July 1, 1930. W. B. BRONANDER 1,769,618

FIRE EXTINGUISHER

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Fig. 1.

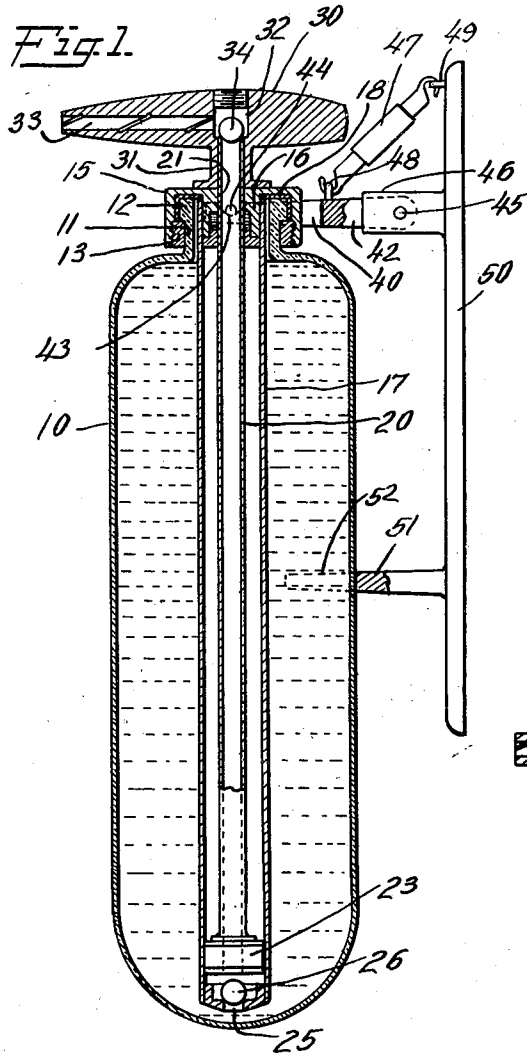


Fig. 2.

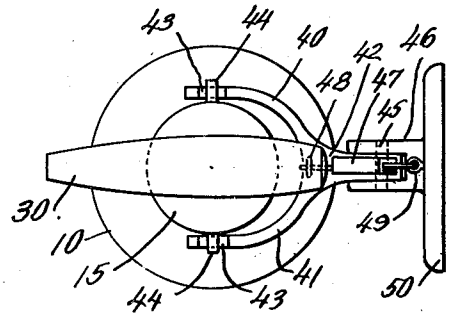
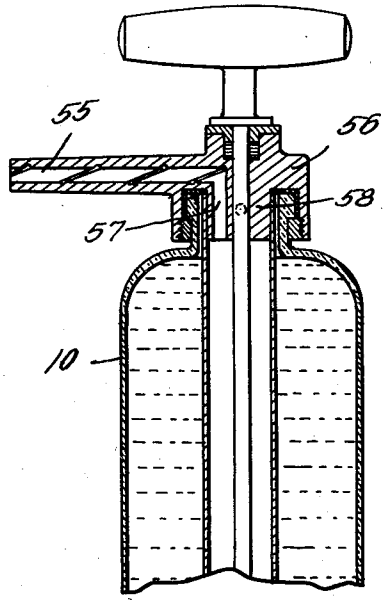


Fig. 3.



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Fig. 4.

