United States Patent [19]

Spiegel

[11] **3,829,006**

[45] **Aug. 13, 1974**

[54] **SHIPPING AND DISPLAY CARTON AND BLANK THEREFOR**

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[22] Filed: **Feb. 1, 1973**

[21] Appl. No.: **328,840**

[52] **U.S. Cl.** ..... **229/51 TS,** 229/51 WB

[51] **Int. Cl.** **B65d 5/54**

[58] **Field of Search** .... 229/7 R, 17 R, 51 R, 51 TS, 229/51 D, 51 WB, 51 TC; 206/44 R

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Primary Examiner—Donald F. Norton
Attorney, Agent, or Firm—Arthur S. Caine

[57] **ABSTRACT**

An improved folding paper-board carton formed of a unitary blank having longitudinal and transverse fold facilitating score lines whereby the blank is adapted to be formed into a carton, said blank including longitudinal and transverse tear facilitating score lines for the removal of a tear panel whereby the carton is readily convertible from a sturdy shipping container to a display and dispensing enclosure of increased efficiency and attractiveness.

12 Claims, 7 Drawing Figures

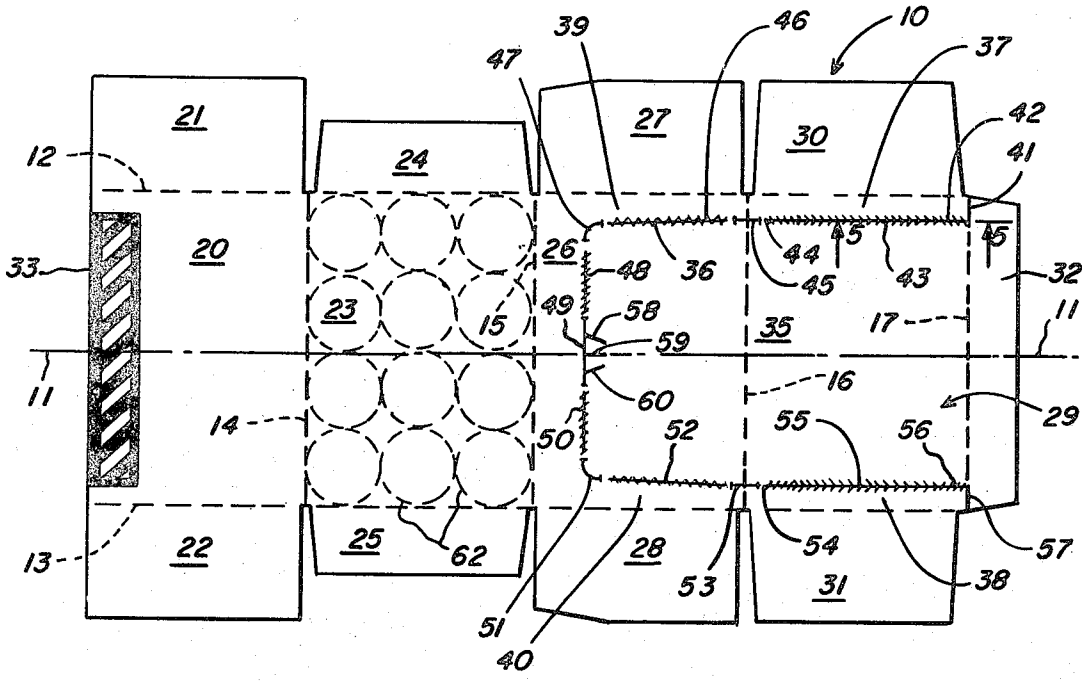

FIG. 1.

