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E. J. GRANT ET AL

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FLEX FAUCET

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Fig. 1.

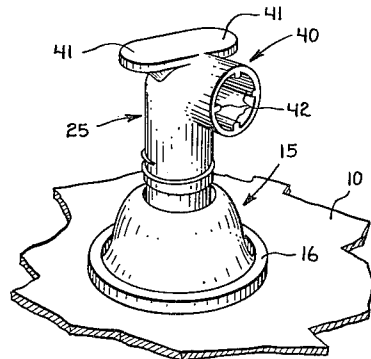
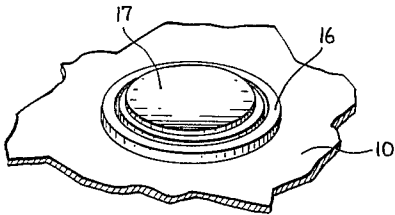


Fig. 2.

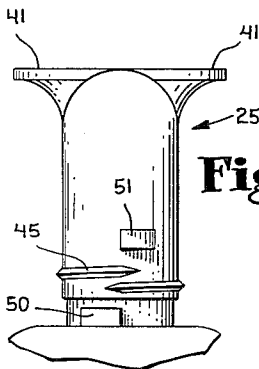


Fig. 5.

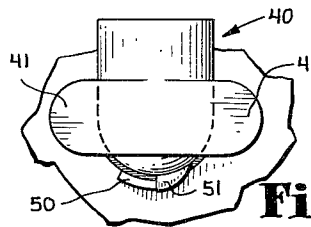


Fig. 6.

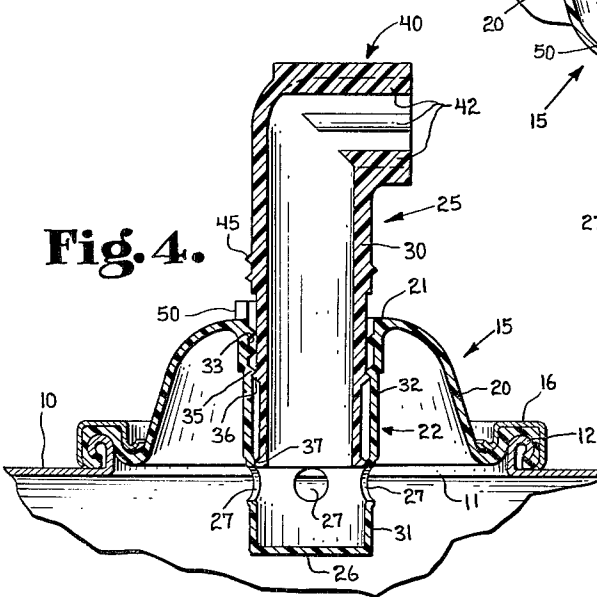


Fig. 4.

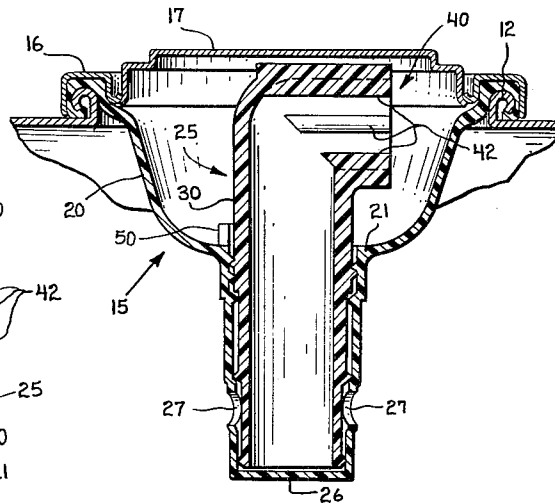


Fig. 3.

INVENTORS
EDWARD J. GRANT and
GLENN T. RIEKE
BY

Lockwood, Woodard, Smith & Winkert
Attorneys

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Edward J. Grant, Racine, Wis., and Glenn T. Rieke, Auburn, Ind., assignors to Rieke Metal Products Corporation, Auburn, Ind., a corporation of Indiana
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This invention relates generally to closures for cans and drums and more particularly relates to a flexible spigot or a contractible spigot closure combination or an extensible and retractable pouring spout for use with such cans and drums.

Extensible and contractible flexible pouring spout or spigot structures are known in the art for use with cans and drums. Prior art structures, however, do not incorporate easily and conveniently operated means for shutting off or starting flow from such flexible pouring spouts or spigots. Consequently, a primary object of the present invention is to provide a container-closure spout combination which is easily and conveniently operated to shut off or turn on flow from the container.

Still another object of the invention is to provide a closure arrangement which is generally flush with the container during shipment and storage and which, therefore, permits rough handling, storage and shipment of many such containers in confined spaces without damage to the closure arrangement, said closure arrangement also including an extensible and controllable spout or spigot for ease in dispensing the contents of the container.

