

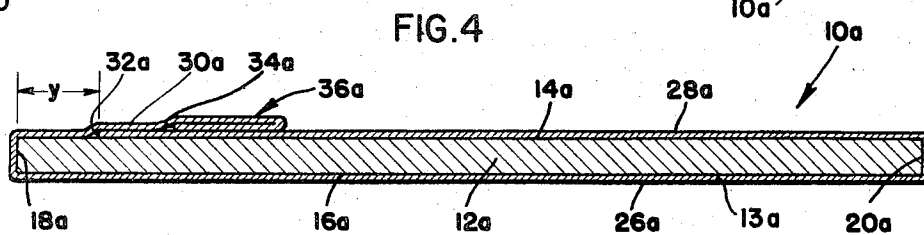
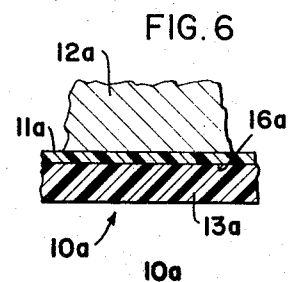
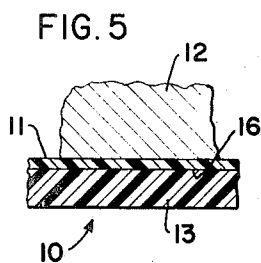
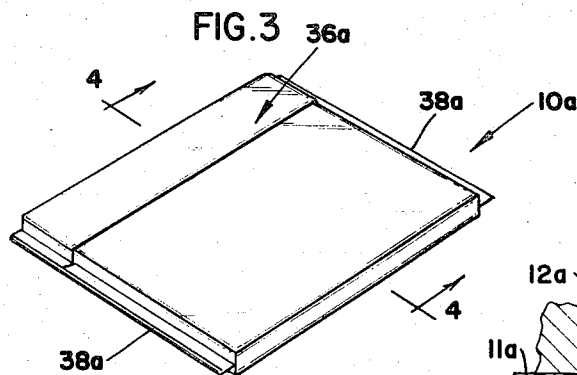
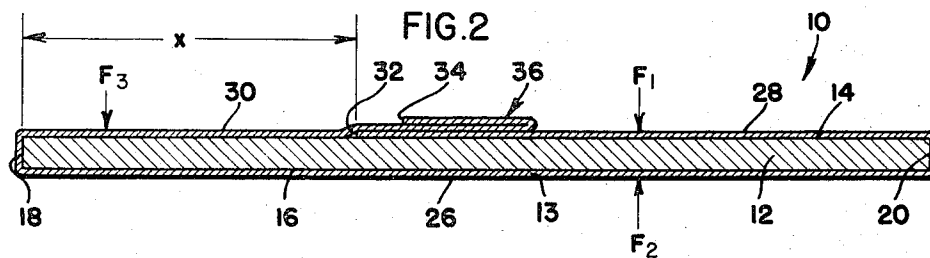
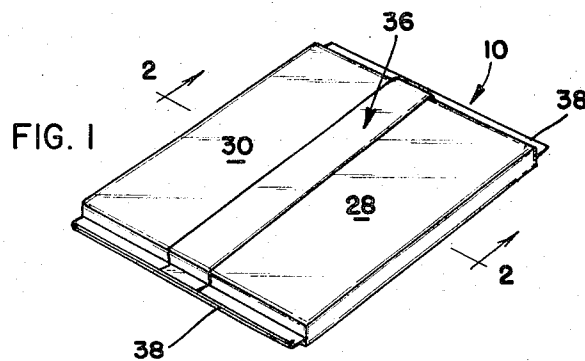
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3,851,068

CHEESE PACKAGE

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3,851,068

CHEESE PACKAGE

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Continuation of abandoned application Ser. No. 801,978, Feb. 25, 1969. This application Nov. 29, 1971, Ser. No. 203,063

Int. Cl. B65b 25/06

U.S. Cl. 426—130

4 Claims

ABSTRACT OF THE DISCLOSURE

A package is provided in which a single individually wrapped slice of cheese is enclosed in a sheet of flexible wrapping material in such a manner as to minimize breaking of the slice as the package is being opened and to render sealing of certain areas of the wrapping material more efficient.

