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EXTENSIBLE FAUCET FOR PRESSURIZED CONTAINERS

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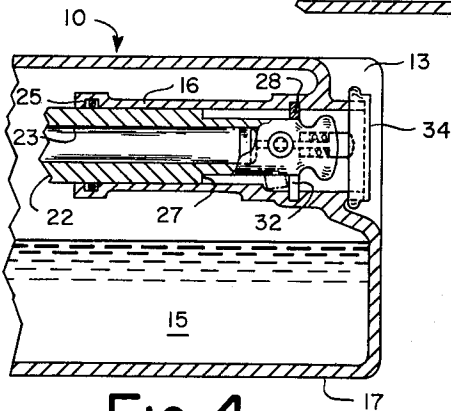
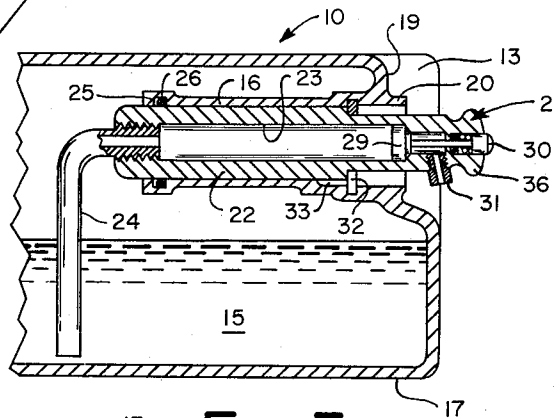
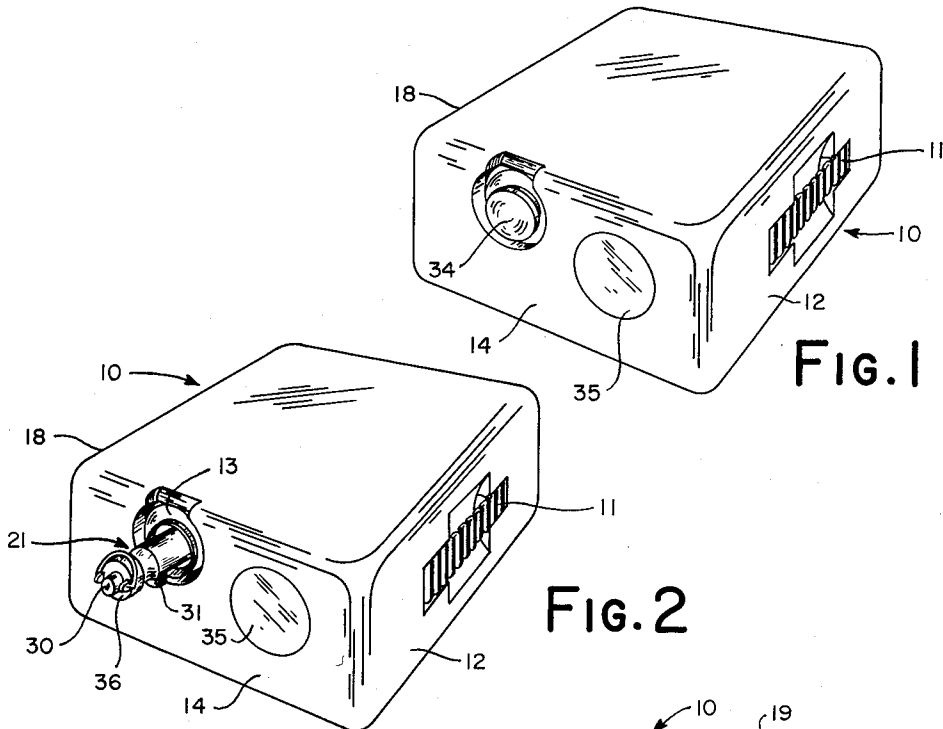


FIG. 3

FIG. 4

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1

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EXTENSIBLE FAUCET FOR PRESSURIZED CONTAINERS

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This invention relates generally to a pressurized container, and more particularly to a pressurized container having a faucet extending therefrom for dispensing fluids.

