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POURING ADAPTER FOR LIQUID CONTAINERS

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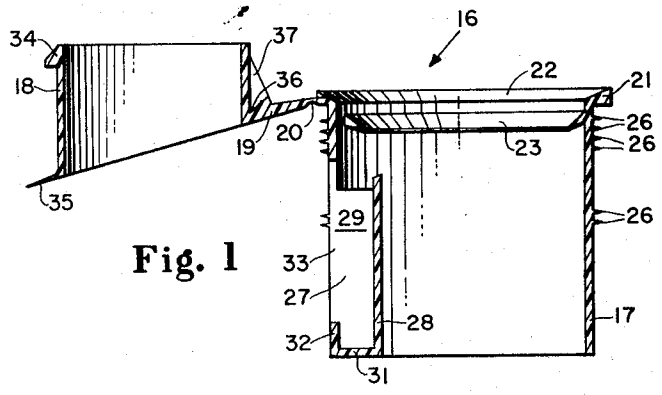

Fig. 1

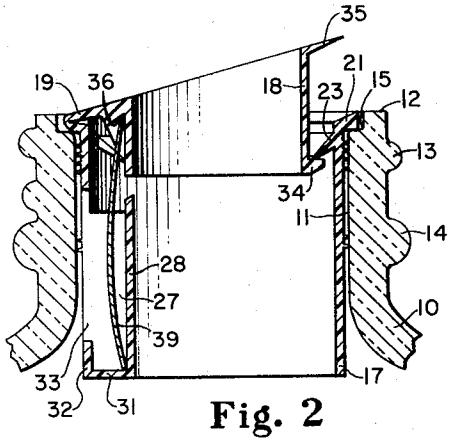

Fig. 2

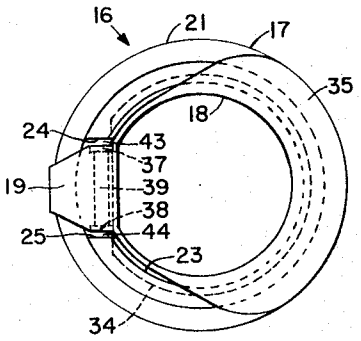

Fig. 3

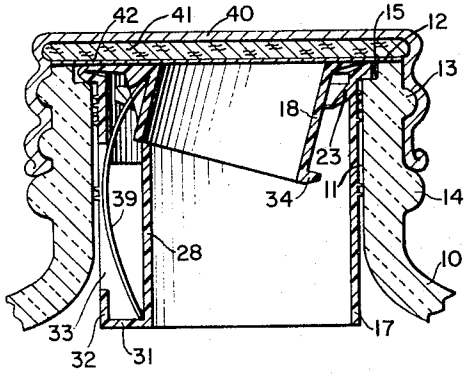

Fig. 4

INVENTOR.
Robert V. Burt

BY Fredrick H. Braun

ATTORNEY

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POURING ADAPTER FOR LIQUID CONTAINERS

Robert V. Burt, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio, a corporation of Ohio

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This invention relates to pouring adapters and more particularly to an adapter having a movable pour spout, the entire device being designed for assembly in the discharge opening of a liquid container.

When pouring liquids, e.g., liquid shortenings, salad and cooking oils, from conventional containers, a residuum of liquid droplets tends to form on the lip of the container when pouring is discontinued. Some of these droplets run down the outside surface of the container. As a result, the outer surface of the container becomes covered with a film of the liquid product. This is particularly objectionable if the liquid is of an oily character since it causes the outside surface of the container to become sticky and messy. In addition, if the oily product is subject to oxidative deterioration, rancid odors will develop if the container surface is exposed to the atmosphere during periods of storage and non-use.

Conventional glass and metal containers are normally provided with pouring lip designs which do not inherently prevent dripping and running down the outer surface when flow is stopped unless an adapter device of some kind is inserted in the container pouring opening. Generally speaking, drip-inhibiting adapters do not have adequate means for venting the pouring opening. This causes gurgling and slug-like flow when liquid is poured from the container. Most conventional adapters are also deficient in not providing adequate flow-back means for liquid droplets that flow over their drip-inhibiting surfaces. This allows the liquid droplets to run down the outer container surfaces which is objectionable as indicated heretofore.

