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(54) PACKAGING OF CHIP-TYPE SNACK FOOD PRODUCTS

(71) We, GENERAL MILLS INC, a corporation of the State of Delaware, United States of America, of 9200 Wayzata Boulevard, Minneapolis, Minnesota 55424, United States of America, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to the packing of chip-type snack food products. The packaging of chip-type snack food products such as potato chips has typically involved placing the chips in a bag in a random unoriented manner. Such bags are made from one or more sheets of waxed paper or glassine. Such packaging is relatively inexpensive but provides little protection to the fragile chips, and the chips are often broken during handling and shipping of the packaging. Thus it is quite common to have a number of broken chips in the bags.

Another type of packaging for chip-type snack food products involves vertically stacking the chips one upon another to form a straight vertical columns and placing such column in a substantially rigid, tubular container. The tubular container may be sealed and closed by securing ends thereto. It has been found that when such a container is dropped on one of such ends, the chips nearest that end tend to break. Broken chips do not normally meet with consumer acceptance.

Another type of packaging for nested chip type of snack food products involves placing such chips in a ring configuration such as shown in Patent Specification No. 1,461,349. Such packaging is highly resistant to breakage; however, this packaging is somewhat more expensive in manufacturing and filling as compared to the waxed paper, glassine type packaging.

The present invention provides a package of uniformly-shaped chip-type snack food products, said package including a container and a plurality of chips of substantially uniform shape and size nested one against the other in closely fitting relationship to form an elongate array of chips, each of said chips being disposed at an angle to a plane perpendicular to the longitudinal axes of said elongate array. Preferably one or more films secured within the containers and serving to suspend said array within the container.

Preferred embodiments of the invention will now be described with reference to the accompanying drawings wherein:—

FIG. I shows one embodiment of the present invention with portions of the package broken away;

FIG. II shows a blank for preparing a carton;

FIG. III shows the blank of FIG. II with a shrinkable film attached thereto;

FIG. IV shows a cross sectional view of the package of FIG. I with the film in an unshrunk condition;

FIG. V shows a view similar to FIG. IV but with the film shrunken;

FIG. VI shows a blank for another embodiment of the present invention;

FIG. VII shows the blank of FIG. VI with shrinkable film attached thereto;

FIG. VIII shows a cross-sectional view of this embodiment of the present invention with the film in an unshrunk condition;

FIG. IX shows a similar cross-sectional view of this embodiment following shrinking of the film; and

FIG. X shows one preferred shape of potato chip.

The package 10 of the present invention, one embodiment of which is shown in FIG. I, may include a carton 11, a shrinkable support film 12, and a column of snack chips 13 preferably wrapped in foil, wax paper or

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glassine 14.

The carton 11 which is shown in blank form in FIG. II, may be a four paneled carton including a side panel 16, a bottom panel 17, side panel 18 and top panel 19. A folding crease such as 21, 22, 23 may be provided between the various panels 16 through 19 as shown in FIG. II. If desired, the panels may be substantially equal in size. Each of the panels 16 through 19 is provided with a pair of end flaps, for example, panel 16 has end flaps 26 and 27, panel 17 has ends flaps 28 and 29, panel 18 has end flaps 31 and 32, and panel 19 has end flaps 33 and 34. If desired, panel 19 may also be provided with a pair of cushion panels 36, 37. The cushion panels 36 and 37 may be relatively narrow panels as shown in FIGS. I and II and serve as shock absorbers. The carton further includes a glue panel 39 and a peel panel 41.

The package 10 further includes a shrinkable support film 12 (FIGS. I and III) which may be substantially the same size as the sum of the three panels 16, 17 and 18. The film 12 may adhere to panels 16 and 18 by any suitable adhesive. In other words, films 12 is secured along zone 42 of panel 16 and zone 43 of panel 18. Zone 42 is preferably disposed in the lower portion of panel 16 as shown in FIG. III, and zone 43 is preferably disposed in the upper portion of panel 18 as shown in FIG. III.

The package 10 is assembled first by placing the carton blank 11 in the position shown in FIG. III. Panel 16 is folded upwardly along crease line 21. Panel 18 is then folded upwardly along crease line 22. The top 19 may be then folded into proper position by folding downwardly along crease line 23, upwardly along crease line 35 such that top panel 19 lies in horizontal position as shown in FIG. I, then upwardly along crease line 38 and again downwardly along crease line 40. The panel 39 is then secured to panel 16 by suitable adhesive. Panel 41 preferably is not glued to panel 16 but rather provides a gripping panel that may be grasped by the ultimate consumer to separate panels 39 and 16 thereby opening the package. The various flaps 26, 28, 31 and 33 may be folded so as to overlap one another thereby forming the one end of the carton 11. Such flaps may be secured to one another by suitable adhesive. The column of chips may then be placed in the carton 11 by insertion through the remaining open end in a position overlying the shrinkable film 12. The flaps 27, 29, 32 and 34 are folded to overlie one another and secured by a suitable adhesive. Of course, the carton may be assembled in other ways without departing from the scope of the present invention.

