Dec. 12, 1933. W. B. BRONANDER 1,939,333

FIRE EXTINGUISHER

Filed Jan. 31, 1931 2 Sheets-Sheet 1

Fig. 1.

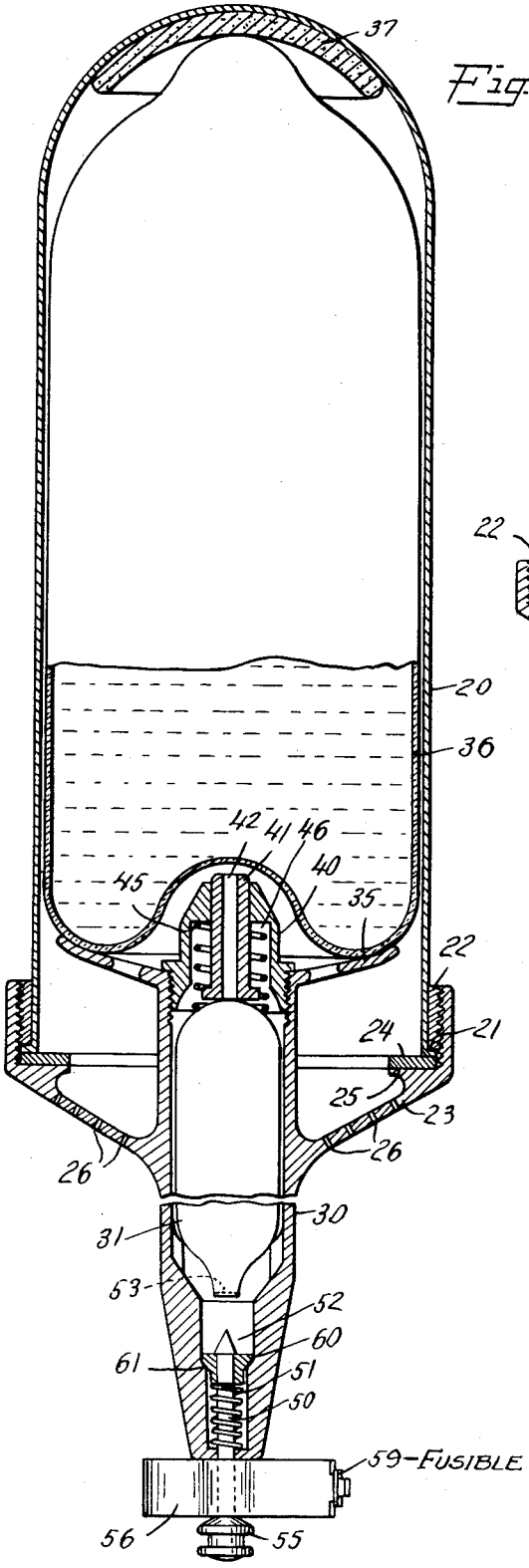


Fig. 2.

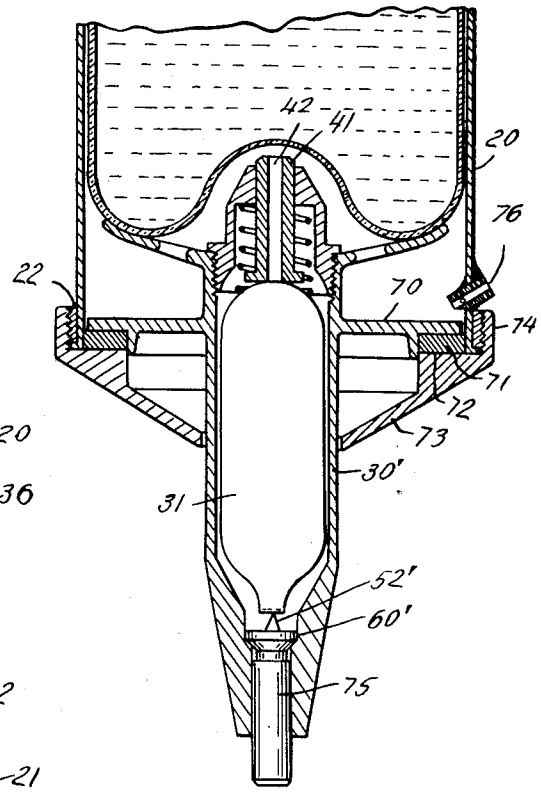
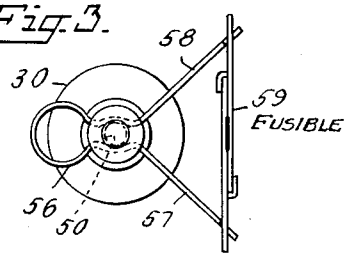


Fig. 3.



