April 15, 1969 D. D. MILLER ET AL 3,438,483

RECLOSABLE PACKAGE

Filed March 27, 1967 Sheet 1 of 2

Fig. 1.

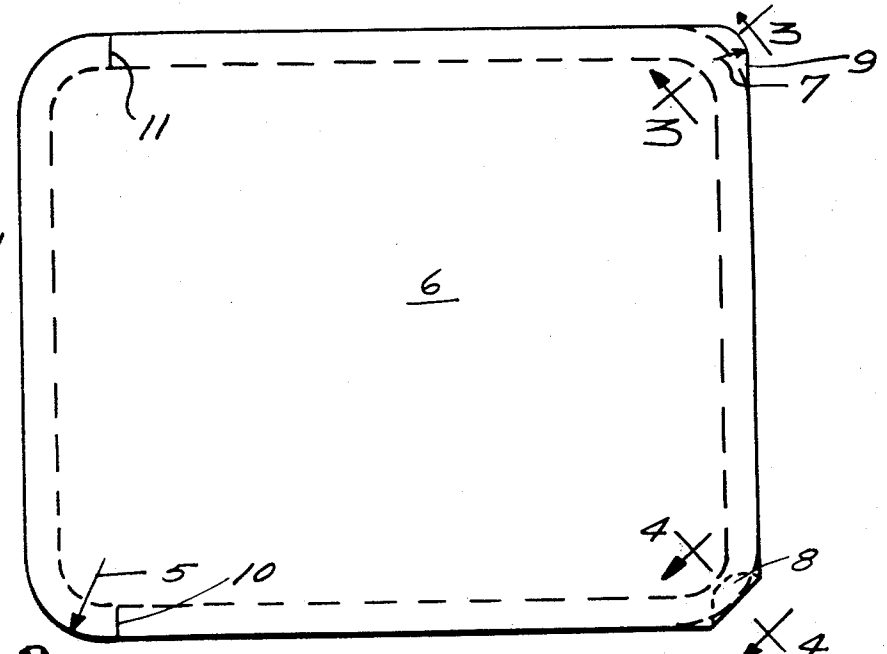


Fig. 2.

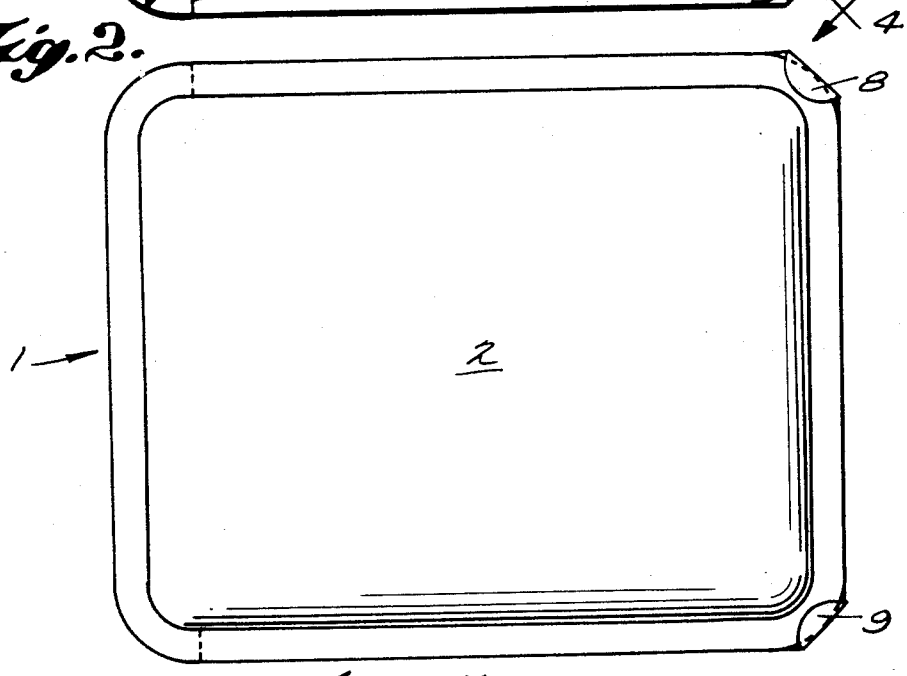


Fig. 3.

