Nov. 3, 1964 E. S. TUPPER 3,155,233

DISCARDABLE OR REUSABLE PLASTIC PACKAGE

Original Filed Nov. 10, 1954 3 Sheets-Sheet 1

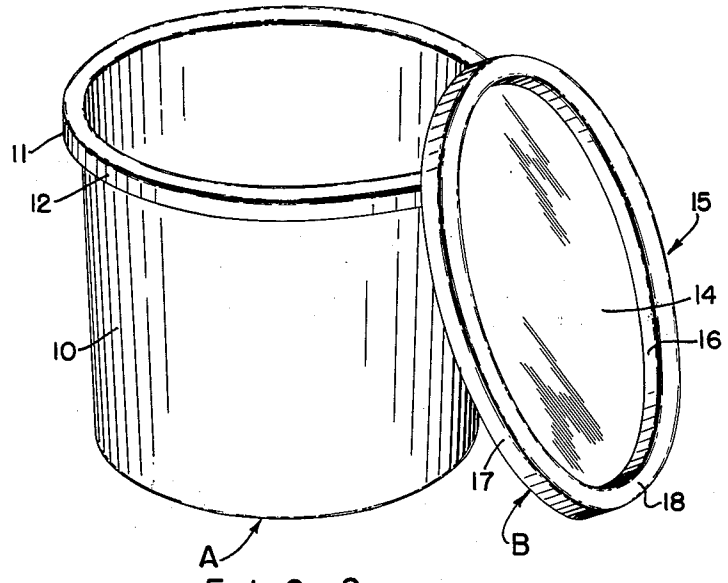

FIG. 2

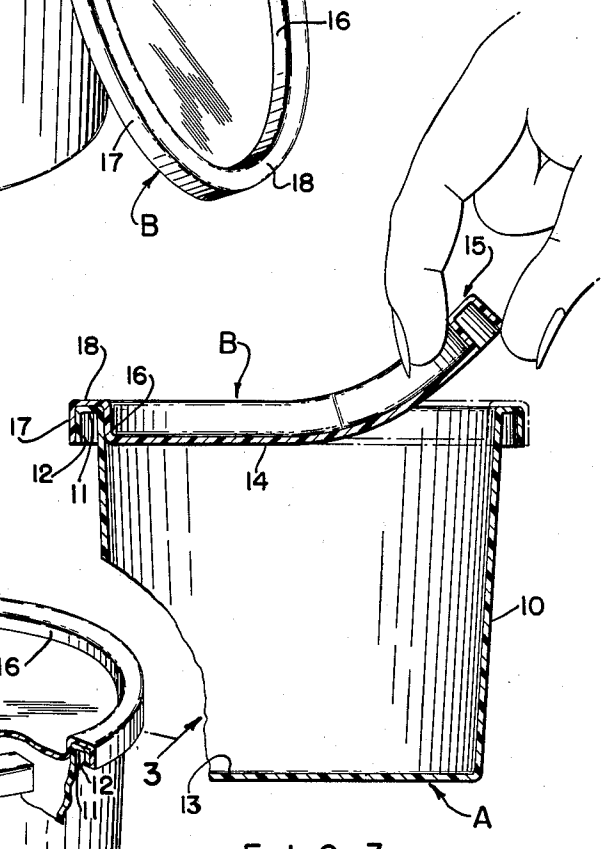

FIG. 3

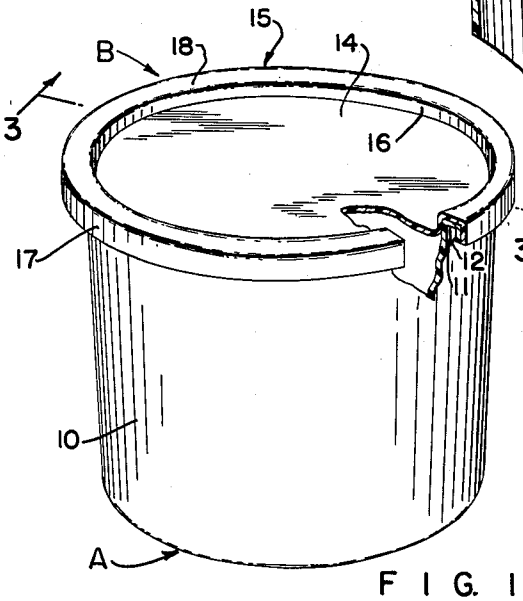

FIG. 1

INVENTOR.

