

July 20, 1954

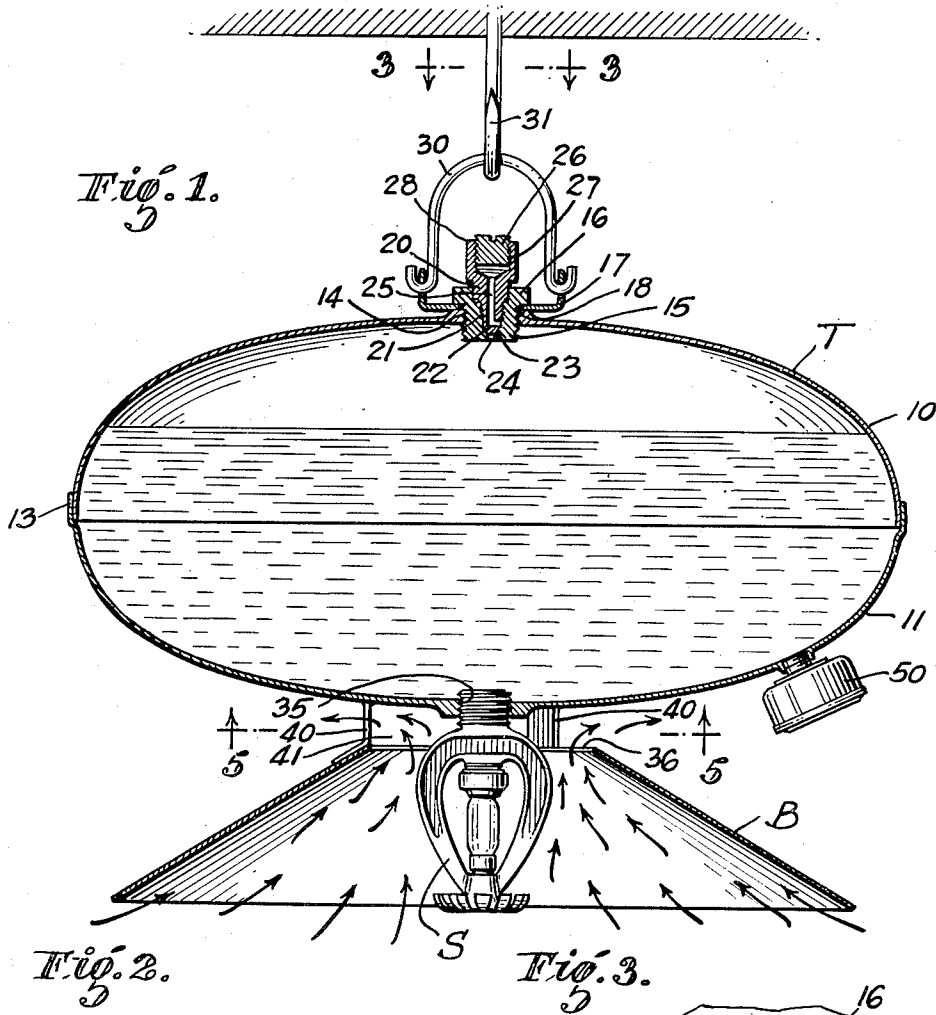
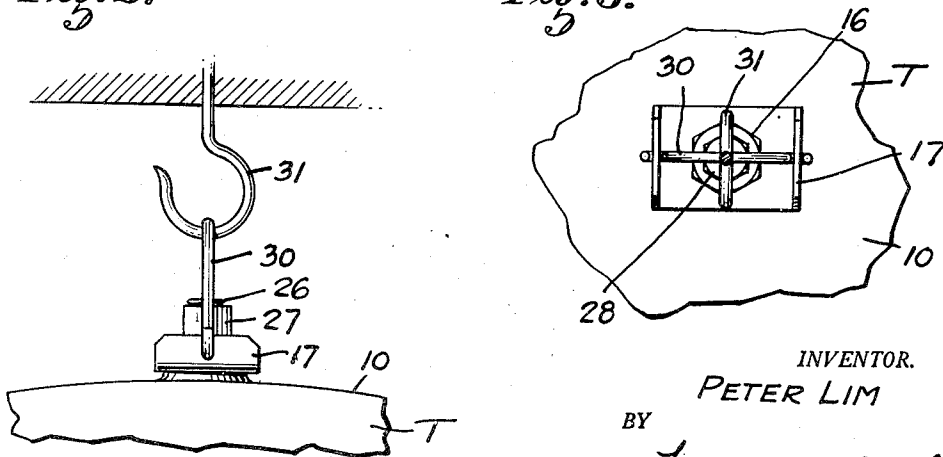
P. LIM

2,684,121

FIRE EXTINGUISHER

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2 Sheets-Sheet 1



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Fig. 4.