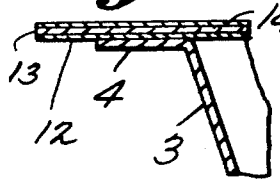
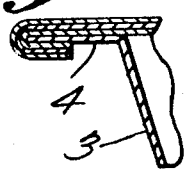


Fig. 4.



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Fig. 5.

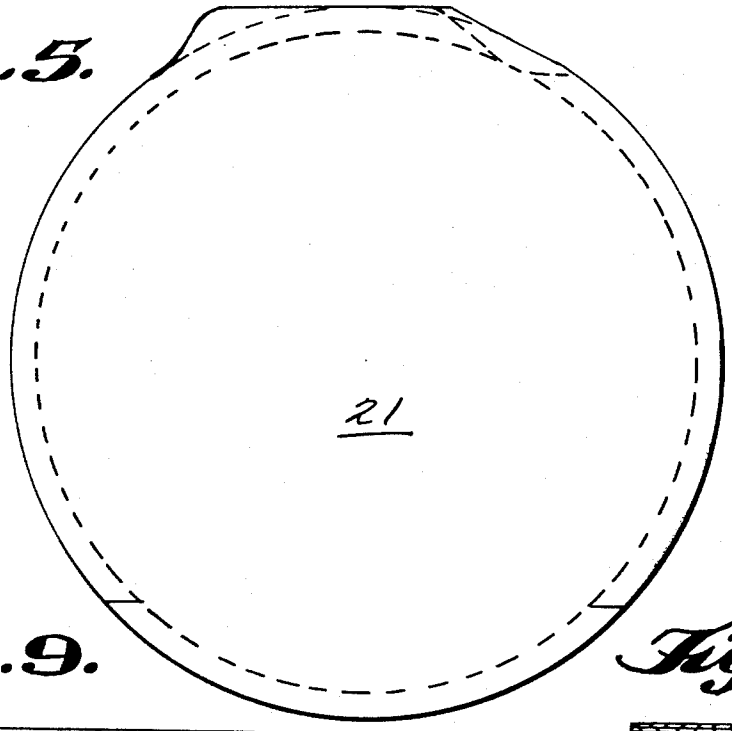


Fig. 9.

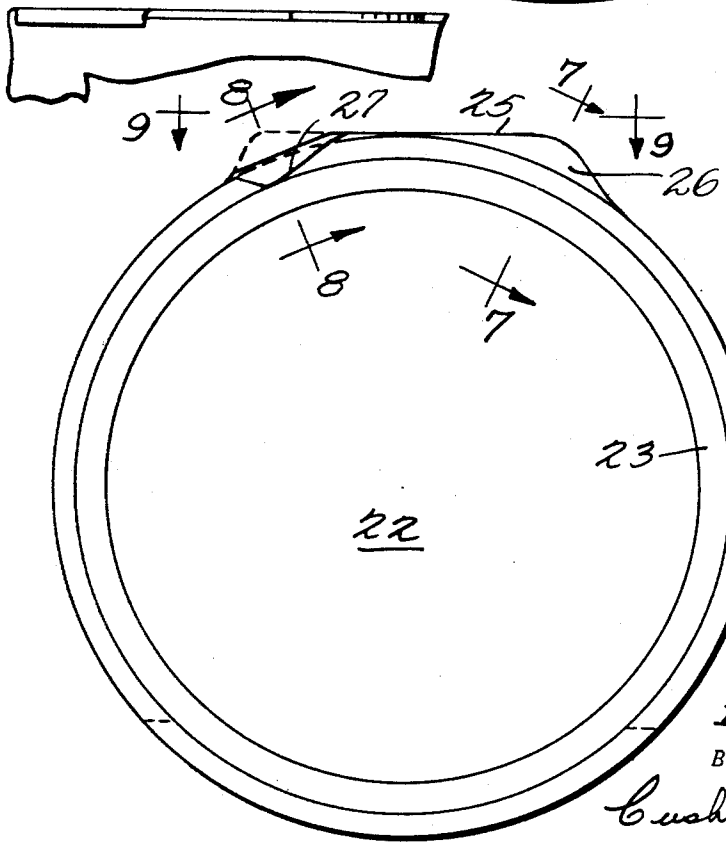


Fig. 7.