This is a continuation of application Ser. No. 801,978, filed Feb. 25, 1969, now abandoned.

The present invention relates generally to the packaging of cheese and, more particularly, to an improved package containing a single slice of cheese which is individually wrapped.

Pre-sliced cheese is a readily salable item due to the ease with which it may be used in the preparation of food, both at home and on a commercial basis in restaurants, etc. Unfortunately, thin slices of cheese have a tendency to dry out upon exposure to the atmosphere. Thus, once a package of cheese slices is opened, if the entire contents are not utilized in a relatively short period of time, its quality may deteriorate. It is accordingly desirable that the slices of cheese be individually wrapped and thus protected against deterioration even though the package overwrapping the individually wrapped cheese slices, if such be the case, has been opened. Individual wrapping also facilitates separation of the cheese slices from each other and makes handling of the slices more sanitary.

In a co-pending application, Ser. No. 550,234, now abandoned, a package containing a single slice of cheese and a method and apparatus for forming such a package is disclosed. The package of that application is similar in some respects to the package of the present application and, in order that the differences between the previous package and the package of the present invention, as well as the advantages associated therewith, may be most clearly understood, the earlier-disclosed package will also be described herein.

It is to be understood, therefore, that the principal object of the present invention is to provide a package constituting an improvement over that previously disclosed.

Other objects and advantages of the invention will become apparent with reference to the following description, taken in connection with the accompanying drawings wherein:

FIG. 1 is a perspective view of the cheese package shown in the earlier application;

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a perspective view of the package of the present invention;

FIG. 4 is a sectional view taken along line 4—4 of FIG. 3;

FIG. 5 is a fragmentary sectional view of a portion of the package of FIG. 2 with the dimensional relationships exaggerated for clarity of illustration; and

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FIG. 6 is a fragmentary sectional view of a portion of the package of FIG. 4 with the dimensional relationships exaggerated for clarity of illustration.

Referring now to the drawing, both the prior and the present packages contain a single slice of cheese, designated by the numeral 12 in FIG. 2. The slice may be of natural cheese, processed cheese, or even a cheese food. In any case, it may be assumed that the slice has a thickness of from $\frac{1}{16}$ to $\frac{3}{16}$ inch and, hence, does not possess significant strength but will, in fact, be readily bendable and breakable. In the following description, the slice will be assumed by way of example to be rectangular and, as seen in FIG. 2, to have a pair of opposed faces 14 and 16, a pair of opposed side edges 18 and 20, and a pair of opposed end edges extending between the side edges 18 and 20.

The cheese slice in each package, is enclosed in a flexible sheet 13 of wrapping material such as cellophane, polypropylene, or a laminate of these or other materials. Preferably, the wrapping material is in addition provided with a coating 11 (FIG. 5) of a thermoplastic material such as polyethylene on one surface to facilitate sealing of the film along opposite edges of the package, as hereinafter described. This coating is of minimal thickness. Although the wrapping material is preferably in roll stock form when the packages are formed commercially in large numbers, in the following description, for the sake of convenience, only the single sheet 13 of wrapping material which actually encloses the slice will be referred to in the description of each package.

Referring now to the previously disclosed package shown in FIGS. 1, 2, and 5, in that package the sheet 13 of wrapping material encloses the slice 12 with the sealable or thermoplastic coating 11 innermost, i.e., adjacent the surface of the slice. As viewed in FIG. 2, the sheet 13 includes a segment 26 within the boundaries of the sheet which covers and is coextensive with the face 16 of the slice. This face 16 will hereinafter be referred to for ease of reference as the "lower" face of the slice, it being understood, however, that the slice and sheet can assume other dispositions while being wrapped and that the package can assume any disposition thereafter.

