Nov. 28, 1961 E. E. SEABERG 3,010,520

VALVE FOR DRY POWDER FIRE EXTINGUISHERS

Filed July 23, 1959

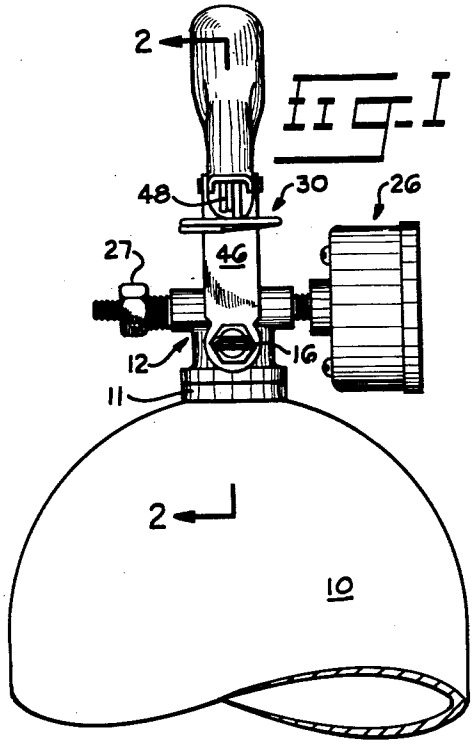
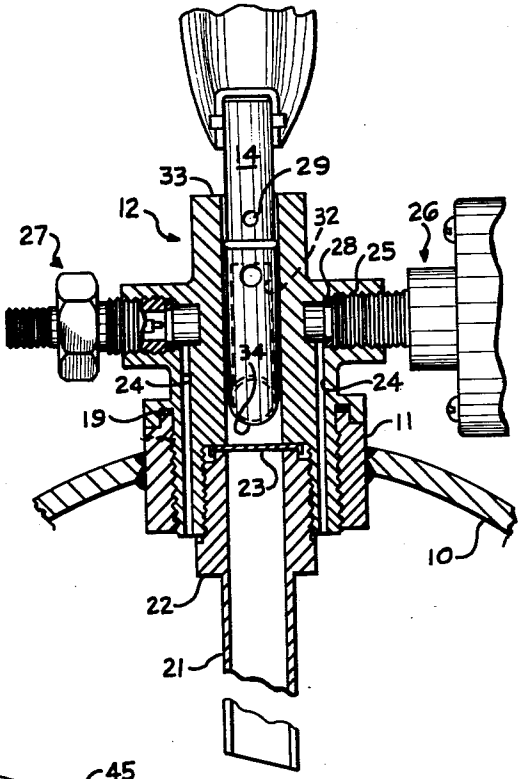


