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B. FEINSTEIN ETAL

3,167,221

REVERSIBLE AND VENTED SPOUT UNIT AND CAN

Filed April 10, 1961

FIG. 1.

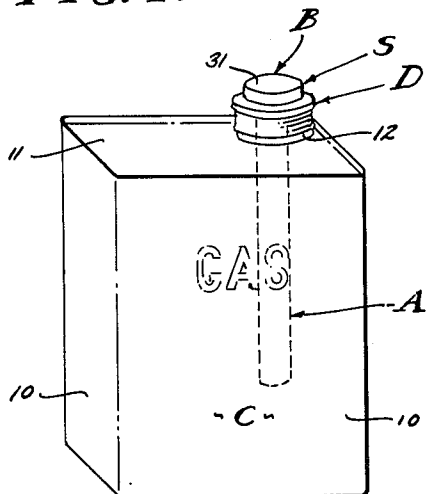


FIG. 2.

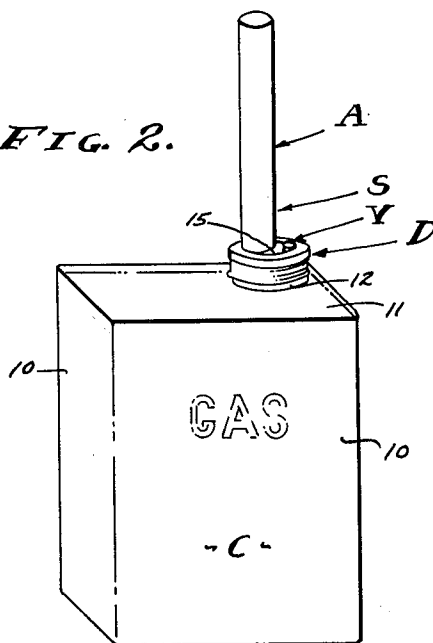


FIG. 3.

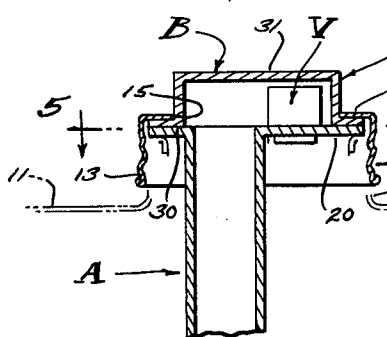


FIG. 4.

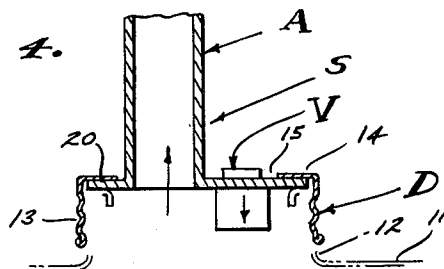


FIG. 5.

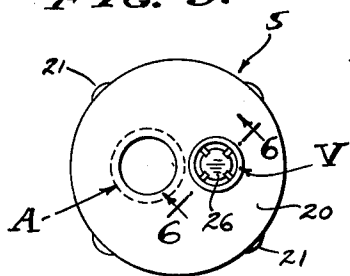
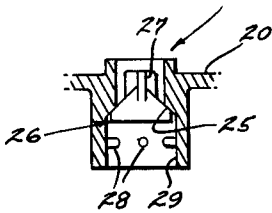


FIG. 6.



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3,167,221 REVERSIBLE AND VENTED SPOUT UNIT AND CAN

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This invention relates to cans for storing liquid, particularly volatile liquid, and is particularly concerned with a vented spout useful to dispense liquid from the can, it being a general object of this invention to provide a combined spout and closure for a liquid storage container, or can, and which usefully serves as a dispenser and alternately as a closure.

Liquid storage containers, or commonly referred to as cans, are widely employed to hold volatile liquids such as cleaning solvents and gasoline, etc. The volume of these cans varies widely, in the country, from a single pint to, say for example, five gallons. Although the size of the can is not important a usual and widely used size is the one gallon size, this being the unit of measurement most widely employed in the sale of volatile fluids, such as gasoline.

The container or can of the class under consideration varies widely in geometric configuration and is usually made of sheet metal, with side walls, a top and bottom, and closed by a single screw cap. The cap covers an opening, usually at one side and corner of the top, so that the liquid can be poured from the can by tipping the same. However, pouring cannot be accomplished satisfactorily from a full can, especially without the provision of a pouring spout, and even with a tubular spout in place of the said cap satisfactory pouring cannot be obtained. Dissatisfaction arises from the lack of a vent to admit air to displace the liquid that is poured. Consequently, without a vent there is a periodic surging of liquid, causing it to gush forth uncontrollably at intervals. This periodic and indeterminable gushing action is present with or without a spout, when pouring from a can without a vent, and this invariably results in substantial spillage and slow dispensing.

