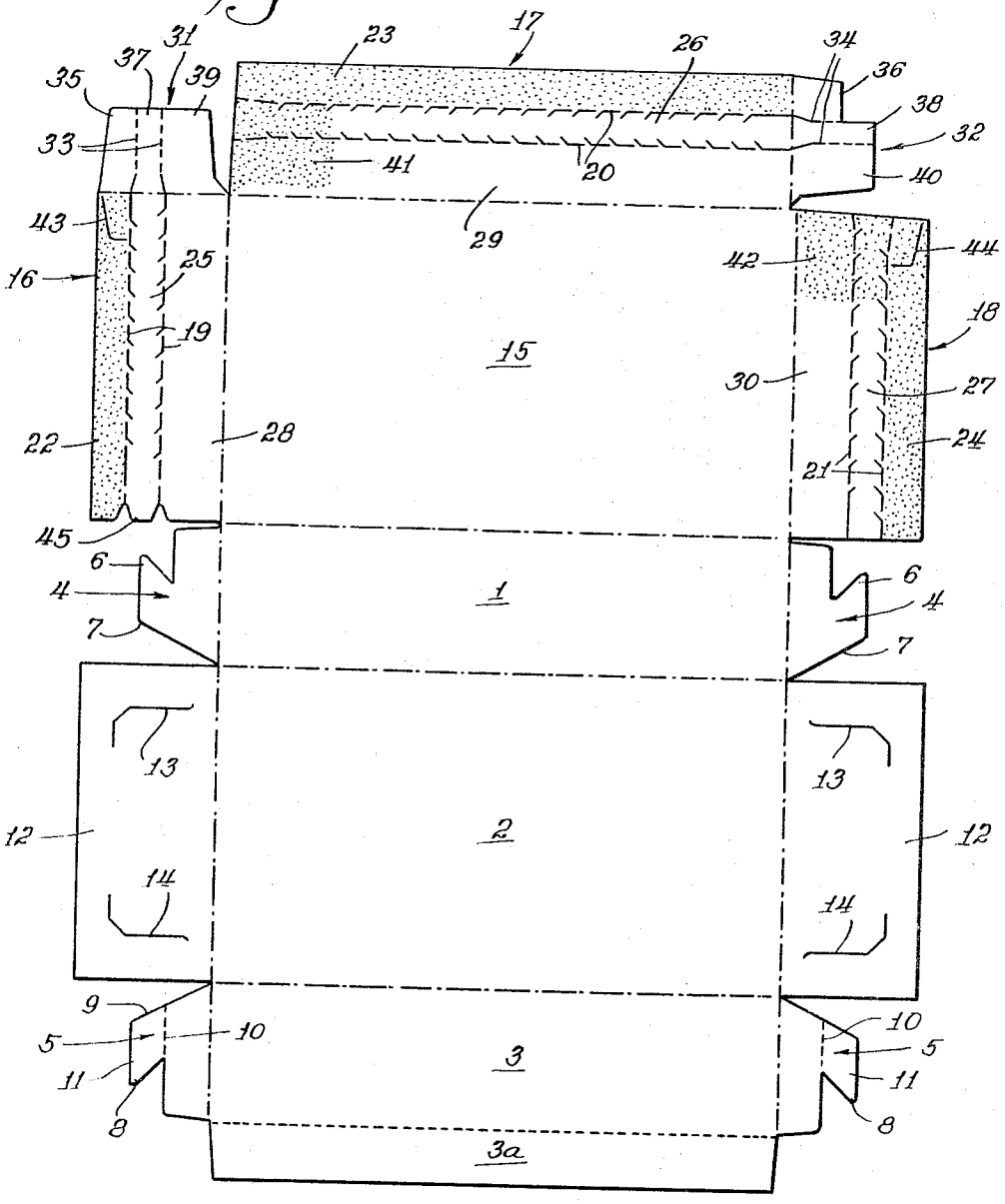
May 9, 1967 K. T. BUTTERY 3,318,508

DROP-FRONT TEAR STRIP CARTON

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Fig. 1.