FIG. 1



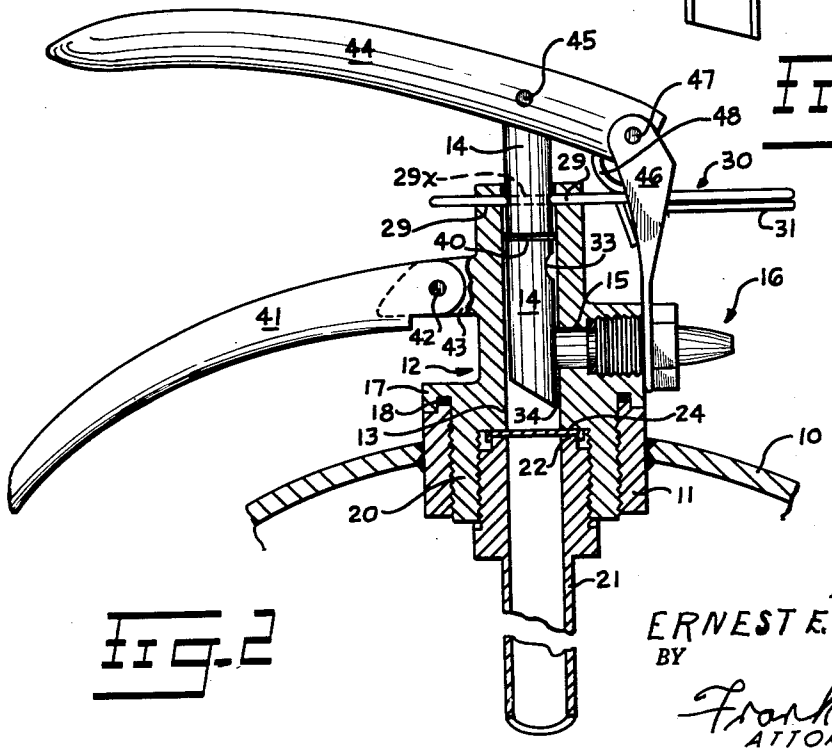


FIG. 3

FIG. 2

INVENTOR.
ERNEST E. SEABERG
BY
Frank A. Mallory
ATTORNEY

United States Patent Office 3,010,520 Patented Nov. 28, 1961

3,010,520

VALVE FOR DRY POWDER FIRE EXTINGUISHERS

Ernest E. Seaberg, 175 Sawmill River Road, Elmsford, N.Y.

Filed July 23, 1959, Ser. No. 829,118
1 Claim. (Cl. 169—31)

This invention relates to valves for dispensing dry powder from fire extinguishers.

It is an object of this invention to provide a compact dispensing valve having a housing having an inlet passageway for charging a container secured to said valve.

It is another object to provide a dispensing valve having besides the above-mentioned inlet charging passageway, optionally a second passageway leading to a pressure guage.

In the prior art the dry powder extinguishers were provided with inlet valves and a guage secured to the tank, U.S. 2,785,759.

Such devices were not compact and subject to damage.

In this invention the storage tank for dry powder under gas pressure is provided with but a single opening so that leakage of gas (if any) from the tank is reduced to a negligible amount.

The above objects of this invention will become apparent upon reading the following descriptive disclosure taken in conjunction with the drawing in which:

FIG. 1 is a front view of the valve secured to the opening of a high pressure resistant storage tank,

FIG. 2 is a vertical section view taken on line 2–2 of FIG. 1 and showing the manner of piercing the frangible disc in the valve,

FIG. 3 is a vertical section view taken at a right angle to the view of FIG. 2 and showing the passageways disposed in the valve housing and communicating with the tank chamber.

Turning to the drawing, a conventional high pressure resistant metal tank **10** is provided with a single top opening in which an internally threaded cylindrical collar **11** is welded.

According to this invention an improved housing **12** is disposed threadingly upon said collar **11** in a gas tight manner.

The housing **12** is of integral cast metal construction and is provided with a central vertically disposed borehole **13** for receiving a plunger **14**, and a horizontally disposed borehole **15** communicating between borehole **15** and the atmosphere. Borehole **15** is internally threaded and screw threaded nozzle **16** is disposed therein. The bottom portion of housing **12** is provided with a cylindrical flange **17** having a recessed channel **18** therein into which a suitable resilient rubber or plastic washer **19** is disposed to effect a hermetic seal to collar **11**. The housing cylindrical bottom portion **20** is provided with external threads which are threaded into the internal threads of collar **11**. The housing portion **20** is also provided with internal threads for engaging a syphon tube **21** having a top portion **22** having suitable threads thereon.

The top rim of the syphon tube top portion **21** is provided with a lip **22** of smaller diameter upon which a copper flange disc **23** having a circular depending skirt is placed.

As shown in FIGS. 2 and 3 the vertical borehole **15** of the housing merges into a larger threaded bottom borehole into which the top portion of the syphon tube is disposed. The syphon tube **20** extends to the bottom of tank **10** and is screwthreaded into housing **12** until the copper disc **23** is hermetically disposed against the annular shoulder **24** of the housing bottom threaded borehole.

The housing bottom cylindrical wall **20** is provided

with at least one, preferably two passageways **24** running through wall **20** at a right angle to the axis of the lateral borehole **15** (FIG. 3).

