United States Patent [19]

Forbes, Jr. et al.

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[45] **Nov. 11, 1975**

[54] **TUBULAR CARTON**

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[21] Appl. No.: **540,453**

[52] **U.S. Cl.** ..... **229/21**; 229/41 B; 229/41 C; 229/51 TS

[51] **Int. Cl.**[2] **B65D 3/04**

[58] **Field of Search** ..... 229/21, 41 C, 41 B, 51 TS

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Assistant Examiner—Stephen P. Garbe

[57] **ABSTRACT**

A tubular carton is disclosed which has particular utility as a support means for an egg-shaped product containing shell. The carton is prepared from a single blank of folded and glued paperboard and includes at the top thereof an integral locking means for retaining the shell in the carton and at the bottom an opening feature for removing the shell from the carton.

7 Claims, 9 Drawing Figures

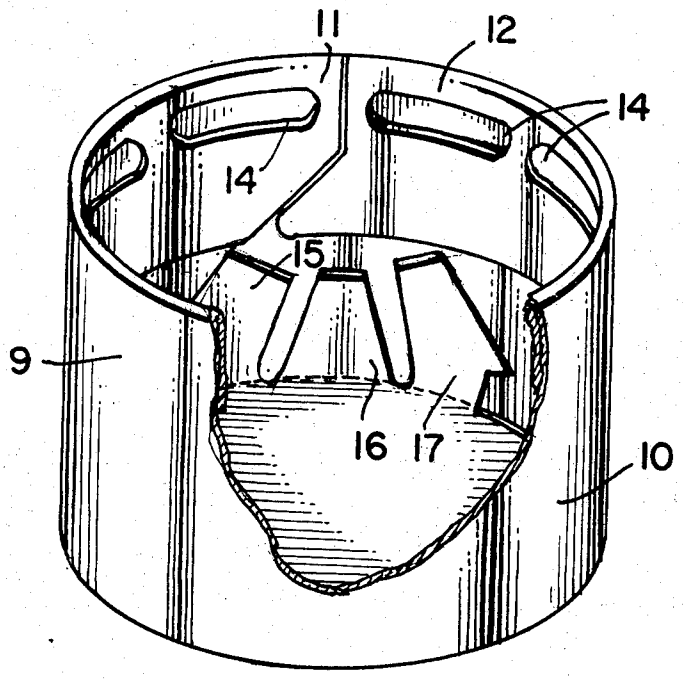


Fig 1.

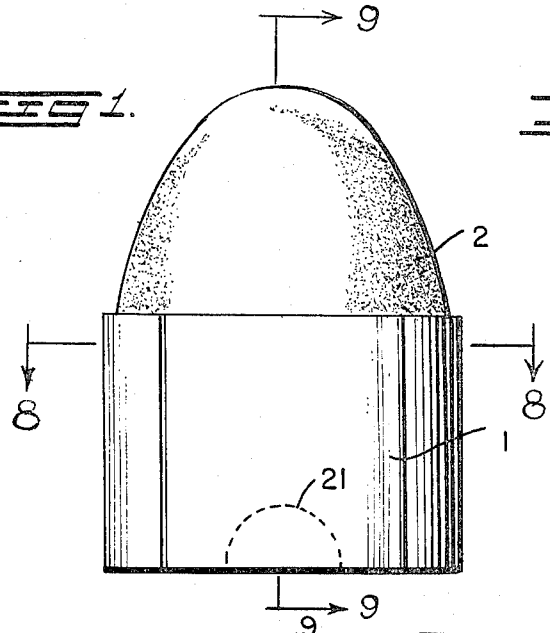


Fig 2.

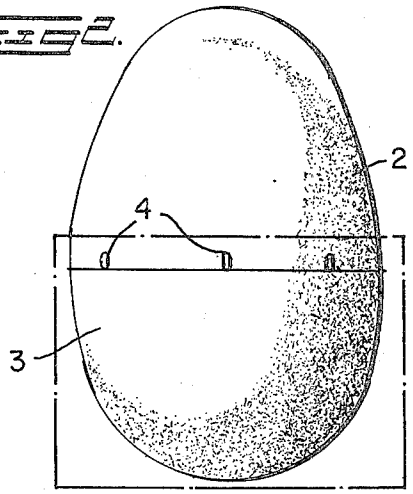


Fig 4.

