Aug. 25, 1964 W. J. TYRSECK ETAL 3,145,836

FOLDING PAPER CONTAINER

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FIG. 1.

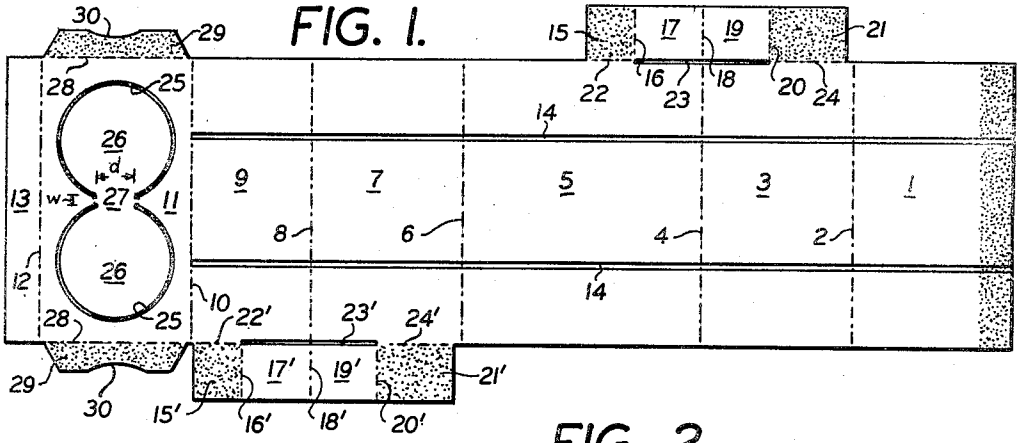



FIG. 2.

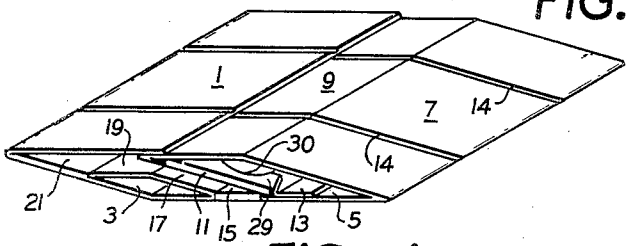



FIG. 3.

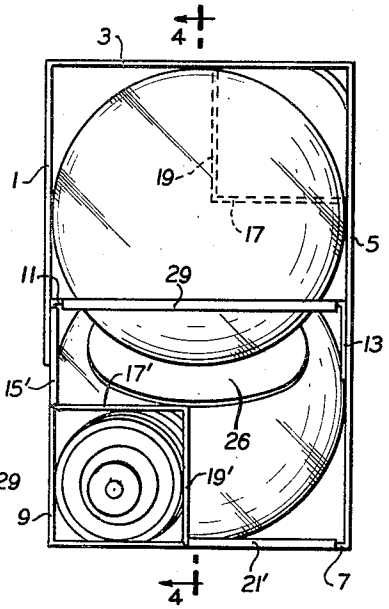



FIG. 4.

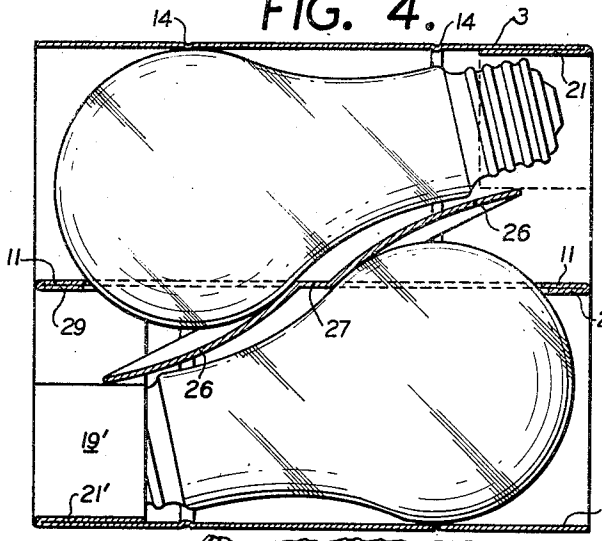
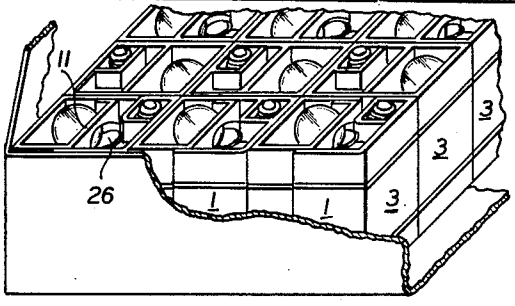



FIG. 5.




