July 9, 1968 R. H. HORNING 3,391,849

PLASTIC CONTAINERS HAVING RESEALABLE TOPS

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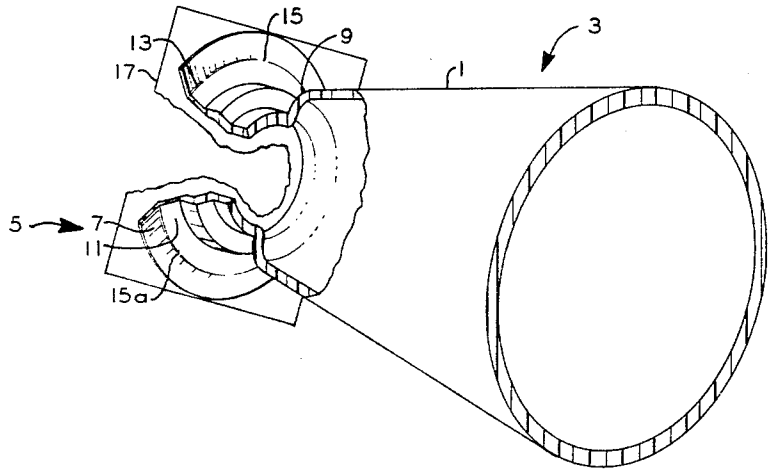


FIG. 1

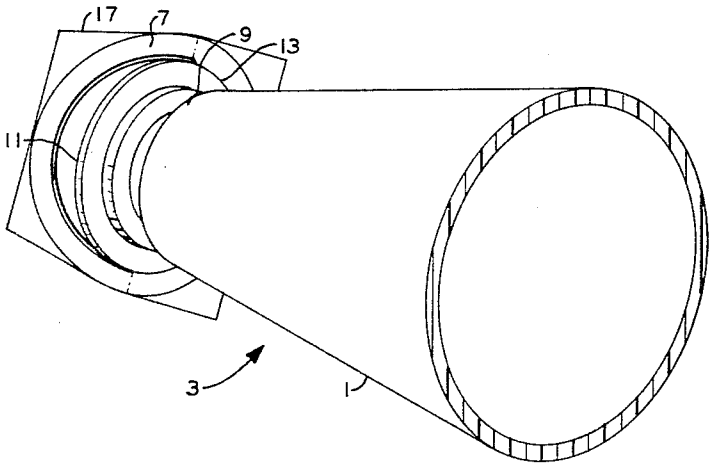


FIG. 2

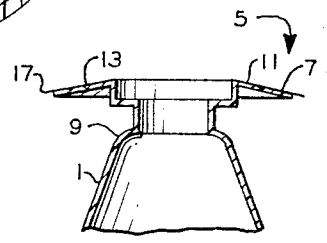


FIG. 4

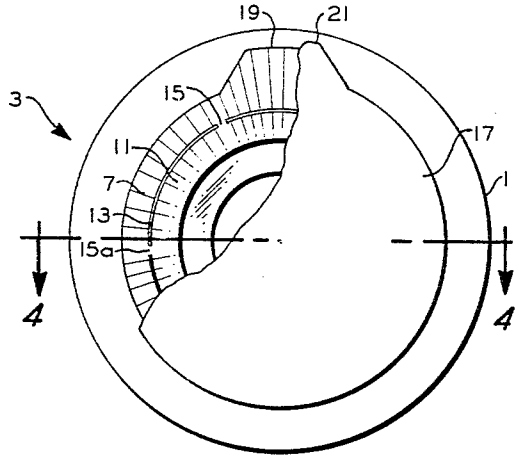


FIG. 3

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PLASTIC CONTAINERS HAVING RESEALABLE TOPS

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ABSTRACT OF THE DISCLOSURE

The open end of a plastic container is provided with a radially outwardly projecting flange extending around said end comprising an outer annular and an inner annular section defined by a groove cutting the flange except at certain narrow places. A cap heat-sealed to the flange is pullable away from the inner flange at an angle therewith, to separate the outer annular flange from the inner flange for pouring contents from the container and is resealable to the container, the outer flange remaining heat-sealed to the cap.

This invention relates to plastic containers which during shipment and display are provided with a hermetic heat seal for protection of the container contents and which when such seal is detached may thereafter be resealed for protective storage of their partially depleted contents or for other purposes since the container body and the top therefor remain completely intact. In one aspect, this invention relates to an improved cap for plastic containers which when in sealed relationship with said container will withstand a hydraulic pressure at least as good as the side of said container brought about when a filled plastic package is dropped from any distance. Another aspect of this invention relates to a novel cap positioning and retaining means which becomes integral with the cap of the container on opening the container and supports the cap in the open position.

In accordance with the invention, the container consists of a body and a resealable cap. The body is preformed of plastic and has at its lip an integral peripheral flange which is provided with a groove or cut substantially around the periphery thereof and to which a cap comprising a suitable material such as metal foil, paperboard, plastic, metal foil laminated with a plastic, or paperboard laminated with a plastic is heat sealed. The flange is provided with a depending outer edge which on opening the container becomes partially detached from the flange proper and remains attached to the underside of the cap. On closing the cap over the container this depending edge provides a tight seal.