The sheet 13 is of significantly greater width than the width of the slice 12 and thus extends beyond the side edges 18 and 20 of the slice. These extending portions of the sheet are folded around the slice with a first portion 28 being folded around the side edge 20 of the slice into overlying and contacting engagement with the top face 14 thereof, and with a second portion 30 being folded around the side edge 18 of the slice into partially overlying and contacting relation to the portion 28. The portions 28 and 30 include free edges 32 and 34, respectively.

From FIG. 2, it will be noted that the portion 28, which will sometimes hereinafter be referred to as the "overlapped" portion, extends from the side edge 20 of the slice slightly past the center thereof. In the illustrated embodiment, the portion 28 covers approximately 60% of the slice, locating the free edge 32 of the portion 28 a significant distance, designated by the letter "x," from the side edge 18 of the slice, and leaving 40% of the slice uncovered by the portion 28, a factor which is important for reasons which will be explained shortly. The portion 30, which will sometimes be referred to hereinafter as the "overlapping" portion, covers or overlaps a relatively small area of the portion 28 which is spaced inwardly from the free edge 32 thereof. The remainder of the portion 30 covers the area of the top face 14 of the slice which is not covered by the portion 28.

In the completed package 10, the film is closely wrapped around the slice so that the segment 26 of the sheet is in contact with and adheres to the lower face 16 of the slice, and the portions 28 and 30 are in contact with those areas

of the face 14 of the slice to which they are adjacent. This contact and adherence may be assured by stacking a number of the packages one upon the other and subjecting them to moderate pressure, and by the fact that the surface of the slice is somewhat tacky when the wrapping takes place.

As seen best in FIG. 2, the area of the overlapping portion 30 adjacent the free edge 34 thereof is folded outwardly upon itself, i.e., it is folded over, to provide a cuff 36 of double thickness, thereby rendering the overlapping portion 30 easier to grasp along its right hand edge, as viewed in FIG. 2, and visually distinguishing it from the remaining surface of the package to render it easier to locate. The folding of the cuff in this manner places the sealable or thermoplastic coating 11 outwardly over the entire upper surface of the cuff. This construction has the disadvantage that when the end edges of the package are sealed, as hereinafter described, the coating is contacted by the heated sealing elements and tends to accumulate on these heating elements.

It should be noted that the cuff 36 is not sealed to the overlapped portion 28 beneath the cuff and across the width of the package (although it is sealed at the ends, as hereinafter described). Thus, it is possible to grasp the cuff by inserting the fingers beneath it.

As seen best in FIG. 1, the end edges of each segment 26, the portion 28 and the portion 30 are joined together along each end of the slice 12 to form seals 38. In a preferred embodiment in which the coating on the inner surface of the wrapping material is thermoplastic, the seals 38 are heat seals. Preferably, these seals are relatively weak seals, as compared to the seals used in some forms of packages, so that the sealed areas can be easily and readily separated without placing undue stress on the slice. However, the seals must necessarily be strong enough to prevent unintended separation during normal handling of the package, so that some stress on the slice during opening is inevitable.

In one contemplated manner of opening the package 10, that portion of the package to the right of the cuff 36 as view in FIG. 2 is held in one hand, e.g., the right hand. In FIG. 2, the approximate location of the forces exerted by the fingers in holding the package is designated by the arrows F_1 and F_2 . The fingers or thumb of the other or left hand are inserted under the cuff 36 so as to grasp the cuff. The grasped portion is then moved to the left, as viewed in FIG. 2, to progressively break the seal holding the overlapping portion 30 in place. Normally, during such an opening operation, the seal between the portion 28 and the segment 26 will remain intact. When the portion 30 has been completely folded back, i.e., to the left in FIG. 2, the fingers or thumb of one hand can be inserted intermediate the lower face 16 of the slice and the segment 26 of the wrapping sheet so that further movement of the portion 30 with the other hand relative to the slice will separate the seal between the segment 26 and the portion 28 to break the seal 38 completely and unwrap the slice.

