United States Patent [19]

Fischer et al.

[11] **3,820,707**

[45] **June 28, 1974**

[54] **LIGHT BULB PACKAGE**

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[52] **U.S. Cl.** ..... **229/39 B**, 206/46 FR

[51] **Int. Cl.** **B65d 5/02**

[58] **Field of Search** ..... 229/39 B, 14 C; 206/46 FR

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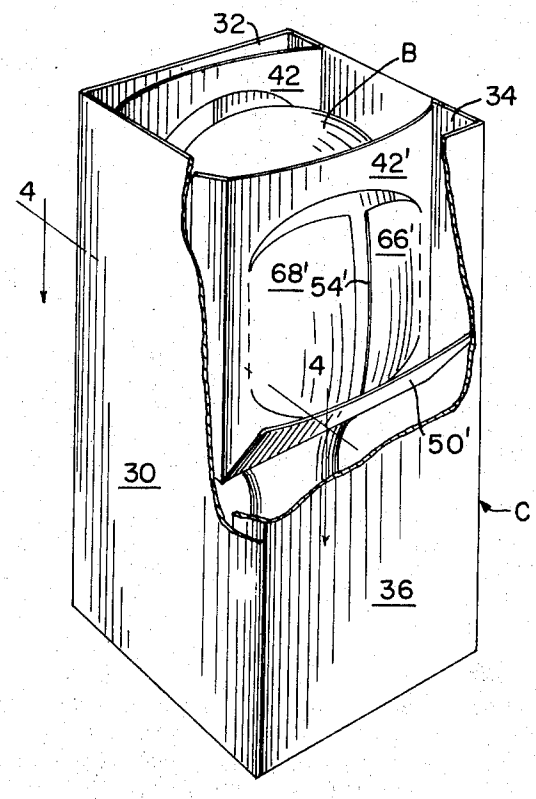
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Assistant Examiner—Stephen P. Garbe
Attorney, Agent, or Firm—Guy A. Greenawalt

[57] **ABSTRACT**

A package for an electric light bulb or similar article which comprises a collapsible open-ended tubular carton of square cross section and formed of paperboard or similar sheet material having a foldable internal partition structure in one end thereof which is characterized by a pair of parallel wall panels spaced inwardly from oppositely disposed side walls of the carton and having pairs of hinged panels cut therein which resiliently grip the body portion of a light bulb when it is positioned between the inner wall panels with portions thereof seated in the openings which result from cutting the hinged body gripping panels therein.

