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FIRE EXTINGUISHER

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FIG. 1.

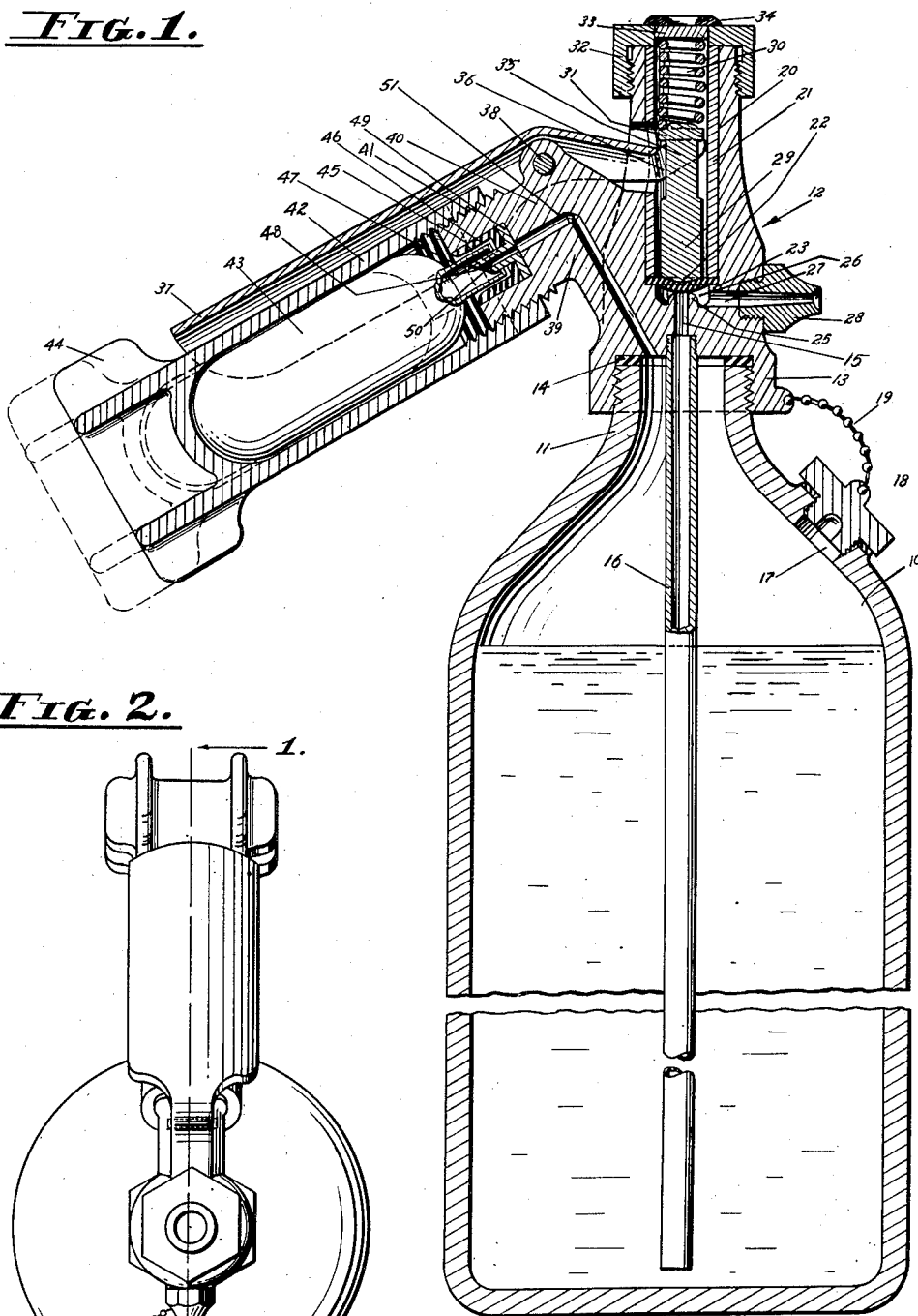
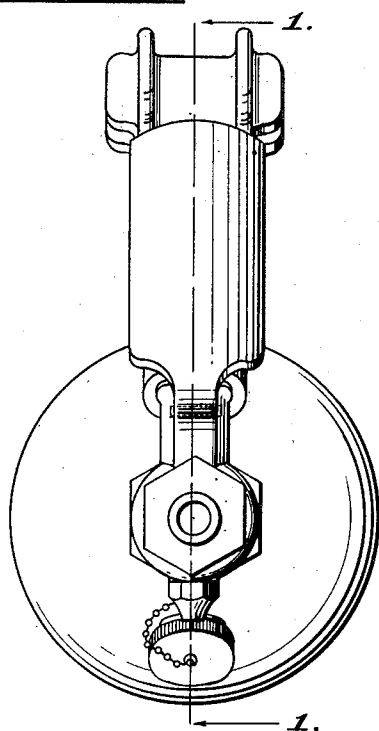


FIG. 2.