Once the package 10 is assembled, it may be heat treated to shrink the film 12 which lifts the column of chips 13 from the bottom panel 17 and desirably urges the column of chips 13 upwardly against panel 19. The film 12 thus serves as a sling to cushion any shocks that otherwise might occur between the bottom panel 17 and the column of fragile chips 13. The film 12 may be a non-shrinkable film, if desired, so long as the film holds the column suspended above the bottom 17 of the carton 11. This, for example, substantially reduces any breakage that might occur when the package is dropped on the bottom 17. The cushion panels 36, 37 likewise serve as shock absorbers should the package 10 be inadvertently dropped with the top panel 19 in a downward position. It has further been found that if the column of chips 13 is snugly held between the film 12 and the top panel 19, increased resistance to breakage is provided if the package is dropped on either end.

The preferred shape of potato chip 13 is shown in FIG. X. The chip 13 may have straight axis designated by the letter "c" and a curved axis designated by the letter "d". The chip 13 is illustrated as being elliptical. The chip may be of various other shapes providing each of the chips in a column are substantially alike in shape.

Increased resistance to breakage is provided if the column of chips is positioned in a particular manner within the carton 11 such as is shown in FIG. I. The straight axis c, of the nested chips is preferably at an angle of less than about 60° to the long axis of the column. Also the straight axis c, of the chip 13 in the column is desirably horizontal and thus parallel with the plane of the package bottom. The chips are most desirably positioned both with the axis c at less than 60° to the long axis of the carton and parallel with the carton bottom.

An alternate embodiment 110 of the present invention is shown in FIGS. VI-IX. The package 110 is prepared by assembling a carton blank 111 including side panel 116, bottom panel 117, side panel 118, and top panel 119. In this instance, the carton does not include any cushion panels. The side panel 116 includes a pair of end flaps 128 and 129. The side panel 118 includes a pair of end flaps 131 and 132. The top panel 119 includes a pair of end flaps 133 and 134. A folding crease 121, 122 and 123 is provided between the respective panels 116 through 119. A glue panel 139 is attached to top panel 119 and a crease line 140 is provided therebetween.

The package 110 may include either a one piece support film 112 or alternatively, such film may be of two separate pieces. The shrink film 112 may be attached to 130

panel 116 by glue zone 142, to panel 117 by glue zone 143, to panel 118 by glue zone 144, and to panel 119 by glue zone 145.

Package 110 is assembled by positioning carton 111 as shown in FIG. VII and folding panel 116 upwardly along crease line 121. Side panel 118 is then folded upwardly along crease line 122. Top panel 119 is then folded forwardly along crease line 123. The end panels 126, 128, 131 and 133 may be suitably folded to overlie one another and secured together by an adhesive. The glue panel 139 may be folded downwardly along crease line 140 and secured to side panel 116 by a suitable adhesive. A column of nested chips may then be inserted into the remaining open end and positioned substantially as shown in FIG. VIII. The remaining end flaps 127, 129, 132, and 134 may be suitably folded to overlie one another and secured together by adhesive. The package 110 may then be heat treated to shrink the film 112 around the column of chips 113 suspended within the carton 111 and provides excellent shock resistance from the bottom, top or either side of the package 110.

Various modifications, of course, may be made without departing from the scope of the present invention claimed. For example, cushion panels may be provided with the bottom panel as well as the top panel of package 110. Also the shrink film may be secured at various locations within the carton 111 so long as the column of chips is held suspended once the film is shrunken. The carton may, for example, substantially cubical in shape or may contain two or more column each supported on a shrinkable or non-shrinkable film.

It may thus be seen there is provided an inexpensive package of uniformly shaped-type snack food products wherein the risk of breakage of the chips during shipment and handling is substantially reduced as compared with known packages.

WHAT WE CLAIM IS:—

1. A package of uniformly-shaped chip-type snack food products, said package including a container and a plurality of chips of substantially uniform shape and size nested one against the other in closely fitting relationship to form an elongate array of chips, each of said chips being disposed at an angle to a plane perpendicular to the longitudinal axis of said elongate array.