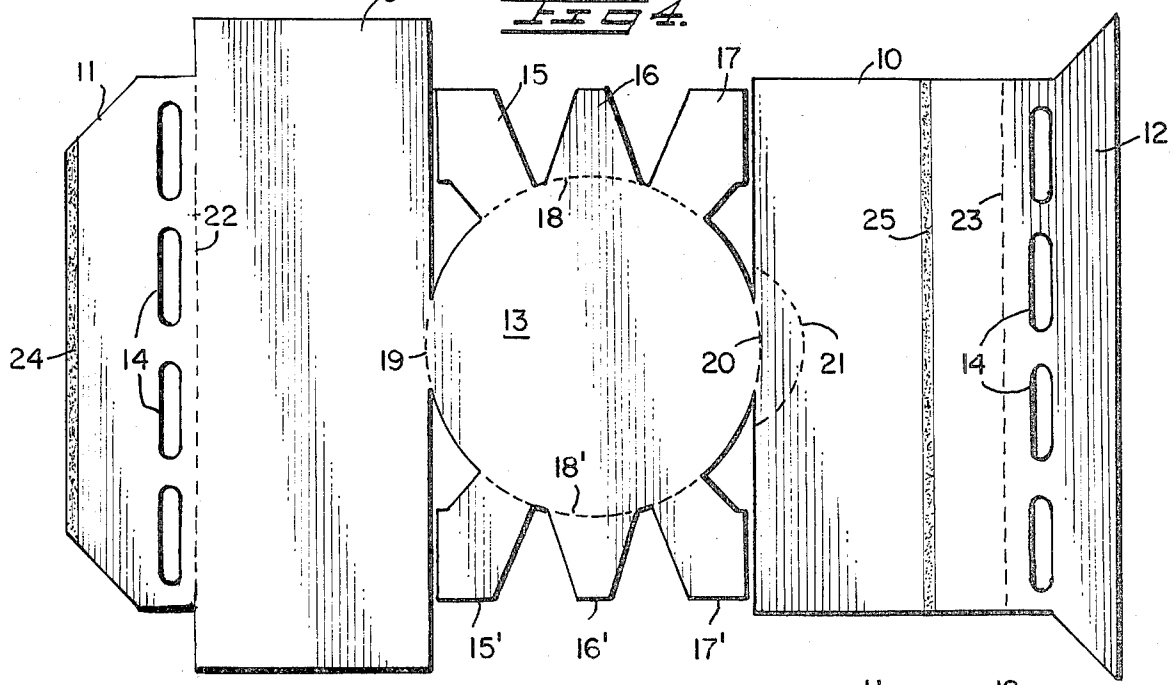


Fig 3.

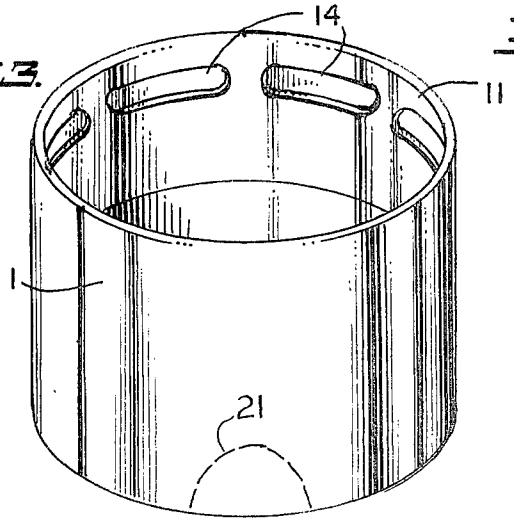


Fig 5.