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FIG. 6.

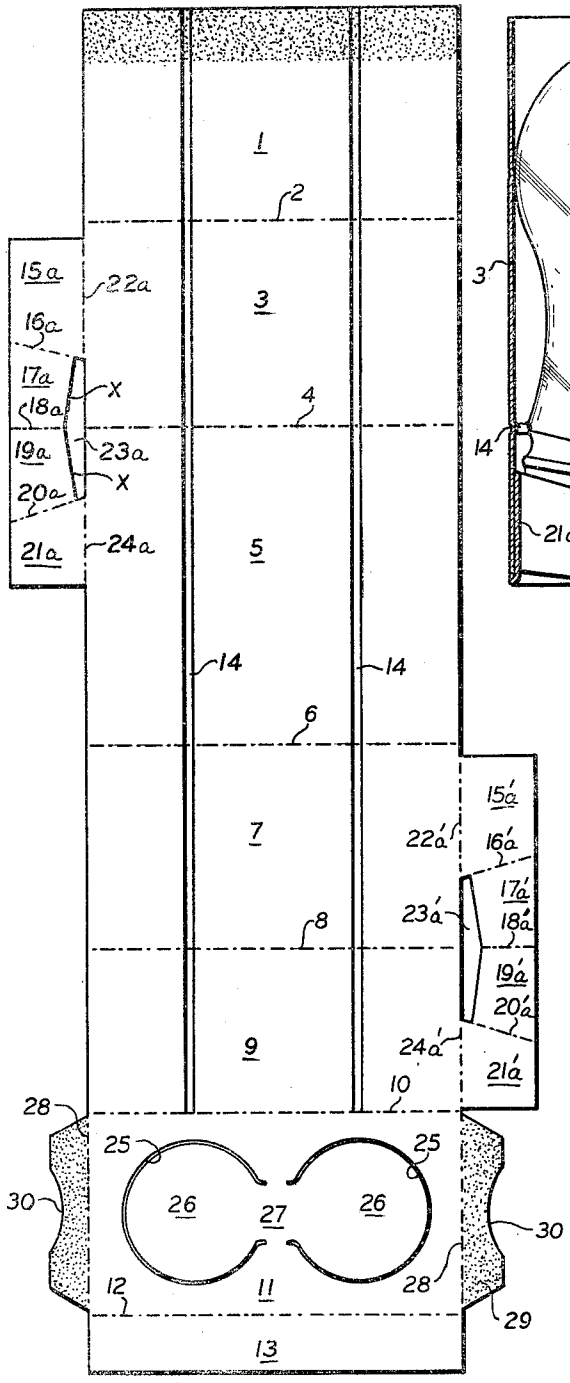



FIG. 8.

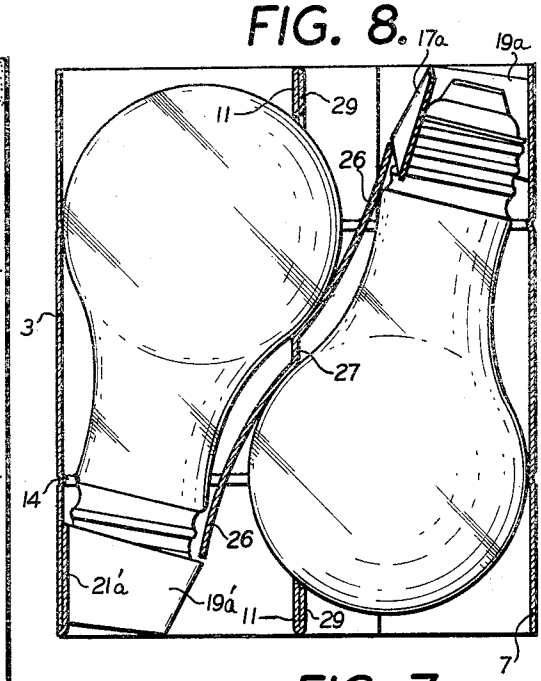
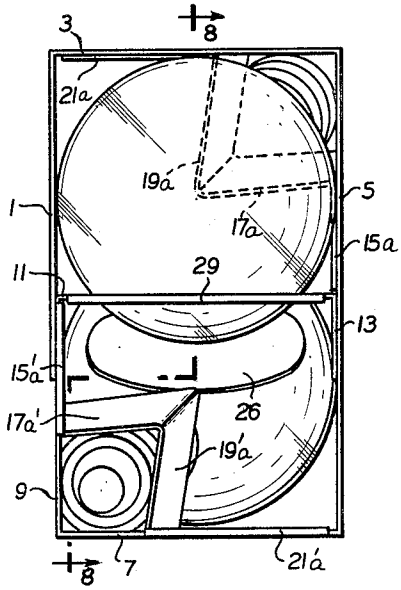



FIG. 7.




