

[54] TAMPERPROOF RECLOSABLE CARTON

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[51] Int. Cl. .... B65d 5/54, B65d 5/70, B65d 17/00

[58] Field of Search .. 229/33, 51 TS, 51 SC, 51 ST, 229/48 SC, 48 T, 43

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[57] ABSTRACT

A tamperproof, reclosable carton construction wherein, after removal of a zipper strip to open the carton, reclosure is effected by tucking a front cover flap between the outside surface of the receptacle front wall and the inner surface of front corner flaps which overlie, but are not adhered to, the end portions of the receptacle front wall. Integrity of the front corner construction is maintained by extension tabs hinged to the front corner flaps and adhered to the bottom panel of the carton.

5 Claims, 8 Drawing Figures

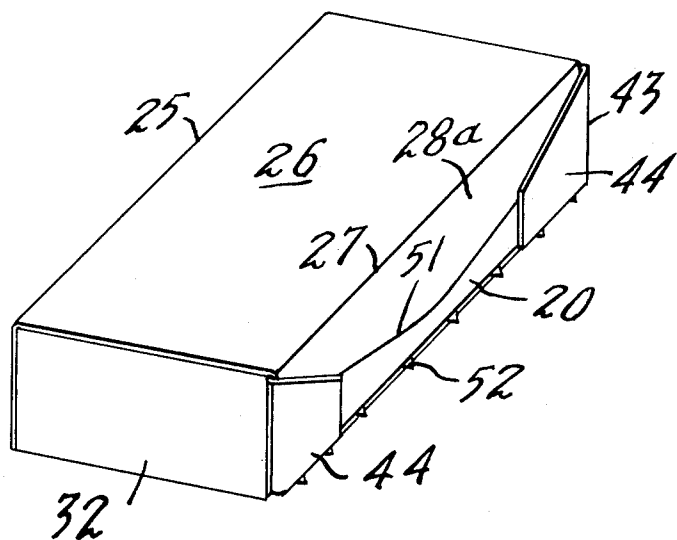


FIG. 1

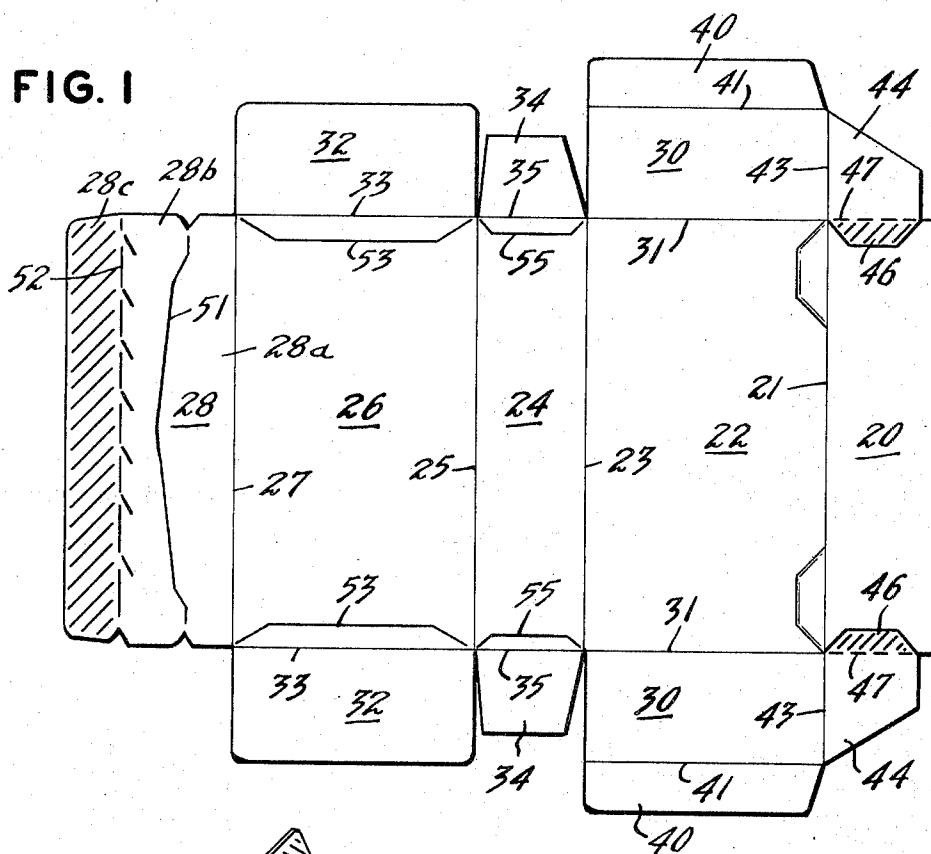


FIG. 2

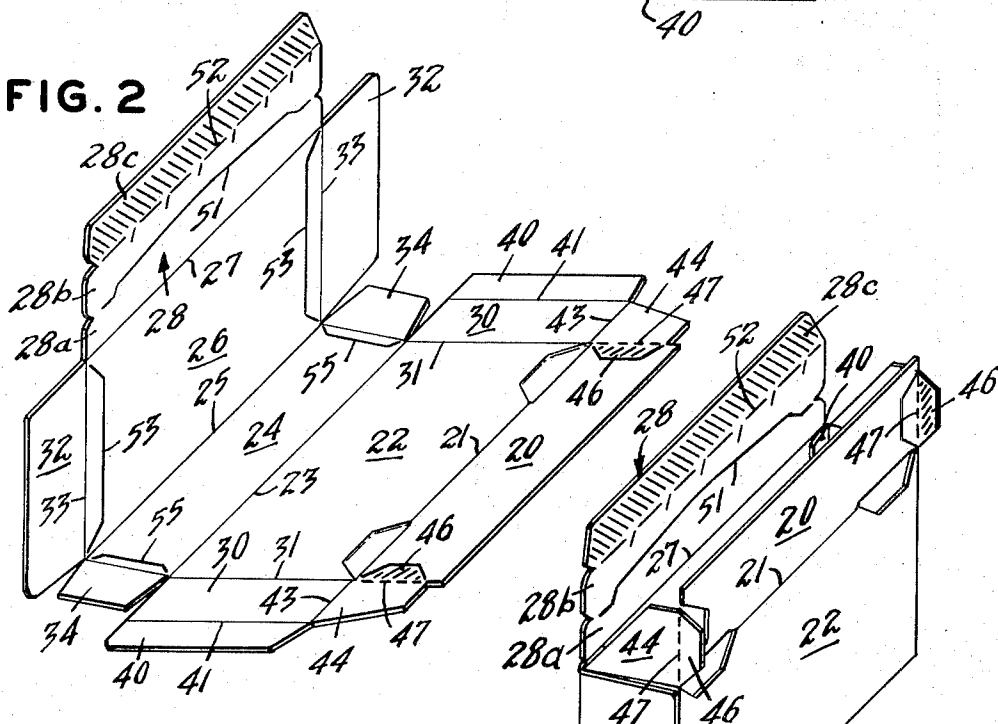
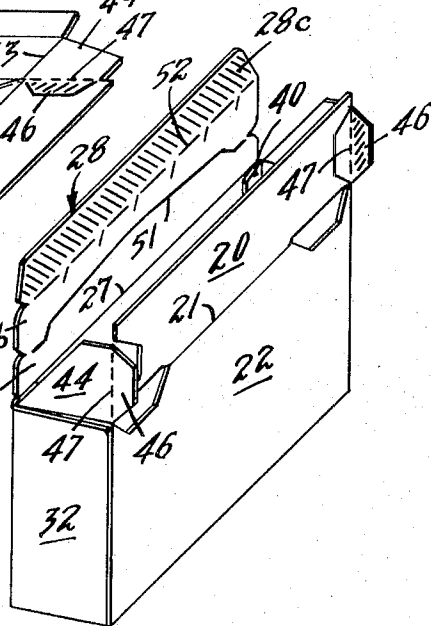
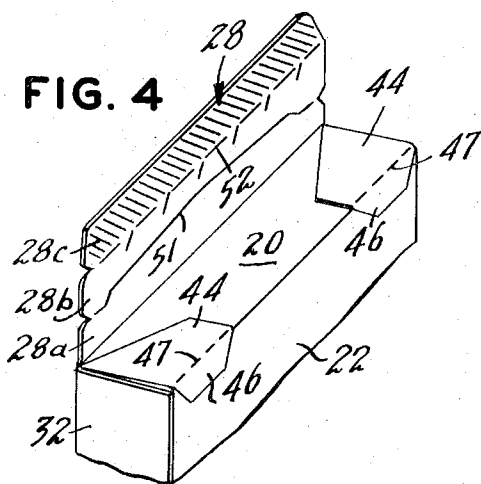
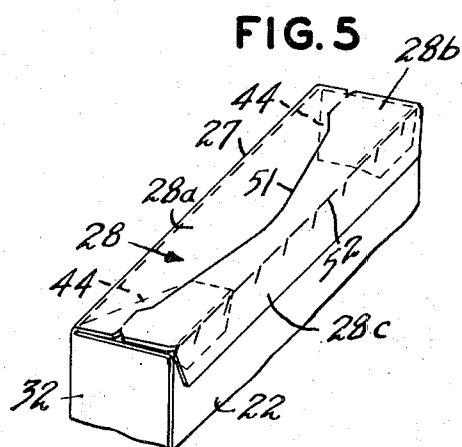
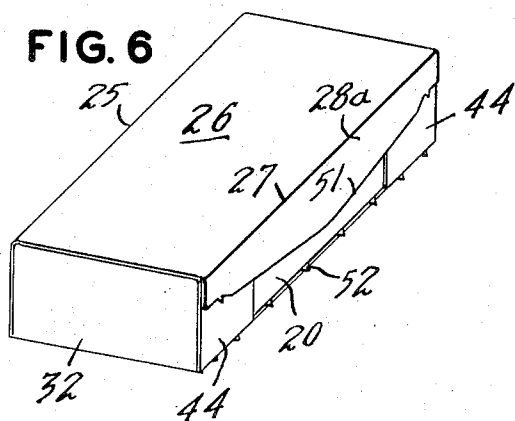
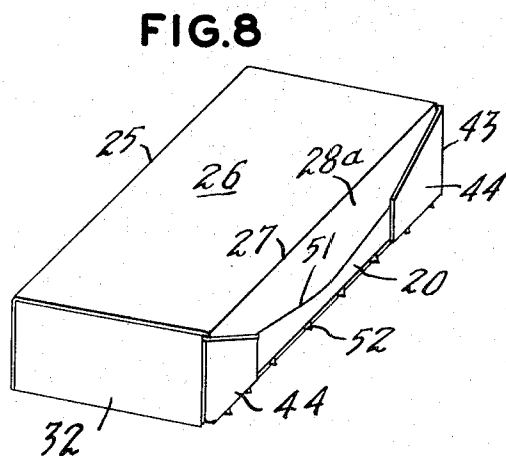
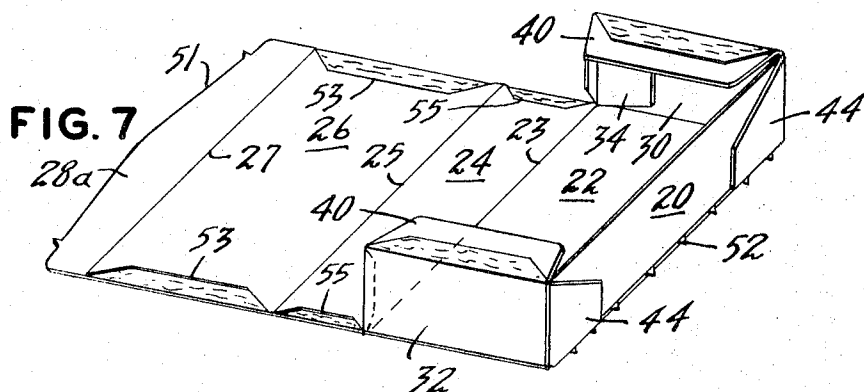