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DROP-FRONT TEAR STRIP CARTON

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Fig. 2.

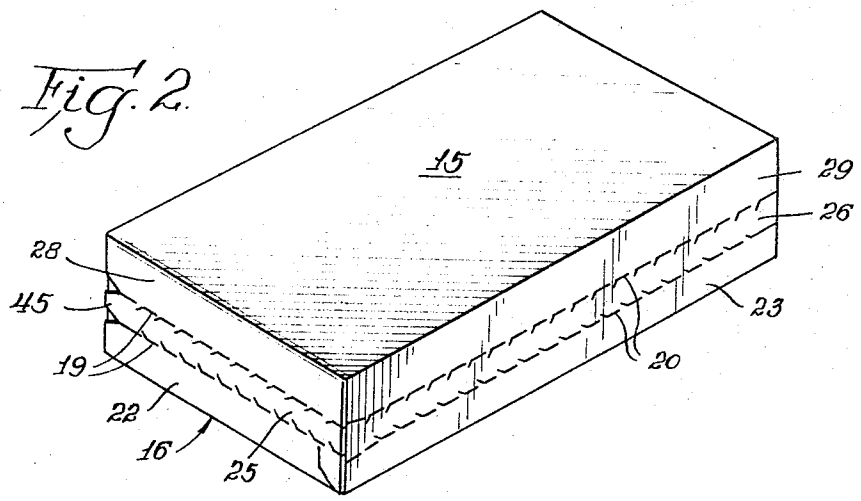
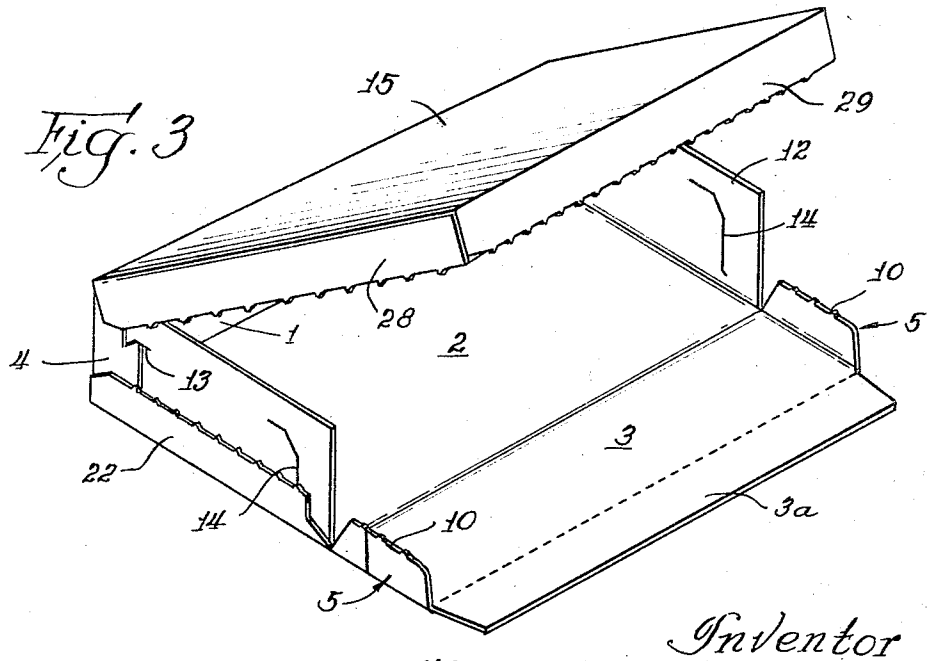


Fig. 3



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United States Patent Office 3,318,508 Patented May 9, 1967

3,318,508

DROP-FRONT TEAR STRIP CARTON

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Filed Feb. 1, 1965, Ser. No. 429,449
14 Claims. (Cl. 229—51)

The present invention relates to a carton having a tear strip provided in its cover flaps, and is more particularly concerned with a carton of the type described having a so-called lock-corner construction involving a male tab and a female locking slit or cut, together with a drop-front, which carton may be readily erected from an integral cut and scored blank and sealed shut by means of automatic machinery, readily opened and readily reclosed.