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FIG. 9.

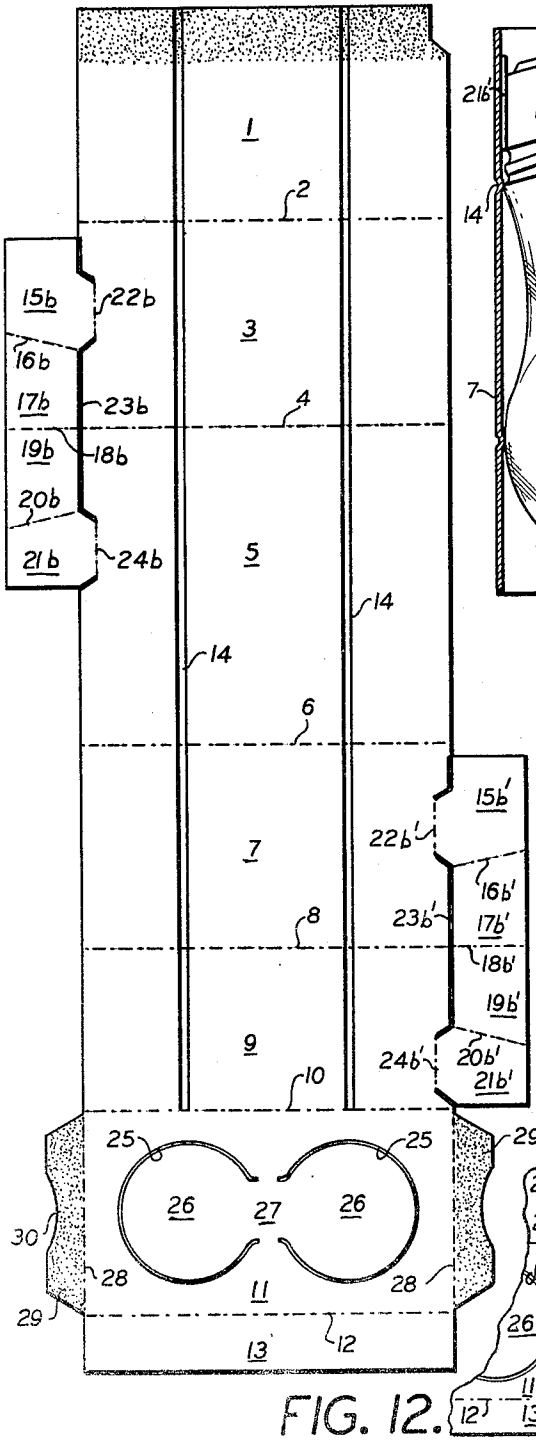



FIG. 11.

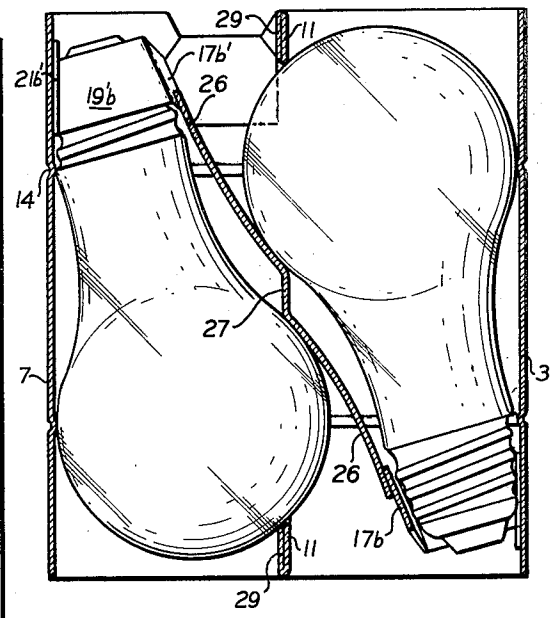



FIG. 10.