The principal object of this invention is to obviate all of the above-mentioned difficulties.

Another object of this invention is to provide a pouring adapter which can be installed in the discharge opening of a conventional glass or metal container to prevent dripping of liquid when poured and also to prevent liquid droplets from running down the sides of the container.

A further object of the invention is the provision of a pouring adapter of this character which can be installed in the pouring opening of a container in such a way that it will not interfere with the formation of a liquid and gas-tight seal between the closure cap and the sealing surface on the pouring lip of the container when the closure cap is secured on the container.

Still a further object of the invention is the provision of a pouring adapter having a structure such that any liquid droplets which may inadvertently flow over the outer edge of the pouring lip are returned to the interior of the container without contacting its outer surfaces.

An additional object of the invention is the provision of a pouring adapter which is both simple and inexpensive and one which is easily assembled in order to reduce material, manufacturing and assembly costs to a point where the device is feasible for use on a large commercial scale.

The nature and substance of the invention can be summarized briefly as comprising a pouring adapter which can be assembled in the dispensing outlet of a container filled with liquid product. The pouring adapter is composed of an outer sleeve element assembled in the dispensing outlet of the container in liquid-tight relationship. An inner spout member is provided and is connected to the outer sleeve member by means of an integral strap element having a notch proximate the outer sleeve member.

The device is assembled by pivoting the inner pour spout member with respect to the outer sleeve member at the notch of the connecting strap element until the pour spout is assembled in substantially coaxial relationship with the sleeve element. The two elements are assembled into this position by forcing an outwardly projecting annular stop element on the pour spout member through a smaller inwardly projecting resilient ledge formed inside the outer sleeve member. A hinge is formed by the integral strap element to normally align the inner spout member with respect to the outer sleeve member. A flat strip string is provided in a preferred embodiment with one end engaging the bottom of a retaining pocket in the sleeve element. The other end of the spring bears against a notch in the pour spout member. The spring is provided to cause the pour spout member to be biased upwardly into pouring relationship with a substantial force in which position said stop element engages said inwardly projecting ledge. This is the normal pouring position of the adapter in which liquid is readily poured from the container when the cap is removed therefrom. An air vent is provided at the side of the adapter nearest the strap element so that liquid can be poured smoothly over the lip of the spout member on the side opposite the strap element. When not in use, the pour spout element can be forced downwardly into its retracted position by a conventional cap secured to the container opening.

While the specification concludes with claims particularly pointing out and distinctly claiming the subject matter regarded as forming the present invention, it is believed the invention will be better understood from the following description taken in connection with the accompanying drawing in which:

FIGURE 1 is an elevation, in cross section, of the pouring adapter showing the relative positions, respectively, of the spout member and sleeve member when formed in the mold.

FIGURE 2 is a fragmentary elevation, in cross section, of the pouring adapter fitted in the opening of a conventional container which shows the pouring position of the adapter parts when the cap is removed from the container.

FIGURE 3 is a plan view of the assembled adapter prior to being inserted in the container dispensing opening.

FIGURE 4 is a fragmentary elevation, in cross section, of the adapter assembled in the container opening showing the cap secured to the container whereby the spout member has been moved into its retracted position.

Referring now to the drawings, a description of the invention in its preferred embodiment will be made with reference thereto. The invention is designed for use with any conventional liquid container which can be made of glass, metal or any other material normally used to dispense liquid products of any kind. Purely for convenience, however, a glass container **10** is shown in FIGURES 2 and 4. The invention has been found to have utility when used in combination with glass containers of the kind commonly employed for packaging and dispensing liquid shortening, salad oils and like products. It is to be understood, however, that the material used for making the container is not limited to glass nor is the use of the pouring adapter necessarily limited to dispensing of edible oil products. These specific materials and products are suggested only to give a specific example of a practical application of the invention.