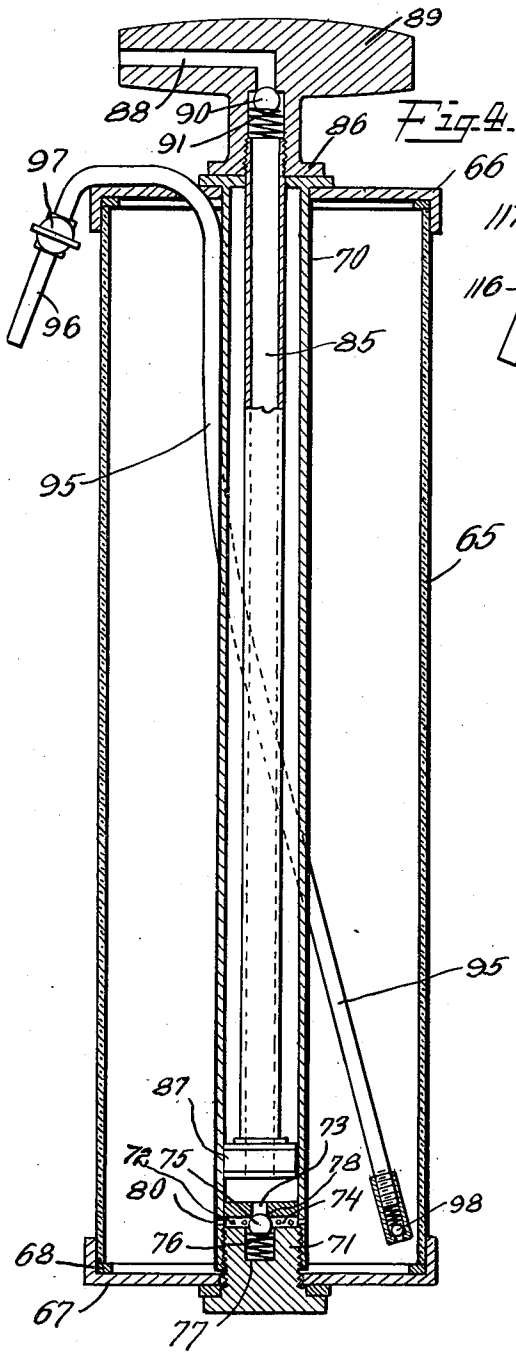
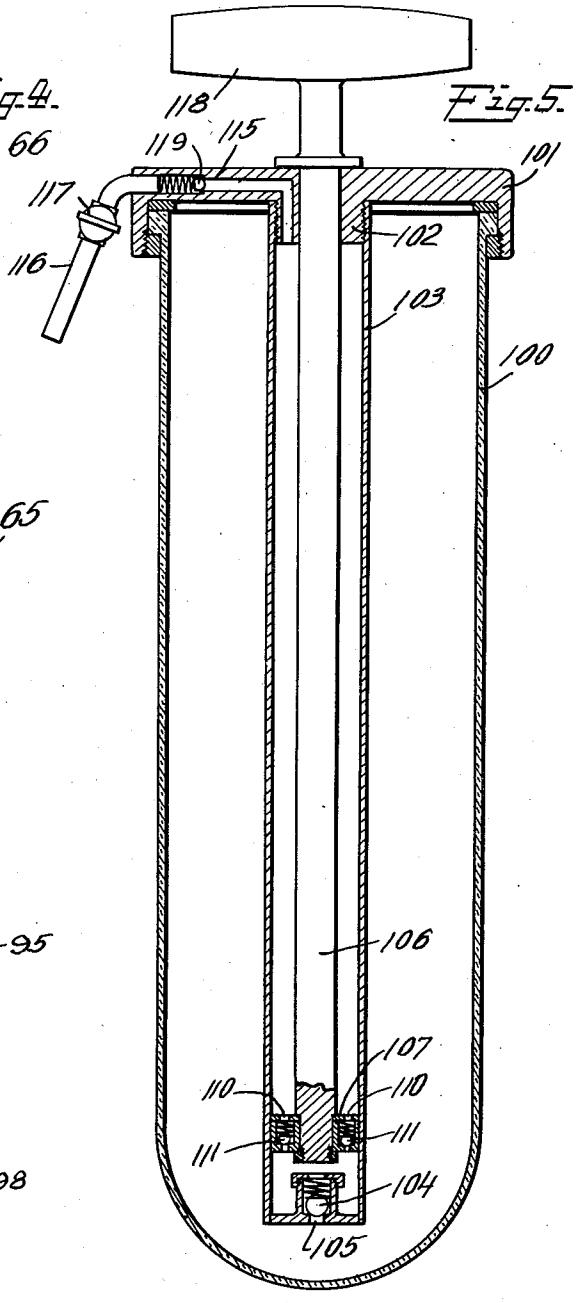


Fig. 5.



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UNITED STATES PATENT OFFICE

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FIRE EXTINGUISHER

Application filed April 18, 1927. Serial No. 184,510.

This invention relates to fire extinguishers.

More particularly stated, the invention relates to a fire extinguisher so constructed that it will automatically release fire extinguishing fluid in case of fire or can be manually manipulated to eject the fluid on the fire.

The invention has for its salient object to provide a simple and practical extinguisher of the type specified that can be manually operated or will operate automatically to release the fire extinguishing fluid in case of fire.

Another object of the invention is to provide an extinguisher of the manually operable type having a container so constructed and arranged that the user can see at a glance whether there is a supply of fire extinguishing fluid therein.

Another object of the invention is to provide an extinguisher so constructed and arranged that the stream of fire extinguishing fluid can be directed by the user of the device.

