April 14, 1970 A. K. PARLOUR 3,506,459

TAMPER-PROOF MULTIPLE COMPARTMENT PACKAGE

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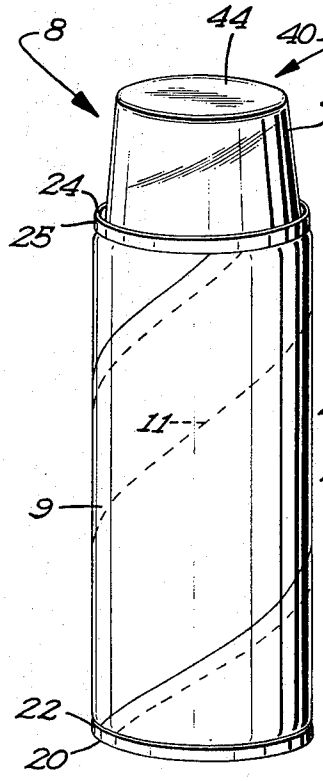


FIG 1

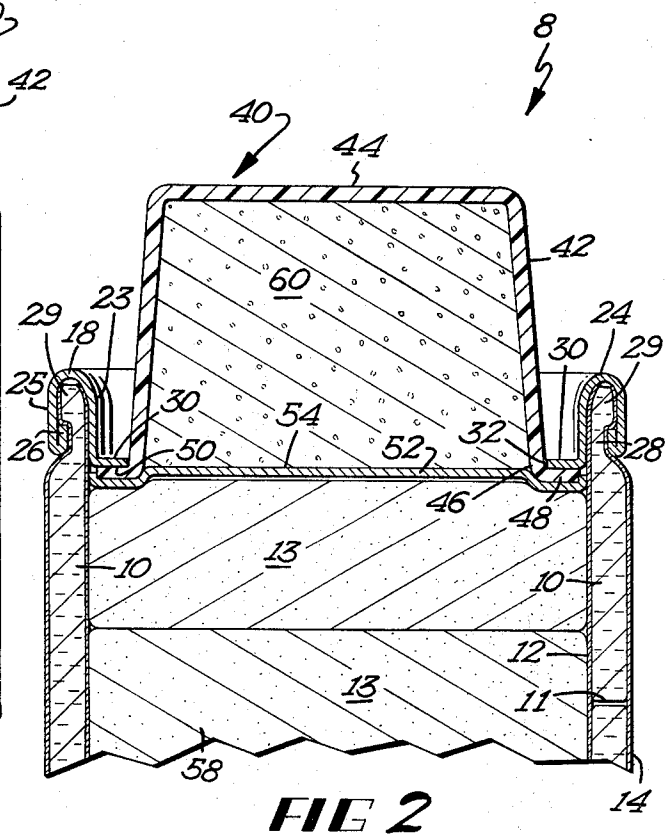


FIG 2

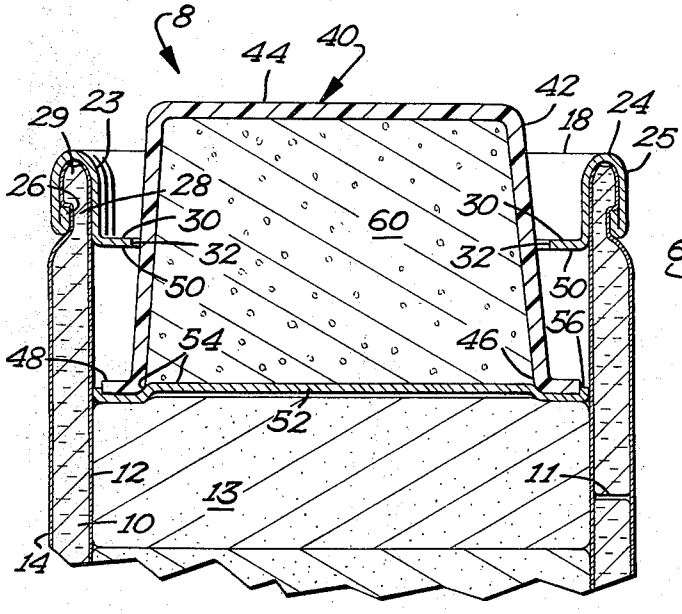


FIG 3

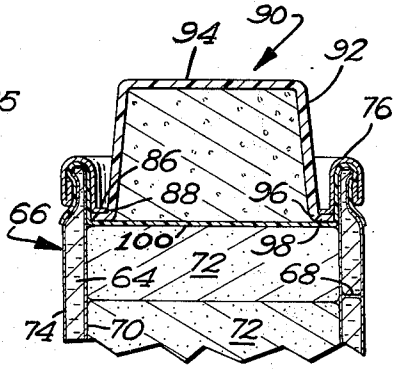


FIG 4

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TAMPER-PROOF MULTIPLE COMPARTMENT PACKAGE

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ABSTRACT OF THE DISCLOSURE

Tamper-proof multiple compartment container or can composed of a tubular wall, first and second end closure plates crimped to the ends of the tubular wall. One of the end closures consists of an imperforate disc, the other is provided with an opening in its center to define a centrally extending circular flange. A cup having a laterally extending circular flange is mounted at the end of the container with its flange in contact with the inside surface of the lip. A dividing disc is positioned between the cup and the interior of the tubular container.

The present invention relates to the packaging industry and more particularly to a tamper-proof multiple compartment container for separately packaging at least two different food products, particularly food products which are to be used together when consumed.

Refrigerated food products such as ready-to-bake biscuits are often packaged together with a topping such as frosting. The biscuits are usually packaged and shipped in paperboard cans adapted to hold the biscuits under pressure. The cans are opened by removing a portion of the outer wrapping and striking the container on a hard surface in order to open the wall of the can along its entire length. According to the prior practice, frosting or other food products contained in the package with the biscuits is located inside the can adjacent one end and is separated from the biscuits by a metal disc or the like located within the can and positioned adjacent one end thereof. These prior containers are exemplified by the container described in U.S. Patent No. 2,494,369.

