Nov. 29, 1966 H. M. RICH ET AL 3,288,278

CRUSH-PROOF SEALED PACKAGE

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Fig. 1

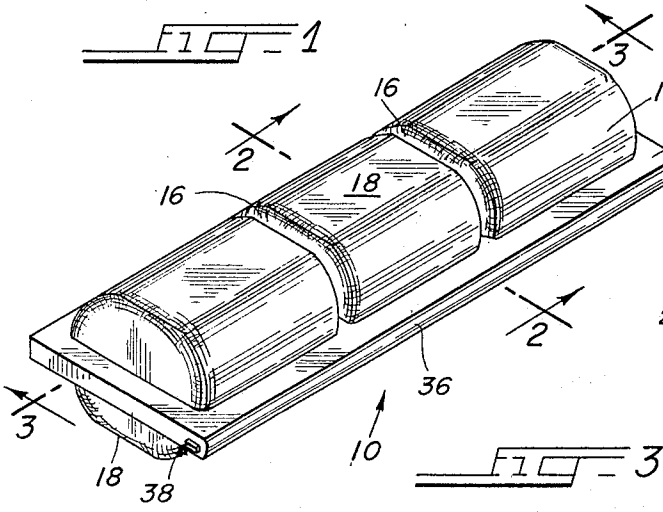


Fig. 2

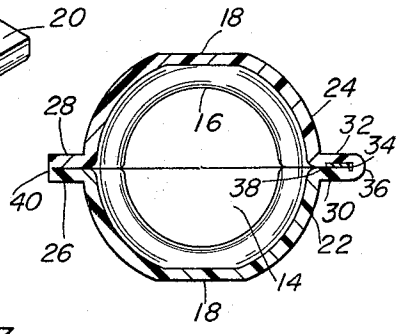


Fig. 3

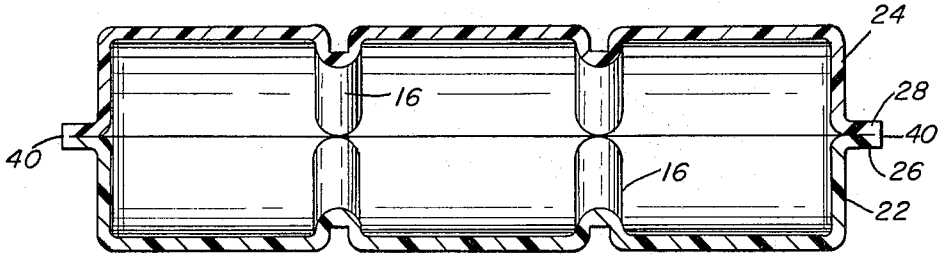
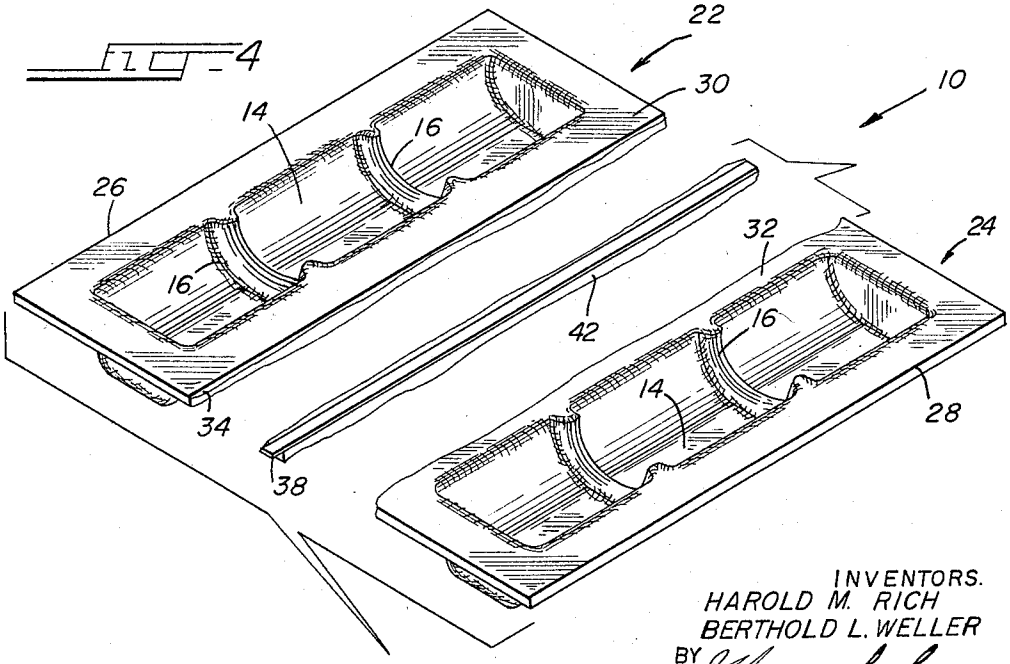


Fig. 4



INVENTORS.
HAROLD M. RICH
BERTHOLD L. WELLER
BY Marvel Cayne
Atty.