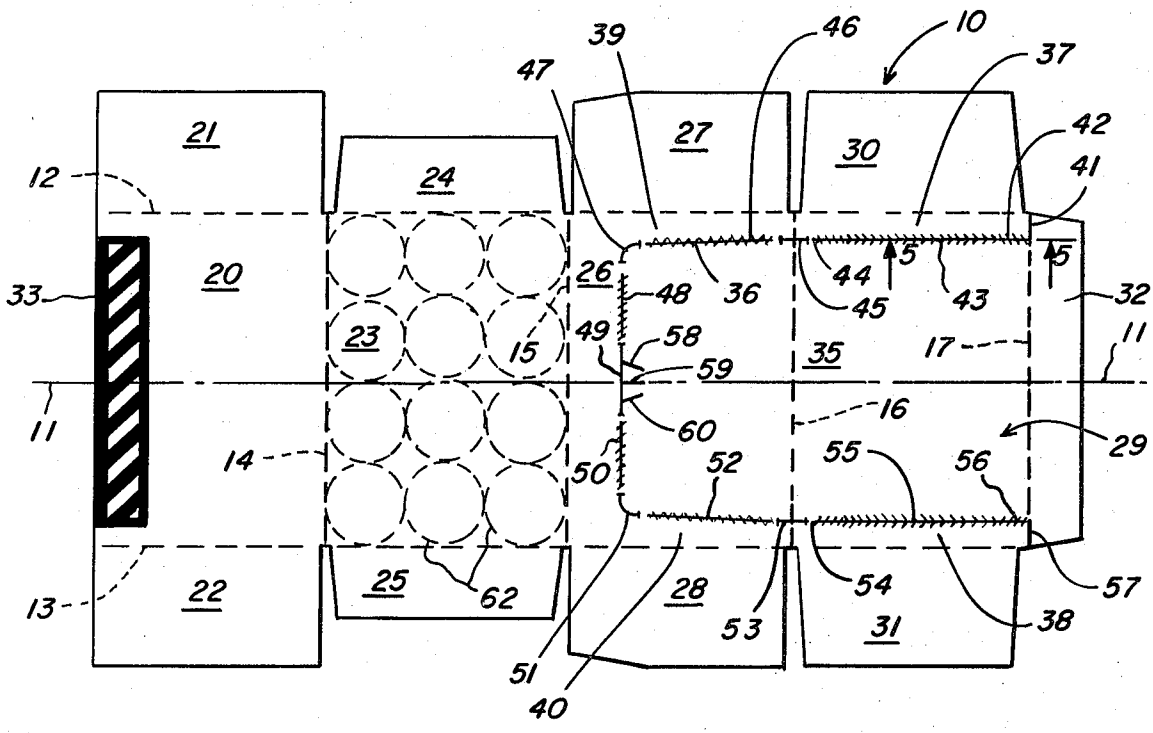
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FIG. 2.

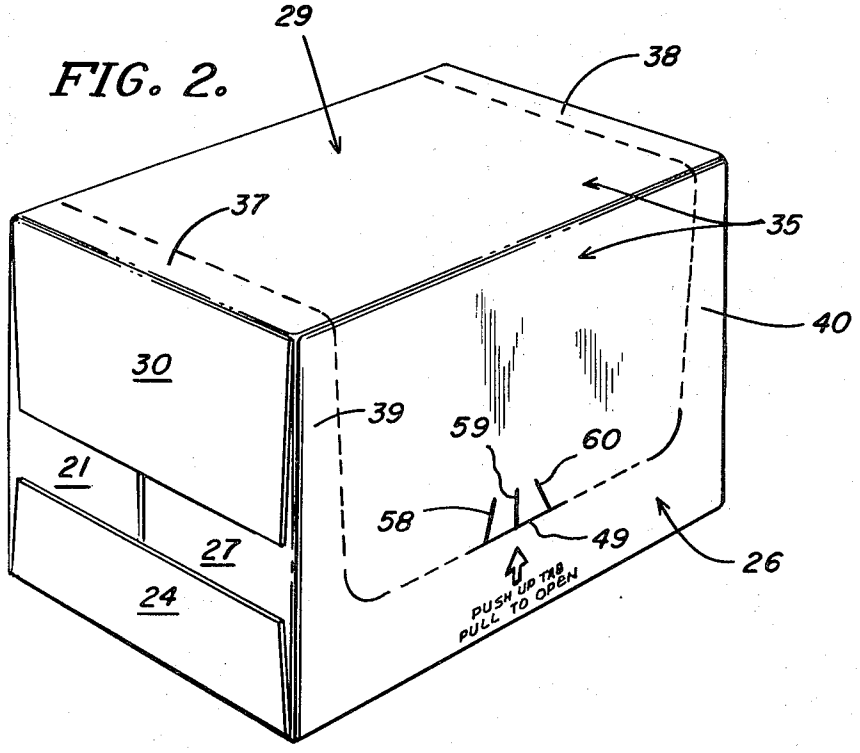

29
38
37
35
40
30
39
59
60
21
58
49
27
26
24
PUSH UP TAB
PULL TO OPEN

FIG. 3.