FIG. 3





## TAMPERPROOF RECLOSABLE CARTON

### BACKGROUND OF THE INVENTION

This invention relates to a paperboard carton construction suitable for use in the packaging of comestibles and particularly comestibles of a moist consistency, such as cream cheese. More specifically, the invention relates to a tamperproof, sealed carton which features a means for reclosing the carton without contaminating the main reclosure flap with the product contained in the package.

Cream cheese has traditionally been packaged in a flexible wrapper of a metal foil-paper laminate which, in turn, is frequently enclosed in a paperboard carton. Access to the product has been inconvenient, reclosure provisions for protection of unused portions of the product have been poor, and the overall package has been considered expensive and cumbersome.

It is an object of this invention to provide a simple, inexpensive, tamperproof and easily reclosable protective paperboard package for comestibles such as cream cheese.

It is a further object of this invention to provide a linerless protective paperboard package for cream cheese which may be readily opened and reclosed with a minimum of effort and with no product contamination of the reclosure panels which normally are contacted by the consumer's hands in manipulating the carton during opening and reclosure.

### SUMMARY OF THE INVENTION

Further objects of the invention will become apparent from the following description thereof.

The carton of this invention is formed of paperboard treated to resist penetration of moisture with resultant softening of the paperboard and degradation of its protective properties. The paperboard is further coated on its exterior surface with a water-resistant, heat-sealable coating of a thermoplastic resin such as polyethylene and is adapted for formation into a carton into which warm, molten cream cheese may be poured and allowed to harden upon cooling. The carton includes frangible lines of weakness for easy access to the enclosed product and a tuck flap type of reclosure in which the cover tuck-in flap, upon reclosure of the package, is seated outside the main receptacle front wall and is sandwiched between the front wall and a pair of corner flaps hinged to the end receptacle walls and overlying the respective end portions of the front wall.

### DESCRIPTION OF THE INVENTION DRAWINGS

The invention may be best understood by reference to the following detailed description, together with the accompanying drawings in which:

FIG. 1 is a plan view of the interior surface of a paperboard blank adapted to be formed into the carton of this invention,

FIG. 2 is a perspective view of the blank in a very early stage of its formation into receptacle form,

FIG. 3 is a perspective view of the blank assembled into an open-ended receptacle in suitable stage for filling with a product to be retained therein,

FIG. 4 is a perspective view of a portion of the carton after filling and with some of the closure panels in the final, closed position.

FIG. 5 is a perspective view of a portion of the carton in the completely closed and sealed state,

FIG. 6 is a perspective view of the carton after removal of the tear strip preparatory to opening the carton,

FIG. 7 is a perspective view of the completely opened carton with product removed, and

FIG. 8 is a perspective view of the carton after reclosing the cover portion thereof.

### DESCRIPTION OF A PREFERRED EMBODIMENT

The carton of this invention is formed of a single paperboard blank as shown in FIG. 1, suitably cut and scored to provide a receptacle front panel 20, bottom panel 22 and rear panel 24, a cover panel 26 and a cover front panel 28, hingedly connected in sequence along parallel score lines 21, 23, 25 and 27, respectively. A receptacle end wall panel 30 is hinged to each end of bottom panel 22 along a hinge score line 31, and a cover end wall panel 32 is connected to each end of cover panel 26 along hinge line 33. Preferably, hinge line 33 is a cut score line impressed in the paperboard from the exterior surface thereof, for reasons hereinafter explained. Hinged to each end of each end of receptacle rear panel 24 along hinge line 35 is a glue flap 34. Hinge line 35 is also a cut score line impressed in the exterior surface of the paperboard.

