

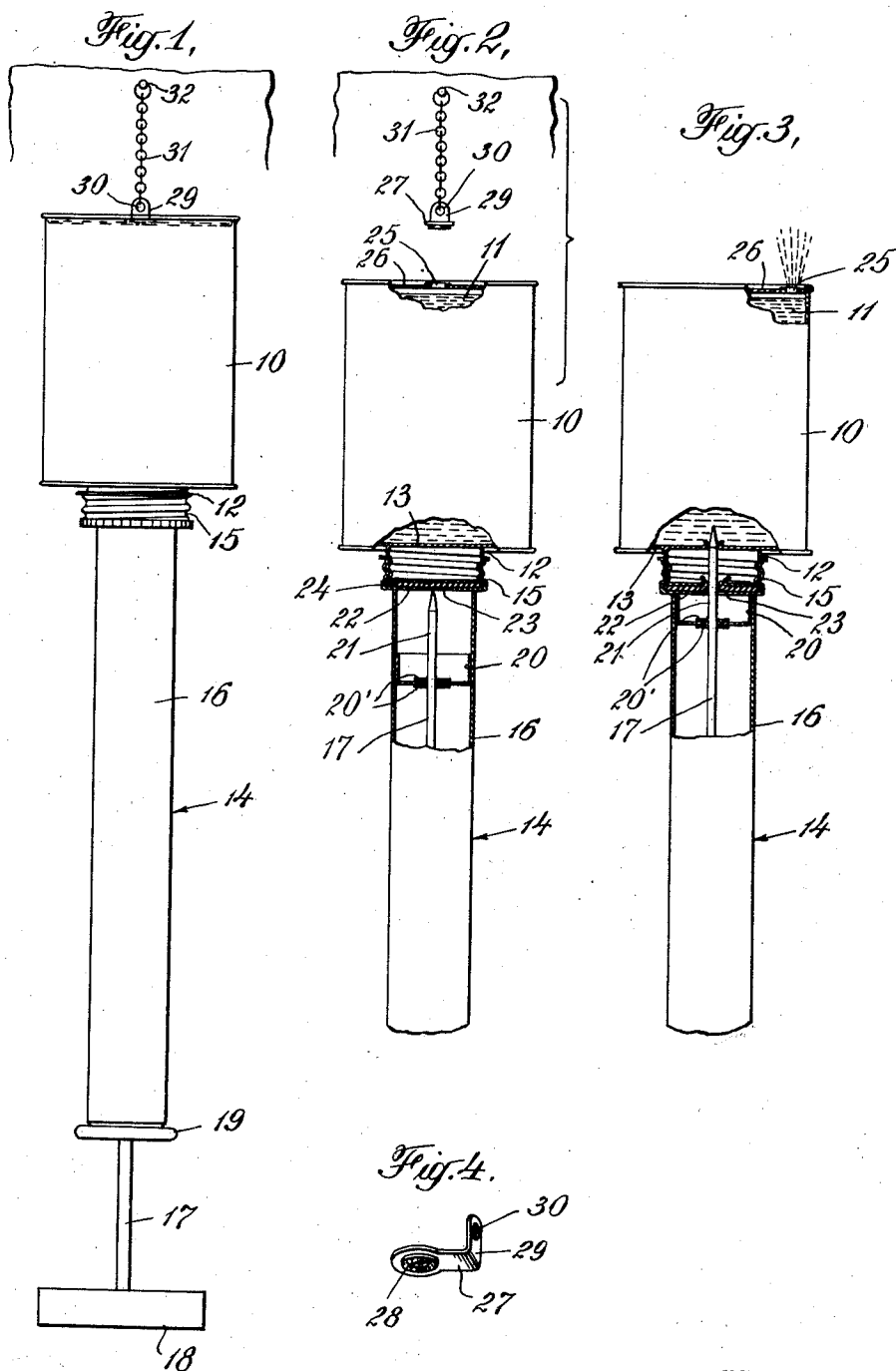
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W. THORNE

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FIRE EXTINGUISHER

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INVENTOR
Ward Thorne
BY
Hoguet, Heary & Campbell
ATTORNEYS

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FIRE EXTINGUISHER

Ward Thorne, Westport, Conn.

