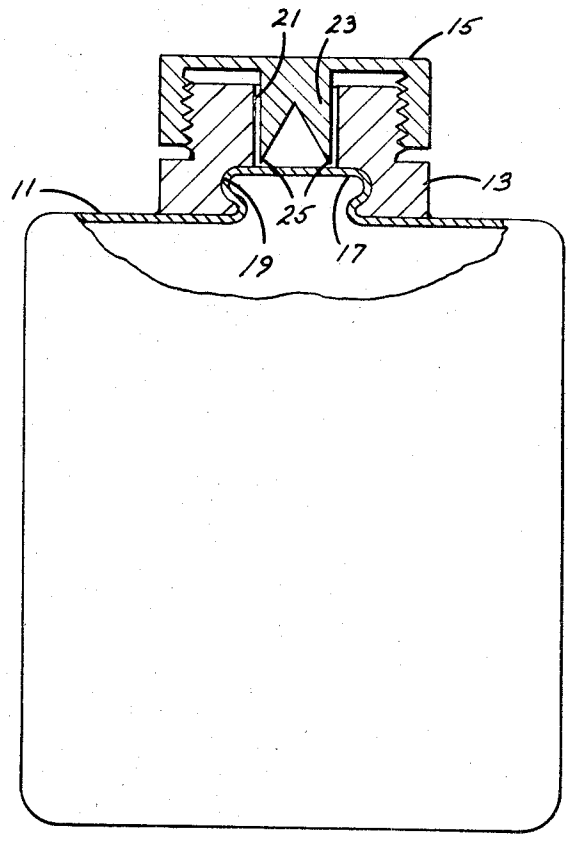
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MOLDED CONTAINER HAVING DISCHARGE SPOUT

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MOLDED CONTAINER HAVING DISCHARGE SPOUT

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Original application Oct. 29, 1963, Ser. No. 319,717, now Patent No. 3,266,658, dated Aug. 16, 1966. Divided and this application Oct. 21, 1965, Ser. No. 499,344
1 Claim. (Cl. 222—566)

ABSTRACT OF THE DISCLOSURE

A molded plastic container of seamless, unbroken and unitary construction having re-entrant wall portions which mate with corresponding re-entrant portions formed within a spout for mechanically attaching the latter to the container without damaging its unbroken construction.

This application is a division of my application Ser. No. 319,717 filed Oct. 29, 1963, now United States Patent 3,266,658.

The present invention relates to fluid-tight molded containers having attached preformed discharge spouts.

It is conventional in the art to mold containers and subsequently attach spouts thereto by adhesives, separate fasteners, etc. The mode of attaching such preformed spouts usually demands greater care and accuracy during the molding operation, entails added operations and material costs and often may involve some sacrifice in the structural and fluid-tight integrity of the container itself. Accordingly, a primary object of this invention is to provide improved molded containers having attached preformed discharge spouts.

Another object is to provide improved molded containers having preformed spouts which are attached thereto without the use of adhesives or separate fasteners.

Still another object is the provision of molded containers of seamless and unbroken construction having preformed spouts attached thereto without any sacrifice in the container strength or fluid-tight characteristics.

Still further objects will appear from the following description.

The container of the present invention includes a molded plastic body which is of seamleses, unbroken and unitary construction and a preformed spout which is mechanically interlocked with the container body. More particularly, the container body and spout are both formed with mating re-entrant or undercut portions which cooperate to lock such body and spout snugly together. The spout does not penetrate the wall of the container body so that there is no reduction in the strength of the body nor any increased risk of leakage in the area of spout attachment.

Aside from having re-entrant portions for securing an interlock with the container body the spout may have a discharge passage of any desired size and may be of any configuration. For example the spout may be formed with external serrations or threads for retaining a cap, tube or perhaps a baby feeding nipple or the like.

The provision of a spout cap is not essential but is desired for preventing foreign matter from entering the spout discharge passage and to protect the contents after the container has been opened. Preferably a cap is employed, such cap having a pin which projects into the spout discharge passage. Normally such cap is threaded onto the spout only to retain the same in place and with its pin spaced from that portion of the container body covering the entrance end of the spout discharge passage. When the cap is advanced further onto the spout, its pin will puncture the container body and thus permit easy removal of the container contents. In the absence of such

specific cap a sharp instrument, similar to a pin, may be inserted through the spout discharge opening to effect rupture of the container body.