EARL S. TUPPER

BY Harold R. Beck

ATTORNEY

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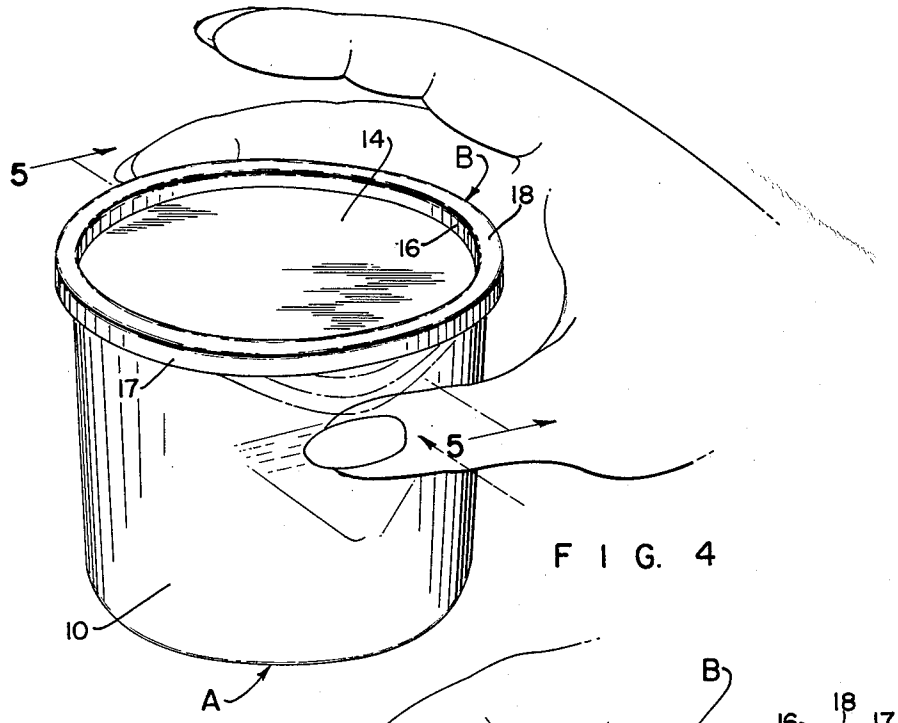

FIG. 4

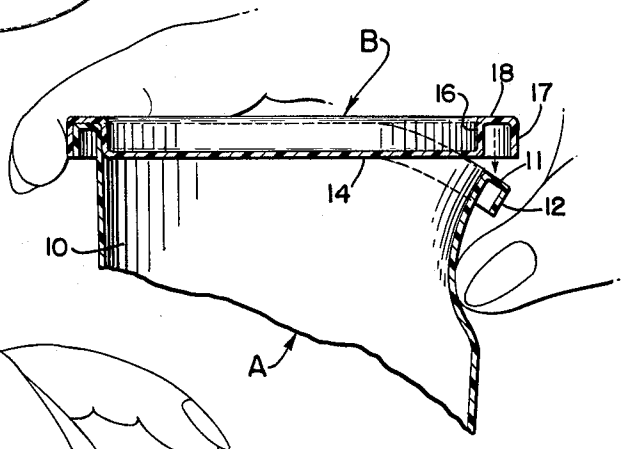

FIG. 5

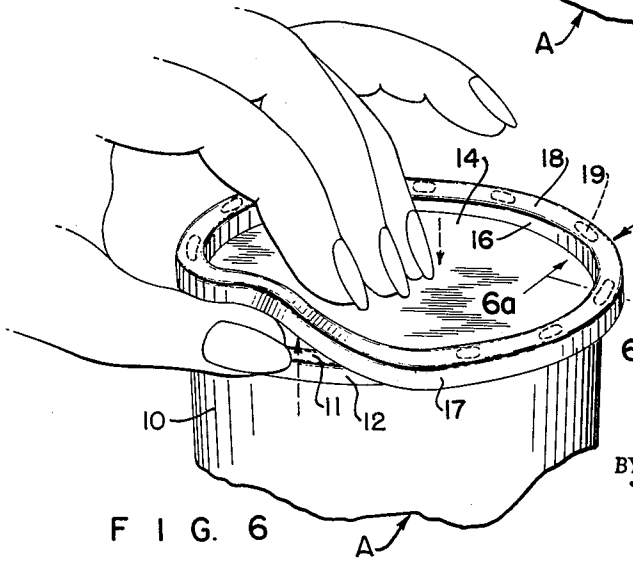

FIG. 6

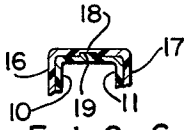

FIG. 6a

INVENTOR.