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Fig. 4.

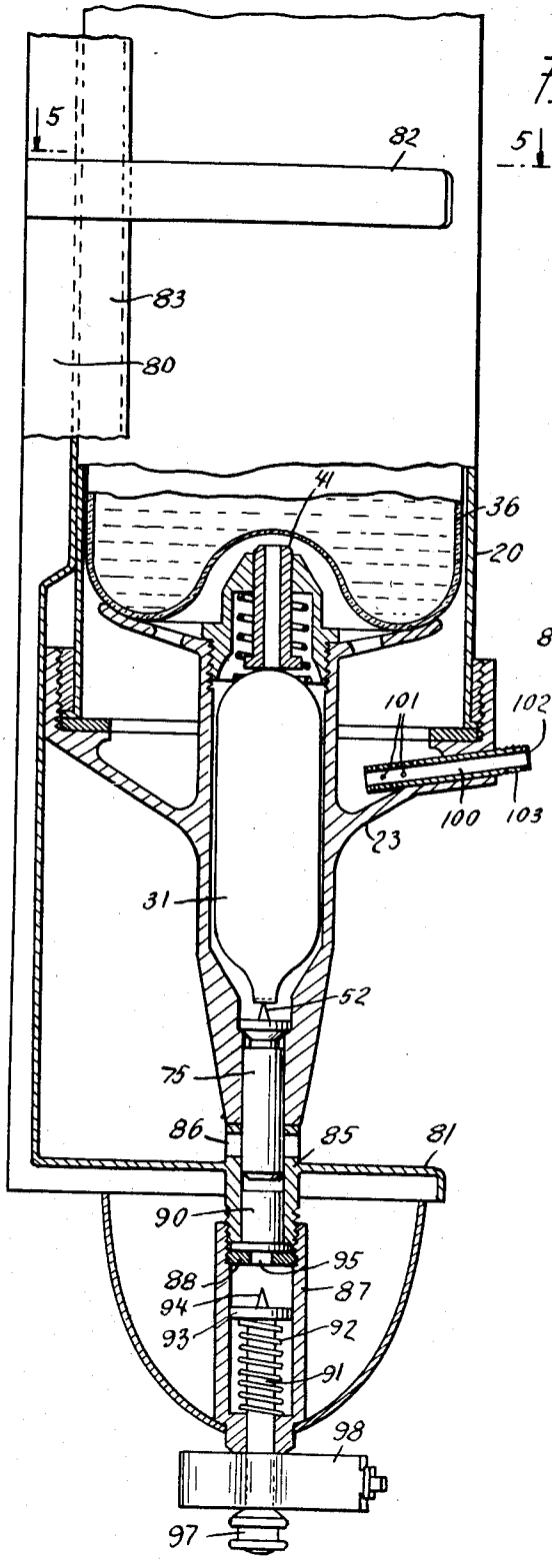
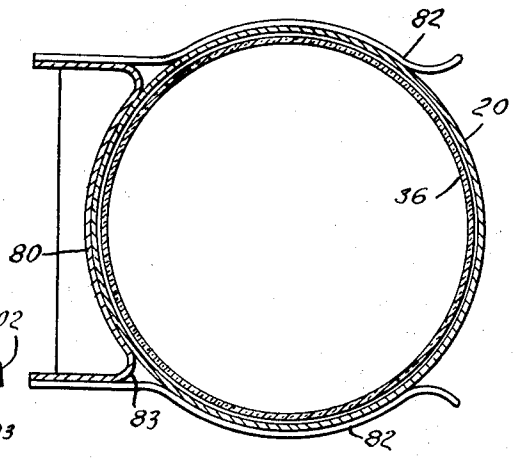


Fig. 5.



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FIRE EXTINGUISHER

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Application January 31, 1931. Serial No. 512,546

13 Claims. (Cl. 169—26)

This invention relates to fire extinguishers and particularly to a pressure type extinguisher.