The opening of the package 10 in the manner just described frequently causes the slice to break along a plane extending transversely of the faces 14 and 16 of the slice and containing the free edge 32. While the reason for this breakage has not been definitely established, it is believed to be caused by the fact that during the initial step of the unwrapping operation, i.e., during the folding back of the portion 30, there is a tendency to move the left hand downwardly slightly as the seal is being broken, even to the extent of peeling the portion 30 from its engagement with the seal 38 by rolling or turning the wrist of the left hand in a counterclockwise direction. Accordingly, in addition to the holding forces F_1 and F_2 applied to the slice at the points where it is held, additional forces are applied downwardly to that portion of the slice to the left of the forces F_1 and F_2 . The resultant of these forces is designated F_3 in FIG. 2 at a location chosen merely for purposes of illustration and not necessarily intended

to represent the precise location of such resultant force in every instance. The forces F_1 , F_2 , and F_3 applied to the slice create a bending moment, causing the slice to bow or bend and creating tensile stresses in the slice adjacent the face 14, which assumes a convex configuration.

It was previously mentioned that in the package 10 the portions of the sheet adjacent the slice contact and adhere to the slice. Prior to any unwrapping of the package, moderate flexing, bowing or bending of the package does not cause breakage of the slice because the sheet itself reinforces the slice against the tensile stresses created adjacent the faces 14 and 16 as a result of the bending. However, as the package is unwrapped, folding back of the portion 30 exposes a substantial area of the upper surface 14 of the slice, that is, the area designated by the letter x and extending to the left from the free edge 32, leaving this area unreinforced. The unreinforced slice is unable to withstand the tensile forces created when the slice is bowed by the force F_3 urging the side edge 18 downwardly, and the possibility of fracture within this unreinforced area becomes acute.

The fracture occurs in that plane passing through the unreinforced portion where the stress is greatest. Since the stress is created by a bending moment, the maximum stress occurs in the plane where the moment arm is of the greatest length. The moment arm is greatest, of course, at the plane containing the forces F_1 and F_2 since this plane is farthest from the force F_3 . However, the area of the slice extending from the plane F_1 - F_2 to the free edge 32 is reinforced by the portion 28 of the sheet. Accordingly, the slice fractures in the plane passing transversely through the slice and containing the free edge 32 which, insofar as the unreinforced area of the slice is concerned, is farthest from the force F_3 .

A package 10a is shown in FIGS. 3, 4, and 6 and is believed to represent an improvement over the package 10. Those elements of the package 10a which are closely similar to the elements of the package 10, except insofar as their location or formation is concerned, are designated in the drawing by a like numeral followed by the subscript "a."

More specifically, in the package 10a, a sheet 13a of flexible wrapping material encloses a single slice 12a of cheese having an upper face 14a, a lower face 16a, and side edges 18a and 20a. The sheet encloses the slice with its sealable or thermoplastic coating 11a (FIG. 6) located adjacent the slice and includes an interior segment 26a which extends substantially beyond the side edges 18a and 20a of the slice. One portion 28a is folded around the edge 20a into overlying relation to the top face 14a of the slice but covers a significantly greater proportion of that face of the slice than did the portion 28 of the package 10. More specifically, the free edge 32a of the portion 28a extends to a line immediately adjacent the side edge 18a of the slice, leaving a very small area of the face 14a uncovered by the portion 28a.

Ideally, the free edge might extend up to and lie in the plane of the side edge 18a of the slice, but such precise positioning is difficult to achieve in practice. However, it has been found that there is no significant breakage of the slice when the distance between the free edge 32a and the side edge 18a of the slice, as designated by the letter in FIG. 4, is no greater than $\frac{3}{8}$ inch in a slice having a total width between the side edges 18a and 20a of $3\frac{1}{2}$ inches. This is due to the fact that the unreinforced area of the slice is quite small. Consequently, the effective length of the moment arm created by forces such as F_1 , F_2 and F_3 shown in FIG. 2 is much shorter and, in addition, the downward forces on the slice to the left of the point where the package is being held, e.g., such as is exemplified by the resultant force F_3 in FIG. 2, are, for the most part, distributed over an area of the slice which is reinforced by the portion 28a rather than principally over an unreinforced area.