Although containers of the type described in the patent perform admirably under many circumstances, they have certain marked shortcomings. One important shortcoming is the requirement for a double thickness of material enclosing the frosting. This duplication of parts is an item of substantial expense, particularly where large numbers of containers are packaged. Another deficiency of the prior construction is spoilage caused by extrusion of the dough around the edges of the separator sheet. It is particularly objectionable since the spoilage of this type cannot be detected until the product has been opened by the consumer. It is an additional disadvantage to the consumer to be unable to see by inspecting the package that it actually contains two separate food components.

In other industries a variety of other packages have been provided for shipping a plurality of components. In one class of container, two otherwise separate receptacles are fastened together by means of glue, tape or a soldered joint. Containers of this type are costly to connect together, are not well suited for assembly on automatic equipment and frequently can be separated rather easily. Another class of prior containers consist of a can to which a plastic cup is secured. Because these prior containers can be readily separated, they cannot be regarded as tamper-proof. Accordingly, they have not been regarded suitable for large scale use in grocery stores where tampering is a problem, particularly in the case of food products.

In view of these and other deficiencies of the prior art, the present invention has among its objects the provision of an improved tamper-proof multiple compartment package having the following characteristics and advantages: (a) the requirement for a single thickness of material enclosing the packaged ingredients; (b) a provision for controlling extrusion of packaged pressurized dough from the compartment where it is stored and enable extruded dough to be detected; (c) a provision for indicating to a prospective purchaser that the package contains two separate food components; (d) a provision facilitating rapid fabrication on high speed, automatic, power-operated equipment; (e) a means for preventing removal of an auxiliary food product storage compartment without completely destroying the entire container and at the same time making both food components instantly available.

These and other more detailed and specific objects will become apparent in view of the following specification and claims, wherein:

FIGURE 1 is a perspective view of a container embodying the present invention.

FIGURE 2 is a vertical sectional view of the upper portion of the container of FIGURE 1 on an enlarged scale.

FIGURE 3 is a view similar to FIGURE 2 showing the auxiliary container as it appears when partially removed.