The container of the present invention is formed as more fully described in my copending application Ser. No. 374,481 filed June 11, 1964, now abandoned, such application being a continuation of my above-noted application Ser. No. 319,717. Briefly, the container of the present invention is formed by expanding a gob, parison or closed tube of plastic or molten film-forming material as a seamless envelope against the internal walls of a desirably shaped mold and into engagement with a preformed spout which is supported within such mold, and thereafter causing the expanding envelope of film-forming material to set. The preformed spout which is employed must be shaped with undercut or re-entrant portions with which the film-forming material interlocks as it is expanded and set. The containers molded by the method of the present invention are preferably filled with the flowable material which is to be packaged and sealed while still remaining in the mold.

In the finished containers the preformed spouts are firmly interlocked with the container walls without actually projecting therethrough. In other words, as the plastic film-forming material is expanded during the molding operation it flows into and about the undercut portions of the preformed spout without being ruptured or punctured. As a result, in the finished container the portion of the wall thereof to which the preformed spout is attached retains its continuous, unbroken and fluid-tight characteristics.

The preformed spouts which are attached to the containers may be formed of metal, plastics or any other suitable materials which are capable of withstanding the conditions encountered during the molding operation.

The container of the present invention may be made from a wide variety of materials which may be rendered plastic or in a flowable condition. Preferred types include the synthetic linear polymers of thermoplastic character and the elastomeric types. Examples include vinyl resins, such as polyvinyl acetate, copolymers of vinyl chloride and vinyl acetate, copolymers of acrylonitrile and vinyl acetate, polyacrylonitrile and copolymers of acrylonitrile with vinyl chloride, vinyl acetate, methacrylonitrile, and sco forth, polyethylene, linear superpolymers of the polyester of nylon (polyamide) type, polyvinyl butyral, polyvinyl alcohols, polyvinyl ethers; elastomeric types may include neoprene, polymers of chloroprene, copolymers of butadiene with styrene or acrylonitrile, polyisobutylene, and so forth. It is to be understood that the mentioning of these particular materials is not intended to limit the invention thereto but merely to illustrate the wide variety of film-forming materials that can be used in carrying out the invention. Of course, the selection of any particular material depends upon the character of the material which is to be packaged in the finished container. Thus, polyvinyl acetate, polyvinyl acetals and polyvinyl alcohols and neoprene, especially the latter two types, are highly advantageous when packaging oils, especially of the hydrocarbon type. Polyvinyl acetate, polyvinyl chloride, related copolymers of these two monomers, and polyethylene are, on the other hand, particularly adapted for packaging of aqueous liquids.

The single figure of the drawing is a side view of the container of the present invention, with a portion thereof being shown in section.

With reference to the drawing, the container of the present invention includes a body **11**, a preformed spout **13** and a cap **15** threaded onto the spout **13**. The body **11** is formed of thermoplastic material and is of seamless, unitary, unbroken or closed construction. This body includes a portion **17** which projects outwardly from the

remainder of such body and extends into and is interlocked with a re-entrant or undercut portion **19** formed in the spout **13**.

As heretofore mentioned, the container body **11** is formed by expanding a gob of plastic or molten film-forming material into and against the re-entrant or undercut portion **19** of the spout **13** and then set in its expanded position. As a result, the projecting portion **17** of the container body **11** conforms with the re-entrant or undercut portions **19** of the spout **13** and is snugly retained in its interlocked position. It will be noted that the spot **13** does not penetrate the container body **11** and that the body **11** does not suffer any reduction in wall thickness in the area of spout attachment. Thus, in the finished container the container body remains completely closed and retains its desired unbroken and fluid-tight characteristics.

Access to the container body is achieved by puncturing the portion **17** of the container body which is adjacent to the entrance end of the spout discharge passage **21**. In the preferred construction illustrated, this is facilitated by a pin **23**, having pointed ends **25**, and which projects from the underside of the cap **15** and into the spout discharge passage **21**. Normally, and as illustrated in the drawing, the pointed ends **25** of the cap pin **23** are located above the portion **17** of the container body **11**. However, when the cap **15** is advanced further onto the spout **13** the pointed ends **25** of the cap pin **23** will puncture the portion **17** of the container body and thus permits the container contents to be removed through the spout.

It is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined in the appended claim.

I claim:

A molded container formed of organic plastic material having a completely closed body of seamless, unbroken, unitary construction, including a top wall having a portion thereof spaced above the main portion thereof and connected thereto by re-entrant wall portions, all portions of said container body being of substantially uniform wall thickness, and a spout formed with re-entrant portions adjacent to the entrance end of the spout discharge passage, said entrance end of the spout discharge passage being located abuttingly adjacent to said raised portion of the container top wall, with the re-entrant portions on the spout being matingly interlocked with the corresponding re-entrant wall portions on the container body, whereby the spout is attached to the container body without reducing its wall thickness and without damaging its unbroken, seamless and unitary construction and said raised wall portion covers the entrance end of the spout discharge passage.

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