Still another object of the invention is to provide a spout or spigot which can be aimed in the direction flow is desired prior to turning on the flow.

Related objects and advantages will become apparent as the description proceeds.

One embodiment of the present invention might include a normally nesting extensible plastic closure for containers, said closure having a first body portion with an outer periphery secured to the container for flexing between a nesting position within the container and an extended position outside of the container, a second generally cylindrical rigid body portion integral with said first body portion and extending toward the inside of said container from the inner periphery of the first body portion, said second body portion having a closed inner end and having holes in the sidewalls thereof, a spout or spigot extending out of said second body portion and having a cylindrical stem telescoped within said second body portion, said spout being movable axially of said second body portion to a first position wherein the stem covers the holes and communication between said container and spout is blocked, said spout being movable axially of said second body portion to a second position wherein said stream uncovers said holes so that communication is effected between said container and spout.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims.

FIG. 1 is a fragmentary view of a container incorporating the enclosure of the present invention and showing the closure in retracted sealed condition.

FIG. 2 is a view similar to FIG. 1 but showing the closure in extended position with the spout thereof pulled out to a "turned on" position.

FIG. 3 is a section through the structure of FIG. 1 taken along the axis of the spout stem.

FIG. 4 is a similar section but shows the structure in the operating position of FIG. 2.

FIG. 5 is a side elevation of the structure as viewed from the left side of FIG. 4.

FIG. 6 is a fragmentary top plan view of the structure as viewed from above FIG. 5.

Referring more particularly to the drawings, there is shown a container 10 which may be a drum, barrel or the like and which has an opening 11 (FIG. 4) provided therein and surrounded by an upturned flange 12. A body 15, preferably formed of a semi-resilient material such as polyethylene plastic or rubber composition is mounted within the opening 11 and is secured in place by a suitable clamping ring 16 which not only clamps the resilient material of the body to the flange 12 but which also receives a sealing member 17 (FIGS. 1 and 3).

The body includes a somewhat frusto-conical first body portion 20 joined at its inner periphery 21 to a rigid generally cylindrical second body portion 22. The body 15 is so formed that when the pouring spout or spigot 25 is not in use, it may be nested within the container as shown in FIGS. 1 and 3. This may be accomplished by forcefully pushing the spout or spigot 25 inwardly of the container so that the first body portion 20 flexes about its outer periphery so as to extend inwardly of the container as shown in FIG. 3. By pulling out on the spout 25 after removing the sealing member 17, the first body portion 20 can be caused to flex about its outer periphery to project outwardly of the container as shown in FIGS. 2 and 4. Because the second body portion 22 is rigid, it retains the same generally cylindrical shape when the first body portion is in either of the above positions.

It can be seen from FIGS. 3 and 4 that the second body portion 22 has a closed inner end 26 and has holes 27 around the second body portion spaced from the end 26 and of sufficient size to flood or fill the spout 25 when the container is positioned with the spout stem 30 extending horizontally and positioned below the level of liquid within the container. The second body portion 22 has its smallest internal diameter at 31, has a somewhat greater internal diameter at 32 and is internally threaded at 33. The internal threads 33 terminate in a bead 35 which extends completely around the body portion 22 and acts as a stop for the stem 30. The stem 30 of the spout 25 has a cooperating stop 36 which extends completely around the external periphery of the stem and which limits projection or withdrawal of the spout past the projected position illustrated in FIGS. 2, 4 and 5. It can be seen that when the spout is in the position of FIG. 4, the holes 27 provide communication between the interior of the container and the spout.

The stem 30 has a bead 37 formed on its external periphery. The outer non-stressed diameter of the bead 37 is slightly greater than the internal non-stressed diameter of the second body portion at 31 so that, when the stem 30 is in the position of FIG. 3, leakage is prevented from the holes 27 into the stem. This structure also prevents leakage between the stem and the portions 32 and 33 of the second body portion 22 when the spout is withdrawn as in FIG. 4.

The spout 25 has an extending end portion 40 which projects at right angles to the axis of the cylindrical stem 30. Formed on the distal end of the spout 25 are oppositely projecting finger tabs 41. The end portion 40 of the spout is formed internally with straight ribs 42 arranged at 90° angles around the inside of the portion 40 and extending in the same direction as the portion 40. The ribs 42 function to prevent swirling of the liquid flowing through the spout.

The spout 25 can be moved inwardly of the container from the position shown in FIGS. 2 and 4 by merely pushing the spout forcefully in the inward direction. The stem 30 is thereby caused to telescope in the second body portion 22 until the threads 45 on the external periphery of the stem engage the threads 33. When this occurs,

the stem 30 will cover the holes 27 and the bead 37 will be positioned between the end 26 of the second body portion and the holes. Thus, flow is cut off from the holes to the interior of the spout by merely pushing inwardly possibly by grasping the spout by the finger tabs 41.