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FIRE EXTINGUISHER

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2 Claims. (Cl. 169—31)

This invention relates to fire extinguishers.

It is the principal object of the present invention to provide a fire extinguisher primarily designed to obtain portability of a fire extinguishing unit and to provide a portable fire extinguisher which may be easily handled, which will not release its pressure fluid until required, and which may be manipulated so as to direct the released fire extinguishing fluid at or into a definite location. It is also an object of the present invention to provide a structure of the type here specified in which the fire extinguishing fluid will normally be held in a container without creating or having exerted upon it any pressure, and thereafter instantly applying or creating pressure to the extinguishing fluid so that the fluid might be ejected from the container.

It is another object of the present invention to provide a fire extinguisher of the type here shown in which the pressure may be released and the extinguisher discharged automatically when a desired degree of external heat is created around the device.

The present invention contemplates the provision of a container having a nozzle head thereon, including means for receiving and releasing a discharge of pressure-creating material and thereby directing a pressure upon a fire extinguishing liquid which is discharged from the head and the flow of which may be established or interrupted at will, the head being further provided with a fusible member acting to release fluid when a predetermined degree of external heat occurs.

The invention is illustrated by way of example in the accompanying drawing, in which:

Figure 1 is a view in central vertical section of a fire extinguisher of the type of which the present invention is concerned.

Fig. 2 is a view in plan showing the complete extinguisher.

Referring more particularly to the drawing, 10 indicates a container. This container is here shown as being in the shape of a bottle or cylindrical tank having a neck 11. The neck is threaded to receive a head 12 with which the present invention is particularly concerned. The head includes a collar 13 which is threaded onto the neck of the container and is provided with a washer 14 to create a fluid seal between the container and the head. Formed centrally of the head is a duct 15 which is internally threaded to receive a syphon tube 16 which extends down-

wardly through the neck 11 and into the container.

It is to be understood that the container is filled with a liquid, such for example as carbon tetrachloride, which operates efficiently in smothering flame and arresting combustion. This material may be fed into the structure through the neck of the container or through a filling opening 17 in the wall of the container, which opening is closed by a plug 18. For convenience the plug may be permanently associated with the head by a chain 19.

The head portion has an upwardly extending body substantially cylindrical in form and centrally of which is formed a cylindrical bore 20. A bushing 21 is fitted within this bore and rests at its lower end against a disc-shaped diaphragm 22. The diaphragm 22 is seated on an annular shoulder 23 at the bottom of the bore. Beneath this shoulder is a reduced bore section 24 within which a valve lip 25 occurs. This valve lip extends upwardly within the bore 24 and terminates short of the plane of the shoulder 23. The duct 15 is formed centrally of the valve lip. Due to this arrangement an annular fluid space 26 is formed within the bore 24 and around the lip 25. An outlet duct 27 extends from this fluid space and outwardly through the side wall of the body of the head. The outer end of this duct is preferably internally threaded to receive the threaded extension of a nozzle 28.

It will be evident that when the diaphragm 22 is flexed downwardly it will seat upon the valve lip 25 and will seal the duct 15 so that the liquid from within the container 10 cannot escape. The disc 22 is held in its sealing position by a valve plunger 29. This plunger is reciprocally mounted within the bushing 21 and is held in its lowermost position by an expansion spring 30 which rests against an upper head 31 of the valve plunger and is held in position by a threaded cap 32. The cap 32 is threaded on to the upper exteriorly threaded end of the body of the head, and provides a seat for the spring 30 as well as a confining shoulder by which the bushing 21 is held in position. If desired the end of the cap 32 may be formed with a separate disc section, such as indicated at 33, and which disc section is held in place by a fusible joint 34. This joint is made of material which would be fusible at a desired external temperature, and since the spring 30 rests directly against the disc 33 it is evident that when fusion of the portion 34 releases the disc 33 the plunger will be free to move upwardly to allow the escape of

fire extinguishing liquid from the duct 15, providing that a suitable pressure is created within the container 10.

The valve plunger 29 is formed with a reduced neck portion 35 which occurs beneath the head 31. A forked element 36 straddles this neck portion and rests against the under face of the head 31 so that the valve plunger 29 may be lifted in a manner to be hereinafter described. The fork 36 is formed as a part of a handle 37. This handle is mounted upon a pivot pin 38. The pivot pin 38 is carried upon a side extension 39 of the head 12 and projects radially from the body of the head. The handle 37 is arcuate in cross-section so that it partially embraces an extension 40 of the portion 39. This extension is threaded as indicated at 41 to receive a sleeve 42, which serves the combined purpose of a handle for the structure and a receptacle for a container 43 within which a pressure-creating element is confined. The sleeve 42 is disposed at a convenient angle to the longitudinal axis of the container 10 and also in a convenient relation to the nozzle 28 so that a stream of liquid from the nozzle may be properly directed in extinguishing a fire.

The outer end of the sleeve 42 is formed with an enlarged head portion 44 which may be knurled or otherwise shaped to facilitate in its rotation upon the threaded portion 41. The end of the extension 41 is formed with a counter-bore 45 which receives a packing cup 46 into which the neck 47 of the container 43 fits and which neck is held in position by the sleeve 42.