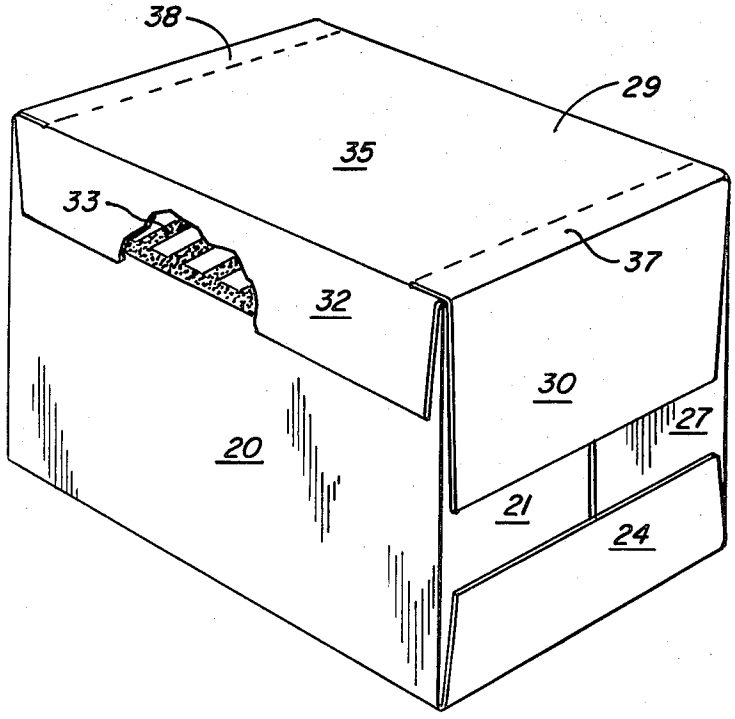


FIG. 5.

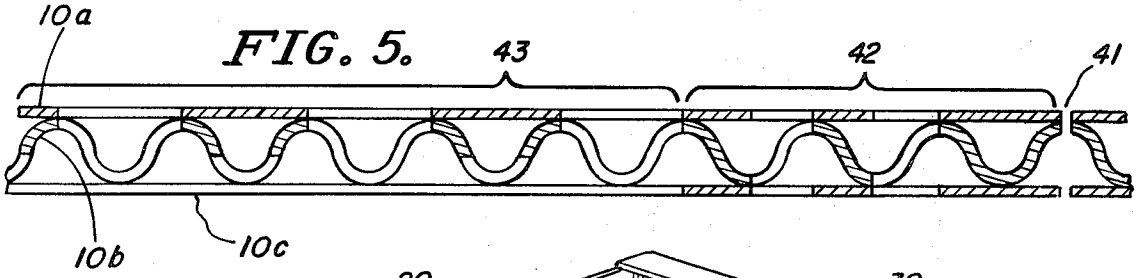


FIG. 4.

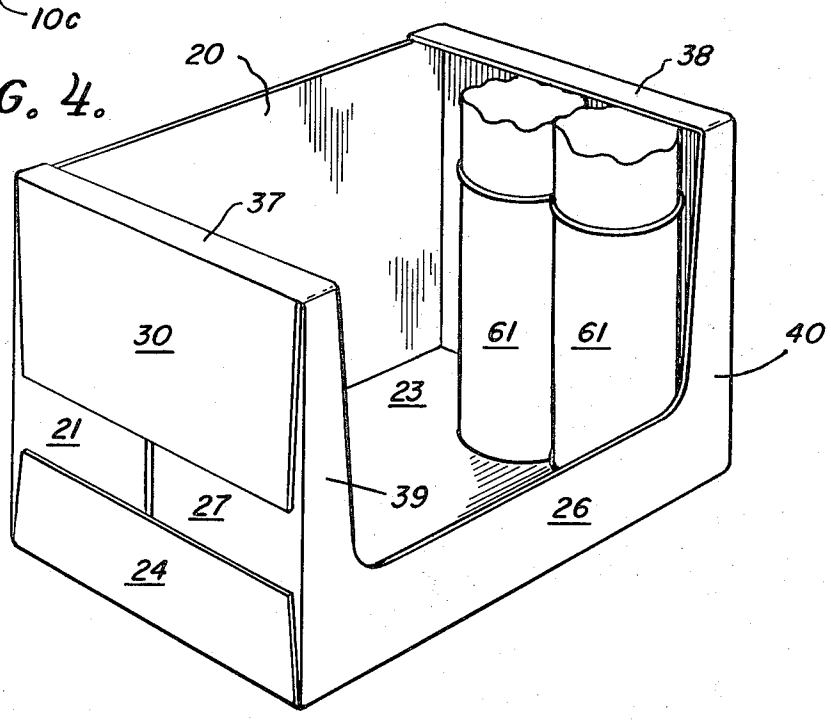
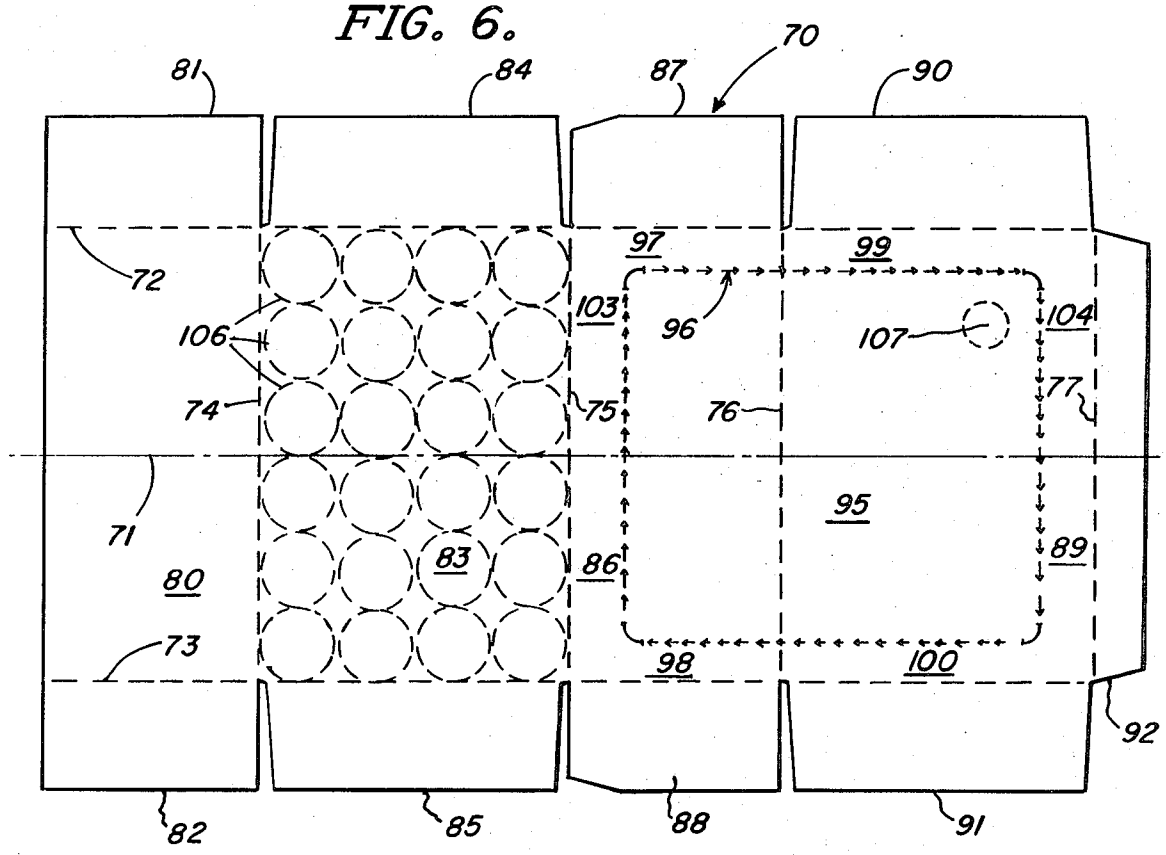