Cartons having a so-called "flip-top" cover hingedly connected to the edge of the rear panel, which may be erected and the cover sealed, and which may be readily opened by the removal of a tear strip, have become exceedingly popular, particularly as containers for food items such as ice cream. Once the tear strip is removed, the cover may be opened for access to some or all of the contents, and may be reclosed for further storage until the contents have been completely consumed. Some cartons of the type described which have been available in the prior art, although satisfactory in use, have the disadvantage that they are difficult to construct and seal on automatic machinery.

Prior art cartons are generally provided with an outer front wall member integral with the cover of the carton, having its own flaps extending at the ends thereof. A tear strip is provided as an integral unit and extends from the end of one outer front wall flap, across the outer front wall, and to the end of the opposite outer front wall flap. Such a structure is difficult to construct into a carton from an integral blank and requires expensive machinery for the purposes of erection and sealing.

In copending application Ser. No. 308,108, filed Sept. 19, 1963, now U.S. Patent 3,168,975, issued Feb. 9, 1965, entitled "Carton Having Tear Strip in Cover Flaps," a carton is disclosed and claimed which is formed from an integral blank, the cover of the carton having three cover flaps, each of the cover flaps having a separate tear strip formed therein comprised of spaced apart substantially parallel fracture lines. Two of the cover flaps are provided with terminal connecting flaps for affixing to the adjacent cover flap. When adhesive material is provided in the proper areas and the cover flaps are glued in place, a sealed carton may be formed having a continuous tear strip extending the entire length of the cover flaps, and wherein the entire tear strip may be removed with a continuous tearing motion. Because of the particular type of construction, the carton may be readily erected, filled, and sealed with relatively simple and inexpensive machinery.

Although the carton of the above-identified application is admirably suited for packaging products such as ice cream, parfaits, and frozen foods, it is somewhat less admirably suited for packaging of such products as pies and other baked goods, whether or not frozen, which goods may be more conveniently removed from the open front of the carton rather than from the top.

It is an object of the present invention to provide a top-opening carton having a so-called "lock-corner" type of construction which may be sealed and subsequently opened by the removal of a tear strip. It is another object to provide such a carton which may be readily reclosed when it is desired to store still unconsumed contents. It is a further object to provide a carton of the type described which may be formed from an integral cut and

scored blank. It is a still further object to provide a carton of the type described which can be readily erected and subsequently sealed by means of relatively simple and inexpensive machinery. It is an additional object to provide a carton of the type described having a drop-front or folding-down front structure. The accomplishment of the foregoing and additional objects will become more fully apparent hereinafter.

The invention in its preferred embodiment is illustrated by the accompanying drawings in which:

FIG. 1 is a plan view of a cut and scored blank from which the carton is formed, viewed from the inside.

FIG. 2 is a perspective view of the assembled and sealed carton; and

FIG. 3 is a perspective view of the carton with the tear strip completely removed and the drop-front open.

Reference is now made to the accompanying drawings for a better understanding of the invention, wherein all of the parts are numbered and wherein the same numbers are used to refer to corresponding parts throughout.