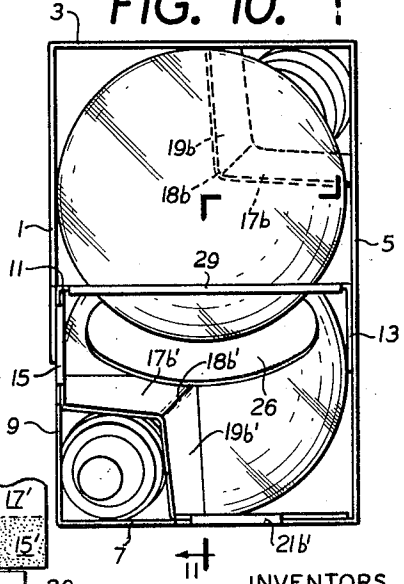









FIG. 12.

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3,145,836

# FOLDING PAPER CONTAINER

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4 Claims. (Cl. 206—46)

This invention relates to folding paper containers for articles such as light bulbs.

At present, light bulbs are generally packed singly, or by two or fours in boxes or sleeves having corrugated board walls or inserts for protecting the bulbs from impact damage. The containers are generally rectangular and have a volume equal to that of a number of separate rectangular containers for the bulbs.

It is an object of the invention to provide a sleeve or carton for holding electric light bulbs which is adapted to automatic high speed production as a collapsed folding box and will hold bulbs safely without requiring corrugated board or other cushioning or padding material.

Another object is to provide a container of reduced over-all dimensions, reducing both material cost and shipping and storage expense.

A still further object is to provide a sleeve container which is adapted to packaging in an outer crate or carton and will furnish maximum protection to the bulbs when so packed.

In our previous application for Folding Paper Container, filed March 2, 1959, Serial No. 796,477, now abandoned, we have disclosed a container generally similar to the container disclosed herein. The present application is directed to modifications or improvements of the disclosure of that application, consisting principally in the formation of a partitioning panel forming the rectangular containers or compartments for the light bulbs and in the provision of additional means for holding and receiving the screw or contact end of the bulb.

A container embodying the invention in a preferred form will now be described with reference to the accompanying drawing, and the features forming the invention will then be pointed out in the appended claims.

In the drawing:

FIG. 1 is a flat view of a blank from which the container of the invention is formed;

FIG. 2 shows the completed container in collapsed and partly opened up condition;

FIG. 3 is a plan view of the completed container with light bulbs in position therein;

FIG. 4 is a section on the line 4—4 of FIG. 3;

FIG. 5 is an isometric showing the positioning of the loaded containers in an outer carton;

FIGS. 6, 7 and 8 are views respectively similar to FIGS. 1, 3 and 4, but showing a modification;

FIGS. 9, 10 and 11 are views similar to FIGS. 6, 7 and 8, respectively, and showing a second modification; and

FIG. 12 is a fragmentary view similar to FIG. 1, but showing a variation in one portion thereof.

Referring first to FIG. 1, it will be observed that the blank comprises an aligned series of panels identified by the odd numbers from 1–11 and a glue flap 13, these elements being joined together along hinge lines identified by the even numerals 2–12, which hinge lines are



creased or partially cut through to facilitate folding in the usual manner.

The panels 1–9 form the four walls of a rectangular sleeve, while the panel 11 forms a central partition dividing this sleeve into two sub-compartments for holding two light bulbs. The panels 1–9 may be creased or embossed to form beads 14, as indicated, the purpose of this beading being to afford additional protection to the contents of the package as later described. Along one edge of panels 3 and 5, a flap structure is provided comprising rectangular elements 15, 17, 19 and 21 joined together by hingelines 16, 18 and 20, to permit folding as later described, and the hingeline 18 being a continuation of hinge line 4 previously described. The terminal elements 15 and 21 of this flap structure are joined to the panels 3 and 5 along scored hinge lines 22 and 24 and the central elements 17 and 19 are separated from panels 3 and 5 by a cut 23. There is provided in connection with the panels 7 and 9 and their hinge line 8 a similar flap structure in which the elements are identified by similar reference characters with the addition of a prime superscript (′), this flap structure being located on the opposite edge of the blank as is apparent from FIG. 1.

The partition panel 11 has a pair of generally circular cuts 25 forming openings for accommodating light bulbs as later described and defining swinging flap elements 26 separated by a generally rectangular bridging portion 27 of width *w* and length *d*, as indicated. The panel 11 carries on top and bottom a pair of reinforcing glue flaps 29 joined to the panel along hinge lines 28 and recessed as indicated at 30 so as to conform to the outline of the cuts 25 when folded down against the panel 11.