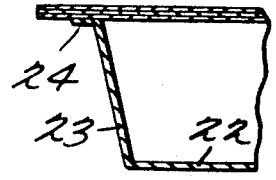


Fig. 8.

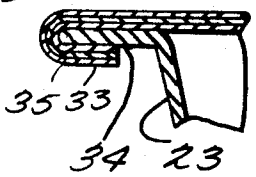


Fig. 6.

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RECLOSABLE PACKAGE

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U.S. Cl. 206—56 7 Claims

ABSTRACT OF THE DISCLOSURE

A reclosable lid for a receptacle which is a rigid or semi-rigid plastic cup or tray having a bottom, a sidewall and a flange extending laterally outwardly from the upper edge of the sidewall. The lid is flat and is composed of a laminate of metal foil and paper or cardboard. The lid extends beyond the flange of the cup or tray at two or more places spaced around the cup and generally at one side thereof. The lid is sealed to the flange of the cup. On opening the cup, the lid is not entirely removed but a peripheral portion of it is left sealed to the flange on the side opposite the extending portions. Indicia on the lid indicate this peripheral portion. When the lid is pressed back against the flange, the consumer folds the lid under the flange at the places where the lid extends beyond the flange. The folded under portions are crimped to the underside of the flange and hold the lid in place.

The present invention relates to a container and more particularly to a container having a closure sealed to a container body which can be removed and then replaced to reclose the container.

The type of container body with which the invention is particularly concerned is a rigid or semi-rigid plastic cup or tray having a bottom, a sidewall and a flange extending laterally outwardly from the upper edge of the sidewall. The cup is filled with a product, for example sliced luncheon meat, and closed with a substantially flat lid which extends over the flange and is sealed to it.

From the consumer's point of view, containers of this type represent a substantial improvement over flexible film wrappings and plastic bags which have been used widely to package sliced cheese, sliced luncheon meat and a wide variety of other products. The principal advantages are that the rigid or semi-rigid cup functions as a permanent receptacle for a product. The consumer can open it, remove part of the contents and then store the remainder of the contents in the cup for later use. In the case of a plastic bag, it is necessary to remove all of the product, in some cases, in order to gain access to a part, and then to replace the unused portion, and both removal and replacement are awkward. A flexible wrapping has the difficulty that the "container" is destroyed, in essence, when the package is unwrapped.

However, the cup-lid container described above is not without its own difficulties. In particular, it is difficult to arrange for easy reclosing. For reasons of cost, it is preferred that the lid be a flat board of inexpensive materials which is sealed against the flange. Once the lid is pullel free of the flange, the package cannot effectively be reclosed. If the purchaser places the lid back against the flange, there is nothing to hold it in place and it will fall off.

One way to avoid the problem is to seal the lid to the cup flange with pressure sensitive adhesive. This type of adhesive remains tacky after the package is opened and will reseal the lid to the flange when the lid is replaced. However, there are manufacturing difficulties associated with pressure sensitive adhesives because

of the tendency of a lid coated with this kind of adhesive to stick to everything it touches. Varivous package structures intended to overcome this problem have been considered, many quite ingenous. However, none has been successful in practice because of manufactuing problems.