In a preferred form, the carton of the invention is constructed from an integral blank as illustrated in FIGURE 1. The structure comprises a rear wall member **1**, a bottom member **2**, and an inner front wall member **3** hingedly connected together at score lines. A protecting flap **3***a* is provided at the edge of the front wall member **3**. The rear wall member **1** and the inner front wall member **3** have lock flaps **4** and **5** hingedly connected at their ends. The lock flaps **4** comprise lock tongues or latching protuberances **6** and beveled heels **7**. The lock flaps **5** comprise lock tongues or latching protuberances **8** and beveled heels **9**. The lock flaps **5** of the inner front wall **3** are suitably provided with a transverse severance line **10** permititng terminal segments **11** containing the lock tongues **8** to be readily detached when the carton is opened and the front wall dropped. A pair of inner end wall flaps **12** are hingedly connected at the ends of the bottom **2**. Each inner end wall flap **12** is provided with engagement slits **13** and **14** positioned to engage the lock tongues **6** and **8**, respectively, when the carton is erected. A cover **15** is hingedly connected to the rear wall **1** at a score line. Cover flap members comprising outer end wall members **16** and **18** and an outer front wall member **17** are hingedly connected to the cover **15**. Each cover flap is divided into three areas by a pair of spaced apart substantially parallel fracture scores **19**, **20** and **21**. The area comprise glue strips **22**, **23** and **24**, tear strips **25**, **26** and **27**, and cover flaps **28**, **29** and **30**. Two of the cover flap members **16** and **17** are provided with terminal extension flaps **31** and **32** having parallel fracture scores **33** and **34** positioned as extensions of the fracture scores **19** and **20** respectively. The fracture scores **33** and **34** define glue strip extensions **35** and **36**, tear strip extensions **37** and **38**, and cover flap extensions **39** and **40**. Additionally, the front portions of the glue strips **22** and **24** are suitably cut to provide tear-out panels **43** and **44** of suitable size and shape to match the lower portion of the front lock flap to which they are adhered when the carton is erected. As a result of the structure described above, when the drop front is opened, the terminal segments **11** are torn off, and the tear-out panels **43** and **44** adhering to the bottom of the flaps **5** are torn out. Glue or other suitable adhesive is applied to the blank, as shown by stippled shading in FIG. 1, at the glue strips **22**, **23** and **24**, and at glue areas **41** and **42**.

Although the tear strips **25**, **26** and **27** may be provided with a uniform width which is the same width as that of the terminal extension tear strips **37** and **38**, in order to compensate for imperfection of registry during assembly of the carton, it is preferred that the tear strips

26 and 27 be wider at their engaging ends than the tear strip extensions 37 and 38. In the preferred embodiment shown in the drawings, the fracture scores at the ends of the tear strips 26 and 27 diverge to enlarge the tear strip ends, while the terminal extension tear strips 37 and 38 are provided with a narrower width than the tear strips 25 and 26. As a result of this configuration, the enlarged tear strip ends completely cover the tear strip extensions 37 and 38 even though the respective parts may not be in perfect registry when the carton is assembled. A graspable portion 45 is provided at the end of tear strip segment 25.

The fracture scores defining the tear strips may be formed by slits of any suitable configuration. However, in a preferred embodiment the slits are provided in the form of a V, each slit having a leg divergent with respect to the center of the tear strip in the direction of tear, terminating in a leg substantially parallel to the direction of tear and defining the outer boundary of the tear strip, the slit configurations on opposite sides of the tear strip preferably being staggered. Tear strips having fracture scores of this configuration tear readily and cleanly, and the line of tear is confined to its intended course. This is particularly important at the crease of the cover flaps where they are adhered to the tear strips of the terminal extensions of adjacent cover flaps. In the embodiment shown in the drawings the preferred configuration is provided only in the fracture scores of the cover flaps proper, since this generally suffices. However, if desired, the preferred configuration may also be used to provide the tear strips in the terminal extensions.

In assembling the carton, the lock tongues 6 and 8 of the lock flaps 4 and 5 are inserted in the engagement slits 13 and 14 to form the body portion of the carton. This step may be performed on conventional carton set-up machinery which is well known in the prior art and presently in use in commerce. The carton may then be filled with the desired contents. The cover 15 is closed over the top of the carton. The glue strip 22 of the outer end wall member 16 is then glued in position to its respective inner end wall member 12. The terminal extension flap 31 is folded over the inner front wall member 3. The outer front wall member 17 is then folded over the terminal extension flap 31 and the front wall 3, and the glue strip 23 is affixed to the bottom of the front wall 3. The glue area 41 which also includes a portion of tear strip 26 affixes the end of the outer front wall member 17 to the terminal extension flap 31, the tear strip 26 thus being affixed to the tear-strip extension 37 formed by the fracture scores 33. The terminal extension flap 32 is then folded over the other inner end wall member 12. The outer end wall member 18 is folded over the terminal extension flap 32 and the inner wall member 12. The glue strip 24 is glued to the inner end wall member 12 and to the structures 36 and 38 of terminal extension flap 32. The glue area 42 is glued to the terminal extension cover flap 40, and the tear strip 27 is affixed to the tear strip extension 38 formed by the fracture scores 34. The result is a completely enclosed and sealed carton, with the tear strip of the three cover flaps being secured together in alignment.