Further objects of the invention will appear from the following specification taken in connection with the drawings, which form a part of this application, and in which

Fig. 1 is a sectional elevation of one form of fire extinguisher and support constructed in accordance with the invention;

Fig. 2 is a top plan view of Fig. 1;

Fig. 3 is a view similar to Fig. 1, but illustrating another form of the invention;

Fig. 4 is a sectional elevation of another type of extinguisher constructed in accordance with the invention;

Fig. 5 is a sectional elevation of another type of extinguisher constructed in accordance with the invention.

The invention briefly described consists of a fire extinguisher having a container formed of transparent frangible material, such as glass. A cap is secured to the upper end of the container and a pump of suitable construction is carried by the cap.

In one form of the invention the fluid is pumped out through the handle of the pump and in another form of the invention a nozzle is formed on or secured to the cap.

Various forms of pumps are illustrated. In some of the forms, the liquid is forced out by air which is pumped into the container and in other forms, the liquid is forced out directly by the pump piston. Either double-acting or single-acting pumps may be used.

The frangible container is supported on a bracket or base or back plate by fusible means so that in case of fire, the container will be released and will drop and break, thus releasing the fire extinguishing liquid.

Further details of the invention will appear from the following description.

In the form of the invention illustrated in Fig. 1, there is shown a container or receptacle 10 formed of transparent frangible material, such as glass. The container has a neck 11 which terminates in an annular flange or shoulder 12. A threaded collar or band 13 is secured around the neck below the annular shoulder or flange. The collar may be split if desired to facilitate the mounting of the collar on the neck. A cap or closure member 15 is mounted on the neck and engages the collar.

The cap 15 has an inwardly extending apertured boss 16 formed thereon which extends into the neck of the bottle and has secured thereto an elongated cylinder 17. Packing 18 may be interposed between the cap and the outer end of the neck.

A hollow piston rod 20 is slidably mounted in the aperture 21 in the boss 16 and extends down into the cylinder 17, a piston 23 being secured to the lower end thereof.

The cylinder 17 has a port 25 at its lower end controlled by a ball check valve 26. A handle 30 having a sleeve 31 is secured to the

upper end of the hollow piston rod 20 and has formed therein a chamber 32 which communicates with the hollow end of the piston rod and also with a discharge opening 33 formed in the handle. A ball check valve 34 controls the opening between the chamber 32 and the upper end of the hollow piston rod 20.

It will be obvious to those skilled in the art that the reciprocation of the piston in the cylinder will cause the fire extinguishing fluid to be discharged through the hollow piston rod and discharge opening 33 in the handle 30 and the stream of fluid can be directed as desired at the fire.

As above stated, the container or receptacle 10 is formed of frangible material and it is preferable to so mount the extinguisher that in the event there is no one at hand to operate the extinguisher in case of fire, the extinguisher will automatically drop and break, thus releasing the first extinguishing fluid. In order to provide for such emergencies, the extinguisher is preferably supported on arms 40 and 41 of a fork-shaped support 42. Each of the arms has formed adjacent its outer end, a notch 43 adapted to receive studs 44 which are formed on or secured to and project laterally from the cap 15.

The fork-shaped member 42 is pivoted at 45 to lugs 46. The member 42 is supported by a fusible link 47 secured at 48 to the member 42 and secured at 49 to a back plate 50.

The lugs 46 are carried by the back plate 50 which is provided with a bifurcated extension 51 having arms 52 which embrace or extend on opposite sides of the container, thus stabilizing the container and preventing accidental release thereof from the support. It will be obvious that when the fusible link 47 melts, the support 42 will drop on its pivot 45, thus releasing the fire extinguisher.

The form of the invention illustrated in Fig. 3 is similar to that already described but differs therefrom in that the discharge opening or nozzle 55 is formed on and extends laterally from the cap 56. The nozzle 55 communicates with a discharge port 57 formed in the boss 58 which corresponds to the boss 16 above described.

In the embodiment of the invention shown in Fig. 4, the extinguisher comprises a cylindrical tubular body member 65 having a metallic cap 66 secured to one end thereof and a metallic cap 67 secured to the other end thereof, packing 68 being interposed between the caps and the ends of the tubular member 65.

The cap 66 carries a cylinder 70 which extends throughout the length of the tubular member 65 and is secured to the cap 67 by a plug 71 which is threaded into the lower end of the cylinder.

A collar 72 fixed in the cylinder 70 has a central opening or port 73 communicating with the interior of the cylinder and also adapted to communicate with a space 74 between the collar 72 and plug 71. A ball check valve 75 is pressed by a spring 76 disposed in a recess 77 against a seat 78 at the junction of the port 73 and the space 74.

