April 24, 1962 G. R. ALLEN 3,031,165

DISPENSING VALVE FOR PRESSURIZED CONTAINER

Filed April 20, 1960 2 Sheets-Sheet 1

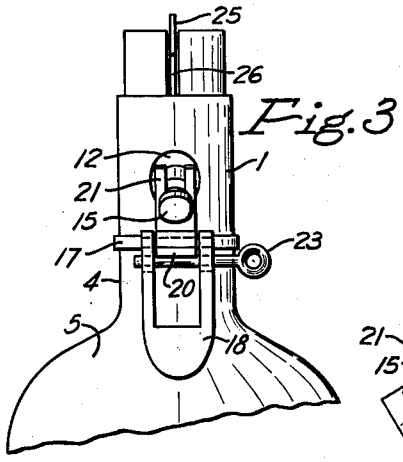


Fig. 3

Fig. 1

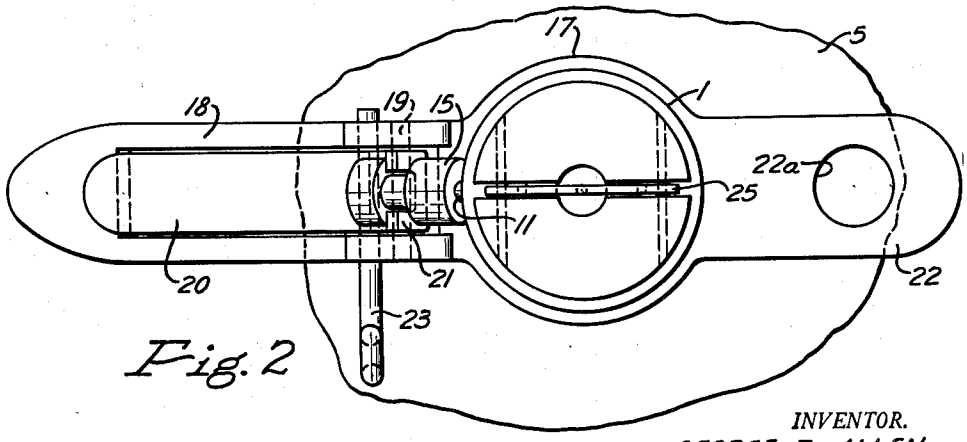


Fig. 2

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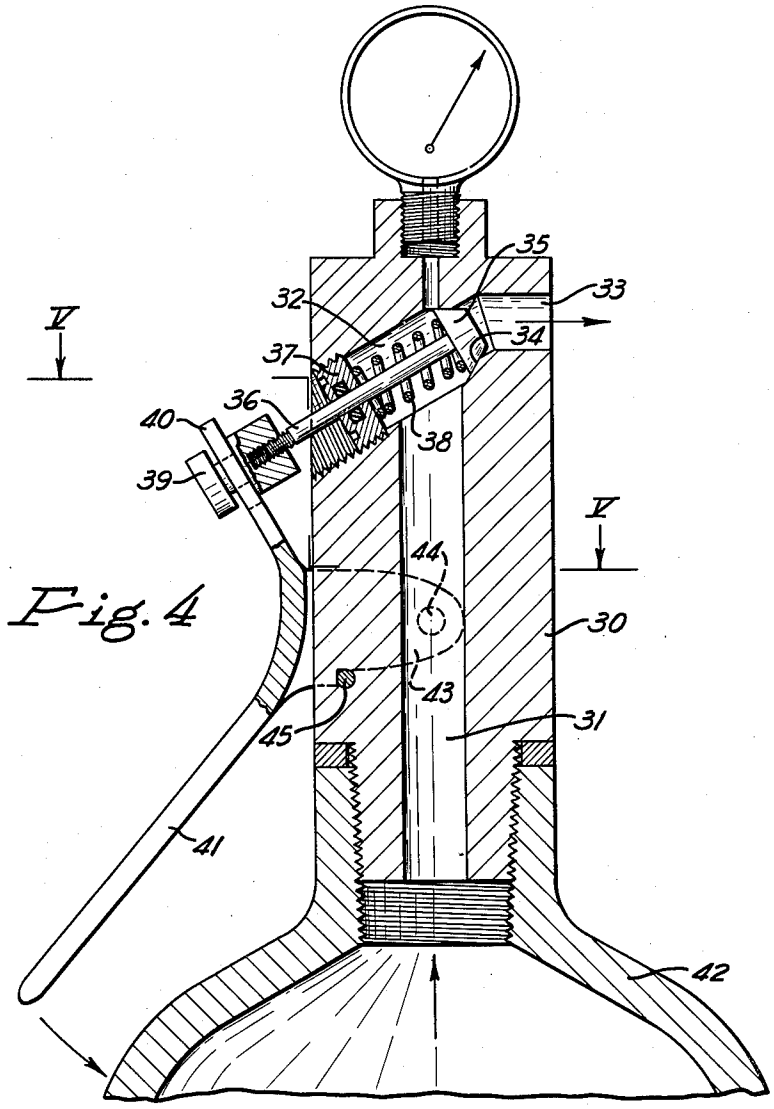


