

Nov. 1, 1966

R. A. COTE

3,282,410

CARTON

Filed March 2, 1965

2 Sheets-Sheet 1

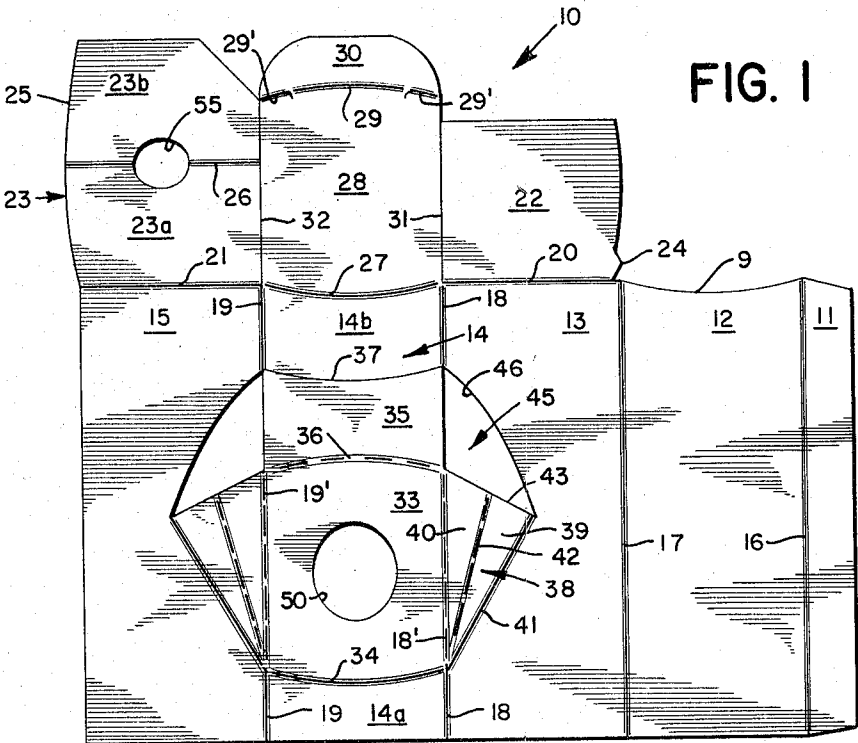


FIG. 1

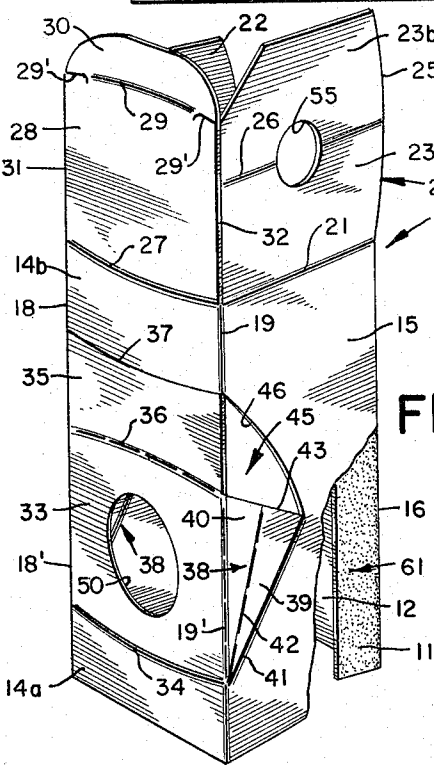


FIG. 2

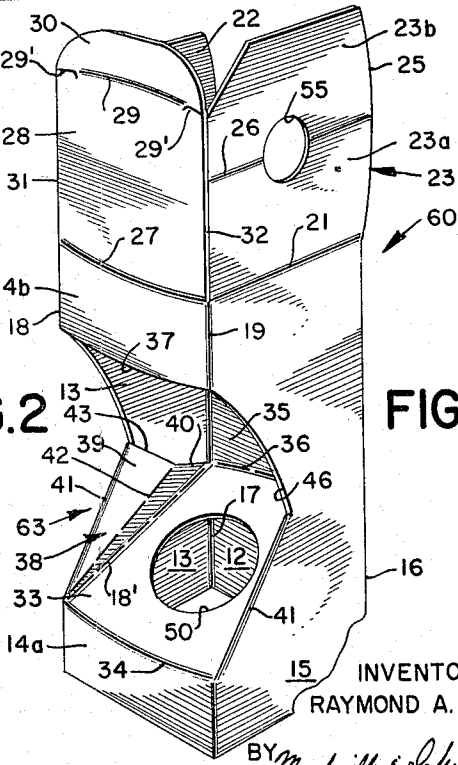


FIG. 3

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