Containers of the class described are finding increasing use in the merchandising of fluent substances, particularly in the distribution of such substances for home consumption as, for example, beverages and the like. When used for this purpose, a protruding faucet must be provided on the container in order to permit the contents thereof to be easily dispensed. Such a protruding faucet, however, forms a discontinuity upon the exterior surface of the container. When containers of the class described are stacked in a warehouse awaiting shipment to a distribution point, or in a store for display and sale, the protruding faucets cause the containers to take up a great deal of floor space in excess of that which would be required were there no such protruding faucets. Furthermore, when a container of the class described containing a beverage is placed in a home-type refrigerator, its protruding faucet is very likely to interfere with other items commonly kept therein. In addition to causing the container to take up excessive space during storage, the protruding faucet is inherently susceptible to damage which would give rise to possible contamination of the container contents. By providing a guard on the protruding faucet, the likelihood of contamination arising from damage to the faucet is reduced. However, such expedient does not solve the problem of excessive floor space required to ship or store the containers.

A further problem arises when the spout of the faucet is fixed with respect to the container because this results in requiring dispensing of the contents to be done only when the container is in a certain position or attitude. Thus, it is very likely that the attitude of a beverage container for achieving optimum space utility in a home-type refrigerator is incompatible with the attitude required for the spout to dispense the contents.

Much effort has been expended to contribute a container of the class described in which the dispensing means do not hinder either storage of many containers or dispensing from a single container in the manner set forth above, but so far as is known, no successful device of the class described has yet been contributed to the art, and the problems here outlined remain unsolved. It is the object of this invention to contribute a container of the class described in which the provision of a protruding faucet thereon does not present any real obstacle to closely stacking many containers, and to dispensing the contents of the container from any position thereof.

As a feature of this invention whereby the objects thereof are achieved, a faucet is provided on the container that is movable from a retracted position entirely contained interior to the container, to an extended position exterior to the container. By making the faucet rotatable as well as reciprocable, it may be rotated when in the ex-

2

tended position until the spout can be used to dispense the contents regardless of the attitude of the container, and it may be rotated when in the retracted position until the spout can be used to lock the faucet in the retracted position. By making the cross-sectional area of the faucet sufficiently large, the force exerted thereon due to the difference between the pressure internal to the container and ambient pressure will automatically move the faucet from retracted position to extended position after the faucet has been rotated to the position at which the spout effects reciprocal movement of the faucet.

The more important features of this invention have thus been outlined rather broadly in order that the detailed description thereof that follows may be better understood, and in order that the contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will also form the subject of the claims appended hereto. Those skilled in the art will appreciate that the conception upon which this disclosure is based may readily be utilized as a basis for designing other structures for carrying out the several purposes of this invention. It is important, therefore, that the claims to be granted herein shall be of sufficient breadth to prevent the appropriation of this invention by those skilled in the art.

In the drawing:

FIGURE 1 is a perspective view of a container equipped with a faucet and made in accordance with this invention showing the faucet in its retracted position with a crown-type closure in place over the faucet.

FIGURE 2 is a perspective view of the container shown in FIGURE 1 with the faucet shown in its extended position with the spout oriented to dispense the contents.

FIGURE 3 is a sectional view showing the internal arrangement of the container shown in FIGURE 2.

FIGURE 4 is a sectional view showing the internal arrangement of the container shown in FIGURE 1.

There is shown in FIGURES 1 and 2, a parallelepiped container indicated generally at 10 having a handle 11 in one side face 12 to facilitate carrying the container, and a recess 13 in an adjacent front face 14 to house the faucet described below. Container 10 carries fluent material 15 under pressure which may be dispensed by means of the faucet. Attached to the interior of container 10 is inwardly extending tube 16 whose axis is equidistant from bottom 17 and side face 18. Tube 16 also projects outwardly from surface 19, which defines the bottom of recess 13, to form lip 20. Tube 16 thus defines an opening in face 14 into which cylindrical barrel 22 of a faucet 21 is reciprocally and rotatably mounted, as indicated by a comparison of FIGURE 3 with FIGURE 4.

Axial passage 23 forms a conduit for fluent material 15 which is forced therein through tube 24 attached to the interior end of barrel 22 by the internal pressure of container 10. The rear portion of tube 16 is enlarged and contains groove 25 for O ring 26 to provide a seal between the tube and barrel 22. The forward portion of barrel 22 is reduced in diameter to define shoulder 27 which limits extension of the barrel when it abuts snap ring 28 engaged in a groove adjacent the forward open end of tube 16.