The container **10** is provided with a conventional glass bottle finish which includes a dispensing outlet or opening **11**, a sealing surface **12**, and a thread **13**. A transfer ring or bead **14** is normally provided on containers of this kind as will be appreciated by those skilled in the art of manufacturing glass containers. The container **10** is provided with a small annular cut-out **15** at the juncture of the opening **11** with the sealing surface **12**. The purpose

and advantages of the cut-out 15 will be explained in greater detail hereinafter although it should be understood that the cut-out 15 is not essential to the proper operation of the pouring adapter.

The pouring adapter shown generally at 16 is molded in the position illustrated in FIGURE 1 prior to assembly for reasons that will be apparent as the description proceeds. The pouring adapter can be molded from polypropylene or any like plastic material which is feasible from a practical and economical standpoint. The pouring adapter 16 comprises an outer sleeve member 17 and an inner pour spout member 18 which are integrally connected by the strap element 19, said strap being notched in close proximity to the outer sleeve member 17 as at 20.

The outer sleeve member 17 includes an annular outwardly extending flange 21 having a chamfered top surface 22. An inwardly and downwardly projecting ledge 23 is provided. The ledge 23 is annular in shape but is interrupted at its ends 24 and 25 as shown in FIGURE 3. The ledge 23 is relatively thin in cross section so that it is readily flexed when assembling the adapter. The thickness of the flange 21 is such that it fits fully within the cut-out 15 in alignment with or below the sealing surface 12 as best shown in FIGURES 2 and 4 to avoid any interference in the seal between the sealing surface 12 and the cap of the container 10.

A plurality of narrow circumferential rings or ridges 26 are spaced along the outer face of the wall portion of the sleeve 17 to provide a sealing means. The ridges 26 frictionally engage the opening 11 (FIGURES 2 and 4) to provide a liquid-tight seal between the sleeve member 17 and the container 10. The ridges 26 are sufficiently flexible so that they will seal satisfactorily when the diameter of the opening 11 of the container varies within reasonable limits. This makes it possible to insert the pouring adapter 16 into commercially available bottles supplied in large quantities wherein variations in the outlet diameter will normally occur.

A retaining pocket 27 may be formed in the outer sleeve member 17 on the same side as the strap 19. The retaining pocket 27 includes a front wall 28, side walls 29 and 30 (FIGURE 3), a bottom wall 31 (FIGURE 1) and a short upstanding rear wall 32 (FIGURE 1). A vent opening 33 is provided at the back which runs almost the full length of the retaining pocket 27.

The pour spout member 18 is formed with an outwardly projecting annular stop element 34 at one end. The other end is formed with an outwardly projecting sharp pouring lip 35 which is designed to inhibit dripping when liquid is poured from the container 10 through the spout 18 and over the lip 35. A notch 36 is formed at one end of the strap 19 with retaining wall elements 37 and 38 (FIGURE 3) at opposite sides thereof.

The pouring adapter 16 is molded in the shape of FIGURE 1. It is then assembled for use in the form of FIGURE 2. A flat strip spring 39 is placed in the retaining pocket 27 with one end resting on the bottom wall 31. The pour spout member 18 is pivoted at the notch 20 formed in the strap 19 so that it enters the top opening in the outer sleeve member 17. In doing so, the upper end of the strip spring 39 is moved into the notch 36 between the wall elements 37 and 38. The stop element 34 is moved downwardly in the opening in the sleeve member 17 until it is forced past the ledge 23. The ledge 23 has sufficient flexibility and resiliency to allow the stop element 34 to pass therethrough. When the pour spout member 18 is released, the strip spring 39 is bowed and forces the spout member 18 upwardly so that the stop element 34 bears against the underside of the ledge 23. When in assembled relation, the outer sleeve member 17 and the pour spout member 18 are substantially coaxial, as best shown in FIGURE 2.

The closure cap 40 is screwed on the thread 13 when the contents in the container 10 are to be sealed. This also acts to push the pour spout member 18 downwardly into retracted position (FIGURE 4). The results in a structure in which the pour spout member 18 is biased upwardly with substantial force so that it snaps into pouring position as soon as the cap 40 is removed.

