of said axis for gathering heat and effecting its conduction to said material.

4. An automatic sprinkler having a strut for holding the sprinkler closed comprising fusible material located substantially at the axis of the sprinkler and heat conducting arms extending to one side of said axis for gathering heat and effecting its conduction to said material; said arms having portions in staggered relation.

5. An automatic sprinkler having a strut for holding the sprinkler closed comprising fusible material located substantially at the axis of the sprinkler and heat conducting arms extending to one side of said axis for gathering heat and effecting its conduction to said material; said arms having portions variously bent.

6. An automatic sprinkler having a strut for holding the sprinkler closed comprising fusible material located substantially at the axis of the sprinkler and heat conducting arms extending to one side of said axis for gathering heat and effecting its conduction to said material, said arms having a serrated edge.

7. An automatic sprinkler having a strut for holding the sprinkler closed comprising fusible material located close by the axis of the sprinkler; and heat collecting means conductively connected to said fusible material and extending to one side of said axis being arranged and constructed to gather heat and conduct it to said fusible material.

8. An automatic sprinkler having a stem with passage therethrough; a yoke; a valve for closing said passage when seated; a strut interposed between the valve and yoke comprising a member resting on the valve and a member resting on the yoke; means connecting said members comprising fusible material located with respect to said stem to be shielded thereby from passing heat currents; and heat gathering means arranged to be bathed by said currents and capable of conducting heat to said fusible material.

9. An automatic sprinkler having means for holding the sprinkler closed comprising fusible material located so as to be shielded from passing heat currents; and heat gathering means arranged to extend into said currents and get heat therefrom that would otherwise not affect the fusible material and conduct said gathered heat to the fusible material.

10. An automatic sprinkler having a stem with passage therethrough; a yoke; a valve for closing said passage when seated; a strut interposed between the valve and yoke comprising fusible material located with respect to said stem so as to be shielded thereby from rising heat currents; and heat collecting means conductively connected with said fusible material and extending with respect to said stem to a position whereat the said collecting means gathers heat from said currents and effects its transfer to said material.

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