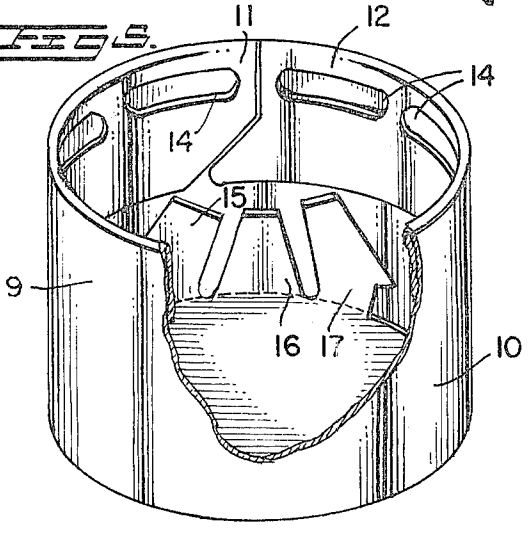
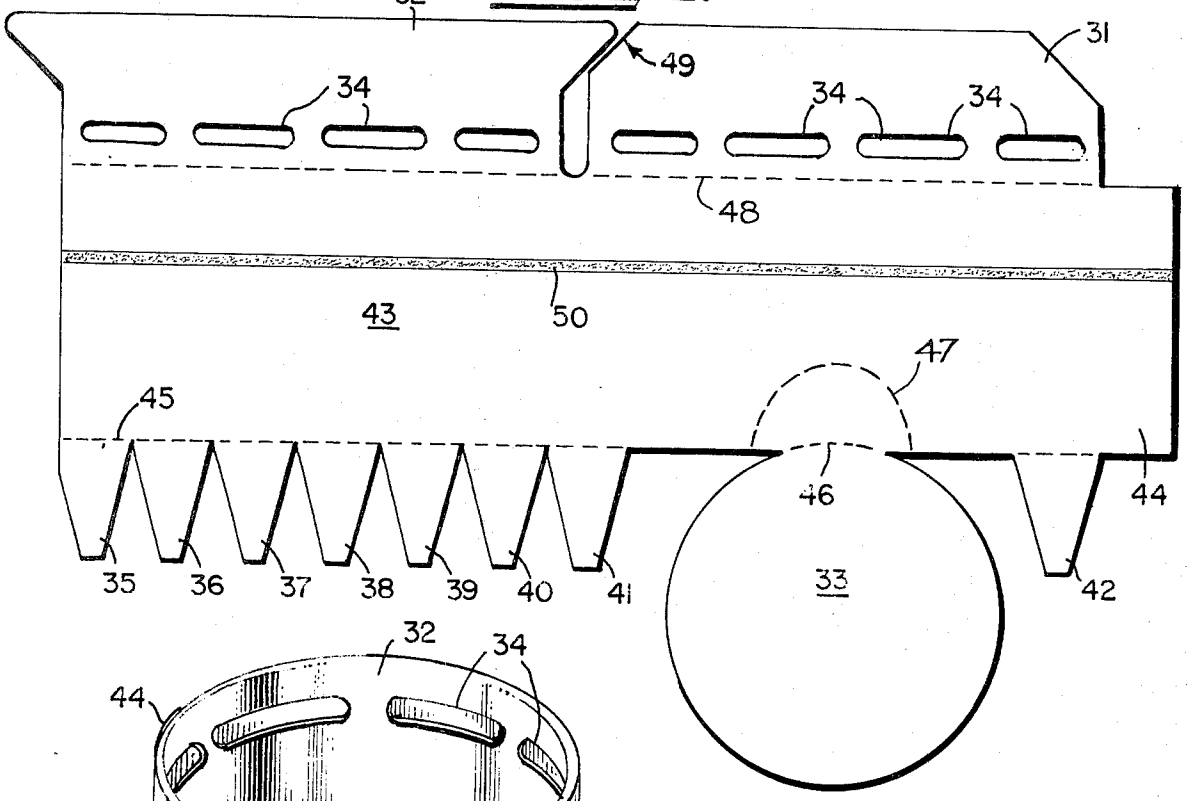


FIG 6.



