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SAFETY DEVICE FOR A FIRE EXTINGUISHER

Filed June 16, 1959

4 Sheets-Sheet 1

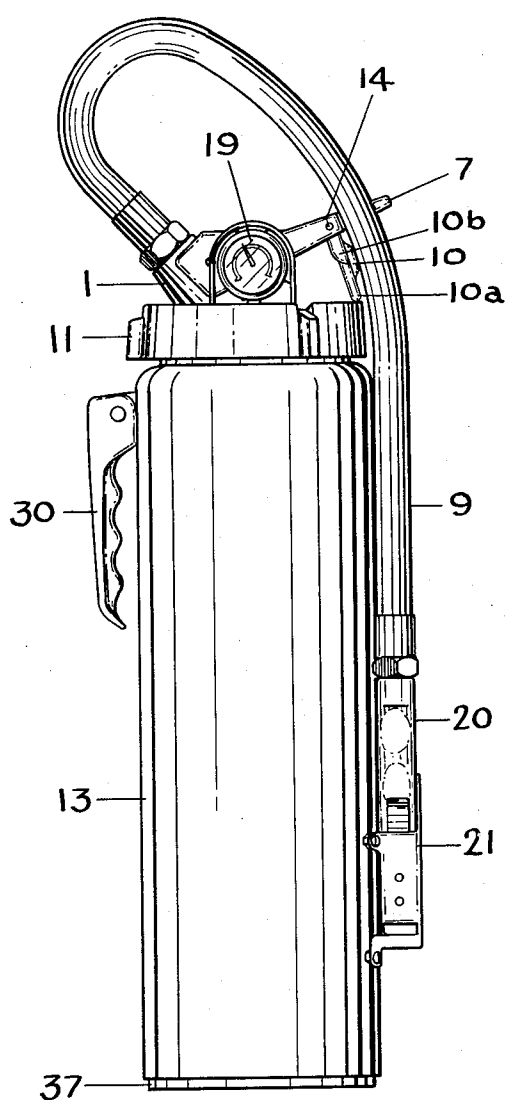


FIG. 1

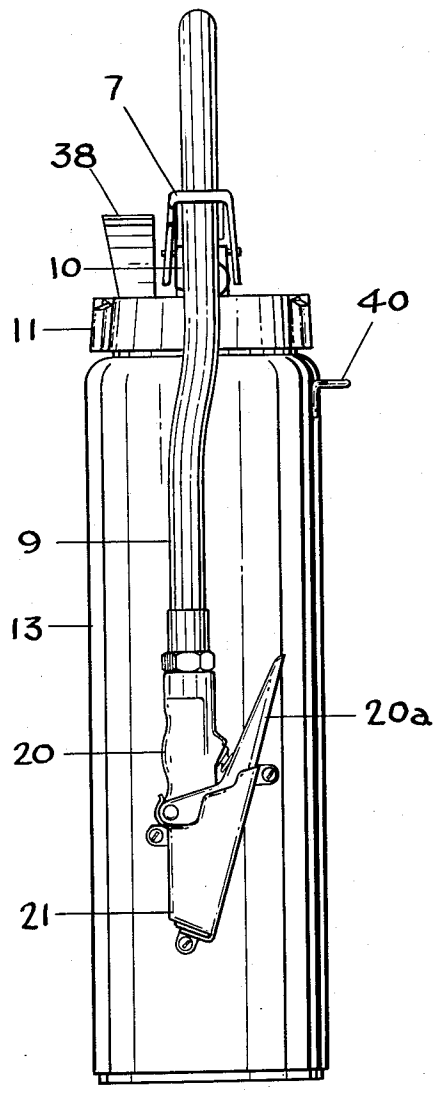


FIG. 2

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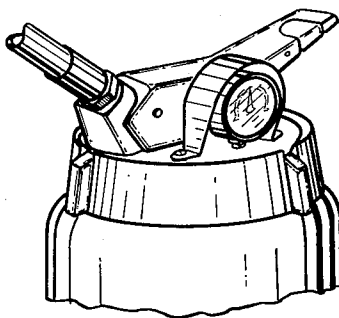