6 Claims, 15 Drawing Figures



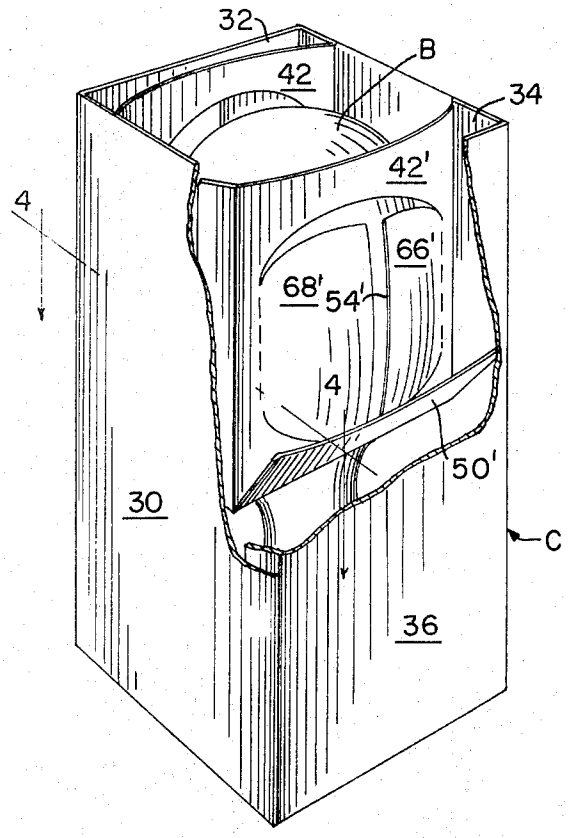


FIG. 1

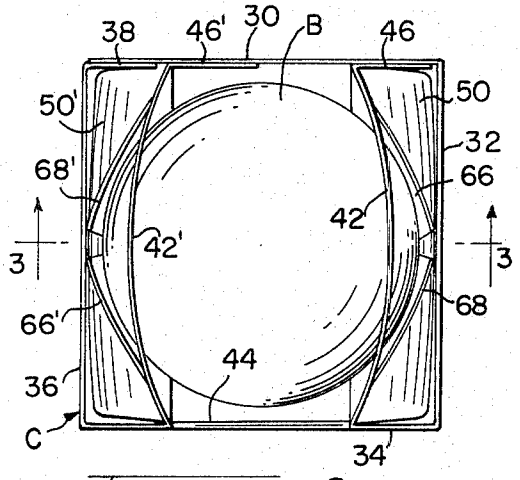


FIG. 2

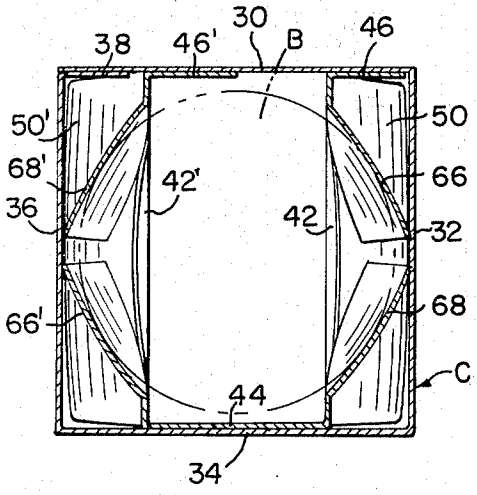


FIG. 4

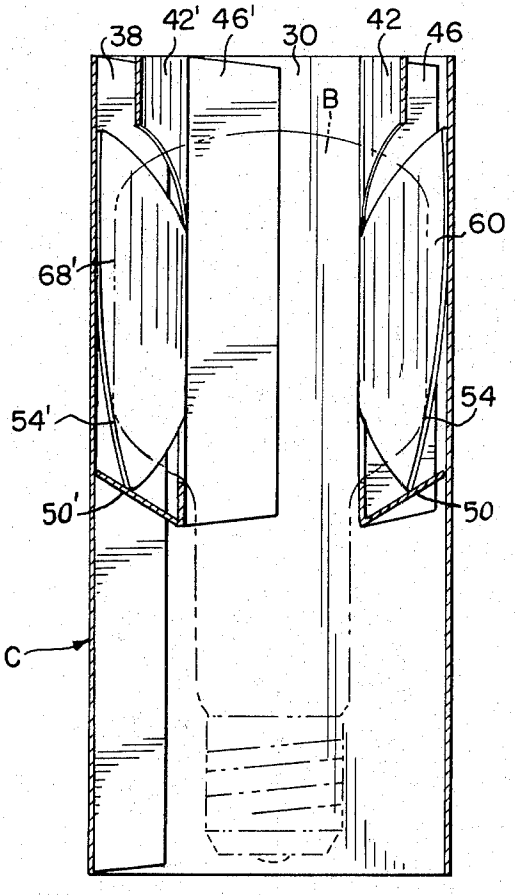


FIG. 3

FIG. 5

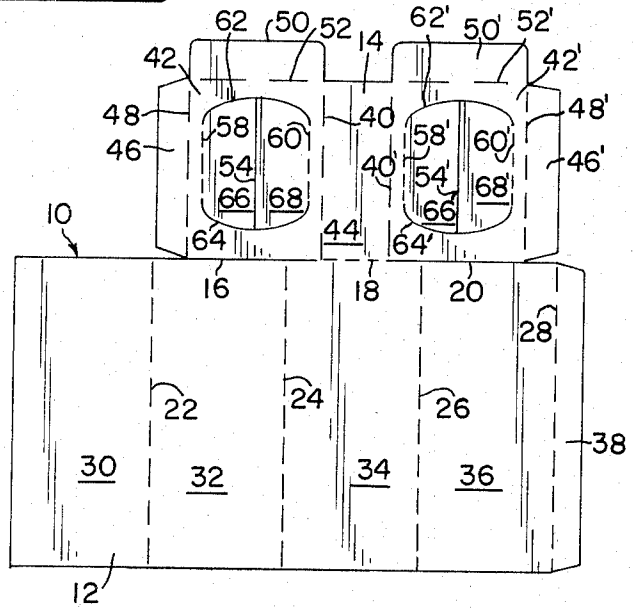
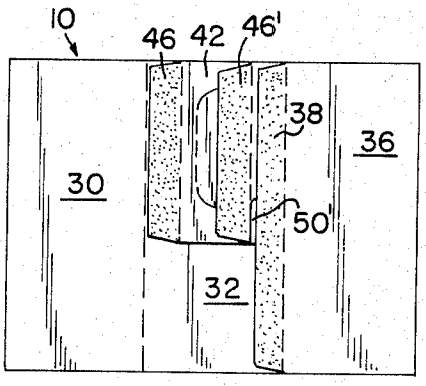