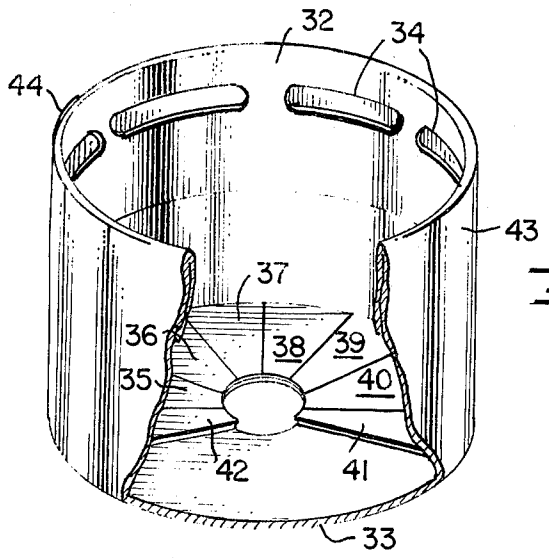


FIG 7

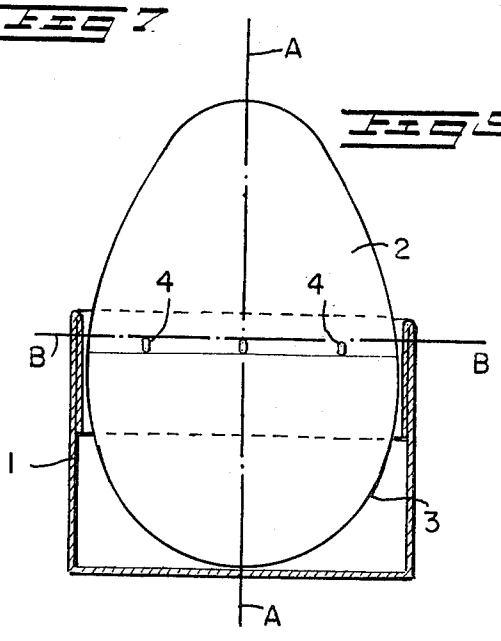


FIG 8.

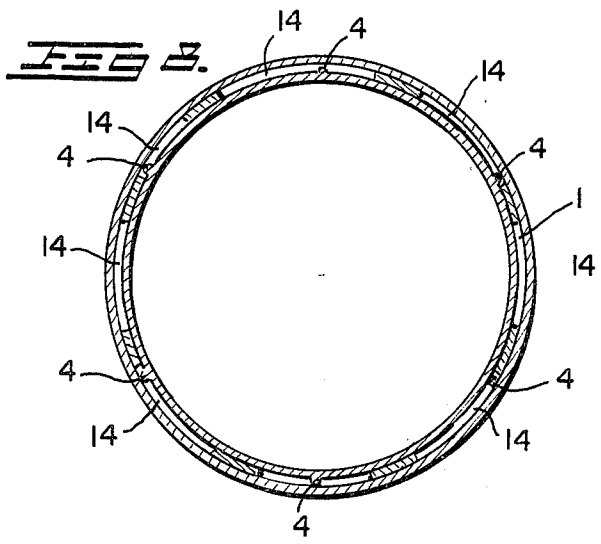


FIG 9.

TUBULAR CARTON

BACKGROUND OF THE INVENTION

The present invention relates generally to an improved construction for a tubular carton. In particular, the carton of the present invention is designed to replace a spirally wound tube in the form of a capped tubular segment that is being used to support product containing shells in point of purchase displays. In this respect, the tubular carton of the present invention is more economical, of ligher weight and easier to print and set up than the presently used spirally wound tubular segment.

SUMMARY OF INVENTION

The present invention relates generally to a tubular carbon having an integral bottom that is prepared from a single blank of folded and glued paperboard. In particular, the present invention relates to a tubular carton that finds utility as a support means for an egg-shaped product containing shell or one of spheroidal or ellipsoidal shape.

In its simplest form, the tubular carton of the present invention may take one of two basic constructions. First, the carton may be formed substantially like a tray wherein an integral circular end closure wall is hingedly connected to the lower edges of a pair of upstanding side walls which are in turn secured together or seamed along two opposed longitudinal or vertical seams. Secondly, the carton may be formed substantially like a cylinder with one longitudinal seam, wherein a single continuous side wall has an integral circular end closure wall and a plurality of segmental flaps attached to the lower edge thereof, that are secured to one another to define the end closure. In either case, the tubular cartons of the present invention also include flapped members along the top edge of the carton side walls which flapped members include integral locking means for retaining the product containing shells in position. In addition, the tubular cartons of the present invention also include means associated with the integral end closure walls for opening the cartons to permit the removal of the product containing shells.

Thus in general, the tubular carton of the present invention resembles the carton construction disclosed in prior U.S. Pat. No. 3,633,814. However the carton of the present invention is tubular in shape from top to bottom, and in this respect it may be further defined as the frustrum of a cylinder, and the carbon disclosed herein is particularly adapted to be used in combination with another product containing member such as a spheroidal or ellipsoidal shell in contrast with the patented carton which is designed primarily as a product containing carton with a rectangular bottom and a round top.

