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F. H. APPÉL
DISPENSER FOR DISPENSING PRESSURIZED
CONTENTS FROM A CONTAINER
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2,964,220

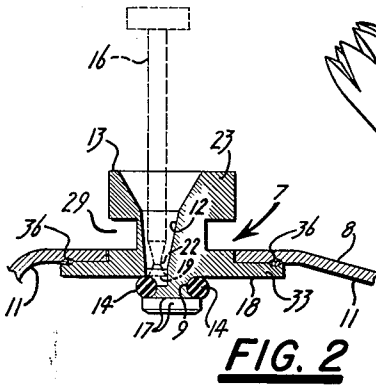


FIG. 2

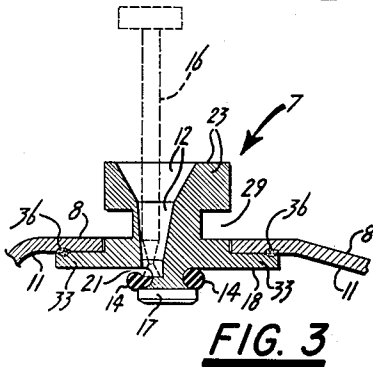


FIG. 3

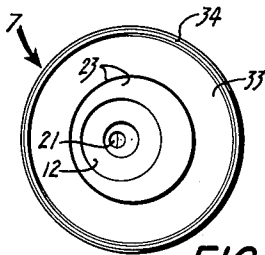


FIG. 4

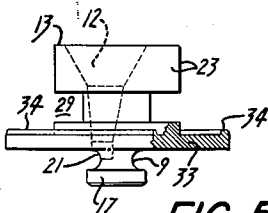


FIG. 5

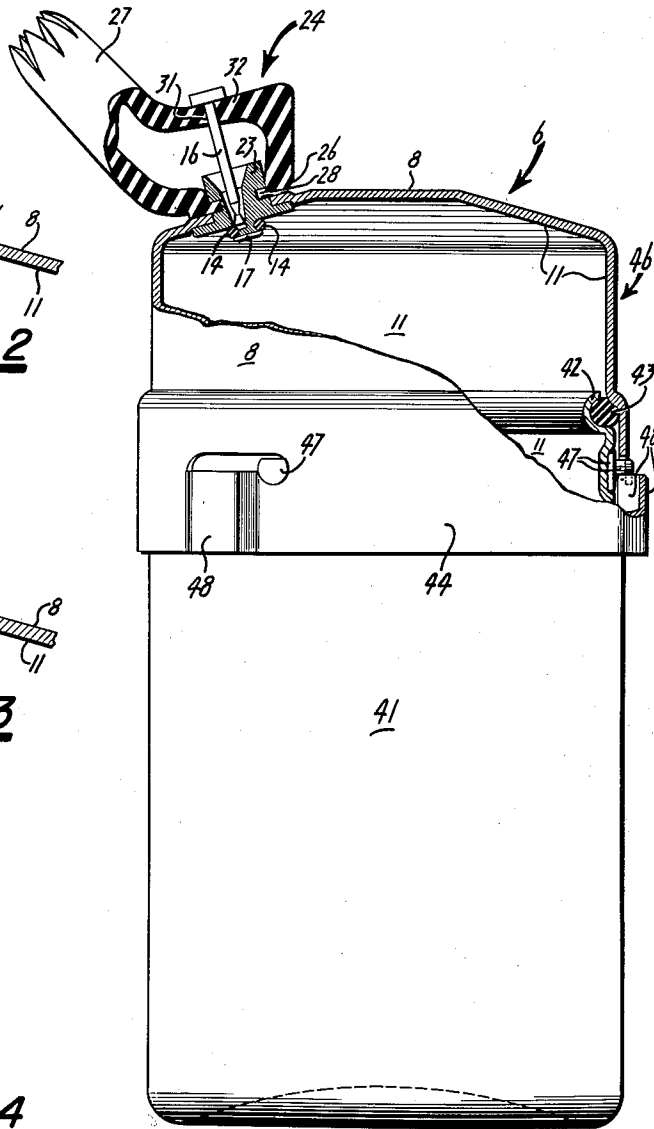


FIG. 1

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DISPENSER FOR DISPENSING PRESSURIZED CONTENTS FROM A CONTAINER

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3 Claims. (Cl. 222-394)

The invention relates to valve, dispenser and container units which are designed for the dispensing of an aerated liquid content from containers in which the liquid product is pressurized for dispensing. A common illustration of such a product is aerated whipped cream.