The invention has for its salient object to provide an extinguisher of the type specified, so constructed and arranged that a fire extinguishing liquid will be quickly discharged therefrom by pressure derived from a compressed charge or gas cartridge.

Another object of the invention is to provide a fire extingisher of the character described, so constructed and arranged that the actuation of a single element will cause the compressed charge to be released and will also cause the fire extinguishing liquid to be released from its container.

Another object of the invention is to provide an extinguisher of the character specified that is simple in construction, comprises few parts, and can be economically manufactured.

Another object of the invention is to provide an extinguisher of the type mentioned so constructed and arranged that the container and compressed charge cartridge can be readily replaced and the extinguisher can be again put in condition for use after the operation thereof.

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 longitudinal sectional elevation of an extinguisher constructed in accordance with the invention;

Fig. 2 is a sectional elevation of the operative parts of the extinguisher, this view illustrating a slightly different embodiment of the invention and including manually operable discharge control mechanism;

Fig. 3 is an end elevation of the lower end of the extinguisher shown in Fig. 1;

Fig. 4 is a view similar to Fig. 1 but showing a modified form of construction; and

Fig. 5 is a sectional elevation taken substantially on line 5—5 of Fig. 4.

The invention briefly described consists of a casing in which is positioned a frangible container having fire extinguishing liquid therein, a cartridge containing a compressed charge of gas, and means for releasing the gas from the cartridge and the liquid from the container. The gas is conducted to the casing and forces the liquid therefrom under pressure.

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

In the embodiment of the invention illustrated in Fig. 1, there is shown a casing comprising a body portion 20 having a flange 21 at the lower end thereof and a threaded ring 22 positioned on the flange. A support 23 is threaded to the ring 22 and a packing washer 24 is positioned between the lower end of the casing 20 and a shoulder 25 formed on the support 23.

The support 23 is provided with discharge outlets 26 and carries a centrally disposed tubular housing 30 within which is positioned a cartridge 31 having a compressed charge of gas therein. The housing 30 is extended upwardly into the casing and has at its upper end a flange 35 which forms a support for the lower end of a frangible hermetically sealed container 36 in which is positioned a fire extinguishing liquid, such as carbon tetrachloride.

The upper end of the casing 20 is closed and a pad 37 of suitable material, such as felt, is positioned therein and rests against the upper end of the frangible container 36.

A hollow boss 40 is threaded into the upper end of the tubular housing 30 and has slidably mounted therein a plug 41 having a central opening 42 therethrough. The plug 41 rests on the upper end of the cartridge 31, the cartridge being held against longitudinal movement in the housing 30 by means of a spring 45 which engages the upper end of the cartridge and is seated in a recess 46 in the boss 40. Attention is directed to the fact that there is sufficient clearance between the cartridge 31 and the housing 30 to permit the gas released from the cartridge to pass upwardly through the housing and through the opening 42 into the chamber formed by the casing 20.

The gas may be released from the cartridge by manually operated or automatically operated mechanism. In Fig. 1 there is shown means for automatically puncturing the cartridge and releasing the gas therefrom. This means comprises a plunger 50 which is actuated by a spring 51 in a direction toward the cartridge and is provided at its inner end with a spike or barb 52 which is adapted to pierce a diaphragm 53 which closes the discharge end of the cartridge. The plunger 50 has a head 55 on its outer end which is held in spaced relation to the end of the housing 30 by means of a spring clip 56 having diverging legs 57 and 58 which are normally held against separation by means of a fusible link 59. When the link melts under the action of heat the legs spread apart, thus releasing the plunger which is thereby actuated by the spring 51, causing the spike or barb 52 to puncture the diaphragm 53.

The inner end of the plunger is slidably

mounted in a valve 60 which seats, as shown at 61, in the lower end of the housing 30 and closes the housing against the escape of gas therefrom. The barb or spike 52 rests on and forms a stop for the valve 60 which is slidably mounted on the plunger 50.

The device illustrated in Fig. 1 operates as follows: In case of fire the fusible link 59 will give way, releasing the spring 56, which in turn will permit the plunger to be actuated and to puncture the gas cartridge 31. At the same time the cartridge 31 will be forced longitudinally in the housing 30, thus pushing the plug 41 against the frangible container 36, causing the container to be broken. The gas will be forced upwardly through the housing 30 and opening 42 in the plug 41 into the casing 20. The pressure of the gas will cause the liquid which is released from the frangible container to be forced outwardly through the discharge openings 26.