FIG. 8



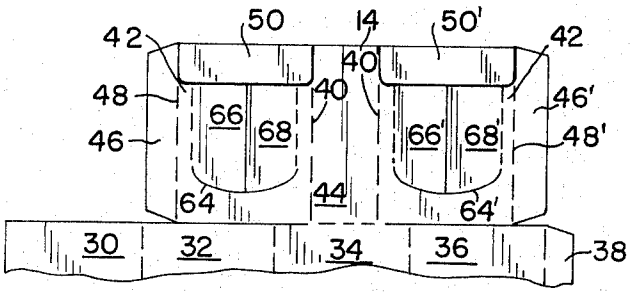
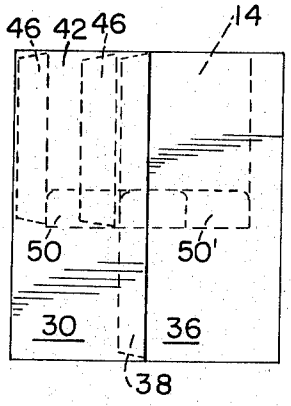


FIG. 6

FIG. 9



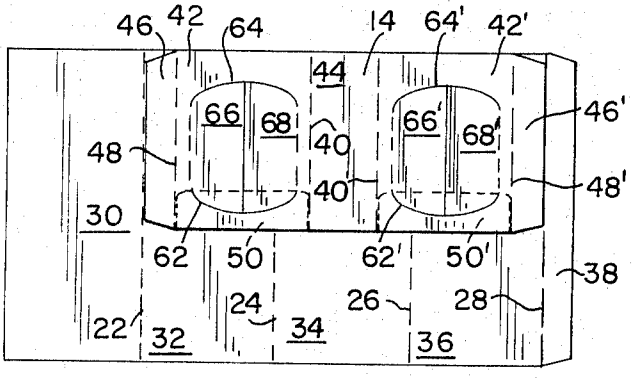


FIG. 7

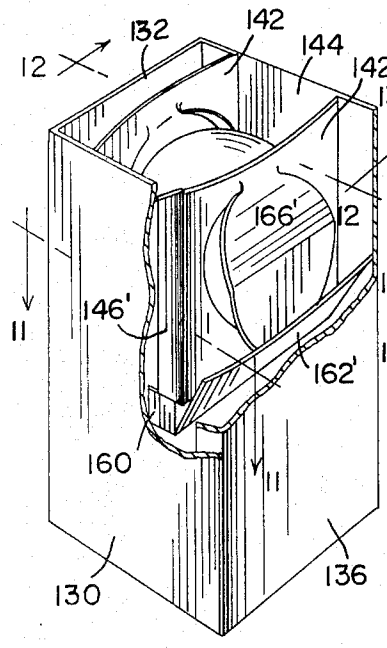


FIG. 10

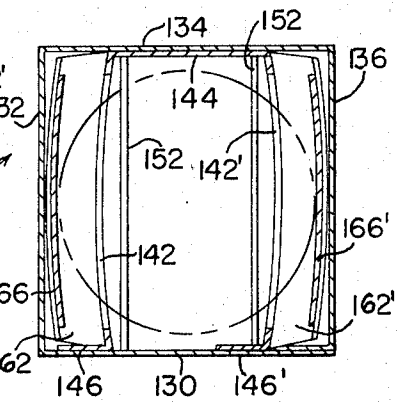


FIG. 11

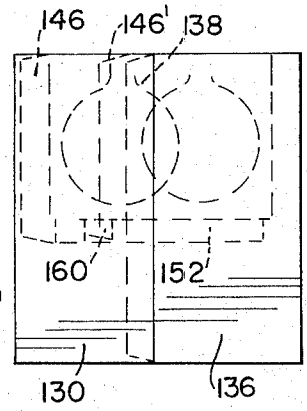


FIG. 15

FIG. 14