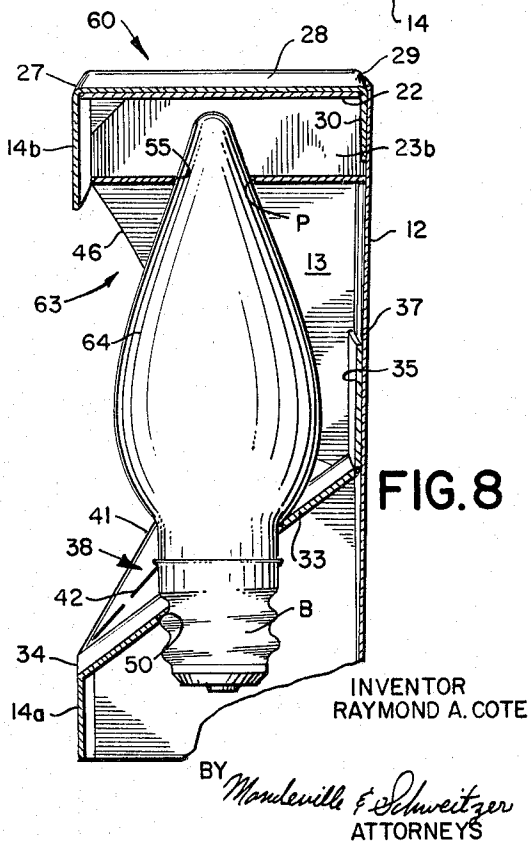
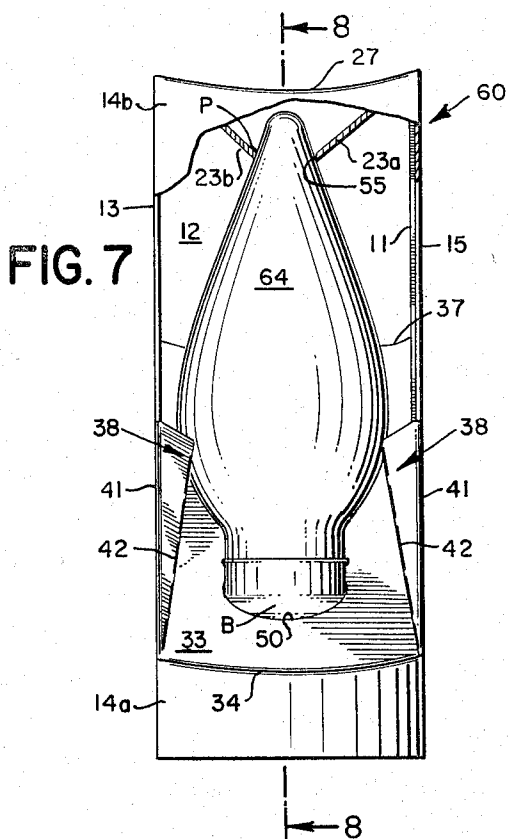
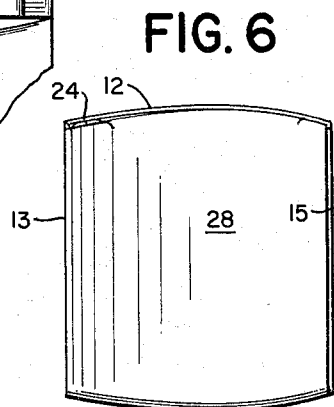
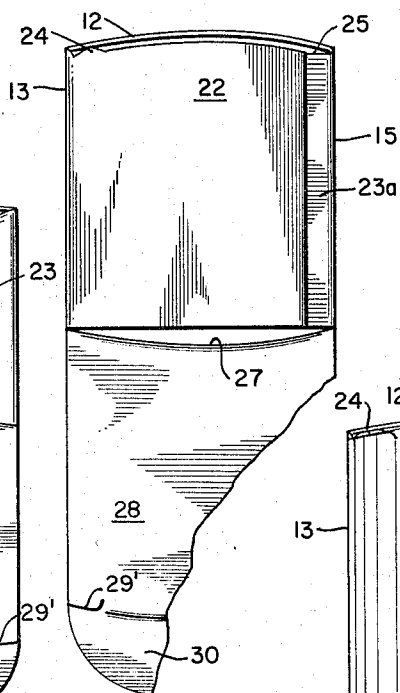
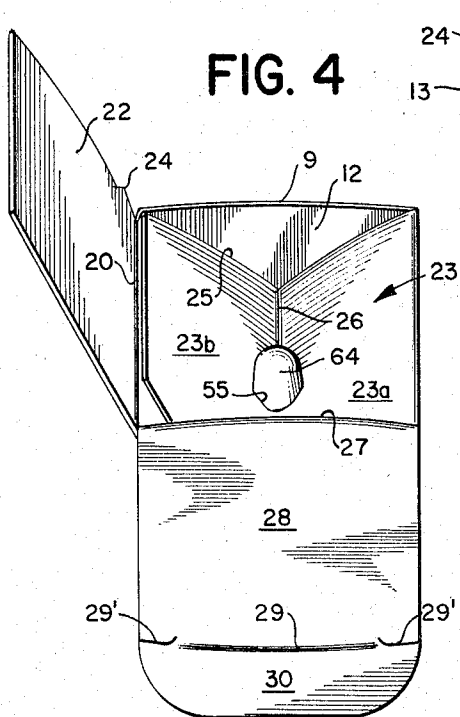
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3,282,410  
CARTON

