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F. A. ZIHERL ET AL

2,806,638

RELEASE VALVE FOR PRESSURIZED CONTAINERS

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FIG. 1

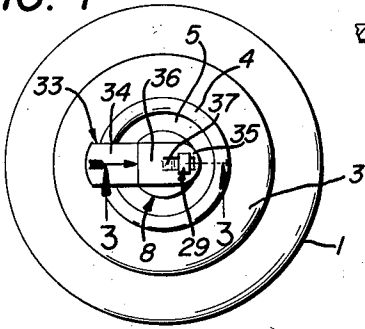


FIG. 2

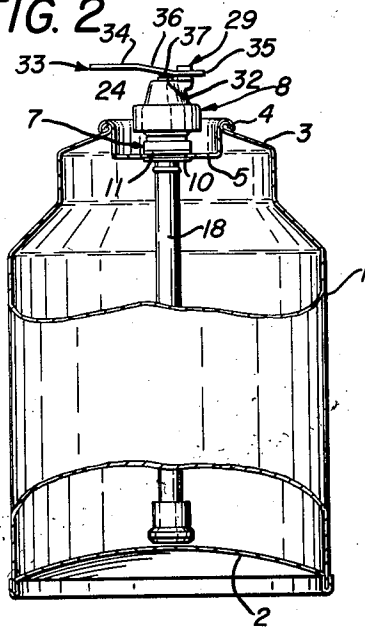


FIG. 4

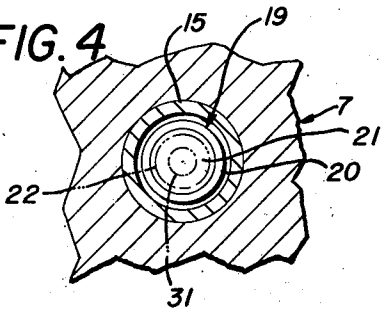


FIG. 3

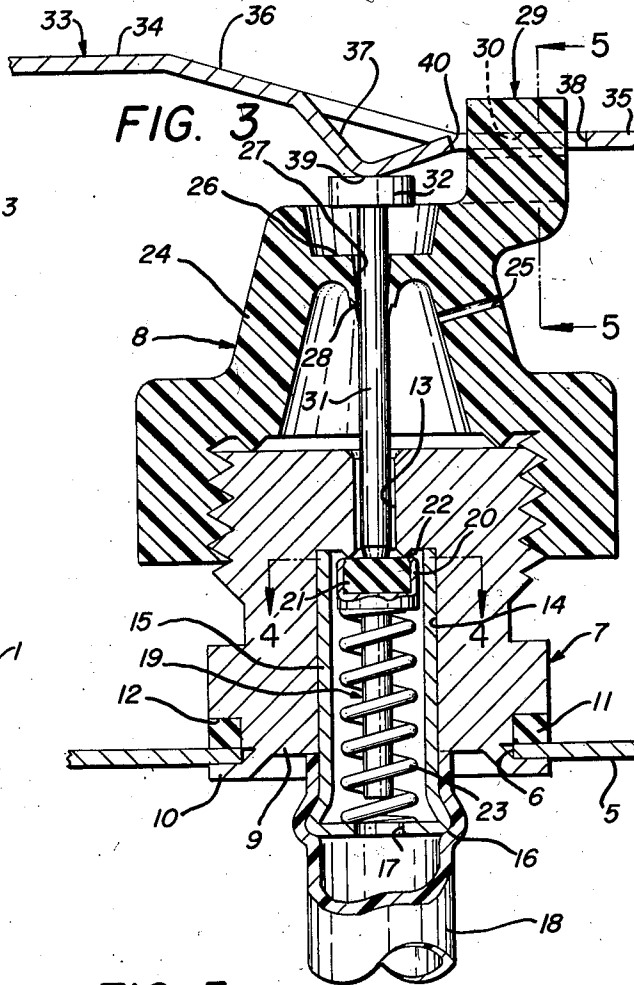
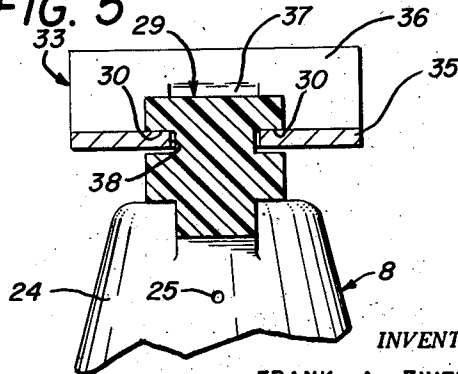