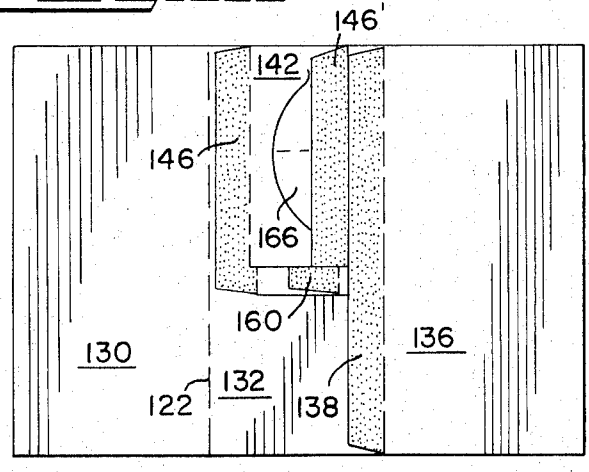


FIG. 13

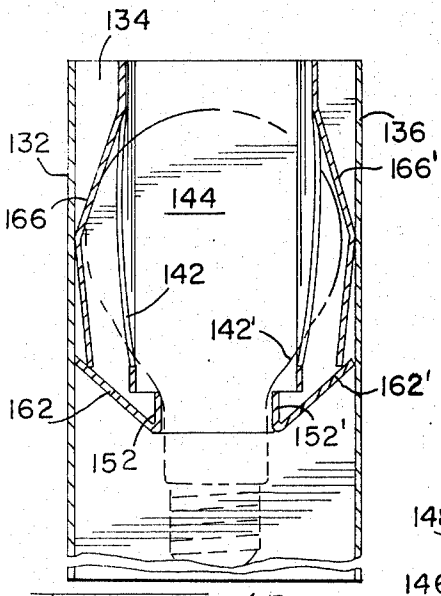
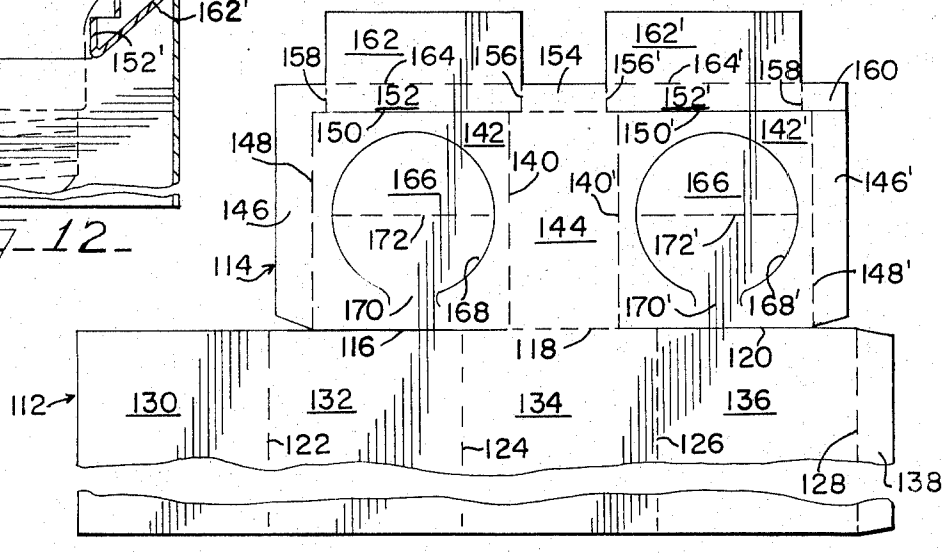


FIG. 12



LIGHT BULB PACKAGE

This invention relates to packaging and is more particularly concerned with improvements in a carton structure for packaging electric light bulbs or similar articles.