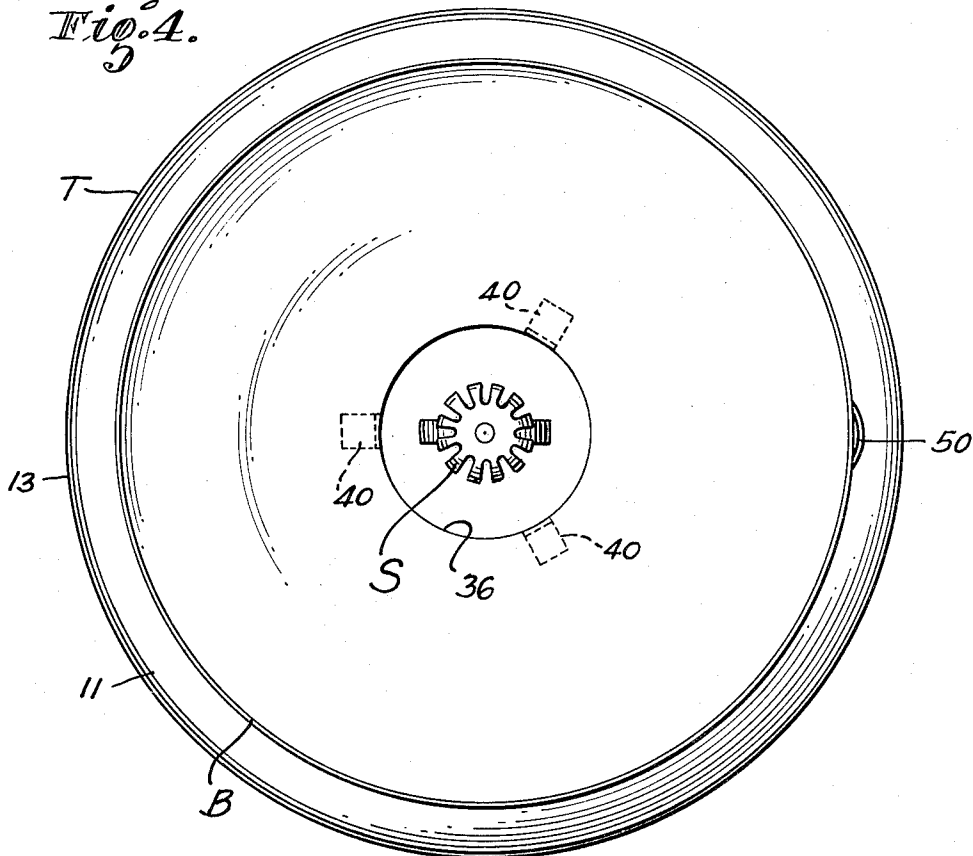
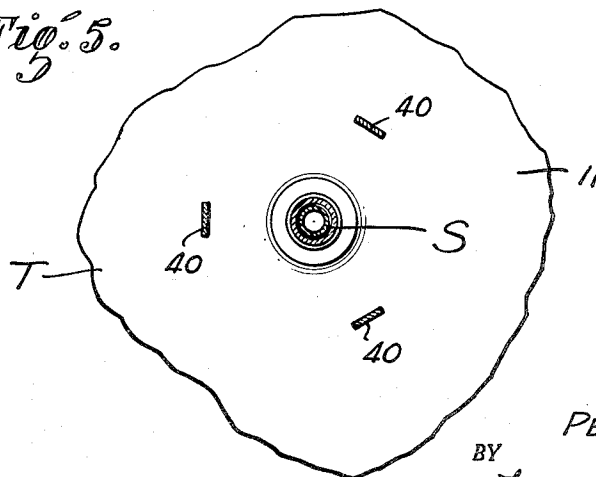


Fig. 5.