Mounted within the counter-bore 45 and extending through the center of the cup 46 is a quill 48 which has a disc-shaped seating portion 49. The point of the quill is preferably sharpened to facilitate in penetrating the metal in the neck of the container 43, it being understood that the walls of the container are preferably made of ductile material. An opening 50 is formed centrally in the quill and communicates with a duct 51 in the member 39. This duct in turn leads to the neck 11 of the container so that when the pressure-creating element within the container 43 is released it will pass into the liquid container 10 and create a pressure upon the liquid. It is to be understood that the pressure from the container 43 may be released when the structure is set up or that it may be released when an emergency arises by rotating the sleeve 42.

In operation of the present invention the structure is assembled as here shown, and a container 43 is placed within the sleeve 42. In the event that the container is not to be opened the sleeve 42 is not rotated to a tightly screwed position on the member 41 so that the neck of the container will not be punctured by the quill 48. When it is desired to use the fire extinguisher the sleeve 42 may be rotated by its end 44. This will force the container 43 toward the member 41 and will force the neck 47 into the cup 46. At the same time the quill 48 will puncture the end of the container 43 and establish communication with the liquid container 10 through the duct 51. This will create a pressure within the liquid container 10 but at this time the valve plunger 29 will hold the valve disc 22 downwardly in a sealed position upon the lip 25. When the handle portion 27 of the structure is depressed in the direction of the arrow —a— it will act upon the fork 36 to lift the valve plunger 29 against the compression of the spring 30 and will thus relieve pres-

sure against the disc 22. As a result, the fluids under pressure within the container 10 will be released and will be discharged through the nozzle 28. When this discharge is to be interrupted the pressure upon the handle portion 37 may be discontinued.

It is to be understood that the pressure-forming element in the container 43 may be any desired gas, liquid or other substance, and that it may create its pressure from the initial pressure with which it was confined in the container 43 or when combined with a suitable liquid occurring within the container 10. In some instances it may be desirable to place the structure in a locality where there is a known fire hazard. In that case the pressure container 43 is tightened into the sleeve 42 until communication is established between it and the liquid container 10.

When the temperature of the surrounding atmosphere reaches a point at which the element 34 will fuse this will release the disc 33 and relieve the valve plunger 29 from the pressure of the spring 30. As a result, the fire extinguishing fluid will be released automatically and will be discharged from the nozzle in the surrounding area.

It will thus be seen that the structure here disclosed provides convenient means for storing a fire extinguishing fluid and a pressure-creating element, for thereafter causing these elements to commingle and to be released and directed as desired.

While I have shown the preferred form of my invention as now known to me, it will be understood that various changes may be made in combination, construction and arrangement of parts by those skilled in the art, without departing from the spirit of my invention as claimed.

Having thus described my invention, what we claim and desire to secure by Letters Patent is:

1. A device of the character described comprising a container for a fire extinguishing liquid, a nozzle head mounted upon said container, a tube extending from the nozzle head downwardly into the container, a valve lip within the nozzle head and through which a duct extends to communicate with the tube, a valve disc adapted to seat upon the valve lip and close the duct there-through, a nozzle having a central passageway extending into the head and around the valve lip whereby when the valve disc is out of contact with the lip communication will be established through the nozzle and the duct in the head to the tube extending into the container, a valve plunger adapted to rest against the valve disc, spring means acting against the plunger to hold the plunger and the valve disc in their closed position, an extension formed as a part of the head and projecting radially thereof, a tubular sleeve mounted upon said extension and providing a hand grip by which the extinguisher may be grasped and manipulated, manually operated means extending alongside of said hand grip and engaging the valve plunger whereby the pressure thereon by the hand of the operator as he grasps the handle structure will act to open the valve, and fusible means for releasing the spring to permit the valve to open independently of the manual means.

2. A device of the character described comprising a container for a fire extinguishing liquid, a nozzle head mounted upon said container, a tube extending from the nozzle head downwardly into the container, an extension formed as part of the head and projecting obliquely thereof, a

tubular sleeve mounted upon said extension and providing a hand grip by which the extension may be grasped and manipulated, a valve lip within the nozzle head and through which a duct
5 extends to communicate with the tube, a valve disc adapted to seat upon the valve lip and close the duct therethrough, a nozzle having a central passageway extending into the head and around the valve lip whereby when the valve disc is out of
10 contact with the lip communication will be established through the nozzle and the duct in the head to the tube extending into the container, a valve plunger adapted to rest against the valve

disc, spring means acting against the plunger to hold the plunger and the valve disc in their closed position, a manually operated means extending along side of said hand grip and in a plane parallel thereto, said manually operated means en- 5 gaging the valve plunger whereby the pressure thereon by the hand of the operator as he grasps the handle structure will act to open the valve, and fusible means for releasing the spring to permit the valve to open independently of the 10 manual means.

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