

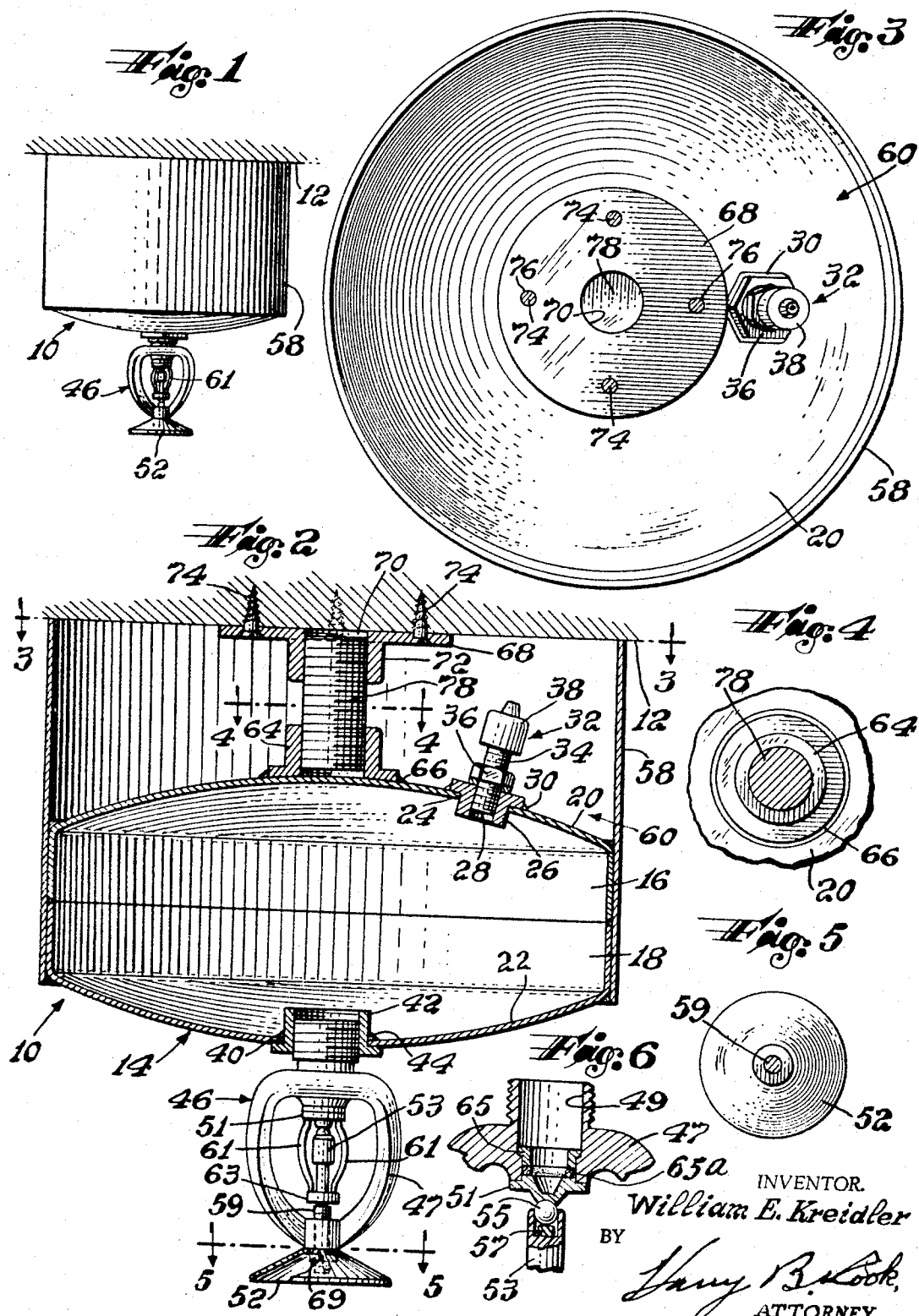
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AUTOMATIC FIRE EXTINGUISHER

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AUTOMATIC FIRE EXTINGUISHER
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2 Claims

ABSTRACT OF THE DISCLOSURE

An automatic fire extinguisher has a container for fluid fire extinguishant under pressure which is dischargeable under control of a thermal responsive sprinkler head beneath which is a diffusing plate, the container having secured thereto a cylindrical housing one end of which is adapted to be held tightly in engagement with a ceiling by adjustable mounting means including relatively movable parts one of which is attached to the container and another is adapted to be secured to the ceiling.