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FIRE EXTINGUISHER

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6 Claims. (Cl. 169—26)

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My invention relates generally to fire fighting apparatus and more particularly to pressurized, automatic sprinkler units which are self-contained and are rendered active to discharge an extinguishant in response to the outbreak of a fire in the immediate vicinity of the units.

An object of my invention is to provide a pressurized, portable, automatic fire extinguishing unit which is structurally characterized by extremely simple and absolutely positive means which is instantly operable in response to the heat rising from a fire in the vicinity of the unit, to discharge the extinguishant over a relatively wide area to smother the fire in a minimum amount of time and before the fire has had a chance to spread out of control.

Another object of my invention is to provide a fire extinguishing unit of the above described character which embodies a simple and positively acting deflector or baffle means operable to direct the hot air and gases from a fire into intimate contact with the fused sprinkler head of the unit, so as to render the head active in the shortest possible time to release the pressurized extinguishant and spread same over a wide area.

With these and other objects in view, my invention resides in the combinations, arrangements and functional relationships of elements as set forth in the following specification and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a vertical axial sectional view showing one form of fire extinguisher embodying my invention in its installed position;

Figure 2 is a fragmentary view in elevation, showing suspending means for the fire extinguisher;

Figure 3 is a fragmentary, sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a bottom plan view of the fire extinguisher; and

Figure 5 is a fragmentary, horizontal sectional view taken on the line 5—5 of Figure 1.

Referring specifically to the drawings, my invention in its illustrated embodiment comprises a container or tank T of double convex or other form, which is preferably constructed of heavy gage alloy steel tested to withstand high pressure. The tank may be constructed in two similar concavo-convex sections 10 and 11 which overlap at their confronting edges as shown at 13 and are seam welded or otherwise bonded to form a fluid-tight joint.

The section 10 is provided centrally thereof with a filling opening 14 which is internally

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threaded to receive an externally threaded plug 15 having a wrench-receiving head 16 which is utilized to secure a U-shaped bracket 17 rigidly to the tank T, with an opening 18 in the bracket receiving the body of the plug 15 as clearly shown in Figure 1.

A filling valve 20 is externally threaded at 21 and is provided with a conical nose 22, which, in the closed position of the valve wherein it is screwed tightly into the plug 15, engages a seat 23 in the plug, so as to seal the inlet port 24 of the plug fluid-tight. When the valve is unscrewed sufficiently to disengage the seat 23, the tank T may be supplied with an extinguishant and be pressurized, through an inlet duct 25 in the valve, upon unscrewing a safety, dirt sealing plug 26 from the internally threaded bore 27 in the wrench-receiving head 28 of the valve.

A bail 30 has its ends extended through openings in the bracket 17 and then return-bent to pivotally connect the bail to the tank so as to enable the tank to be suspended from a suitable hook 31 or other fastening device secured to the ceiling rafters or other elevated support in a building so as to dispose the extinguisher in any desired strategic or hazardous location to protect same against fire.

The section 11 is provided with an internally threaded centrally located outlet opening 35, which, in the installed position of the extinguisher, is at the lowest point in the tank. An automatic, fused sprinkler head S which may be of the construction disclosed and claimed in my co-pending application for patent Serial No. 213,858, filed March 5, 1951, now patent No. 2,661,805, or may be of any well known construction, is screwed into the opening 35 so as to be supported in a vertical position immediately below the tank.

Coactable with the tank T and the head S is a deflector or baffle element B, which, in its illustrated embodiment, is constructed of sheet metal formed to define a very wide angled frustum of a cone, the smaller end of which is provided with an opening 36 freely receiving the head S. The element B is rigidly supported from and below the tank T in co-axial relation thereto by a plurality of circumferentially spaced brackets 40 which are welded or otherwise rigidly secured to the section 11 of the tank and to the element B beyond its opening 40, all so as to support the element B in a horizontal position at substantially the level of the head S, with the latter centrally disposed in the element, and the smaller open end of the element spaced from the tank T

to provide an air passage 41 (Figure 1) between the element and the tank which functions in a manner to be described in the operation of the invention which is as follows:

Let it be assumed that the tank T has been supplied with an extinguishant such as carbon tetrachloride for example, which has been pressurized with carbon dioxide or other gas to a pressure of 90 lbs. p. s. i. which will be indicated by a conventional pressure gage 50 attached to the tank T as shown in Figure 1, and that the fire extinguisher is installed in a building by being suspended near the ceiling or roof.