The present invention provides an entirely different approach to the problem. A flat lid is initially sealed to the package by means of a non-reusable adhesive, which will not adhere to the lid when pressed against the flange after the package is opened, such as a heat activated adhesive. The lid is composed of a laminate of metal foil and paper or cardboard. Unlike conventional lids, it extends beyond the flange of the cup at two or more places around the cup, generally at one side thereof. The package is opened in the ordinary way, by breaking the seal on the side where the lid extends beyond the flange. The lid is not removed entirely but a peripheral portion of it is left sealed to the flange on the side opposite the extending portions. Indicia on the lid indicate this peripheral portion. The lid is folded back to gain access to the contents of the cup. When the lid is pressed back against the flange, the consumer folds the lid under the flange at the places where it extends beyond the flange. The folded-under portion is crimped to the underside of the flange and holds the lid in place, resisting displacement in any direction. The laminated lid has a memory characteristic, that is the property of retaining a shape. When crimped under the flange, the lid remains in place until the package is reopened.

An important element of the invention is the material used in the lid. This is a laminate of metal foil and paper or paperboard. For purpose of convenience, the word "paper" will be used to include all such materials made of fibers, especially of the type made by depositing fibers from water slurry onto a screen. Frequently "paper" is used to refer to such materials up to 0.006 inch thick, while "paperboard" is frequently used to refer to heavier materials, 0.012 inch thick or more. However, no such arbitrary limits are intended herein. The paper should be heavy enough to give body and strength to the laminate, but not so heavy as to prevent manually folding the overhanging portion of the lid to a fairly neat crease. The weight will depend somewhat on the foil and the kind of paper. Its properties can be characterized by reversible bending. If a fresh piece of the paper or board about one inch wide and 6 inches long is suspended at its ends, it should bend at most about ¼ inch under its own weight. Generally the paper will be about 5 to 12 mils, preferably 6 to 8 mils. Particularly useful materials are bleached sulfite board having a basis weight of 90 to 100 pounds per 3000 square feet or Northern Unbleached Natural Kraft having a basis weight of 60 to 70 pounds per 3000 square feet.

The foil usually will be aluminum, but alloys of aluminum, steel and other metals may be used. The foil should be heavy enough to retain the lid folded but light enough to be easy to fold. Generally it will be 0.4 to 1 mil thick. In some cases, there may be a second layer of foil. For example, the lid may be a sandwich of two layers of foil on opposite sides of a layer of paper or cardboard. This structure has the advantage of foil exposed to the product in the container and a decorative exterior foil. In such cases, it is preferred that one layer of foil have the thickness stated above and that the total thickness not exceed 10 mils. It also is possible to include other layers of flexible material. For example, a layer of plastic film such as polyethylene or polypropylene may be between the paper and one of the layers of foil in the last-mentioned embodiment.

The invention will be better understood from the fol-

lowing detailed description of preferred embodiments, reference being made to the drawings, in which:

FIGURE 1 is a plan view of a closed rectangular package embodying the present invention;

FIGURE 2 is a bottom view of the package of FIGURE 1;

FIGURE 3 is a cross section of a part of the package of FIGURE 1 taken along lines 3—3 of FIGURE 1;

FIGURE 4 is a cross-section of a part of the package of FIGURE 1 taken along lines 4—4 of FIGURE 1;

FIGURE 5 is a plan view of a circular package according to the invention;

FIGURE 6 is a bottom view of the package of FIGURE 5, showing it reclosed;

FIGURE 7 is a cross-section of a part of the package of FIGURE 5 taken along lines 7—7 of FIGURE 6;

FIGURE 8 is a cross-section of a part of the package of FIGURE 5 taken along line 8—8 of FIGURE 6; and

FIGURE 9 is a side elevation of a portion of the package of FIGURE 5 viewed along line 9—9 of FIGURE 6.

Referring to FIGURES 1–4, the package illustrated comprises a rectangular cup or tray indicated generally by the numeral **1** having a rectangular bottom **2**, a sidewall **3** extending upwardly and outwardly from the bottom **2** and a flange **4** extending laterally outwardly from the top of the sidewall. The corners of the flange are rounded with a relatively large radius of curvature **5**.