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10 Claims. (Cl. 206—45.14)

The present invention relates to the packaging of light bulbs and more particularly to one-piece paperboard cartons adapted especially for, although not necessarily limited to, tapered or so-called flame-shaped light bulbs.

In the packaging of flame-shaped light bulbs and like fragile articles having special configurations and special decorative end uses, the carton employed should possess certain characteristics adapted to promote the display, protection, and a salability of the packaged product. That is to say, an acceptable carton for decorative light bulbs, which are ordinarily purchased in lieu of more conventionally shaped bulbs because of their unique appearance, should provide substantial display of the shape of the bulb. Additionally, and of equal importance, the carton structure must provide substantial and reliable support and cushioning of the fragile light bulb to protect it adequately from breakage during shipment or storage. Moreover, the carton, itself, should have an attractive and distinctive appearance to enhance the sales appeal of the contained product. Conventional light bulb cartons have not adequately satisfied the aforementioned requisites for a commercially acceptable carton for packaging flame-shaped light bulbs.

The new and improved carton of the present invention incorporates a construction, which provides unusually great product display in an especially attractive carton, while at the same time providing maximum cushioning and a safe support for the fragile contents. Specifically and in accordance with the inventive principles, the new carton is erected from a collapsed tube formed from a one-piece paperboard blank. When squared, the tube defines an open-bottomed sleeve which includes a new and improved bulb supporting structure, the erection of which provides what is perhaps best characterized as a "wrap-around" window extending across the front wall and into each of the side walls of the sleeve. More specifically, intermediate portions are folded inwardly from the planes of the sleeve walls to form a suspended platform for engaging the base of a flame-shaped light bulb. Additional support of the flame-shaped light bulb is provided by a resilient V-shaped, apertured flap which is suspended from the top of the tubular sleeve.

In accordance with a more specific aspect of the invention, the carton is given an attractive appearance as well as improved rigidity by outwardly bowing the sleeve walls into convex shapes and by providing a top-closing structure which is inwardly bowed into a concave shape.