An object of this invention is to provide a spout that can be stored within the container or can and which can be withdrawn and mounted for convenient pouring of liquid from the said can.

Another object of this invention is to provide a vented pouring spout for a container or can and which prevents surging of liquid as it is dispensed. Further, the said vent means that we provide is incorporated in the spout structure and does not encumber the said can in any way.

It is still another object of this invention to provide a vent construction to be applied to the already standardized container or can construction, wherein the spout enters through the usual pouring opening for housing it within the said can, and wherein the said spout mounts on and projects from the said usual pouring opening.

The various objects and features of this invention will be fully understood from the following detailed description of the typical preferred form and application thereof, throughout which description reference is made to the accompanying drawings, in which:

FIGS. 1 and 2 are perspective views showing a typical can of the class under consideration and the two useful installations of the vented can spout of the present invention.

FIGS. 3 and 4 are enlarged detailed sectional views, FIG. 3 showing the position of the can spout shown in FIG. 1, and FIG. 4 showing the position of the can spout as shown in FIG. 2.

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FIG. 5 is a plan view of one of the parts and taken as indicated by line 5—5 on FIG. 3.

FIG. 6 is an enlarged detailed section of a portion of the structure and taken as indicated by line 6—6 on FIG. 5.

In the drawings we have shown a typical container or can C of the type under consideration. Combined with the said can C is the closure and pouring spout unit S of the present invention. In FIG. 1 of the drawings the spout and vent unit S is shown with a spout A inserted into the can C and with the closure B in use and exposed. In FIG. 2 of the drawings the spout and vent unit S is shown mounted for pouring liquid from the can C and with the closure B removed and not used. In both of the two conditions shown in FIGS. 1 and 2, respectively, the tubular pouring opening of the can C is employed to receive and to position the spout and vent unit S.

The can C that we have shown is a typical rectangular one-gallon can with flat side walls 10, a flat bottom, and a flat top 11. The pouring opening 12 is a tubular part offset to one corner of the top 11 and it projects normally therefrom. The particular opening 12 that we employ is a standardized one and three-quarter inch opening, the part 12 forming the same being threaded to receive a cap that is not employed, but which is modified as a coupler D, to be described.

The coupler D that we employ in lieu of the usual cap is essentially the same as a cap in that it has a depending skirt 13 that is threaded to screw onto the opening part 12. However, the top 14 of the cap is modified and provided with an opening 15 therethrough and of substantial size. In practice, only a small marginal portion of the top 14 remains and such as to overlie the top rim of the part 12. It is to be understood that other types of caps may be employed, for example snap-on type caps can be used thus avoiding use of screw threads.

The spout and vent unit S involves an elongate tubular spout A carried by a mounting plate 20 and adapted to have two assembled positions relative to the can C. Further, the unit S involves a vent means V also carried by the mounting plate 20. As shown, the said mounting plate 20 is a flat disc-shaped element, smaller in diameter than the inside diameter of the threads of the coupler D. A plurality of small radial projections 21 extend from the periphery of the plate 20 in order to engage with the threads in the coupler D and so that the parts remain assembled and do not easily separate.

The tubular spout A projects from one side of the plate 20 and opens at the other side of the plate 20, said spout A being spaced inward from the periphery of the plate so as to extend by or through the opening 15 in the coupler D.

The vent means V is positioned alongside the spout A and oppositely from the spout A. That is, the spout A projects from one side of the plate 20 while the vent means V projects from the opposite or other side of the plate 20. As shown, the vent means V is a valve means that permits fluid flow in one direction only, in a direction opposite to the direction of flow in the spout A when liquid flows therethrough from the can C. The valve of the vent means V is a poppet type check valve with a seat 25 that is engaged by a valve disc 26. A stem 27 extends from the disc 26 to guide the same and projections 28 extend inwardly in the flow passage 29 to retain the disc 26 in working position relative to the seat 25.

In accordance with the invention, the vent means V is in the form of a tubular element that projects well into the can chamber in order to admit displacement air to said chamber at a point removed inwardly from the plane of the plate 20 where liquid enters the spout A. Thus, air

entering the chamber does not merely exhaust again through the spout A but remains in the chamber allowing the liquid only to discharge therefrom.