The structure and sequence of assembly described result in a carton wherein the terminal extension flaps 31 and 32 extend in the direction of tear. The lateral extension 31 is overlapped by and affixed to the cover flap member or outer front wall 17, and the terminal extension flap 32 is overlapped by and affixed to the cover flap or outer end wall 18. This insures the integrity of the tear strip as it is removed. For example, as the tear strip 25 is being removed and reaches the corner of the carton, the lateral extension 37 lifts the tear strip 26. Consequently, the adhesive bond connecting the tear strip extension 37 to the tear strip 26 is not stressed nearly as much as it would be if the arrangement were reversed. Even if the adhesive bond should fail, the lifting of the segment 25 will tear out the end of the tear strip 26, so that it subsequently can be grasped and removed. In contrast, if the end flaps were to be folded in first, followed by the cover flap 17, the adhesive joint would be the sole lifting means for the tear strip 26. As the tear strip rounded the corner, the tear strip extension 37 would be engaged with section 26 only by its adhesive bond. This might place an undue stress on the adhesive bond and, in case of its failure, the tear strip 26 might remain intact and might be engaged and torn off only with some difficulty. However, if desired, other arrangements may be used, especially if a stronger adhesive and stronger material of construction, e.g., paperboard, are used. For example, one terminal extension may be connected to the outer end flap 16 and the other terminal extension to the outer end flap 18 or, alternatively, both terminal extension flaps may be connected to the ends of the outer front wall member 17. The latter two structures, especially the last one, may be further improved, if desired, by the use of a two-part tear strip provided in the outer front wall member by means of an opening defining two graspable ends. Since each tear strip segment in such an arrangement is opened in a different direction from the other, the terminal tear strip extensions, if located on the front wall, are preferably oriented below the tear strips of the respective outer end walls. Conversely, in such arrangement, when the terminal extensions are on the outer end flaps, they are preferably positioned above the tear strip of the outer front wall.

The carton is opened by engaging the tab 45 of the tear strip, as shown in FIG. 2. As a result of the structure described, the tear strips 25, 26 and 27 together with the tear strip extensions 37 and 38 form a unitary tear-strip structure. The entire tear-strip structure may be detached or ripped off with a single operation. Once the tear strip has been removed, the cover may be readily lifted at one end and opened, as illustrated in FIG. 3. If contents of the carton are not immediately consumed, the cover may be reclosed and the carton stored until further use.

After the tear strip has been removed, the inner front wall member 3 may be dropped to permit the contents of the carton to be removed from the open front instead of from the top. This is particularly useful for removing baked goods such as pies. The inner front wall member 3 is dropped by grasping its edge and folding it downward about the score line connecting it to the bottom 2. As force is applied, the main portions of the flap 5 are separated from the terminal portions 11 along the score lines 10. Additionally, the tear out panels 43 and 44 of the glue strips 22 and 24, which are adhesively affixed to the lower portions of the flaps 5, are removed from the glue strips and carried along with the flaps 5. As a result, all connections between the flaps 5 and the ends of the carton are eliminated, and the inner front wall 3 is free to drop. In an alternative embodiment, the flaps 5 may be caused to remain free of the glue strips 22 and 24 if those portions of the flaps 5 engaging the glue strips are provided with a glue resist coating.

