

Oct. 23, 1956

F. T. ROBERTS
FIRE EXTINGUISHER

2,767,796

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2 Sheets-Sheet 1

Fig. 1

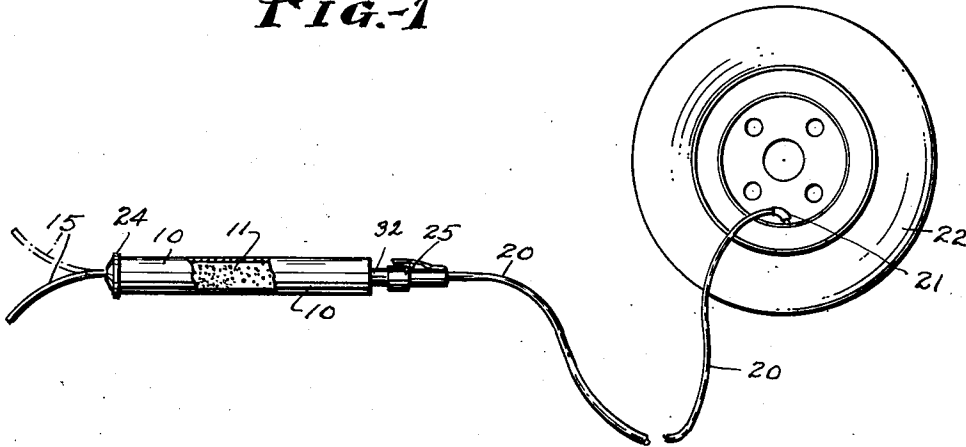
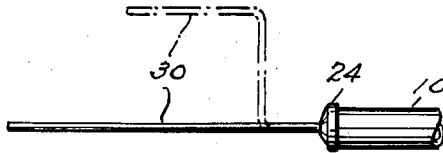


Fig. 2

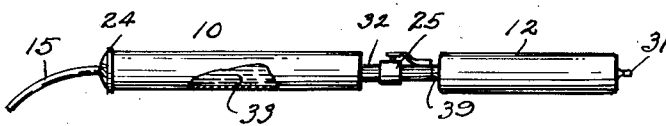


Fig. 3

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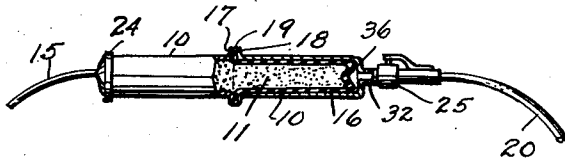


FIG.-4

FIG.-5

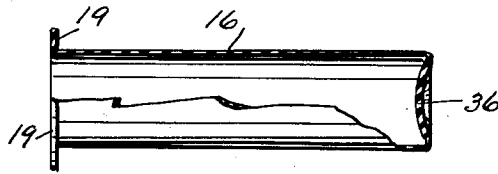
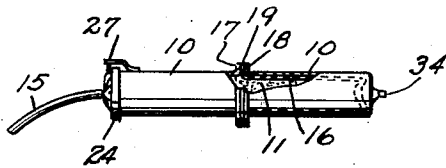


FIG.-6

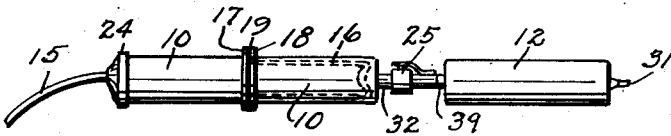


FIG.-7

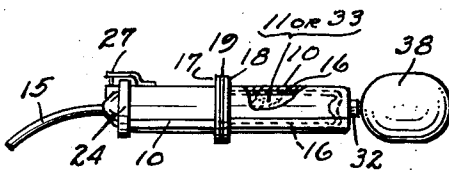


FIG.-8

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FIRE EXTINGUISHER

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4 Claims. (Cl. 169—31)

This invention relates to fire extinguishers of the portable type and particularly to a fire extinguisher which is especially adapted for use in extinguishing a fire in an automobile.

There is a great demand for a fire extinguisher which may be quickly placed in operation for extinguishing a fire in a motor vehicle. Heretofore, an effort has been made to supply such demand by the use of chemical fire extinguishers, but these have been objectionable in that the fire extinguishing material would deteriorate, or the valve mechanisms thereof would stick, and in that the extinguishing fluid could not readily be directed against the source of a fire beneath the hood and in other places to which access might be difficult. Some extinguishers have also been objectionable in that the extinguishing fluid or material was either under pressure at all times or required a chemical action to produce the extinguishing pressure. Other extinguishers have been objectionable in that they included a manually operated pump to eject their contents. Many such extinguishers required complicated valves and/or pumping mechanisms to enable ejection of the fire extinguishing contents. Such valves and pumping mechanism were subject to corrosion and often were inoperative following prolonged periods of idleness.

