Aug. 17, 1965 J. R. TRAVIS ETAL 3,201,026

RECLOSURE DEVICE FOR AUTOMATICALLY FORMED AND SEALED CORRUGATED CONTAINERS

Filed Aug. 12, 1963 3 Sheets-Sheet 1

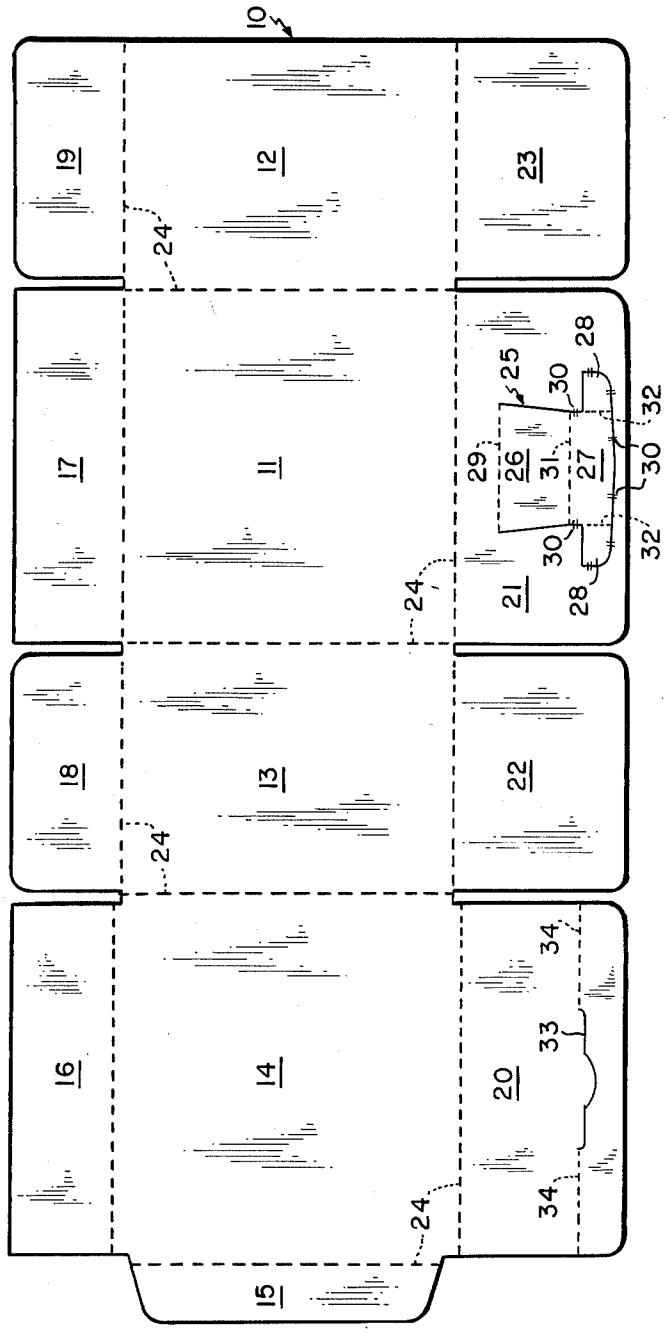


Fig. 1

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Filed Aug. 12, 1963 3 Sheets-Sheet 2

