Aug. 27, 1963 J. L. GIMPLE 3,101,883

RECLOSABLE CARTON

Filed April 21, 1961 3 Sheets-Sheet 1

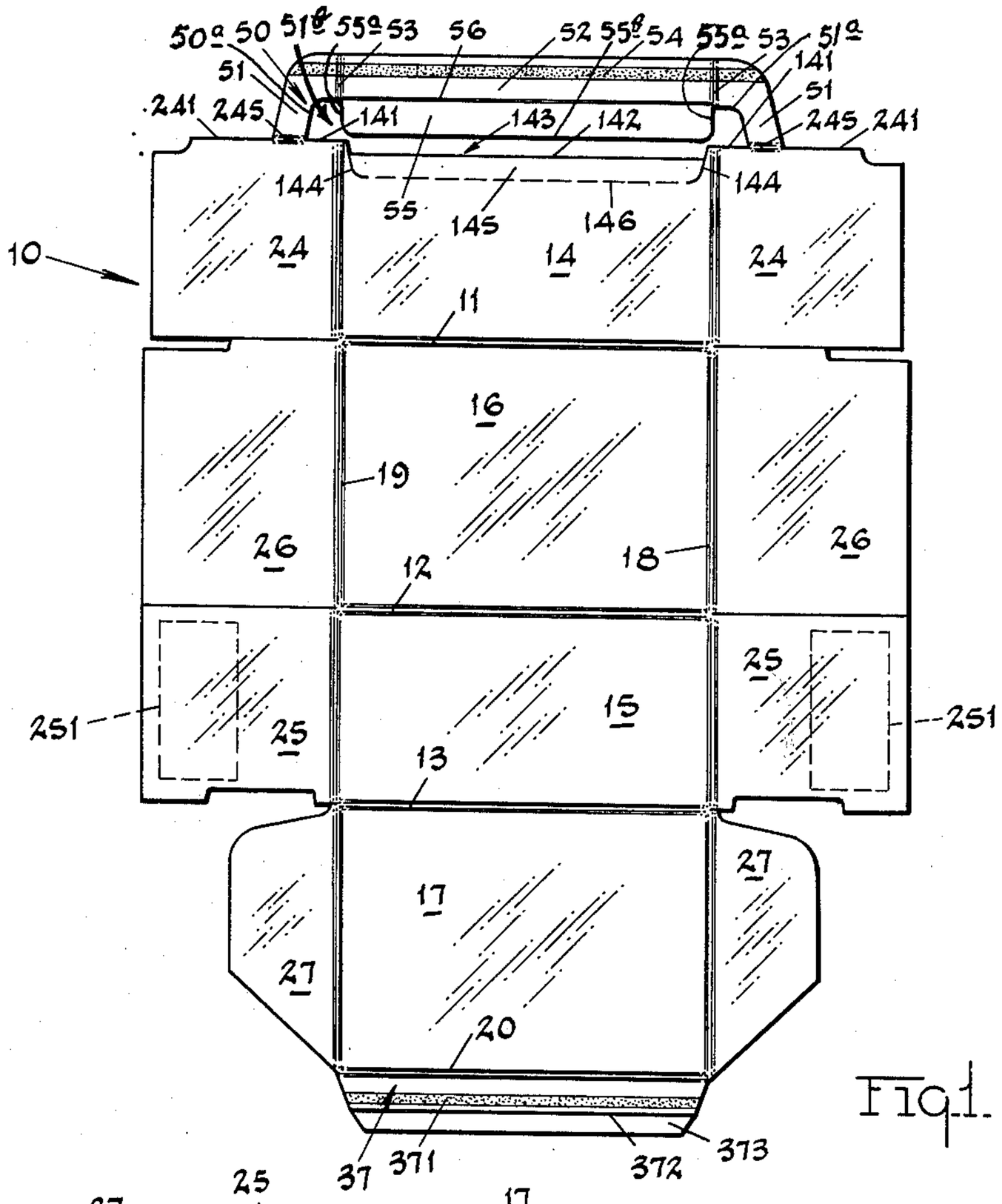

Fig.1.