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This invention relates to fire extinguishing mechanisms, and has particular reference to improvements in devices for storing and applying fire extinguishing fluids.

It is an object of the present invention to provide a fire extinguisher of simple, inexpensive construction which may be adapted readily to use with various fire extinguishing fluids presently available.

A further object is to provide a fire extinguisher constructed in a manner preventing leakage of fluid, or deterioration of the fluid charge through contact with the air, upon standing.

A further object is to provide a manually operated fire extinguisher which is fool-proof in operation, and which may be renewed after use without the mixing or handling of chemically active substances by the operator.

A further object is to provide a fire extinguisher constructed to avoid accidental discharge thereof, and which may be operated without preliminary mechanical adjustment demanding practice or skill on the part of the operator.

Further objects and advantages will be apparent from the following description thereof and the drawing, wherein:

Figure 1 is a view in front elevation of a fire extinguisher constructed in accordance with the present invention;

Figure 2 is a similar view thereof partly in section, with the seal of the fluid reservoir broken by removal of the fire extinguisher from its supporting element;

Figure 3 is a view similar to Figure 2, indicating the fire extinguisher of the invention prepared for operation; and

Figure 4 is a perspective view of the sealing means on the fluid reservoir of the fire extinguisher.

In accordance with the present invention, the numeral 10 designates a cylindrical container forming a reservoir for a suitable fire extinguishing fluid 11. A collar 12, which may be soldered or otherwise fixed to the bottom wall 13 of the container 10, provides means for attaching a pump assembly 14 to the fluid container 10, the collar 12 preferably being threaded to detachably engage with a threaded collar 15 which forms a part of the pump assembly 14.

The pump assembly 14 comprises a cylinder 16, and a pump shaft 17 having a handle 18 for manual operation of the pump. A disc 19 on the end of the cylinder 16 closes off the cylinder and supports the shaft 17 axially thereof. A preferably cup-shaped piston 20 is carried on the shaft

within the cylinder 16. In accordance with usual practice, the piston 20 may be formed of leather or similar material, and supported on the shaft 17 by discs 20', or suitable packing may be superimposed on the piston 20 in such manner that on the forward stroke of the piston, the packing wedges against the walls of the cylinder 16 in relatively close engagement therewith. On the reverse stroke of the piston, the engagement of the packing with the cylinder wall releases sufficiently to allow the passage of air past the piston into the forward portion of the cylinder, thus providing a typical valving action upon operation of the pump. As is shown in Figure 2, the shaft 17 extends beyond the piston 20, the end of the shaft being sharpened to form a spike 21.

The base of the collar 15 is formed with an annular disc 22 extending inwardly to define an aperture 23, positioned opposite the spike 21. The disc 22 supports a diaphragm 24 which closes the aperture 23, the diaphragm being held in position on the disc 22 by the threads of the collar 15. The diaphragm 24 is preferably composed of a liquid impermeable material, such as matted vegetable fibers pressed to form a semi-rigid disc. If use of a chemically active fire extinguishing fluid is contemplated the diaphragm preferably is strengthened by interposition of a protective material thereon, such as metal foil. The diaphragm 24 serves to prevent accidental puncturing of the wall 12 of the container by the spike 21.

An aperture 25 in the top wall 26 of the container 10 serves as a discharge orifice for the fire extinguishing fluid. The orifice 25 is closed by means of a cap 27, shown in Figure 4, preferably having a raised portion 28 formed of a material having a low melting point which may be fused to the wall 26 over the orifice 25. The cap 27 is formed with a flanged portion 29 having an aperture 30 therein for receiving a chain 31 or similar means for suspending the assembled fire extinguisher from a supporting element, such as a hook 32. The bond between the cap 27 and the container surface should be of sufficient strength to carry the weight of the charged extinguisher without danger of accidental fracture. On the other hand, the bond should be of a strength permitting breaking thereof upon exertion of a light downward force on the fire extinguisher, freeing the latter from the supporting element to permit of use by the operator.