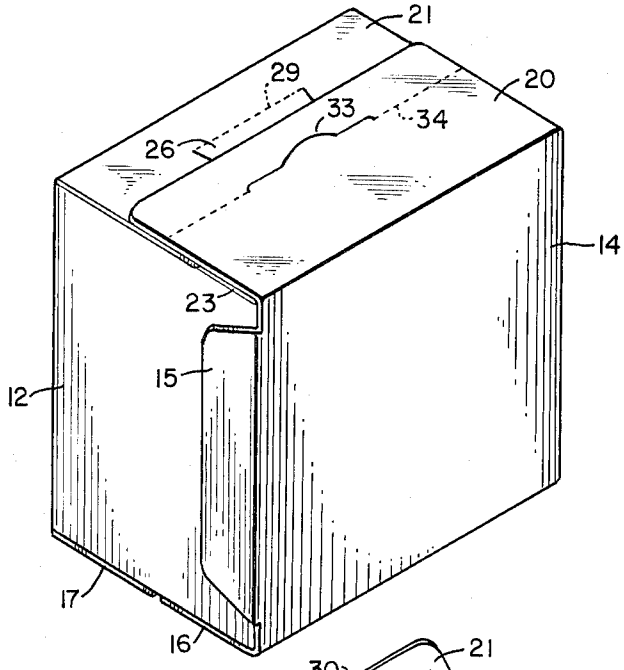


Fig. 2

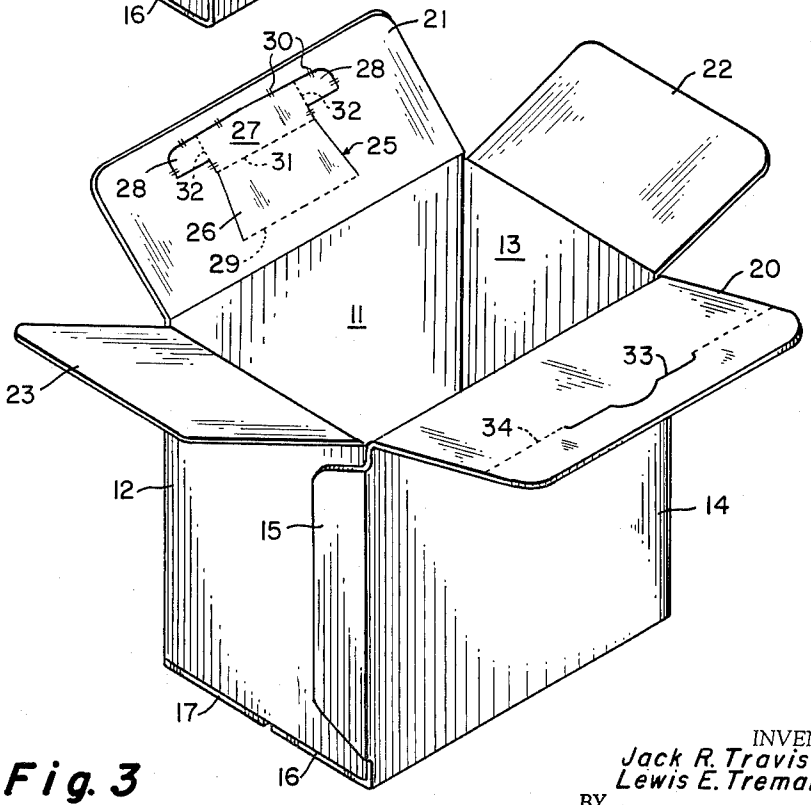


Fig. 3

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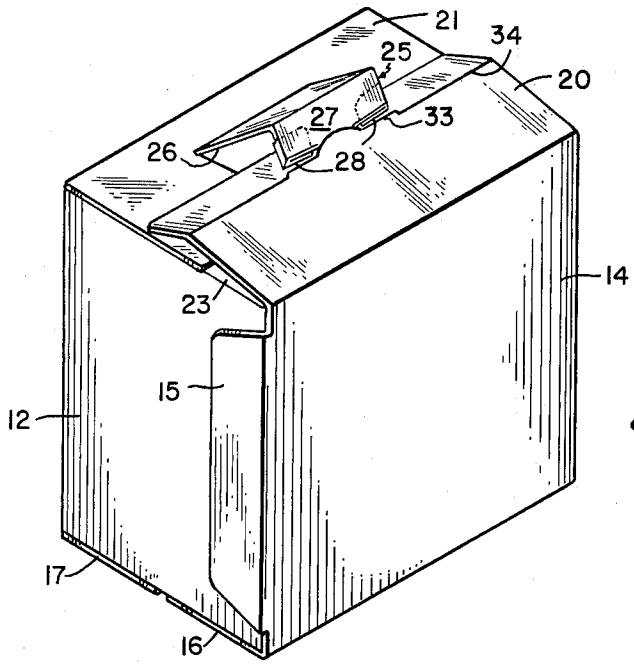