FIG. 6

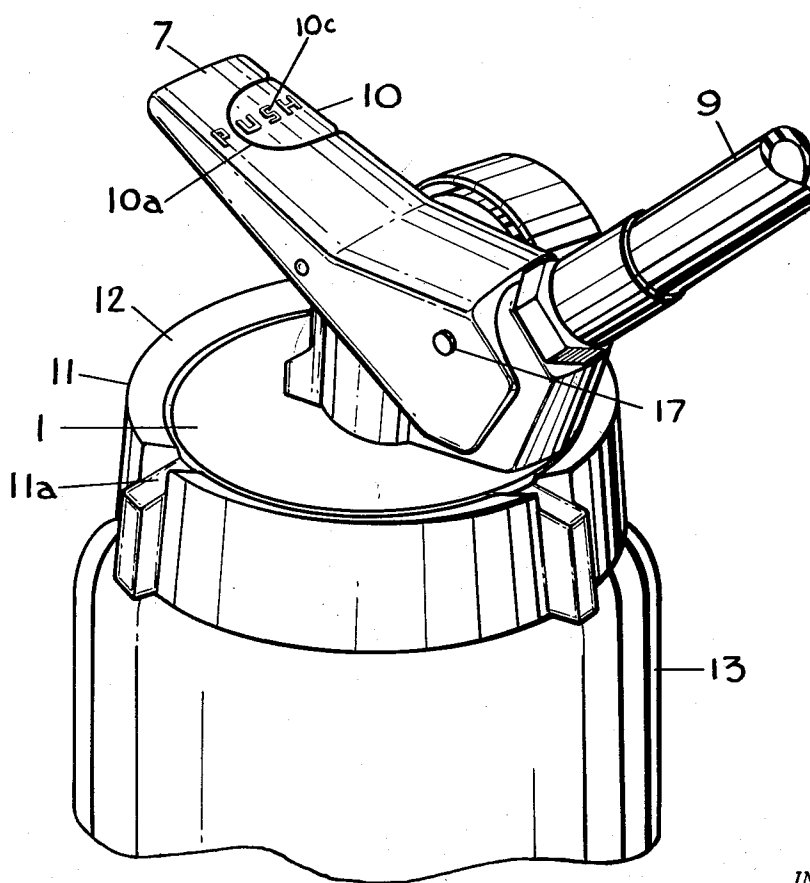


FIG. 5

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SAFETY DEVICE FOR A FIRE EXTINGUISHER

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10 Claims. (Cl. 169—31)

This invention relates to improvements in fire-extinguishing equipment. More specifically the invention relates to fire-extinguishing equipment of the type wherein a dry, powdered, free-flowing, non-caking fire-extinguishing composition is expelled and borne to the flame to be extinguished by a gas under pressure.

Still more specifically this invention is an improvement of the hand-portable fire-extinguishing apparatus in which there is provided a container in which dry chemical is stored under gas pressure. There is also provided a lever operated valve and a pickup tube which allow the compressed gas to expel the dry chemical under gas pressure through the valve.

Various means have been suggested in prior constructions for releasably sealing the equipment against tampering. For example, a ring pin may be inserted through the hand lever and its link to prevent downward movement of the valve for releasing the dry chemical. Removal of the ring pin is required before the equipment may be used. The ring pin is suitably fastened to the equipment by a chain so that the ring pin will not be lost and will be available for reuse.

Such sealing means have a number of distinct disadvantages. Before the equipment can be used, it is first necessary to withdraw the ring pin. Sometimes in the panic and confusion caused by a fire, an inexperienced person attempting to use such equipment is not fully acquainted with the instructions to first pull the ring pin so that vital time may be lost in putting out a fire. Also the metal ring pin occasionally may become bent from a blow on the release valve mechanism and therefore cannot be removed when needed. The metal ring pin is also liable to corrosion and freezing in position making removal difficult. The ring pin may also occasionally be lost, fall out of position or may not be replaced when the extinguisher is recharged and so there is no protection from inadvertent discharge of the extinguisher.

The present invention overcomes these disadvantages by providing a fire-extinguishing equipment in which the need for a sealing ring pin is eliminated.

In the present invention the discharge hose is used to position the member which prevents movement of the valve-actuating lever. To operate the valve it is only necessary to remove the nozzle from the nozzle holder, remove the hose from its restraining recess and actuate the valve-operating mechanism.

Our invention also serves to control the loop in the hose by binding the hose in a more or less fixed position. This expedient provides a neater installation and insures that the hose will not flop around and impede the operator's movements in carrying the extinguisher to the scene of the fire.

Further details and advantages of the present invention will be apparent from the following specification and accompanying drawings, wherein

FIGURE 1 is a front elevational view of the fire-extinguishing apparatus,

FIGURE 2 is a right hand side elevational view of the extinguisher,

FIGURE 3 is an enlarged view of the head of the extinguisher, partly in section, showing details of the head assembly, and the hose in its stored position,

FIGURE 4 is a perspective view of the upper portion

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of the extinguisher showing the hose in its stored position when not in use,

FIGURE 5 is a perspective view of the upper portion of the extinguisher showing the hose removed from its stored position ready for use, and

FIGURE 6 is a perspective view of the upper portion of the extinguisher showing the face of the pressure gauge.