In operation, the pump assembly 14 is secured to a sealed container charged with fire extinguishing fluid, and the extinguisher suspended in

a suitable location by means of the chain 31 and hook 32. When use thereof is desired, the operator frees the extinguisher from the hook by pulling downwardly on the extinguisher to break the seal over the discharge orifice 25. The shaft of the pump is manually operated to thrust the spike 21 through the diaphragm 24 and the wall 13 of the container 10, at the same time advancing the piston 20 in the cylinder 16. The air pressure generated in the cylinder by the pumping action is exerted against the fluid in the container 10 simultaneously with the puncturing thereof, thus expelling a portion of the fluid through the orifice 25. By positioning the orifice 25 at a point on the periphery of the wall 26, all of the fluid in the container may be expelled by axially rotating the extinguisher to position the orifice 25 at the bottom of the container, while continuing operation of the pump. Moreover, the fluid stream is easily controlled so that it may be directed toward a desired area, for instance the base of a fire, thus securing maximum operating efficiency.

As the container 10 is exhausted of fluid, the fire extinguisher may be recharged merely by detaching the emptied container 10 from the pump assembly 14 and substituting therefor a fully charged container. Upon breaking of the seal over the orifice 25, operation of the fire extinguisher may be resumed in the manner above described. The diaphragm 25 may be replaced with a new diaphragm when the extinguisher is recharged and set aside for future use, thus preventing accidental puncturing of the container 10.

A great advantage of the fire extinguisher of the present invention lies in its relatively simple, fool-proof structure and method of operation. The fire extinguisher may be put into immediate operation without such preliminary adjustment of valves or other parts as will demand practice or mechanical skill on the part of the operator. By reason of the small number of parts involved in its construction, defects in mechanical operation, and the necessity for repair and replacement of worn parts are avoided.

Fire extinguishers constructed in accordance with the present invention are relatively inexpensive and, as the fluid is sealed except when the extinguisher is in actual operation, a supply of extinguishing medium is always insured. As there are no valves or other mechanisms to become defective under chemical action of the extinguishing fluid, the danger of leakage and accidental discharge of the fluid are completely eliminated. Furthermore, the fire extinguisher of the present invention may be recharged by the operator without the necessity of handling the recharging fluid.

While the invention has been described with reference to specific structure, it is to be understood that the description is given only by way of illustration and that the invention is not to be limited save as defined in the appended claims.

I claim:

1. A fire extinguisher comprising a hermetically sealed container charged with fire extinguishing fluid, a cap detachably connected by frangible means to an end of said container and sealing a discharge orifice in said container, a pump detachably connected to another end of said container having means for puncturing said another end of said container and for expelling the fluid from the container upon removal of the cap, and means for supporting the fire extinguisher from the cap whereby the cap is removed from the said orifice upon withdrawal of the fire extinguisher from the supporting means.

2. In a fire extinguisher, the combination of a hermetically sealed container charged with fire extinguishing fluid, a removable cap sealing a discharge orifice secured to one end of said container by frangible material, said cap being adapted to suspend said container from a support, a collar on the opposite end of said container, a pump including a cylinder and a piston, a collar at one end of said cylinder engageable with the collar on said container for detachably connecting said container and said pump, a piercing element on said piston for puncturing said container, whereby upon pulling said container from said support and actuating said piston, the fluid will be discharged from the orifice by the pressure generated by said pump.

3. A fire extinguisher comprising a hermetically sealed container charged with fire extinguishing fluid, a cap detachably connected by frangible means to an end of said container and sealing a discharge orifice in said container, a pump detachably connected to another end of said container having means for puncturing said another end of said container and for expelling the fluid from the container upon removal of the cap, and said cap being provided with means adapted to be connected to a support whereby the cap can be removed from the said orifice by withdrawing the fire extinguisher from the support.

4. A fire extinguisher comprising a container having a discharge opening, a strip of material forming a closure for the opening and a tab for suspending the container, one end of said tab being bent to facilitate the separation of said tab from the container in response to a pull on the suspended container, a pump attached to the container, said pump having a plunger and means for piercing a wall of the container.

WARD THORNE.