EARL S. TUPPER

BY Harold F. Beck

ATTORNEY

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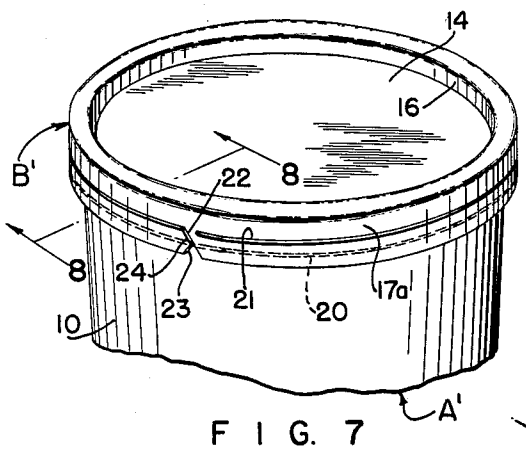

FIG. 7

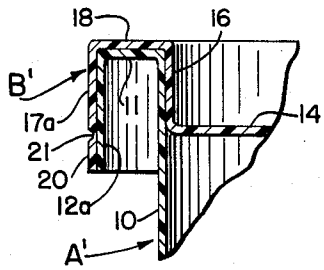

FIG. 8

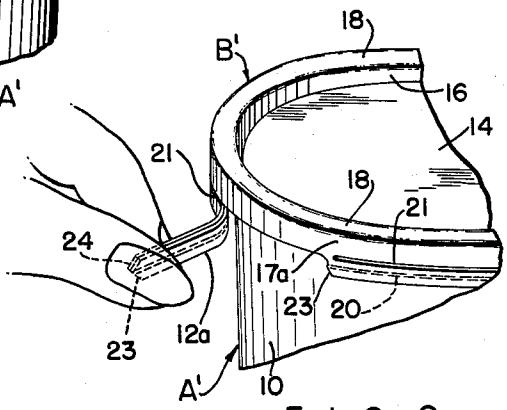

FIG. 9

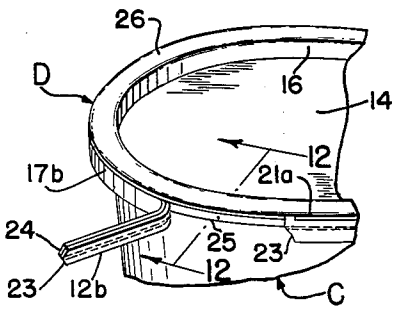

FIG. 10

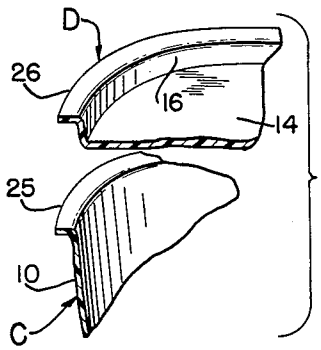

FIG. 11

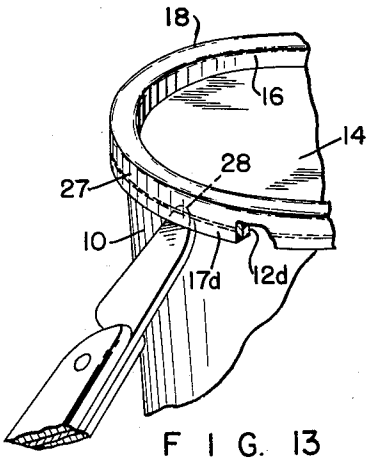

FIG. 13

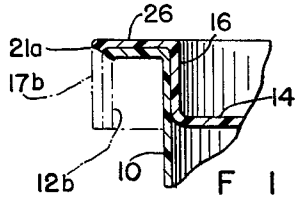

FIG. 12

INVENTOR.
EARL S. TUPPER
BY Harold P. Beck
ATTORNEY

United States Patent Office 3,155,233 Patented Nov. 3, 1964

3,155,233 DISCARDABLE OR REUSABLE PLASTIC PACKAGE

Earl S. Tupper, Esmond, R.I., assignor, by mesne assignments, to Rexall Drug and Chemical Company, Los Angeles, Calif., a corporation of Delaware