For a more complete understanding of the invention and its attendant advantages, reference should be made to the following detailed description and to the accompanying drawings, in which:

FIG. 1 is a plan view of a one-piece blank from which the carton of the invention may be formed;

FIG. 2 is a perspective view of a squared carton tube embodying the principles of the invention;

FIG. 3 is a perspective view of the carton of FIG. 2 illustrating the formation of the new and improved platform and the wrap-around window;

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FIGS. 4-6 are plan views of the carton of FIG. 2 showing its new and improved top structure in consecutive stages of completion;

FIG. 7 is a front-elevational view of the new carton and a packaged flame-shaped light bulb, with portions broken away to show details of construction; and

FIG. 8 is a cross-sectional view of the carton and bulb of FIG. 7 taken along line 8—8 thereof.

Referring to the drawings and particularly to FIG. 1 thereof, a one-piece paperboard blank 10, from which the carton of the invention may be subsequently formed, includes consecutively articulated glue flap 11, rear wall 12, first side wall 13, front wall 14, and second side wall 15 panels hinged, respectively, on parallel longitudinally extending score lines 16-19. As shown, all of the panels are of equal width and the front wall panel includes lower and upper portions 14a, 14b, respectively. Hinged to the top of the first and second side wall panels 13, 15 along transverse score lines 20, 21, respectively, are a top-closing flap 22 and a bulb-engaging flap 23. A transverse score line 26 divides the bulb-engaging flap 23 into right and left portions 23a and 23b, respectively. In accordance with the principles of the invention, the width of at least one of the last-mentioned flaps is greater than the width of the side walls 13, 15. In the illustrated arrangement, the flap 23 is of greater width than the side walls, by reason of an arcuate, outwardly projecting camming edge 25. The flap 22, in such case, need not be wider than the side walls 13, 15, but advantageously is provided adjacent its connected edge with a projecting cover locking tab or edge 24.

As shown clearly in FIG. 1, the upper edge 9 of the rear wall 12 is arcuate and is similar in shape to that of the upper edge of the front wall 14, as defined by an arcuate score line 27 along which score line a cover panel 28 is articulated. The rear edge of the cover 28 is defined by an arcuate score line 29, of similar radius but opposite curvature to that of the score line 27, and by J-shaped cuts 29' and has a gradually tapered tuck flap 30 articulated thereto along the score line 29. The cover panel 28 is bounded by and separated from the adjacent flaps 22, 23 by cuts 31, 32, respectively, which are colinear with the score lines 18, 19.

In accordance with the principles of the invention, the supporting structure for the flame-shaped bulb includes a platform panel 33 of full carton width, as defined by weakened line segments 18', 19' of alternate cuts and scores, which panel is hinged to the upper edge of the lower front wall portion 14a along a downwardly bowed arcuate score line 34 similar in shape to the curved upper edge 27 of the front wall. The platform panel 33 has a platform assembly flap 35 hinged thereto along an upwardly bowed, arcuate line of weakness 36 defined by alternate cuts and scores and somewhat similar in shape to the score line 29. A downwardly bowed, arcuate cut 37, similar in shape to the score lines 27, 34, defines both the lower edge of an upper front wall portion 14b and the outboard edge of the platform flap 35.

As a specific aspect of the invention, a reversible bellows structure 38, including adjacent triangular flaps 39, 40, is included in each of the side walls 13, 15. As shown in FIG. 1, each of the bellows structures 38 is hinged to its associated side wall along an oblique score line 41 extending outwardly from the ends of the score line 34. A more acutely disposed hinge line 42 of alternate cuts and scores extends from the free edge 43 of the bellows

structure, toward the intersection of lines 18' and 41, but terminating somewhat short thereof.

The blank 10 also includes cutout window portions 45 in the side walls 13, 15 which portions are bounded by the edges of the flap 35, the edges 43 of the bellows structures, and cuts 46 extending from the lower corners of the upper front wall panel 14b to the upper ends of the score lines 41. In accordance with the invention and as will be developed more fully hereinafter, the window portions 45 constitute part of a "wrap-around" window formed when the platform structure 33 and the bellows structures 38 are folded inwardly from the planes of the carton front and side walls.

As shown, the platform panel 33 includes a lower, generally circular bulb-engaging aperture 50, while a smaller but similarly shaped upper bulb-engaging aperture 55 is included symmetrically about the score line 26 in the flap 23. It will be appreciated that the shapes and sizes of the apertures 50, 55, as well as the proportioning of other elements of the carton may be appropriately modified to conform to the specific shape of the contents to be packaged.