Fig. 4

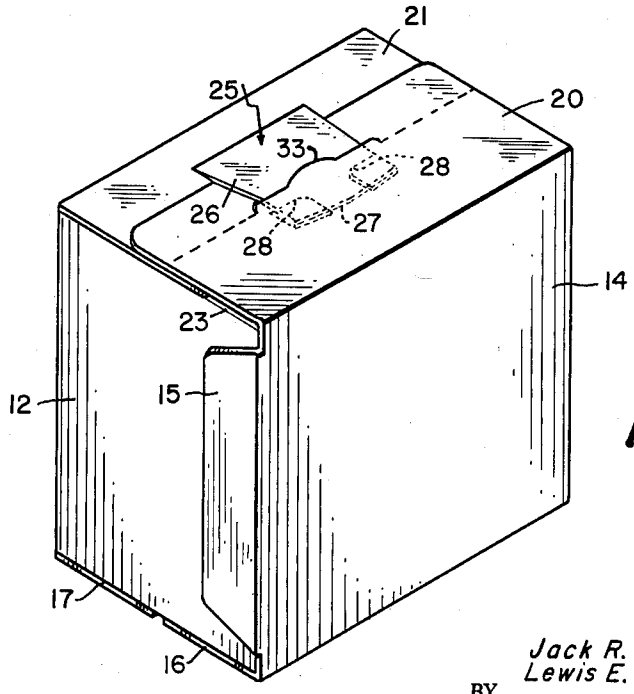


Fig. 5

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RECLOSURE DEVICE FOR AUTOMATICALLY FORMED AND SEALED CORRUGATED CONTAINERS

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3 Claims. (Cl. 229—39)

This invention relates to an improved construction for lockably reclosing a glued or adhesively-bonded automatically formed corrugated container which had been opened through the release or breakage of its adhesive seal, and more particularly to an improved reclosure construction formed within a die-cut blank usable in standard automatic carton forming and sealing machinery to lockably reclose such adhesively-sealed cartons which, heretofore, have not been recloseable.

Automatic forming and closing of corrugated cartons by machinery has definite economic and structural advantages in high speed packaging. In the past, however, applications for such cartons have been somewhat limited because of their rather rough or unfinished appearance and the difficulty encountered in opening the adhesively bonded or glued flaps. As a result, the application of such mechanically formed cartons has been limited to industrial areas.

The recent use of improved graphics and manufacturing techniques has materially enhanced the aesthetic appearance of these cartons and has made them feasible for consumer-oriented applications. However, a desirable merchandising feature for such consumer packaging is the recloseability of the cartons, thus enabling store clerks and purchasers to examine the contents and then securely reclose the carton prior to further handling. Prior to this time, it has not been possible to reclose mechanically formed cartons which have their end flaps all adhesively-bonded or glue-sealed during the forming and sealing of such cartons. Accordingly, when the cured or dried adhesive is broken to open the carton, the carton cannot subsequently be utilized as a sealed container, unless additional means such as exterior taping, stapling, or binding is applied, which of course is not always readily available to a consumer.

The reclosure device embodying our invention is self-contained within the structure of the carton, and has been developed primarily for use in packaging products designed for retail distribution. The reclosure device is not only self-locking so as to be substantially pilfer-proof, but also appears to be strong enough to be acceptable for insured mailing without necessitating the utilization of additional guing, stapling, or taping means.

A prime concern in the development of our improved reclosure device was the design of the carton blank based upon the capabilities of standard automatic carton forming and sealing machinery, such as that produced by Huntingdon Industries, Inc. of Bethayres, Pennsylvania. This equipment utilizes two stages to automatically or mechanically manufacture corrugated cartons. The corrugated blanks are first formed into open-top trays and ware to be packaged is then placed in the trays. The loaded cartons are then sent through a sealing unit, in which the carton tops are folded to a closed position, and the side and front flaps are glued in place. Our invention utilizes a standard sized partial overlap carton blank, which is die-cut to include our novel reclosure device therewithin.

It thus has been an object of our invention to provide a glued mechanically-formed corrugated container with a self-contained reclosure device.

A further object of our invention has been to form

a reclosure device within the blank of a mechanically-produced corrugated carton, which device remains inopertive within the surface of such carton while such carton is adhesively bonded together, and which may be folded into an operative position to reseal the carton after it has once been opened.