FIG. 6.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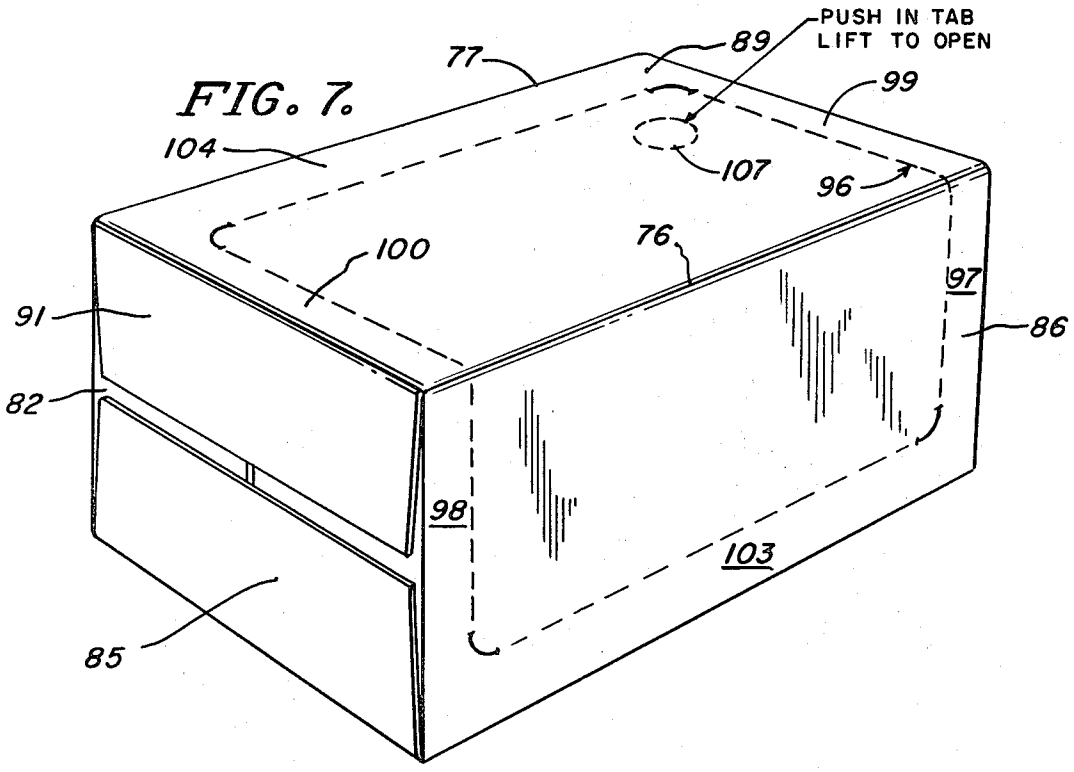
81
84
87
90
72
97
99
103
96
107
104
106
74
75
76
77
71
95
89
80
83
86
73
98
100
92
82
85
88
91

FIG. 7.