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FIG. 5

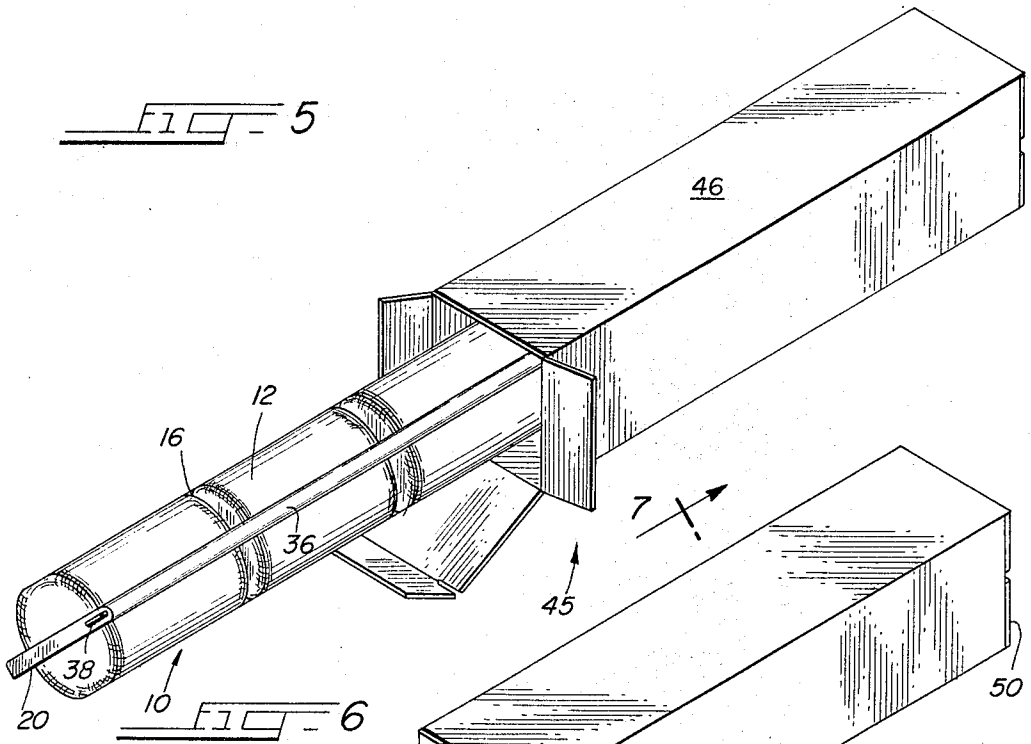


FIG. 6

FIG. 8

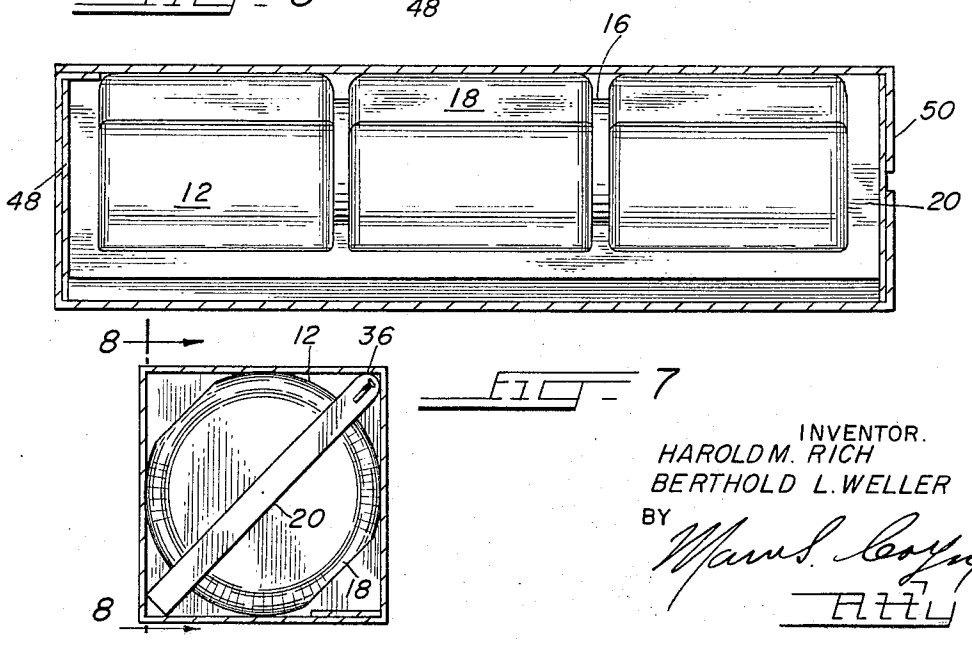


FIG. 7

INVENTOR.
HAROLD M. RICH
BERTHOLD L. WELLER
BY
Atty

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CRUSH-PROOF SEALED PACKAGE

Harold M. Rich, Northbrook, and Berthold L. Weller, Deerfield, Ill., assignors to Kitchens of Sara Lee, Inc., Chicago, Ill., a corporation of Maryland

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6 Claims. (Cl. 206—46)

This invention relates generally to packaging and more particularly to a sealed package having rigidifying means for protecting the packaged goods against crushing forces. More specifically, the invention relates to a crush-proof sealed package for crushable or frangible disc-like or wafer-like objects such as cookies and the like.

The packaging of wafer-like foods, and particularly frangible baked produces such as crackers, cookies, wafers, etc., presents problems which heretofore have proved insoluble. At the outset, of course, the packages for such products must be airtight or hermetically sealed so that the original oven fresh tastefi aroma and texture of the foods may be maintained until the package is opened by the consumer. In addition, however, the package must afford some measure of shock protection for the frangible cookies or crackers. The two requirements of sealing and shock resistance given rise to a number of additional problems such as difficulty of opening, destruction of package during opening, prohibitively high cost etc.

By way of example, most packaging of cookies, crackers and the like has heretofore been done in two general ways, namely, in sacks or bags and in relatively thin paperboard cartons alone or in combination with one or more wrappers. In the first instance, while airtight and inexpensive bags may be made from the newer materials including polyethylene, the shortcomings of such packages in terms of shock resistance are apparent. On the other hand, the familiar carton-type packaging is more expensive and affords generally a less effective airtight seal. In addition, the shock resistant characteristics of such cartons are at best only partially satisfactory.

It is therefore an important object of this invention to provide a sealed package which overcomes all of the problems described hereinabove. A related object is to provide a method of packaging which overcomes all of said problems.

Another object of the invention is to afford a sealed package of the character described having self-contained rigidifying means which serve to protect the contents thereof from shock and crushing forces. In this respect, the invention contemplates the use of a two-sectioned tubular container which closes to receive the particular product in contour accommodating relationship. The container may be molded from a suitable lightweight plastic material such as polystyrenes, foamed polystyrenes or polypropylenes, and may include a plurality of sectionalizing and rigidifying ribs.