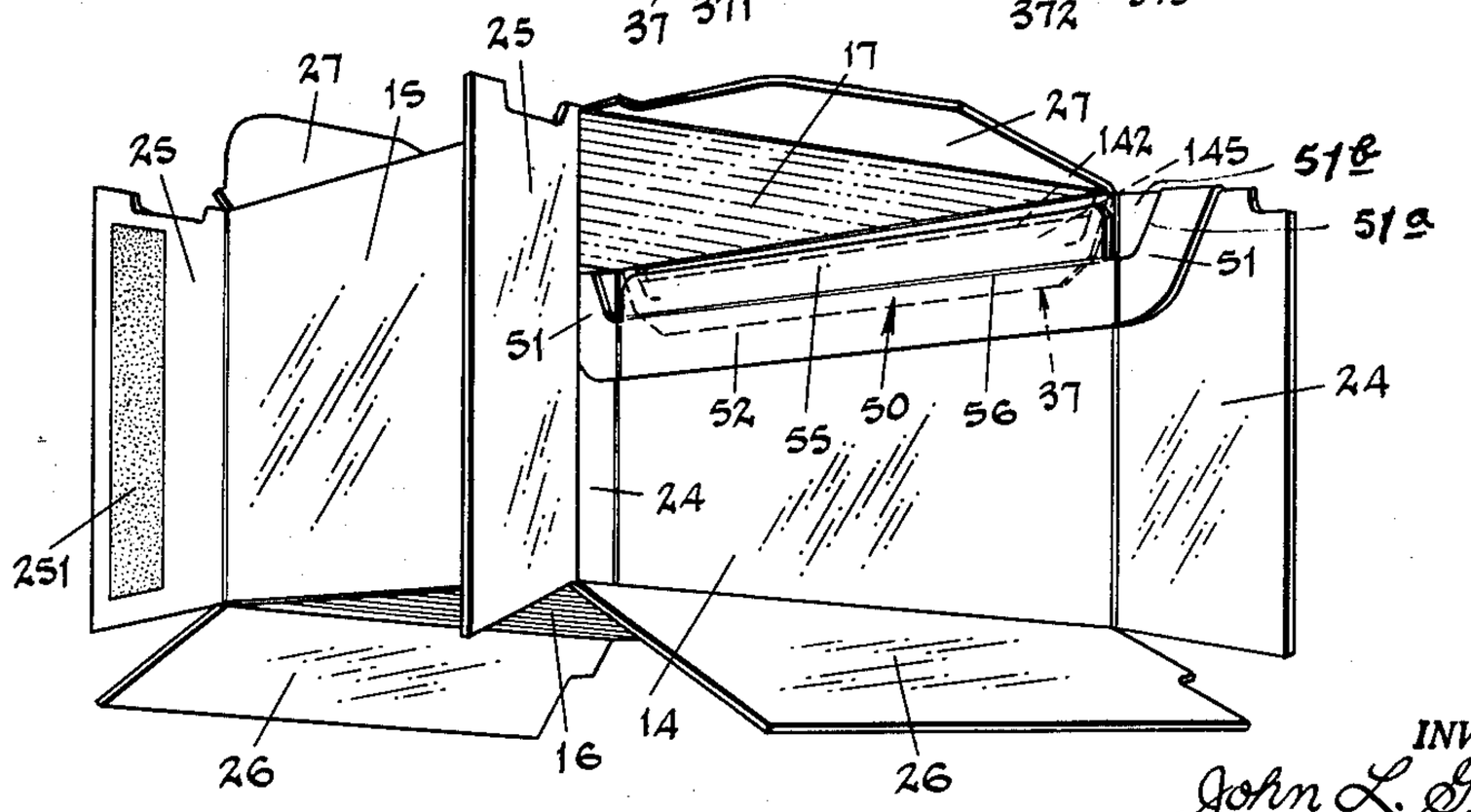

Fig.3.

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RECLOSABLE CARTON

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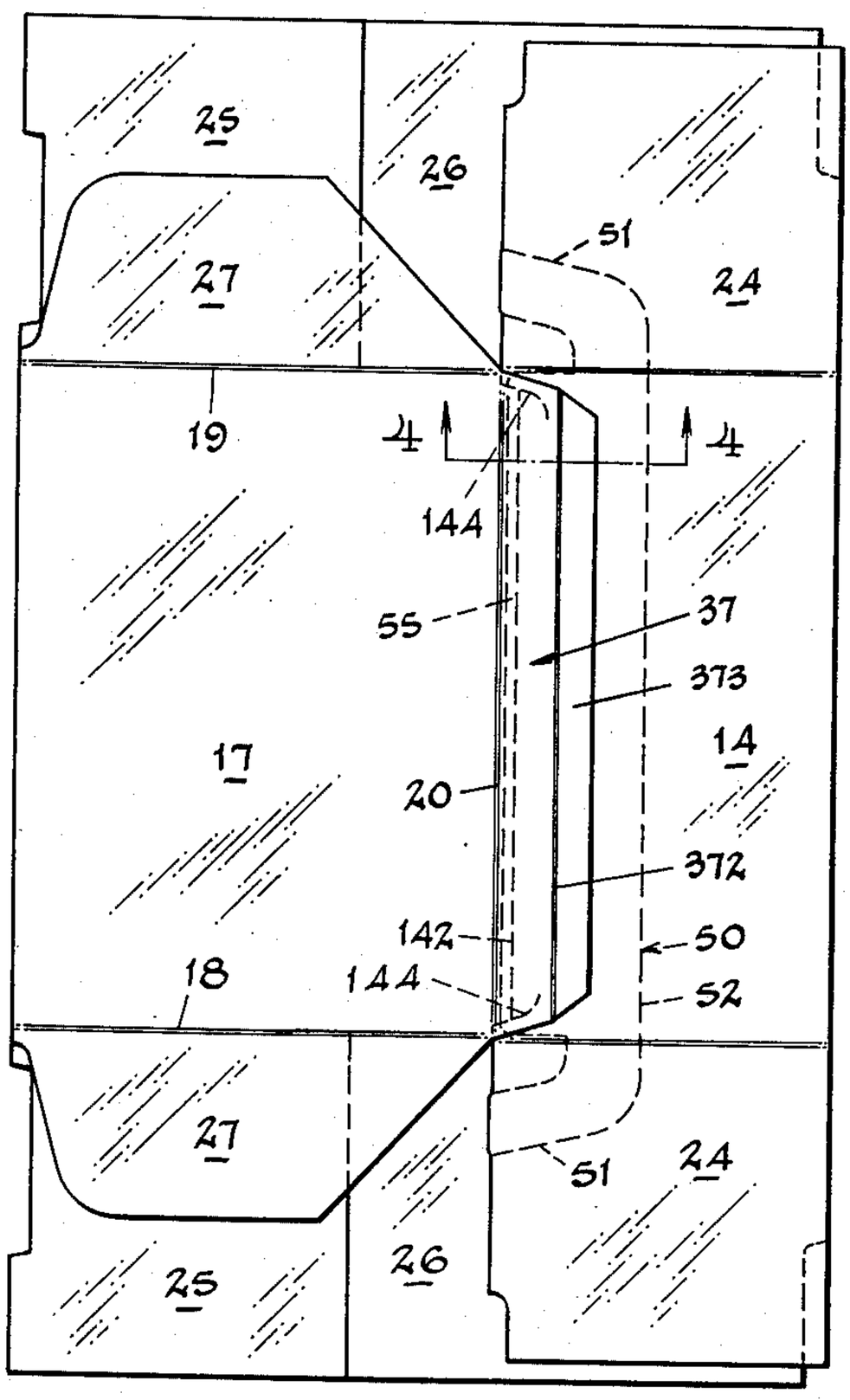

Fig. 2.

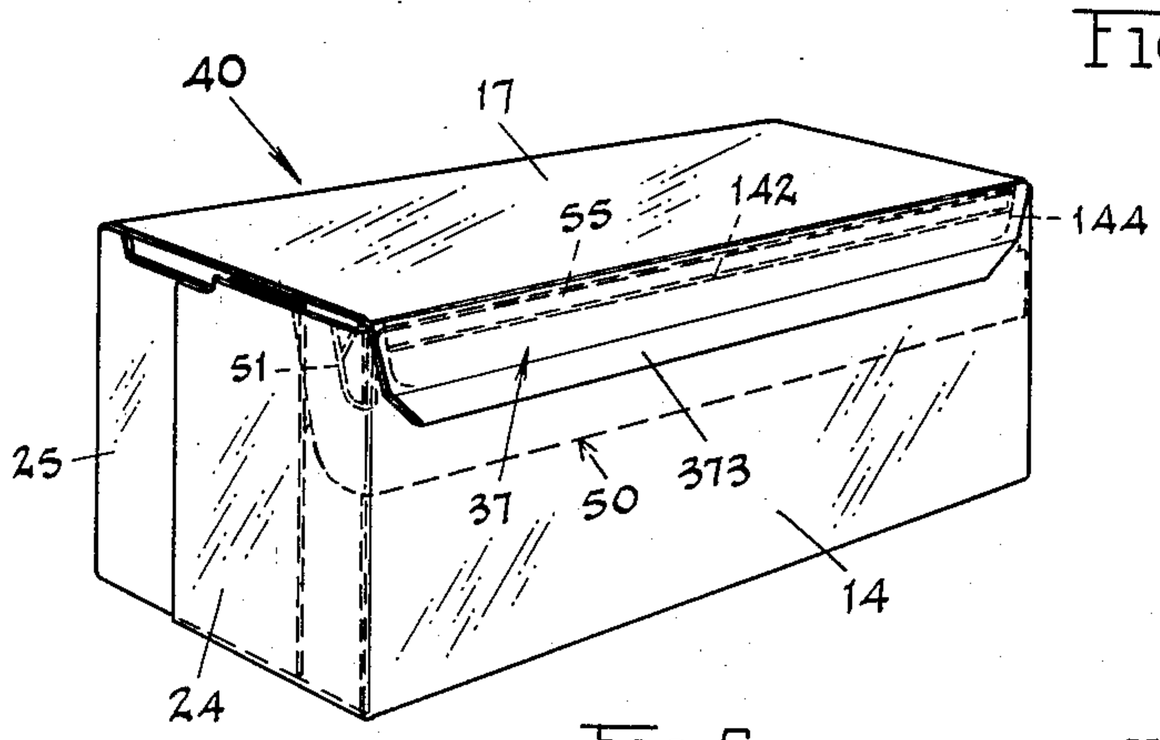

Fig. 5.

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RECLOSABLE CARTON

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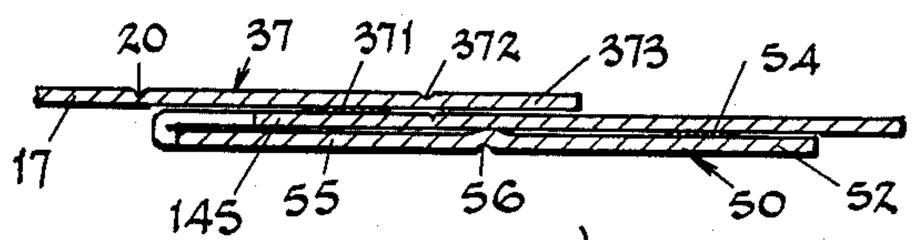

Fig. 4.

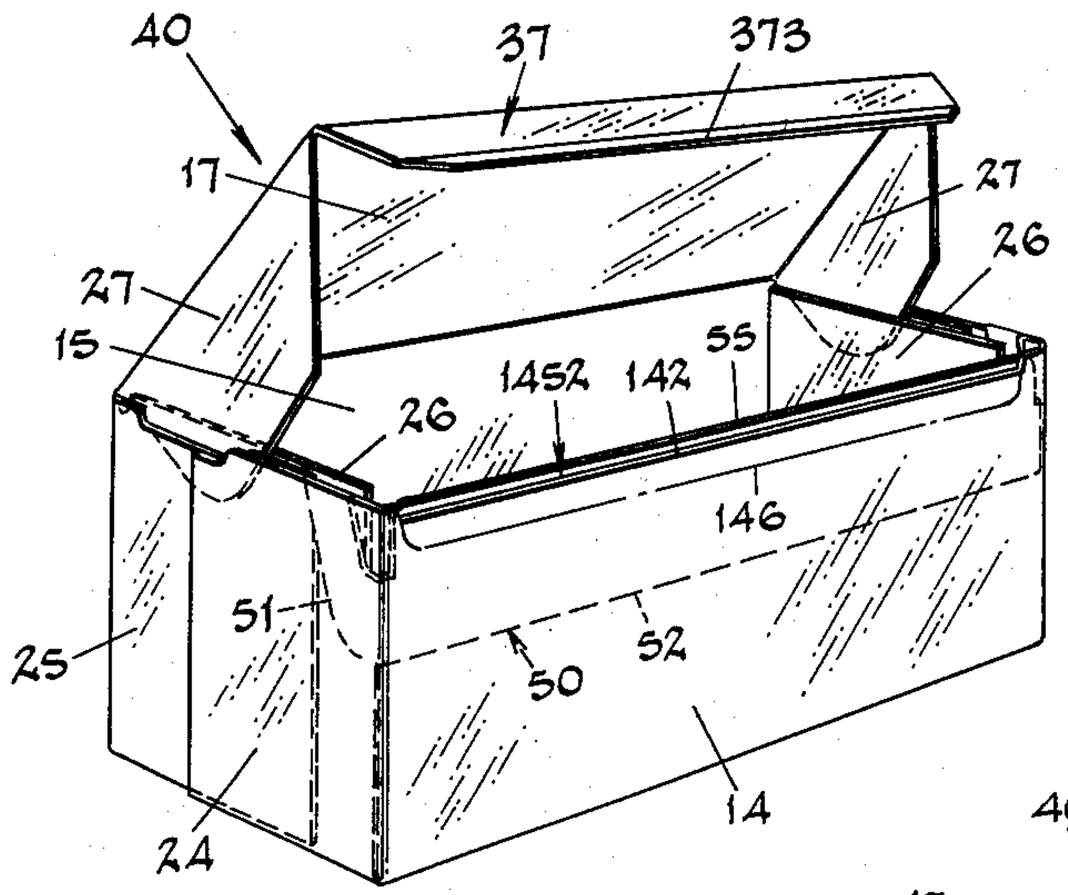

Fig. 6.

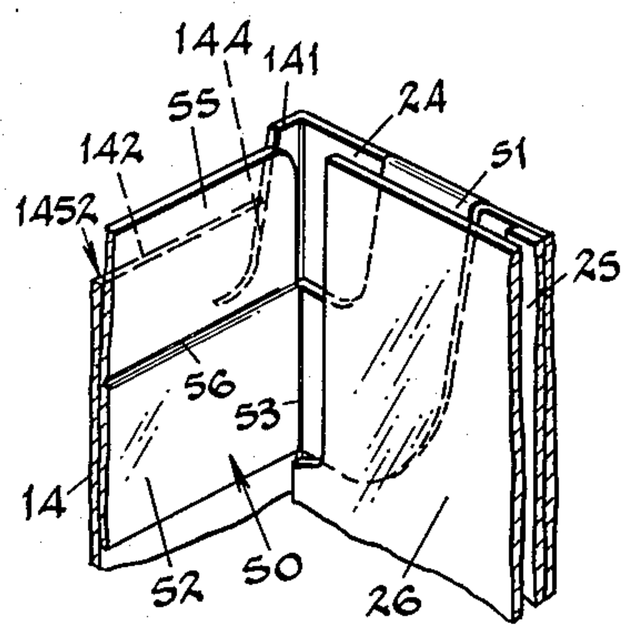

Fig. 7.

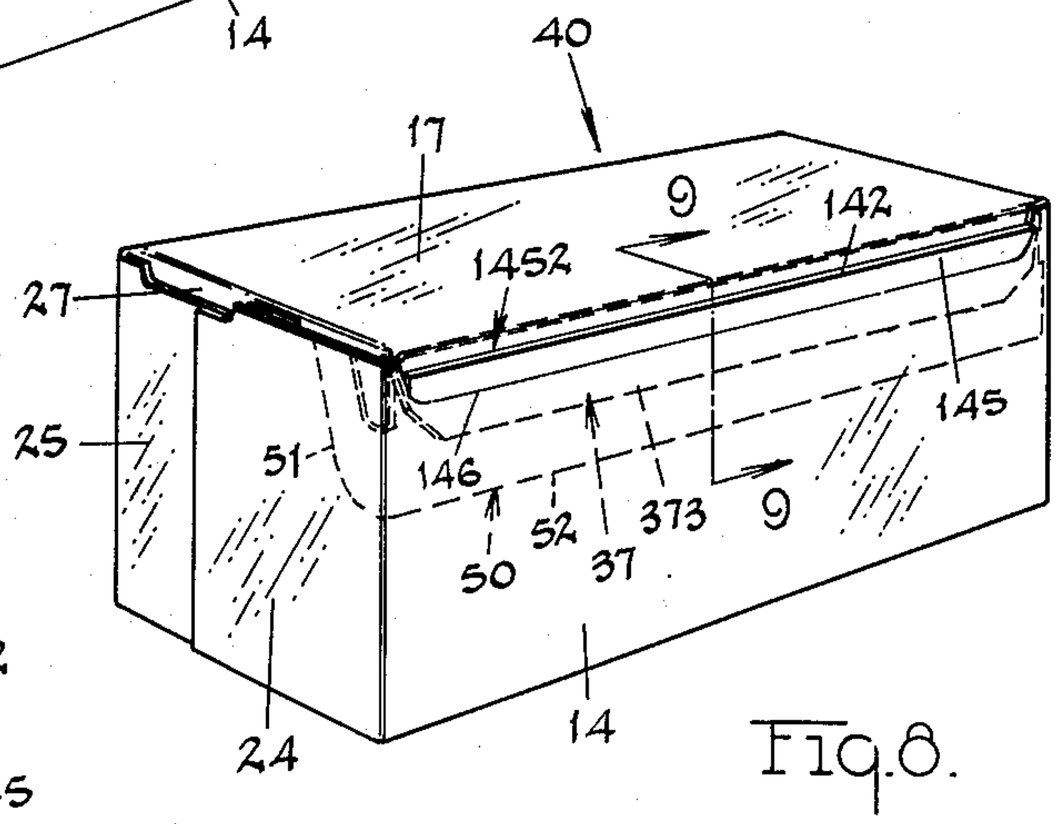

Fig. 8.

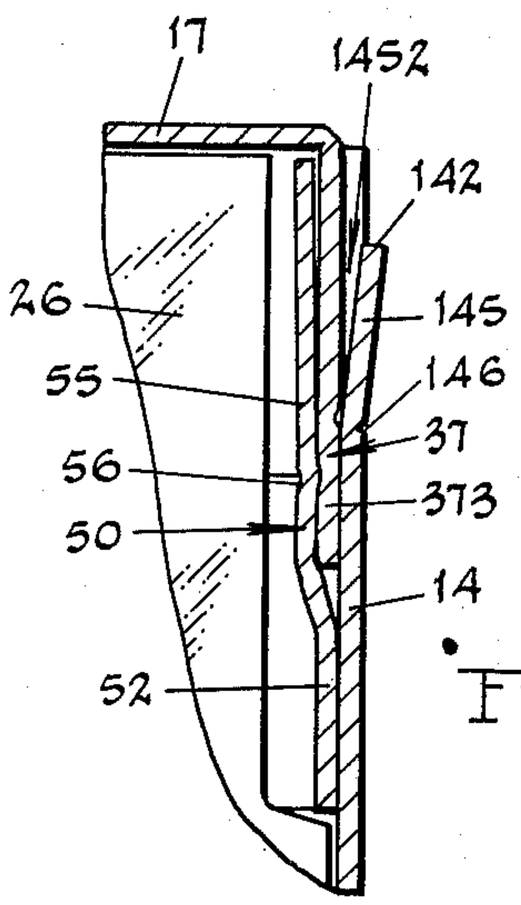

Fig. 9.

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United States Patent Office

3,101,883

Patented Aug. 27, 1963

3,101,883
RECLOSABLE CARTON

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Filed Apr. 21, 1961, Ser. No. 117,249
2 Claims. (Cl. 229—51)

My invention relates to a paperboard carton by which material or things may be packaged, usually in contemplation of shipping, storing and merchandising.

Most particularly, the invention concerns a paperboard carton that is formed by folding and adhesively securing a single blank to provide the usual carton walls and a thereto hinged closure cover and which when originally packed, is "sealed" against opening, access thereto being by breaking an adhesive bond that holds a flap on the carton cover to one of the carton upstanding walls. When the carton cover has been lifted and swung on its hinged connection, the carton contents may be dispensed. Should, however, only some part of the contents be withdrawn, the user may wish to employ the carton to store that which remains and in consequence will "close" the carton by moving the closure cover to a carton closing position.

In an effort to retain the carton cover in a reclosed position, it is not uncommon to tuck the cover flap into the carton, behind the uppermost edge of a carton upstanding side wall. This expedient is not altogether satisfactory not only because the tucked flap is not always held in its tucked position but also because, in tucking the flap it is inserted into the carton and may contact the carton contents conveying thereto that which had been exterior of the carton and may be aesthetically or gastronomically undesirable to the contents. In addition, the flap in being tucked into the carton and contacting the contents may become smeared with the contents and be thereafter objectionable to handle, as in the subsequent opening and reclosing of the carton.

My invention is directed to this problem and has for its primary object to provide means on the carton of the type mentioned engageable by the carton closure cover flap thereof that ensures that the flap will not, in being tucked, contact the carton contents and will, when tucked, effectively hold the flap against undesired releasing movement. Another broad object of my invention is to advance the teachings in this art, as disclosed in the United States Patents Nos. 1,471,478 to Feigelman; 2,358,943 to Smith; 2,747,732 to Fischer; and 2,858,058 to Kitchell.

One advance, which is also one of the broad objects of my invention to make, it that by which the advantages of preventing contact between the carton contents and the closure cover flap and of securing the cover flap against releasing movement is obtained for a flap that extends for the entire length of the cover—rather than for only some part of such length. This enables the mentioned advantages of reclosing to be enjoyed in cartons used for packaging a greater variety of contents than heretofore. For example, my invention enables the advantages of shielding the closure flap and holding it to be enjoyed in cartons designed to contain semi-liquids and foods, such as ice cream, cake, butter, etc., where, in reclosing for storage, after initial opening, closure almost to the state of the sealing of all points and edges is important and highly desirable to prevent leakage and the penetration of odor and dust into the carton. Such near sealing cannot be had in the prior art structures of which I am aware but by my invention this specifically is now made practicable, simple, and inexpensive.

One of the more particular objects of my invention is

to provide a paperboard, hinged cover carton of single blank construction with a flap of an inverted U-shape whose opposite end leg portions extend from and are hingedly connected to the end flaps of one of the carton side walls and whose body spine portion is of a length equal to that of the mentioned carton side wall and is adapted to be supported in lamina, closure flap receiving relation to such side wall, by the leg portions of the flap when the same are swung on their hinged connections mentioned as the carton is being erected for packing. Thus, in one form of embodiment, my invention eliminates the need so commonly evidenced in the prior art, for having, folding, and assembling the separate parts of two and three blank parts to form a carton in order to obtain the advantages of pocketing the closure flap to prevent contact with the carton contents and to hold the flap against release.

The invention has other and further objects which will appear from the following description and from the drawings which accompany the same. These, the drawings and description, illustrate and describe what now appears to me to be the best mode by which my invention may be carried out. However, it is not my intention, by such particular description or illustration, to imply that other forms than those described or illustrated are beyond my contemplation or that of my invention made hereinafter manifest and claimed.

Of the drawings that accompany:

FIG. 1 is a plan view of a blank from which a paperboard carton to be herein described is formed;

FIG. 2 is a plan view of the blank shown in FIG. 1 as first folded and bonded by the carton maker and received by the packer for filling, in what is sometimes called a tube or "knocked-down prepacked" condition;

FIG. 3 is a perspective view looking inwardly endwise of the tube blank shown in FIG. 2 after it has been partially erected;

FIG. 4 is a greatly enlarged view of a section taken along the plane of the line 4—4 indicated in FIG. 2;

FIG. 5 is a perspective view of a carton, erected from the blank shown in the preceeding mentioned figures and in the contents containing, "sealed" condition with which a carton user is most familiar;

FIG. 6 is a perspective view of the carton of FIG. 5 showing the carton on opening;

FIG. 7 is a fragmentary perspective view of the carton of FIG. 6 looking within the carton;

FIG. 8 is a perspective view of the carton of FIG. 6 after reclosure thereof; and

FIG. 9 is a greatly enlarged view of a section taken along the plane of the line 9—9 indicated in FIG. 8.

My invention possesses great utility when associated with a fairly conventional paperboard carton formed and erected by folding and adhesively securing a paperboard blank, such as a blank 10 shown in FIG. 1 of the accompanying drawings. When the blank 10 is properly folded and secured, a carton such as that shown at 40 in FIG. 5 of the accompanying drawings, results.

In FIG. 1, the inner and unprinted side of the blank 10 is shown face up. The blank 10 is crease scored along parallel lines 11, 12, 13 to form panels, providing side walls 14 and 15 and a bottom 16 and a closure cover 17. The cover 17 is thus hingedly connected to and set off by the score 13 from a side edge of the side wall 15, which edge, when the carton is erect, as shown in FIG. 5, is uppermost.

The blank 10 is also crease scored along parallel spaced lines 18 and 19 to form and set off end flaps 24 at opposite ends of opposite side wall 14 and end flaps 25 at opposite ends of the side wall 15 and end walls 26 hingedly connected to opposite ends of the bottom 16. The scores

18 and 19 also mark and set off cover end flaps 27 at opposite ends of the closure cover 17.

To provide the carton to be formed from the blank 10 with locking means, the closure cover 17 is scored along a line 20 that sets off and hingedly connects a flap 37 to the free side edge of the closure cover 17. It should be noted here that the flap 37 extends for the full length of the side of the cover 17 and is a length substantially equal to the length of the side wall 14. If desired, the flap 37 may be scored, as along line 372, to form a pull tab 373, whose use in manipulating the flap 37 is well known and will be hereinafter mentioned in greater detail.

Now, if the end walls 26 were to be folded upwardly, that is out of the plane of FIG. 1 and relative to the bottom 16 and the side walls 14 and 15 likewise moved and folded upwardly relative to the bottom 16; and the end flaps 24 and 25 moved and folded to normal angular relation with the now upstanding side walls 14 and 15, the blank 10 will have been folded for erection. By application of heat and pressure to a heat seal adhesive 251, provided on the printed side surface of the end flaps 25, the end flaps 24 and 25 will be secured together, thus retaining the side walls 14 and 15 and the end walls 16 erect in an uncovered or open container forming relation.

If the end flaps 27 of the closure cover 17 be now folded to a normal angular relation to the closure cover and the closure cover itself moved and folded along the score 13, the end flaps 27 being passed between the connected end flaps 24 and 25 and end walls 26, the cover 17 will close and seal the chamber within the erected side and end walls. The cover 17 may be locked in such closing position as by an adhesive 371 on the flap 37 which having been now bent normal to the cover 17 engages the side wall 14 and allows bonding of the adhesive to form a carton like that shown at 40 in FIG. 5 of the drawings.

In actual commercial use, however, the blank 10 is prefolded only along the scores 11, 12, 13 and 20 and the flap 37 is bonded by adhesive 371 to the outer surface of the recumbent side wall 14. In this "knockdown" form, shown in FIG. 2 of the drawings, the blank is shipped to the packer who, preliminary to filling, folds, assembles and heat seals flaps 24, 25 and 27 at one end with the end wall 26 at that end in the sequence and relation heretofore described. After filling, the flaps 24, 25 and 27 at the other end are together with the end wall 26 at that end likewise folded, assembled and heat sealed also in the relation previously outlined. This results in the filled and sealed carton 40 shown in FIG. 5 of the drawings.

Those skilled in the art will recognize that the structure and relations, which I have at this point just completed describing are conventional and well known in the art. It is, however, upon this background and from this point that my invention goes forward. Turning again to FIG. 1 of the drawings, I there show structure embodying my invention as part of the blank 10 and whose use, after folding and securing in the manner I shall describe, makes the advantages I have mentioned and others that will appear available to the ultimate user and consumer of the carton and its contents.

Such structure includes a lineally extending, substantially free flap 50, hingedly joined only at each of its opposite ends and there to points on the flap edge 241 of each of opposite end flaps 24 of the carton blank 10 that are spaced outwardly (see FIG. 1 of the accompanying drawings) from the intersections of the scores 18 and 19 with edge 141 of the side wall panel 14. The juncture of the ends of the flap 50 is effected by scorings 245 that are substantially coincident with the edge 241 and when the blank 10 is flat, as shown in FIG. 1 of the accompanying drawing, are aligned with each other. In order that certain features of my invention may be enjoyed in a manner that will be later explained, material within the perimeter of the flap 50 is die-cut as along a line 50*a*,

to form portions of the flap 50 providing opposite end legs 51 and a thereto intermediate elongated body spine 52 from which an elongated tongue 55 preferably extends. It will be seen that one of the consequences of die-cutting along line 50*a* is to locate one end of each leg portion 51 so as to engage the flap edge 241 only at points spaced outwardly of the side wall 14, particularly, outwardly from points thereon at which the scores 18 and 19 intersect with the edge 141, another consequence of the mentioned die-cut is to locate the other end of each leg portion 51 in engagement with the flap spine 52 only at points outwardly of the edge 141 of the side wall 14. A third consequence of such die cut along line 50*a* is to form inner edges 51*a* on the leg portions 51 and end edges 55*a* on the tongue 55, which with the edges 241 of the end flaps 24, describe and encompass a pair of openings 51*b*, each in opposite ends of the flap 50. This, in effect, disposes the spine portion 52 of flap 50 in a spaced parallel relation to the edge 141 of the carton side wall 14. (See drawing FIG. 1.) In such position, the tongue 55 extends toward the edge 141 of side wall 14, between the leg portions 51, from the spaced away spine portion 52 for a distance substantially equal to that through which each leg 51 extends. The tongue 55 is preferably of a width to locate its opposite end edges 55*a* in substantial coinciding alignment with the inner sides of the scoring lines 18 and 19 to obtain advantages that will be explained. Also, the length of the tongue 55 is such that its tip edge 55*b* will extend in alignment with edges 241 of end flaps 24, when the blank 10 is flat or erect, as shown in FIG. 1 and FIGS. 6 and 7, respectively.

Thus, when viewed in the flat, the flap 50 may be said to be roughly of a block M-shape, the end leg portions 51 forming the letter legs and the spine portion 52 and tongue 55 forming the letter bridge. Each leg portion 51 being set off from and hingedly joined to the end flap edge 241 by score 245 as heretofore described the leg portions 51 may be moved from the position in plane with side wall 14, shown in FIG. 1, to a position in surface contact with the imprinted inner surfaces of the end flaps 24, shown in FIG. 3. When the leg portions 51 are so disposed, the body spine portion 52 will be in lamina, surface contact relation with the inner unprinted surface of the side wall 14 and will extend, as shown in FIG. 3 of the accompanying drawings, lineally in parallel spaced relation to the side edge 141 of the side wall 14 that, when the side wall 14 is erect as shown in FIG. 5, becomes the uppermost side edge of the side wall.

Such is the disposition of the flap 50, prior to bonding the flap 37 to the side wall 14. To overcome difficulties that likely arise in the further manufacturing process of the carton and in the subsequent folding and filling thereof, if the overlaying flap 50 be allowed to move freely relative to the side wall 14, I provide means engaging the flap 50 and another portion of the blank 10, preferably the side wall 14 thereof, which means operates to restrain the overlaying flap 50 from movement that would generate such difficulties. Preferably, for this purpose, the flap 50 has adhesive means, indicated at 54 in FIG. 1, that extends along the body spine portion 52, preferably near an edge thereof that, when the flap 50 is folded as described and the side wall 14 is erect, will be the lowermost edge. The adhesive means 54 may also extend into and be effective on the leg portions 51, as shown in FIG. 1 of the drawings. When the adhesive means 54 is activated, it will be as though the body spine portion 52 on the uppermost side of the adhesive became a sort of "pocket" having its upper edge open and its lower edge closed by the sealing means 54, as appears in FIGS. 4 and 9 of the accompanying drawings.

The pocket thus formed, indicated at 1452 in FIGS. 4 and 9, is dimensioned lineally to receive and frictionally retain the flap 37 and its connected pull tab 373 between the inner surface of the side wall 14 and a surface of the body spine portion 52 of the flap 50. This becomes pur-

poseful, after the carton **40**, shown in FIG. 5, is opened, as shown in FIG. 6. Opening the carton **40**, the user's finger grasps the pull tab **373** and draws on it to swing flap **37** outwardly and upwardly away from the carton side wall **14**. This movement breaks the bond **371** and allows the closure cover **17** to be swung on its hinging score **13** to an open position shown in FIG. 6. Now, access to within the carton walls has been had, the contents or a portion thereof may be dispensed.

Should but a portion of the contents be dispensed, the carton user very often desires to use the carton **40** as a storage receptacle for the contents which remain. Seeking to reclose the carton **40**, where an embodiment of my invention as here described is incorporated, the user moves the closure cover **17** to closing position and inserts the flap **37**, pull tab **373** foremost, into the pocket **1452**. There, the flap **37** and pull tab **373** will be shielded from contact wtih the carton contents and will be held frictionally against release, thereby insuring that the closure cover **17** remains closed.

The tongue **55** on the spine portion **52** extends the effects of shielding the inserted cover flap **37** from contact with the carton contents and enlarges the area of frictional seizure. As the tongue **55** is preferably as long as the spine portion **52** and nearly as wide as the leg portions **51** are high, the tongue **55** will engage substantially the entire area of the roughened under surface of the flap **37** produced as a consequence of breaking the bond of the adhesive **371** when opening the carton **40**. Such engagement greatly increases the resistance of the arrangement to releasing the flap **37**.

To set the tongue **55** off from the body spine portion **52** and to provide some measure of yieldable flexibility to its movement and means for holding the tongue slightly spaced from the plane of the surface of the side wall **14** to facilitate insertion of the flap **37** and its pull tab **373** into the pocket **1452**, the flap **50** may be scored along line **56**. The score **56** in engaging the inner surface of the side wall **14** acts as a spacer holding the tongue **55** in an agape relation to the wall **14**. Now, when the flap **37** and its pull tab **373** are introduced for tucking between the flap **50** and the side wall **14** into the pocket **1452**, the passage thereof will be made easier because of the guidance furnished to such insertion by the tongue **55**.

Insertion of the flap **37** into the pocket **1452** may also be further facilitated by providing a re-entrant edge **142** along the upper side edge **141** of the carton side wall **14**. The re-entrant edge **142** forms an elongated shallow notch **143** in the side wall **14** and extending over an area spanned by the tongue **55**. Removal of the stock in the thus notched area **143** allows the flap **37** to easily find the open upper edge of pocket **1452**.

This finding may be further facilitated by providing a pair of spaced slits **144** which extend inwardly and downwardly into the side wall **14** from spaced points on the re-entrant edge **142**. Preferably, the slits **144** extend from opposite ends of the notch **142** and are slightly curved at their inner ends to a J-shape, as shown in FIG. 1 of the accompanying drawings. By weakening the side wall **14** in the area between the slits **144**, the stock will more readily yield to the probing movements of flap **37** and its pull tab **373** in finding and insertion into the pocket **1452**. The stock between the slits **144** provides a lip flap **145** which may be set off, as by a score along line **146** extending between and joining the inner ends of the slits **144**. Thus, the lip flap **145** may more readily yield to the probing exploration of the flap **37** and its pull tab **373** to find and enter the pocket.

The carton **40** formed by the single blank **10** having a flap **50** with the structural features embodying my invention, as above described, lends itself particularly to packaging ice cream, the particular package illustrated in the drawings being of a one-half gallon capacity. Packaged ice cream consumers, even those who normally would only need smaller quantities, more readily purchase larger

quantities because the carton **40** in which it is packed may, by a simple closure of the flap **17** be as effectively sealed by the consumer against the intrusion of odor or extraneous matter as it was by the packer when first packaged, thereby enabling safe and easy storage while the contents are being consumed in daily portions.

This advantage to the consumer is obtained by the packer at no great additional cost, such as might be involved if assembling multiple blanks or blank parts were required to form a carton with the sealing features of my invention. Neither is the carton maker put to any considerable additional expense in waste stock, assembly or collation of blanks.

Having cut and scored the blank **10** as heretofore described and shown in FIG. 1, and applied the adhesive **251**, **371** and **54**, on end flaps **25**, cover flap **37** and the flap **50**, the carton maker first folds the flap **50** along the scores **245** to locate the flap **50** on the panels of blank **10** forming the side wall **14** and its end flaps **24**. The adhesive **54** is then activated, bonding the leg portions **51** to the end flaps **24** and the body spine portion **52** to the side wall **14**. The blank **10** is then folded on scores **12** and **20** and the adhesive **371** activated to form the knockdown tube shown in FIG. 2 of the drawings, ready for shipment to and use by the packer. The packer, using folding, sealing and filling machinery and methods presently conventional to such operations, proceeds in the usual normal way to fill, close and seal the package for distribution to the consumer.

In this, certain structural features of a blank embodying my invention greatly aid in the folding and filling process. For example, overlaying and fixing the flap **50** on to the side wall **14** and its end flaps **24**, as heretofore described, would ordinarily produce a structure that would exert a considerable resistance to the folding of the end flaps **24** relative to the side wall panel **14**, in the end closure of the carton. However, along the line on which each leg position **51** joins the spine portion **52** of the flap **50**, I provide a score **53** that not only sets off the leg portion from the spine portion, but also hingedly relates the leg and spine portions for folding movement. The scores **53** are each aligned with (see FIG. 1 of the drawings) scores **18** and **19** of the blank **10** that set off the end flaps **24** from the side wall **14**. By such provision, the scores **53** will be substantially coincident with the scores **18** and **19**, when the flap **50** overlays and becomes affixed to the side wall panel **14**. Folding of the end flaps **24** relative to the side wall **14** about the hinge axes provided by scores **18** and **19** will cause a corresponding folding of the leg portions **51** relative to the spine portion **52** about nearly coincidental axes.

Because the scores **53** are formed in the flap **50** to extend only along a line of points spaced outwardly from the edge **141** of the carton side wall **14** as well as from the edges **241** of the end flaps **24**, the hinges provided by the scores **53** will, when the flap **50** is folded to overlay the side wall **14** and its end flaps **24**, be positioned well within the span of the side wall and end flaps and significantly spaced from the ends of the scores **18** and **19** where they intersect the side wall edge **141**. This disposes the scores **53** in a position that such resistance to folding as may be exerted when folding on such scores to move the end flaps **24** to closed position, will be applied in regions of the end flaps **24** that are more nearly central of the flap hinge connections along scores **18** and **19** and the area of the flaps **24**. Hence, the resistance to folding on scores **53** is less likely to cause the end flaps **24** to cock or fold on the bias out of square in the operation of automatic end flap folding machinery.

At this point, the skilled in the art will appreciate the aid to folding that is furnished by the tongue edges **55***a*. These edges, in the overlaying and adhesively secured position of the flap **50**, are held in alignment with the scores **18** and **19**, tending to reinforce (see FIG. 7) portions of the side wall **14** adjacent the ends of the notch **142** and the slit **144** therein. The tongue edges **55***a* act as creas-

ing gauges in regions of the carton that have been thus weakened to secure the notch and slit advantages mentioned.

Removal of flap **50** material to produce the openings **51***b* and expose the tongue edges **55***a* for the just described engagement of portions of the side wall **14** serves also to relieve the flap **50** from being subjected to an undesired end compression causing a bowing of the flap **50** away from the side wall **14** when the end flap **24** is folded relative to the side wall to end close the carton. In this same connection, such removal of flap material to provide the openings **51***b* also eliminates material at the hinge formed by scores **18** and **19** and thus enables folding of the end flaps **24** to be accomplished with considerably less work and likelihood of undesirably distorting the carton in the folding operation.

Thus, it will be seen that I have advanced the art in many practical ways while at the same time securing the greater advantages heretofore asserted for embodiments of my invention.

I claim:

1. In a paperboard carton having a bottom and a therefrom upstanding plurality of side and end walls, one of the mentioned side walls having opposite end flaps in hinged connecting relation thereto and adapted, when the carton is erect, to be in surface to surface contact with the mentioned carton end walls, a closure cover in hinged connection relation with and along an edge of the other of the carton side walls, the cover having a flap along and in hinged connecting relation to one edge of the cover and spaced from and extending parallel to the mentioned hinged connection of the cover and the mentioned other side wall of the carton; the provision of a flap of a substantially M-shape having a body spine portion and end leg portions at opposite ends of the body spine portion and extending from the uppermost edges of the end flaps, the body spine portion being of an elongated shape extending a length substantially equal to the length of the first mentioned carton side wall, the flap having a pair of lineally extending scores by which the leg portions are set off from and are in hinged connecting relation to the mentioned end flaps to thereby support the flap body spine portion in spaced parallel relation to the uppermost edge of the first mentioned carton side wall, the M-shape flap having a second pair of lineally extending scores that are aligned with the lines of hinged connections between the mentioned end flaps and the first mentioned carton side wall and by which the flap body spine portion is set off from the respective end portions, the body spine portion of the flap having a tongue substantially equal in length to the distance between the mentioned second pair of scores and extending from the body spine portion into the space between the end leg portions toward the mentioned uppermost edge of the first mentioned carton side wall and adapted, when the flap is moved on the first mentioned pair of scores, to locate the leg portions thereof in contact with the surfaces of the mentioned end flaps and to support the body spine portion in a downwardly spaced but parallel relation with the uppermost side edge of the first mentioned carton side wall and in contact with the inside surface thereof to support the tongue extending upward toward the mentioned uppermost side edge of the first mentioned carton side wall, adhesive securing means between and in engagement with the inner surface of the first mentioned carton side wall and the thereto facing surface of the mentioned flap body spine portion to thereby support the body spine portion against movement and the tongue for limited movement relative to the first mentioned carton side wall when the closure flap is inserted between the tongue and the first mentioned side wall of the carton, in which the first mentioned carton side wall has an uppermost re-entrant edge providing a shallow elongated notch extending nearly the entire length of the first mentioned carton side wall and, in addition, has two slits extending inwardly from points on the notch forming re-entrant edge spaced from each other forming therebetween a lip flap on the notch forming re-entrant edge of the first mentioned carton side wall in engagement with the tongue and in an area over which the tongue extends.

2. In a paperboard carton, as described in claim 1, in which the first mentioned carton side wall has a score along a line joining the inner ends of the mentioned slits and providing a hinging connection between lip flap and the first mentioned carton side wall.

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