The carton of the present invention has a number of advantages over prior art cartons of a similar type. The carton may be readily erected and closed by means of simple machinery. This is made possible by the structure provided in the cover and cover flap members. The tear strip may if desired be provided in several individual panels which are adhered together during erection of the carton to form integral tear strips. The provision for a fold-down or drop-front facilitates the removal of particular types of contents such as baked goods from the carton. Moreover, the structure permits use of the highly desirable so-called lock-corner structure together with a drop-front arrangement.

It is to be understood that the invention is not limited to the exact details of construction, operation, or exact materials or embodiments shown and described, as ob-

vious modifications and equivalents will be apparent to one skilled in the art, and the invention is therefore to be limited only by the scope of the appended claims.

I claim:

1. A carton formed of an integral blank cut and scored to provide a bottom member having inner end wall members attached thereto, a rear wall member, an inner front wall member, and end flaps attached to said rear and inner front wall members, said rear wall end flaps and said inner front wall member end flaps being provided with latching protuberances and said bottom member end flaps being provided with complementary slits engaging and retaining said protuberances, said inner front wall member end flaps each being provided with a severance line permitting said protuberances to be detached, a cover hingedly connected to the upper edge of said rear wall member and provided with cover flaps comprising outer end wall members and an outer front wall member, terminal extensions connected to ends of said cover flaps securing said ends to adjacent cover flap ends, said cover flaps and said terminal extensions each being provided with a pair of spaced-apart substantially parallel fracture scores defining a tear strip, said outer end wall members being secured to said inner end wall members and to said inner front wall member end flaps below the lower of the fracture scores of said outer end wall members, and said outer front wall member being secured to said inner front wall member below the lower of the fracture scores of said outer front wall member, the tear strips of said cover flaps being secured together in alignment by the tear strips of said terminal extensions, and areas of said outer end wall members secured to said inner front wall member end flaps being provided with severance lines permitting said areas to be detached from said outer end wall members whereby, when said tear strip is removed, said inner front wall member end flaps may be detached from said protuberances and said inner front wall member unfolded to permit the contents of said carton to be removed through the resulting open front thereof.

2. A carton formed of an integral blank cut and scored to provide a bottom member having inner end wall members attached thereto, a rear wall member, an inner front wall member, and end flaps attached to said rear and inner front wall members, said rear wall end flaps and said inner front wall member end flaps being provided with latching protuberances and said bottom member end flaps being provided with complementary slits engaging and retaining said protuberances, said inner front wall member end flaps each being provided with a severance line permitting said protuberances to be detached, a cover hingedly connected to the upper edge of said rear wall member and provided with cover flaps comprising outer end wall members and an outer front wall member, one of said outer end wall members having a terminal extension affixed to an end of said outer front wall member adjacent thereto and the other end of said front wall member having a terminal extension affixed to the outer end wall member adjacent thereto, said cover flaps and said terminal extensions each being provided with a pair of spaced-apart substantially parallel fracture scores defining a tear strip, said outer end wall members being secured to said inner end wall members and to said inner front wall member end flaps below the lower of the fracture scores thereof, and said outer front wall member being secured to said inner front wall member below the lower of the fracture scores thereof, the tear strips of said cover flaps being secured together in alignment by the tear strips of said terminal extensions, and areas of said outer end wall members secured to said inner front wall member end flaps being provided with severance lines permitting said areas to be detached from said outer end wall members whereby, when said tear strip is removed, said inner front wall member end flaps may be detached from said protuberances and said inner front wall member unfolded to permit the contents of said carton to be removed through the resulting open front thereof.

3. A carton according to claim 2 wherein the ends of the tear strips of said cover flaps have a width greater than that of the tear strips of said terminal extensions to which they are secured.

4. A carton according to claim 2 wherein said fracture scores comprise a plurality of V-shaped slits each comprising a leg divergent with respect to the center of the tear strip in the direction of tear and terminating in a leg substantially parallel to the direction of tear and defining the outer boundary of said tear strip.