Packages have heretofore been designed for use in the marketing of bulbous articles, such as electric light bulbs, which are relatively fragile and which require protection so as to facilitate handling and display with minimum risk of breakage. Prior package arrangements provided for articles of this type have generally had a tubular configuration with some means for supporting the article within the tubular shell and for gripping the bulbous portion so as to retain the article in the tubular container. Generally, these prior packages have been of a non-collapsible type and with insufficient protection against possible breakage under normal handling conditions. It is a general object, therefore, of the present invention to provide a package structure for light bulbs, or the like, which affords greater protection against possible damage to the article when handling the package, which is economical to manufacture, and which embodies a carton structure requiring minimum operations for set up and loading.

A more specific object of the invention is to provide a package structure for electric light bulbs or similar articles of a relatively fragile nature wherein an outer open ended tubular carton is provided with an internal partition structure for suspending the article therein so that the end of the article is visible through the open end of the outer container.

It is a still more specific object of the invention to provide a package structure for an article such as an electric light bulb, wherein an outer tubular sleeve structure is provided with inner cross partition walls which are separated from each other and spaced from oppositely disposed outer walls of the tube, which inner walls are apertured so as to provide openings for seating therein a bulbous portion of the article being packaged.

Another object of the invention is to provide a container for packaging electric light bulbs or similar articles wherein an outer collapsible tubular carton member of square cross section is provided with inner article engaging partition walls or panels which are spaced from oppositely disposed outer walls of the tube and which have cut therein pairs of article engaging panels which are adapted to hinge outwardly so as to enable bulbous portions of the article to be seated in the openings resulting from cutting the hinged article engaging panels therein.

A still further object of the invention is to provide a package structure for an electric light bulb or similar article which comprises an outer open ended tubular container or carton member of foldable sheet material having cross partition forming panels mounted therein in spaced relation to oppositely disposed side wall panels of the outer container and the panels having cut therein pairs of bulb engaging panel members which hinge outwardly when the bulb is inserted through the open end of the outer container and portions of the bulb walls are seated in the openings in the cross partition panels which result from cutting the bulb engaging panels therein.

Still another object of the invention is to provide a collapsible, tubular, open ended container structure for packaging an electric light bulb, or the like, which has mounted therein a pair of spaced inner cross wall forming panels with hinged door forming panels cut therein which engage the opposite side walls of a bulb when it is positioned in the container with portions seated in the openings provided in the inner cross wall forming panels by cutting the door forming panel elements therein and wherein the cross wall forming panels have associated end panels which open up when the outer container is squared up and assume a position between the inner and outer panels which tends to hold the outer container in squared up condition.

These and other objects and advantages will be apparent from a consideration of the package structure and the method of forming the same which is shown by way of illustration in the accompanying drawings wherein:

FIG. **1** is a perspective view of a package which embodies therein the principal features of the invention, the package having portions of the outer walls broken away to show more clearly the manner in which an electric light bulb is supported therein;

FIG. **2** is a top plan view of the package of FIG. **1**;

FIG. **3** is a vertical sectional view taken on the line **3—3** of FIG. **2**;

FIG. **4** is a cross sectional view taken on the line **4—4** of FIG. **1**;

FIG. **5** is a plan view showing the inside face of a paperboard blank which is cut and scored preparatory to forming the container shown in FIGS. **1** to **4**;

FIG. **6** is a fragmentary plan view showing the initial folding step in fabricating the container;

FIG. **7** is a plan view illustrating a further folding step in the handling of the blank of FIG. **5**;

FIG. **8** is a plan view illustrating a still further folding operation and also the application of an adhesive to certain of the panels preparatory to completing the fabrication of the container;

FIG. **9** is a plan view illustrating the completed container in collapsed condition;

FIG. **10** is a perspective view of a modified form of the package, with portions of the outer walls of the container broken away to show the manner in which an electric light bulb is supported therein;

FIG. **11** is a sectional view of the package of FIG. **1**, the view being taken on line **11—11** of FIG. **1**;

FIG. **12** is a vertical sectional view taken on the line **12—12** of FIG. **1**;

FIG. **13** is a partial plan view showing the inside face of a paperboard blank which is cut and scored preparatory to forming the container shown in FIGS. **10** to **12**;

FIG. **14** is a fragmentary plan view showing the portions of the blank of FIG. **13** following certain folding and adhesive applying steps which are executed in fabricating the container; and

FIG. **15** is a plan view illustrating the completed container of FIG. **10** in collapsed condition.