Fig. 4

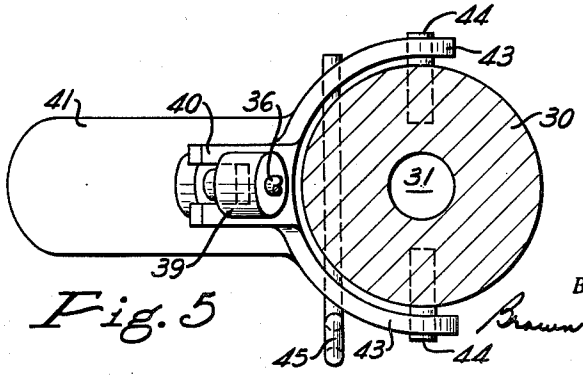


Fig. 5

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3,031,165 DISPENSING VALVE FOR PRESSURIZED CONTAINER

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1 Claim. (Cl. 251—111)

This invention relates to valves, and more particularly to those used with pressure vessels to dispense the contents thereof when desired.

It is generally considered to be good valve design to use the fluid pressure in a pressure vessel to help maintain the valve closed. In some cases, such as stored pressure fire extinguishers, the Underwriters Laboratories, National Bureau of Fire Protection, and similar agencies may require the valve closure to be mechanically locked against its seat to prevent the valve from being opened accidentally.

It is among the objects of this invention to provide such a valve in which the valve is opened by squeezing a pivoted lever, in which the valve can be locked closed by means of the lever, in which the pressure of the valve closure against its seat can be adjusted, in which a handle can be quickly attached to the valve body without altering the body to receive it, and in which all moving parts of the valve can be removed from the valve body without removing it from the pressure container.

In accordance with this invention, a valve body has a fluid passage through it provided with a valve seat normally engaged by a valve closure that is movable backward away from the seat. A stem projects from the back of the closure. Operatively connected with the stem is a lateral projection of a pivoted lever that is supported by the valve body, whereby the closure can be pulled back away from its seat when the lever is swung in one direction from a normal position. When the lever is released, a spring moves the closure forward toward its seat. The stem also is urged forward by the lever projection when the lever is swung in the opposite direction from its normal position, and the lever can be held there by manually removable locking means engaging it. In this way the closure is locked against its seat.

The invention is illustrated in the accompanying drawings, in which

FIG. 1 is a vertical section through my valve attached to a fluid pressure container;

FIG. 2 is a plan view thereof;

FIG. 3 is a reduced side view;

FIG. 4 is a view, similar to FIG. 1, of a modification; and

FIG. 5 is a horizontal section taken on the line V—V of FIG. 4.

Referring to FIGS. 1, 2 and 3 of the drawings, a more or less cylindrical valve body 1 has a reduced lower end encircled by threads 2 terminating at their upper ends at a radial shoulder 3. The threaded end of the valve body is screwed into the neck 4 of a container 5 filled with fluid under pressure. Extending upward axially through most of the valve body is a fluid passage 6, the upper end of which opens into an inclined passage 7 that terminates at its upper end in a radial outlet opening 8. The upper portion of the inclined passage is tapered upwardly to provide a valve seat 9 that normally is engaged by a tapered closure 10. Secured to the back of the closure is a valve stem 11 that extends down through the inclined passage and a packing nut 12 screwed into its lower end. The stem between the nut and the closure is encircled by a coil spring 13 that normally holds the closure against its seat. The outer end of the stem is threaded into an axial opening 14 in the enlarged inner end of a spool 15.

Encircling the valve body 1 beneath shoulder 3 and clamped between the shoulder and the upper end of pressure vessel neck 4 is a metal ring 17 that serves as a gasket. It also serves as a support for a handle, which can be integral with it. Thus, projecting from one side of the ring is a downwardly inclined rigid handle 18, by which the container can be carried. The upper end of the handle is bifurcated and has a pin 19 extending through it, on which the inner end of a lever 20 is pivotally mounted. The lever normally extends more or less horizontally above the handle, and at its inner end it has an upwardly projecting finger 21 that is forked in order to straddle the reduced central portion of spool 15. The finger is slightly resilient so that it can be bowed slightly if the lever is lifted while the upper end of the finger is in engagement with the inner end of the spool and the closure is against its seat. To open the valve, the lever is merely squeezed down toward the handle. That causes lever finger 21 to swing out against the enlarged outer end of the spool and pull closure 10 away from its seat 9. When the lever is released, coil spring 13 will return the closure to its seat and swing the lever back up to normal position. Opposite to handle 18, ring 17 may be provided with a projection 22 provided with a hole 22*a* for hanging the device on a wall bracket.