Each receptacle end wall panel 30 has a dust flap 40 hingedly attached along score line 41 to the edge remote from the hinge connection 31 to the bottom panel 22. Attached to the front edge of each receptacle end wall panel 30 along a hinge score line 43 is a front corner flap 44, and an extension tab 46 projects from the side edge of each corner flap 44 adjacent receptacle front panel 20 along hinge score line 47.

Cover front panel 28 is comprised of three sections, an upper section 28a, adjacent the main cover panel 26, a detachable section 28b, lying intermediate section 28a and a lower or edge portion 28c, which is adapted for adhesion to a receptacle panel. The detachable section 28b serves as a zipper strip for opening the carton by virtue of its connection to the adjacent sections 28a and 28c of cover front panel 28 along severable lines of weakness 51 and 52, respectively.

It has been noted above that hinge lines 33 and 35, connecting cover end panels 32 and dust flaps 34 to the cover panel 26 and rear panel 24, respectively, are cut score lines impressed in the exterior surface of the paperboard. Parallel to and only slightly separated from cut score lines 33 and 35 are corresponding cut score lines 53 and 55, respectively, which are impressed in the inside surface of the cover panel 26 and rear wall panel 24, respectively. Each of the cut score lines 53 has a short, angled portion at each end thereof directed toward the adjacent end of the proximate cut score line 33, and similarly angled portions of cut score lines 55 extend from each end of the parallel portion thereof toward an adjacent end of the proximate cut score line 35.

In forming the paperboard blank into a receptacle preparatory to filling with a product such as molten cream cheese, the blank is folded about a mandrel in a sequence whereby glue flaps 34 are folded about hinge lines 35 to lie normal to rear wall panel 24, bottom panel 22 and cover panel 26 are then folded about hinge lines 23 and 25 to extend normal to rear panel

24, after which the end panels 30 attached to bottom panel 22, together with the cover end panels 32 attached to cover panel 26 are swung inward on their respective hinge lines to form double thickness end walls to the receptacle. At this point in the carton assembly, the blank has been formed into an open-mouthed receptacle as shown in FIG. 3. In this state of assembly of the carton, glue flaps 34 constitute the innermost members of the end walls, receptacle end wall panels 30 overlie the exterior surface of the glue flaps 34 and finally, cover end wall panels 32 overlie the receptacle end wall panels 30. In this position, glue flaps 34, and end wall panels 30 and 34 are heat-sealed together into a unitary end wall structure by means of the heat-sealable thermoplastic coating which covers the exterior surface of the entire paperboard blank. It is, of course, to be understood that the desired unified end wall structure could also be obtained by adhesively joining those panels which are herein described as being joined by heat-sealing. Dust flaps 40 at this point lie in snug contact with the interior surface of the end portions of cover panel 26, but are not adhered or sealed thereto.

The open receptacle formed as described above may then be removed from the forming mandrel and filled with product through the open front face of the carton. When filling is completed, the receptacle front panel 20 is folded inward about hinge line 21 to cover the product, followed by corner flaps 44 which are folded to lie superposed on front panel 20. The carton at this point is illustrated in FIG. 4. A suitable adhesive, suitably an adhesive of the wax and resin-based hot melt type, may then be applied to the interior or under surface of the front cover flap lower or edge portion 28c and corner flap extension 46. The cover front panel is then folded down to overlie front panel 20, corner flaps 44, flap extensions 46 and a portion of receptacle bottom panel 22, to which the lower or edge portion 28c of cover front panel 28 is then adhered as shown in FIG. 5. It will be noted that corner flap extensions 46 thereby come into underlying relationship to cover front panel portion 28c and are adhered to bottom panel 22, thus insuring the integrity of the receptacle front corner structure without the necessity of any adhered relationship between the front corner flaps 44 and the front wall panel 20. The fact that the corner flaps 44 are not adhered to the front wall panel 20 is of importance in the reclosure of the carton of this invention, as will be detailed hereinafter.