In the form of the invention illustrated in Fig. 2, the housing 30' is provided with a flange 70 which seats on a packing 71 carried by a ledge 72 formed on a ring 73. The ring 73 has an upwardly extending flange 74 which is threaded to the ring or band 22.

In this form of the invention a plunger 75 is slidably mounted in the lower end of the housing 30'. The plunger 75 is provided with a barb or spike 52' at the upper end thereof and is slidable through the valve 60' in the manner above described. In this case, however, pressure is exerted on the plunger by means of a hammer or by striking the plunger against a fixed structure.

The casing 20 in this instance is provided with a single discharge outlet or nozzle 76.

When the plunger is forced inwardly, the gas cartridge 31 will be punctured and the gas released therefrom will pass upwardly through the housing 30' and through the opening 42 in the plug 41. The pressure on the plunger will also force the cartridge upwardly, breaking the frangible container. The gas pressure will force the liquid out of the casing through the discharge outlet 76. The pressure will also cause the flange 70 to be forced downwardly against the packing 71, thus automatically sealing the lower end of the casing 20. After the plug 41 has been forced upwardly to break the container 36, the pressure of the gas will hold the plug up and the gas will pass through the opening 42 into the container 36 and casing 20.

In the embodiment of the invention illustrated in Figs. 4 and 5, the extinguisher casing 20 and the support 23' which closes the lower end thereof are carried by a bracket having a vertical portion 80 and a horizontal portion 81 disposed at the lower end of the vertical portion. The vertical portion of the bracket is provided with spring clamping arms 82 adapted to embrace the casing 20 and with laterally extending portions 83 adapted to receive the casing.

The horizontal portion 81 of the bracket has an apertured boss 85 which is adapted to receive the lower end of the plunger 75 which is forced upwardly to puncture the cartridge 31. Lateral openings 86 are formed in the portion of the boss 85 disposed above the bracket portion 81. The boss extends below the part 81 and has threaded thereon a sleeve 87 in the upper end of which is disposed a washer 88 on which is supported a blank cartridge 90.

A plunger 91 is slidably mounted in the lower end of the sleeve 87 and is actuated in an upward direction by a spring 92 which engages a washer 93 positioned in abutting engagement with a spike or barb 94. The washer 88 is provided with a central aperture 95 through which the spike or barb 94 is adapted to extend when the plunger 91 is forced upwardly by the spring 92.

The plunger 91 has a head 97 on its lower end and means is provided for engaging the head to hold the plunger in retracted or inoperative position. This means may consist of a spring 98 similar to the spring illustrated in Figs. 1 and 3.

The support or casing cover 23 has extending thereinto, a discharge pipe 100 having perforations 101 disposed on the inner portion thereof and having a discharge orifice 102 at the outer end thereof. The outer end of the pipe 100 may be threaded as shown at 103 and a hose or nozzle of suitable construction may be mounted on the threaded end.

The device shown in Figs. 4 and 5 operates as follows: If a fire occurs when the extinguisher is mounted in the bracket, the heat will cause the fusible link to melt, releasing the plunger 91, which will be forced upwardly by the spring 92 causing the spike or barb 94 to fire the blank cartridge 90. The pressure of the gas from the cartridge 90 will force the plunger 75 upwardly, causing the spike 52 on the upper end thereof to puncture the gas cartridge 31 and release the gas. The cartridge 31 will also be forced upwardly in the manner hereinbefore described, causing the plug 41 to break the frangible container and release the liquid therefrom. The released charge of compressed gas will then force the liquid out through the discharge pipe 100.

If the fire occurs when someone is present, the extinguisher can be manually lifted from the bracket and the plunger 75 can be forced inwardly by a blow.

From the above description it will be clear that a simple, practical and efficient fire extinguisher has been designed and that a single operation will cause the fire extinguishing liquid to be discharged under pressure. Furthermore, since the glass container 36 is hermetically sealed, no liquid can evaporate or contact with or corrode the operative parts or discharge orifice of 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. A fire extinguisher comprising a substantially closed casing having a discharge outlet therein, a frangible container in said casing and having fire extinguishing fluid therein, a compressed gas cartridge slidably mounted in the casing, means for puncturing the cartridge and for moving the cartridge in the casing, and means movable by the cartridge to break the container.