2. A package as claimed in claim 1 wherein each chip is curved in one direction and straight in a perpendicular direction, 60 each chip being disposed with said straight

direction at an angle of 60° or less to the axis of said column.

3. A package as claimed in claim 1 or 2 wherein each chip is curved in one direction and straight in a perpendicular direction, each chip being disposed with said straight direction parallel with the plane of a bottom of the package.

4. A package as claimed in claim 1 wherein said package includes one or more films secured within the container and serving to suspend said array within the container.

5. A package as claimed in claim 4 wherein said film or films are heat-shrunk to engage and suspend said array.

6. A package as claimed in claim 4 or 5 wherein a film underlies said array and holds said array against a top panel of the container.

7. A package as claimed in claim 6 wherein said top panel includes means to absorb shock loading arising should the container be dropped with the top panel face downward.

8. A package as claimed in claim 7 wherein the top panel includes cushion panels extending downwardly from side edges of the container to a main top panel.

9. A package as claimed in claim 4 or 5 wherein said film or films both overlies and underlies said array whereby to suspend said array spaced from a top panel and a bottom panel of the container.

10. A container as claimed in claim 4 wherein said package includes at least two arrays of a plurality of chips of substantially uniform shape and size nested one against the other in closely fitting relationship, each array being suspended in said container by one or more films.

11. A package as claimed in any of claims 1 to 3 wherein said array is encased in encasing means.

12. A package as claimed in claim 11 wherein said encasing means comprise a flexible overwrap.

13. A package as claimed in claim 12 wherein said flexible overwrap is foil.

14. A package as claimed in claim 11 wherein said flexible overwrap is glassine.

15. A package as claimed in any preceding claim, wherein said container has a bottom support panel and wherein said array is supported with respect to said bottom support panel.

16. A package as claimed in claim 15 wherein said array is disposed with said longitudinal axis parallel with bottom support panel.

17. A package as claimed in claim 16 wherein said column of chips is supported on a sling-like film.
18. A package as claimed in claim 17 wherein said carton means has a cushion panel.
19. A package of uniformly-shaped chip-type snack food products substantially as described with reference to Figures 1 to 5 and 10 of the accompanying drawings.
20. A package of uniformly-shaped chip-type snack food products substantially as described with reference to Figures 6 to 10 of the accompanying drawings.

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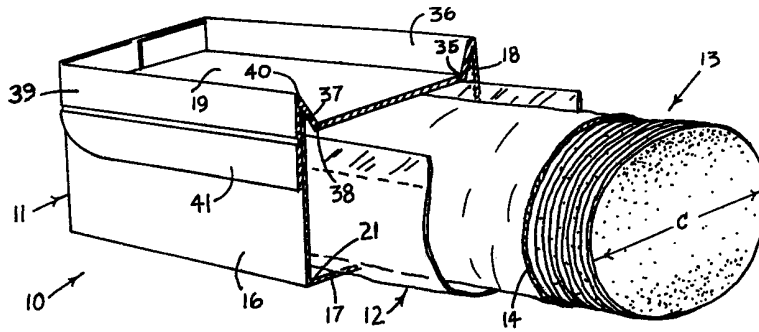