PUSH IN TAB
LIFT TO OPEN
77
89
99
104
107
96
100
76
97
86
91
82
98
103
85

SHIPPING AND DISPLAY CARTON AND BLANK THEREFOR

This is a continuation-in-part application of Richard G. Spiegel, Ser. No. 114,980 filed 02/12/71, and now abandoned.

THE INVENTION

This invention relates to the field of shipping and display containers, and more specifically to knock-down, set-up cartons formed from a one-piece blank, particularly designed to be folded into a safe container which is sufficiently sturdy for shipping purposes during which the carton may be stacked one upon the other, and at the same time is especially well adapted for quick easy conversion to an inexpensive article display and article dispensing enclosure for use with articles which are of comparatively limited horizontal space area, or slender articles having a relatively high center of gravity, which articles might easily topple from the container if not suitably confined.

Containers used for shipping articles, particularly when plural articles are to be enclosed in a single container, are preferably parallelepipedic in conformation to facilitate stacking the containers in transport vehicles. After reaching their destination, such as a retail establishment, it is often very desirable that the same container be usable to display the articles in attractive fashion, often in a mass display. Frequently it is the practice that free standing stacks of such containers are made available so that customers may serve themselves, and the container then also serves a dispensing function as well. This multiple use of cartons is not broadly new.

My invention constitutes an improvement in multi-purpose cartons for use with articles which are relatively tall compared with their base area, and which for attractive presentation or for other reasons must be displayed to potential customers in an upright position. This means that the display area must be tall, and also that the container must be so configured that even when converted to display use, it will resist the tendency of the articles displayed to topple from the container, while at the same time presenting them for maximum visual inspection and for easy removal.

Another controlling factor in the design of an efficient container that serves for both shipping and display purposes, which is also adapted for machine packing, which of course includes machine assembly of the carton itself. For this purpose it is desirable that the carton be formed of a single blank, and which, when opened for display purposes reveals clean non-ragged edges.

It is accordingly a principal object of the present invention to provide a new and improved one piece carton blank, and more especially to provide such a blank which can be readily formed into a rugged shipping container, and subsequently converted with ease into an efficient, attractive display enclosure for plural articles of relatively unstable equilibrium.

Another object of the invention is to provide a safe and relatively inexpensive shipping carton formed with an integral tear portion that can be easily removed and which is centered approximately in an area comprised of top and front body panels of the carton.

Another object is to provide a safe and relatively inexpensive shipping container formed with an integral tear portion that can be easily removed, leaving a clean and undisfigured edge and surface to the remainder of the container.

Various other objects, advantages, and features of novelty which characterize my invention are pointed out with particularity in the claims annexed hereto and forming a part hereof. However, for a better understanding of the invention, its advantages, and objects attained by its use, reference should be had to the drawing which forms a further part hereof, and to the accompanying descriptive matter, in which there is illustrated and described a preferred embodiment of the invention.

In the drawing:

FIG. **1** shows the carton blank of one embodiment in its unformed or undeveloped state;

FIGS. **2** and **3** show the blank formed into a shipping container;

FIG. **4** shows the shipping container converted to a display enclosure for articles within it;

FIG. **5** is a magnified section of the material or board forming the carton taken on the lines **5—5** of FIG. **1**;

FIG. **6** shows the blank in a modified form in its unformed or undeveloped phase; and

FIG. **7** shows the second blank of the modification formed into a shipping container.

As shown in FIG. **1**, my invention comprises a carton blank generally identified by the reference number **10**, and preferably made of double faced corrugated fiber board. The blank is symmetrical about a longitudinal axis identified by the broken line **11—11**, which may advantageously extend perpendicular to the grain of the material. The blank has first and second longitudinal fold-facilitating score lines **12** and **13** and a plurality of transverse fold-facilitating score lines **14, 15, 16** and **17**, by which it is divided into a back body panel **20** having transversely extending end tabs **21** and **22**, a bottom body panel **23** having transversely extending tabs **24** and **25**, a front body panel **26** having transversely extending end tabs **27** and **28**, a top body panel **29** having transversely extending end tabs **30** and **31**, and a closure tab **32**. At the opposite end of the blank there is a printed surface **33** which receives adhesive material and forms a separate layer between the adhesive and the adjacent surface of the fiber board, as will be discussed hereinafter.

A tear panel **35** extending longitudinally across the whole of panel **29** and most of panel **26**, and symmetrical about axis **11—11**, is defined by a tear-facilitating score line generally identified by the reference numeral **36**. The transverse extent of panel **35** is somewhat less than that of panels **29** and **26**, so that it defines marginal portions **37** and **38** in top panel **29**, and marginal portions **39** and **40** in front panel **26**.

