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METHOD OF PACKAGING

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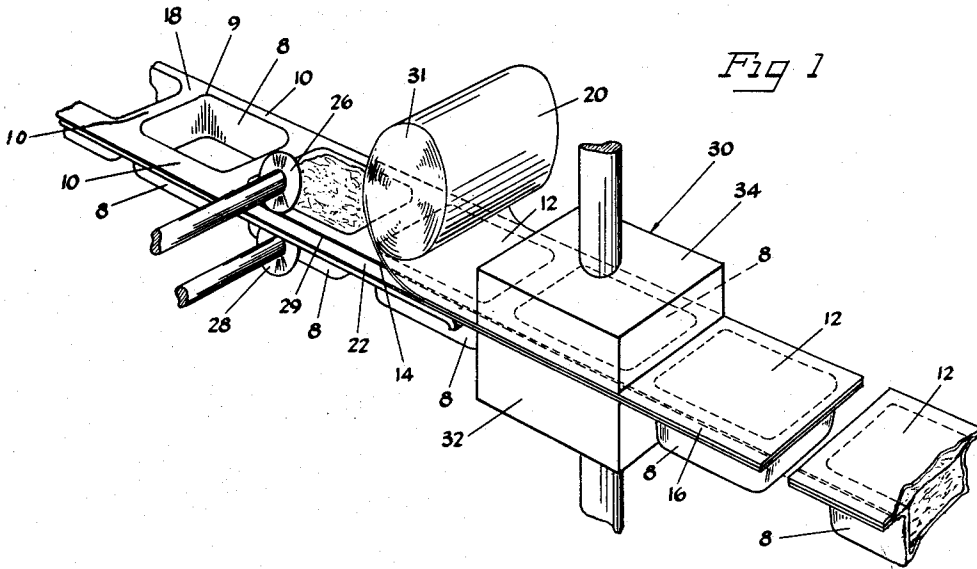


Fig 2

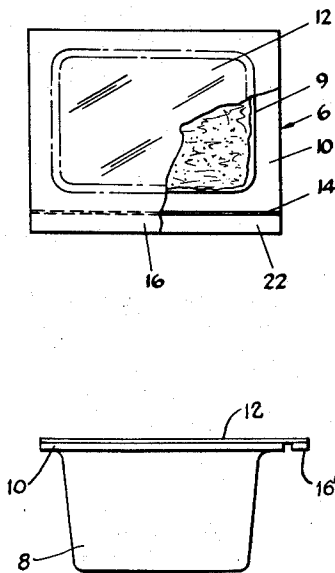


Fig 3

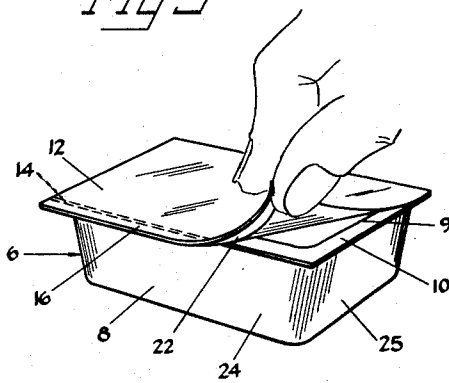


Fig 4

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METHOD OF PACKAGING

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The present invention relates generally to a package and to a method for making such a package. More specifically, the invention relates to a package particularly adapted for food products in individual servings and to a method of packaging such products.

Packages of plastic or the like for units of food or for other items of commerce have come into popular use during the last few years. These packages have been inexpensive and convenient but have at times been somewhat difficult to open.

For example, packages for individual food servings prepared in accordance with previously available methods, such as that described in United States Patent No. 2,736,656, have proved to be very satisfactory and have been widely used. These packages comprise a unitary container of plastic or the like which includes a central cup having a border flange extending therearound. A sealed cover is provided which overlaps one of the edges of the flange so as to provide a finger grip for peeling the cover from the container. However, because of the thinness of the material ordinarily utilized for the cover, the overlapping edge sometimes curls under the border flange and/or is sometimes difficult to immediately locate.

