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3,250,428

MEANS OF ATTACHING A CLOSURE TO CONTAINERS

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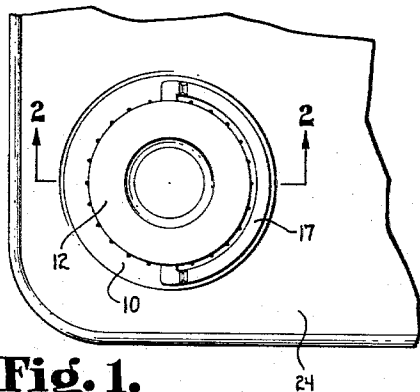


Fig. 1.

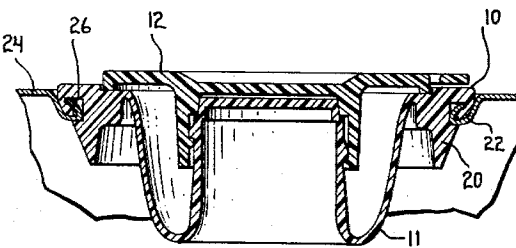


Fig. 2.

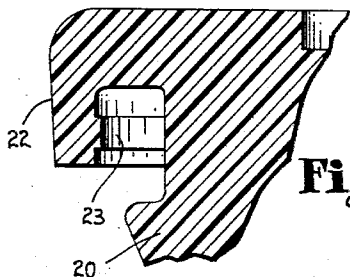


Fig. 6.

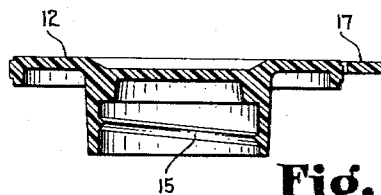


Fig. 3.

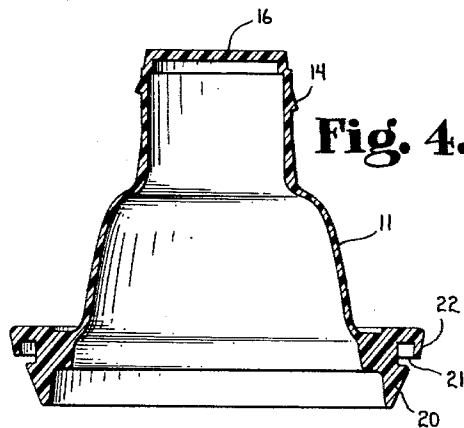


Fig. 4.

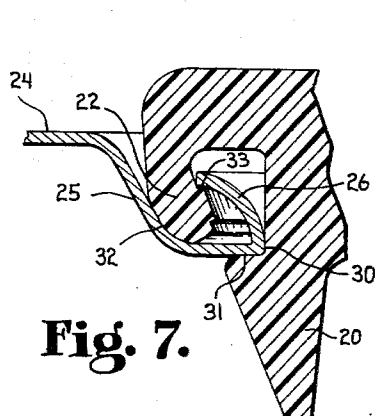


Fig. 7.

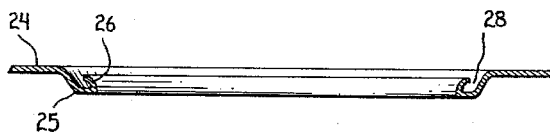


Fig. 5.

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MEANS OF ATTACHING A CLOSURE TO
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1 Claim. (Cl. 220—60)

This invention relates generally to closures for containers and more particularly to a plastic closure having structure for sealing and locking it with respect to a container.

Conventional plastic closures for fluid containers are provided with various types of flange structures adapted to cooperate with flanges formed on the containers for sealing and locking the closure with respect to the container. It has been found difficult to maintain sealing engagement and locking engagement of the closure with respect to the container because of shrinkage which is inherent in many plastic materials. Such shrinkage may occur over a substantial period of time and, therefore, liquid containers in storage or in transit may develop leaks between the closure and container. Such shrinkage and also cold flowing of the plastic material may also cause the closure to become loose with respect to the container and become separated therefrom. Many fluids, such as liquid fuels and acids can create substantial damage and, hence, it is important in the designing of closures to provide permanent sealing and locking of the closure to the container. Leakage also represents an economic loss and customer complaint; wherefore, it is found necessary to provide closures which are permanent.

The principal object of this invention is to provide a plastic closure for fluid containers having structure adapted to cooperate with the container structure in a manner to provide permanent sealing and locking of the closure to the container.

Another object of this invention is to provide a closure for fluid containers which satisfies the foregoing object of the invention and which has sealing and locking structure adapted to be snapped into place over the container opening.

Still another object of this invention is to provide a closure of the character described which does not project beyond the surface of the container to any substantial degree, thus permitting stacking of a plurality of containers for space economy in shipping or display.

In accordance with this invention there is provided, in combination with a container having a depressed and upturned flange surrounding the container opening, a closure having a frusto-conical base portion adapted to project through said opening and engage a portion of said flange in locking and sealing relation thereto, and a peripheral flange member adapted to engage another portion of said container flange and seal and lock with respect thereto.