Original applications Nov. 10, 1954, Ser. No. 467,992, now Patent No. 2,901,098, dated Aug. 25, 1959, and June 23, 1959, Ser. No. 822,325, now Patent No. 3,044,610, dated July 17, 1962. Divided and this application Mar. 16, 1962, Ser. No. 186,573

3 Claims. (Cl. 206—46)

This invention relates generally to a plastic container for packaging varieties of merchandise and of the type adapted to be prefilled and sealed air-tight and in tamper-proof manner at the filling plant, but more specifically to a package of a gauge sufficient to be self shape-retaining and yet subject to local deformation at areas of slight pressure and further being capable of being either reused as a container and cover after seal severance or discarded as the ordinary cardboard, glass or metallic package.

The invention is a continuation-in-part and an improvement over the invention set forth in applicant's application for patent filed November 27, 1953, under Serial No. 394,604, now U.S. Patent No. 2,941,660, and is a division of parent case Serial No. 467,992, filed November 10, 1954, now U.S. Patent No. 2,901,098, and application Serial No. 822,325, filed June 23, 1959, now U.S. Patent No. 3,044,610.

The primary object of the invention herein resides in the provision of a substitute type of merchandise package relative to metallic, glass, cardboard and composition types now on the market and being on approximately the same price levels of cost of manufacture and wherein said package may serve as a durable package for the vessel contents for storage and transportation by carriers, and wherein the package is capable of being partially or fully severed at the normally permanent seal by the consumer, the package parts after severance being either discardable as in the case of conventional packages after content removal or reusable as a container and frictionally engageable cover for storage and dispensing purposes.

A further feature of the invention resides in the provision of a plastic package of the above characteristics having both content protecting light properties and at the same time being sight penetrable by virtue of the gauge and material from which the package is formed. Said material is preferably polyethylene or other substance having similar physical characteristics including the vinyls and derivatives, all being locally distortable and capable of withstanding and yielding to shocks without breakage or fracture and further being flexible, sufficiently soft for cutting, tearing or severance for opening the package. In addition, the material used is non-absorbtive to and not readily wetted by water, odorless, resistant to acids, alkalis, solvents and other chemicals at ordinary temperatures. Moreover, the material does not soften far below the boiling point of water, is resistant to mildews, micro-organisms, and insects and absorbs blows and shocks by ready yieldability. Furthermore, the package is capable of a degree of distortion while under permanent seal to enable easy storage either for transportation or refrigeration when quarters are cramped and is capable of easy expansion and contraction in capacity for variations in temperature and pressure.

Although polyethylene has been found to be a most suitable plastic polymer which has all the above characteristics, it is understood that other plastic materials reduced to similar physical properties are applicable.

The packaging herein described may be used in various capacities for packaging (under vacuum if desired) alcoholic liquids, foods, carbonated beverages, milk and derivative products, cheese, candies, drugs, industrial, commercial and other products such as metals, chemicals, poisonous materials, and other not too heavy merchandise.

A further feature of the invention resides in the provision of a package wherein the normally permanent connection of the members made at the filling plant and including heat-sealing is disposed on cooperating structure between the container and cover members, such structure being of sufficient dimensions as to retain their respective sealing and gripping functions but only frictionwise after partial or full severance at the connecting areas.

Another object of the invention resides in the provision of a form of packaging for commercial, industrial and consumer products which is strong, durable, resistant to wear, tear, shocks of handling, storage and impact, is electrically non-conductive and is capable of reusability and econmically may well be discarded after the heat-sealing or non-frictionally joined areas have been separated by a simple knife blade or point cutting, by pulling along a scored area, or by pulling a tear string.

A further object of the invention resides in the utilization of easily yieldable thin-walled material in the formation of a package prefilled and sealed at a filling plant and which is suitable for storage, refrigeration and transportation and which is strengthened despite the thin gauge by virtue of complete permanent closure and structure at the sealing edges.