Accordingly, it is an object of the present invention to provide an improved unit of the type which includes a container section and a border flange. Another object of the invention is the provision of a package which has an easily removable cover. Yet another object of the invention is the provision of an inexpensive and easily manufactured hermetically sealed package for individual food servings, the package having an easily removable cover. A further object is the provision of a method of making a package having an easily removable cover.

Further objects and advantages of the present invention will become apparent by reference to the following description and accompanying drawing.

In the drawing:

FIGURE 1 is a schematic perspective view illustrating a method of making a package embodying certain features of the present invention;

FIGURE 2 is a plan view of a package produced by the method illustrated in FIGURE 1, a portion being cut away to show the relationship between the component parts of the package;

FIGURE 3 is an enlarged perspective view illustrating the manner in which the package shown in FIGURE 2 may be opened; and

FIGURE 4 is an elevational view of an alternative form of the package shown in FIGURES 2 and 3 in which a narrow continuous strip of material is disposed along, but detached from, a marginal edge of the border flange of the package.

Generally, the package illustrated in the drawing comprises a unitary container 6 of plastic material including a cup 8 having a mouth 9 and a border flange 10 extending around the mouth 9, and a cover sheet 12 which is attached to the upper surface of the border flange 10. The border flange 10 is provided with a line of weakness 14 underlying the cover sheet 12 and extending from a marginal edge thereof whereby an edge portion 16 of the package beyond the line of weakness 14 may be pulled back to peel the cover sheet 12 from the border flange 10.

In order to facilitate the description of the package of

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the present invention, a method of forming a package embodying certain of the features of the present invention is described hereinafter. Generally, the method, as illustrated in FIGURE 1, comprises the forming of a longitudinally spaced series of cups 8 in a strip 18 of thermoplastic material while leaving a horizontally extending border flange 10 about each cup. The cups 8 may be successively filled with the material being packaged, and then, the border flange 10 is provided with a longitudinally extending line of weakness 14 adjacent one edge thereof. A continuous cover strip 20 of thermoplastic material, which is wide enough to extend across the cups 8 and to a point on the border flange 10 beyond the line of weakness 14, is applied to the border flange 10; after which, the cover strip 20 is sealed to the border flange 10 to provide a low strength bond therebetween. Finally, the sealed cup units are separated by cutting the border flange 10 and associated cover strip 20 transversely between the cups 8 to provide a plurality of individual sealed packages each having a cover sheet 12 which includes an edge portion 16 attached to a portion 22 of the border flange 10 beyond the line of weakness 14. The edge portion 16 and the portion 22 of the border flange 10 attached thereto provide a grip for peeling the cover sheet 12 from the associated border flange 10.

More specifically, the cups 8 are successively formed in a continuous strip 18 of suitable thermoplastic material, such as a co-polymer of vinyl chloride and vinyl acetate, by any suitable manner. However, the cups may be formed from other materials such as foil, paper, etc., without departing from the scope of the invention. One suitable forming mechanism for thermoplastic material is shown in United States Patent No. 2,736,150, entitled "Packaging Apparatus," issued February 28, 1956, and assigned to the assignee of this invention. Generally, the forming mechanism disclosed in this patent includes a means for heating a predetermined area of a flat strip of thermoplastic material, which is intermittently fed step by step through the apparatus, the strip being sufficiently heated to render it stretchable; and a means for forming the heated area into the desired shape with gas pressure. The cups 8 may also be formed with vacuum or with suitable dies.

In one commercial embodiment of the invention, the cups are formed from a strip measuring about one and five eighths inches in width, and about .012 inch in thickness, the material being a vinyl chloride-vinyl acetate copolymer sold under the trade name of Vinylite. The resulting cups 8 are truncated pyramids having inwardly tapering side walls 24 and 25, the mouth 9 of the cups 8 measuring about one and one half inches longitudinally and one inch transversely, and the border flange 10 between the cups 8 being approximately five eighths of an inch.