The space 74 communicates with the receptacle 65 through openings 80 formed in the cylinder 70.

A hollow piston rod 85 is slidably mounted in a head 86 formed at the top of the cylinder and carries a piston 87. The upper end of the hollow piston rod is adapted to communicate with a conduit 88 formed in a handle 89 secured to the top of the piston rod. A ball check valve 90 controlled by a spring 91 is mounted in the handle intermediate the conduit 88 and the upper end of the piston rod 85.

A conduit 95 is secured to the outer surface of the cylinder 70 and extends upwardly through the cap 66 and has connected to its outer end a nozzle 96. A control valve 97 is provided for regulating the stream passing through the nozzle. A check valve 98 is preferably provided at the inlet end of the tube 95 to prevent air from entering the container 65 through the tube 95.

In the form of the invention illustrated in Fig. 4, the reciprocation of the piston rod 85 will cause air to be forced into the cylinder 65 through the hollow piston rod, port 73, space 74 and openings 80. On the upstroke of the piston rod, the cylinder 70 will receive air through the handle and the hollow piston rod and on the down-stroke of the piston, this air will be forced into the tubular body member 65 and will in turn eject the fire extinguishing fluid from the extinguisher.

In the form of the invention illustrated in Fig. 5, a container 100 formed of glass or other suitable material has secured to the upper end thereof, a cap 101 preferably formed of metal. The cap 101 has a boss 102 formed thereon to which is secured a cylinder 103 having a ball check valve 104 controlling a port 105 at the inner end of the cylinder. A piston rod 106 is reciprocably mounted in the boss 102 and has a piston 107 secured to one end thereof. The piston has a plurality of openings 110 therethrough controlled by downwardly seating ball check valves 111.

A conduit 115 is formed in the cap 101 and communicates with a nozzle 116 having a regulating valve 117 therein. A check valve 119 is preferably provided in the conduit 115 to prevent the entrance of air into the pump cylinder 103 therethrough.

A handle 118 is secured to the upper end of the piston rod 106.

The pump in Fig. 5 is so constructed that the cross sectional area of the piston rod 106 will be equal to the cross sectional area of the cylinder 103 minus the cross section of

the piston rod, or in other words, the cross sectional area of the piston rod equals the area of the space in the cylinder 103 around the piston rod. This being true, the area of the cylinder below the piston is equal to twice the area of the space between the piston rod and cylinder above the piston. Therefore, when the piston is drawn upwardly in the cylinder, twice the volume of liquid will be drawn into the cylinder that can be expelled on the down-stroke of the piston. Since one half of the liquid in the cylinder will be forced out on the down-stroke, it is evident that each stroke of the piston in either direction will force liquid out of the cylinder. Thus, the pump will be double-acting. It will be understood that the cap 66 in Fig. 4 and cap 101 in Fig. 5 are provided with lugs similar to the lugs 44 in Fig. 2 whereby the extinguisher can be supported in a bracket 42.

From the foregoing description it will be evident that a simple and practical form of fire extinguisher has been designed and that the extinguisher can be operated by hand to direct a stream of fluid on a fire or will operate automatically in case a fire occurs when there is no one present to operate the extinguisher.

Although certain specific embodiments of the invention have been particularly shown and described, it will be understood that the invention is capable of modification and that changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the spirit or scope of the invention, as expressed in the following claims.

What I claim is:

1. In combination, a frangible receptacle, a pump therein for discharging liquid therethrough, and means including a fusible element for supporting said receptacle, the receptacle being releasable from the supporting means when the fusible element gives way.

2. In combination, a bracket, a support pivoted thereon and adapted to swing downwardly, a fusible link connected to said support and to said bracket for holding the support against pivotal movement relative to the bracket, and a frangible container supported by said support and releasable therefrom when the support swings downwardly.

3. In combination, a plate, pivot lugs thereon, a supporting member pivoted on said lugs and adapted to swing downwardly, a frangible container supported by said member and releasable therefrom as the support swings downwardly, and a fusible link connecting said supporting member to said plate for holding said member against pivotal movement on said pivot lugs.

4. In combination, a bracket, a support pivoted thereon, a fusible link connected to said support and to said bracket for holding the support against pivotal movement relative to the bracket, and a frangible container supported by said support, said pivoted support and container being so relatively constructed and arranged that said container will be discharged by gravity from said support when said fusible element melts and releases the support.

In witness whereof, I have hereunto set my hand this 31st day of March, 1927.

WILHELM B. BRONANDER.