The fabrication of the package, which is shown in FIG. **1**, will be best understood by referring first to the blank **10**, which is illustrated in FIG. **5**. The blank **10** is cut and scored, as shown, to enable it to be folded and glued so as to provide the collapsed container or carton C which is illustrated in FIG. **9** and which is

adapted to be opened up and receive a light bulb B to complete the package of FIG. **1.**

The blank **10** is formed from foldable sheet material, preferably paperboard stock, of suitable caliper or weight, or from any similar foldable sheet material. The blank **10** is divided into an outer tube forming section **12** and an inner article cushioning and supporting section **14** by cutting and scoring on the lines **16, 18, 20.** The middle section **18** is scored and may be perforated or otherwise weakened to facilitate folding in subsequent operations. The line portions **16** and **20** are cut to free the ends of section **14** for folding. The main section **12** of the blank **10** which is adapted to form an outer tubular container is subdivided by transverse score lines **22, 24, 26** and **28** to provide rectangular side wall forming panels **30, 32, 34** and **36** of equal size and a relatively narrow glue flap **38** at the one end of the blank.

The blank section **14** is subdivided by transverse score lines **40** and **40'** to provide two partition forming panels **42, 42'** of identical size and shape which are separated by an intermediate connecting panel **44** with the latter being hingedly connected to the side wall panel **34** of the main portion of the blank along the score line **18,** while the panels **42** and **42'** are freed from the main portion of the blank by the cutting lines **16** and **20.** The panels **42** and **42'** have relatively narrow glue panels or flaps **46, 46'** at opposite ends of the blank section **14** which are spearated therefrom by the hinge forming score lines **48** and **48'**. Relatively narrow panels or flaps **50** and **50'** extend along the outer margin of the panels **42** and **42'** and are separated therefrom by hinge lines **52, 52'**. The panels **42** and **42'** are cut on the transversely extending lines **54, 54'** which are spaced in the longitudinal drection of the blank so as to fall in the center of the panels **42, 42'** and which are equally spaced between pairs of transverse score lines **58, 60** and **58', 60'** with the cutting lines **54** and **54'** extending in the transverse direction between longituidnal, transversely spaced pairs of cutting lines **62, 64** and **62', 64',** the latter having a degree of curvature towards each other and extending between the ends of the hinge forming score lines **58, 60** and **58', 60'** so as to provide pairs of door-like panels **66, 68** and **66', 68'**. The dimensions of the panels **42** and **42'** in the longitudinal direction of the blank are approximately the same as the corresponding dimensions of the side wall forming panels **32** and **36.** The dimension of the panel **44** in the longitudinal direction of the blank **10** is substantially less than the corresponding dimension of the panel **34,** to the one end of which panel **44** is hinged.

In forming the container or carton C from the cut and scored blank **10** the small panels **50** and **50'** are first folded about the hinge lines **52, 52'** into overlying engagement with the panels **42** and **42'** as shown in FIG. **6** after which the blank section **14** is folded about the hinge line **18** into engagement with the inside face of the adjoining portion of the blank section **12** and overlying portions of the side wall forming panels **32, 34** and **36,** as shown in FIG. **7.** The panel **42'** may then be folded about the score line **40** and the panel **36** may be folded about the hinge line **26** so as to bring these panels into the position shown in FIG. **8** where they overlie the major portion of the panel **34.** An adhesive is then applied to the exposed faces of the flaps **46, 46'** and **38** after which the panel **30** is folded about the hinge line **22** to bring the margin thereof into engagement with the glue flap **38.** This completes the fabrication of the container in the collapsed condition, as shown in FIG. **9,** in which it is designed to be furnished to the user.

In forming the package, the collapsed container or carton C is opened up or squared up to the position shown in FIGS. **1** to **4** which brings the inner panels **42** and **42'** into parallel, spaced relation to the outer side wall panels **32** and **36,** whereupon the bulb B may be inserted through the open end of the outer container forming tube and positioned with oppositely disposed portions of the side wall of the bulb seated in the openings in the panels **42** and **42'** which result from cutting therein the hinged panels **66, 68** and **66', 68',** the diametrical dimension of the bulb portion being greater than the distance between the panels **42** and **42'** so as to force the pairs of hinged panels **66, 68** and **66', 68'** outwardly, with the lower ends pushing the bottom panels **50, 50'** outwardly into the area between the panels **42** and **42'** and the confronting outer side wall panels **32** and **36.** The panels **50, 50'** tend to square up and hold in squared condition the tubular outer container.