Should a fire break out in the vicinity of the unit, the ascending hot air and gases from the fire will, upon reaching the element B, be deflected inwardly thereof towards the sprinkler head S, and the velocity of the gases increased as the air progresses upwardly in the element and discharges therefrom at high velocity due to the functioning of the element in the manner of a chimney flue.

Thus, the column of hot air flowing with an accelerated velocity through the element B in intimate contact with the sprinkler head S, will cause the thermo-responsive fuse of the head to more rapidly release the extinguishant under the tank pressure, whereby to more quickly smother the fire than would be possible in the absence of the element B. As time is of vital importance in checking the spread of fires, the quicker release of the sprinkler head obtainable by the use of the element B insures more efficient fire protection with the attendant saving of life and property.

It will also be noted that the element B acts as a shield for the sprinkler head S so as to protect the head against being struck from any side, and thus prevent damage to the head.

I claim:

1. A fire extinguisher comprising: a container having an outlet and 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; 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 baffle means supported beneath said container in surrounding relation to said head, and open at the bottom and top to provide an inlet and a central outlet, respectively, for the circulation of ascending hot air and gases from a fire through said baffle means around said head and into intimate contact with said head so as to accelerate the thermo-responsive action of the head in releasing the extinguishant.

2. A fire extinguisher comprising: a container having an outlet and 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; 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; a baffle element defining a hollow cone frustum open at its ends to provide an inlet at the larger end of said element and a central

outlet at the smaller end thereof; and means supporting said element beneath said container in spaced relation thereto and in surrounding relation to said head, with the smaller end of said element uppermost, whereby ascending hot air and gases from a fire, entering the inlet of said element from below the latter will be brought into intimate contact with said head and will discharge from the central outlet of said element around the head at an increased velocity so as to accelerate the thermo-responsive action of the head in releasing the extinguishant.

3. A fire extinguisher comprising: a container having an outlet and 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; 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 means defining a chimney flue freely receiving said head and being spaced beneath said container to provide an air passage; said means being open at the bottom and top to provide an inlet and an annular central outlet around said head, respectively, for the circulation of ascending air and gases from a fire into intimate contact with said head; said means tapered so as to upwardly reduce in cross sectional area, whereby to increase the velocity of ascending air and gases from a fire entering said means, and to accelerate the thermo-responsive action of the head in releasing the extinguishant.

4. A fire extinguisher comprising: a container having an outlet and 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; 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; a baffle element defining a hollow cone frustum open at its ends; and a plurality of circumferentially spaced brackets rigidly supporting said element beneath said container and spaced therefrom in surrounding relation to said head, with the smaller end of said element uppermost, whereby to direct entering hot air and gases from a fire into intimate contact with said head so as to accelerate the thermo-responsive action of the head in releasing the extinguishant.

5. A fire extinguisher comprising: a container having a top inlet and a bottom outlet and 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 extinguishant when the head is subjected to a predetermined temperature; a plug closing said inlet and having an inlet port surrounded by a valve seat; a valve adjustably mounted in said plug to close against said seat and seal said port or to disengage said seat and open said port for a filling operation; and a suspension member receiving said plug and clamped thereby to the container for the support of the latter in an elevated position.

6. A fire extinguisher comprising: a container having a top inlet and a bottom outlet and

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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 extinguishant when the head is subjected to a predetermined temperature; a plug closing said inlet and having an inlet port surrounded by a valve seat; a valve adjustably mounted in said plug to close against said seat and seal said port or to disengage said seat and open said port for a filling operation; a suspension member receiving said plug and clamped thereby to the container for the support of the latter in an elevated position; a baffle element defining a hollow cone frustum open at its ends; and means supporting said element beneath said container in spaced relation thereto and surrounding said head, with the smaller end of the

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element uppermost so that ascending hot air and gases from a fire, entering the larger end of said element, will be increased in velocity when discharging from the smaller end of said element and will be directed towards said head during passage through the element so as to accelerate the thermo-responsive action of the head in releasing the extinguishant.

10 References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
873,651	Asmus	Dec. 10, 1907
1,233,289	Thomson	July 10, 1917
1,489,613	Serrell et al.	Apr. 8, 1924
1,667,425	Loepsinger	Apr. 24, 1928