FIGURE 4 is a transverse vertical sectional view of a modified form of the invention on a somewhat reduced scale.

In brief terms, the invention provides a tamper-proof multiple compartment container and dough package which consists of a cylindrical container body in which a dough product is packaged. The container body includes a fiberboard wall, a first end closure secured to the bottom portion and a second end closure rigidly and permanently secured to the top of the container body. The top closure includes a centrally extending lip formed from a rigid material. A second compartment consists of a cup having a laterally extending circular flange positioned beneath the lip of the top closure and adapted to rest against its lower surface. The flange of the cup is small enough to slide telescopically within the cylindrical body portion of the container. A partition member is provided within the package between the dough and the interior of the cup. The partition is of an appropriate size to abut against the lateral flange of the cup. The partition can be formed either from a rigid material such as a metal or from a flexible material such as a resinous polymeric film material suitably secured at its edges to the end of the cylindrical container body.

Refer now to FIGURES 1, 2 and 3 which illustrate a preferred form of the invention. The package **8** consists of a cylindrical body **9** formed from a sheet material such as fiberboard body stock **10** which in this instance is spirally wound in conventional manner to form a cylinder having a helically disposed butt joint **11** running the full length of the container and extending around its complete circumference. The body wall has sufficient strength to withstand the pressure generated by the dough bodies packed within the container.

The body stock **10** is lined from within by means of an interior liner **12** which can consist for example of foil laminated to a layer of kraft paper or of any other suitable material known to the art. The foil liner is also helically or spirally wound at the same time that the body **10** is being wound. The linear **12** is secured to the body by means of adhesive and its edges overlap the spiral butt joint **11**. The liner **12** retards the escape of moisture and prevents materials contained within the dough bodies **13** from penerating the body stock **10**. The liner also serves to reinforce the butt joint **11** of the body stock **10**.

Secured by means of adhesive to the exterior of the body stock **10** is an outer layer **14** which normally serves

as a label. The label **14** is superimposed about the body stock **10** and is spirally wound thereon with its longitudinal seam offset from the butt joint **11**. The label **14** provides additional reinforcement for the butt joint.

The container can be opened as will be described more fully hereinbelow by removing the label **14** to thereby weaken the butt joint. The container is thereafter struck against a hard object thereby rupturing the liner **12** and allowing the container to open along its full length. In an alternative opening procedure, the container is opened by striking it directly against a hard object without removing a portion of the label stock **14**.

Upper and lower end closure elements **18** and **20** are applied to the ends of the cylinder formed by the wound layers. The bottom closure element **20** consists of a disc composed from a deformable material such as sheet metal, e.g. aluminum or lacquered steel stamped to provide a circumferentially extending cylindrical chime or seam **22**. The top closure element **18** likewise preferably consists of metal. An important aspect of the present invention is the provision of a permanent connection or bond between the top closure element **18** and the cylindrical body **9**. By "permanent bond" is meant one in which the destruction of the top closure element **18** and body **9** is required for separating these parts.

The permanent bond although it may take various forms in this instance consists of a cylindrical vertically projecting chuck wall **23**, a laterally extending seaming panel **24**, a downwardly extending seaming wall **25** and an upwardly projecting terminal end hook **26**. The top closure element is applied with can end seaming equipment of the type in which the can is rotated during the seaming operation. Briefly, in this operation rolls first bend the seaming panel and seaming wall downwardly to form the seam and turn up the terminal hook **26**. In a second part of the operation, pressure against the exterior of the seam causes the terminal hook portion to be deflected toward the center of the can to thereby compress the overall seam and lock the terminal edge portion of the cylindrical container body **9** securely in place by forming a constricted portion **28** and an enlarged bead portion **29** between the chuck wall and the seaming wall. In this manner the top closure element **18** is permanently bonded to the end of the can.

As shown in FIGURES 2 and 3, the top closure element **18** includes a flat, horizontally disposed circular, centrally projecting lip **30** defining a central opening **32**. An important consideration in the present invention is that the lip **30** be formed from a strong rigid material that cannot readily be deformed manually. When the end closure **18** is formed from metal, the lip can consist, for example, of a steel sheet of about **18** gauge.