A further object is to provide a crush-proof sealed package of the character described in which said container is adapted to cooperate with an outer carton made of normally weak paperboard or the like to further rigidify the entire package. In this regard, the sealed inner container includes a peripheral flange adapted to function as a brace between opposite corners of the outer carton.

Still another object is to afford a crush-proof sealed package of the character described which may be readily and quickly opened without the use of any auxiliary tools or instruments.

Yet another object is to provide a crush-proof sealed package of the character described which may be opened without any substantial destruction thereof so that the same may be used for retaining the unused portions of the packaged goods.

Still a further object is to afford a crushed-proof sealed package of the character described which may be made in a variety of tubular shapes to nicely accommodate particular products.

Yet an further object is to provide a crush-proof sealed package of the character described which may be inexpensively and simply manufactured and yet is most efficient for the purposes intended.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain movel features of construction, arrangement and a combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit of sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of our invention, we have illustrated in the accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, our invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawings:

FIG. 1 is an isometric view of a crush-proof sealed package embodying the principles of the invention and showing the same without any outer or protective covering thereover;

FIG. 2 is a sectional view taken on the plane of line 2—2 in FIG. 1 and viewed in the direction indicated;

FIG. 3 is a sectional view taken on the plane of line 3—3 in FIG. 1 and viewed in the direction indicated;

FIG. 4 is an exploded isometric view showing the parts of the package of FIG. 1 after the same has been opened;

FIG. 5 is an isometric view showing the sealed package of FIG. 1 being inserted into a cooperating outer carton;

FIG. 6 is an isometric view of the completed combined package with the outer carton being closed;

FIG. 7 is a sectional view taken on the plane of line 7—7 in FIG. 6 and viewed in the direction indicated; and

FIG. 8 is a sectional view taken on the plane of line 8—8 in FIG. 7 and viewed in the direction indicated.