Referring to the drawings, FIGURE 1 shows a general view of the fire-extinguishing apparatus which comprises a receptacle or vessel 13 in which the fire-extinguishing agent is stored under pressure. The neck of the vessel is closed by a head, indicated generally by numeral 1, which is held in place by a removable union ring 11 internally threaded for engaging the threaded neck portion 13a of vessel 13. Pressure within the extinguisher is shown on the gauge 19.

The head, as shown in FIGURE 3, has a bore 2 and a discharge passage 4, the bore being constructed near its lower end to form a valve seat 3 and adapted to accept an axially movable plunger 6. On the lower end of the plunger is mounted a valve body 5 which seals in the valve seat of the bore to maintain the pressure within the extinguisher shell. The upper end 6a of the plunger 6 is engaged by plate 7a retained on actuating lever 7 pivotally mounted on the pivot 17. The actuating lever 7 is urged by the helical spring 16 to maintain the valve in a normally seated position. A stop means is provided which consists of a substantially semi-circular shaped member 10 adapted to carry instruction indicia 10c thereon, as shown in FIGURE 5. The body member 10 is carried by member 10b which terminates at its forward ends in a stop portion 10a. The member 10b is pivoted at its rear portion on pin 14 retained on lever 7 as shown in FIGURE 3. Torsion spring 15 urges member 10b and the stop means into a position in which body member 10 normally fits in the mating complementary substantially semi-circular recess 8 provided in actuating lever 7. The exposed surface of body member 10 and adjacent complementary surface of actuating lever 7 provide a combined visible area for carrying indicia instructions 10c such as the word Push. The stop assembly is designed so that when depressed, as shown in FIGURE 3, its free end 10a is in approximate abutment with the rim 12 of the union ring 11. The stop is maintained in this depressed position by insertion of the hose 9 in the recess 8 in the actuating lever, and when so positioned, prevents opening the valve 5 by the actuating lever. Thus, we do not depend on the rigidity of the hose to prevent movement of the actuating lever. The hose merely keeps the stop in the depressed position, thus preventing movement of the actuating lever 7. To place this extinguisher in operation it is merely necessary to remove the hose from its retaining recess which automatically enables the stop to retract into the actuating lever which may then be depressed to release the contents of the extinguisher.

The rim 12 of the union ring 11 is inwardly inclined at an angle, the outer edge being above the inner edge, so that should a force be applied to the actuating lever 7 sufficient to materially deform the hose, the stop 10a is forced toward the head 1. Thus, as the pressure is applied to the actuating lever 7 the stop 10a is urged toward the head assembly and thus into more firm engagement with the union ring rim 12. This action eliminates the possibility that the stop 10a might slip off the rim and thus void its effectiveness when a force was applied to unintentionally depress the actuating lever.

As indicated in FIGURES 4 and 5, the operating instructions on the actuating lever 7 are arranged with a major portion of the word Push on the stop 10. When the hose is in position and the stop is depressed thereby, the instructions do not appear, as shown in FIGURE 4.

When the hose is removed, as shown in FIGURE 5, the word of instruction Push automatically completes itself and the next step to be performed is clearly indicated.

To discharge the extinguisher, nozzle is removed from its holster 21, the hose 9 is removed from engagement with the actuating lever 7, the actuating lever is depressed and the stream of extinguishing agent is directed toward the fire by manipulation of the nozzle lever 20a. After the fire-extinguishing agent has been fully discharged from the receptacle 13, the union ring 11 is rotated by inserting a suitable tool in notches 11a to permit removal of the entire head assembly. The receptacle 13 is then refilled with fire-extinguishing agent and the head is replaced. The receptacle is then pressurized with a suitable gas supplied through the discharge passage 4.

The present construction may, of course, be applied to various types of fire-extinguishing equipment besides the dry chemical type. The use of the flexible hose for inactivating a pivoted lever may also be applied to other types of fire-extinguisher constructions in addition to the specific construction herein described. It is therefore to be understood that changes and modifications may be made in the construction described which are intended to be included in the appended claims.

We claim:

1. A fire-extinguishing apparatus comprising a container for storing an extinguishing agent under pressure, means for releasing the extinguishing agent from said container, a flexible hose connected to said container for conveying a stream of extinguishing agent expelled from said container, an actuating lever for actuating said releasing means, means for retaining said hose in removable engagement with the said lever, and stop means to restrain movement of the actuating lever, said stop means being maintained in restraining position by engagement of said hose with said stop means.