For reasons presently to be explained, line **36** is not everywhere the same along its length, but consists of completely cut portions indicated by solid lines, perforated portions, indicated by lines with simple cross markings, and special portions combining perforations with superimposed cuts through half the thickness of the material, indicated by lines with double cross portions. By a perforated portion is meant a series of cuts or punchings closely spaced along the desired line and passing all the way through the material.

Line **36** will now be traced in detail. It begins with a completely cut portion **41** at one end of fold facilitating

line 17 between top panel 29 and the closure tab 32, then includes as partially seen in FIG. 5, a short perforated portion 42, a special portion 43, another perforated portion 44, a cut portion 45 crossing the fold facilitating line 16, and a perforated portion 46, all extending in a direction generally parallel to axis 11—11, to a completely cut corner 47. From corner 47, line 36 extends transversely of axis 11—11 as a perforated portion 48, a completely cut central portion 49 and a perforated portion 50 to a second completely cut corner 51, and thence parallel to axis 11—11 as a perforated portion 52, a completely cut portion 53 across line 16, a perforated portion 54, a special portion 55, and a perforated portion 56 to line 17, terminating as a completely cut portion 57 along line 17 to its end. Associated with completely cut portion 49 of line 36 are three further complete cuts 58, 59 and 60.

The blank just described may be produced in quantity by a suitably constructed die having cutting, creasing, perforating, and special rules suitably located and used in a suitable press. One such die has a base of 5/8 inch hard core maple plywood. The cutting rule is 0.937 inch beveled steel with 5/16 inch × 1/2 inch hard rubber glued to each side. The creasing rule for the fold-facilitating lines is a 0.900 inch steel rule. The perforating rule is 0.937 inch beveled steel rule, and the special rule is also 0.937 inch beveled steel rule, bevel ground to 0.918 inch every other 1/8 inch. Cutting is done from the inside of the blank. The material used was single walled corrugated fiber board (also known as double faced) i.e., one flat facing is glued to each side of the corrugated member. The material had a bursting strength of 200 pounds.

As shown on a magnified scale in FIG. 5, the board 10 is composed of the flat outer faces 10*a* and 10*c* glued to the opposite sides of the corrugated center portion 10*b*. This figure shows the three different characteristics of the tear line 36. At the right of the figure, the completely cut portion 41 is shown, which obviously offers no resistance. The special portion 43 is shown at the left of the figure; here the lower face 10*c* of the board is completely cut and the cut extends partially through the center portion 10*b*, while the upper face 10*a* has spaced perforations giving some strength to that part of the tear line. The portion 42 at the right of the figure between portions 43 and 41 has perforations between which are interconnected portions of the three parts of the board which will give greater strength to that part of the tear line 36.

In use a blank 10 is placed in a suitable packaging machine, and the designated quantity of articles (here shown as tall cylinders 61) is deposited on bottom portion 23, as suggested by the dotted circles 62 in FIG. 1. The blank is folded along lines 14, 15, 16 and 17, to encircle the articles and closure tab 32 is secured to the printed surface 33 located at the upper edge of back panel 20 with a quick-setting adhesive. Tabs 21, 22, 27 and 28 are folded inwardly against the articles, and tabs 24, 25, 30 and 31 are then folded against tabs 21, 22, 27, and 28, and secured with the same adhesive. After the adhesive has set, the container and contents bear the appearance of the structure shown in FIG. 2, and is ready for storage or shipment.

When it is desired to display the articles in the carton, the retailer presses his fingers against the front panel 26, just above the cut portion 49, depressing the material forming the tabs defined by cuts 58–60, and inserts his fingers under the center of the tear panel 35. A steady outward and then upward pull on the tear strip separates the strip on either side of the cuts 58–60 along the portions 48, 50 and thence 46, 52 to the fold line 16 and thence through the perforated portions 44, 54. As the action continues, the length of the tear strip increases and the tendency to roughly tear the outer layer of the fiber board would increase; however, at this point the special cut portions 43 and 55 of the score line come into play and the separation across the top panel 17 is clean or precise to the fully cut portions 41 and 57. At this point, the lifting action is exerted wholly upon the closure tab 32 that is held by adhesive to the printed portion 33 of the back body panel 20. Since the ink of the printed portion 33 is between the inner surface of the tab 32 and the outer surface of the back panel 20, the break or separation occurs between these two surfaces, so that under the impetus of the lifting pull, the closure tab 32 will cleanly separate from the back panel 20, exposing the contents of the container 10 as seen in FIG. 4. The provision of the marginal portions 37, 38, 39 and 40 add materially to the usefulness of the carton by providing a degree of reinforcement to the lateral portions of the open carton. Moreover, these portions also act to prevent the contents of the carton, here shown as tall cylindrical containers, such as aerosol hair spray containers, from toppling out of the carton.