In folding the blank of FIG. 1, the flap elements 15, 21, 15′, 21′, 29 as well as the edge of panel 1 are prepared with adhesive as indicated by the stippling in FIG. 1 and the glue flap 13 is also prepared with adhesive. In folding, the flap structures 15–21, 15′–21′ and 29 are all first folded over so as to join them adhesively to the panels 3, 5, 7, 9 and 11, as the case may be, and the structure is then folded over first upon the line 10, then on the line 6 and then on the line 2 to form the collapsed container which is shown partially opened out in FIG. 2. When the collapsed container is completely opened out and the light bulbs inserted, it presents the appearance shown in FIGS. 3, 4 and 5, the bulbs being securely held in place and protected as hereinafter described.

## *First Modification*

FIGS. 6, 7 and 8 illustrate a modification of the structure of FIGS. 1–5 concerned with the side flap structures of the blank which form the pockets for receiving the stems or screw ends of the bulbs. Similar parts of the structure of FIGS. 6–8 are identified by similar reference numerals and the modified side flap structures are identified by the same reference numerals with the addition of the suffix *a*, so that the previous description applies also to FIGS. 6–8 and will not be repeated herein except to the extent necessary to explain the modification and its purpose.

It will be noted that the side flap structures 15–*a* to 21–*a* of FIG. 6 is similar to that shown in FIG. 1, except that the fold lines 16–*a* and 20–*a* are slanted and the cut 23–*a* is enlarged to remove a five sided section or area of the blank, having upper edges *x* substantially at right angles to these fold lines and spaced from the

edges of panels **3** and **5**. The blank is folded and the carton is packed in the same manner as previously described in connection with FIGS. 1–5, but the side flap structure now forms a tapered pocket in which the screw end of the bulb may be wedged as clearly shown in FIGS. 7 and 8, thus adding to the security of holding of the bulb and cooperating with the walls of the sub-compartments, the central partition **11** and the flap **26** to hold it securely and immovably in position.

*Second Modification*

A further modification is illustrated in FIGS. 9–11 which is similar to that described in connection with FIGS. 6–8, but modifies the construction of the corner pockets by recessing the hinge lines on which they are joined to the main panels of the blank, thus positioning the pockets further from the edges of the completed package. In FIGS. 9–11, corresponding parts are identified by numerals corresponding to those used in connection with earlier figures and will require no further description. The side flap elements which form the corner pockets are identified by numerals similar to those used in connection with FIGS. 6–8, but with the suffix "*b*."

As is clear from FIG. 9, the side structure **15–*b*—21–*b*** is similar to that shown in FIG. 6, but the panels **15–*b*** and **21–*b*** are partly formed by cutting into the wall panels **3** and **5** for a limited extent adjacent its edge so that the elements **15–*b*** and **21–*b*** hinge along lines **22–*b*** and **24–*b*** spaced inwardly from and parallel to the edge of the blank. Apart from this difference, the folding and operation of the structure is the same as in connection with the blank of FIG. 6, the principal difference being that the corner pockets receiving the stems of the bulbs may, with the same amount of board be positioned further downward and upward within the carton, so as to conform to particular dimensions of bulb and package and also to proportion the parts so as to have the elements **26** engage the pockets rather than the stems of the bulbs directly.

As will be clear from FIG. 10, even though the stem holding pockets are formed in the corners of the box and the bulb stems are in the corners of the box, the edge **18–*b*** is positioned about midway between walls **5** and **9** (or walls **5** and **1**) so as to engage the tip of the element **26** midway of its width and support the same in a firm manner.

*Third Modification*

As shown in FIG. 12, flaps **29–*c*** may be utilized on the panel **11**, but without glueing the same to the panel **11**. When the bulb is inserted, these flaps will be forced out or spring out from the panel **11** generally and by reason of their angular relation to the panel **11** afford considerable stiffening and support for the ends of that element.

*Dimensions and Details of Construction*

Considerations affecting the dimensions and details of construction will now be pointed out in some detail and apply to all the foregoing modifications except as otherwise indicated.