FIG. 5



INVENTORS

FRANK A. ZIHERL &
BY ARTHUR S. KISH

Soler and Oresten
ATTORNEYS

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RELEASE VALVE FOR PRESSURIZED CONTAINERS

Frank A. Ziherl, Cleveland, and Arthur S. Kish, Mayfield Heights, Ohio, assignors to Z and W Machine Products, Inc., Cleveland, Ohio, a corporation of Ohio

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4 Claims. (Cl. 222—394)

This invention relates generally to a release valve for pressurized containers, but has reference more particularly to a novel release mechanism or unit for such valves.

A primarily object of the invention is to provide a release valve of the character described, which is readily adaptable for use in conjunction with conventional pressurized containers of a type which is in general use at the present time.

Another object of the invention is to provide a valve opening mechanism or unit which is highly economical in construction, consisting of a minimum number of simple parts, which are easily and inexpensively manufactured, and quickly and easily assembled, without the use of tools or extraneous fastening elements.

Other objects and advantages of our invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Fig. 1 is a plan view of a pressurized container with a release valve embodying the invention;

Fig. 2 is a view, partly in side elevation, and partly in section, of the container and valve;

Fig. 3 is a fragmentary cross-sectional view, on an enlarged scale, taken on the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary cross-sectional view, taken on the line 4—4 of Fig. 3, and

Fig. 5 is a fragmentary cross-sectional view, taken on the line 5—5 of Fig. 3.

Referring more particularly to the drawings, reference numeral 1 designates a can, closed at the bottom, as by a bottom member 2, and having a curled or beaded upper end 3, to which a cover 4 is frictionally secured, as by crimping the cover over the end 3, in the manner clearly shown in Fig. 2.

The cover 4 is provided with a base portion 5 which is an integral part of the cover, and has a central circular opening 6, in which the release valve is secured.

The release valve comprises a valve body consisting of a lower member 7, and an upper member 8, which is threadedly secured to the lower member. The lower member 7 is provided with a portion 9 of reduced diameter which extends through the opening 6, and has an annular flange 10 which is riveted or crimped to the lower surface of the base 5 of the cover. A gasket 11 is interposed between the upper surface of the base 5 and a shoulder 12 of the body member 7, to render the connection of the body member to the cover leakproof.

The body member 7 is provided with an axial opening 13, which is counterbored, as at 14, for the reception of a cylindrical valve housing 15 which is frictionally secured in the counterbore, and has a base flange 16 forming an opening 17. An intake tube 18 is secured to the housing 15.

Disposed within the housing 15 is a valve 19 having a cup-like upper end 20 within which a rubber disk 21 is frictionally secured. The rubber disk 21 is normally maintained seated against an annular rib 22 of the body

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member 7, a compression coil spring 23 being provided for this purpose, which spring bears at its lower end on the base flange 16 and at its upper end against the end 20 of the valve 19.

The body member 8, which is preferably molded of polyethylene, is provided with a conical portion 24, through which a passageway 25 for the liquid extends. It is also provided with a web-like central portion 26 having a passageway 27 extending axially therethrough, which passageway is tapered inwardly about 3° from top to bottom. A knife-edge 28 is provided at the lower end of the passageway 27 by molding the wall of the lower portion of the passageway in the manner shown in Fig. 3. The function of this knife-edge will be presently explained.

Above the passageway 25, the body member 8 is also provided with a bracket like extension 29 having grooves 30 in the side thereof, which grooves extend horizontally.

The release valve further includes a stem 31 which extends through the passageway 27 and opening 13 and is several thousands of an inch less in diameter than the diameter of the lower end of the passageway 27, so that the member 8 not only centralizes the stem with respect to the opening 13, but the knife edge 28 always maintains a wiping contact against the stem. The stem 31 is of slightly less diameter than that of the opening 13, so as to provide a passageway for fluid between the stem and the wall of this opening. The stem 31 is provided with a head 32 at its upper end.