Valve 29 is disposed at the forward end of faucet 21 coaxial with passage 23 and is operable by button 30

3

which is spring urged to normally seat valve 29 in closed position. Spout 31 connects with a portion of passage 23 and provides the means by which fluent material may be selectively withdrawn from container 10.

Snap ring 28 has a notch 32 as shown in FIGURE 4, and adjacent this notch, tube 16 has a recess 33 which is sufficiently large to receive spout 31 when faucet 21 is pushed to retracted position. The position of spout 31 in this condition is as shown in phantom lines in FIGURE 4, and crown closure 34 may then be seated on lip 20 since button 30 is now interior to the lip.

At the factory, faucet 21 is moved to retracted position as described above with spout 31 in recess 33 and rotated in tube 16 by means of knurled knob 36 so that spout 31 is engaged behind snap ring 28 to retain the faucet in retracted position. Crown closure 34 is then placed on lip 20 and the container may be filled as through flush closure 35. The result is a container having no protuberances to interfere with stacking containers in storage, or to interfere with other articles usually found in home-type refrigerators. The appearance of the container is as shown in FIGURE 1 and, as can be readily seen, a minimum amount of floor or shelf space is required by this shape.

Furthermore, closure 34 effectively seals the faucet so that the contents of the container cannot become contaminated during the time the container is in storage or in transit to the consumer. When in the hands of a consumer, closure 34 may easily be removed in the same manner that a bottle crown closure is removed. By grasping knob 36, faucet 21 may be rotated to align spout 31 with notch 32. The cross-sectional area of barrel 22 is sufficiently large for the force exerted thereon, due to the difference between the pressure internal to container 10 and ambient air pressure external to the container, to then automatically move the faucet from its retracted position to its extended position so that fluent material 15 may be withdrawn. Thus, the portion of barrel 22 exposed to the pressure differential constitutes means that is responsive to such differential for automatically moving faucet 21 from retracted to extended position when the latter is rotated so that spout 31 is aligned with notch 32. In such position, the pressure on the interior of faucet 21 acts to cause faucet 21 to automatically move from its retracted position to its extended position so that fluent material 15 may be withdrawn.

Faucet 21 is constructed so that the free end of tube 24 interior to the container opens in the same direction as the outlet of spout 31. Since the faucet is rotatably mounted in tube 16, turning spout 31 to the position required for dispensing fluent material 15 will necessarily place the free end of tube 24 within the fluent material regardless of what surface the container is resting upon. For example, if the container is resting on bottom 17, the free end of tube 24 is adjacent the bottom when spout 31 is turned to the position required for material to be dispensed; and when the container is resting on side 18, the free end of tube 24 is adjacent that side when spout 31 is turned to the position required for material 15 to be dispensed. By locating the axis of tube 16 equidistant from bottom 17 and side 18, the free end of tube 24 will be equidistant from both bottom 17 and side 18 when faucet 21 is turned to the positions described above.

It should be noted that when faucet 21 is in its retracted position with spout 31 engaged behind snap ring 28, and closure 34 is engaged on lip 20 to seal tube 16 and protect contents 15 from contamination, nothing protrudes from surface 14 to interfere with close stacking of many containers. This desirable result arises because surface 19 is recessed sufficiently for closure 34 to lie entirely within recess 13.

Those skilled in the art will now appreciate that by this invention, there is provided a container having a faucet for dispensing pressurized fluent material which nevertheless takes up a minimum of storage space, per-

4

mits convenient stacking and storage, and safeguards the fluent material against contamination. It will be further appreciated that this invention also provides a container in which a retractable faucet is automatically extendable for permitting dispensing of fluent material from the container in whatever position is most convenient for its storage.

What is claimed is:

1. In a rectangular container for holding fluent material under pressure, the combination with a bottom, a side and a front wall on said container that are mutually perpendicular, of a faucet rotatably mounted in said front wall about an axis normal to said front wall and equidistant from said bottom wall and said side wall, conduit means rigidly connected to said faucet interior to said container, said conduit means having an open end through which material to be dispensed is adapted to pass, a spout rigidly connected to said faucet exterior to said container, said spout having an open end through which fluent material is dispensed, said faucet including said conduit and spout being rotatable as a unit on said front wall, a valve movably mounted in said faucet, said valve being selectively operable whereby the pressure in said container forces the material through the conduit and faucet and out the spout, the open end of said conduit being adjacent the bottom when the container rests thereon, and the open ends of said spout and conduit facing in the same direction whereby said material may be dispensed when said container rests on said side by rotating said faucet so that the open end of the spout faces said side.