A flat lid **6** is hermetically sealed to the flange **4** around its perimeter. Along the straight sides of the flange, the lid is approximately the same width and length as the outer dimensions of the flange. However, at two of the corners at the right side of the package, the lid is rounded to a smaller radius of curvature **7**. Consequently, the lid extends beyond the flange at two corners to provide tabs **8** and **9**.

As seen in FIGURES 3 and 4, the lid comprises a lower layer of aluminum foil **12**, an intermediate layer of bleached sulfite or natural kraft board **13**, and an upper layer of aluminum foil **14**. The thicknesses of the layers are respectively 0.5, 7 and 0.3 mils.

The lid **6** is initially sealed hermetically to the flange **4**. This may be accomplished by any known means, but a preferred material is a heat activated adhesive. This is a material which is not tacky at room temperature but which becomes tacky when heated. The adhesive layer may be thermoplastic, that is capable of stiffening on cooling and re-softening and re-stiffening in subsequent heating-cooling cycles. However, it also is possible to use a material which is thermosetting, that is a material which cures on heating and therefore becomes irreversibly stiffened. Numerous materials of this type already are known to those skilled in the art.

As indicated in FIGURE 1, there are fold lines **10** and **11** printed on the lid to indicate to the consumer where the lid is to be folded. When the consumer opens the package, the tabs are lifted, the seal is broken, the lid lifted to the lines or indicia **10** and **11**, and a part of the contents are removed. The customer then presses the lid back against the flange. Since some portions of the seal have been broken, the lid no longer can be secured to the flange in those areas by means of the adhesive previously applied. The customer folds the corner tabs **8** and **9** under the corners of the flange **4** and this prevents the lid from lifting from the cup. Because the lid is constructed of foil and board, the tabs **8** and **9** remain folded under the flange **4**.

FIGURES 5–9 illustrate another embodiment in which there is a circular cup **20** and a circular lid **21**. The cup comprises a circular bottom **22**, a side wall **23** extending upwardly and outwardly from the bottom **22** and a circular flange **24** extending laterally outwardly from the sidewall **23**. At one side of the cup, two portions of the lid extend beyond the flange at two points towards an edge **25** which is tangential to the circular flange **24**, to form two tabs **26** and **27**. The lid is constructed of outer and inner layers of aluminum foil, **33** and **34** and an intermediate layer of board, as in the embodiments in FIGURES 1–4.

Various other lid-cup arrangements can be conceived wherein the lid extends beyond the flange in two or more distinct positions at one side of a first center line. It is preferred that where thre are only two tabs they be symmetrically arranged, that is equally spaced from a second center line perpendicular to said first center line. That is, if an imaginary center line is drawn from one side of the flange to the other, both of the tabs should be on the same side of it and if a second imaginary center line is drawn perpendicular to the first, the tabs should be equally spaced from it. Preferably, the angle between the tabs, that is between lines drawn from the centers of the tabs to the center of the lid, is at least about 30°, more preferably at least about 45°. On the other hand, it is preferred that the angle between these tabs not exceed about 110°, more preferably 90°. Additional tabs may be used, but are in general unnecessary. On the other hand, if only one tab is used, or the tabs are too close together, the lid may curl away from the flange and not adequately reclose the package. In principle, a single extension can extend continuously around the flange in the above angles, so that, in effect, there are two tabs which are connected together rather than two independent tabs. This arrangement is wasteful of lid material and the lid may be harder for the consumer to reclose. However, if used properly, it can effectively provide for reclosing the package. It is especially desirable that there be no tabs on the opposite side of said first center line. In addition to being wasteful of material, the consumer may be encouraged to lift the lid completely from the flange, which makes it difficult to effectively reclose the package.

The indicia **10** and **11** set off a peripheral portion of the lid to be left sealed to the flange. This portion is on the other side of said first center line and is preferably symmetrical with respect to the second center line. The angle included, i.e. between lines connecting the center of the lid with the edges of the peripheral portion preferably is about 60–130°.

The distance which the tab extends beyond the flange is not too critical, although it prferably should not substantially exceed the width of the flange nor be substantially less than one-half the width of the flange. This assures an ppropriate length of lid material to tuck under the flange.