These objects and other incidental ends and advantages of the invention will hereinafter appear in the progress of the disclosure and as pointed out in the appended claims.

Accompanying this specification are drawings showing preferred forms of the invention and wherein:

FIGURE 1 is a view in perspective partially in section showing a package partly in section and after severance of the permanent seal.

FIGURE 2 is a view in perspective of the package shown in FIGURE 1 and showing the cover member in separated condition.

FIGURE 3 is a sectional view of the package across the plane 3—3 of FIGURE 1 showing one manner of separation of the cover from the container member.

FIGURE 4 is a view in perspective of the package of FIGURE 1 showing finger depression between the top rim and the wall member to facilitate cover removal.

FIGURE 5 is a fragmentary sectional view across the plane 5—5 of FIGURE 4.

FIGURE 6 shows the package permanently sealed between the cover and container members at spaced areas and wherein the sealing points are spaced and disposed along specified areas of said members for an easy pull-type of severance and separation.

FIGURE 6*a* is an enlarged and fragmentary sectional view of FIGURE 6 across the plane 6*a*—6*a*.

FIGURE 7 is a fragmentary perspective view of a package showing cooperating score lines and sealing areas between the cover and container members for severance of the permanent sealing means and resulting in structure shown in FIGURES 1–5.

FIGURE 8 is an enlarged and fragmentary sectional view of FIGURE 7 across the plane 8—8 thereof.

FIGURE 9 is a fragmentary view in perspective showing the manner of removal of the sealing areas of the package parts in the structure shown in FIGURE 7.

FIGURE 10 is a fragmentary view in perspective showing a modified means over the means of FIGURE 7 of scoring and sealing areas of the package for severance.

FIGURE 11 is a fragmentary and exploded view partly in section showing the structure of FIGURE 10 after severance and in condition for reusability or discardability.

FIGURE 12 is a fragmentary and enlarged sectional view of FIGURE 10 across the plane 12—12 thereof.

FIGURE 13 is a fragmentary view in perspective partly in section showing a modified means of sealing the package and a means of severing same with a knife point.

In accordance with the invention and the forms shown, FIGURES 1–5 show a type of storage container and cover suitable for reusability after a permanent seal impressed at a filling plant has been severed. This type of container or canister has a friction-engaging type of cover and may also be discarded as any other merchandise container since little material is required for molding and forming the same as a result of the thin gauge of the walls. Thus letter A represents the container member and letter B the cover therefor. Container A has a side wall 10 provided with a top having a horizontal type of peripheral flange 11 with a downwardly extending skirt 12. The container has a bottom wall 13. As shown, side wall 10 is rounded and slightly outwardly tapered from bottom wall 13, but it is understood that the necessity of the taper, and the size and perimetric shape are selective only. Furthermore, flange and skirt 11–12 are of any predetermined sizes for purposes hereinafter described.

Container A is of any required capacity and together with cover B is furnished by the package manufacturer to the filling plant or filling operator and the latter determines requirements as to size, capacity and shape. The filling operator at the filling plant first employs the usual facilities for filling vessel A with contents such as food, chemicals, industrial, pharmaceutical, commercial and other types of products capable of being packaged for consumption or distribution by other manufacturers, dealers, distributors, consumers and the like. Thereafter, the parts are permanently sealed by conventional means as will appear hereinafter.

Container A is made to be easily and locally deformable to slight pressure and at the same time is sufficiently rigid to be self shaped-retaining. This is accomplished by employing polyethylene or other substance having similar physical characteristics in thin gauge and by reason of the cooperating closure structure as will appear.

Cover member B made of the same material and of comparable gauge as container A cooperates with the flange and skirt 11–12 of the container to add in the shape-retaining characteristic thereof. Thus, flange and skirt 11–12 by virtue of its structure serves as a reinforcing rim for container A arresting the tendency for easy collapsing and deformability of the container member thereat. Moreover, flange 11–12 serves as a handle element when container A is used by itself as a canister, storage container and the like as best shown in FIGURES 1–4.

Container flange and skirt 11–12 is further utilized for cooperation with a similar type of engaging flange on cover B.

Cover member B is provided with a central wall 14 and terminates edgewise in an inverted, raised and peripheral groove generally indicated by numeral 15 and having an inner wall 16, an outer wall 17 and a top connecting wall 18. Cover member B being made as stated of the same material and with comparable gauge as container A is likewise capable of easy deformability, the distortion also being controlled and arrested by the reinforcing effect of the groove rim structure as described.