DESCRIPTION OF DRAWING

FIG. 1 is a side view of the tubular carton of the present invention in combination with the product containing shell;

FIG. 2 illustrates a side view of the product containing shell with the tubular carton of the present invention shown in phantom lines;

FIG. 3 is a top perspective view of the tubular carton of the present invention;

FIG. 4 is a plan view of the blank from which the tubular carton of FIG. 3 may be formed;

FIG. 5 is a view similar to FIG. 3 but with a portion of the side wall broken away to illustrate how the bottom of the carton is formed and the arrangement of the product containing shell locking means at the top of the carton;

FIG. 6 is a plan view of a modified blank for forming the tubular carton of the present invention;

FIG. 7 is a top perspective view of the tubular carton formed from the blank shown in FIG. 6 with a portion of the side wall broken away to illustrate how the bottom of the carton is formed and the arrangement of the product containing shell locking means at the top of the carton;

FIG. 8 is a horizontal sectional view of the tubular carton and product containing shell taken along the line 8—8 of FIG. 1; and,

FIG. 9 is a vertical sectional view taken along the line 9—9 of FIG. 1.

DETAILED DESCRIPTION

The tubular carton 1 of the present invention is intended primarily for use in combination with a product containing shell 2,3 substantially as shown in FIGS. 1 and 2. In the illustrated embodiment, the product containing shell 2,3, is formed in the shape of an egg, but obviously the carton of the invention could readily be used with a spheroidal or ellipsoidal shaped shell or any other shell shape having at least a portion thereof cylindrical in shape and with curved surfaces in the region of the cylindrical shape.

The egg-shaped shell illustrated in FIG. 2 consists of two portions, an upper part 2 having dimensions slightly smaller than a lower part 3. The upper part 2 further includes a plurality of embossed protrusions 4 that are located in a plane that is slightly above a plane through the point of maximum diameter of the egg. The protrusions or locking elements 4 on the shell half 2 are arranged around the shell at equally spaced points, and in the embodiment shown, lie on 60 degree centers with respect to one another. Further, the locking elements 4 on the shell half 2 are arranged to become engaged in mating locking slots 14 provided inside the tubular carton 1 when the shell is inserted in the carton. Accordingly, the principle of the present invention resides in the arrangement and location of the locking elements 4 on the shell half 2 with respect to the size and location of the mating locking slots 14 on the tubular carton 1. Once the two elements (shell 2,3 and carton 1) are inserted one within the other, the shell cannot be easily or readily removed from the carton in the same manner that it was inserted, but requires that the bottom of the carton be removed to permit removal of the shell from the carton and access to the contents of the shell.

The carton blank shown in FIG. 4, and the carton formed from the blank shown in FIGS. 3 and 5, is seen to comprise a pair of side wall panels 9 and 10, a circular bottom wall panel 13 located between and attached to the two side walls, and a plurality of finger-like flaps 15,16,17 and 15′,16′,17′ also attached to the circular bottom wall panel 13. The side wall panels 9 and 10 are attached to the bottom wall 13 along a pair of perforated lines 19, 20 and the finger-like flaps 15,16,17 and 15′,16′,17′ are attached to the bottom wall 13 along the perforated lines 18 and 18′ respectively.

The side walls 9 and 10 further include along their upper edges a pair of flap elements 11,12 connected

thereto along a pair of fold lines **22,23.** The flap elements **11,12** each contain a plurality of equally spaced cut outs **14** which are elongated from end-to-end along the fold lines **22,23** and which have a width that is substantially equal to but slightly larger than the height of the locking elements **4** on the shell half **2.** The flap element **11** is illustrated as being tapered inwardly along its free edge opposite the side wall **9** and the flap element **12** is illustrated as being tapered outwardly along its free edge opposite the side wall **10.** The tapered arrangement of the flaps **11,12** is provided so that the respective ends of the flaps will cooperate with one another when the carton is set up substantially as shown in FIG. **5.**

In setting up the carton from the blank shown in FIG. **4,** the first step involves gluing the flaps **11** and **12** to the side walls **9** and **10.** For this purpose, two adhesive applications to the blank of FIG. **4** are shown at **24** and **25.** After the flaps **11, 12** are adhered to the inside of the walls **9,10,** the blank is inserted in a conventional mandrel-type carton forming machine where the carton blank is formed into its tubular shape. The mandrel of the carton forming machine is placed over the circular bottom wall **13** and the finger-like flaps **15,16,17** and **15',16',17'** are each folded up from the plane of the wall **13** and adhesive is applied to their outside surfaces. Next, side wall **9** is applied with adhesive along its two spaced edges in the region outside the width of the tapered flap **11,** and the two side walls **9** and **10** are folded up and around the mandrel so as to adhere the glue applied inside surfaces of side wall **9** to the cooperating outside surfaces of side wall **10.** Simultaneously, the folding sequence brings the adhesive applied outside surfaces of the finger-like flaps **15,16,17** and **15',16',17'** into contact with the inside surfaces of the side walls **9** and **10** where they become adhered thereto. In this manner the carton substantially as shown in FIG. **5** is setup and glued for shipment to the user.