A modified form of the package and a blank for fabricating the container therefor is illustrated in FIGS. **10** to **15.** In this form of the package the container is adapted to better accommodate an electric light bulb of the configuration illustrated in FIG. **12.** The cut and scored blank **110,** which is illustrated in FIG. **13,** is divided into an outer tube forming section **112** and an inner article cushioning and supporting section **114** by cutting on the lines **116, 120** and scoring on the line **118,** all of which are aligned longitudinally of the blank **110.**

The main section **112** of the blank **110** which is adapted to form the outer container or carton is subdivided, in the same manner as the corresponding blank section **12** in FIG. **5,** by transverse score lines **122, 124, 126** and **128** to provide rectangular side wall forming panels **130, 132, 134, 136** of equal size and a narrow glue flap **138** at one end of the blank.

The blank section **114** is subdivided in part by transverse score lines **140** and **140'** to provide two partition forming panels **142, 142'** of identical size and shape which are separated by an intermediate panel **144** with the latter hingedly connected to the one side wall panel **134** along the score line **118.** The panels **142** and **142'** are freed from the main portion **112** of the blank by the cutting lines **116** and **120.** The panels **142** and **142'** have narrow glue flaps **146, 146'** extending along opposite ends of the blank section **114** which are separated therefrom by the hinge forming score lines **148** and **148'**. Cutting lines **150** and **150'**, which are aligned longitudinally along the outer side margin of the blank section **114,** divide from the panels **142** and **142'** relatively narrow panels **152, 152'** which are separated in the longitudinal direction by an intermediate panel **154** extending between transverse score lines **156** and **156'**. The latter are spaced apart in the longitudinal direction of the blank a distance less than the corresponding dimension of the panel **144** of which the panel **154** forms an extension. The panels **152** and **152'** have the same dimension lengthwise of the blank as the panels **142** and **142'** and their remotely spaced ends terminate at transverse score lines **158** and **158'**, which are offset relative to the transverse score lines **148** and **148'** in the direction of the respective panels **152** and **152'**. The cutting line **150** extends between the outer end of

the transverse score line **148** and the inner end of the transverse score line **156** while the cutting line **150'** extends from the outer end of the transverse score line **140'** to the end edge of the blank section **114** so as to free the panel **152** for hinging on the score lines **158** and **156** and the panel **152'** for hinging on the score lines **156'** and **158'** and providing a glue tab portion **160** on the free end of the panel **152'**. Rectangular panels **162** and **162'** are provided on the outer side margin of the blank section **114** which are separated from the panels **152** and **152'** by hinge forming score lines **164** and **164'**. Generally circular panels **166** and **166'** are cut in the panels **142** and **142'** on circular cutting lines **168** and **168'** which are interrupted so as to allow for a hinge connection **170, 170'** with the respective panels, and each of the panels **166** and **166'** has a diametrical score line **172, 172'** to enable the panels to bend as indicated in FIGS. **10** and **12.**

The cut and scored blank **110** is provided with adhesive and folded in the same manner as the blank **10.** The panels **162, 162'** are first folded in over the panels **152, 152'** and the blank section **114** is folded about the score line **118.** The panels **142** and **152** are folded about the score lines **140'** and **156'** while the panel **136** is folded on the score line **126.** An adhesive is applied to the exposed faces of glue tabs or panels **138, 146', 160** and **146** as shown in FIG. **14.** The panel **130** is then folded on the score line **122** to complete the carton in collapsed condition as shown in FIG. **15.**

In forming the package the collapsed blank of FIG. **15** is squared up and the light bulb BB is inserted from the open end so that the bulb portion seats in the apertures resulting from cutting on the lines **168, 168'** and the inner portions of the outwardly bulged panels **166, 166'** serve to urge the panels **162, 162'** into a position where they operate to maintain the container in squared up or opened up condition.