A handle 33 is also provided, which is preferably formed from a single piece or blank of sheet metal, bent to provide offset parallel portions 34 and 35 and an inclined interconnecting portion 36. A trigger 37 is formed from the blank by shearing the blank to provide a rectangular opening 38 in the portions 35 and 36 and bending the metal from this opening to an angular form, having a rounded bottom 39, which rests on the head 32 of the stem 31, after the handle has been secured to the extension 29 of the body member 8.

The handle is secured to the extension 29 by squeezing the extension 29 through the opening 38 in the handle until the sides of this opening are coplanar with the grooves 30, after which the metal at the sides of the opening will enter the grooves, thus locking the handle against vertical movement relatively to the extension 29. The right end of the opening 38 will then preclude displacement of the handle 33 from the extension 29 by movement to the left, as viewed in Fig. 3, and the end 40 of the trigger 37 will preclude such displacement from the extension 29 by movement to the right, as viewed in this figure.

The operation of the device will be readily understood from the foregoing description.

The can 1 contains a fluid under pressure, and the valve 19 normally precludes escape of the fluid from the can.

When the handle 33 is depressed, the trigger 37 thereof forces the stem 31 downwardly, thereby unseating the valve 19, so that the contents of the can pass upwardly through the tube 18, through the opening 17, through the housing 15, through the space between the stem 31 and wall of the opening 13, into the conical portion 24 of the body member 8, and out through the passageway 25.

The knife-edge 28 exerts a yielding pressure against the stem 31 at all times, and not only wipes foreign particles which might accumulate on this stem, but also forms a fluid tight seal with the stem or precludes escape of fluid through the joint therebetween.

The valve releasing mechanism is highly economical in construction, being made of extremely simple parts which are easily and inexpensively manufactured, and quickly and easily assembled, without the use of tools, or extraneous fastening elements. Moreover, the mechanism

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is readily adaptable for use in conjunction with conventional pressure spray cans.

It is to be understood that the form of our invention, herewith shown and described, is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of our invention, or the scope of the subjoined claims.

Having thus described our invention, we claim:

1. A valve releasing mechanism for pressurized containers of the character described, said mechanism comprising a body member of molded flexible plastic material, said body member having a fluid passageway extending through the wall thereof, said body member provided with an extension formed integrally therewith and extending upwardly and forwardly from the body member so as to overlie the exit end of said passageway, said extension having horizontal grooves in the sides thereof, a valve stem slidable in said body member, and a unitary handle removably secured to said body member in overlying relationship to said valve stem, said handle being provided with an opening through which said extension extends, portions of said handle being disposed in said grooves, and said portions being of lesser width than said grooves whereby said portions are vertically movable relatively to said grooves.

2. A valve releasing mechanism for pressurized containers of the character described, said mechanism comprising a body member molded of a flexible plastic material, said body member having a fluid passageway extending through the wall thereof and having an axial passageway extending therethrough, a portion of the wall defining this axial passageway being relatively thin and flexible, a stem slidable in said axial passageway, the thin and flexible wall exerting pressure radially inwardly against said stem at all times, said body member having an extension formed integrally with the body member and extending upwardly to a point at a level substantially above the upper end of said stem, and extending laterally from the body member, said extension having parallel grooves in the sides thereof, and handle removably secured to said body member and having a trigger bearing on said stem, said handle provided with an opening

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through which said extension extends, portions of said handle being disposed in said grooves, the upper walls of said grooves acting as a fulcrum for said handle when said handle is depressed to cause said trigger to move said stem.

3. A valve releasing mechanism for pressurized containers of the character described, said mechanism comprising a hollow body member molded of a flexible plastic material, said body member having a fluid passageway extending through the wall thereof, a web portion formed integrally with said body member and extending transversely of said body member between the top of said body member and said fluid passageway, said web portion having a central depending conical projection defining an axial passageway through said web portion, a valve stem slidably mounted in said axial passageway, said projection consisting of a wall section of progressively decreasing thickness resiliently engaging said stem and terminating in a knife edge, and a handle removably secured to said body member and having a trigger bearing upon said stem.

4. A valve releasing mechanism, as defined in claim 3, in which said body member is provided with an extension extending upwardly from the body member and having parallel grooves in the sides thereof, and said handle is provided with an opening through which said extension extends, portions of said handle being disposed in said grooves, the upper walls of said grooves acting as a fulcrum for said handle when the handle is depressed to cause said trigger to move said stem.

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