One of the major requirements of a display carton is attractiveness and neatness. I have found that the use of complete cuts at corners 47 and 51, at the points 45 and 53 where line 36 crosses line 16, and at 41 and 57 where line 36 coincides with line 17, prevents the occurrence of ragged unsightly tears at these points, where they are otherwise specially prevalent. It has also been observed that in the normal opening process, the direction of application of force is such that while the simple perforation gives a clean separation along the front body portion 26, there is a tendency to raggedness along the top panel 29; use of the special portions of line 36 at 43 and 55 gives an improved appearance to the top of the dispenser without unduly weakening the carton for shipping purposes.

A second embodiment of the knock-down set-up carton is illustrated in FIGS. 6 and 7. FIG. 6 shows the knock-down carton blank 70 which is essentially spaced about a longitudinal center line 71 and thus is symmetrical about said center line. The blank has first and second longitudinal fold-facilitating score lines 72 and 73, and transverse fold-facilitating score lines 74, 75, 76 and 77 by which it is divided into a back body panel 80 having transversely extending end tabs 81 and 82, a bottom body panel 83 having transversely extending end tabs 84 and 85, a front body panel 86 having transversely extending end tabs 87 and 88, a top body panel 89 having transversely extending end tabs 90 and 91, and a carton closure tab 92.

A tear panel 95 is essentially centrally arranged within the adjoining panels 86, 89, and is also symmetrical about the center line 71. The tear panel 95 is defined by an endless tear facilitating score line generally identified by the reference numeral 96. The transverse extent of tear panel 95 is somewhat less than that of body panels 86 and 89 between score lines 72 and 73, so that the score line 96 and fold facilitating lines 72, 73, define marginal portions 97, 98, in front panel 86 and marginal portions 99, 100 in top panel 89. Mar-

ginal portions **103, 104** are respectively defined by the areas between tear score line **96** and fold score lines **75, 77.**

The score line **96** which defines the rectangular shaped tear panel **95** is not everywhere the same along its length, but consists of completely cut portions indicated by solid lines at the corners of the rectangle and perforated portions between the corners. By a perforated portion is meant a series of cuts or punchings closely spaced along the desired score line and passing all the way through the material. A completely cut portion consists of a continuous punching which penetrates through the carton blank to assist in making a clean tear-away of the panel **95.**

To assist in the desired removal of the tear panel **95,** a circular punch-out portion **107** defined by a circular perforating tear facilitating line is provided. The punch-out portion **107** is adjacent the marginal area **104** between tear-facilitating line **96** in the top panel **89** and adjacent to the transverse fold facilitating score-line **77.**

In use a carton blank **70** is placed in a suitable packaging machine, and the designated quantity of articles (here shown as cylinders **61**), which may be of any designated number, is deposited on the bottom body panel or second panel **83,** as represented by the dotted circles **106.**

The blank is folded along score lines **74, 75, 76** and **77** to encircle the articles **61.** Thereafter, carton closure tab **92** is secured to the upper exterior of the back panel **80** with a quick-setting adhesive. Transverse end tabs **81, 87,** are folded inwardly against the articles, and end tabs **84** and **90** are then folded against the tabs **81, 87,** and secured with the same adhesive. Similarly transverse tabs **82** and **88** are folded against the standing articles **61,** and then end tabs **85, 91** are folded against the tabs **82, 88,** and also secured thereto with the same adhesive. After the adhesive has set, the container and contents bear the appearance of the structure in FIG. **7,** and is ready for storage or shipment.

When the retailer receives the articles in the carton and desires to display the articles in the carton, he presses fingers against the punch-in tab **107,** depressing the material forming the tab. Thereafter, he inserts his fingers in the hole of panel **89,** resulting from the removal of tab **107.** A steady upward pull on the tear strip **95** separates the strip on either side from the margin portions **99, 100, 104** and the separation action continues across the fold line **76.** Thereafter an outward and downward action is applied across the fold line **76** and panel **86** to the horizontal bottom tear facilitating fold line shown in FIG. **7.**

The transverse marginal portions **103, 104** of panels **86, 89,** between the tear panel **95** and the transverse fold lines **75, 77,** along with the longitudinal margin portions **97, 98, 99** and **100** following removal of panel **95** serve to strengthen the end walls of the carton. One end wall of the carton comprises marginal end tabs **82, 85, 88** and **91.** By providing the horizontal structural members **103, 104,** which tie in with margin members **98, 100,** secured to end tabs **88, 91,** an end is reinforced and thereby opposes lateral movement, thereby tending to maintain the shape of the set-up cartons following removal of the tear panel for display purposes.