I claim:

1. A carton for packaging an article having the form of an electric light bulb which carton is formed from a blank of foldable sheet material cut and scored so that it is divided into a series of wall forming panels which are connected and which provide, when set up, a collapsible open ended outer tube structure having an inner bulb supporting structure disposed therein adjacent one end which bulb supporting structure includes a pair of bulb supporting panels positioned in oppositely disposed axial planes, said pair of bulb supporting panels being spaced from each other and each being spaced from an oppositely disposed side wall of said outer tube structure, said pair of bulb supporting panels each having cut therein smaller panels which are adapted to be engaged by the body portion of a light bulb disposed between the same with side portions of the bulb body extending into the apertures resulting from cutting said body engaging panels therein, said inner bulb supporting structure including an axially extending panel member disposed along the inside face of a wall forming panel of said outer tube structure and hinged to an end edge thereof, which panel member is hingedly connected to an edge of each of said pair of bulb supporting panels and said pair of bulb supporting panels having hinged flaps at the opposite edges thereof, which are secured to a tube wall forming panel which is disposed opposite said axially extending connecting panel member, and at least one of said pair of bulb supporting panels having a relatively narrow hinged panel at an edge thereof which, when the collapsed outer tube structure is opened up, will swing into the space between said bulb supporting panel and the adjacent tube wall forming panel so as to hold the outer tube structure in set up condition.

2. A carton as set forth in claim **1** wherein said smaller panels are hinged adjacent the outermost end of said bulb supporting structure so as to enable said panels to hinge outwardly in the direction of the oppositely disposed side walls of said outer tube when engaged by the body portion of said light bulb.

3. A collapsible carton for packaging an article having the general shape of an electric light bulb with a bulbous body portion and a slender connecting member, which carton is formed from a blank of foldable sheet material cut and creased so that it is divided into a series of panels which are connected and provide, when in set up condition, an outer tube structure having a bulb supporting structure therein, said bulb supporting structure including a pair of bulb supporting panels in oppositely disposed, spaced axial planes, said bulb supporting panels being connected by a panel which lies along the inside face of a side wall forming panel of said outer tube structure and is hinged to the end edge thereof, said connecting panel being hinged along opposite side edges to side edges of said bulb supporting panels on axially extending hinge lines, each said bulb supporting panel being spaced from an oppositely disposed side wall forming panel of the outer tube structure, said pair of bulb supporting panels each having cut therein smaller panels which are adapted to be engaged by said bulbous body portion of an article inserted in the space between the same and hinged outwardly thereof with said bulbous body portion extending into the openings in the bulb supporting panels resulting from cutting therein said smaller panels and said bulb supporting panels having relatively narrow hinged panels at the innermost ends which, when the outer tube structure is set up, will hinge into a transverse plane and engage with side wall forming panels of the outer tube structure so as to hold the same in set up condition.

4. A blank for forming a carton adapted to package an article having the form of an electric light bulb, said blank comprising a generally rectangular sheet member of paperboard or similar foldable sheet material which is divided by parallel, longitudinally spaced, transverse score lines into a series of wall forming panels of a size sufficient to provide, when connected, an outer tube member for enclosing said article, a generally rectangular partition forming panel member of reduced longitudinal dimension extending along one side edge of said tube forming member and divided therefrom on a longitudinally extending line which is cut in part to free portions of the partition panel and score in part to form a hinged connection, said partition forming panel member being subdivided by parallel, transverse score lines which are spaced in the longitudinal direction of the blank so as to divide said panel member into a pair of cross partition forming panels each having a dimension in the lengthwise direction of the blank which equals the corresponding dimension of each of a pair of the wall forming panels in said tube forming member, said pair of cross partition panel forming members being freed from said pair of tube wall forming members, and a connecting panel between said cross partition panels having a dimension in the lengthwise direction of the

blank which is less than the corresponding dimension of the adjoining tube wall forming panel and which is hinged thereto on said dividing line, narrow glue flaps divided therefrom by hinge forming score lines along the free end margins of said partition forming panel and each of said cross partition forming panels having a relatively narrow panel extending along the outer side margin of the blank which is divided therefrom by a hinge forming score line extending longitudinally of the blank.

5. A blank as set forth in claim **4** wherein said pair of cross partition forming panels each have a pair of smaller panels cut therein which remain connected along hinge forming, longitudinally spaced, transverse score lines.

6. A blank as set forth in claim **4** wherein said pair of cross partition forming panels each have a generally circular smaller panel cut therein which remains connected by a hinge forming area adjacent the innermost side edge of the partition forming panel member.

* * * * *