These and other objects of our invention will be more apparent to those skilled in the art from the following specification and accompanying drawings in which:

FIG. 1 is a plan view of a flat blank for use with automatic carton-forming machinery embodying the reclosure device of our invention;

FIG. 2 is a perspective view of an adhesively-bonded carton formed from the blank shown in FIGURE 1 by automatic-carton forming machinery, and illustrating our novel locking device in an inoperative position within the surface of such carton;

FIG. 3 is a perspective view of the carton shown in FIGURE 2 illustrating the carton in an opened position after breakably releasing the adhesive bond;

FIG. 4 is a perspective view of the carton shown in FIGURE 3 illustrating the manner in which the reclosure device is operated to lockably reclose the previously opened carton; and

FIG. 5 is a perspective view of the carton shown in FIGURE 4 in a reclosed and securely locked position.

Referring now to the drawing, and particularly FIGURE 1, a blank 10 of standard configuration for use in automatic carton-forming machines is shown having a fill support panel 11, side panels 12, 13, a closure panel 14, an outside manufacturer's joint panel 15, and abutting outer end flaps 16, 17, at one end thereof, having cooperating inner end flaps 18, 19. The other end of the blank is shown provided with partial overlapping end flaps incuding an outer partial overlap end flap 20, an inner partial overlap end flap 21 and a pair of inside end flaps 22, 23. The various panels are separated from one another and the flaps separated from the various panels by suitable score lines 24.

One novel reclosure device is formed in the partial overlapping flaps 20 and 21. A T-shaped tuck or locking section 25, having a base portion 26 and a nose portion 27 provided with a pair of outwardly-extending barbs or engaging tabs 28, is die-cut out of and formed integrally with, by means of folding crease or score line 29, inner partial overlap flap 21. A plurality of retaining nicks 30 retain the tuck section 25 in a non-operational position within the plane of the flap 21 until such time as it is needed. The nose portion 27 is separated from the base portion 26 by means of a score line 31 and the barbs or engaging tabs 28 are separated from the nose portion 27 by means of score lines 32.

Outer partial overlap flap 20 is provided with a transversely-centered slot 33. Although the slot is shown having an offset portion for facilitating the entrance of the tuck therein, as hereinafter described, the slot may be of any desired configuration so long as the outer portions of the slot are designed to lie coincident with the contact edges of the barbs. A score line 34 extends transversely across the flap 20 from the ends of the slot 33 so as to facilitate the opening of such flap.

In machine forming a carton from the blank 10, a tray is initially formed with the fill support panel 11 providing a bottom therefor and with the side panels 12, 13 and end flaps 17, 21 folded along their respective score lines 24 to form upright sides about panel 11. During the formation of such tray, abutting end flap 17 is glued or adhesively bonded to inside end flaps 18, 19, and partial overlap flap 21 is glued or adhesively bonded to inner end flaps 22, 23.

The article or articles to be packaged are positioned within the thus-formed opened tray, and closure panel 14

is then automatically folded along its appropriate score line 24 so as to closeably overlie the tray, and outside manufacture's joint 15, abutting end flap 16, and outer partial overlap flap 20 are glued or adhesively bonded to side panel 12, inside end flaps 18, 19, and inside end flaps 22, 23, respectively. The resulting carton, thus formed by the automatic carton forming machinery, is adhesively sealed together as a closed container. Such container, depending upon the ware packaged therein, may be retained in the orientation in which it is formed with the fill support panel 11 forming a bottom thereof, or upended as shown in FIGURE 2 with the partial overlapping flaps 20, 21 forming the upper end of such adhesively-bonded closed container.

When it is desired to open the sealed carton, such as for examining the merchandise packaged therein, the outer corners of partial overlap 20 may be lifted and pulled back to break the glued bond and release the adhesion from inner partial overlap flap 21. In order to protect the T-shaped tuck section 25, glue is not applied to it during the formation of the carton, or it may be printed with ink or varnish to resist glue adhesion with the adjacent mating areas of flap 20. After outer partial overlap flap 20 has been pulled free from inner partial overlap flap 21, flap 21 is then pulled back away from inside end flaps 22 and 23 to open the carton completely and permit access to its contents as shown in FIGURE 3. It should be noted, that up to this time, the T-shaped tuck section 25 of the reclosure device has been retained in an inoperative position within the surface of the carton.