Mounted within the end of the container body **9** for axial sliding movement is an auxiliary food storage compartment that consists of a cup **40** including a frustoconical side wall **42** and a top wall **44** and an opening **46** at the inner end thereof. Adjacent the opening **46** is a circumferentially extending, laterally projecting circular flange **48** of a sufficiently large diameter to rest adjacent the lower surface **50** of the lip **30**.

Flange **48** is formed from a strong material that has sufficient rigidity to prevent deflection of the lower portion of the cup **40** in the plane of the flange **48** (either laterally or centrally). By reason of this provision, it will be impossible to deform the cup **40** and in that way slip the edge of the flange **48** through the opening **32**. When the cup **40** is made of a thermoplastic resinous material such as high density polyethylene, polypropylene or polystyrene, a flange having a thickness of about $\frac{1}{16}$ inch is generally satisfactory. When other materials are used, the thickness can be varied between wide extremes provided however that the flange **48** is rigid enough to prevent deformation sufficient to allow removal of the cup through the opening **32**. Since the cup cannot be removed except by destroying the body wall **9**, the container can be properly regarded as tamper-proof.

Mounted loosely within the container in abutting relationship with the lower surface of the flange **48** is a divider disc **52** composed of any suitable material such as metal. The divider **52** is preferably provided with a circular central elevation **54** of an appropriate size to exactly fit the mouth **46** of the cup **40**. This helps to center the divider **52** and assists in sealing the cup. The divider is also provided with a terminal axially extending circular flange **56** which projects between the wall of the container and the marginal edge of the flange **48**. The divider **52** functions reliably to prevent undesired extrusion of dough into the icing cup **40** and any tendency for this to occur will be largely offset since the force exerted by the dough pieces **13** against the divider **52** causes a pressure increase between the flange **48** and the marginal portion of the divider **52**.

When the container is to be opened, the tube is either broken directly by striking it against a sharp edge or the label **14** is removed first and the container is then struck against a sharp edge to sever the container body **9** along the longitudinally extending helically disposed butt joint **11**. Once the container has been opened in this manner and a few of the biscuits **13** have been removed, the cup **40** can be slid axially as shown in FIGURE 3 and removed through the opening established by the broken butt joint.

Refer now to FIGURE 4 which illustrates a container **66** embodying another form of the invention. The container **66** includes a fiberboard layer **64** having a helically disposed butt joint **68** which extends its full length. The fiberboard layer **64** has secured to it an interior liner **70** that can consist, for example, of foil laminated to a layer of kraft paper. The liner **70** is spirally wound at the same time as the body stock **64** so as to overlap the spiral butt joint **68**.

Bonded to the exterior of the body portion **64** is an outer label **74**. The label **74** is superimposed about the body stock **10** and is spirally wound thereon with its longitudinal seam offset from the butt joint **68**. The container can be opened as previously described in connection with FIGURES 1–3, by removing the label thereby weakening the butt joint or by striking it directly against a hard object without removing a portion of the label **74**.

An end closure element **76** in all respects is identical to end closure element **18** and is applied to the end top of the container body in the manner described in connection with FIGURES 1–3. As in the container of FIGURES 1–3, a permanent connection or bond is provided between the top closure element **76** and the container body **66**.

As in FIGURES 1–3, the top closure element **76** is attached first by bending the periphery down to form the seam and then turning up the terminal hooked portion. Pressure against the exterior of the seam causes the terminal hooked portion to be deflected centrally to compress the seam and lock the terminal edge portion of the body wall securely in place. This defines a constricted portion and an enlarged bead portion between the chuck wall and the seaming wall. In this manner, the top closure element **76** is permanently bonded to the end of the can.

As in FIGURES 1–3, the top closure element **76** includes a flat, horizontally disposed circular, centrally projecting lip **86** defined by a central opening **88**. The lip is again formed from a strong rigid material.