This invention relates to an automatic fire extinguisher adapted to be detachably suspended from an over-head support and containing a fire extinguisher fluid normally retained under pressure by an automatic sprinkler head secured to the bottom of the container and provided with a thermally controlled valve which under abnormally high temperature will be automatically released to discharge the contents of the container in case of fire in the immediate vicinity thereof.

A primary object of the present invention is to provide a fire extinguisher with an outer housing that reinforces the extinguisher to withstand high pressure tests, protects the loading valve against damage in shipping, handling and installing, and enhances the appearance of the fire extinguisher for use in homes, schools, offices and the like, and conceals the connector means between the ceiling and extinguisher.

Another object of the invention is to provide a hanger device for installing the fire extinguisher flush on the ceiling, that prevents vibration and oscillation of the fire extinguisher at the time of discharge, and facilitates attachment of the fire extinguisher to the ceiling.

A further object of the invention is to provide an automatic fire extinguisher with a fire extinguisher head coating with a conical fluid spreading baffle element to cause spreading of the fire extinguisher fluid over a larger area.

For further comprehension of the invention and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawing forming a material part of this disclosure:

FIG. 1 is a side elevational view of a fire extinguisher embodying my invention.

FIG. 2 is an enlarged vertical sectional view through the center of the fire extinguisher of FIG. 1.

FIG. 3 is a top plan view as seen from the line 3—3 of FIG. 2.

FIG. 4 is a horizontal sectional view taken on the line 4—4 of FIG. 2.

FIG. 5 is a similar view taken on the line 5—5 of FIG. 2, and

FIG. 6 is an enlarged fragmentary vertical sectional view of the sprinkler head.

Referring now in detail to the various views of the drawing, in FIG. 1 a fire extinguisher embodying my invention is indicated generally at 10 and shown suspended from a ceiling 12. The fire extinguisher 10 comprises a container

14 of double convex form which is preferably constructed of heavy gage alloy steel tested to withstand high pressure. The container 14 is constructed in two similar substantially concavo-convexo sections 16 and 18 fitted one upon the other and permanently brazed or otherwise secured together to form a fluid tight joint. Section 16 has a curved top wall 20 and section 18 a curved bottom wall 22.

The section 16 is provided in its top wall 20, to one side of the center thereof, with a filling opening 24 in which is plugged a bushing 26 having internal screw threads 28. The bushing is secured in position by welding or brazing as indicated at 30. A filling or loading valve 32 of the ordinary Schrader type, with an externally screw threaded body 34, is threaded into the bushing 26. The body is held in position by a lock nut 36. A removable cap 38 seals the outer end of the body of the valve. When the cap 38 is removed the container may be supplied with an extinguishant and be pressurized through a duct in the body of the valve.

The section 18 is provided with a centrally located outlet opening 40 which is at the lowest point on the container in the installed position of the extinguisher. An internally screw threaded bushing 42 is fitted in the opening 40 and is secured therein by welding or brazing 44. An automatic fused sprinkler head 46 in general of known type including a frame 47 is screwed into the bushing 42 so as to be supported in a vertical position immediately below the tank. The frame 47 has a discharge passage 49 therethrough normally closed by a valve disc 51 which is held in normal closed position by a rod 53 in one end of which is a ball 55 seated on a fusible disc 57 and abutting the closure disc 51, the other end of the rod being seated in a concavity in the end of a screw 59 threaded in the lower end of the frame 47. A pair of leaf springs 61 are interposed between the closure disc 51 and a collar 63 on the rod 53 and are normally placed under tension when the screw 59 is adjusted to press the ball 55 against the closure disc 51. In the passage 49 is seated a bushing 65 between which and the inner end of the closure disc 51 is a Teflon O-ring 65a to provide a tight closure against the escape of the extinguishant from the container 14.

A diffuser or baffle element 52 is suspended from the bottom of the head 46. The diffuser or baffle element is constructed of sheet metal formed to define a very wide angled frustum of a cone, of the order of 25° suitably secured to the head 46, for example by a nut 69 on the screw 59 so as to depend therefrom with its smaller end uppermost. The conical surface thus flares downwardly and outwardly.

