PACKAGE AND BLANK THEREFOR
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BC; 294/87 R

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ABSTRACT
The package includes a plurality of cartons, a container formed from a blank, and a shrink film member shrunk around the container to hold the container and cartons together. The container is formed from a rectangular piece of corrugated paperboard and has a bottom wall, opposed side walls with support flaps cut from the side walls, and top wall portions overlying the support flaps and spaced from each other. A tie interconnects the top wall portions to at least temporarily hold the top wall portions in position. Thus the container has open ends and a partial top wall. The shrink film overwrap is so arranged to retain the cartons at the open ends and top of the package.

19 Claims, 7 Drawing Figures


SHEET 1 OF 2


SHEET 2 OF 2


## PACKAGE AND BLANK THEREFOR

## BACKGROUND

The invention pertains generally to receptacles or packages, and more particularly to a receptacle or package which includes a folded blank having a reinforcing flap formed by infolding a portion of the side.
A considerable amount of milk, and other liquids, is packaged in a gable top carton. For example, one suitable gable top carton is shown in U.S. Pat. No. Re. 26,305. In the shipment and storage of such cartons, a wire basket is most generally used. While these wire baskets are very strong, protect the cartons, and stack well, they consume considerable space when empty and must be retransported and reused. To overcome the deficiencies of the wire baskets, disposable packages have been proposed. U.S. Pat. No. 3,384,229 discloses a rigid top protector contoured to contact the gable tops in combination with a flexible sheet material extending around the grouped containers. U.S. Pat. No. 3,313,406 contemplates a paperboard container which surrounds the milk cartons and has separate brace members to add structural strength to the package. While both of these packages are disposable, the former relies on the strength of the milk carton for its stacking strength while the latter requires separate reinforcing members to add stacking strength to the package.

## SUMMARY

The present invention relates to packages and more particularly to a package which incorporates a folded blank having a reinforcing flap formed from infolding a portion of the side.
It is a general object of the present invention to provide a package and container blank therefor which is of economical construction yet sturdy enough to be stacked.
Another object of the invention is to provide a container that is of one piece construction and suitably rigid in the vertical direction.
Still another object of the present invention is to provide a package which includes a plurality of cartons, a container that extends partially around the cartons, and a shrink film overwrap.

Yet another object of the present invention is to provide a package in accordance with the foregoing object and which container has top wall portions which are spaced from each other and including a tie engaged with the top wall portions for at least temporarily holding the top wall portions in position.
Still another object of the present invention is to provide a package in accordance with the foregoing object in which the container has reinforcing flaps formed from the side walls.
These, and other objects and advantages of the present invention, will become apparent as the same becomes better understood from the following detailed description when taken in conjunction with the accompanying drawings.

## DRAWINGS

FIG. 1 is a perspective view of a preferred embodiment of the present invention;
FIG. 2 is a plan view of the blank used to form the container incorporated in the package of FIG. 1 with a portion of the outer layer of the blank broken away to illustrate the corrugations running in the longitudinal direction of the blank;
FIG. 3 is a cross-sectional view taken along line 3-3 of FIG. 1;
FIG. 4 is a partial cross-sectional view on a larger scale than FIG. 3 and taken generally along line 4-4 of FIG. 6;
FIG. 5 is a perspective view of a plurality of gable top cartons and partially folded container blank;
FIG. 6 is a package with the blank folded into position and with a tie extending between the top wall portions; and
FIG. 7 is a view of the package of FIG. 6 with a shrink film overwrap in position preparatory to being shrunk around the container and cartons.

Reference is now made more particularly to the drawings which illustrate the best presently known mode of carrying out the invention and wherein similar reference characters indicate the same parts throughout the several views.
Referring to FIG. 1, the illustrated package is generally indicated by the numeral 20 and includes a plurality of cartons 22, a folded container blank 24, a tie member 26, and a shrink film member 28.
The cartons 22 are advantageously of the type known as gable top and contain liquid such as milk. In the embodiment illustrated, the cartons are arranged in at least two rows with at least two cartons in each row. The cartons 22 are herein illustrated of the half-gallon size; however, it is to be understood that the quarts, gallons, or other sizes may also be utilized. The size of the usual gable top containers are such that four gallon containers or 16 quart containers fit into generally the same space as nine half-gallon containers.
The container blank 24 is of rectangular formation and is preferably made of corrugated paperboard in which the corrugations run in the longitudinal direction of the blank. The blank 24 has a first pair of spaced weakened lines 32 and 34 forming a bottom wall 36. A second pair of transversely extending weakened lines 42,44 are spaced outwardly of lines 32, 34, respectively to form side wall portions 45-48. The remainder of the blank outwardly of lines 42 and 44 form top wall portions 52,54 , respectively.
Die-cuts 32a, 34a, 42a, and 44a are disposed in an intermediate area of the fold lines $32,34,42$ and 44 , respectively. The die-cuts, have their major portion parallel to the fold lines but spaced therefrom a distance equal to the thickness of the corrugated paperboard. Usually, die-cuts of this nature are formed one-half the thickness of the corrugated paperboard; however, it has been found that the aforementioned location of the die-cuts results in an improved package.
A die-cut 61 interconnects die-cuts $32 a$ and $42 a$ to form a pair of reinforcing flaps 62 and 63 which may be folded inwardly along fold lines 64 and 65 , respectively. Similarly, a die-cut 71 interconnects die-cuts $34 a$ and $44 a$ to form reinforcing flaps 72 and 73 which may be folded inwardly along fold lines 74, and 75, respectively.
Each top wall portion 52 and 54 has a U-shaped die-cut 81 therethrough to receive the tie 26. Preferably, the base of the cut 81 faces the free end of the flap 52 or 54 and thereby faces the opposite top wall portion in the completed package. The reason for the shape of cuts 81 will be hereafter explained.
When the blank 24 is folded to form the container, bottom wall 36 underlies the cartons 22 . As best shown in FIG. 5 , flaps $62,63,72$ and 73 are folded inwardly to lie between two adjacent cartons 22 when the side walls are folded along lines 32 and 34. The top wall portions 52 and 54 have a dimension, measured in the longitudinal direction, generally equal to the width of the flaps. In the present embodiment, this dimension is about one-sixth the total width of the blank 24. Preferably, the upper and lower edges of the reinforcing flaps are parallel and the top wall portions 52 and 54 can engage the upper edges to provide a convenient bearing surface for stacking several packages.

As previously indicated, a tie 26 interconnects the spaced top wall portions 52 and 54 to at least temporarily hold the container side wall portions, flaps and top walls portions in position. In the embodiment illustrated, tie 26 is conveniently formed of a flat piece of paper having a width greater than the width of die-cuts 81 . The paper is flexible so that it can be inserted through the die-cut flaps for the tying operation (see FIG. 4). Since the tie is wider than the cut, the edges bind
against the legs of the U-shaped against the legs of the $U$-shaped cut and prevent the tie 26 from being extracted from the cut 81. This occurs when the base of the cut faces the opposite top wall portion, as illustrated in the drawing. Generally, it is only necessary that the tie 26 be effective until the shrink film member 28 is shrunk
around the container and cartons. However, if another type of overwrap is utilized, tie 26 can be effective for any desired period of time.
The package thus far described is illustrated in FIG. 6 and includes the cartons 22 , the container 24, and the tie 26 . It can be seen that the container 24 is open at opposite ends. This is desirable in accordance with the present invention. In other words, the container blank 24 has a width generally equal to the length of the row of cartons 22 . The vertical strength of the container is accomplished by the infolded flaps rather than by outer corners of a box, for example. It has been found that the intermediately located infolded flaps give a higher ratio of compression strength to area of the blank than other known forms of containers of the same material.

In its preferred form, the length of the side wall portions 45-48, as well as the infolded flaps, is greater than the height of the cartons 22. In this manner, the upper edges of the infolded flaps and the top wall portions 52 and 54 are spaced above the uppermost portion of the gable tops. In this manner, the cartons are not relied on for any of the strength of the resulting package. This protects the cartons against damage in shipment, storage, and handling.
Referring now to FIG. 7, there is shown the shrink film member 28 wrapped around the package of FIG. 6. While the shrink film member 28 can be wrapped around the package of FIG. 6 in any convenient manner, the wrapping can be conveniently accomplished by the method and apparatus disclosed in U.S. Pat. No. $3,453,801$ in which the film may be seam welded as at $28 a$ (see FIG. 7). Thereafter the shrink film member is shrunk, as by heat shrinking, to form the package shown in FIG. 1. Preferably, the width of the shrink film is wider than the corresponding dimension of the container. In this manner, when the film is shrunk around the container, the opening created by the infolding of the flaps is at least partially closed to retain the cartons 22.
While a preferred embodiment of the invention has herein been illustrated and described, this has been done by way of illustration and not limitation, and the invention should not be limited except as required by the scope of the appended claims.
The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A package comprising, in combination:
a plurality of cartons having liquid therein and arranged in at least two rows with at least two cartons in each row, each carton having top, bottom, and side walls;
a container formed from one-piece, sheet material and including a bottom wall underlying the carton bottoms, a pair of opposed side wall means at opposite sides of the bottom wall and extending to a height above the carton tops, each side wall means having a flap formed therefrom and swingable about an upright line, each flap being disposed between two adjacent cartons and engaged by the carton side walls to hold the flap in position, each flap having a bottom edge engaged with the bottom wall and a top edge generally parallel to the bottom edge, a pair of top wall portions overlying the flaps and each connected to the top edge of one of the side wall means, and each top wall portion being spaced above the carton tops;
tie means engaged with the top wall portions for at least temporarily holding the top wall portions in position and thereby holding the side wall means in a generally upright position; and
a shrink film member receiving the container and cartons and shrunk around the container to hold the container side wall means, flaps, and top wall portions in position;
whereby the top wall portions are spaced above the carton tops and positioned to support another package stacked thereon, and the loading is transferred through the flaps engaged with the bottom wall and top wall portions so that no load is transferred through the cartons.
2. A package as set forth in claim 1 wherein the container is formed of corrugated paperboard with the corrugations running in the upright direction of the side wall means, the width of the paperboard approximates the length of a row of cartons, the width of each flap is about one-sixth of the paperboard width, and the width of each top wall portion approximates the width of the flaps.
3. A package as set froth in claim 2 wherein each side wall means has two flaps formed therefrom and swung in opposite directions.
4. A package as set forth in claim 3 wherein each row of cartons consists of three cartons, the flaps are formed from the middle third of the side wall means, and one carton has a side completely exposed in the space from which the flaps are formed.
5. A package as set forth in claim 1 wherein each top wall portion has a $U$-shaped cut therethrough to receive the tie means, and the base of the U -shaped cut faces the opposite top wall portion.
6. A package as set forth in claim 5 wherein the tie means comprises a flat, flexible member having end portions with a width wider than the base of the cut and extending through the cut.
7. A package comprising, in combination:
a plurality of cartons arranged in at least two rows of at least two cartons each; each carton having a top, a bottom, and generally upright side wall means extending between the top and bottom;
an open-ended container formed from an initially flat, rectangular piece of corrugated paperboard with the corrugations running in the longitudinal direction of the rectangle; said piece having a first pair of spaced transversely extending weakened lines forming a bottom wall underlying the carton bottoms, a second pair of weakened lines outwardly of the first pair and forming outer side walls, transverse die-cuts extending along a portion of said lines, longitudinal die-cuts in the side walls each interconnecting a pair of die-cuts to from a flap in each side wall swingable about a longitudinal line and disposed between the side wall means of two adjacent cartons, portions outwardly of the second pair of lines forming top wall portions overlying the upper end of a respective flap, and the top wall portions being spaced apart and having a width approximating the width of the flaps;
tie means engaged with the top wall portions and extending across the space therebetween for at least temporarily interconnecting the top wall portions; and
a shrink film member receiving the container and cartons and shrunk therearound to hold the same together.
8. The combination of claim 7 wherein the cartons have gable tops, and the top edge of the flaps and the top wall portions are spaced above the uppermost part of the gable tops.
9. The combination of claim 7 wherein each container side wall has two flaps formed therefrom and swung in opposite directions, and each flap has a height equal to the height of the side wall minus two times the thickness of the paperboard.
10. The combination of claim 7 wherein the tie means comprises a thin, flat, member spanning the space between the top flap portions and having end portions secured to the top flap portions.
11. The combination of claim 10 wherein each top wall has a cut therethrough to receive the end portion of the tie member and secure the same, and the tie member has a width greater than the size of the cut.
12. A package comprising, in combination:
a plurality of cartons having liquid therein and arranged in at least two rows of at least two cartons each; each carton having top, bottom, and side walls;
an open-ended container formed from an initially rectangular piece of corrugated paperboard with the corrugations running in the longitudinal direction of the rectangle; said container including a bottom wall underlying the carton bottoms, a pair of opposed side wall means at opposite
sides of the bottom wall and extending in an upright direction to a height above the carton tops, each side wall means having a flap formed therefrom and swingable about an upright line, each flap being disposed between two adjacent cartons and engaged by the carton side walls to hold the flap in position, each flap having a bottom edge engaged with the bottom wall along its entire length and a top edge parallel to the bottom edge, a pair of top wall portions each connected to the top edge of one of the side wall means and spanning the space from which the flap is formed, each top wall portion overlying the flap and having a width such that the free edges of the top wall portions are spaced from each other; and
tie means secured to each top wall portion and extending across the space therebetween for interconnecting the portions to hold the container side wall means, flaps, and top wall portions in position.
13. A package according to claim 12 wherein each top wall portion has an opening therethrough to receive the tie means; and the tie means is relatively thin and flat and has a width greater than the opening.
14. A package according to claim 13 wherein each opening is a generally $U$-shaped cut with the base of the cut facing the opposite top wall portion.
15. A package according to claim 12 wherein each carton is generally rectangular in horizontal cross-section and has a gable top; the side walls of the two adjacent cartons engage the flap across its entire width for at least the majority of its height, and the top edge of the flaps and the top wall portions are spaced above the uppermost part of the gable tops.

## 16. A package comprising, in combination:

a plurality of cartons arranged in at least two rows of at least two cartons each; each carton having top, bottom, and side walls;
a container formed from an initially flat, rectangular piece of corrugated paperboard with the corrugations running in the longitudinal direction of the rectangle; said piece having a first pair of spaced, transversely extending,