The package is typically constructed of paper board such as customarily used for folding paper boxes and board of .020 inch thickness is suitable although lighter or heavier board may be used where found desirable. The size and spacing of the cuts **25** is of primary importance. In general, it is desirable that the bulb should fit into the cut **25** solidly and firmly, this cut being preferably substantially circular for this purpose. Since the panel **11** is flexed somewhat by the bulbs, it is apparent that a true circular cutout may not engage a truly spherical bulb, due to the curvature of the surface in which the cutout is formed, so that where a full line engagement is important, the cutout may be shaped so as to obtain such engagement when the bulbs have been inserted. Also in many cases, other forms of cutout may be utilized, such cutouts having polygonal configurations and one or more bridging or flap elements of a variety of shapes which may be substituted for the flap **26**. In general, there is, however, no advantage in modifying the structure of the present invention in these particulars.

An increase in the dimension *w* of the bridging portion **27** of the partition panel **11** does not add to the strength of the construction, for the reason that the flaps **26** at the edges thereof are flexed in opposite directions by the bulbs so that the one flap opposes the action of the other and thus stiffens the bridging portion **27** which as a section, which is apparent from FIG. 4, much like that of a **Z**-beam. On the other hand, if the dimension *w* is too small, the portion **27** degenerates into a mere hinge line and does not afford positive separation of the bulbs in the plane of the partition panel **11**, but merely such separation as is afforded by the thickness of the board itself. It is found in general that making the dimension *d* of the bridging portion **27** approximately one-third of the diameter or width of the element **26** and the dimension *w* approximately one-fourth of an inch to one-half of an inch provides excellent support. The package illustrated by way of example in the drawing as applied to the holding of 60 watt bulbs having a maximum bulb diameter of about 2 and ⅜ inches, has a height of about 4 and ⅜ inches (horizontal dimension of FIG. 4) rectangular dimensions (as viewed in FIG. 3) of about 2 and ⅜ by 3 and ¾ inches, the other dimensions being in proportion. With bulbs of different sizes it is necessary only to vary the dimensions stated to suit the particular bulb, the proportionality of about four to five in the sub-compartment dimensions and in the size of the cutouts **25** as compared to the width of the panel **11** not changing. In all cases, the packages may be packed in an outer shipping carton as indicated in FIG. 5, this method of packing being generally similar to that in our above mentioned application filed March 2, 1959, but with the difference that the stem of the bulb is held in place in the corner of the pocket. As will be apparent from FIG. 5, the individual packages may be so placed in successive rows so that in each row the bulb portion of a bulb is opposite the stem portion of the bulb contained in its own package and also opposite the stem portion of the bulb in any adjacent package. Since the walls of the individual packages are held flat by reason of their contact with the outer carton and with each other, complete security of holding and cushioning are obtained for shipment purposes.

As is apparent from FIGS. 4, 8 and 11, the present invention provides for a bulb stem holding pocket in which the entire pocket is contained within the sleeve and none of its elements extends beyond the upper or lower edge of the sleeve panels **1**, etc. This result follows from the parallelism of the fold lines **16**, **18** and **20** in the form of the container shown in FIGS. 1–4 and from the cutting back of the pocket panel elements **17–*a*** and **19–*a*** in the modification of FIGS. 6–8 and the recessing of the fold lines **22–*b*** and **24–*b*** in the modification of FIGS. 9–11. At the same time and without interrupting at all or to any substantial extent the rectangular form of the outer sleeve walls, the stem holding pocket may be located lengthwise of the sleeve pretty much as desired, for holding the bulbs securely and immovably in position.

What is claimed is:

1. A folding paper light bulb package comprising a rectangular sleeve, a central partition wall dividing the sleeve into two rectangular compartments, the partition being spaced from the parallel outer walls of the sleeve by a less distance than the distance between the other two outer walls of the sleeve, a light bulb carried in the sleeve on each side of the partition wall, the two said bulbs facing oppositely to each other so that the stem of one is opposite the bulb portion of the other, and each bulb portion being substantially in contact with three sleeve outer walls, the partition wall having cutouts accommodating the said bulb portions and flaps within the said cutouts and hingedly fastened to the partition panel adjacent its

middle, pocket elements adjacent the ends of the sleeve receiving and holding the stems of the said bulbs, the said flaps and pockets being dimensioned so that the outer ends of the flaps engage and are supported by the pockets and the flaps are flexed and held thereagainst by the bulbs.

2. A folding paper light bulb package according to claim 1, in which the said cutouts are spaced apart and comprising a portion of the partition wall therebetween separating the said bulbs lengthwise of the package.

3. A folding paper light bulb package according to claim 2, comprising also end flaps on the partition and bent at an angle thereto so as to reinforce the partition.

4. A folding paper light bulb package according to claim 3, in which the said flaps lie flat against the partition panel and are adhesively joined thereto.



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