If desired, the areas of the bottom panel to which the corner flap extensions are adhered may be embossed so that the outer surface of the bottom panel is slightly depressed in these areas. In this event, the flap extensions will lie substantially in the plane of the bottom panel when adhered thereto, thereby presenting less possibility of receiving damage in storage and handling of the packages.

In the carton of this invention, the dimensions of the several sections of the cover front panel 28 and the configuration and placement of the weakness lines 51 and 52 are of significance in relation to the overall carton construction. The combined width of front cover panel segments 28a and 28b is equal to the height of the receptacle front panel 20, so that in the sealed carton weakness line 52 is substantially coincident with hinge line 21. Front cover panel segment 28c, which extends beyond weakness line 52, is thus adapted for adherence

to the bottom panel 22. Cover front panel segment 28a is adapted to become a reclosure flap and, for maximum utility in this respect, weakness lines 51 and 52 are not precisely parallel but are slightly closer together in their central section because weakness line 51 is slightly angled toward closer convergence with weakness line 52 in the center thereof. Removal of the central, detachable section 28b of the cover front panel, as shown in FIG. 6, when the carton is originally opened thus leaves the upper portion 28a with a flatly pointed remote edge particularly suited for tuck-in reclosure of the package.

In opening the carton, detachable section 28b of front cover panel 28 is first torn away along weakness lines 51 and 52 and the upper section 28a of the front cover panel is then lifted. Since both the cover panel 26 and the rear panel 24 have paired cut score lines of weakness (33 and 53 in the cover panel and 35 and 55 in the rear panel) one member of each pair being impressed from the inside and the other from the outside of the paperboard, opening of the carton continues by splitting of the paperboard in the area between the paired cut scores. Thus, both the cover panel and in the rear panel may be opened up away from the product while the sealed end wall structure of the carton remains intact. In completely opened condition, as shown in FIG. 7, the cover panel 26 and rear wall panel 24 are folded down substantially in the same plane as the bottom panel 22, allowing very easy access to the packaged product for slicing and easy removal of any desired portion thereof.

The carton may be reclosed into the condition illustrated in FIG. 8 by bringing the rear and cover panels into their original positions and tucking the ends of front cover panel portion 28a between the exterior surface of front panel 20 and corner flaps 44 which lie superposed on, but not adhered to, front panel 20. This convenient means of reclosure prevents the contamination of the tuck reclosure flap 28a with the packaged product. Such contamination normally occurs when the reclosure flap is tucked inside the receptacle front wall or is forced through a slit lock formed in the front carton wall.

The means for reclosure described above as a feature of the carton construction of this invention and illustrated in FIG. 8 is made possible by the provision of a tuck-in pocket at each end of the carton front wall. Such pocket exists between the front panel 20 and the corner flaps 44 because the corner structure is maintained in an integral condition without gluing of the corner flaps by the adhesion of the flap extensions 46 to the bottom panel 22.

It has been previously mentioned that the paperboard of which the carton is constructed is treated with a water and grease repellant material to prevent the absorption of these agents into the paperboard. Such absorption of moisture and/or oily matter by paperboard seriously impairs its strength and stiffness and is hence undesirable in a packaging material. Various waxes and resins have been used to make paperboard resistant to water and oil absorption and to impart wet strength to the substrate. Of particular utility in the present application is an alkylketone dimer obtainable from Hercules Powder Co., Wilmington, Del., under the trade name Aquapel. This dimeric material may be added to the aqueous cellulose pulp dispersion from which paperboard is manufactured in an amount of about 0.1 to

0.3 percent by weight of dimer based on the weight of cellulose fibers and will yield a paperboard which is satisfactorily resistant to water absorption for the purpose of this invention. In this application, a dimer concentration of about 0.2 percent by weight of pulp is considered preferable. The finished paperboard also has an exterior coating of 7 to 15 pounds per ream of 3,000 sq. ft. of polyethylene or equivalent heat-sealable, water-resistant polymer which serves as a sealing medium as well as imparting protective properties to the package.

