FIRE EXTINGUISHER CONSTRUCTION

Clyde Forrester, Glenview, and Robert L. Paus, Chicago, Ill., assignors to Ansul Chemical Company, Marquette, Wis., a corporation of Wisconsin

Filed May 22, 1959, Ser. No. 515,191
4 Claims. (Cl. 169—33)

This invention relates to improvements in fire-extinguishing equipment. More specifically, the invention relates to a portable extinguishing apparatus 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 high pressure.

An object of this invention is to provide the operating parts of the extinguisher with protection from dirt, rain, etc.

Another object of this invention is to protect the operating elements of the extinguisher from mechanical shock and accidental damage.

It is another object of this invention to provide a more economical method of constructing the fire extinguisher head.

It is another object of this invention to provide a fire extinguisher head which may be disassembled and assembled with a minimum use of tools.

These and other objects are attained by providing a unitary structure which effectively functions as a dust cover, gauge guard, ring pin support, pivot retainer and use indicator.

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

FIGURE 1 is a front elevation view of the fire extinguisher.

FIGURE 2 is a side elevation view thereof.

FIGURE 3 is an exploded perspective view of the elements constituting the head assembly.

FIGURE 4 is an enlarged perspective view of the head assembly with the hose removed showing the actuating lever in locked condition.

FIGURE 5 is a similar view showing the actuating lever in unlocked condition, and

FIGURE 6 is a fragmental sectional view of the head showing the valve control means.

Referring to FIGURES 1 and 2, the fire-extinguishing apparatus comprises a steel cylindrical or receptacle 1 in which is stored a fire-extinguishing agent. The container is adapted to be closed by a head assembly, designated in general by numeral 3, secured in place with a union ring 16 shown in FIGURE 5. The ring 16 is provided with spaced lugs 16a for facilitating engagement of the ring by a suitable tool.

The head assembly comprises a closure head 30 and neck portion 31 which is inserted in the open end of the container 1. The upper neck portion 34 of the container is threaded and is adapted to interlock with an internally threaded union ring 16 which serves to secure the head assembly to the container, as shown in FIGURE 5. The head carries the gauge 14 and is also provided with a boss 32 which is adapted to removably retain the actuating lever 4. A riser tube 36, welded to the extinguisher shell at its lower end 36a, is provided to convey the dry chemical to the head assembly and is maintained in pressure tight engagement with neck portion 31. The head assembly has a valve 37 which is operated by the plunger 40 and actuating lever 4. The head 40a of plunger 40 is engaged in slot 17 of lever 4 for actuating the valve 37.

Spring 18 urges lever 4 in its normally upward position. The valve 37 controls the flow of fire-extinguishing agent from riser tube 36 through port 11. A flexible hose 3 is suitably connected to the port 11 of the head assembly. The hose is provided at its free end with a nozzle 7 having a valve 26 which is actuated by the lever 25. When not in use, the nozzle 7 is removable retained by the nozzle holder 8 fixed to the shell 1. The pressure within the extinguisher shell is displayed on the pressure gauge 14 which is in communication with the interior of the shell by suitable passageways. The shroud 6 affords protection to the pressure gauge and the other parts of the extinguisher head. Inadvertent movement of the actuating lever 4 is prevented by the ring pin 5 which is flexibly attached to the shroud 6 by the chain 21. When intact and unbroken, the visual indicator 9 shows the ring pin has not been tampered with. The carrying handle 15 is suitably attached to the extinguisher shell. The extinguisher can be mounted on the wall by the hanger 20.

As shown in FIGURE 3, the shroud 6 is retained on the boss 32 by a single screw 10 which passes through a hole 6a provided in the shroud and is secured in the tapped hole 23 of the boss 32. Lock washer 35 prevents accidental loosening of the screw 10. A removable pin 12 is also carried by the boss 32. When the shroud is secured by screw 10, it positions the pin 12 about which the actuating lever 4 pivots. When so positioned, the shroud also affords excellent mechanical protection for the gauge 14 whose face may be viewed through the aperture 15 provided in the shroud 6. A hole 13 is drilled in the shroud to receive arm 8a of the ring pin 5 which passes under the actuating lever 4 and so restrains it that it cannot be moved unintentionally, the short arm 8b of the ring pin being inserted in the drilled hole 4a in lever 4 to prevent twisting of the ring pin. The angle of that portion of the shroud 6c which is adjacent to the actuating lever 4 is shaped so that its lines form a continuation of the angle of the actuating lever when the latter is in its inoperative position as shown in FIGURE 4.

This type of construction serves to highlight or emphasize any displacement of the actuating lever such as when the extinguisher is discharged, as is illustrated in FIGURES 4 and 5. This is an additional indication that the extinguisher has been used.

The visual indicator 9, which is illustrated in FIGURES 3, 4 and 5 consists of a strip of frangible material, such as cellulose acetate butyrate, is fitted with non-separable snap fasteners 9a and 9b. After the ring pin 5 has been inserted in the properly assembled extinguisher, as shown in FIGURE 4, the indicator 9 is threaded through the ring pin and the slot 40 in the actuating lever, and the fasteners 9a and 9b are snapped together. When the ring pin is withdrawn or tampered with, this is revealed by fracture of the frangible strip, which usually takes place at the notches 9c.