It will be noted that when the pour spout member 18 is in retracted position, the chamfered surface 22 provides clearance for the pouring lip 35 so that the cap can be securely seated. The closure cap 40 has an internal sealing element which includes a compressive element 41 made of cork or the like material and a liner 42 which can be of thin aluminum or other suitable materials. When the closure cap 40 is firmly screwed to the thread 13, the liner 42 of the sealing element bears on the sealing surface 12 to provide a liquid and gas-tight seal. This is particularly important in the packaging of edible oil products and the like which are subject to deterioration on contact with air or oxygen.

When pouring liquid from the container 10, it will normally be held to cause liquid to flow over the lip 35 at the edge opposite the strap 19 (on the right side when viewed in FIGURE 2). In other words, a user would ordinarily grasp the container 10 so that the product flows over the highest portion of the pouring lip 35. It will be noted in FIGURE 3 that narrow elongated openings 43 and 44 are formed alongside the strap 19. The openings 43 and 44 form an air vent communicating with the vent opening 33 to permit air to flow into the container 10 while liquid is being poured out. The vent is formed at the side opposite the highest point of the pouring lip 35 when in normal pouring position as shown in FIGURE 2. The vent is important to the proper functioning of the invention since it eliminates undesirable gurgling, bubbling and slug-like flow when pouring liquid from the container 10 through the adapter 16.

Any liquid droplets that may flow over the sharp edge of the pouring lip 35 are returned to the inside of the container. It is not possible for these droplets to come in contact with the outside surface of the container 10. The droplets will run down the outside surface of the pour spout 18 where they will be retained in the channel formed between the ledge 23 and the stop element 34. If a large number of droplets are collected they will tend to flow into the container by moving beyond the ends 24 and 25 of the ledge 23. Any small residue will be returned to the container when the cap is attached to pivot the spout member 18 downwardly as shown in FIGURE 4.

While particular embodiments of the invention have been illustrated and described it will be obvious to those skilled in the art that various changes and modifications can be made without departing from the spirit and scope of the invention and it is intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

What is claimed as new is:

1. A pouring adapter for use with a liquid container having a dispensing opening and sealing surface comprising an outer sleeve member having sealing means on its outer diameter, said sealing means being fitted in frictional engagement within the dispensing opening in said container, an inwardly projecting ledge located intermediate the ends of said outer sleeve member, an inner spout member having a sharp pouring lip at one end, an outwardly projecting stop element surrounding the other end of said inner spout member, said outer sleeve member and said inner spout member being molded integrally with a strap joining said members at their upper ends, said strap being notched in close proximity to said outer sleeve member, the inner spout member being pivoted on said strap to a position inside of said outer sleeve so that said inner spout member and said outer sleeve member are substantially coaxial, means for biasing the inner spout member upwardly to its pouring position, said stop element bearing against the inwardly projecting ledge to limit

outward movement of said inner spout member caused by said biasing means, and a vent opening alongside said strap member, said vent opening being located opposite the highest point of said pouring lip of said inner spout member, said vent opening being provided to permit smooth pouring of liquid through said inner spout member.

2. A pouring adapter for use with a liquid container as claimed in claim 1 including a retaining pocket projecting inwardly from the wall of said outer sleeve member, a notch at one end of said strap adjoining said pour spout member, said biasing means including a spring seated in said pocket at one end and projecting into said notch at the other end, said biasing means urging said pour spout member into the pouring position.

3. A pouring adapter for use with a liquid container as claimed in claim 2 wherein said retaining pocket includes a bottom wall, a front wall, two side walls, a short upstanding rear wall, and a vent opening above said short upstanding rear wall.

4. A pouring adapter for use with a liquid container as claimed in claim 3 including a retaining guide on each side of said notch for retaining said spring.

5. A pouring adapter for use with a liquid container as

claimed in claim 4 including an annular cut-out in the top of the liquid container at the juncture of said dispensing opening with said sealing surface, said outer sleeve member having an outwardly extending annular flange surrounding its upper end, said annular flange fitting within said annular cut-out so that the sealing surface of the container is at least as high as the uppermost surface of the pouring adapter when the pour spout member is in retracted position.

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RAPHAEL M. LUPO, *Primary Examiner.*