2. A fire-extinguishing apparatus as defined in claim 1, wherein means is provided for abutment with the stop means in restraining position, whereby applied force on the actuating lever will force the stop means into a more secure restraining position.

3. A fire-extinguishing apparatus as defined in claim 1, wherein spring means is provided for retracting the stop means into alignment with the actuating lever when the hose is removed from engagement with said actuating lever.

4. A fire-extinguishing apparatus as defined in claim 1, wherein a recess is provided in the actuating lever, operating indicia instructions a portion of which are located on the actuating lever and the remaining portion of which are located on the stop means, the said two portions being brought into mating relation by the retraction of the stop means into said recess in the actuating lever to complete the operating indicia instructions.

5. A fire-extinguishing apparatus comprising a container for storing an extinguishing agent under pressure, means for releasing the extinguishing agent from the container, a flexible hose connected to said container for conveying a stream of extinguishing agent expelled from said container, a lever for actuating said releasing means, said lever being provided with cut-out portion at its free end for embracing a hose portion in removable engagement therewith, stop means connected to said lever to limit the movement of said lever for preventing release of extinguishing agent in said container, said stop means being inactivated upon release of the hose from engagement with said lever whereby said lever may be moved for its farthest travel to actuate said releasing means.

6. A fire-extinguishing apparatus comprising a container for storing an extinguishing agent under pressure, means for releasing the extinguishing agent from the container, a flexible hose connected to said container for conveying a stream of extinguishing agent expelled

from said container, a lever for actuating said releasing means, said lever being provided with a substantially semi-circular cut-out portion at its free end for embracing a hose portion in removable engagement therewith, stop means hinged to said lever to limit the movement of said lever for preventing release of extinguishing agent in said container, said stop means being inactivated upon release of the hose from engagement with said lever whereby said lever may be moved for its farthest travel to actuate said releasing means.

7. A fire-extinguishing apparatus comprising a container for storing an extinguishing agent under pressure, means for releasing the extinguishing agent from the container, a flexible hose connected to said container for conveying a stream of extinguishing agent expelled from said container, a lever for actuating said releasing means, said lever being provided with cut-out portion at its free end for embracing a hose portion in removable engagement therewith, stop means connected to said lever to limit the movement of said lever for preventing release of extinguishing agent in said container, said stop means being inactivated upon release of the hose from engagement with said lever whereby said lever may be moved for its farthest travel to actuate said releasing means, said stop means being provided with a body portion having a contour complementary to the contour of the cut-out portion of said lever, whereby a combined surface is provided when the stop means is in inactivated position to bear legible indicia thereon.

8. A fire-extinguishing apparatus comprising a container for storing fire-extinguishing agent under pressure, said container having an open end, a removable head retained on said end for closing same, a union ring for removably securing said head to said container, said union ring having a peripherally extending marginal flange, means for releasing the extinguishing agent from said container, a flexible hose connected to said container for conveying a stream of extinguishing agent expelled from said container, a lever for actuating said releasing means, said lever being provided with a cut-out portion for embracing a portion of said hose in removable engagement therewith, stop means hinged to said actuating lever, said stop means being adapted to be engaged by said hose portion to position the free end thereof into abutment with said marginal flange, whereby said actuating lever is inactivated, said stop means being released from abutment with said marginal flange upon release of said hose portion from said lever, whereby said lever may be moved for its farthest travel to activate said releasing means.

9. A fire-extinguishing apparatus comprising a container for storing a pressurized fire-extinguishing agent, said container having an open end, a removable head assembly retained on said end for sealing same, said head assembly having means for releasing the extinguishing agent from the container, a flexible hose connected to said head assembly for conveying a stream of extinguishing agent expelled from said container, and a lever pivotally connected to said head assembly for actuating said releasing means, said lever being provided with a semi-circular cut-out portion near the end remote from said extinguishing agent container and said head assembly for removably retaining said hose, whereby the hose is restrained from excessive movement while so retained.

10. A fire-extinguishing apparatus comprising a container for storing pressurized fire-extinguishing agent, said container having an open end, a removable head assembly including an abutment surface retained on said open end for sealing the same, said head assembly having means for releasing the extinguishing agent from the container, a flexible hose connected to said head assembly for conveying a stream of extinguishing agent expelled from said container, a lever pivotally connected to said head assembly for actuating said releasing means, said lever be-

ing provided with a cut-out portion near its free end for removably retaining said hose whereby the hose is restrained from excessive movement while so retained, stop means pivotally mounted on said lever, spring means intermediate said lever and said stop means for biasing said stop means toward said lever, said hose when in said cut-out portion maintaining said stop means in engagement with said abutment surface.

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