Each of the spaced apart cups 8 is then filled with the material being packaged. This may comprise any desired substance such as a food serving of jam, jelly, peanut butter, cream, or other foods which may be conveniently served in packaged form. It should be understood that the cups 8 may also be filled with other suitable materials and substances such as nuts, bolts, hardware, pharmaceuticals, electronic components, etc.

If food is to be packaged, a suitable automatic filler mechanism (not shown) of any conventional design may be used to successively fill the cups 8. Since the particular construction of the filler mechanism comprises no essential portion of the present invention, a detailed explanation and showing thereof is believed unnecessary.

The strip 18 is then passed through a suitable cutting apparatus, such as a pair of cooperating knife edged rollers 26 and 28, a razor blade, etc., which is disposed so as to provide a line of weakness 14 in the border flange 10

adjacent one edge thereof, the line of weakness illustrated being a longitudinally extending slit 29 which separates the edge portion 22 from the border flange 10. However, for certain cup materials, the line of weakness 14 may comprise a series of perforations, a score-line in the material, etc., without departing from the scope of the invention. Moreover, instead of providing the line of weakness 14 in the border flange 10, a narrow continuous strip 16' of suitable material may be disposed along a marginal edge of the border flange 10 as a substitute for the flange material beyond the line of weakness (FIG. 4).

The edge portion 22 beyond the line of weakness 14, which is suitably maintained in spaced relation to the border flange 10, is at least of sufficient width to provide a suitable grip. For example, in the previously mentioned commercial embodiment of the invention, the edge portion 22 measures about one eighth of an inch in width.

In order to make a balanced appearance in the final package and to provide a uniform sealing surface on the border flange 10, the cups 8, when they are formed in the flat strip of material, may be offset from the longitudinal center line of the strip a distance generally equal to the width of the edge portion 22. In the commercial embodiment previously mentioned, the cups 8 are offset approximately one eighth of an inch.

The continuous cover strip 20, which may be of the same material as the strip 18 or of another suitable material, such as foil, paper, etc., is applied, as from a roll 31, to the upper surface of the border flange 10, the cover strip 20 extending beyond the line of weakness 14. If the narrow strip is utilized as an extension of the flange 10, as previously indicated, the cover strip 20 may be of sufficient width to overlie at least a portion of the narrow strip. Generally, the cover strip 20 is of thinner material than the strip 18 and is substantially the same width as the strip 18. In the commercial embodiment of the invention previously mentioned, the cover strip 20 is approximately one and five eighths inches wide and about .002 inch thick, the material being a vinyl chloride-vinyl acetate co-polymer.

The covered cups 8 are advanced to a suitable sealing mechanism 30 where the cover strip 20 is attached to the border flange 10, the strength of the bond being such as to protect the material packaged and yet being weak enough so that the cover sheet 12 may be easily removed from the border flange 10. If the narrow strip is utilized as an extension of the border flange 10, as previously indicated, the cover strip 20 may be likewise attached to the narrow strip. One such sealing mechanism for a thermoplastic cover strip is disclosed in United States Patent No. 2,736,150, previously mentioned, and generally includes a bed 32 and platen 34 that are heated by steam, hot water or oil. The bed and platen, 32 and 34, are designed to provide a hermetic seal without fusion or welding by suitably compressing and heating the border flange 10 and overlying cover strip 20.

It should be realized that, when utilizing certain cup and cover materials, the cover strip 20 may be attached to the border flange 10 by disposing suitable adhesive material on one or both of the interfaces, and then compressing the border flange and the overlying cover strip.

Finally, the series of spaced apart sealed cups 8 are separated into individual cups by a suitable cutting mechanism (not shown) which cuts the border flange 10 and the cover strip 20 transversely between the cups 8. A cutting mechanism, which may be used, is disclosed in United States Patent No. 2,736,150, previously referred to.