Various materials can be used for the cups including synthetic plastics, transparent and opaque, and various metal foils. For example, the invention is applicable to cups of polystyrene, polyvinyl chloride, relatively rigid aluminum sheet, cardboard and the like, and these may be coated with various liquid or vapor barrier materials. The flange should be at least as stiff as the lid, and preferably should have an effective flexural modulus at least 1.5 times as great as the flexural modulus of the lid so that no difficulty is experienced in folding the tabs. The effective flexural modulus of the flange is the force needed to bend the flange a given angle and will of course depend on the flexural modulus of the cup material, the thickness of the lid and also the shape of the cup. Various ribs in the side wall, and also the shape of the flange itself can reinforce the cup and make it harder to bend the flange than might be expected from the nature and thickness of the material. On the other hand, the flange should not be thicker than about ⅛ inch preferably not thicker than 1/32 inch. If the flange is too thick, the tabs will not grip it as well. In ordinary packages, the flange will be about 5 to 20 mils thick. In the case of very thick flange materials, an adjustment will have to be made in the width of the extending tabs, such that they will extend a distance equal to the thickness of the flange plus 50–100% of the width of the flange. However, when the flange is less than 1/16 inch thick, this correction generally is insignificant and can be ignored. Normally the flange will be

at least about 3/16 inch wide in the area where there are lid tabs, preferably 1/4 inch or more.

Various other changes can be made in details of construction and mode of operation without departing from the scope of the invention, as will be apparent to those skilled in the art.

We claim:

1. A reclosable package comprising

a cup having a bottom, a side wall and a flange extending laterally outwardly from said sidewall with a commodity therein and

a lid sealed to said flange and extending beyond said flange in at least two places around said flange at one side of a first center line thereof,

said lid comprising a laminate of a layer of paper and a layer of metal foil, the portions of said laminate extending beyond said flange being manually foldable from a position in the plane of said lid to a position under said flange after the package is opened and sufficiently retentive of the folded configuration to keep said lid on said package during further storage.

2. A reclosable package as set forth in claim 1 in which said lid comprises a layer of paper and layers of metal foil adhered to opposite sides of said layer of paper.

3. A reclosable package as set forth in claim 2 in which said lid includes a layer of synthetic plastic between said layer of paper and one of said layers of foil.

4. A reclosable package as set forth in claim 1 in which said lid is sealed to said flange with a non-reusable adhesive which will not adhere said lid to said flange on pressing them together after the package is opened.

5. A reclosable package as set forth in claim 1 including indicia on said lid designating a peripheral portion on the other side of said first center line to be left sealed to said flange when the package is opened, said peripheral portion cooperating with the folded under extended portions of said lid when said package is reclosed.

6. A reclosable package comprising

a synthetic plastic cup having a bottom, a sidewall and a flange about 5 to 20 mils thick and having portions at least about 3/16 inch wide extending laterally outwardly from the top of the sidewall and

a generally flat lid sealed to said flange with a non-reusable adhesive which will not adhere said lid to said flange on pressing them together after the package is opened, said lid extending beyond said flange a distance about 50–100% of the width of said flange in at least two places around said flange at one side of a first center line, said places being substantially symmetrical with respect to a second center line perpendicular to said first center line,

the angle between lines connecting said places with the center of said lid being about 30–110°,

said lid comprising a laminate which is less stiff than said flange of a layer of paper of about 5 to 12 mils thick and a layer of aluminum foil about 0.4 to 1 mil thick, the portions of said laminate extending beyond said flange being manually foldable under said flange after the package is opened and retentive of the folded configuration to keep said flat lid on said package during further storage.

7. A reclosable package as set forth in claim 6 including indicia on said lid designating a peripheral portion on the other side of said first center line to be left sealed to said flange when the package is opened, said peripheral portion cooperating with the folded under extended portions of said lid when said package is reclosed.

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DAVIS T. MOORHEAD, *Primary Examiner.*

U.S. Cl. X.R.

99—171; 229—43, 51