The flange members 11 and 12 of container A and groove walls 16–18 of cover B are suitably dimensioned for sealing at the filling plant so that following removal in the methods hereafter described of the permanent sealing portions, sufficient flange and skirt areas will remain for proper functioning of the packages as containers and frictionally removable and frictionally sealable covers therefor as shown in FIGURES 1–5. Thus, in said FIGURES 1–5 cover B has at least groove walls 18 and 17 engageable with container A at the flange and skirt portions 11 and 12 respectively for removable and sealable purposes after the permanent sealing as shown in FIGURES 7–10, 12 and 13 has been severed.

Because the gauge of the material forming container A and cover B is thin, it is simple after permanent seal severance, to remove the cover from the container for storage and other useful purposes. Thus, as shown in FIGURE 3, the removal of the cover from the container is effectuated by pressing the top wall 14 of the cover member with one finger and simultaneously lifting by means of the thumb the lower edge of the groove outer wall 17 of the cover member. The depression of top wall 14 of cover B by one of the fingers causes a displacing action between the cover groove edge 17 and the container skirt 12 whereupon the cover may be removed in a peeling-off type of operation. Another method of removing the cover B from container A is to indent container side wall 10 with one finger such as the thumb and simultaneously grasp the cover rim at a diametrically opposite area. The thinness of gauge of the package material causes a distinct deformation of the container portion at the thumb-press area causing a disengagement and lowering of the container flange 11 and skirt 12 from the groove of the cover as shown in FIGURE 5 to initiate a peeling-off type of removal of the cover.

In applying cover B on container A, it is merely necessary to align the cover groove with the flange and skirt 11–12 of the container and then by a progressive sliding movement around groove top wall 18 of the finger, sealtight engagement takes place.

By reason of the economy in the gauge of material and modern molding methods the container and cover may be made at costs comparable with conventional glass, paper and composition containers and covers and hence may be discardable with the same amount of freedom by the consumer. However, it should be borne in mind that a container and cover of the type described is far more suitable than the cardboard, glass or other types of package including the metal type for the reason that the material packaged at the filling plant is capable of not only being viewable from the outside, but is also locally deformable, non-fracturable when exposed to shocks, transportation and impact. Furthermore, the material is insulating to the penetrating rays of light where found to be injurious and has such advantageous physical characteristics as being tasteless, odorless, and chemically inert so that putrefaction is inhibited and the taste of metal, composition or cardboard is not imparted to the container contents. Moreover, the contents after seal severance may remain in the container without danger of interaction with the container material.

Several means of permanent sealing of cover B to container A are possible, one of which is shown in FIGURES 6 and 6*a*. Permanent and spaced heat-sealing or other type of permanent adhesion or fusion is effected between container rim wall 11 and the underside of cover groove top wall 18 at spaced areas 19. For seal severance, the cover A is lifted by bearing pressure on cover wall 14 (FIGURE 6) and raising the cover at a non-sealed area from the lower edge of cover wall 17. By a peeling-off and exfoliating type of operation, the parts are separated.

FIGURES 7, 8 and 9 show another means of affixation between container A' and cover B' wherein the cover and container members are modified in that the cover groove outer wall 17*a* and the container skirt portion 12*a* are elongated so that upon removal of the lower portions of walls 17*a* and 12*a*, said walls are reduced to the sizes of walls 17 and 12 as shown in FIGURES 1–5. Sealing 20 between walls 12*a* and 17*a* is in the form of a peripheral and narrow ring area of fusion accomplished by either heat-sealing, adhesive, solvent or other known means, the said sealing being fluid proof. The sealing 20 above the lower edges of walls 12*a* and 17*a* is disposed below a peripheral scoring line 21 penetrating cover groove

wall 17*a*, the said scoring line being broken at a small area 22 (FIGURE 7) below which a notch 23 running from the lower edges of walls 12*a* and 17*a* and disposed below area 22 is formed, said notch 23 terminating below fusion ring 20. One edge of notch 23 is extended by a scoring line 24 on outer wall 17*a* whereby removal of overlapping portions of 12*a* and 17*a* below scoring ring 21 at notch 24 may be initiated by a pulling operation as shown in FIGURE 9 for removing the lower portions of the walls 12*a* and 17*a* below scoring ring 21.