Mounted within the end of the container body **66** for axial sliding movement is an auxiliary food storage compartment defined by a cup **90** including side wall **92** and a top wall **94** and an opening **96** at the bottom thereof. Adjacent the opening **96** is a circumferentially extending, laterally projecting circular flange **98** of a sufficiently large size to rest adjacent the lower surface of the lip **86**.

The flange **98** has sufficient rigidity to prevent central deflection of the lower portion of the cup. It will, therefore, be impossible to deform the walls **92** of the cup **90** and in that way slip the ends of the flange **98** through the opening **88**.

Mounted to extend across the lower portion of the cup **90** to thereby seal the opening **96** is a divider composed of a flexible plastic film **100**. The film **100** is preferably provided with a peripheral portion which extends upwardly and is enclosed between the end of the container body and the end closure element **76**.

When the container **66** is to be opened, the tube is either broken directly by striking it against a sharp edge or the label **74** is removed first to weaken the longitudinally extending helically disposed butt joint **68**.

With the present invention, the can end containing the hole for the protruding cup is secured after inserting the cup, i.e. the cup is placed in the can and then the can end is attached to the can body.

Many modifications can be made. For example, the cup and end closure can be formed as one piece from plastic or metal or even formed of different materials and permanently joined.

As described previously, prior separator members consist of a sheet metal disc held in place by a combination of friction and pressure. The present separator discs can be formed from many other materials and in somewhat different cross sectional shapes so long as they fit the inside of the can.

With the present invention, it is not essential to employ both friction and pressure to hold this separator in place. Either of these separately will suffice under many circumstances. In assembling the container, the cup is first inserted into the can end **76**. The cup is then filled and covered with a plastic film **100**. Finally the can end **76** is crimped to the end of the can body **66**. If desired, the cup can be filled before insertion into the can end **76**.

It is also possible for the disc punched out to form the opening **32** to be used for the divider **52**. In this event, the open end **46** of the cup **40** is suitably shaped to accommodate a disc of this size. This can be conveniently done by providing a circular downwardly opening circumferentially extending recess to receive the punched out disc adjacent the open end **46** having the same diameter as the opening **32**.

It is apparent that many modifications and variations of this invention as hereinbefore set forth may be made without departing from the spirit and scope thereof. The specific embodiments described are given by way of example only and the invention is limited by the terms of the appended claims.

I claim:

1. A tamper-proof multiple compartment dough package and a second packaged product, said dough package comprising a container having a cylindrical container body including a tubular wall portion, a first end closure secured to one end of the tubular wall, a second end closure rigidly and permanently secured to the other end

of the tubular wall, the second closure including a centrally extending lip formed from a rigid material, a compartment for the second packaged product defined by a cup projecting outwardly beyond the end of the tubular wall portion and having a laterally extending circular flange positioned beneath the lip of the top closure and adapted to rest against the inner edge of the lip, said flange having sufficient rigidity to prevent central deflection of the lower portion of the cup, the flange of the cup being adapted to slide telescopically within the cylindrical container body and a divider member positioned within the container between the dough and the interior of the cup, the divider being of an appropriate size to abut against the lateral flange of the cup.

2. The container according to claim **1** wherein the second closure element comprises a metal disc formed from sheet metal and seamed to the end of the body wall to form a permanent bond therewith, said closure element including a cylindrical upwardly extending chuck wall portion, a laterally extending seaming panel, a cylindrical seaming wall extending downwardly from the outward edge of the seaming panel and a terminal seaming wall and a hook portion located adjacent the inside surface thereof.

3. The container according to claim **1** wherein the divider comprises a disc formed from a rigid material mounted within the container, said disc including a marginal edge portion positioned in overlapping abutting relationship with the lower marginal portion of the cup whereby the pressure produced within the dough forces the divider disc into pressure contact with said marginal portion of the cup thereby controlling extrusion of the dough into the cup.

4. The container according to claim **1** wherein the divider is composed of a flexible, resinous sheet material positioned between the cup and the interior of the container body, said sheet material extending between the terminal portion of the container body and the second end closure element and being permanently bonded therebetween.

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U.S. Cl. X.R.

220—23; 229—5.7