The resulting package provided by the above described method is a container for substances, such as individual food servings, having a sealed cover sheet 12, the cover sheet being easily removable by gripping the edge portion 16 of the package beyond the line of weakness 14 with the fingers and peeling back the cover sheet 12 in a manner indicated in FIGURE 3. To aid in the location of the edge portion 16 on the package, the edge portion may be

suitably indicated. For example, the cover strip 20 may be provided with a continuous, colored stripe (not shown) adjacent the edge which is to overlie the edge portion 22.

It should be understood that the cups 8 formed in the strip 18 need not be rectangular in shape, but may be circular or of any other convenient shape which may be preferred.

Various changes and modifications may be made in the above described construction without departing from the scope of the invention. Various of the features of the invention are set forth in the following claims.

I claim:

1. A method of packaging individual food servings comprising forming an elongated strip of thermoplastic material into a longitudinally spaced series of cups while leaving a horizontally extending border flange about each cup, successively filling the cups with a food material, providing a longitudinally extending line of weakness in said border flange adjacent one edge thereof, applying a continuous second strip of thermoplastic material to said border flange, said second strip being wide enough to extend across said cups and to a point beyond said line of weakness, heat sealing said second strip to said border flange at a temperature such that a low strength hermetic seal is effective therebetween, and cutting said border flange and said second strip transversely between said cups to provide a plurality of individual sealed packages each having a cover sheet which includes an edge portion attached to a portion of the border flange beyond the line of weakness, said edge portion and the attached portion of the border flange providing a grip for removing the remainder of said cover sheet from the remainder of said associated border flange.

2. A method of forming packages comprising forming an elongated strip of material into a longitudinally spaced series of cups while leaving a generally horizontally extending border flange about each cup, providing a longitudinally extending line of weakness in said border flange adjacent one edge thereof, successively filling the cups with the material to be packaged, applying a second strip of material to said border flange, the second strip being wide enough to extend across the cups and to a point beyond the line of weakness, attaching said second strip to said border flange to provide a low strength bond therebetween, and cutting said border flange and said second strip transversely between said cups to provide a plurality of individual packages each having a cover sheet which includes an edge portion attached to a portion of the border flange beyond the line of weakness, said edge portion and the portion of the border flange providing a grip for removing the remainder of said cover sheet from the remainder of said associated border flange.

3. A method of forming packages comprising forming an elongated strip of material into a longitudinally spaced series of cups while leaving a generally horizontally extending border flange about each cup, providing a longitudinal cut inward of the marginal edge of said border flange so as to provide a narrow strip of material detached from said cups but adjacent thereto successively filling the cups with the material to be packaged, applying a cover strip of material to said border flange, the cover strip being wide enough to extend across said cups and overlie at least a portion of said narrow strip, sealing said cover strip to said border flange and to said narrow strip to provide a releasable bond therebetween, and cutting said border flange, said narrow strip, and said cover strip transversely between said cups to provide a plurality of individual packages each having a cover sheet which includes an edge portion attached to the narrow strip, said edge portion and the attached narrow strip providing a grip for removing the remainder of said cover sheet from the remainder of said associated border flange.

4. A method of forming packages comprising forming an elongated strip of plastic material into a longitudinally

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spaced series of cups while leaving a horizontally extending border flange about each cup, providing a line of weakness in said border flange adjacent one edge thereof, successively filling the cups with the material to be packaged, applying a second strip of plastic material to said border flange, said second strip being wide enough to extend across said cups and to a point beyond said line of weakness, sealing said second strip to said border flange to provide a low strength bond therebetween, and cutting said border flange and said second strip transversely between said cups to provide a plurality of individual packages each having a cover sheet which includes an edge portion attached to a portion of the border flange beyond the line of weakness, said edge portion and the attached portion of the border flange providing a grip for remov-

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ing the remainder of said cover sheet from the remainder of said associated border flange.

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