An object of the present invention is to provide a portable fire extinguisher which is not subject to chemical deterioration or loss of pressure, and which can be quickly applied and readily directed against the source of fire in a motor vehicle without endangering the life of the user.

Briefly the present invention includes a tubular container for fire extinguishing powder, water, or chemical extinguishing material, the container having a size convenient for holding in the hand and being provided with an opening at each end. A discharge nozzle is attached to one end of the container, and a flexible hose is attached to the other end and provided with a connection by means of which it may be quickly connected to the air valve of a spare tire or the air valve of any of the other tires, whereby a source of fluid under pressure may be applied to the powder or other extinguishing material in the container, so as to discharge it readily from the container. A control valve mounted on the conduit adjacent the container enables the user to control the supply of air to the container as desired.

Further the present invention contemplates the provision of a hand fire extinguisher of the fluid pressure ejection type wherein the pressure generating fluid never mixes with or comes into direct contact with the fire extinguishing material and wherein the fluids used to eject the extinguishing material cannot escape from the extinguisher and detract from the efficiency of the extinguisher.

Referring now to the drawings,

Fig. 1 is a view of a fire extinguisher embodying the present invention and showing it attached to the air connection of a pneumatic tire;

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Fig. 2 is a fragmentary view of the container showing a modified form of nozzle construction;

Fig. 3 is a modified form of extinguisher which is adapted for use in the home, on boats, or the like;

Fig. 4 is a view, partly in section, illustrating one manner of preventing either mixing or direct contact of the extinguishing material with the pressure material;

Fig. 5 is an enlarged view, partially in section, of the separating element removed from the extinguisher;

Fig. 6 is a view similar to Fig. 4 but illustrating a valved extinguisher;

Fig. 7 illustrates a modified form similar to that of Fig. 4 but having a separate detachable pressure chamber; and

Fig. 8 illustrates the extinguisher similar to that of Fig. 6 having a relatively small inflating cartridge attached thereto.

The fire extinguisher embodying the present invention includes a container 10 which is adapted to receive and store a supply of fire extinguishing powder 11 as shown in Fig. 1 or a liquid extinguishing material as shown in Fig. 3. The container has a size convenient for holding in the hand and has a length which is adequate for storing a satisfactory quantity of extinguishing material. For this purpose a container having a diameter of three inches and a length of about eighteen inches would be sufficient for use with a passenger motor vehicle.

The container has an opening at one end which is closed by a removable cap 24 carrying a discharge nozzle 15 which is in communication with the interior of the container. The other end of the container has an opening in communication with a conduit 32 to which a supply conduit 20 is secured. The supply conduit is a hose of any suitable length, such as twenty feet, sufficient at least to reach from the spare tire in the trunk compartment of a vehicle to any part adjacent the front end of the vehicle. The hose is provided with a connection 21 for quick attachment to the air valve of a tire, as indicated at 22, and is provided with a thumb-controlled valve 25 adjacent the point of connection between the hose and the container conduit 32.

When the fire extinguisher embodying the present invention is not in use, it may be stored in the trunk compartment of the vehicle, with the connection 21 in position for quick connection to the air valve of the spare tire, by means of which a source of air under pressure is provided for discharging the contents of the container against the fire. The amount and extent of the pressure is controlled by the hand valve 25 during operation of the device. The device of this invention is not limited to use with the spare tire, but the connection 21 may be quickly applied to any of the other tires on the vehicle for obtaining a source of air supply to operate the extinguisher.

In Fig. 2 there is shown a modification of the invention wherein the container 10 is provided with a discharge nozzle 30 which is in the form of a flexible tube that will retain any shape to which it is bent by the user. This will enable the user to direct the fire extinguishing material against a flame which is located in a spot difficult of access, and also enables a user to direct the material around a corner without exposing himself to the action of the flame.

Fig. 3 illustrates a modified form of the invention enabling the extinguisher to be used and stored in the home, in boats, or other places where there is danger of fire. In this modification another cylinder 12 is connected to the air valve 25. This eliminates the need for the flexible hose 20. This cylinder 12 is about half the length of cylinder 10 but of the same diameter and at one end it has the ordinary filling air valve 31, and at the other end a threaded connection 39 to be joined to the valve 25. This air cylinder may be filled at a "filling

station" with full tank pressure, probably one hundred pounds, the same as may be done with the extinguisher shown in Fig. 6, through the valve 34, as very little volume is required at this high pressure.

In fire extinguishers made in the past, it has generally been necessary to hold the cylinder in a predetermined position to cause the fire extinguishing material to remain between the pressure material and the outlet or nozzle of the extinguisher, so that the extinguishing material and not the pressure material would be ejected from the nozzle. The present invention provides an extinguisher in which the user has neither to hold the nozzle of the extinguisher to direct the spray, nor to retain the extinguisher itself in a predetermined position to insure ejection of the extinguishing material.