Referring more particularly to FIGURES 1 through 4 of the drawings, it will be seen that the reference character **10** indicates generally a sealed package embodying the principles of the invention. The package **10** comprises in its sealed condition an elongated tubular body member **12** affording a cavity **14** therein. The member **12** and cavity **14** may be of any desired cross-sectional configuration for nicely retaining therein in shock proof and contour accommodating relationship a plurality of fragile disc-like objects. Thus, in the embodiment illustrated, the body **12** is substantially annular or cylindrical for accommodating a plurality of circular cookies in a plane normal to the longitudinal axis of said body. A plurality of internal sectioning beads **16** may be provided for further insuring the snug and shock-proof retention of the cookies. As indicated, the generally cylindrical body member **12** may be provided with a pair of opposite slightly flattened surfaces such as **18**, **18** for properly supporting the package **10** on a planar supporting surface.

Integrally formed with the body member **12**, and extending peripherally therearound, is a diametral rigidifying flange or rib **20** whose function will become apparent as the description proceeds.

Preferably, the entire package **10** is fabricated from a thermoplastic material which is capable of being formed or molded into the desired configuration. In keeping with the stated objectives, the material should also be impervious to gases and somewhat sponge-like or shock absorbent. Additionally, the material should be readily frangible to permit an opening operation which will subsequently be described. For all of these purposes and characteristics, we have found that materials such as polystyrenes, foamed polystyrenes and polypropylenes are ideally suited.

Directing particular attention to FIGS. 2 and 4 of the drawings, a preferred method of making the package **10** and subsequently opening the same will now be described. A pair of opposed mating body sections **22** and **24** is integrally molded or otherwise suitably formed from one of the plastic materials described. Each of the body sections **22** and **24** includes one-half of the body member **12**, cavity **14** and sectioning ribs **16**. In addition, the body sections **22** and **24** comprise respectively peripheral marginal flanges **26** and **28** which combine to provide the package flange **20**.

It is important to note that the flanges **26** and **28** each have only three free edges and respective flange segments **30** and **32** which are integrally connected together. One or both of the flange segments **30** and **32** is provided with a longitudinal fold or score line **34**. As will be appreciated by those versed in the art, the nature of the plastic materials and the score line or lines **34** permit the body sections **22** and **24** to be folded together along a common side edge **36**.

A string or tear tape **38** is adhered or otherwise connected to one of the flange segments such as **32**, and the tape is slightly longer than said segment so that a small finger gripping portion extends freely therefrom.

To seal the package **10**, the body section **22** is first filled with cookies and the body section **24** folded thereover as described to provide the common edge **36**. The remaining three marginal edges of the flanges **26** and **28** are then cut through their combined thicknesses by a thermal blade or wire. The hot blade has the effect of fusing together the flanges **26** and **28** around said marginal edges to form a thin connection line **40**. The package **10** is now completely sealed and airtight because the flanges **26** and **28** have been fused together to form the rigidifying flange **20**. In this respect, it will be appreciated that the small and extremely thin protruding finger grip portion of the tear tape **38** has little or no effect upon the described fusion and resulting airtight integrity.

To open the sealed package **10** it is simply necessary for the purchaser consumer to grip the tear tape **38** and lift the same upwardly and to the right as viewed in FIG. 1. The yieldable and frangible nature of the described plastic materials readily permits such motion of the tear tape **38** with the result that a strip such as **42** is torn from the flange segment **32**, said strip being connected to and substantially coextensive with the tear tape. The two body sections **22** and **24** may now be readily separated from each other by grasping the flange segments **30** and **32** and lifting apart. Again, those versed in the art will appreciate that the thin and frangible fusion line **40** may be readily ruptured so that the package has been opened with a minimum of tearing as indicated in FIG. 4. The upper body segment **24** thus may be replaced and the container **10** may be employed, albeit no longer airtight, for retaining unused portions of the packaged cookies.

Although the above described package **10** retains its contents in relatively crush-proof relationship, it is frequently desirable or necessary to increase the shock protection and/or provide more suitable advertising and labeling surface. Referring to FIGS. 5 through 8, there is illustrated such a combined package indicated generally by the numeral **45**. The combined package **45** comprises an ordinary rectangular or square carton **46** made of the

customary and not too crush resistant thin paperboard or the like.