The portion 30a of the package 10a is folded around the side edge 18a of the slice into contacting relation to

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the area of the slice not covered by the portion 28a and into overlapping relation to the portion 28a which is spaced to the right of the edge 32a thereof. As with the package 10, the portion 30a is folded adjacent its edge 34a to form a cuff 36a. However, the fold is under, rather than over, so that the coating 11a on the area of the sheet 13a defining each layer of the cuff is in face-to-face contact, as distinguished from the cuff of the package 10 where the thermoplastic coating 11 was exposed over its upper surface. Thus, the coating 11a at the cuff in the package 10a is not exposed to, or subject to engagement by, the heat sealing elements which form edge seals 38a, similar to the edge seal 38 in the package 10.

In the illustrated embodiment, the cuff 36a is located at the left hand side of the package 10a. However, it could also be located centrally of the package, as in the package 10, without significantly increasing the possibility of the slice breaking during the opening of the package, provided edge 32a remains located as described.

The package 10a thus provides two significant improvements over the package 10 described herein and also in the co-pending application referred to. In the package 10a, the sheet is wrapped around the slice in such a way that the tendency of the slice to break during opening is minimized. In addition, the folding of the sheet under, rather than over, to form a cuff does not permit the thermoplastic coating on the sheet to be contacted by the heat sealing elements, thus preventing the coating from accumulating on the elements.

Various of the features of the invention are set forth in the following claims.

What is claimed is:

1. In a cheese package comprising a single relatively thin slice of cheese having a pair of generally parallel faces, a pair of opposed end edges, and a pair of opposed side edges, and a rectangular sheet of flexible wrapping material enclosing said slice with an overlapping edge portion of said sheet overlying an overlapped edge portion of said sheet, said overlapping edge and said overlapped edge being unsealed across the face of the slice, the marginal edges of said sheet extending beyond the end edges of said slice and being joined together to provide a readily separable seal, said package being openable by initially grasping said overlapping edge portion of said sheet and applying a force thereto sufficient to separate the seal between the marginal edges of said sheet; the improvement which comprises locating the edge of said

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overlapped portion along a line substantially parallel with one side edge of said slice, said edge location of said overlapped portion being immediately adjacent said parallel side edge, said adjacent edge location of said overlapped portion being no greater than three eighths of an inch in a slice having a total width of three and one-half inches between said parallel side edge and the side edge opposed to said parallel side edge.

2. A cheese package in accordance with claim 1, wherein said overlapping edge portion of the sheet is folded upon itself to provide a double thickness at its free edge to facilitate grasping.

3. A cheese package in accordance with claim 2, wherein said flexible wrapping material is provided with a coating of a sealable material on one surface, wherein said sheet is folded around the slice with said coating adjacent the slice, and wherein said overlapping edge portion of the sheet is folded inwardly upon itself in the direction of the slice to locate the coating of the inwardly folded section beneath the remainder of the overlapping portion of the sheet so that the coating will not be contacted by means employed to seal the sheet adjacent the end edges of the slice in the formation of the package.

4. A cheese package in accordance with claim 3, wherein said sealable material is a thermoplastic material, and wherein the readily separable seals adjacent the end edges of the slice are heat seals.

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U.S. Cl. X.R.

426-123

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 3,851,068
DATED : November 26, 1974
INVENTOR(S) : George Howard Kraft

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 3, line 23, "althodugh" should be --although--.

Col. 3, line 41, "view" should be --viewed--.

Col. 4, line 17, "silce" should be --slice--.

Col. 4, line 49, "side" should be inserted before
"edge 20a".

Col. 4, line 62, at the end of the line "letter"
should be followed by --y--.

In the references, for Patent No. 2,882,169 to
Kielsmeier et al., the Class should be --206--
instead of "260".

Signed and Sealed this

twenty-third Day of December 1975

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks