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3,244,353

RECLOSABLE CORRUGATED CARTON

Filed April 7, 1964

2 Sheets-Sheet 1

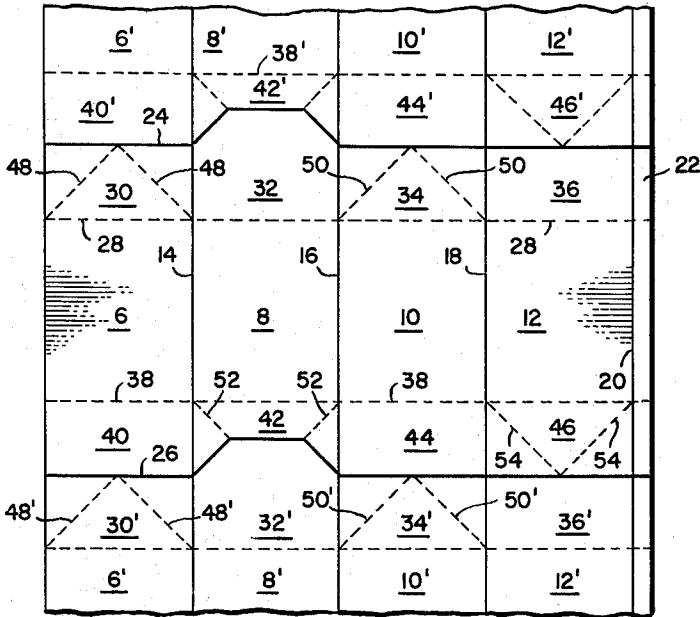


FIG. 1.

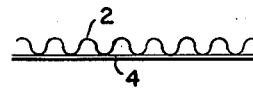


FIG. 2.

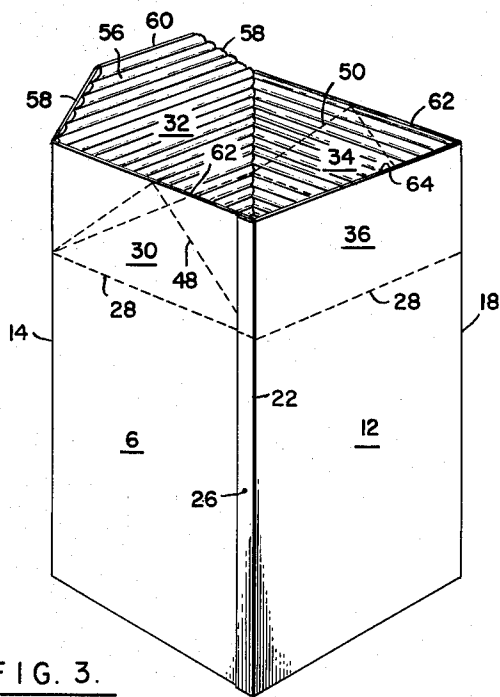


FIG. 3.

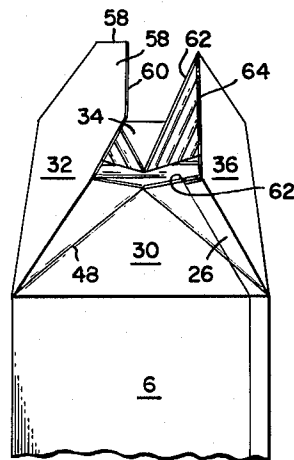


FIG. 4.

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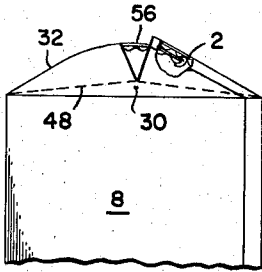


FIG. 5.

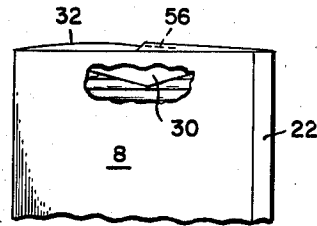


FIG. 6.

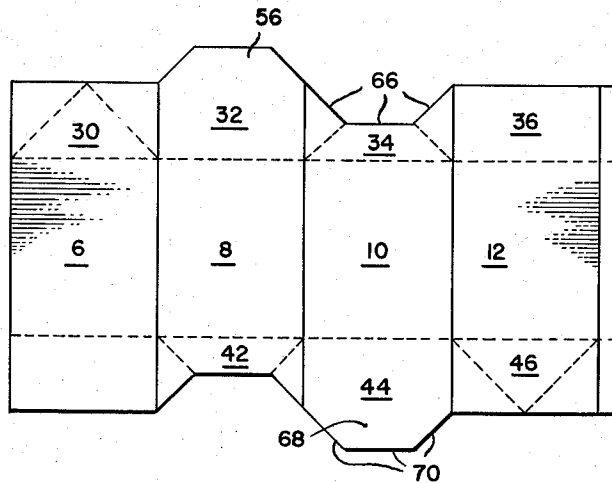


FIG. 7.

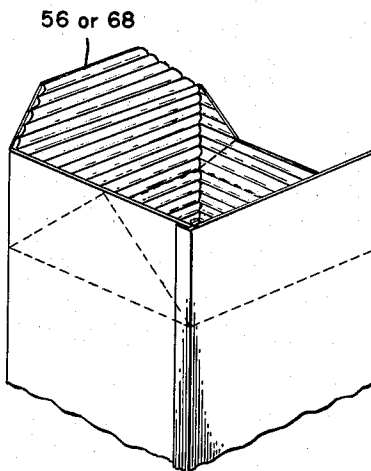


FIG. 8.

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RECLOSABLE CORRUGATED CARTON

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2 Claims. (Cl. 229—39)

This invention relates to reclosable flap structures for containers, and more particularly to a highly advantageous and novel reclosable flap structure which can be applied to containers constructed of corrugated paperboard.

In some containers formed of the common types of sheet material (such as plastic or paper) reclosability of the flap structure is desirable for reasons which in most cases involve the fact that all of the contents will not be dispensed at one time. "Reclosability" is intended to mean, for present purposes, that the renewal or reuse of any adhesive tape, string tie, clips or the like, is not involved, and the container can be manually opened and reclosed a number of times without significantly impairing either the effectiveness or appearance of the closure. On the other hand, in the packaging of fragile articles, such as large or expensive glass lamps (or products which otherwise are susceptible to damage by shock), different considerations may influence the desirability of reclosable containers. Reclosability of cartons containing these articles generally is desirable for purposes of their inspection at various points in the course of storage, shipping and merchandising; such inspection might be to check either the condition of an article or its identification, type, etc. At the point of sale a customer, for example, might want to confirm that an article has not been broken.

For reasons of effectiveness in absorbing shock and low cost, a single face corrugated paperboard has been the principal material used in cartons for the packaging of glass lamps and the like. ("Single face corrugated" is the term generally applied to paperboard comprising a corrugated inner sheet adhered to a single flat outer sheet.) In the prior art, however, due to various reasons stemming from the particular nature of this corrugated paperboard, for purposes of packaging fragile articles and the like there has not been available any satisfactory form of reclosable carton formed of this material. For example, some prior attempts to provide a reclosable flap structure for corrugated cartons have been unsuccessful because of the prohibitive cost of a design, lack of adaptability to automatic packaging machinery, or deficiencies in the closure itself.

Accordingly, it is the principal object of this invention to provide, in a single face corrugated carton of low cost, a very secure closure which can be opened and closed a number of times without impairing its effectiveness or neat appearance.

It is a further object of this invention to provide a closure of this type whereby supplementary closure means such as adhesive tape, staples and the like are unnecessary.

Briefly, in accordance with this invention a basic corrugated paperboard carton of well-known design, but which heretofore had to be closed by supplementary means such as adhesive tape, has been modified by a very simple yet significant addition whereby such supplementary means can be omitted completely. This basic carton included four interconnected rectangular flaps folded inwardly from the side panels along fold lines, with two opposite flaps having "gabled" converging score lines (extending at an angle of 45 degrees from the corner fold line junctions), whereby all of the flaps together can be folded inwardly over the open end and secured by tape. This invention involved the provision of an extension or

"tab" on one of the other two flaps (i.e., other than the two opposite flaps provided with scored angular fold lines) whereby it can be tucked beneath the corrugated inner surface of the opposite flap. As described more fully hereafter, by virtue of this feature in combination with the corrugated surfaces and other features inherent in the basic design, this closure secures itself tightly and can be readily opened and reopened without impairment.

Further objects, advantages, and details of this invention will become evident from the following description when read in conjunction with the accompanying drawings, in which:

FIGURE 1 is a view of the corrugated (inner) side of flat single face corrugated paperboard which has been cut and scored to form carton blanks in accordance with this invention;

FIGURE 2 is a cross-section through single face corrugated paperboard shown in FIGURE 1.

FIGURE 3 is a perspective view of a carton set up from a blank shown in FIGURE 1, with the upper end open;

FIGURE 4 is a perspective view showing this carton in partly closed condition;

FIGURE 5 is a side view of the carton in still further closed condition, with the tab on one end panel partly tucked beneath the opposite panel;

FIGURE 6 is a side view, partly broken away, of the fully closed carton;

FIGURE 7 is the outline of a blank basically the same as illustrated in FIGURE 1, but modified to provide reclosable structures at both ends; and

FIGURE 8 is a perspective view of either end of a carton set up from the blank shown in FIGURE 7.

In FIGURE 1 there is pictured a section of a length of standard "single face" corrugated paperboard, and as shown in FIGURE 2 this paperboard comprises a flat outer paper sheet 4 to which is glued a paper sheet 2 that has been processed in conventional manner to form the characteristic undulations or ripples therein. (It will be understood that this paperboard may incorporate various suitable coatings and impregnated compositions if desired, or various substitutes for paper may be used.) An entire carton blank and parts of blanks cut from adjoining portions of the sheet of corrugated paperboard are shown in FIGURE 1. An entire and complete blank is separated from adjacent blanks by severing along lines 24 and 26. Four rectangular side panels designated 6, 8, 10 and 12 are defined and separated by scored corner fold lines 14, 16, 18 and 20, respectively. Corner fold lines 20 separate panel 12 from a narrow strip 22 to which adhesive is applied. The strip 22 comprises only the backing sheet 4, without the corrugated sheet 2, and in setting up the carton it is lapped over the side margin of panel 6, and adhered thereto, as shown in FIG. 3. Across the end of the blank which is to form the reclosable upper end of the carton, a fold line is formed by serrated cutting means. (By these means, along such a line the material is weakened by a series of short, spaced slits penetrating both the backing sheet 4 and corrugated sheet 2, whereby a sharper corner or edge fold can result.) Fold line 28, corner fold lines 14, 16, 18 and 20, and the blank edge created by separation line 24, collectively define four interconnected rectangular panels numbered 30, 32, 34 and 36. Each of the last-mentioned panels has a dimension extending outwardly (away from fold line 28) which is approximately one half its own width and that of its integrally associated side panel. From the junctions between fold line 28 and the respective opposite sides of the panel 30, two weakened fold lines 48 are cut at an angle of 45 degrees to the line 28, so that they converge to a point on the outer edge of this panel. Similarly, the panel 34, which will be opposite panel 30 when set up, is provided with fold lines 50 converging from the junctions between

fold line 28 and corner fold lines 16 and 18. At the bottom end of the blank, the panels 42 and 46 have respectively, weakened fold lines 52 and 54 similarly cut at 45 degree angles relative to the fold line 38.

At each side of the blank which is cut from a single sheet of corrugated paperboard, the blanks are of exactly the same description. In FIGURE 1, primed (') reference numerals have been applied to features identical to features already described by reference to the same numerals.

Referring to FIGURE 3, in setting up the carton the blank is first folded to form four square corners along lines 14, 16, 18 and 20, and strip 22 is then adhered over the margin of panel 6. Next the panels 40, 42, 44 and 46 are folded inwardly across the bottom end of the carton and secured by means such as a strip of adhesive tape 57. (As will be disclosed hereafter, such supplementary means as the tape can be omitted by providing this reclosable structure at both ends of the carton.)

From FIGURE 3 it will be noted that in the separated blank, along the upper edge thereof which was created by cutting line 24, at the sacrifice of material in panel 42' there has been formed a tab 56 extending in continuation of the closure panel 32. Tab 56 has a straight outer edge 60 and bevelled corner edges at 58.