The carton 60 of the present invention may be simply and expeditiously erected by first forming a flat tube by adhering the glue flap 11 by adhesive 61 or other suitable means to the free edge of the side wall 15 to form conventionally a flattened carton tube. This operation, of course, requires the folding of the carton blank 10 along at least two of the longitudinal score lines 16-19. As will be understood, the so-formed flattened or collapsed tube may be economically stored in a minimum of space for later erection and filling.

Completion of the new and improved carton of the invention may be simply effected by first squaring the carton tube, as shown in FIG. 2, to form an open tubular sleeve 62 of square cross section. Thereafter, the platform panel 33 may be placed in its operative bulb-engaging position by pivoting it inwardly of the carton along the hinge 34, to suspend it from the sidewalls by means of the reversible bellows structures 38 (FIG. 3). As shown, the platform 33 is of a length greater than the depth of the carton, as defined by the widths of the side walls, and therefore will bear against the rear wall 12 in a normal, canted position along the line of weakness 36, while the platform flap 35 will assume a free, face-to-face contact with the rear wall. As a specific aspect of the invention, the geometry of the bellows structures 38 is predetermined to ensure that they are resilient and not fully expanded when the platform panel 33 is in the erected position of FIG. 3. Therefore, the bellows 38 may be further expanded to accommodate slight deflections of the platform panel 33, and they will possess sufficiently resilience to cushion the supported bulb.

The completion of the top structure of the carton is accomplished by downwardly and inwardly folding the top flap 23 in a manner such that it assumes a V-shaped cross section substantially as shown in FIGS. 4 and 7. In accordance with the principles of the invention, the camming edge 25 of the flap 23 acting against the rear wall 12 of the tube will tend to bow the same, outwardly. Thereafter, the top flap 22 may be inwardly folded (FIG. 5), before the top of the carton is finally closed (FIG. 6) by folding the cover 28 and inserting the self-locking tuck flap 30 in sandwiched relation between the rear wall 12 and the camming edge of the flap 23. During the operation, the locking edge 24 of the flap 22 will be automatically forced into the J-shaped cut 29' and will tend to maintain the tuck flap in its tucked position, thus holding the cover 28 closed.

In accordance with the invention and as a result of folding the paperboard along the oppositely curved score lines 27, 29, the cover will assume a concave profile and will cause the bowing out of the front and rear walls. Similarly, the inward folding of the platform 33 along the curved score line 34 will cause the lower portion 14a

of the front wall to be outwardly bowed. Thus, as clearly shown in FIGS. 6 and 7, the completely erected carton has an attractive appearance enhanced by the outwardly bulging or convex front and rear walls and the inwardly bulging, concave top cover. It should further be understood that the overall rigidity and crush resistance of the carton 60 are considerably enhanced by the bowed configuration of the carton walls, in conjunction with the bracing effect of the platform 33.

In accordance with the inventive principles, the formation of the platform 33, in addition to providing cushioned support for the bulb and enhancing carton rigidity, provides a wrap-around window 63 extending completely across the front wall and into the side walls 13, 15. As discussed hereinabove, the manner of suspension of the platform 33 along the hinge line 34 by the bellows structures 38 is such that it has predetermined inherent resilience sufficient to accommodate slight displacement thereof. Similarly, the V-shaped upper bulb-engaging flap 23, by nature of its structure, has an inherent resilience sufficient to accommodate predetermined displacement.

The aforementioned resiliences of the platform 33 and the flap 23 are of extreme importance in one contemplated mode of packaging flame-shaped light bulbs in which the carton 60 is first completely erected, as described. In this mode of packaging, a bulb 64 may be inserted through the window 63 of the erected carton 60 and pressed into cushioned, supporting engagement with the apertures 50, 55. As will be understood, the resiliences of the flap 23 and the platform 33 accommodate minor displacements in the loading of the carton while also causing the return of the flap 23 and platform 33 to their normal folded positions, illustrated in FIGS. 7 and 8, in which the tapered peak P and threaded base B of the bulb are firmly supported.