5. A carton formed of an integral blank cut and scored to provide a bottom member having inner end wall members attached thereto, a rear wall member, an inner front wall member, and end flaps attached to said rear and inner front wall members, said rear wall end flaps and said inner front wall member end flaps being provided with latching protuberances and said bottom member end flaps being provided with complementary slits engaging and retaining said protuberances, said inner front wall member end flaps each being provided with a severance line permitting said protuberances to be detached, a cover hingedly connected to the upper edge of said rear wall member and provided with cover flaps comprising outer end wall members and an outer front wall member, said outer front wall member having a terminal extension at each end, said cover flaps and said terminal extensions each being provided with a pair of spaced-apart substantially parallel fracture scores defining a tear strip, said outer end wall members being secured to said inner end wall members and to said inner front wall member end flaps below the lower of the fracture scores thereof, and said outer front wall member being secured to said inner front wall member below the lower of the fracture scores thereof, the tear strips of said outer end wall members overlapping and being secured in alignment to the tear strips of said terminal extensions, said outer front wall member being cut to provide a medial opening dividing the tear strip thereof into two segments with a graspable portion at the end of each segment, said segments cooperating with the tear strips of adjacent outer end wall members to provide a pair of integral tear strips, and areas of said outer end wall members secured to said inner front wall member end flaps being provided with severance lines permitting said areas to be detached from said outer end wall members whereby, when said tear strip is removed, said inner front wall member end flaps may be detached from said protuberances and said inner front wall member unfolded to permit the contents of said carton to be removed through the resulting open front thereof.

6. A carton according to claim 5 wherein the ends of the tear strips of said cover flaps have a width greater than that of the tear strips of said terminal extensions to which they are secured.

7. A carton according to claim 5 wherein said fracture scores comprise a plurality of V-shaped slits each comprising a leg divergent with respect to the center of the tear strip in the direction of tear and terminating in a leg substantially parallel to the direction of tear and defining the outer boundaries of said tear strip, said V-shaped slits being oriented so that each of said integral tear strips may be removed by tearing from said medial opening to the opposite end of said tear strip.

8. An integral blank for forming a carton cut and scored to provide a bottom member having inner end wall members attached thereto, a rear wall member, an inner front wall member, and end flaps attached to said rear and inner front wall members, said rear wall end flaps and said inner front wall member end flaps being provided with latching protuberances and said bottom member end flaps being provided with complementary slits

adapted to engage and retain said protuberances, said inner front wall member end flaps each being provided with a severance line permitting said protuberances to be detached, a cover hingedly connected to the upper edge of said rear wall member and provided with cover flaps comprising outer end wall members and an outer front wall member, terminal extensions connected to ends of said cover flaps adapted to secure said ends to adajcent cover flap ends, said cover flaps and said terminal extensions each being provided with a pair of spaced-apart substantially parallel fracture scores defining a tear strip, said outer end wall members being adapted to be secured to said inner end wall members and to said inner front wall member end flaps below the lower of the fracture scores thereof, and said outer front wall member being adapted to be secured to said inner front wall member below the lower of the fracture scores thereof, the tear strips of said cover flaps being adapted to be secured together in alignment by the tear strips of said terminal extensions, and the areas of said outer end wall members adapted to be secured to said inner front wall member end flaps being provided with severance lines permitting said areas to be detached from said outer end wall members whereby, when said carton is erected and said tear strip is removed, said inner front wall member end flaps may be detached from said protuberances and said inner front wall member unfolded to permit the contents of said carton to be removed through the resulting open front thereof.