It is apparent that the coupler D overlies the plate 20 to clamp it in working position with the spout extending from or into the chamber in the can C. When the said spout A is extended into the can C to be housed, then the closure B is utilized to close the otherwise open spout A and the vent means V that is operable to open. The said closure B is a cap-shaped element with a rim 30 to seal with the top 14 of the coupler D and with a dome 31 to overlie the vent means V that projects from the plate 20. With the unit S installed in the can C, as shown in FIG. 1, there is sealed engagement of the closure B with the opening part 12, the plate 20 being clamped therebetween, and liquids are safely contained within the chamber in the can, said spout being hidden from view.

From the foregoing it will be apparent that we have provided a very simple and readily useful combination of elements that can be quickly assembled in the two manners shown. In order to use the vented can spout of the present invention it is simply necessary to unscrew the coupler D and to reverse the position of the spout A. The closure B is removed from the assembly and the coupler D reapplied as shown in FIGS. 2 and 4, whereupon the structure is ready for use simply by tipping the can. Liquid will readily flow from the spout A without surging thereof, this action being afforded by the provision of the vent means V which operates to jet displacement air into the chamber of the can while allowing full flow of liquid from the said chamber.

Having described only a typical preferred form and application of our invention, we do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to ourselves any modifications or variations that may appear to those skilled in the art and fall within the scope of the following claims.

Having described our invention, we claim:

1. In combination with a can having a closed chamber therein and with a single opening to the said chamber; a reversible spout unit comprising a pouring tube permanently fixed to and extending from one side of a mounting plate and a valve controlled vent opening displaced laterally of the pouring tube and through and open at said mounting plate, said plate being co-extensive with the said single opening and with an opening therethrough passing the tube and exposing the vent opening, the spout unit having a first mounted position with the pouring tube projected through the opening and into the chamber and a second mounted position with the pouring tube projected from the opening at the exterior of the chamber, a coupler engaging the plate to secure it to the can, and a closure to overlie and seal the first mentioned opening when the spout unit is in said first position.

2. In combination with a can having a closed chamber therein and with a threaded part forming a single opening to the said chamber; a reversible spout unit comprising a pouring tube permanently fixed to and extending from one side of a mounting plate and a valve controlled vent opening displaced laterally of the pouring tube and through and open at said mounting plate, said plate being co-extensive with the said part and with an opening therethrough passing the tube and exposing the vent opening, the spout unit having a first mounted position with the pouring tube projected through the part and into the chamber and a second mounted position with the pouring tube projected from the part at the exterior of the chamber, a threaded coupler screwed onto the plate and securing it to the part on the can, and a closure to overlie and seal the said part when the spout unit is in said first position.

3. In combination with a can having a closed chamber

therein and with a single opening to the said chamber; a reversible spout unit comprising a pouring tube permanently fixed to and extending from one side of a mounting plate and a valve controlled vent opening displaced laterally of the pouring tube and through and open at said mounting plate and permitting fluid to flow in a direction opposite from the extension of the pouring tube, said plate being co-extensive with the said opening and with an opening therethrough passing the tube and exposing the vent opening, the spout unit having a first mounted position with the pouring tube projected through the single opening and into the chamber and a second mounted position with the pouring tube projected from the opening at the exterior of the chamber, a coupler engaging the plate to secure it to the can, and a closure to overlie and seal the first mentioned opening when the spout unit is in said first position.

4. In combination with a can having a closed chamber therein and with a threaded part forming a single opening to the said chamber; a reversible spout unit comprising a pouring tube permanently fixed to and extending from one side of a mounting plate and a valve controlled vent opening displaced laterally of the pouring tube and through and open at said mounting plate and permitting fluid to flow in a direction opposite from the extension of the pouring tube, said plate being co-extensive with the said part and with an opening therethrough passing the tube and exposing the vent opening, the spout unit having a first mounted position with the pouring tube projected through the part and into the chamber and a second mounted position with the pouring tube projected from the part at the exterior of the chamber, a threaded coupler screwed onto the plate and securing it to the part on the can, and a closure to overlie and seal the said part when the spout unit is in said first position.

5. In combination with a can having a closed chamber therein and with a threaded part forming a single opening to the said chamber; a reversible spout unit comprising a pouring tube permanently fixed to and extending from one side of a mounting plate and a valve controlled tube vent opening displaced laterally of the pouring tube and through and open at said mounting plate and projecting substantially from the plate in a direction opposite from the extension of the pouring tube and permitting fluid to flow in a direction opposite from the direction of said pouring tube extension, said plate being co-extensive with the said part and with an opening therethrough passing the pouring tube and exposing the tube vent opening, the spout unit having a first mounted position with the pouring tube projected through the part and into the chamber and a second mounted position with the pouring tube projected from the part at the exterior of the chamber, a threaded coupler screwed onto the plate and securing it to the part on the can, and a closure to overlie and seal the said part when the spout unit is in said first position.

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