Another means of fusion and severance of container and cover parts is shown in FIGURES 10, 11 and 12 wherein walls 17*b* of cover D and 12*b* of the container C are of the conventional size as shown in FIGURES 1–5 and wherein a peripheral scoring ring 21*a* on outer wall 17*b* adjacent the edge of groove top wall 18 is provided and wherein a scoring mark 24 on wall 17*b* and a similar notch 23 is formed at the adjacent lower edges of walls 12*b* and 17*b* for use as a starting point to effect the start of removal of the complete walls 12*b* and 17*b* by a pulling operation (FIGURE 10). Upon removal, container and cover members are formed wherein container C results in having a horizontally disposed edge flange 25 and wherein cover D is left without a groove outer wall, the engagement between the cover D and container C being frictional and telescopic.

In FIGURE 13, another means of sealing and severance is shown wherein the sealing area is indicated by a peripheral ring 27 between the cover groove outer wall 17*d* and the container skirt 12*d*. Ring 27 is disposed above the lower edges of walls 12*d* and 17*d* to enable a knife point 28 to be inserted for cutting seal 27 by peripheral movement until complete severance takes place. The resultant container and seal of the embodiment shown in FIGURE 13 resembles the container and seal shown in FIGURES 1–5.

Of course, any type of cover and container member are feasible to practice the invention herein so long as there remains frictional engagement between the cover and container members after severance for purposes of sealability in the event the package is to be reused instead of being discarded. The invention herein further should not be construed as being limited to specific engaging structure. A tear string may be welded or fused between the cover and container members at the engaging portions for severance of the connected members if desired, although this type of severance is not shown.

Permanent sealing areas as mentioned may be continuous or spotted, but it is to be remembered that where sealing is not continuous, full hermetical sealing protection of the contents is furnished to the extent afforded by the frictional and live engagement between the cover and the vessel.

Although it is preferable to utilize the same material as well as gauge in the formation of both cover and container, it is understood that slight variations to suit requirements and economies may also be used. Both the container and cover may be formed by any of the known methods in use and the manner of production thereof in no way affects the invention herein. Included in such methods are injection, compression, blow molding and vacuum forming.

The rigidity afforded by the container and cover rim elements when connected or in separated condition causes a self-shaped-retaining structure even though the portions beyond said rim elements are very easily deformable.

It is understood that the above forms of the invention apply to differently shaped containers and covers including household items such as plates, cereal dishes, creamers, sugar bowls, tumblers etc.

It is distinctly understood that minor changes and variations in the material, integration, location and arrangement, size and connection and separation of parts may all be resorted to for practicing the invention without departing from the spirit of the invention and the scope of the appended claims.

I claim:

1. In a self retaining and pressure-sensive, hermetically sealed and deformable container with contents sealed therein and adapted for selective discarding or reusability as a frictionally sealable container and cover after severance for removal of enclosed contents, the combination comprising a container and cover both being of thin gauge, pressure-sensitive and deformable material, the container having a bottom and side wall terminating in a rigidifying outwardly disposed peripheral rim flange having horizontal portions and depending skirt portions, a cover having a central wall, an upwardly extending side wall and a rigidifying outwardly disposed peripheral side wall rim flange having horizontal portions and depending skirt portions, the side wall portion of the container adjacent the flange thereof being operative for frictional telescopic and hermetical engagement with the cover side wall, the cover flange and the container flange being in abutting engagement with the abutting faces of the skirt portions providing a slot between the free edges thereof, fusion means between the abutting faces of said flange skirt portions and spaced from said free edges, said flange skirt portions of the cover and container flanges being severable by cutting means placed between said free edges of the skirt portions to sever said fusion means whereby the package may also serve selectively as a container and separate frictionally engageable cover therefor for reuse or as a separated package to be discarded.

2. A self shape-retaining and pressure-sensitive, hermetically sealed and deformable container with contents as set forth in claim 1 wherein the container, cover and flange members are formed of a substance having similar physical properties of polyethylene.

3. A container according to claim 1 wherein said skirt portions of the cover flange and container flange are disposed substantially vertically so that the cutting means is inserted vertically between the free edges of the skirt portions to sever the fusion means.

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