9. An integral blank for forming a carton cut and scored to provide a bottom member having inner end wall members attached thereto, a rear wall member, an inner front wall member, and end flaps attached to said rear and inner front wall members, said rear wall end flaps and said inner front wall member end flaps being provided with latching protuberances and said bottom member end flaps being provided with complementary slits adapted to engage and retain said protuberances, said inner front wall member end flaps each being provided with a severance line permitting said protuberances to be detached, a cover hingedly connected to the upper edge of said rear wall member and provided with cover flaps comprising outer end wall members and an outer front wall member, one of said outer end wall members having a terminal extension adapted to be overlapped by and affixed to an end of said outer front wall member adjacent thereto and the other end of said front wall member having a terminal extension adapted to be overlapped by and affixed to the outer end wall member adjacent thereto, said cover flaps and said terminal extensions each being provided with a pair of spaced-apart substantially parallel fracture scores defining a tear strip, said outer end wall members being adapted to be secured to said inner end wall members and to said inner front wall member end flaps below the lower of the fracture scores thereof, and said outer front wall member being adapted to be secured to said inner front wall member below the lower of the fracture scores thereof, the tear strips of said cover flaps being adapted to be secured together in alignment by the tear strips of said terminal extensions, and the areas of said outer end wall members adapted to be secured to said inner front wall member end flaps being provided with severance lines permitting said areas to be detached from said outer end wall members whereby, when said carton is erected and said tear strip is removed, said inner front wall member end flaps may be detached from said protuberances and said inner front wall member unfolded to permit the contents of said carton to be removed through the resulting open front thereof.

10. An integral blank according to claim **9** wherein the ends of the tear strips of said cover flaps have a width greater than that of the tear strips of said terminal extensions to which they are adapted to be secured.

11. An integral blank according to claim **9** wherein said fracture scores comprise a plurality of V-shaped slits each comprising a leg divergent with respect to the center of the tear strip in the direction of tear and terminating in a leg substantially parallel to the direction of tear and defining the outer boundary of said tear strip.

12. An integral blank for forming a carton cut and scored to provide a bottom member having inner end wall members attached thereto, a rear wall member, an inner front wall member, and end flaps attached to said rear and inner front wall members, said rear wall end flaps and said inner front wall member end flaps being provided with latching protuberances and said bottom member end flaps being provided with complementary slits adapted to engage and retain said protuberances, said inner front wall member end flaps each being provided with a severance line permitting said protuberances to be detached, a cover hingedly connected to the upper edge of said rear wall member and provided with cover flaps comprising outer end wall members and an outer front wall member, said outer front wall member having a terminal extension at each end, said cover flaps and said terminal extensions each being provided with a pair of spaced-apart substantially parallel fracture scores defining a tear strip, said outer end wall members being adapted to be secured to said inner end wall members and to said inner front wall member end flaps below the lower of the fracture scores thereof, and said outer front wall member being adapted to be secured to said inner front wall member below the lower of the fracture scores thereof, the tear strips of said outer end wall members being adapted to overlap and to be secured in alignment to the tear strips of said terminal extensions, said outer front wall member being cut to provide a medial opening dividing the tear strip thereof into two segments with a graspable portions at the end of each segment, said segments being adapted to cooperate with the tear strips of adjacent outer end wall members to provide a pair of integral tear strips, and the areas of said outer end wall members adapted to be secured to said inner front wall member end flaps being provided with severance lines permitting said areas to be detached from said outer end wall members whereby, when said carton is erected and said tear strip is removed, said inner front wall member end flaps may be detached from said protuberances and said inner front wall member unfolded to permit the contents of said carton to be removed through the resulting open front thereof.

13. An integral blank according to claim **12** wherein the ends of the tear strips of said cover flaps have a width greater than that of the tear strips of said terminal extensions to which they are adapted to be secured.

14. An integral blank according to claim **12** wherein said fracture scores comprise a plurality of V-shaped slits each comprising a leg divergent with respect to the center of the tear strip in the direction of tear and terminating in a leg substantially parallel to the direction of tear and defining the outer boundaries of said tear strip, said V-shaped slits being oriented so that each of said integral tear strips in a carton erected from said blank may be removed by tearing from said medial opening to the opposite end of said tear strip.

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GEORGE O. RALSTON, *Primary Examiner.*

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

May 9, 1967

Patent No. 3,318,508

Kenneth T. Buttery

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

In the heading to the printed specification, lines 3 and 4, for "assignor to KVP Sutherland Paper Company, Kalamazoo, Mich.," read -- assignor, by mesne assignments, to Brown Company, --.

Signed and sealed this 28th day of November 1967.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents