

[72] Inventor **Charles Henry Turpin**
Louisville, Ky.
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 [73] Assignee **The Pillsbury Company**
Minneapolis, Minn.

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Primary Examiner—Joseph R. Leclair

Assistant Examiner—Steven E. Lipman

Attorneys—Ronald E. Lund, James V. Harmon and M. Paul
 Hendrickson

[54] **REINFORCED SCORELINE SHIPPING
 CONTAINER**
12 Claims, 6 Drawing Figs.

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 217/69, 229/49
 [51] Int. Cl..... **B65d 5/02,**
 B65d 5/42
 [50] Field of Search..... 217/69;
 220/73; 229/37, 37 R, 49, 6

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ABSTRACT: A reinforced paperboard shipping container or baler for enclosing a plurality of articles such as cans is formed from a prescored paperboard blank including four parallel score lines, each reinforced with a narrow strip of a tough sheet material such as a 1-inch wide strip of paper or plastic. A pair of flap scorelines positioned at right angles to the four reinforced scorelines define a plurality of end flaps which when folded over one another form the ends of the container. The end flaps are separated from each other by parallel cuts which are located out of alignment, i.e., laterally of the scorelines that are covered by the reinforcing strips. This produces a plurality of subsidiary flaps integral with the end flaps. The fold line between each of the end flaps and its subsidiary flap is covered by the end portion of one of the reinforcing strips.

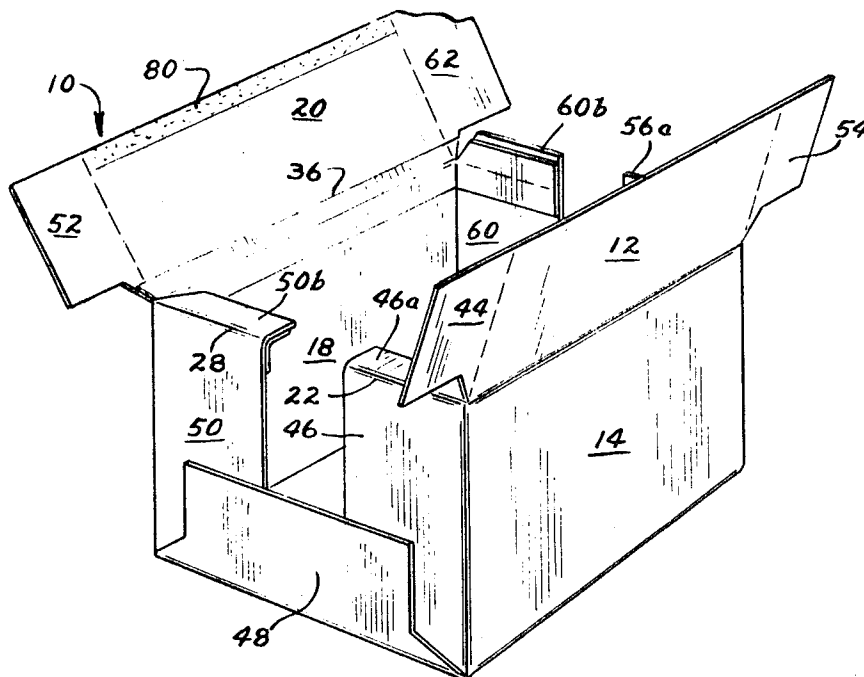


FIG. 1

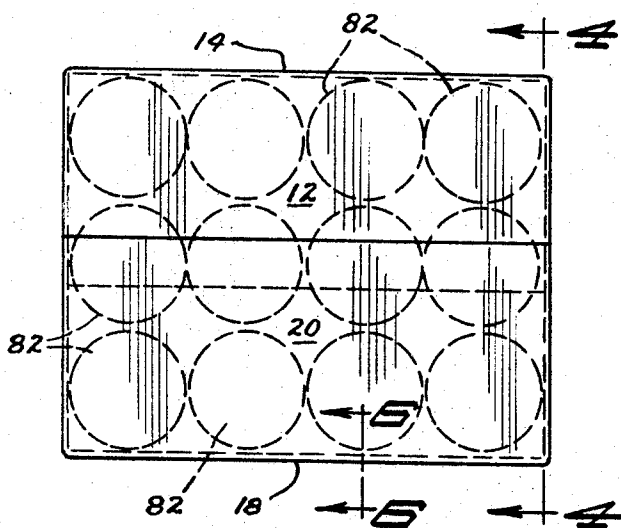
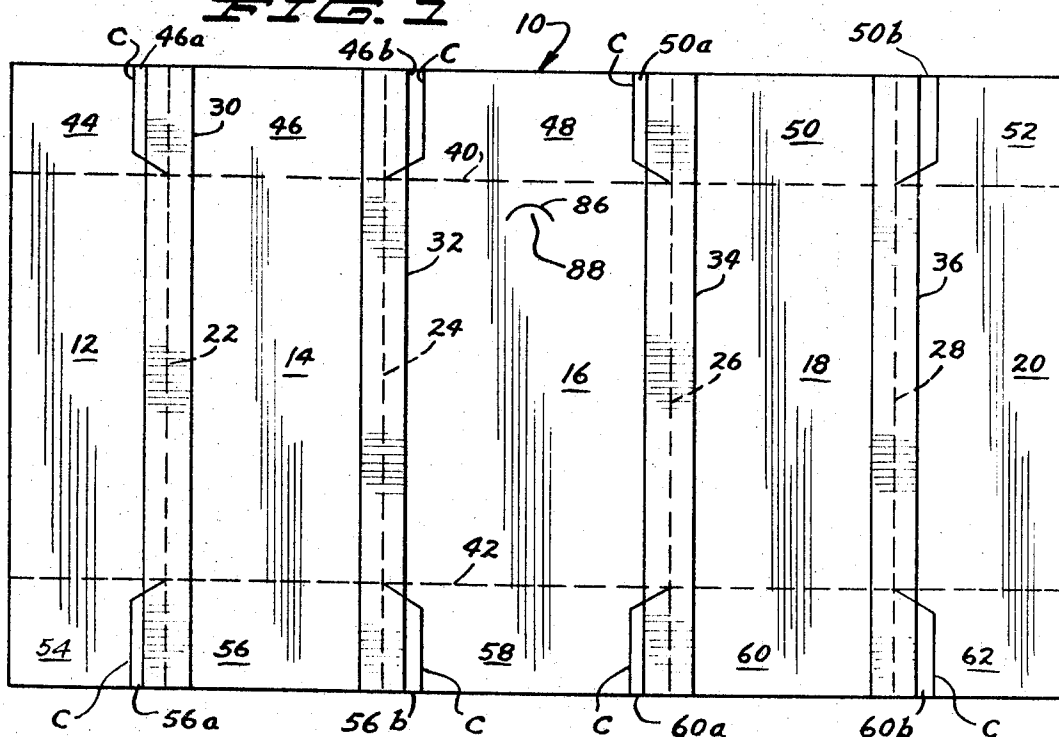


FIG. 2

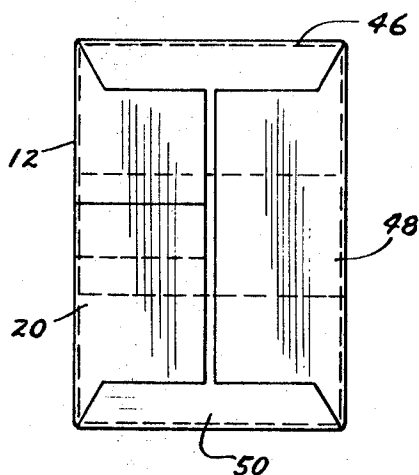


FIG. 3

INVENTOR.
CHARLES H. TURPIN

BY *James H. Turpin*
ATTORNEY

FIG. 4

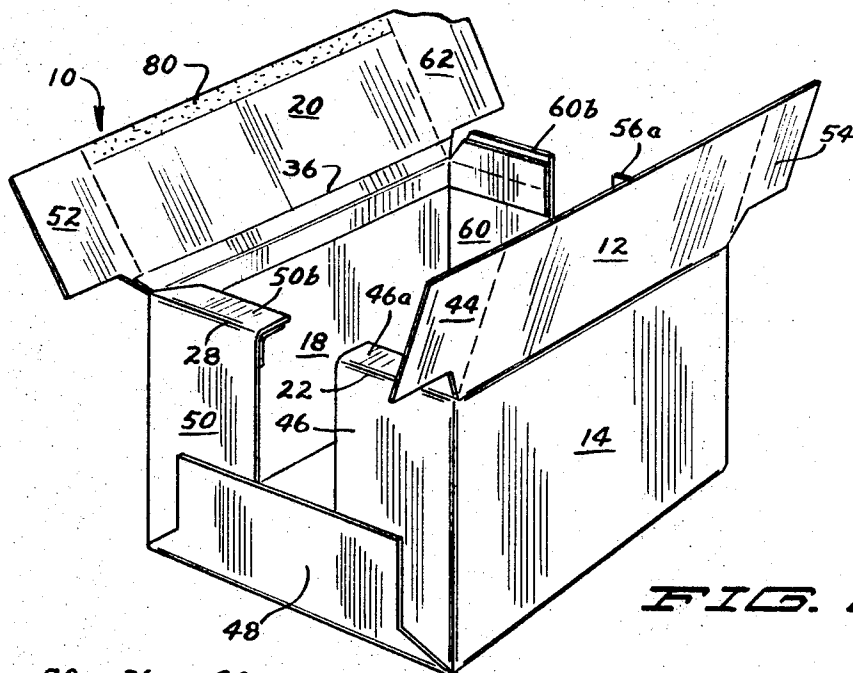
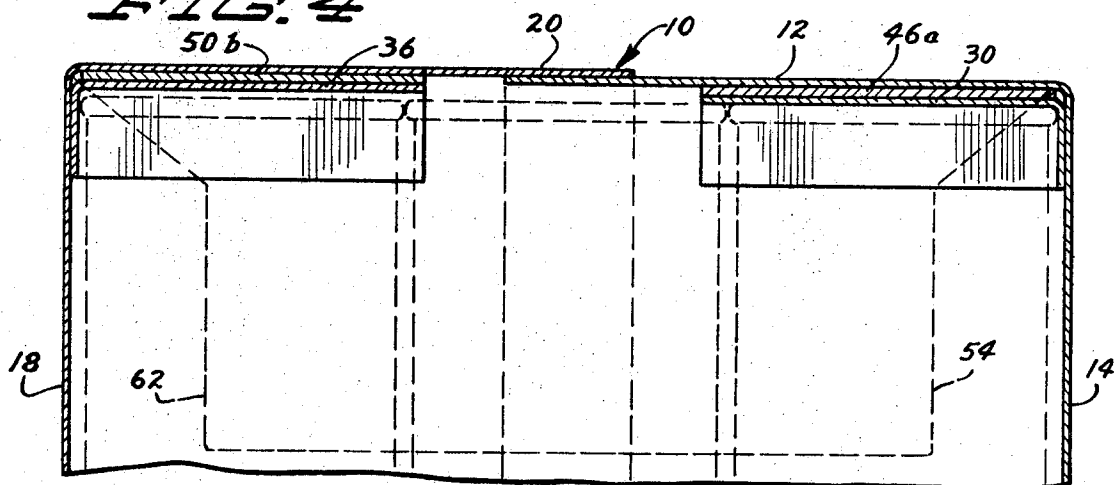


FIG. 5

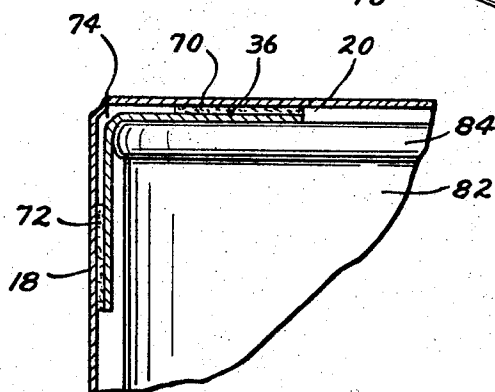


FIG. 6

INVENTOR.
CHARLES H. TURPIN

BY

James V. Hornum

ATTORNEY

REINFORCED SCORELINE SHIPPING CONTAINER

The present invention relates to the packaging art and more particularly to an improved reinforced container composed typically of paperboard and sometimes referred to as a baler. The invention is particularly useful for packaging a plurality of articles such as cans.

An important deficiency of prior paperboard shipping containers and balers is the lack of an effective reinforcement for the scorelines. This is especially a problem in the packaging of cans because the can chimes, where they contact the scorelines, of the can frequently produce a hole in the container or cause the carton to tear. It has been previously proposed to reinforce containers of this kind with a strip of sheet material bonded to the carton in overlapping relationship with one or more of the fold lines. This is an improvement but there is frequently no reinforcement over the fold lines located at the ends of the carton where the material is subjected to the most damage. At best, only two layers of material are provided along fold lines.

In view of these deficiencies of the prior art, it is one object of the present invention to provide an improved carton of the type described having the following characteristics and advantages, (a) manufacture and assembly can be accomplished with existing equipment, (b) the blank design allows the cutter used for severing the blank to sever the reinforcing material simultaneously, (c) a provision for distributing reinforcement over the fold line in such a manner as to provide at least two thicknesses of material where the chimes of cans packed in such a container contact the sidewalls of the container and three thicknesses of material at the point where the can chimes contact the end walls of the container, (d) the utilization of reinforcing materials that are normally discarded, and (e) a degree of strength which is greater than containers not utilizing the invention through more efficient use of materials.

These and other more detailed and specific objects will be apparent in view of the following specification and drawings wherein:

FIG. 1 is a plan view of a container blank embodying the invention.

FIG. 2 is a plan view of a container embodying the invention.

FIG. 3 is a side elevational view of the end of the container of FIG. 2.

FIG. 4 is a partial transverse sectional view of the container taken on line 4-4 of FIG. 2 but on a somewhat larger scale.

FIG. 5 is a perspective view of the invention and

FIG. 6 is an enlarged partial vertical section view taken on line 6-6 of FIG. 2.

Briefly, the invention provides a shipping container formed from flexible sheet material including four sidewalls and two end walls, the latter being composed of flaps that are folded over one another. Subsidiary flaps project laterally from at least some of the end flaps and a plurality of reinforcing strips formed from flexible sheet material are bonded to the sheet material of the container in parallel relationship with each being positioned appropriately to extend from one end of the container to the other in overlapping relationship with the intersection between the four sidewalls and between the intersection between each of the end flaps and its adjacent integral subsidiary flap. In this way, two thicknesses of material are provided at each of the intersections between the sidewalls of the container and three thicknesses of material are provided at the ends of the container where the reinforced intersection between the subsidiary flaps and its adjacent flap lies in lapped relationship with another layer of the sheet material from which the container is formed.

A preferred form of the invention is formed from a prescored cut paperboard blank including four parallel scorelines, each reinforced with a narrow strip of a tough sheet material such as a 1-inch wide strip of paper or plastic. A pair of flap scorelines are positioned at right angles to the four reinforced scorelines. When the flaps are folded over one another, they form the ends of the carton. The flaps are separated from each other by parallel cuts which are located

out of alignment with the scorelines covered by the reinforcing strips such that a plurality of subsidiary flaps are formed with the fold line between each flap and its subsidiary flap being covered by the end portion of one of the reinforcing strips.

Reference will now be made to the FIGS. in detail. In FIG. 1 is shown a container blank 10 composed of a suitable flexible packaging sheet material such as Kraft paper of 130 pounds per ream (3,000 square feet) including five body panels 12, 14, 16, 18 and 20 which are separated by parallel scorelines 22, 24, 26 and 28. Over each of the fold lines 22-28 is bonded by means of a suitable adhesive one of the reinforcing strips 30, 32, 34 and 36. The reinforcing strips can be formed from 1-inch wide strips of Kraft paper of the same weight as the container body stock.

The flap fold lines designated 40 and 42 are positioned at right angles to those mentioned above to define end flaps 44, 46, 48, 50 and 52 at one end of the carton and end flaps 54, 56, 58, 60 and 62 at the opposite end. These end flaps are separated from one another by longitudinally extending cuts *c* which extend from the side edges of the blank longitudinally to the nearest flap fold line 40 or 42 as the case may be. It should be noted that the cuts *c* are positioned out of alignment with the fold lines 22, 24, 26 and 28 so as to define subsidiary flaps 46a and 46b, 50a and 50b at one end of the container. At the other end, the cuts *c* define subsidiary flaps 56a and 56b and 60a and 60b. The cuts *c* at their inward ends include laterally extending sections which in this case consist of obliquely oriented straight lines. It will be understood by those skilled in the art that the oblique sections can instead be curved or, if desired, cut *c* can extend all the way to the fold line 40 or 42 as the case may be thence laterally to the nearest fold line of 22-28. The precise shape of the central end of the cut *c* is not critical.

The preferred mode of attaching the reinforcing strips will now be described. By reference to FIG. 6 it will be seen that reinforcing strip 36, which is typical of those used, is bonded to the overlying sheet material with two parallel spaced apart longitudinally disposed glue lines 70 and 72 leaving a free unglued portion 74 between them. The unglued portion extending the entire length of each of the reinforcing strips 30, 32, 34 and 36 gives the package added strength.

To facilitate opening the container 10, I provide (FIG. 1) a curved cut 86 in the panel 16 to serve as a tab 88 which when pulled longitudinally will sever the panel 16 thereby enabling the carton to be readily opened.

There are two possible methods of assembling the carton 10. In one, a line of adhesive 80 (FIG. 5) bonds the flaps 20 and 12 together at their point of overlap. In this way, the container is made into an open-ended tube or sleeve which is folded flat for shipment before being filled. When the contents are to be inserted, the flattened tube is folded open, the contents, such as cans 82, FIGS. 2 and 6, are inserted from one end of the tube with the chimes 84 of the outer two rows of cans in contact with reinforcing strips 30-36. The end flaps and subsidiary flaps are then folded into place with the subsidiary flaps either overlapping or underlying adjacent flaps. It is ordinarily less difficult to bond the subsidiary flaps beneath the adjacent contacting flaps.

In the alternative, the carton can be set up as a tray by gluing flaps 48 to 50 and 46 and flap 58 to flaps 56 and 60, as shown in FIG. 5. In this case, the cans 82 are inserted from the top rather than from the end. The subsidiary flaps 46a, 50b, 56a and 60b are then folded downwardly over the tops of the cans 82. Next, flaps 12 and 20 are folded downwardly with the flap 20 above flap 12 as seen in FIGS. 2 and 4. Finally, the flaps 52, 62, 44 and 54 are bonded to the underlying material as shown in FIGS. 3 and 4.

The reinforcing strips are preferably formed from an energy absorbing paper or polymeric resinous sheet material commonly referred to as plastic sheeting. One preferred energy absorbing material is a commercially available extensible Kraft paper. When plastic sheet is used for the reinforcing

material, a 10 mil polypropylene sheet oriented in a direction transverse to the long axis of the strip itself is suitable. Other materials will be apparent to packaging specialists.

The invention has a number of advantages the primary ones being the highly efficient use of materials and the provision of two thicknesses of material at the point where each of the can chimes along the side of the carton is in contact with the fold line. At the point where the greatest stress occurs (the ends of the carton) the chimes 84 are overwrapped by three thicknesses of material. Thus, as seen in FIG. 4, the chimes 84 are overwrapped first by the reinforcing strip 36, next by the flap 50b and finally by the flap 20. In addition to these advantages it will be noted that none of the material from the blank has to be thrown away.

It is apparent that many modifications and variations of this invention as hereinbefore set forth may be made without departing from the spirit and scope thereof. The specific embodiments described are given by way of example only and the invention is limited only by the terms of the appended claims.

I claim:

1. A shipping container formed from flexible sheet material including four sidewalls and two end walls composed of flaps folded over one another, subsidiary flaps projecting laterally from the sides of at least some of the end flaps and a plurality of reinforcing strips formed from flexible sheet material, each of the reinforcing strips being parallel to each other and being positioned to extend from one end of the container to the other in overlapping relationship with the intersection between the four sidewalls of the container and the ends of each of the strips overlapping the intersection between each of the end flaps and its adjacent integral subsidiary flaps whereby two thicknesses of material are provided at each of the intersections between sidewalls of the container and three thicknesses are provided on the ends of the container where the reinforced intersections between the subsidiary flaps and the adjacent flaps lie in lapped relationship with a portion of the sheet material from which the container is formed.

2. The container according to claim 1 wherein the sheet material is rectangular and includes four parallel longitudinally extending fold lines defining the sidewalls and two transversely extending generally parallel flap folds and define the flaps of the carton, each of the reinforcing strips is bonded in overlapping relationship with each of the four parallel fold

line to separate the container flaps from one another and cuts are positioned laterally of each of the four parallel fold lines thereby forming the subsidiary flaps.

3. The container according to claim 1 wherein each of the reinforcing strips is bonded to the underlying sheet material by two rows of spaced apart longitudinally extending strips of adhesive separated by an unbonded section.

4. The container according to claim 1 wherein the sheet material from which the container is formed comprises paper.

5. The container according to claim 1 wherein the reinforcing material comprises paper.

6. The container according to claim 1 wherein the reinforcing strips comprise flexible sheet material formed from a polymeric resinous material.

7. The container according to claim 6 wherein the reinforcing strip is composed of a polyethylene material, the direction of orientation of said polyethylene material being positioned at right angles to the longitudinal axis of the strip.

8. A reinforced paperboard shipping container or baler for enclosing a plurality of articles such as cans, formed from a prescored cut paperboard blank including four parallel scorelines, each reinforced with a narrow strip of sheet material, a pair of flap scorelines positioned at right angles to the four reinforced scorelines divide the blank into a plurality of marginally disposed flaps which are adapted to be folded over one another at the ends of the container, said flaps being separated from each other by parallel cuts which are located out of alignment with the scorelines covered by the reinforcing strips such that a plurality of subsidiary flaps are formed with the fold line between each of the flaps and its subsidiary flap covered by the end portion of one of the reinforcing strips.

9. The container according to claim 8 wherein each of the reinforcing strips is bonded to the underlying paperboard blank by two rows of spaced apart longitudinally extending strips of adhesive separated by an unbonded section.

10. The container according to claim 8 wherein the paperboard blank comprises paper.

11. The container according to claim 8 wherein the reinforcing material comprises paper.

12. The container according to claim 8 wherein the reinforcing strips comprise flexible sheet material formed from a polymeric resinous material.

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