Referring next to FIGURE 4, after the contents have been put into the carton, the closing operation involves folding inwardly the four hingedly interconnected panels 30, 32, 34 and 36. As this is effected, the panels 30 and 34 have their corner portions folded backwardly over them about the sharply defined inner fold lines 48 and 50 and corner fold lines 14, 16, 18 and 20, while in turn the panels 32 and 36 are folded completely over the panels 30 and 34. As the opposite panels 32 and 36 are folded into close proximity with each other, by bowing outwardly the tab 56 and panel 36, the tab 56 can be slipped beneath the corrugated inner surface of panel 36. Proceeding then to FIGURES 5 and 6 the tab 56 finally is fully covered by panel 36.

Several factors combine to cause tab 56 to be securely held in such a way as to resist accidental opening. First, referring to FIGURE 5, note that the edge 60 of tab 56 tends to spring upwardly against and engage in the ridges of inner corrugated sheet 2. Also, the edges 62 of panels 30 cross beneath and engage in the ridges of the inside of tab 56. Inherent in this basic construction, due to the interdependency of movement of all the panels, is the fact that neither panel 32 nor 36 can be lifted without attendant upward movement of the other; the tab 56 thus tends to resist opening of these two panels by, in effect, uniting them. A final characteristic inherent in this construction as shown in FIGURE 6, is that panels 30 and 34 snap downwardly beneath the plane of fold line 28, and effect a toggle type of action which tends to resist any lifting of the closure panels.

The opening of this carton, of course, simply involves the exertion of a force on tab 56 sufficient to remove it from beneath the panel 36. The carton can be closed again, and opened and reclosed thereafter a number of times, without appreciably changing its effectiveness or appearance.

As previously mentioned instead of the tape 57 at the bottom of the carton, the reclosable structure provided at the top of the carton in FIGURES 1 to 6 can be duplicated at the bottom if desired. In FIGURE 7, the illustrated blank is identical to that which has been described herein with the exception of a tab 68 which is a duplicate of tab 56. The edges 70 of tab 68 are contoured at the expense of a portion which is robbed from panel 34 along its edges 66. Thus, in the modified embodiment of FIGURES 7 and 8, the opposite ends of the carton are identical

and both embody the reclosable feature in accordance with this invention.

From the above description it will be evident that all of the aforementioned objects have been attained by this invention. It should be understood that various departures from this invention can be effected without departing from the scope thereof as defined by the following claims.

What is claimed is:

1. In a carton having a bottom, four vertical side walls and a top opening, a reclosable closure structure of single face corrugated paperboard for said top opening comprising, when in closed position:

- (1) a pair of rectangular closure panels hingedly connected by horizontal fold lines to the top edges of a first opposed pair of said side walls and disposed generally parallel to said bottom so that each of said closure panels covers approximately one half of said top opening, the corrugations thereon facing downwardly and being parallel to said fold lines;
- (2) a pair of rectangular gusset panels having their bottom edges hingedly connected to the top edges of a second pair of said side walls and having their side edges hingedly connected to the side edges of said pair of closure panels, each of said gusset panels being divided into a triangular main flap and a pair of triangular connecting webs hinged to the sides of said main flap by a pair of weakened lines extending from the bottom corners of said gusset panel inwardly toward the center of the top edge thereof, the corrugations on said main flap extending downwardly and being perpendicular to said fold lines and the corrugations on said webs facing upwardly and being perpendicular to said fold lines; said main flap being folded inwardly to thereby fold said webs about said weakened lines to a position overlying said main flap, said closure panels overlying said gusset panels; and
- (3) a locking tab integral with and extending from the free edge of one of said closure panels with its corrugations facing downwardly and being parallel to said fold lines, said locking tab being disposed below the other of said closure panels and overlying the opposed pair of webs located below said other closure panel so that the downwardly extending corrugations on said locking tab are engaged by the upwardly extending corrugations on said opposed pair of webs and the free edge of said locking tab is engaged by the downwardly extending corrugations on said other closure panel, whereby the closure structure is retained in closed position by said locking tab.

2. In a carton according to claim 1, wherein said four vertical side walls are of equal size and wherein said weakened lines extend from said bottom corners of said gusset panels at an angle of approximately forty-five degrees.

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