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

FIG. 1 is a top plan view of the closure as provided in accordance with this invention illustrating a portion of the container to which the closure is attached.

FIG. 2 is a cross section taken on line 2—2 of FIG. 1.

FIG. 3 is a cross section of the closure cap illustrated in FIGS. 1 and 2.

FIG. 4 is a cross section of the closure in extended position, the cap of FIGS. 1, 2 and 3 being omitted.

FIG. 5 is a partial cross section of the container top including the flange to which the closure may be attached.

FIG. 6 is an enlarged partial cross section of the flange portion of the closure.

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FIG. 7 is an enlarged partial cross section of the container flange and the closure flange in attached relation to one another.

Referring to the drawings, this invention comprises a container closure having a retractable and extensible pour spout of the same general character as shown in United States Letters Patent No. 2,561,596 granted to Irvin H. Rieke July 24, 1951, and Patent No. 2,895,654, granted to Glenn T. Rieke July 21, 1959, both of which are assigned to Rieke Metal Products Corporation, Auburn, Indiana. As in the aforementioned patents, the closure, as provided in accordance with this invention, comprises a plastic member having a flange portion 10, a flexible retractable and extensible spout 11 and a cap 12. FIG. 2 illustrates the spout in its retracted position, and FIG. 4 illustrates the spout in its extended position. The end of the spout may be threaded or engaged as indicated at 14 and the cap may be threaded or engaged as indicated at 15 whereby the cap may be taken on and off the end of the spout. An integral seal 16 is formed on the cap end of the spout and may be cut off when it is desired to pour fluid from the container. For pulling the spout to its extended position, the cap includes, as an integral part thereof, a flexible bail handle 17 which may have a structure similar to that shown in my Patent No. 2,895,654.

The flange 10 is novel in respect to the previously mentioned patents and includes a frusto-conical base portion 20. A groove or constriction is indicated at 21, and flexible downwardly projecting rim is indicated at 22. On the inside of rim 22 an inwardly projecting collar 23 is formed, and its function and purpose will be described hereinafter.

For cooperating with the flange of the closure, the container, such as a conventional metallic can 24, has an aperture formed by the depressed annular flange 25. When the aperture is formed, the flange is shaped to provide at its inner periphery a partially turned-over lip 26.

The closure is assembled to the container by inserting the frusto-conical base portion 20 through the container aperture and pressing the closure through the aperture with the downwardly projecting rim 22 entering the slot 28 formed by the lip 26 until the closure assumes the position illustrated in FIGS. 2 and 7. As illustrated in FIG. 7, the base 20 engages the container flange 25 at the point indicated at 30 in FIG. 7 to form a liquid-proof seal. The closure is locked to the container by the shoulder 31 of base 20, FIG. 7, which engages the container flange. A second liquid seal is provided at the point indicated at 32 in FIG. 7 where the rim 22 of the closure engages the container flange. There is a third sealing point, as indicated at 33 in FIG. 7, where the upper surface of collar 23 engages the edge of lip 26. This seal may or may not be effective when the closure is initially assembly to the container, but where the closure consists of a plastic material which has a tendency to shrink with age, the seal 33 will become effective and prevent leakage of fluid from the container even though such shrinkage breaks the seals at points 30 and 32.

A further feature of this invention comprises a second means for locking the closure to the container. When the rim 22 is forced into the slot formed by lip 26, the rim projects inwardly under the lip, and since the closure is intended to be manufactured of thermoplastic materials, such as polyethylene, a cold flow process occurs. The closure then assumes a permanent set, locking itself permanently under the lip 26. The double locking feature, as provided in accordance with this invention, insures that the plastic closure will not be pulled free of the container or otherwise loosened with respect thereto.

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This is also important, taking into consideration the fact that considerable force must be applied to the closure in order to pull the extensible spout to its extended position. Without the special locking feature, as provided herein, repeated extension and retraction of the spout might eventually cause the closure to be pulled from the container.

That invention claimed is:

In combination with a container having an aperture defined by a depressed annular flange shaped to provide a downwardly sloping portion and a partially turned over lip forming a slot facing outwardly of said aperture, a closure covering said aperture and comprising a base member projecting through said aperture, said base member including a cylindrical wall engaging the radially innermost edge of said flange to provide a seal, and a circumferential flange on said closure having a rim portion disposed in and bent into said slot in sealing contact

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with said sloping portion of said container flange, said rim including an internally projecting preformed collar forming a shoulder engaging with the inner surface of said lip in sealing and locking engagement therewith.

References Cited by the Examiner

UNITED STATES PATENTS

2,565,699	8/1951	Rieke	222—529
2,661,128	12/1953	Rieke	222—529
2,895,654	7/1959	Rieke	222—529
3,021,976	2/1962	Tracy	220—60
3,117,702	1/1964	Henchert	222—543
3,159,320	12/1964	Scholtz	222—468

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