An object of the present invention is to provide a valve of the character described which is constructed of a minimum number of simply formed and inexpensive parts co-functioning in a most direct and highly effective manner to provide a particularly safe and foolproof dispensing valve mechanism.

Another object of the present invention is to provide a valve mechanism of the character above which will afford easy and precise control of the discharge of the aerated product and will seal effectively even under low pressure and wherein the several parts are designed and dimensioned to limit the maximum rate of discharge.

A further object of the present invention is to provide a valve mechanism of the character above which is compact and light in weight and designed for easy one-hand operation and wherein the discharge orifice is disposed close to the top wall of the container for complete self-drainage of the contents.

Still another object of the present invention is to provide a valve structure of the character above which may be easily kept and maintained in a clean and sanitary condition and affords ready visual inspection and easy replacement of the single wearable part whereby the valve mechanism may be kept in good operating condition over an indefinitely long and useful life.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawings:

Figure 1 is a side elevation, partly in section of a pressure container equipped with a dispensing valve mechanism constructed in accordance with the present invention.

Figure 2 is a cross-sectional view on an enlarged scale of the valve.

Figure 3 is a cross-sectional view of the valve similar to Figure 2 but showing the valve in open position.

Figure 4 is a top plan view of the valve body.

Figure 5 is a side elevation of the valve body partly in section.

The valve mechanism of the present invention is, as above noted, particularly designed for the dispensing of pressurized contents from a container 6 and consists briefly of a valve body 7 adapted for sealed mounting in and extending through a wall 8 of the container and being formed with an annular groove 9 and a normally interior side 11 of the wall 8, the body 7 being formed with a discharge passage 12 extending from the groove 9 to the

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normally exterior side 13 of the body, an O-ring 14 of soft compressible material such as natural or synthetic rubber mounted in groove 9 in sealing relation across passage 12 and manually displaceable means 16 moveable in the passage to engage and displace O-ring 14 to an unsealed position with respect to passage 12. Preferably the groove 9 is formed in a shoulder 17 projecting from the normally interior side 18 of the body, the shoulder 17 here being formed as a central or axial extension of the body and the groove 9 being formed in the exterior periphery of the shoulder directly at the under side 18 of the body so as to provide good drainage characteristics as above noted. The means 16 may consist simply of an actuating stem mounted for reciprocation in passage 12 with the interior end 19 of the stem in engagement with the O-ring 14 for displacement of the latter away from its normal sealed position across the passage upon manual depressing of the stem to effect an opening of the valve as depicted in Figure 3.

Another feature of the foregoing construction lies in the fact that the depressing of the dispensing stem 16 moves the stem into the dispensing orifice 21 defined by the joiner of passage 12 and groove 9 to thus limit the size of this orifice during the dispensing operation. Also since the plane of the O-ring 14 is perpendicular to the axis of stem 16, the lower end 19 of the stem will engage and compress the O-ring against the base of its groove and the maximum effective compression of the portion of the O-ring under the stem end 19 serves to effectively limit the maximum rate of discharge regardless of how hard the stem is depressed considering normal manually applied force to the stem.

The present valve construction thus provides a soft action and easy and precise control of the rate of discharge of the pressurized contents. The O-ring 14 should have a normal dimension snugly fitting the groove 9 so as to constantly cover and seal the discharge orifice 21 even at low pressures. As will be further observed the O-ring may be readily slipped off from the lower end 17 of the valve body for cleaning, inspection and replacement. When the O-ring is removed, the whole of the connecting passageway portions 12, 21, and 9 are readily visible for inspection, cleaning and straight through brushing action in the case of passage 12 which is of importance where the handling of a food product such as cream is involved.

Also cooperating in a desired expansion flow of the discharged products is the precise forming of the bore 12 and the adjacent stem 16. As here shown, passage 12 is of tapered form diverging outwardly from the discharge orifice 21 to the outer side 13 of the body. Also the stem 16 is formed with a recess 22 adjacent its inner end 19 and which cooperates with the passage 12 to provide an immediate expansion of the contents pouring past the open O-ring and into the tapered bore 12.