An access means is provided for opening the bottom of the tubular carton in the form of a displaceable thumb panel formed by the perforated line **21** and the connection **20** between side wall **10** and circular bottom wall **13.** Thus after the product containing shell is inserted in the carton, access to the shell is achieved by pressing the area between perforated lines **20** and **21** to break the connection, and then the circular bottom wall **13** can be removed from the carton by separating it from its attachment to the finger-like flaps **15,16,17** and **15',16',17'** along the perforated lines **18** and **18'.**

The carton blank shown in FIG. **6** and the carton formed from the blank shown in FIG. **7** comprises a circular bottom wall **33** attached to the lower edge of a carton side wall panel **43** along a perforated line **46.** Also attached to the lower edge of carton side wall **43** there are a plurality of finger like flaps **35–43** located asymmetrically of the bottom wall **33** and attached thereto along a perforated line **45.** The side wall **43** further includes an integral extension portion **44** at one end which is secured to the other end thereof when the carton is set up, and a pair of flap elements **31, 32** attached to the upper edge of the side wall along a fold line **48.** Flap elements **31,32** are shaped substantially like the flap elements **11** and **12** of the FIG. **4** embodiment and are arranged on the blank so as to cooperate with one another when the carton is formed. Each of the flap elements **31,32** contain a plurality of shell locking slots **34** of the same shape and size as those provided in the FIG. **4** embodiment described hereinbefore. In FIG. **6,** the two flaps **31** and **32** are shown as being separated from one another by a slot at **49,** however this slot could be omitted entirely depending on the diameter of the final carton. An access means for the bottom of the carton is provided by the perforated line **47** adjacent the connection **46** between the side wall **43** and the circular bottom wall **33.** The access means for this embodiment functions substantially the same as the access means described hereinbefore for the FIG. **4** embodiment.

In setting up the carton from the blank shown in FIG. **6,** the inside of side wall **43** is applied with adhesive as shown at **50** and the two flap elements **31,32** (or a single flap element where slot **49** is omitted) are folded over about fold line **48** and adhered to the inside of wall **43.** The blank is then placed on a conventional mandrel-type carton forming machine where adhesive is applied to the inner surface of side extension **44** and to the outside surfaces of the finger like flaps **35–42.** Subsequent manipulation of the carton forming machine wraps the side wall **43** around the mandrel and positions the finger-like flaps **35–42** between the mandrel and the circular bottom wall **33** so that side wall extension **44** is adhered to the outer surface of the opposite end of side wall **43** while the finger-like flaps are adhered to the inside of the circular bottom wall **33.** In this manner, the carton substantially as shown in FIG. **7** is set up and glued for shipment to the user.

FIGS. **8** and **9** show the criticality of the arrangement of and spacing between the shell locking protrusions **4** and the locking slots **14** and **34** on the carton flap elements. In the embodiment shown, the shell locking elements **4** are spaced on **60** degree centers as may be seen in FIG. **8.** FIG. **9** shows the shell locking elements **4** as being arranged on the shell half **2** in a plane "B" that is slightly above the plane that would extend through the maximum diameter of the shell. The location and arrangement of the locking elements on the surface of the shell is important in order to reduce pilferage of the shell from the carton. Thus, by inserting the end of the shell having the greatest diameter into the carton **1** to engage the locking elements **4** within their cooperating slots **14,34,** the shell becomes locked in such a manner that it cannot readily or easily be removed from the carton. Furthermore, in order to provide a fail-safe mechanism for insuring that the shell will always become locked within more than one slot when the shell is ramdomly inserted in the carton, the criticality of the shape, spacing and size of the locking slots should be noted.