In its particular adaptation to the packaging of cream cheese, the carton of this invention provides a packaging medium of excellent protective characteristics which may be set up on conventional carton forming machinery, which may be filled with product in a molten state and subsequently cooled to allow the product to set up to a solid state and which requires no liner or other packaging material to preserve the product for extended periods of time. The package is tamperproof and yet easy to open for access to the product and may be reclosed in a manner which obviates the possibility of contaminating the reclosure panel member with the contents of the package.

Having now described a preferred embodiment of the invention, it will be obvious that various modifications thereof may be made without departing from the spirit thereof and no limitations on the scope of the invention are intended except as defined by the appended claims.

I claim:

1. In a paperboard carton including hingedly connected receptacle front, bottom, rear and cover panels and having cover end wall panels and a cover front panel hingedly connected to said cover panel, glue flaps hingedly connected to said rear panel, and receptacle end wall panels hingedly connected to said bottom panel, said cover end wall panels, said glue flaps and said receptacle end wall panels being adhered together into a unified end wall construction at each end of the carton,

a tamperproof carton opening and reclosure construction comprising

- a. a front corner flap hingedly attached to the forward side edge of each of said receptacle end wall panels, said corner flaps being in overlying but unadhered relationship to respective end portions of said front panel, and
- b. an extension tab hingedly connected to a side edge of each front corner flap, said extension tabs being adhered to said bottom panel adjacent the hinge connection between said bottom panel and said front panel,
- c. said cover front panel being divided by a pair of transverse weakness lines into an upper section adjacent said cover panel, a central detachable section and a lower section, the combined width

of said upper section and said central section being equal to the height of said receptacle front panel,

d. said lower section of said cover front panel being in overlying, adhered relationship to said extension tabs and to a portion of said bottom panel between said extension tabs and adjacent the hinge connection between said bottom panel and said front panel,

e. said upper section of said cover front panel being adapted, after removal of said detachable central section, to tuck between the outer surface of the carton front panel and the overlying, but unadhered front corner flaps, thereby effecting a reclosure of the carton.

2. A carton according to claim 1 wherein the hinge connections between said cover panel and said cover end wall panels and the hinge connections between said rear panel and said glue flaps are formed as adjacent parallel pairs of cut score lines, the members of each pair being impressed in the paperboard carton stock from opposite sides thereof.

3. A carton blank of paperboard cut and scored to provide a receptacle front panel, bottom panel, rear panel, cover panel and cover front panel hingedly connected in sequence along parallel hinge score lines, a cover end wall panel hingedly connected to each end edge of said cover panel, a glue flap hingedly connected to each end edge of said rear panel, a receptacle end wall panel hingedly connected to each end edge of said bottom panel, a dust flap connected to the edge of each respective receptacle end wall panel remote from said bottom panel, a front corner flap hinged to the forward edge of each receptacle end wall panel and an extension tab hingedly connected to the edge of each front corner flap adjacent said receptacle front panel,

said cover front panel being divided by transverse lines of weakness into an upper section adjacent said cover panel, a detachable center section and a lower section, the combined width of said upper and center sections being substantially equal to the height of said receptacle front panel.

4. A blank according to claim 3 wherein said paperboard contains between about 0.1 and 0.3 percent by weight of an alkylketone dimer and bears on one surface thereof a coating of between 7 and 15 pounds of polyethylene per ream of 3,000 sq. ft. of said paperboard.

5. A blank according to claim 3 wherein said transverse weakness lines in said cover front panel are closer together in the central area than in the end areas thereof, whereby the upper section of said cover front panel has a flatly pointed edge remote from the hinge connection to said cover panel.

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