The valve body 7 also projects externally of wall 8 to provide a cylindrical shoulder or head portion 23 which is used to support a detachable dispenser nozzle 24. The latter may be of more or less conventional form as generally illustrated in Patent No. 2,699,890 and is desirably moulded from plastic or rubber of hollow tubular form so as to provide a tubular base portion 26 and an angularly extending nozzle portion 27. As here shown, the tubular base portion 26 is dimensioned for detachably mounting on the external end or head portion 23 of the body for supporting the dispenser nozzle on the container. If desired, and as here shown, the base of the nozzle may be formed with an internal flange 28, which is dimensioned for snapping into and out of an external groove 29 formed in the head 23. The stem 16 is here carried by the nozzle and is mounted for reciprocation through an opening 31 in a wall portion 32 of the nozzle aligned with the open central axis of flange 28 so that

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the stem 16 will be supported in alignment with and for reciprocal engagement in passage 12 for engagement with the O-ring as above described.

The head 23 is also dimensioned to fit a chuck (not shown) used in charging the container with gas. During the charging operation the stem 16 is not in place and accordingly the entering gas passes directly through the tapered bore 12 and past the O-ring 14 and into the container. In practice it is frequently desirable to charge the container in stages so as to increase the total gas absorption by the liquid to be aerated. With other types of sealing valves heretofore used, an outward spray of cream or other contents takes place at each of the several charging stages. This outward spray is effectively eliminated in the present design. Also due to the absence of the stem 16 during charging, gas may be let into the container at a relatively high rate of flow to thus reduce fill time to a minimum.

Mounting of the valve body in the container wall 8 may be conveniently effected by the provision of an enlarged flange 33 on the body having an edge rim 34 engageable against the underside 11 of container wall 8. The flange 33 may be readily resistance welded to the wall 11 by the application of pressure and electricity causing the edge rim 34 to fuse into a continuous weld bead 36 as depicted in Figures 2 and 3.

In the construction here illustrated, shoulder 17 and groove 9 are concentrically arranged and passage 12 is eccentrically arranged so that the lower end of the bore 12 will properly intersect the groove 9 in the discharge orifice 21. The alternate construction providing the same result would be to form the shoulder 17 and groove 9 eccentric to the axis of the valve body and form the bore 12 concentric, or bore 12 may be slant-drilled so as to provide the proper intersection of the lower end of the bore with the O-ring groove.

The container 6 here illustrated is formed of a two-piece construction including a container body 41 having integral side and bottom walls with the side wall terminating in an open top rim 42 formed with an annular groove or socket in which is mounted an O-ring 43 of rubber or other soft compressible material. The outer periphery of O-ring 43 overhangs the side wall so as to slidably engage the inside surface of a depending skirt 44 formed on a detachable cap section 46. The valve body 7 is here mounted in the top wall of the cap section.

The cap section 46 is retained on the can body by a bayonet connection composed of a plurality of circumferentially spaced pins 47 on the side wall of the body and which engage in bayonet guideways 48 formed by embossments in the skirt 44. The internal pressure in the container functions to constantly urge the O-ring into sealed engagement with the opposed surfaces of the body

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and cap sections. The construction thus affords quick and easy attachment and detachment of the sections for filling and cleaning and a simple positive seal between the parts when in attached position. The specific construction of the container is being covered in a separate application.

I claim:

1. A dispenser for dispensing pressurized contents from a container comprising, a valve body adapted for sealed mounting in and extending through a wall of said container and being formed with a shoulder projecting from the normally interior side of said body, said shoulder being formed with an external annular groove, said body being formed with a discharge passage extending from said groove to the normally exterior side of said body, an O-ring mounted in said groove in sealing relation across said passage, and a manually displaceable actuating stem mounted for reciprocation in said passage for engagement of one end of said stem with said O-ring to displace the latter away from its normal sealed position across said passage.

2. A dispenser as characterized in claim 1 wherein said passage is of tapered form diverging outwardly from said groove and said stem is formed with a recess adjacent its said end cooperating with said passage to provide an expansion chamber for the released pressurized contents.

3. A dispenser for dispensing pressurized contents from a container comprising a valve body adapted for sealed mounting in and extending through a wall of said container and having a middle portion and two ends projecting from the external and internal sides of said wall, the external end of said valve body being substantially enlarged with respect to said middle portion, the internal end of said body being formed with an external annular groove, said body being formed with a discharge passage extending from said groove to said external end, an O-ring mounted in said groove in sealing relation across said passage, a resilient dispenser nozzle having a tubular base portion formed with an inwardly-directed resilient flange and detachably snap-fitted over the enlarged external end of said valve body with said resilient flange engaging the middle portion thereof, and a manually engageable actuating stem carried by said nozzle and being mounted for reciprocation in said passage for engagement of the internal end of said stem with said O-ring to displace the latter away from its normal sealed position across said passage.

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