2. A fire extinguisher comprising a substantially closed casing having a discharge outlet therein, a frangible container carried thereby and disposed therein, said container having fire extinguishing fluid therein, a movable receptacle having a compressed gas charge, means for conducting gas from the receptacle into said casing, means for releasing gas from the receptacle, and means mechanically actuated by the movement of the receptacle for breaking said container.

3. A fire extinguisher comprising a substantially closed casing having a discharge outlet therein, a frangible container in said casing and having fire extinguishing fluid therein, a second casing

adapted to communicate with said first casing, a cartridge movably mounted in said second casing having a compressed charge therein, means for puncturing said cartridge, and mechanically acting means movable by said cartridge for breaking said container.

4. A fire extinguisher comprising a substantially closed casing having a discharge outlet therein, a container of fire extinguishing liquid in said casing, movably mounted means for releasing the liquid from the container, a cartridge having a compressed charge, means for releasing the charge from the cartridge and for conducting the charge into the casing, said liquid releasing means being operatable by the movement of said cartridge.

5. A fire extinguisher comprising a substantially closed casing having a discharge outlet therein, a frangible container of fire extinguishing fluid therein, a gas cartridge slidably mounted in the casing, means for puncturing the cartridge and for moving the cartridge in the casing, and means movable by the cartridge to break the container, said container breaking means having an opening to conduct the gas from the cartridge into the container casing.

6. A fire extinguisher comprising a substantially closed casing having a discharge outlet therein, a frangible container of fire extinguishing fluid carried thereby, a chamber in said casing, a gas cartridge in said chamber having a compressed charge of gas therein, said cartridge being slidably mounted in said chamber for movement toward said frangible container, means movable by said cartridge into breaking contact with said container, and means for puncturing and moving the cartridge toward the container.

7. A fire extinguisher comprising a substantially closed casing having a discharge opening therein, a frangible container in said casing, a movable cartridge having a charge of compressed gas, said cartridge being mounted in a chamber communicating with said casing, an explosive cartridge, means for firing the explosive cartridge, means in the path of the explosive charge for puncturing the gas cartridge, and movable means operable by the gas cartridge for breaking the frangible container.

8. In combination, a bracket including an upright portion and a portion extending laterally therefrom, a fire extinguisher casing having a discharge opening therein, a frangible container of fire extinguishing fluid therein, a compressed gas cartridge mounted in a chamber communicating with said casing, means including a member projecting from the chamber for puncturing said cartridge and for breaking the container, means for supporting the casing on the bracket, and means carried by the laterally extending portion of the bracket for actuating the container breaking means.

9. In combination, a bracket including an upright portion and a portion extending laterally therefrom, a fire extinguisher casing having a discharge opening, a frangible container of fire extinguishing fluid therein, means including a member projecting from the casing for breaking the container, means for supporting the casing on the bracket, means carried by the laterally extending portion of the bracket for receiving the projecting member, and means including a resiliently actuated member carried by said portion for actuating the projecting member and causing the container to be broken.

10. In combination, a bracket, a casing having a frangible fire extinguisher container of fire extinguishing medium therein and having a discharge opening, means on the bracket for releasably supporting said casing, means carried by the casing engageable with the container to break said container, and means including heat controlled resiliently actuated means carried by the bracket for setting in operation said container breaking means.

11. In combination, a bracket, a casing having a frangible fire extinguisher container of fire extinguishing medium therein and having a discharge opening, means on the bracket for releasably supporting said casing, means carried by the casing engageable with the container to break said container, explosive means carried by the bracket for actuating said container breaking means and resiliently actuated heat controlled means for setting said explosive means in operation.

12. In combination, a bracket, a casing, a cartridge therein having a compressed charge of gas, a container of fire extinguishing fluid, means carried by the casing for puncturing said cartridge and releasing the gas therefrom, substantially closed means on the bracket for holding the container and having a discharge opening therein, and means carried by the bracket for actuating said puncturing means, said casing communicating with said container holding means.

13. In combination, a bracket, a casing, a cartridge therein having a compressed charge of gas, a container of fire extinguishing fluid, means carried by the casing for puncturing said cartridge and releasing the gas therefrom, substantially closed means on the bracket for holding the container and having a discharge opening therein, and heat controlled means carried by the bracket for actuating said puncturing means, said casing communicating with said container holding means.

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