2. A container comprising a hollow housing, and a faucet having a body, said body being slideably and rotatably mounted on said housing with one end of the body being interior to the housing and the other end being exterior, a spout on said other end, said faucet being slideable from a retracted position where said spout is interior to the housing to a projected position where said spout is exterior to said housing, said housing adapted to contain fluent material under a pressure that exceeds ambient pressure whereby the pressure differential across the ends of the body urges the faucet to projected position, said faucet having a valve for dispensing fluent material through the spout when the faucet is in projected position, means on said housing cooperable with said spout to prevent sliding movement of the faucet from projected to retracted position at all angular positions of the faucet but one, said faucet being rotatable away from said one angular position when the faucet is in retracted position, retaining means on said housing cooperable with said spout when the faucet is in retracted position at any angular position but said one angular position for preventing movement of said faucet to projected position, and means on said faucet responsive to said pressure differential for automatically moving said faucet from retracted to projected position when the faucet is rotated to said one angular position.

3. A container comprising a hollow housing, said housing having a cylindrical bore connecting the interior of the housing to the exterior, a faucet having a cylindrical body of substantially the same diameter as the bore, said body being slideably and rotatably mounted in said bore with one end of the body being interior to the housing and the other end being exterior, a spout on said other end of the body, said faucet being axially slideable in the bore from a retracted position where said spout is contained within said bore to a projected position where said spout is exterior to said bore, said housing adapted to contain fluent material under a pressure that exceeds ambient pressure whereby the pressure differential across the ends of the body urges the faucet to projected position, a valve on said faucet for dispensing the fluent material through the spout when the faucet is in projected position, means in said bore cooperable with said spout to prevent axial movement of said faucet from projected to retracted position at all angular positions of the faucet but one, said faucet being rotatable away from said one angular position when the faucet is in

5

retracted position, and retaining means in said bore cooperable with said spout when the faucet is in retracted position and is at any angular position but said one angular position for preventing movement of the faucet to projected position, said one end of the body being sufficiently large in cross-section to cause the force exerted thereon due to the pressure differential to automatically move the faucet from retracted position to projected position when the faucet is rotated to said one angular position.

4. A container comprising a hollow housing, a tube on the exterior of the housing extending away therefrom and terminating in a free end, a cylindrical bore in said tube connecting the interior of the housing to the exterior, a faucet having a cylindrical body of substantially the same diameter as the bore, said body being slideably and rotatably mounted in said bore with one end of the body being interior to the housing and the other end being exterior, a spout on said other end of the body, said faucet being axially slideable in the bore from a retracted position where said spout is contained withdrawn below the level of the free end of the tube to a projected position where said spout extends beyond the free end of the tube, said housing adapted to contain fluent material under a pressure that exceeds ambient pressure whereby the pressure differential across the ends of the body urges the faucet to projected position, a valve on said faucet for dispensing the fluent material through the spout when the faucet is in projected position, means on said tube cooperable with said spout to prevent axial movement of said faucet from projected to retracted position at all angular positions of the faucet but one, said faucet being rotatable away from said one angular position when the faucet is in retracted position, retaining means on said tube cooperable with said spout when the faucet is in retracted position and is at any angular position but said one angular position for preventing movement of the faucet to projected position, means on said faucet responsive to the pressure differential across the ends of the body for automatically moving said faucet from retracted to projected position when the faucet is rotated to said one angular position, and cap means removably connected to the free end of said tube when the faucet is in retracted position for closing the bore and covering the faucet.