If this step is reversed, the spout can be turned on by merely a single straight outward pull. It should be mentioned that the bead 36 has a slightly larger external non-stressed diameter than the internal non-stressed diameter of the portion 32 so that when the spout is pushed inwardly to cut off flow, the beads 36 prevent flow between the stem and the second body portion.

The spout 25 can be moved to still a further position which is the position of FIG. 3 wherein the threads 45 are screwed into the threads 33. The position of the spout in FIG. 3 further insures that the closure is thoroughly sealed and leak-proof and is the usual shipping position of the spout. The "screwed in" position of FIG. 4 is the usual position in which the body 15 will be flexed between its inward and outward positions of FIGS. 3 and 4 although such flexing can also be accomplished with the spout unscrewed as in FIG. 4. The body 15 is provided with an integral stop 50 at the junction of the first and second body portions. The spout 25 is also provided with an integral stop 51. The stops 50 and 51 engage one another when the spout is completely screwed in to prevent "over screwing" and stress cracking of the spout and body.

It will be evident from the above description that the spout can be aimed prior to its turning on. This is accomplished by unscrewing the spout, by aiming the projecting end portion 40 of the spout in the direction desired and by then pulling the spout outwardly of the container so that liquid flow is turned on.

While the invention has been disclosed and described in some detail in the drawings and foregoing description, they are to be considered as illustrative and not restrictive in character, as modifications may readily suggest themselves to persons skilled in this art and within the broad scope of the invention, reference being had to the appended claims.

The invention claimed is:

1. A normally nesting extensible plastic closure for containers including a body having a first body portion with an outer periphery adapted to be secured to the container for flexing between a nesting position within the container and an extended position outside of the container, said first body portion having an inner periphery, a generally cylindrical second rigid body portion integral with said first body portion and extending inwardly of said container from the inner periphery of said first body portion, said second portion having a closed inner end and having holes in the sidewall thereof, a spout extending out of said second body portion, said spout including a cylindrical stem telescoped within said second body portion, said spout being movable axially of said second body portion to a first position wherein said stem covers said holes and communication between said container and said spout is blocked, said spout being movable axially of said second body portion to a second position wherein said stem uncovers said holes so that communication is effected between said container and spout, said second body portion being internally threaded along a portion thereof adjacent said first body portion, said stem being externally threaded whereby said spout can be screwed inwardly of said container into said second body portion from said first position, said second body portion having an internal bead adjacent its threads and said stem having first and second external beads, said first bead being disposed inwardly of said internal bead and engageable therewith for stopping said spout in said second position and in pressure and sealing engagement with the internal surface of said second body portion to provide a fluid seal

between said second body portion and said stem when said holes are covered or uncovered, and said second bead being disposed at the inner end of said stem in pressure and sealing engagement with the internal surface of said second body portion to provide a fluid seal between said body portion and said stem when said holes are uncovered, said spout having an extending end portion external of said second body portion and projecting at right angles to the axis of said cylindrical stem, said spout being rotatable in said second body portion between said first position and said second position for aiming said spout, outwardly projecting finger tabs extending from the distal end of said spout, and cooperating stop members on said stem and body for limiting threading of said stem into said second base portion.

2. A normally nesting extensible plastic closure for containers having a first body portion with an outer periphery adapted to be secured to the container for flexing between a nesting position within the container and an extended position outside of the container, said first body portion having an inner periphery, a generally cylindrical second rigid body portion integral with said first body portion and extending inwardly of said container from the inner periphery of said first body portion, said second portion having a closed inner end and having holes in the sidewall thereof, and a spout extending out of said second body portion, said spout including a cylindrical stem telescoped within said second body portion, said spout being movable axially of said second body portion to a first position wherein said stem covers said holes and communication between said container and said spout is blocked, said spout being movable axially of said second body portion to a second position wherein said stem uncovers said holes so that communication is effected between said container and spout, said second body portion being internally threaded along a portion thereof adjacent said first body portion, said stem being externally threaded whereby said spout can be screwed inwardly of said container into said second body portion from said first position, said second body portion having an internal bead adjacent its threads and said stem having first and second external beads, said first bead being disposed inwardly of said internal bead and engageable therewith for stopping said spout in said second position and in pressure and sealing engagement with the internal surface of said second body portion to provide a fluid seal between said second body portion and said stem when said holes are covered or uncovered, and said second bead being disposed at the inner end of said stem in pressure and sealing engagement with the internal surface of said second body portion to provide a fluid seal between said body portion and said stem when said holes are uncovered, said spout having an extending end portion external of said second body portion and projecting at right angles to the axis of said cylindrical stem, said spout being rotatable in said second body portion between said first position and said second position for aiming said spout.

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WILLIAM F. O'DEA, *Primary Examiner.*
ISADOR WEIL, *Examiner.*