The carton **46** is dimensioned to snugly receive the package **10** therein. Thus, as seen in FIG. 8, the end edges of the flange **20** bear against and support and rigidify the end walls **48** and **50** of the carton **46**. Even more importantly, however, it will be seen in FIG. 7 that the longitudinal edges of the flange **20** bear snugly against the opposite corners of the carton **46**. In addition, the relatively rigid arcuate portions of the body member **12** bear against and support the flat side walls of the carton. It has been found that the described rigidfying cooperation between the package **10** and carton **46** results in combined package **45** having strength and rigidity which far exceed that which might be anticipated from the nature of the structures under consideration.

From the foregoing description and drawings, it should be apparent that we have provided a novel crush-proof sealed package and method of making the same. The materials of construction of the package **10** are shock absorbent and may be molded or formed into any desired configuration to suit the particular product being packaged. The package **10** may be inserted into an ordinary carton of paperboard or the like whereupon said package and carton cooperate to afford a combined package having great strength and rigidity. The airtight sealing of the package **10** is quickly and inexpensively accomplished by a hot cutting means to provide the thin fused connection line, and said package may be quickly and readily opened by manipulating the tear tape as described.

If desired, the tear tape **38** may be eliminated and other suitable means employed for quickly opening the package **10**. One such means is disclosed in our co-pending application, Serial No. 394,826, entitled, "Easy Opening Sealed Package," and filed September 8, 1964, now abandoned. Thus, as disclosed in said co-pending application, one of the flanges **26** or **28** may be formed with a score line at one corner and cut partially through the thickness thereof. Said corner may then be readily fractured and the two body sections **22** and **24** moved apart by rupturing the frangible connection line **40**. It will of course be appreciated that in such case the two body sections **22** and **24** may comprise separate parts as an alternative to the integrally molded construction here shown and described.

It is believed that our invention, its mode of construction and assembly, and many of its advantages should be readily understood from the foregoing without further description, and it should also be manifest that while a preferred embodiment of the invention has been shown and described for illustrative purposes, the structural details are nonetheless capable of wide variation within the purview of our invention as defined in the appended claims.

What we claim and desire to secure by Letters Patent of the United States is:

1. A crush-proof sealed package comprising

a pair of opposed substantially semi-cylindrical thermoplastic material container body sections, an article positioned in the container formed by said body sections,

a peripheral flange integrally formed with each of said body sections,

a tear tape secured to the inner surface of one of said flanges,

a thin fusion line around the marginal edges of said flanges connecting said flanges together in airtight relationship, and

a rectangular, relatively collapsible, single-ply, paperboard material carton,

said container being snugly positioned in said carton so that said connected flanges provide a brace between opposite corners of said carton,

said connected flanges and the arcuate walls of said container cooperating with the corners and walls of

said carton to greatly strengthen and rigidify the same.

2. The package of claim 1 in which said body sections are integrally connected along a common edge of said flanges,

said body sections being folded over along said common edge to afford said sealed package.

3. The package of claim 1 in which said thermoplastic material comprises a material chosen from a group consisting of polystyrenes, foamed polystyrenes and polypropylenes.

4. A crush-proof sealed package comprising

an elongated substantially cylindrical thermoplastic material container, an article positioned in said container,

a diametral peripheral rigidifying flange extending integrally from said container,

said container consisting of a pair of opposed substantially semi-cylindrical body sections,

each of said body sections including a flange segment of substantially one-half the thickness of said rigidifying flange,

said body sections being integrally connected along one common edge of said flange segments and being folded over said common edge to produce said cylindrical container,

a tear tape secured to one of said flange segments adjacent said common edge,

a thin frangible fusion line along the three free marginal edges of said rigidifying flange connecting said flange segments together in airtight relationship,

said tear tape adapted to be moved to tear away a segment of said one flange segment whereby said body

sections may be separated to rupture said fusion line and open said container, and

a substantially square sectioned, relatively collapsible, single-ply, paperboard carton,

said container being snugly positioned in said carton so that said rigidifying flange braces opposite corners thereof,

said rigidifying flange and the arcuate walls of said container cooperating with the walls of said carton to greatly rigidifying and strengthen the same.

5. The package of claim 4 in which a plurality of internal sectioning beads is integrally formed in said cylindrical container.

6. The package of claim 4 in which said thermoplastic material is chosen from a group consisting of polystyrenes, foamed polystyrenes and polypropylenes.

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GEORGE O. RALSTON, *Primary Examiner.*

JOSEPH R. LECLAIR, *Examiner.*

D. T. MOORHEAD, *Assistant Examiner.*