The problem with prior art plastic containers is that the hermetic seal bonding the cap to the container often was caused to split open by the hydraulic pressure developed when the filled plastic container was inadvertently dropped. In addition, it was very difficult to obtain a positive seal between the cap and the container after the container, which was opened in order to gain access to the contents contained therein, was resealed.

Therefore, it is an object of this invention to provide a container provided with a cap which provides a closure stronger than the container side wall, which possesses an easy opening and reclosing feature, which is highly sanitary, attractive and economical and which will withstand the hydraulic pressure brought about when the filled container is dropped.

Other objects and many of the attendant advantages of this invention will be appreciated as the same becomes better understood by reference to the following detailed description, which is to be considered in connection with the accompanying drawings wherein:

FIGURE 1 is an axonometric view, partly in section, of the body and cover components of the container in closed position;

FIGURE 2 is a front axonometric view of the body and cover components in said container in open position;

FIGURE 3 is a plan view of another form of the reclosure means;

FIGURE 4 is a sectional view of FIG. 3 along the line 4—4.

With reference to FIGURES 1 and 2, the body **1** of the container **3** is preformed and is closed at one end. It is made of a suitable plastic material such as polypropylene, polyethylene and copolymers of ethylene and butene-1. The open end of the container body is integrally formed with a flange **5** having a depending outer portion **7** which extends over and above the edge **9** of the container body and assumes a frusto-conical shape. The inner portion **11** closely approximates the outer diameter of the container body in the container neck area.

The inner boundary of portion **7** is preferably defined by a groove or cut **13** which extends almost completely around the entire periphery of flange **5**. It is left connected to the body **1** in only several narrow places such as **15** and **15***a*.

After the container body is filled with its intended contents, a plastic cap **17** is sealed over the open end of the container body. The cap **17** is capable of being heat sealed throughout its peripheral area to the outer portion **7** and also to the inner portion **11** of flange **5**. The cap is made of suitable film materials which include polyethylene, polyethylene-coated cellophane, and propylene, or polypropylene-coated cellophane, polyethylene and polypropylene-coated paperboard, polyethylene and polypropylene-coated metal foil or other like films which have been treated with a heat-sealable solution. It is readily evident that the contents of this container are hermetically confined and protected during shipment, storage and display by an inexpensive cover consisting only of a member of plastic film or other cheaper film treated to induce a heat seal on the bottom thereof.

To open the container for pouring out at least some of its contents, one pulls upwardly on cap **17** which causes the outer portion **7** to separate from flange **5** along the peripheral groove or cut **13** remaining attached to the under side of cap **17** as it is lifted up (see FIGURE 2). A portion of cap **17** remains heat sealed to the inner portion **11** of flange **5**.

To reseal the container, the outer portion **7** along with cap **17**, which is attached thereto, is pulled down over the upper newly exposed surface of the inner portion of flange **5** and because of its frusto-conical contour the portion **7** will press cap **17** against the top surface of inner portion **11** of flange **5** forming a tight seal therewith. In this manner it provides a tight seal for protection of portions of the contents of the container.

In another embodiment shown in FIGURES 3 and 4, the inner portion **11** of flange **5** is also frusto-conical shaped. In addition the outer portion **7** of flange **5** is provided with a tab **19** which aids in the opening of the container. In this embodiment, the cap **17** is also provided with a matching tab **21** which is heat-sealed to tab **19**.

Containers embodying the invention need not be circular-shaped as shown in the drawing but can be rectangular, oval, octagonal or any other desired shape with retention of the features above-described.

The containers described have many other advantages of significance to the manufacturer and to the merchant. Since the container consists only of a plastic body and a plastic film cap or a plastic-coated film cap it is very inexpensive and so is economically suitable for an extended range of inexpensive products such as fruit juices,

milk, salads, frozen fruits, dairy products including cottage cheese, ice cream, and the like. Since the plastic body and plastic film cover are chemically inert, foodstuffs, pharmaceuticals and the like can be inexpensively packaged without danger of contamination. Also, since the plastic body and the cover film may be heat sealed to each other the use of adhesives with consequent possibility of contamination may be avoided. The cover film may be transparent for inspection and display of the contents of the sealed container. The cover film may have printing thereon to identify the product and/or its source and at costs substantially lower than for printed molded covers. Using film of usual heat-sealing types, the container is hermetically sealed during shipment and display. When the container contents are of a nature requiring that the sealed container be able to breathe, such characteristic can be obtained by use of a cover film which has been irradiated or otherwise treated to obtain microporosity permitting passage of moisture.

Obviously, many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described herein.

What is claimed is:

1. A sealed container comprising a plastic body having an opening at one end thereof; a flange member integral with said body at its open end, said flange member having a frusto-conical shaped outer portion defined by a groove or cut extending substantially around the flange member and a plastic cap peripherally heat sealed to said flange member on both sides of said groove to provide a sealed closure for the container during shipment and display, said plastic body being characterized by the severance of said frusto-conical portion from said flange member when said plastic cap is pulled away from said body member and which, when said cap is pressed down on said body member, will cause said flange member to form a tight seal with said cap.

2. A sealed container according to claim **1** wherein said portion of said flange member inside of said groove or cut is frusto-conical shaped.

3. A plastic container according to claim **1** further characterized in that said flange member is provided with a pull tab extending outwardly from said outer portion.

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