Dec. 2, 1958 E. J. DUKES 2,862,565

AUTOMATIC SPRINKLER

Filed July 15, 1957

Fig. 1

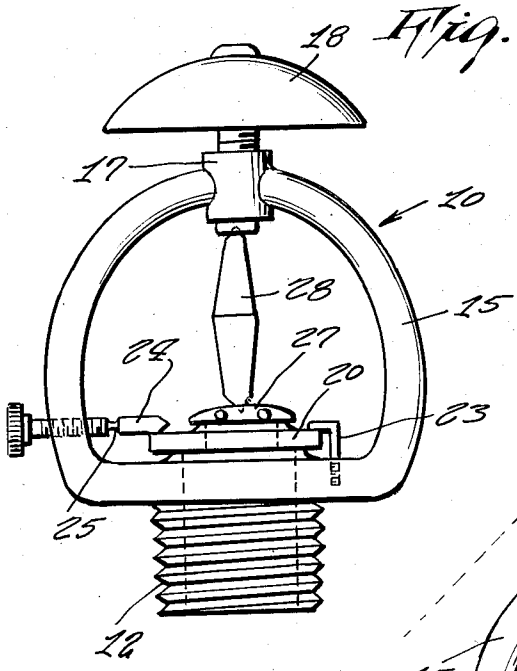
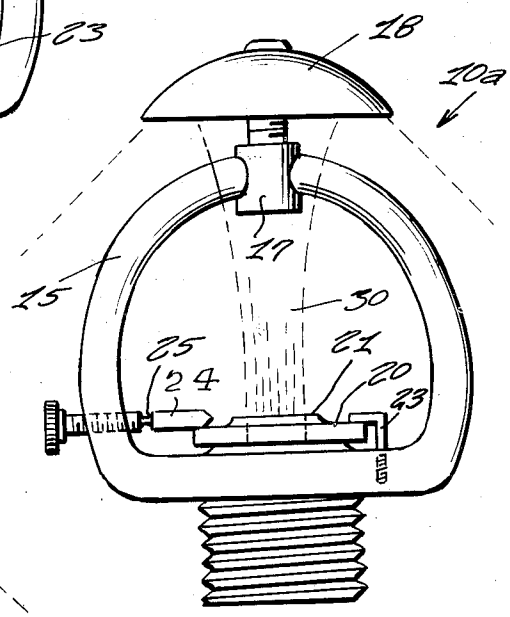


Fig. 2



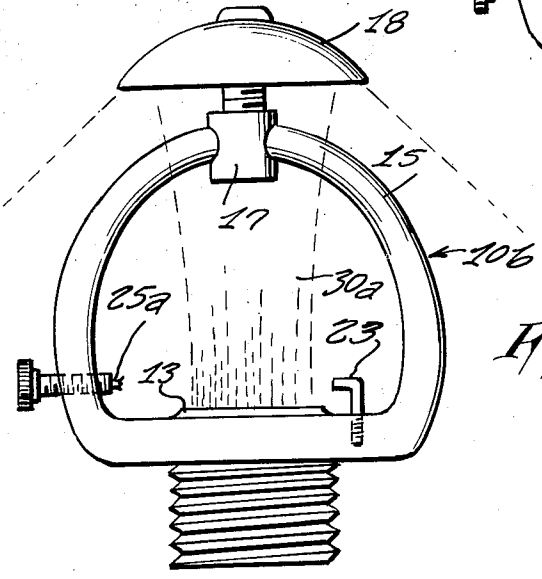


Fig. 3

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AUTOMATIC SPRINKLER

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2 Claims. (Cl. 169—38)

This invention relates to fire extinguishing apparatus and more particularly to an automatic sprinkler device.

While various types of sprinkler systems have been used to extinguish fires from within a building, the capacity of such sprinklers is limited by the operating pressure of the extinguishing fluid and the cross sectional area of the discharge nozzle. In the same respect, the operating pressure is limited by the prescribed safe working pressures of the piping used in such systems. Furthermore, it has been found that in order to double the fluid flow through the nozzle by increasing the operating pressure of the fluid, it would be necessary to quadruple the pressure which is usually not possible because of the limited strength of the supply lines. Accordingly, it is an object of the present invention to provide an automatic sprinkler device in which the cross sectional area of the discharge orifice may be selectively enlarged at any time during the extinguishing of a fire so as to increase the rate of flow of the fire extinguishing fluid without unduly increasing the operating pressure thereof.

