Nov. 19, 1935. G. L. TRUEBLOOD 2,021,493

FIRE EXTINGUISHER

Filed Oct. 30, 1933

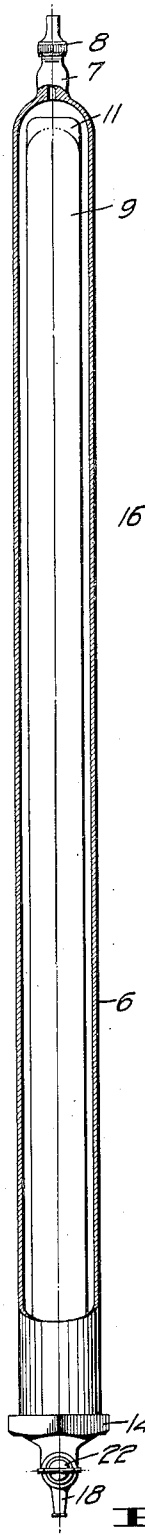


FIG. 1.

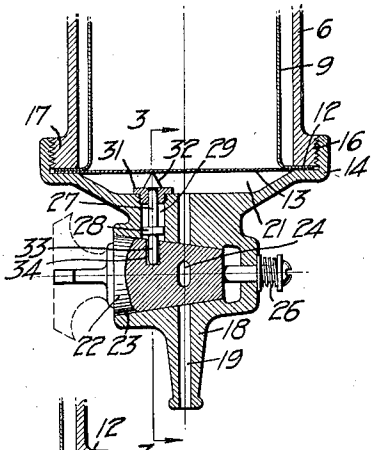


FIG. 2.

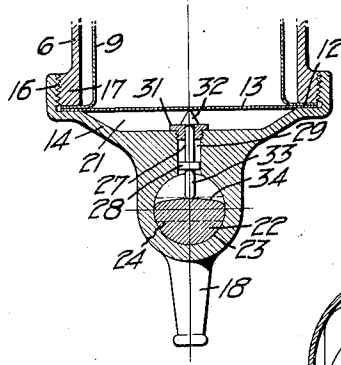


FIG. 3.

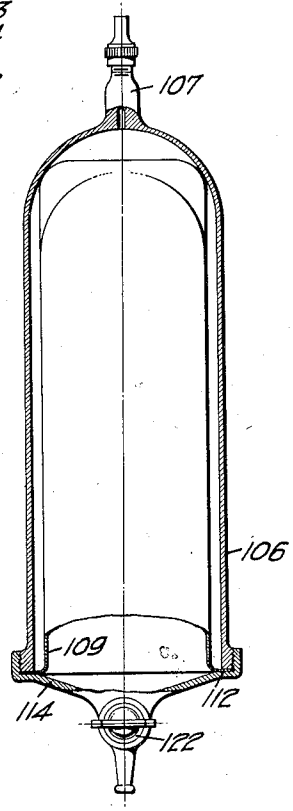


FIG. 4.

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FIRE EXTINGUISHER

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2 Claims. (Cl. 169—33)

My invention relates to portable means for use in extinguishing fires and is particularly concerned with a fluid container adapted to discharge a stream of fluid under pressure.

An object of my invention is to provide a portable fire extinguisher which is capable of discharging an extinguishing fluid under pressure without requiring pumping by the operator.

Another object of my invention is to provide a fire extinguisher which is very simple to refill after use.

Another object of my invention is to provide a very inexpensive fire extinguisher.

A further object of my invention is to provide a fire extinguisher which can easily be installed in a motor vehicle.

Another object of my invention is in general to improve portable fire extinguishers.

In the drawing:

Figure 1 is a side elevation of one form of fire extinguisher in accordance with my invention, a portion being broken away to disclose the interior construction.

Figure 2 is a cross-section on a transverse plane of one portion of a fire extinguisher constructed in accordance with my invention.

Figure 3 is a cross-section the plane of which is indicated by the line 3—3 in Figure 2.

Figure 4 is a cross-section on a transverse plane of a modified form of fire extinguisher in accordance with my invention, certain portions being shown in elevation.

In its preferred form, the fire extinguisher of my invention includes a deformable casing adapted to contain a fire quenching liquid which is enclosed in a relatively non-deformable housing adapted to contain air under pressure, together with means for releasing liquid from the casing under the influence of the pressure within the housing.

While the fire extinguisher of my invention is susceptible of embodiment in numerous different forms, I have, for example, illustrated it herein as comprising an outer housing 6 which preferably is a relatively long tube of metal or other substantially rigid or non-deformable material. The tube is conveniently made circular in cross-section, and at one end is provided with an air admission valve 7 of the type customarily utilized on vehicle tires. Such valve, as is well known, is provided with a check to permit the ingress of air but to prevent the egress of air. Preferably, the valve 7 is of the more recent type, including a pair of checks in series and is normally closed by a removable, air-tight cap 8.