To operate the extinguisher, shown in FIGURES 1 and 2, the nozzle 7 is withdrawn from its holder 8, the ring pin 5 is withdrawn which breaks the visual indicator 9, the actuating lever 4 is depressed and the extinguishing agent is directed toward the flame with the nozzle 7.

Following discharge of the extinguishing agent, it is desirable to disassemble and clean the extinguisher to insure it will be gas-tight after being filled. The type of construction provided by our invention enables this operation to be carried out with a minimum use of tools. The screw 10 may be withdrawn using a screwdriver or a dime as a tool. Once this has been done, the shroud 6 may be lifted off the extinguisher head, and the pin 12 may be withdrawn with the fingers. A restriction in the top of the valve operating plunger 40 fits in a keyhole-shaped opening 17 in the actuating lever 4 and after the pin 12 has been removed, the actuating lever 4 is easily disengaged from the plunger 40 which may then be withdrawn.
with the valve for cleaning. To reassemble the extinguisher head the steps are merely performed in reverse. The construction illustrated by FIGURE 3 permits a number of manufacturing economies. For example, by providing the single shroud 6, it is no longer necessary to produce an assembly of a multiplicity of small parts, each of which performs its own separate function. The reduction in the number of parts accomplishes a considerable saving in assembly time and a reduction of inventory problems.

By supplying a cover for the operating parts, only the cover need have a fine surface finish for the extinguisher to present a satisfactory appearance and a considerable saving results by paying less attention to surface finish of the hidden components. By having the pin 12 consist of a short length of rod positioned and restrained against axial movement by the shroud 6, the least expensive possible type of assembly is provided. For example, the substitute might consist of a screw having turned shoulders to position it, a slotted head, and a tapped element to retain it in position, obviously a much more elaborate and expensive manner of securing the operating lever.

The present construction may, of course, be applied to various types of fire-extinguishing equipment besides the dry chemical type and 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 shell for storing a fire-extinguishing agent, a head assembly removably retained on and closing said shell, said head being provided with an outlet passage communicating with said shell, a pressure gauge carried on said head and communicating with the interior of said shell for indicating the pressure therein, valve means in said outlet passage for controlling the flow of fire-extinguishing agent from said shell, a boss on said head having an aperture therein, a pin mounted in said aperture and being removable therefrom, an actuating lever removably mounted on said pin for controlling said valve means, a single piece shroud enclosing said pressure gauge and said head assembly, an aperture in said shroud and in alignment with said pressure gauge to permit observation of said pressure gauge, said shroud including interior surfaces therein for retaining said pin in said boss and means for removably retaining said shroud on said head.

2. A fire-extinguishing apparatus comprising a shell for storing a fire-extinguishing agent under pressure, a head assembly closing said shell, said head assembly being provided with a discharge means comprising a valve actuated by a pivoted lever, a shroud enclosing said head assembly, a removable ring pin having two extending arms, an opening in said shroud for receiving the other of said arms to thereby inactivate said pivoted lever, a slot in said pivoted lever, a fragile strip looped about said ring pin and through said slot, said fragile strip being adapted to be broken to permit removal of said ring pin whereby said actuating lever may be actuated to release fire-extinguishing agent from said shell.

3. A fire-extinguishing apparatus comprising: a shell for storing a fire-extinguishing agent, a head assembly removably mounted on and closing said shell, said head being provided with an outlet port communicating with said shell, valve means in said outlet passage for controlling the flow of fire-extinguishing agent from said shell, a boss on said head, a pin removably mounted on said boss, an actuating lever removably mounted on said pin for controlling said valve means, a single piece shroud enclosing said head assembly, said shroud including interior surfaces therein for positioning said pin on said boss, means for removably retaining said shroud on said head, said shroud including an extension having a contour which is complementary to the contour of the free end of said actuating lever and extending at the same angle that the actuating lever assumes in its normally inoperative position.

4. A fire-extinguisher unit comprising: a shell for containing fire extinguishing agent under pressure, a head assembly engaging said shell, said head assembly including a closure head, discharge means including a valve, a lever pivotally mounted on said closure head for actuating said valve means, a shroud removably attached to said closure head for protecting the same, said shroud having an extension with a contour complementary to the contour of the free end of the actuating lever and extending at the same angle that the lever assumes in its normally inoperative position, a removable ring pin having two extending arms, an opening in said pivoted lever for receiving one of said arms, an opening in said shroud for receiving the other of said arms to thereby inactivate said pivoted lever, a slot in said pivoted lever, a fragile strip looped about said ring pin and through said slot, said fragile strip being adapted to be broken to permit removal of said ring pin whereby said actuating lever may be actuated to release fire-extinguishing agent from said shell.

References Cited in the file of this patent

UNITED STATES PATENTS

2,531,123 Guise Nov. 21, 1950
2,580,419 Griggs Jan. 1, 1952
2,681,707 Mapes June 22, 1954
2,719,590 Guise Oct. 4, 1955
2,753,945 Beebee et al. July 10, 1956
2,822,054 Howard Feb. 4, 1958
2,878,965 Hirt et al. Mar. 24, 1959
2,926,731 Bowman et al. Mar. 1, 1960