To reclose the carton, inside end flaps 22, 23 are folded back into place. The T-shaped tuck section 25 is punched or broken out of the inner partial overlap end flap 21 and the flap 21 folded back in place over inside end flaps 22, 23. With the tuck section 25 folded along score line 29 and held backwardly out of the way, outer partial overlap 20 is then folded back into place over inner partial overlap flap 21, and the score line 34 extending from the ends of slot 33 is folded downwardly to open the slot in the center of flap 20, as shown in FIGURE 4. The barbs or engaging tabs 28 are folded 180° under the nose portion 27 along score lines 32, allowing the nose portion 27, which is folded along score line 31, to engage slot 33 as shown in FIGURE 4.

The flaps 20 and 21 are then flattened out and the nose portion 27 of the locking tuck section 25 becomes fully engaged through slot 33. Due to the spring-back action of the barb or engaging tab scores 32, after passing through slot 33, the disengagement of the locking structure is prevented, and the carton is accordingly reclosed in a positively-locked position as shown in FIGURE 5.

The inner end flaps 22 and 23 prevent the barbs 28 from projecting into the carton proper, although, if desired, the inside end flaps 22, 23 may be provided with complementary recessed portions so that the edges of the barbs may lock against the surface of such recessed portions. The reclosed carton, as shown in FIGURE 5, may be rehandled or mailed without damage or loss of contents. Any attempt to reopen the carton at this stage will normally result in obvious damage to the enclosure device thus providing an indication of tampering.

Although we have disclosed our now preferred embodiments of a positive-locking reclosure device for use with adhesively-sealed machine-formed corrugated cartons, it will be apparent to those skilled in the art that various changes and modifications may be made thereto without departing from the spirit and scope of our invention as defined in the appended claims.

We claim:

1. A positive locking reclosure device for adhesively-bonded machine-formed corrugated cartons which have been opened at one end by the release of the adhesive bonding which comprises, a T-shaped locking tuck section formed out of an inner partial overlap end flap and foldably secured thereto along a score line; said tuck section having a base portion, a nose portion foldably secured to said base portion along a score line, and a pair of outwardly-projecting engaging tabs foldably secured along score lines to opposite sides of said nose portion; a slot formed in an outer end flap partially overlying said inner end flap, a score line extending transversely across said outer end flap from end portions of said slot; said outer partial overlap flap being foldable along said last mentioned score line to open said slot while partially overlying said inner overlap flap; and said engaging tabs of said tuck section being foldable under said nose portion so that said nose portion may project through said slot and lock said tuck section within said slot to positively retain the partial overlapping flaps in a secured locked position.

2. A reclosure device formed integrally with a mechanically-formed adhesively-bonded corrugated carton for lockably-reclosing such carton after it has once been opened by breaking the adhesive bond which comprises, a corrugated carton having a plurality of bounding wall panels, abutting end closure flaps adhesively sealed in a closed position at one end of said carton, an inner partial overlap end flap and an outer partial overlap end flap adhesively sealed together at the opposite end of said carton, a locking portion formed out of and lying within the plane of said inner partial overlap end flap; said locking portion including a base portion secured to said inner partial overlap end flap along a folding crease, a nose portion foldably connected to said base portion, and a pair of outwardly-extending barbs foldably secured to opposite sides of said nose portion; a slot formed in said outer partial overlap end flap in alignment with said locking portion, a score line extending transversely across said outer partial overlap end flap from opposite ends of said flap; said locking portion and said slot cooperating with one another to lockably reclose said carton after the carton has been opened by breaking the adhesive seal between such end flaps; and said outer partial overlap flap being foldable along said transversely extending score line to open said slot and facilitate the projection of said nose portion, with said barbs folded thereunder, through said slot, so as to lockably retain said overlapping flaps in a closed position.

3. A locking device formed integrally with a mechanically-formed adhesively-bonded corrugated container for lockably-reclosing such container after once having opened the container by breakably-releasing the adhesive bond which comprises, a corrugated container having a plurality of bounding wall panels closed at one end with adhesively secured end flaps and at the opposite end with partially overlying end flaps, a tuck section formed out of an inner flap of said partially overlying end flaps; said tuck section having a base portion foldably secured to said inner end flap, a nose portion foldably secured to said base portion, and a pair of barbs foldably secured to side edges of said nose portion; a slot formed through the outer flap of said partially overlapping end flaps; said barbs being foldable along a crease line through an arc of substantially 180° to a position beneath said nose portion to facilitate the entrance of said nose portion within said slot; and said barb crease lines tending to spring said barbs outwardly so as to lockably secure the nose portion within the slot and securely retain the carton in a reclosed position.

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