As also shown in FIG. 3, the housing **12** is further provided with respective internally threaded cavities **25** communicating between the respective passageway **24** and the outside atmosphere.

A conventional gas pressure guage **26** is threaded into one of the cavities **25** along with a rubber seal gasket **28** in order to register continuously the gas pressure in cylinder **10**. Where a second passageway **24** is provided, a conventional tire valve **27** is threaded into its respective communicating cavity **25** in order to introduce gas under pressure into tank **10** as needed.

The housing top portion is provided with a lock pin receiving borehole **29** which is disposed over and parallel to the lateral borehole **15**.

Borehole **29** in effect goes through the central borehole **15**. A suitable pin receiving borehole **29X** is also disposed through plunger **14** and a lock pin **30** having a finger receiving ring **31** is disposed normally through boreholes **29** and **29X** in order to lock the plunger **14** away from the frangible copper disc **23**.

The plunger **14** is provided with a bottom tubular borehole **32** terminating at a lateral port **33**. Port **33** is disposed normally over the lateral borehole **15** so that depressing the plunger causes the plunger knife edge **34** to pierce the plunger copper disc **23** and bring the port **33** into register with the housing borehole **15** thereby permitting the dry powder fire extinguishing chemical, for example, dry sodium bicarbonate, to be dispensed under the container gas pressure through the syphon tube **20** and out of nozzle **16**.

The plunger **14** is provided with an resilient sealing O-ring **40** to prevent dry powder from passing out of the top of borehole **15**.

The valve of this invention is also provided with a bottom handle **41** secured by pin **42** to a suitable housing lug **43** disposed opposite to nozzle **16**. The valve is further provided with a top handle **44** secured by a pivot pin **45** to the top of the plunger **14**. The front end of handle **44** is pivotally secured to a conventional lock plate **46** by a pivot pin **47**. Lock plate **46** is provided with a suitable aperture which is disposed over the borehole **15** exterior opening and through which a portion of nozzle **16** is disposed.

A suitable coil spring **48** is disposed around pin **47** with its respective ends biased against handle **44** and plate **46**. Thus spring **48** continuously urges handle **44** and the plunger **14** conneced thereto upwardly.

In operation of the fire extignuisher the locking pin **30** is pulled out of plunger **14** and handle **44** is squeezed toward handle **41** causing the plunger knife edge to cut the copper disc **23** and then bring plunger port **33** into register with lateral borehole **15** and its nozzle **16**.

This invention has been illustrated by an embodiment but clearly its novel principle is of more generic scope and as claimed herein.

I claim:

A valve for dispensing dry powder fire extinguishing chemicals under gaseous pressure comprising an integral tubular valve housing having a bottom depending annular wall forming a bottom cylindrical tubular portion of relatively large diameter and threaded interiorly for engagement with a syphon tube to form a threaded borehole and threaded exteriorly for threaded engagement with a pressure resistant container, said housing having a top smooth walled tubular portion having a centrally disposed borehole of relatively small diameter axial to and communicating with said threaded borehole in the bottom cylindrical tubular portion forming an annular shoulder therebetween with a lateral dispensing borehole communi-

cating between said central small diameter borehole and the atmosphere, said housing having a pair of lateral opposed threaded cavities disposed at a right angle to said lateral borehole, a pair of relatively smooth walled narrow boreholes disposed through said annular wall each respectively communicating with a lateral cavity and the interior of said container; a syphon tube threaded exteriorly at one end and provided with a terminal annular valve seat at said threaded end, a frangible metal disc disposed on said syphon tube and threadingly against said shoulder intermediate said centrally disposed and said threaded boreholes of said housing to effect an air tight seal, and manually operated plunger means having a plunger having a conduit therethrough disposed in said central borehole and adapted to rupture said disc with alignment of said conduit with said lateral borehole, one

of said lateral cavities being used to receive indicating pressure means to indicate the pressure in said container and the other lateral cavity being used with means to fill said container with high pressure gas.

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