5. A container comprising a hollow housing, a tube on the exterior of the housing extending away therefrom and terminating in a free end, a cylindrical bore in said tube connecting the interior of the housing to the exterior, a faucet having a cylindrical body portion of substantially the same diameter as the bore, a coaxial cylindrical spout portion of reduced diameter on one end of the body portion, said body portion being slideably and rotatably mounted in said bore with the other end of the body portion being interior to the housing and said one end being exterior, a spout on said spout portion, said spout having a free end, said faucet being axially slideable in the bore from a retracted position where said spout is below the level of the free end of the tube to a projected position where said spout extends beyond the free end of the tube, said housing adapted to contain fluent material under pressure that exceeds ambient pressure whereby the pressure differential across the ends of the body urges the faucet to projected position, a valve on said faucet for dispensing the fluent material through the spout when the faucet is in projected position, and a transverse partition in said bore, said partition having a circular opening of the same diameter as the spout portion, said partition having a radial opening for limiting axial movement of said faucet from projected to retracted position at all angular positions of the faucet but the one in which the spout is aligned with the radial opening, said faucet being rotatable away from said one angular position when the faucet is in retracted position, said partition being cooperable with said spout when the faucet is in retracted position and is at any angular position but said one angu-

6

lar position for preventing movement of the faucet to projected position, said other end of the body portion being sufficiently large in cross-section to cause the force exerted thereon due to the pressure differential to automatically move the faucet from retracted position to projected position when the faucet is rotated to said one angular position.

6. The container of claim 4 including cap means removably connected to the free end of said tube when the faucet is in retracted position for closing the bore and covering the faucet.

7. A container comprising a hollow housing, a faucet having a body rotatably mounted on said housing so that the container is rotatable about the axis of the body when the faucet is held fixed, said housing adapted to be partially filled with fluent material under a pressure that exceeds ambient pressure, the level of the fluid in the housing remaining parallel to the axis of the body when the housing is at any angular position relative to the axis, said body having an inner portion interior to the housing and an outer portion exterior to the housing, said body having a hole connecting the inner portion with the outer portion, a hollow conduit rigidly attached to the inner portion of the body and connected to said hole, said conduit having an open end, a spout rigidly attached to the outer portion of the body and connected to said hole, said spout having an open end, said body with said conduit and spout attached being rotatable on said housing as a unit to a position where the open end of the conduit is below the level of the fluid whenever the level is parallel to the axis, a valve on said body for controlling dispensing of the fluid, operation of the valve when the open end of the conduit is below the surface level of the fluid causing the pressure to force the fluid into the open end of the conduit, through the hole in the body and out the spout whereby the fluid can be dispensed from the housing regardless of its angular position relative to said axis, said body being axially slideable on said housing from a retracted position where the faucet is within the housing to a projected position where the spout of the faucet is external to the housing and the fluid can be dispensed, said faucet being rotatable in the retracted and the projected positions, and means on said housing to prevent axial movement of the faucet from retracted to projected position at all but one angular position of the faucet relative to the housing, said inner and outer portions of said body having a pressure differential thereacross which automatically moves the faucet from retracted to projected position when the latter is in said one angular position.

8. A container comprising a hollow housing having bottom, side and front walls that are mutually perpendicular, said housing adapted to contain fluent material under pressure, and a faucet for dispensing said fluent material, said faucet having a body portion rotatably mounted in said front wall about an axis normal to said front wall and equidistant from said bottom wall and said side wall, spout means rigidly attached to said body exterior to said housing, said spout means having a free end with an opening therein, conduit means rigidly attached to said body interior to said housing, said conduit means having a free end with an opening therein, said faucet including the body, spout means and conduit means being rotatable on said front wall as a unit until the openings of the free ends of both the conduit means and spout means face the bottom wall when the housing rests thereon, said faucet having a valve by which dispensing of the fluent material is controlled, said faucet being rotatable on said front wall until the free ends of both the conduit means and spout means face the side when the housing rests thereon whereby the fluent material can be dispensed regardless of whether the housing rests on its bottom or side.

9. In a rectangular container for holding fluent material under pressure and having a bottom wall, a side wall, and a front wall which are mutually perpendicular: dispensing means for dispensing said fluent material including a faucet

mounted in said front wall for rotation about an axis normal to said front wall and equidistant from said bottom wall and said side wall, spout means rigidly attached to said faucet exterior to said container and having an opening, conduit means rigidly attached to said faucet interior to said container, said conduit means being inclined with respect to said axis and having an opening that is displaced from said axis approximately the same distance as said axis is displaced from said bottom wall and said side wall, the opening of said spout means facing in the same direction as the opening of said conduit means, said spout means and conduit means being rotatable as a unit when the faucet is rotated so that when said container rests on said bottom wall said faucet is rotatable to a position where the openings of said conduit and spout means face the bottom wall and when said container rests on said side wall

said faucet is rotatable to a position where the openings of said conduit and spout means face the side wall.

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