FIG. I

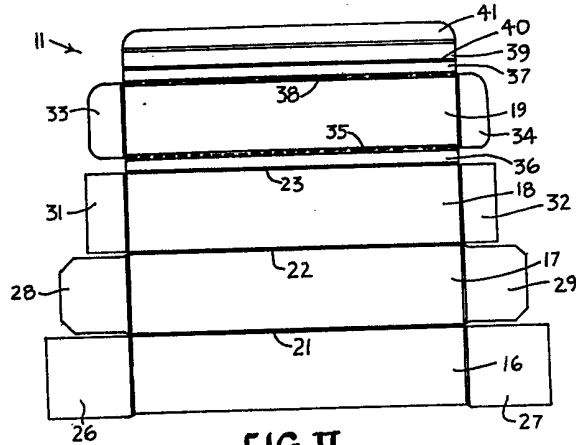


FIG. II

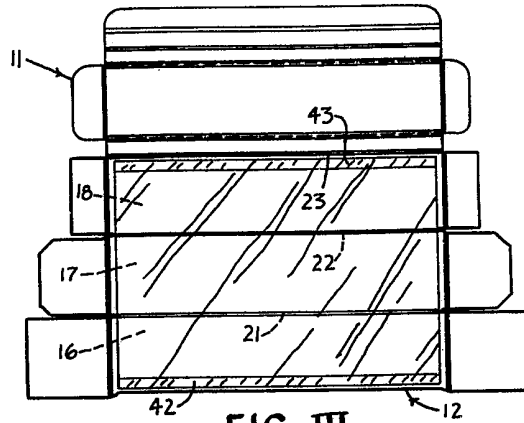


FIG. III

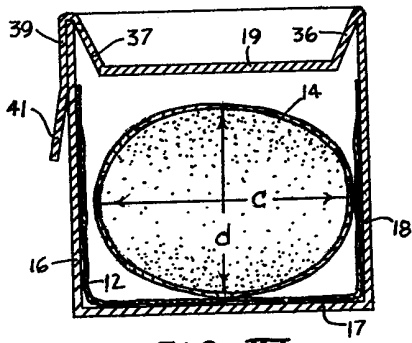


FIG. IV

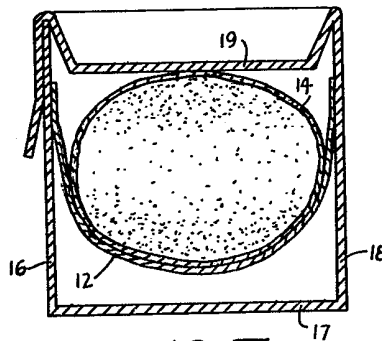


FIG. V

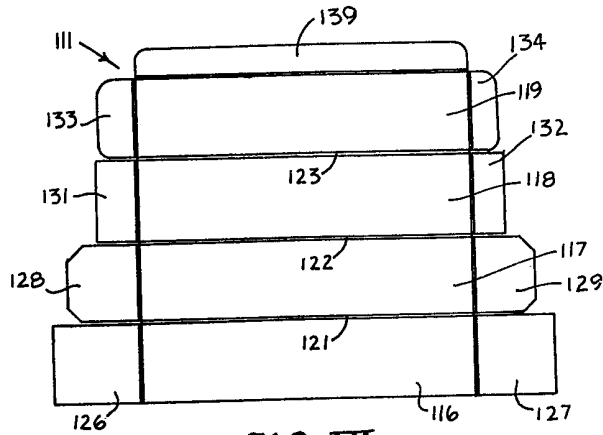


FIG. VI

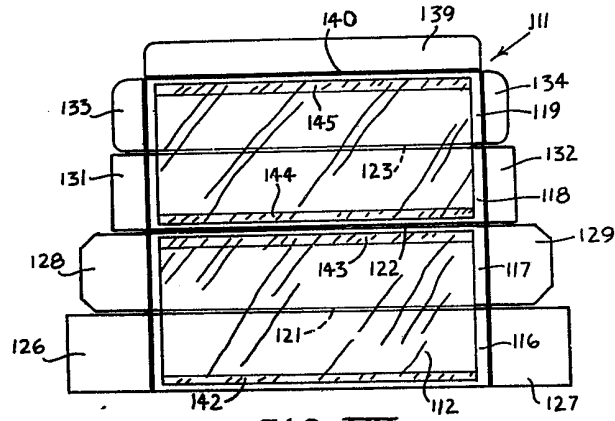


FIG. VII

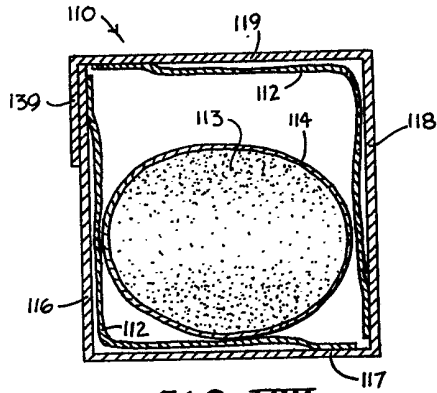


FIG. VIII

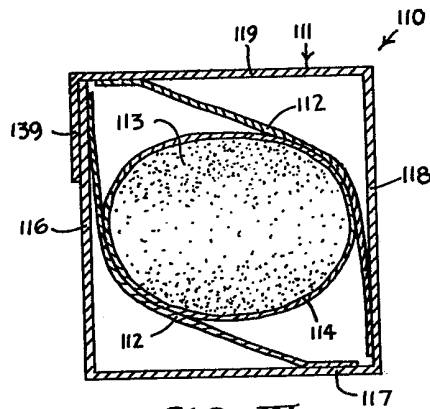


FIG. IX

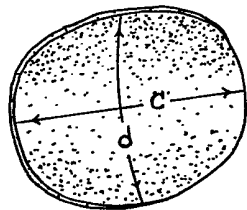


FIG. X