Alternatively, the bulb 64 may be packaged by inserting it through the open top end of the carton after the platform has been erected but before the top structure has been completed, the condition shown in FIGURE 3. With the base B embraced in the aperture 50, support of the bulb and formation of the top closure may be completed by folding the flap 23 into a V-shape with its aperture 55 embracing the peak of the bulb (FIG. 7) and thereafter folding the flap 22 and the cover 28, as described more fully hereinabove.

It will be appreciated that the new and improved carton of the invention provides many advantageous features in a relatively simple, but highly efficient, one piece construction. Specifically, through the utilization of a platform hinged to the front wall of a tubular sleeve and suspended by bellows structures from the side walls, a carton having both a substantial area of display, in the form of a wrap-around window and an increased resistance to crushing, may be economically provided. Furthermore, the cooperation of the new top structure, including an oversized, V-shaped bulb-engaging flap, with the platform provides reliable cushioning and support of flame-shaped light bulbs. Additionally, the strength of the carton and its appearance are greatly enhanced by providing convex front and rear walls and a concave cover.

The carton of the invention, in addition to providing good protection for its contents, is particularly advantageous in that it provides for an effective display of the packaged article through a large wrap-around window cutout. In accordance with the invention, a large window cutout may be provided without unduly comprising the carton strength by providing for a bowing and rigidifying of the carton walls.

While the present invention has been representatively described in terms of a specific, preferred embodiment especially well suited for packaging flame-shaped light bulbs, it is to be understood that certain variations and modifications thereof, within the scope of the inventive principles, will be apparent to those skilled in the art for packaging fragile articles of other shapes. According-

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ly, reference should be made to the following appended claims in determining the full scope of the invention.

1. A display carton for a fragile article erected from a one-piece paperboard blank, comprising

- (a) a rectangular tubular sleeve having consecutively articulated rear, first side, front, and second side walls, 5
- (b) said front wall having intermediate full width portions folded inwardly therefrom defining a window, 10
- (c) said side walls having edge portions adjacent said intermediate front wall portions removed therefrom to extend said window into said side walls,
- (d) said intermediate full width portions being hinged to said front wall and including a platform panel of greater than full carton depth bearing against said rear wall for limited movement relative thereto, 15
- (e) said side wall edge portions including bellows portions hinged between opposite sides of said platform panel and said side walls, and limiting the extent of hinging displacement of said platform to a predetermined sloped relation with respect to said rear wall, 20
- (f) said platform panel defining a first article-engaging aperture therein, and 25
- (g) an article-supporting flap articulated to an upper edge of said sleeve and defining a second article-engaging aperture therein.

2. The carton of claim 1, in which

- (a) a hinge line intersects said second aperture and divides said flap into first and second portions, 30
- (b) said front wall being divided into spaced upper folded from said first side wall and said second portion is upwardly and outwardly folded from said first portion into contact with said second side wall, 35
- (c) said article-supporting flap thereby having a substantially V-shaped cross section, and
- (d) said platform panel is hinged to said front wall along an arcuate line. 40

3. The carton of claim 1, in which

- (a) an assembly flap is articulated to said platform panel along a line of weakness,
- (b) said assembly flap is maintained in unlocked face-to-face contact with said rear wall, and 45
- (c) said bellows portions being connected to at least the rearmost edge portions of said platform panel and said bellows portions normally being less than fully expanded.

4. A package including a flame-shaped light bulb or the like and display carton therefor erected from a one-piece paperboard blank, comprising

- (a) an open bottom tubular sleeve having consecutively articulated rear, first side, front and second side walls, 50
- (b) said front wall being divided into spaced upper and lower portions with an intermediate platform panel of a length greater than full carton width hinged to said lower portion along an arcuate hinge line and defining an aperture therein whose edges supportingly engage lower portions of said bulb, 55
- (c) bellows means formed in each of said side walls and being connected with at least the rear edge portions of said platform panel, 60
- (d) said platform panel and bellows means being foldable inwardly of said tubular sleeve to define a window extending across the full width of said carton and into each of said side walls,
- (e) bulb engaging flap means of greater than full carton width articulate to the upper edge of one of said side walls and defining a second aperture therein whose edges supportingly engage upper portions of said bulb, 65
- (f) top flap means hinged to the upper edge of the other side wall, 70

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(g) cover means hinged to an upper edge of said sleeve and including a tuck flap,

(h) said bulb-engaging flap means being folded inwardly of said sleeve and engaging said other side wall, and

(i) means locking said cover in a sleeve-closing relation.

5. A blank for a carton for fragile articles or the like comprising

- (a) a paperboard sheet cut and scored to define four consecutively articulated wall panels and a glue flap,
- (b) said wall panels including a front wall having upper and lower portions, a rear wall, and a pair of side walls,
- (c) a platform panel hinged to said lower front wall portion along the upper edge thereof,
- (d) said upper edge of the lower front wall being defined by an arcuate score line of predetermined curvature adapted to bow said front wall outwardly upon the inward folding of said platform panel,
- (e) bellows panels disposed in each of said side walls and integrally hinged thereto along an oblique score line,
- (f) said bellows panels being hinged to said platform panel along vertical score lines extending from the corners of said lower front wall portion,
- (g) an article-engaging flap hinged to the upper edge of one of said wall panels, and
- (h) cover means hinged to the upper edge of one of said wall panels,
- (i) said article-engaging flaps and said platform each defining an article-engaging aperture therein.

6. A display carton for fragile, flame-shaped bulb articles and the like, comprising

- (a) a tubular sleeve including four consecutively articulated walls,
- (b) a first one of said walls being divided into upper and lower portions and defining a display window therebetween,
- (c) second and third walls immediately adjacent said first wall defining window portions contiguous with said display window,
- (d) article supporting means are disposed in association with said upper and lower first wall portions,
- (e) said article-supporting means including a platform of at least full carton width hingedly connected to one of said upper and lower wall portions,
- (f) normally less than fully expanded, resilient bellows means derived from and suspending said platform from said second and third walls and accommodating displacements of said platform along said fourth wall and providing a slight deflection of said platform panel to cushion said fragile article,

7. A display carton in accordance with claim 6, in which

- (a) said bellows means are connected to at least the rearmost edge portions of said platform panel.

8. A display carton in accordance with claim 6, in which

- (a) said platform is hinged to said lower first wall portions along an arcuate line of first predetermined weakness,
- (b) said bellows panels are articulated to said second and third walls along lines of first predetermined weakness, and
- (c) said bellows panels are articulated to said platform panel and to one another along weakened line segments of greater weakness than said first predetermined weakness.

9. A display carton in accordance with claim 6, in which

- (a) said bellows means comprises a pair of articulated panels which in said normally less than fully ex-

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panded condition are definitive of an angle substantially greater than 90° but less than 180°.

10. A display carton comprising

- (a) a tubular sleeve including four consecutively articulated walls, 5
- (b) a first one of said walls being divided into upper and lower portions and defining a display window therebetween,
- (c) second and third walls immediately adjacent said first wall defining window portions contiguous with said display window, 10
- (d) article supporting means disposed in association with said upper and lower first wall portions,
- (e) said article-supporting means including a platform of greater than full carton width hingedly connected to one of said upper and lower wall portions and arranged in a sloped relation with respect to said fourth wall, and 15
- (f) bellows means being connected to at least the rear-

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most edge portions of said platform and suspending said platform from said second and third walls.

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UNITED STATES PATENT OFFICE  
CERTIFICATE OF CORRECTION

Patent No. 3,282,410

November 1, 1966

Raymond A. Cote

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.

Column 3, line 52, for "sufficiently" read -- sufficient --; column 4, line 66, for "comprising" read -- compromising --; column 5, line 32, strike out "said front wal lbeing divided into spaced upper" read -- said first protion is downwardly and inwardly --; line 70, for "articulate dto" read -- articulated to --; column 6, line 32, for "flaps" read -- flap --; line 54, for "article," read -- article. --; column 8, line 11, for "2,845,135" read -- 2,854,135 --.

Signed and sealed this 5th day of September 1967.

(SEAL)  
Attest:

ERNEST W. SWIDER  
Attesting Officer

EDWARD J. BRENNER  
Commissioner of Patents