In the form of the invention illustrated in Figs. 4 to 8 inclusive the fire extinguishing material, which may be either a fluid or a powder, is disposed between the outlet cap 24 and a bag 16 of flexible fluid impervious material. This bag 16 is interposed between the extinguishing material 11 or 33 and the pressure material so that the latter never mixes with or comes into direct contact with the extinguishing material.

The container 10 illustrated in Fig. 4 is made in two parts having flanges 17 and 18 respectively. The bag is made of thin rubber, "neoprene" or any flexible plastic compound that will withstand ageing and deterioration when in contact with the chemicals of the extinguishing material and at the same time provide a bag which will be collapsible under pressure and capable of transmitting the applied pressure to the extinguishing materials so as to discharge them from the container. One end of the bag 16 is open and is provided with an external annular flange 19 which is clamped between the flanges 17 and 18 of the two sections of the container 10. The other end of the bag 16 is preferably somewhat thicker than the side wall of the bag and is slightly inverted as is shown at 21 in Fig. 5 so that it will exert a more even pressure on the extinguishing material.

The container sections may be bolted together or they may be secured together permanently in any well known manner. The flange 19 of the bag 16 serves as a means for securing the bag in position within the container 10, and as a gasket to insure a tight joint between the container sections. The container 10 is charged with extinguisher material by removal of the outlet cap 24 and filling it until the bag 16 assumes substantially the position shown in Fig. 4. The closure cap 24 is then replaced and the extinguisher is ready for use.

The construction illustrated in Fig. 6 is similar to that of Fig. 4. However the hose 20 and valve 25 have been replaced by an air inflation valve 34. This valve may be identical with the tire air valve 22 heretofore mentioned. Like the construction of Fig. 4, that of Fig. 6 has the advantage that the fluid pressure, for instance air pressure, introduced through the valve 34, or the hose 20, as the case may be, never mixes with, nor touches the extinguishing material, and further fluids so introduced cannot be ejected through the nozzle regardless of the position of the unit. The closure cap 24 of the container 10 of Fig. 6 is provided with a manually operable control valve 27.

The construction illustrated in Fig. 7 is similar to that of Fig. 4, however in place of the hose 20 a second cylinder 12 is connected with the air valve 25 to provide an air pressure reservoir such as heretofore described in connection with Fig. 3.

The extinguisher shown in Fig. 8 is provided with a closure cap 24 having a manually operable discharge valve 27 which controls the flow of material from the extinguisher. In this instance small inflating cartridges are well known at the present time. Generally the valve 25 is not used with such cartridges.

A fire extinguisher embodying the present invention may be economically made, and may be operated expeditiously and efficiently without fear of injury to the user. Additionally the extinguisher is of a size which is convenient to operate, and to store for immediate use. Further the invention provides a fire extinguisher which is provided with a collapsible inner liner separating the extinguishing material from the air or other pneumatic pressure used to expel it, thereby making it impossible for such air pressure to get through the outlet conduit or nozzle and fan the flames.

I claim:

1. In a fire extinguisher, an elongated tubular rigid container, a collapsible impervious partition dividing the container into two chambers, one chamber comprising a storage chamber adapted to receive and store a fire extinguishing material and having an outlet conduit leading from the end thereof remote from said partition, and the other chamber comprising a pressure chamber and having an inlet conduit leading from the adjacent container end and adapted to be connected with a source of fluid supply, said partition comprising a thin-walled pliable elastic bag having one end open, the open end of the bag being secured to the container substantially midway between the container ends, and wherein said bag normally extends from the mid-portion of the container substantially to the container inlet to permit the other end of the container and the bag to be filled with extinguisher material, and wherein said bag is sufficiently flexible to permit movement of its closed end from a point adjacent the inlet conduit to a point adjacent the outlet conduit under the impulse of fluid pressure applied through said inlet and thereby forcibly eject all of the material from the container and bag.

2. A fire extinguisher according to claim 1 wherein the bag has a comparatively thin side wall thickness and the closing end wall is of greater thickness than the side wall.

3. A fire extinguisher according to claim 2 wherein the end wall of the bag is dished inwardly toward the open end thereof.

4. A fire extinguisher according to claim 1 wherein the container comprises two tubular substantially axially aligned sections each of which is open at one end and is provided with an outwardly extending peripheral flange, and wherein the open end of the bag has an outwardly extending peripheral flange adapted to be clamped between the flanges of said container sections to divide the container into two chambers and to provide a fluid impervious sealing gasket between the said container sections.

References Cited in the file of this patent

UNITED STATES PATENTS

1,945,457	Warr et al.	Jan. 30, 1934
2,001,207	McManamna et al.	May 14, 1935
2,021,493	Trueblood	Nov. 9, 1935
2,328,345	Keefe	Aug. 31, 1943
2,501,047	Gustafsson et al.	Mar. 21, 1950