It is a feature of this invention that the valve closure can be locked against its seat when the valve is not in use, so that accidental opening will be avoided. This is done by inserting a locking pin 23 through holes in the upper end of the handle directly beneath the lever. Before that is done the first time, spool 15 is rotated on the valve stem to locate the spool at such a distance from closure 10 that after the closure has been pressed against its seat by spring 13, the lever finger 21 will be bowed slightly when the lever is raised high enough to insert the locking pin beneath it. The finger therefore will exert a positive pressure against the inner end of the spool and that will cause the closure to be held tightly against its seat. The amount of pressure exerted on the closure will depend on the adjustment of spool 15. Of course, the valve cannot be opened until the locking pin has been removed.

The upper end of the valve may be provided with a suitable gauge to indicate the amount of fluid pressure in container 5. The gauge illustrated is made by mounting an indicating plate 25 on the upper end of a sliding pin 26 that extends down into a cylinder 27, in which there is a piston 28. The piston is exposed to the fluid pressure in the container by means of a small bore 29 connecting the lower end of the cylinder with the top of the inclined passage 7 behind the closed valve closure 10.

The valve just described is easy to handle and use. When not in active use, it can be locked closed. The valve body does not require modification or fastening elements to hold the handle and operating lever in place, because that is done by ring 17 which is merely slipped over the lower end of the valve body just before it is screwed into the container. It will also be observed that the valve closure and all of the parts behind it can be quickly and easily removed from the valve body for inspection and repair by simply removing nut 12 first. Therefore, it is unnecessary to disconnect the valve from the container in order to work on the valve.

In the modified embodiment of the invention shown in FIGS. 4 and 5, the valve body 30 is similar to the one first described. It is provided with a central axial passage 31 that opens at its upper end into an inclined passage 32 connected with a radial outlet 33. The upper end of the inclined passage is provided with a tapered seat 34 and closure 35. A valve stem 36 extends from the closure down through a packing nut 37 in the lower end of the inclined passage. A coil spring 38 normally keeps the valve closed. The outer end of the stem

carries an adjustable spool **39** that is straddled by a slightly resilient finger **40** projecting laterally from a lever **41**.

This particular valve is not provided with a handle and therefore is intended to be used with a smaller pressurized container **42** where a carrying handle is not so necessary. The lever **41** is pivoted to the valve body itself. For this purpose the upper end of the lever has two laterally projecting curved forks **43** straddling the valve body. Their inner ends are mounted on aligned pivot pins **44** set in opposite sides of the body. When the lever is pressed down, it swings its projecting finger **40** away from the the valve body and thereby retracts the closure from its seat. When the lever is released, coil spring **38** closes the valve.

In order to lock the valve closed when not in active use, a locking pin **45** is inserted in a transverse opening through the valve body directly below the lever forks **43**. The spool **39** is adjusted on the valve stem to make it necessary to flex the adjoining finger **40** slightly when the lever is pulled up enough to permit the locking pin to be inserted. The finger therefore exerts a continuing pressure on the inner end of the spool and holds closure **35** tightly against its seat. Before the valve can be opened, the locking pin must be removed to free the lever. This valve has all of the advantages of the one first described.

According to the provisions of the patent statutes, I have explained the principle of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claim, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

A valve comprising a body having a fluid passage therethrough provided with a valve seat, the inlet of said passage being at one end of said body, said end of the body being reduced in diameter and provided with an external thread for screwing it into the neck of a pressure vessel, said body having a shoulder at the inner end of the thread, a valve closure normally engaging said seat but movable backward away from it, a stem projecting from the back of said closure, a removable ring encircling said body in engagement with its shoulder and adapted to be clamped thereby against said vessel neck, a rigid handle projecting from said ring, a lever pivotally supported at the inner end of the handle and having a lateral projection operatively connected with said stem for pulling said closure away from its seat when the lever is swung toward the handle, a spring for moving the closure forward toward the seat when the lever is released, the stem also being urged forward by said projection when the lever is swung away from the handle, and locking means removably mounted in the handle and engageable with the lever for holding the lever in a position where its projection will press the closure tightly against its seat.

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