In accordance with the present invention, the container 14 is encased in a hollow cylindrical housing 58 open at both ends and sleeved around and secured at one end to the container by welding or in any other suitable manner. The other end of the housing extends above the curved top wall 20 of the section 16 thereby, with the top wall, defining an open chamber or recess 60 wherein the filling or loading valve 32 is located and protected from damage.

An important feature of the invention is the novel hanger assembly for suspending the fire extinguisher from the ceiling 12. For this purpose, an internally threaded upstanding flanged bushing 64 is positioned centrally on the top wall 20 of section 16 and secured thereon by welding or brazing 66. A hanger suspension element in the form of a circular plate 68 with a central opening 70 and a downwardly extending hub portion 72 around the opening is fastened to the ceiling 12 by means of screws 74 passing through holes 76 formed in the plate in annular formation. The hub portion 72 is internally screw threaded and coacts with the threaded bushing 64 to receive the ends of an externally screw threaded rod or cylinder 78. The cylinder is dimensioned and related to the hanger sus-

pension element, the bushing 64 and the rod 78 to permit the top peripheral edge of the hollow housing 58 to engage the surface of the ceiling when the fire extinguisher is installed and thereby provide rigidity in the extinguisher when it is installed and preventing vibration or oscillation at the time of discharge of the extinguishant.

In operation, assuming that the container 14 has been supplied with an extinguishant such as the chemical known on the market as Du Pont Freon 1301, which extinguishant has been pressurized to a pressure of 400 lbs. p.s.i. and is adapted to be increased to approximately 1200 lbs. by heat, and that the fire extinguisher is installed in a building by being suspended from the ceiling 12, in operation, when the temperature of a fire in the vicinity of the extinguisher reaches a point adequate to fuse the fusible disc 57, the ball 55 is released from its seat on the closure disc so that the springs 61 displace the rod 53 laterally and permit the extinguishant under pressure in the container to blow out the closure disc 51 and thereby release the extinguishant from the container.

It will be noted that the hollow cylindrical housing 58 serves to reinforce the fire extinguisher to withstand high pressure tests, protects the loading valve against damage in shipping, handling and installing, and enhances the appearance of the fire extinguisher for use in homes, schools, offices and the like, and conceals the connector means between the ceiling and the extinguisher.

While I have illustrated and described the preferred embodiment of my invention, it will be understood that changes in details of construction might be made without departing from the principle of the invention and I desire therefore to be limited only by the state of the prior art and the appended claims.

What I claim is:

1. An automatic fire extinguisher comprising: a container having an outlet and a loading valve at the top thereof through which the container is adapted to be charged with a fluid fire extinguishant under pressure; a thermo-responsive fused sprinkler head controlling said outlet and adapted to release the fire extinguishant when the head is subjected to a predetermined temperature; mounting means by which the container is adapted to be supported in an elevated position in a space to be protected, with said head disposed beneath the container so as to discharge the extinguishant downwardly and outwardly and said container having a hollow cylindrical housing extending at one end above the container and adapted to engage the ceiling when installed to protect the loading valve and to conceal the mounting means between the ceiling and fire extinguisher, said mounting means including relatively

movable parts one of which is attached to said container and another of which is adapted to be secured on the ceiling, whereby said mounting means is adjustable to effect tight engagement of said end of the housing with the ceiling to rigidify the extinguisher and prevent vibration thereof during discharge of the extinguishant under pressure.

2. An automatic fire extinguisher comprising: a container having an outlet at the bottom thereof and a loading valve at the top thereof through which the container is charged with a fluid fire extinguishant under pressure; a thermo-responsive fused sprinkler head controlling said outlet and adapted to release the fire extinguishant when the head is subjected to a predetermined temperature; mounting means by which the container is adapted to be supported in an elevated position in a space to be protected, with said head disposed beneath the container so as to discharge the extinguishant downwardly and outwardly, said mounting means for supporting the container in an elevated position comprising a hanger assembly including a flanged upstanding threaded bushing fastened to the top of the container at the center thereof, and an externally threaded rod having one end threaded in said bushing and its other end threaded in an internally screw threaded perforated plate adapted to be fastened to a ceiling, with the addition of a hollow cylindrical housing with one end extending around said container and fastened to the outer surface thereof, the other end of the housing extending above the container and adapted to engage the ceiling when installed to protect the loading valve and to conceal the mounting means between the ceiling and fire extinguisher, and to rigidify the extinguisher and prevent vibration thereof when said upper end of the cylinder is pressed against the ceiling by tightening of said mounting means by rotation of said container.

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