Situated within the housing 6 is an inner casing 9 which is preferably deformable or non-rigid. As an example of a suitable collapsible inner casing, I provide a thin metallic tube, usually circular in cross-section, which is crimped or otherwise closed at one end 11 and at the other end is provided with an out-turned flange 12 spanned by a frangible or rupturable diaphragm 13 in tight relationship with the flange 12. If desired, the casing 9 can be made, in addition to thin metal sheets, of metal foil and the like, or of a non-metallic substance such as cellophane. The inner casing 9 is located or held in place within the housing 6 and an air-tight seal is made by a cap 14 which preferably is fastened by threads 15 to an enlarged flange 17 at one end of the housing 6. The inner casing 9 contains a suitable fire quenching liquid, for example, carbon tetrachloride, while the outer housing 6 is charged with air under a suitable pressure, say 50 lbs. per square inch, by means of the inlet valve 7. When the device is so conditioned, the liquid within the casing 9 is under substantially 50 lbs. per square inch pressure and remains under such pressure until released in use.

In order to release liquid from the interior of the casing 9 when desired, I provide a nozzle 18 projecting from the cap 14 and having a bore 19 therethrough which extends from the tip of the nozzle to a chamber 21 enclosed between the cap 14 and the diaphragm 13. A plug cock 22 is mounted in a conical bore 23 in the cap 14 and, having an aperture 24 therethrough, is effective upon rotation of the plug cock to govern flow through the passage 19. A suitable spring mechanism 26 maintains the cock 22 in seated position.

In order to rupture the diaphragm 13 and thereby release the contents of the casing 9, I preferably provide a puncturing pin 27 guided by an enlargement 28 operating in a bore 29 in the cap 14, and likewise guided by a plug 31 preferably screwed into the cap 14 and underlying an enlarged head 32 terminating the pin 27. A depending portion 33 of the pin 27 rests within a cam groove 34 cut into the plug cock 22. When the cock is in off position, or with the passage 24 out of line with the passage 19, the cam groove 34 is ineffective to translate the pin 27 axially. However, upon rotation of the plug 22 in either direction the cam 34, bearing against the extension 33, translates the pin 27 axially and forces the piercing head 32 to rupture the diaphragm 13. The liquid within the casing 9, therefore, passes through the rupture in the diaphragm

and through the passage 19, being controlled in its flow by the plug cock 22.

Since the entire device is relatively light and quite portable, it can be aimed by the operator in any desired direction for best results in quenching a fire. Particularly is this true if the device is constructed of the general proportions indicated in Figure 1. The relatively great length of the device enables the operator to remain relatively remote from a fire and nevertheless accurately to direct the issuing stream of quenching liquid at the desired portion of the fire. When the device has been entirely discharged, the cap 14 can be unscrewed and, with the plug cock 22 in off position, can be returned to the location shown in Figure 2 after the exhausted and crumpled inner casing 9 has been removed and has been replaced by a new casing full of quenching liquid. After reinstallation of the cap 14 the air pressure within the housing 6 can be restored from any suitable source of air under pressure, by furnishing air to the interior of the casing 6 through the valve 7.

Under certain conditions I prefer to make my fire extinguisher more of the proportions shown in Figure 4, and likewise modify the arrangement by omitting any diaphragm to seal the inner casing. In this instance, the inner casing 109 is provided with an out-turned flange 112 which is directly clamped between the terminus of the outer housing 106 and the cap 114. Control of the flow is solely by means of a plug cock 122 which is normally in closed position, so that when the interior of the outer housing 106 is filled with air under pressure through the valve 107, the device is ready to operate upon rotation of the plug cock 122 to release the fire quenching contents of the inner casing 109. This form of the invention is somewhat simpler and cheaper to manufacture and is adequate for many uses. Its shape, however, does not make it so easily installed in a motor vehicle, for instance, as does the shape of the form shown in Figure 1 which can readily be located near a vehicle seat, transversely of the vehicle top, or in other convenient locations. The extinguisher can likewise be finished to correspond with the interior finish of the car, and, while readily available and instantly accessible, it is not unduly conspicuous or bulky.

I claim:

1. A fire extinguisher comprising a rigid outer housing, a nozzle on said housing, means for admitting air under pressure to said housing, a deformable inner casing adapted to contain a fire quenching fluid and disposed within said housing, a diaphragm interposed between said casing and said nozzle, and mechanism for rupturing said diaphragm and controlling flow of said fluid through said nozzle including a valve.

2. A fire extinguisher comprising a cylindrical, non-deformable housing, a nozzle on said housing, a valve for controlling flow through said nozzle, a valved air inlet on said housing, a deformable casing adapted to contain liquid and disposed within said housing, said casing normally precluding communication between the interior of said casing and said nozzle, and means operated by said valve for puncturing said casing to establish communication between the interior of said casing and said nozzle.

GEORGE L. TRUEBLOOD.