Numerous objects and advantages of my invention have been set forth in the foregoing description, together with details of the structure and function of the invention, and the novelty thereof is pointed out in the appended claims. The disclosure, however, is illustrative only and changes may be made in detail, especially in matters of shape, size and arrangement of parts, within the principle of the invention, to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

I claim as my invention:

1. A carton blank symmetrically arranged on a longitudinal axis and having impressed thereon longitudinal and transverse-fold facilitating score lines parallel and perpendicular respectively to the center line or longitudinal axis of the carton blank thereby defining in sequence a first, back body panel, a second, bottom body panel, a third, front body panel, and a fourth, top body panel, all of said panels having transversely extending end flaps extending beyond the longitudinal fold facilitating score lines, a closure tab, and a tear panel, defined by an endless tear-facilitating scoreline, said tear panel having a smaller transverse extent than the portions of said body panels within the longitudinal fold facilitating score lines, said tear facilitating score line being symmetrical about said longitudinal axis and with an area extending into said third and fourth panels from the fold-facilitating line between the third and fourth panels.

2. A carton blank symmetrically arranged on a longitudinal axis or center line and having impressed therein longitudinal and transverse fold-facilitating score lines parallel and perpendicular respectively to the center line, said fold-facilitating score line defining in sequence a first, back body panel, a second, bottom body panel, a third, front body panel, and a fourth, top body panel, all of said panels having transversely extending end flaps, a closure tab, and a tear panel defined by a tear-facilitating score line, the tear panel being smaller in transverse extent than the portions of said body panels between the longitudinal fold facilitating score lines, said tear panel being symmetrical about said center line and with an area composed of adjacent portions of said third and fourth panels on opposite sides of the fold facilitating score line between said third and fourth panels.

3. A carton blank symmetrically arranged on a longitudinal axis and having longitudinal and transverse fold-facilitating score lines defining in sequence a first, back body panel, a second, bottom body panel, a third, front body panel, and a fourth, top body panel all having transversely extending end flaps, and a closure tab; and a tear panel, of smaller transverse extent than said body panels, symmetrical about said axis and extending across the entire fourth panel and a greater portion of the third panel, said tear panel being defined by a tear-facilitating score line extending, from the score line between said closure tab and said top panel, axially across said fourth panel, the score line between said fourth and third panels, and the major portion of said third panel to a first corner, thence transversely across said third panel to a second corner, and thence axially across said third panel, the score line between said third and fourth panels and said fourth panel to the score line between said fourth panel and said closure tab.

4. The invention defined by claim **3,** together with means in said tear panel adjacent to said tear-

facilitating score line and between said corners, for facilitating initiation of the tear.

5. The invention of claim **3,** in which said tear-facilitating score line is for the most part perforated, but is a continuous cut at each of said corners.

6. The invention of claim **3,** in which said tear-facilitating score line is for the most part perforated, but is continuous across the intersection thereof with the score line between said third and fourth body panels.

7. The invention of claim **3,** in which the score line between said fourth panel and said closure tab includes completely cut end portions extending towards said axis as far as said tear-facilitating score line.

8. The invention of claim **3,** in which the portion of said tear-facilitating score line extending across said fourth body panel combines through-perforations with a continuous cut of a portion of the thickness of said blank.

9. In a carton having a front panel, a top panel, a back panel, and a closure tab for securing the back of the top panel to the top of said back panel, a tear panel defined by a first tear-facilitating line extending horizontally across said front panel and a pair of further tear-facilitating lines extending upward from the opposite ends of the first line to the upper limit of said front panel and thence across the entire top panel to its intersection with the back panel, and means coacting between said back panel and said closure tab for facilitating neat removal of said closure tab with said tear panel.

10. The invention according to claim **9,** in which said pair of further tear-facilitating lines are less resistant to tearing across said top panel than they are across said front panel.

11. A carton blank symmetrically arranged on opposite sides of a longitudinal axis or center line and having both longitudinal and transverse fold-facilitating score lines which define in sequence a first, back body panel; a second, bottom body panel; a third, front body panel; and a fourth, top body panel; all panels having transversely extending end flaps; a closure tab; and a tear panel, defined by a tear facilitating score line, with smaller transverse extent than that of said body panels between the longitudinal fold facilitating score lines, and centered within said third and fourth body panels about said center line, said tear panel being defined by a tear-facilitating score line extending in part the width of the tear panel transversely in the fourth body panel at a position short of the score facilitating line between said closure tab and said fourth or top body panel, the tear panel being further defined by a pair of longitudinal lines from the ends of the transverse tear lines that extend in the direction of the center line across the remainder of said top body panel, then across the fold facilitating score line between said fourth and third body panels and longitudinally across the major portion of the third panel, and the ends of the longitudinally extending tear lines thence being connected by a tear line transversely of said third panel.

12. The invention defined by claim **11,** together with means in said tear panel adjacent the transverse tear-facilitating line in said fourth panel, for facilitating initiation of the tear.

* * * * *