Another object of the present invention is to provide an automatic sprinkler of the type described which will operate to discharge a normal quantity of water in response to the predetermined local increase in temperature until the operating pressure is increased sufficiently to provide a discharge orifice of enlarged cross sectional area to increase the rate of flow.

Another object of the present invention is to provide an automatic sprinkler of this type which may be manufactured in large quantities at relatively low cost.

All of the foregoing and still further objects and advantages of this invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing, wherein:

Figure 1 is a front elevational view of a sprinkler made in accordance with the present invention with the parts disposed in a normally closed position;

Figure 2 is a view similar to Figure 1, showing the sprinkler in use for discharging a fluid stream of a normal size; and

Figure 3 is a view similar to Figure 2, showing the sprinkler in use discharging a substantially larger stream of fluid.

Referring to the drawing, a sprinkler head **10** made in accordance with the present invention is shown to include a threaded hollow base **12** of standard dimensions having a discharge opening **13** opening upwardly toward a yoke **15** of substantially ring shape. A threaded sleeve **17** in axial alignment with the longitudinal axis of the base **12** threadingly and adjustably supports a stream deflector plate **18** which reverses the direction of flow of fluid impelled thereagainst during the operation of the sprinkler. An orifice reduction ring **20** having a discharge orifice **21** of substantially reduced cross sectional area than the

discharge orifice **13** of the base **12**, is releasably secured in engagement with the base **12** by means of a lug **23** and a frangible stud **24** located at diametrically opposite sides of the ring. The stud **24** is provided with a weakened portion **25** which, in response to the exertion of a sufficient upward force by the ring **20** will fracture so as to automatically remove the ring **20** from engagement with the base **12**. A closure cap **27** is releasably supported on top of a discharge orifice **21** of the reduction ring **20** by means of a fusible strut **28** that is disposed between the sleeve **17** and the top of the cap **27**.

In operation, the melting of the fusible strut **28** in response to an extreme temperature rise in the particular enclosure will automatically release the closure cap **27** to permit the pressurized stream of fluid **30** to discharge outwardly through the reduced orifice **21** of the ring **20**. Of course, the quantity of fluid so discharged is sufficient for normal purposes but in response to a very hot fire, such stream may prove to be inadequate. Thus, by increasing the pressure of the fluid stream temporarily to effect a sufficient force to fracture the frangible stud **24**, the weakened portion **25** will fracture **25***a* to discharge the ring **20** and permit the fluid stream to discharge outwardly through the discharge orifice **13** of the base **12**. This stream **30***a* is of substantially larger cross sectional area so that the rate of fluid discharged is greatly increased with a substantial increase in operating pressure. In the event that the smaller stream is sufficient, the ring **20** will remain in place during the entire operation, the device **10***a* being normally sufficient, but being automatically convertible to a larger capacity unit **10***b* as may be required.

While this invention has been described with particular reference to the construction shown in the drawing, it is to be understood that such is not to be construed as imparting limitations upon the invention, which is best defined by the claims appended hereto.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. An automatic sprinkler head comprising, in combination, a hollow base having means for threaded engagement with a water supply pipe, said hollow base defining an upwardly opening orifice, a yoke supported upon and above said base, a deflector supported upon said yoke in alignment with said orifice, an orifice reduction ring supported upon said base with closing engagement with said defined orifice and further defining an orifice of reduced size, a cap removably closing said orifice of reduced size, and retaining means releasably securing said cap in closing engagement, said retaining means comprising a fusible strut disposed between said yoke and said cap, and destructible means securing said orifice reduction ring in said closing engagement with said defined orifice independently of said fusible strut, said destructible means comprising a fixed lug and a frangible lug carried by said yoke and acting at diametrically opposite sides of said ring.

2. A sprinkler head as set forth in claim 1, wherein said frangible lug comprises a threaded stud having a centrally located weakened portion spaced diametrically outwardly from said ring.

References Cited in the file of this patent

UNITED STATES PATENTS

1,233,289	Thomson	July 10, 1917
1,997,404	Hamilton	Apr. 9, 1935
2,560,468	Morton	July 10, 1951
2,697,008	Rowley	Dec. 14, 1954