The slotted areas **14,34** cannot be made too small or they will be ineffective for their purpose. Moreover, the waste that is formed by very small cut outs is very difficult to remove from paperboard blanks. On the other hand, the slots cannot be too large or they will unduly weaken the flaps **11,12** and **31,32** and they will interfere with the correct fold along fold lines **22** and **48.** Thus to offset these potential problems and to insure accurate locking of the elements **4** within the slots **14** or **34,** the slots are made to be only slightly wider than the locking elements **4** and they are formed with an elongated dimension to provide a maximum amount of open area uniformly distributed around the carton on centers different from the centers of location of the locking elements on the shell. Thus, when the shells are

randomly inserted into the carton portions, there is no necessity to establish any specific linearity of the two elements to guarantee that they will become locked together.

Thus, it may be seen that the present invention provides at least two embodiments of a novel carton construction having advantageous economical and useful features. However, the invention is not intended to be limited to the exact construction or details illustrated since those skilled in the art could readily make changes or substitutions within the scope of the appended claims.

We claim:

1. A one piece blank of substantially rectangular shape for forming a tubular carton, comprising:

a. a bottom wall panel of circular configuration located centrally of said blank;

b. a pair of side wall panels attached to two opposed sides of said bottom wall panel along perforated score lines;

c. a plurality of finger-like bottom closing flaps located between said side wall panels along the remaining opposed sides of said bottom wall panel and attached thereto along perforated lines;

d. a pair of tapered flaps foldably attached to said side wall panels along the edges thereof that are opposed from the attachment between said side wall panels and said circular bottom wall;

e. an access means in one of said side walls formed by a curved perforated line located adjacent the perforated line connecting said side wall to said bottom wall; and,

f. a plurality of longitudinal locking slots formed in each tapered flap and located adjacent the fold lines connecting the tapered flaps to the side wall panels.

2. A one piece blank of substantially rectangular shape for forming a tubular carton, comprising:

a. an elongated carton side wall panel having an extension at one side thereof for forming a glue lap;

b. a bottom wall panel of circular configuration located along the lower edge of said side wall panel and connected thereto along a perforated score line;

c. a plurality of finger-like bottom closing flaps located along the lower edge of said side wall panel asymmetrically of said bottom wall panel and connected to said lower edge along a perforated score line;

d. at least one tapered flap attached along the upper edge of said side wall panel along a score line;

e. an access means in said side wall formed by a curved perforated line located adjacent the perforated line connecting said side wall to said bottom wall; and,

f. a plurality of longitudinal locking slots formed in the tapered flap and located adjacent the fold line connecting the tapered flap to the side wall panel.

3. In combination, a tubular carton formed from a unitary blank of paperboard or the like and a product retaining shell, a portion of which is of cylindrical cross section, said tubular carton having a closed bottom end and an open top end for supporting said product retaining shell, said tubular carton and said product retaining shell each including cooperating locking means, said tubular carton comprising:

a. a flat circular bottom wall;

b. a cylindrical side wall formed from at least one side wall panel and attached to said bottom wall along at least one edge thereof by a perforated line;

c. a plurality of finger-like bottom wall closure flaps connected between said bottom wall and said cylindrical side wall at the bottom of said tubular carton;

d. at least one tapered flap foldably connected to said cylindrical side wall and secured to the inside of said cylindrical side wall at the top of said tubular carton; and,

e. an access means in said cylindrical side wall adjacent the closed bottom of said tubular carton.

4. The combination of claim **3** wherein the cooperating locking means of said product retaining shell consists of a plurality of embossed protrusions on said product retaining shell that are spaced from one another and located in the region of the cylindrical cross section of said product retaining shell.

5. The combination of claim **4** wherein the cooperating locking means of said tubular carton consists of a plurality of elongated slots equally spaced from one another and located in the tapered flap secured to the inside of said cylindrical side wall at the top of said tubular carton.

6. The combination of claim **5** wherein the flat circular bottom wall of said tubular carton is located centrally of the unitary blank of paperboard or the like from which the tubular carton is prepared, the cylindrical side wall consists of a pair of side wall panels attached to two opposed sides of said bottom wall and the finger-like bottom wall closure flaps are located between said side wall panels along the remaining opposed sides of said bottom wall and are attached thereto along perforated lines.

7. The combination of claim **5** wherein both the flat circular bottom wall and the plurality of finger-like bottom wall closure flaps are located along a lower edge of said cylindrical side wall and connected thereto along perforated lines, with the finger-like bottom wall closure flaps being positioned asymmetrically of said bottom wall.

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