

June 26, 1962

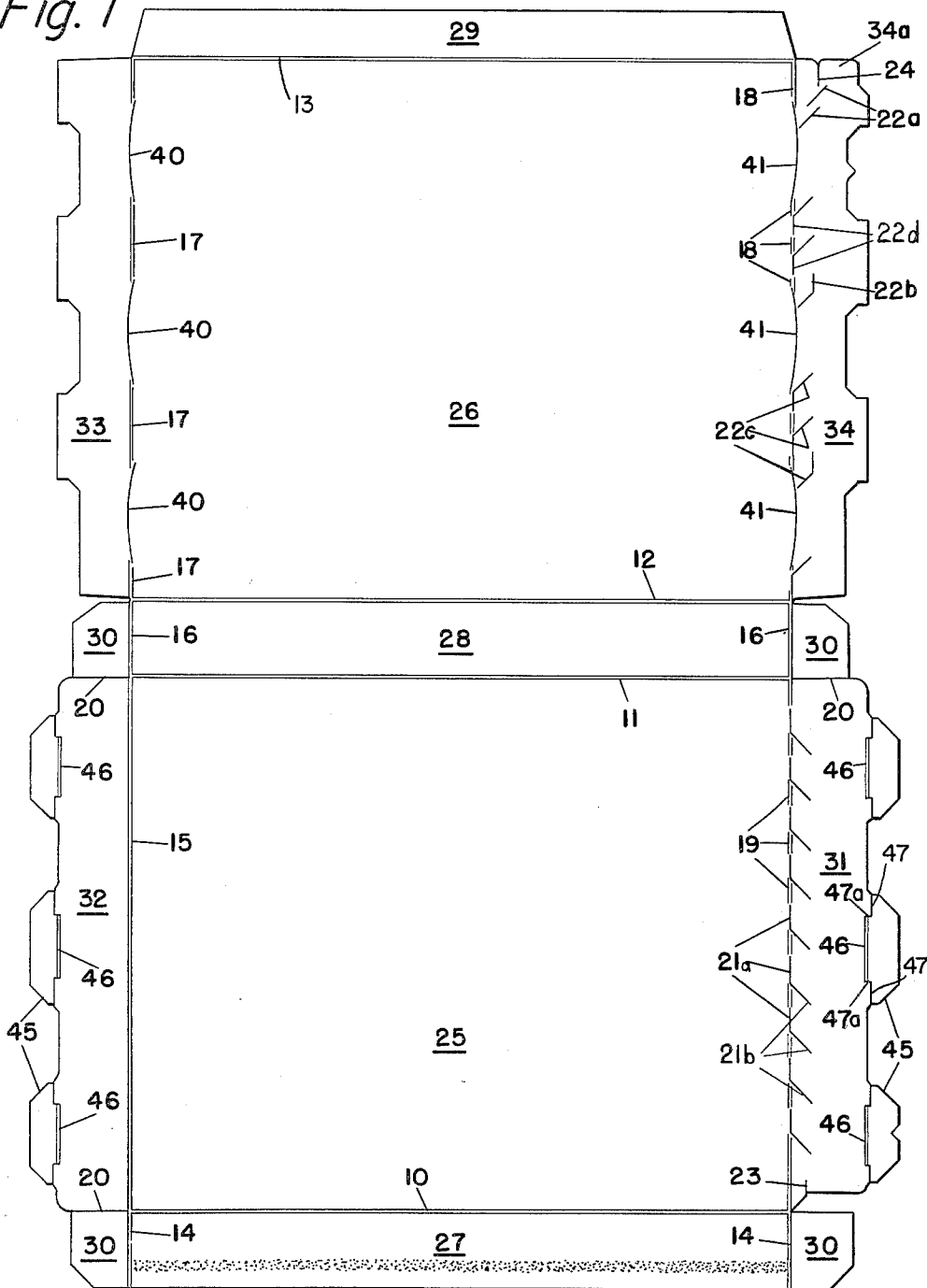
G. L. MEYERS
CARTON OPENING MEANS

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Fig. 1



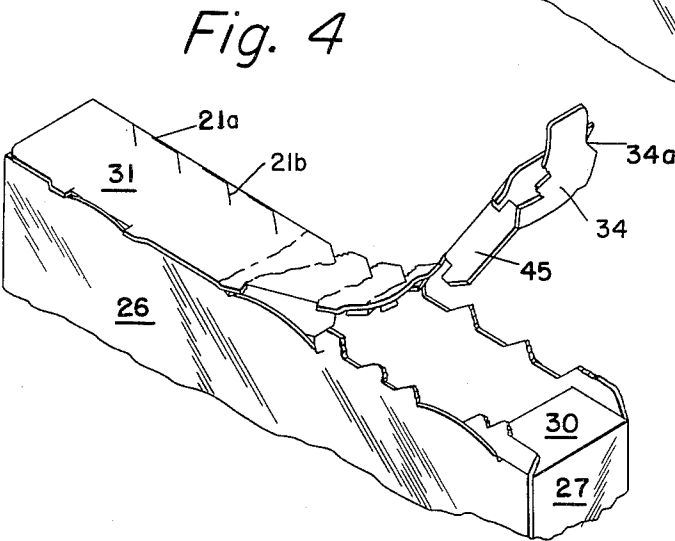
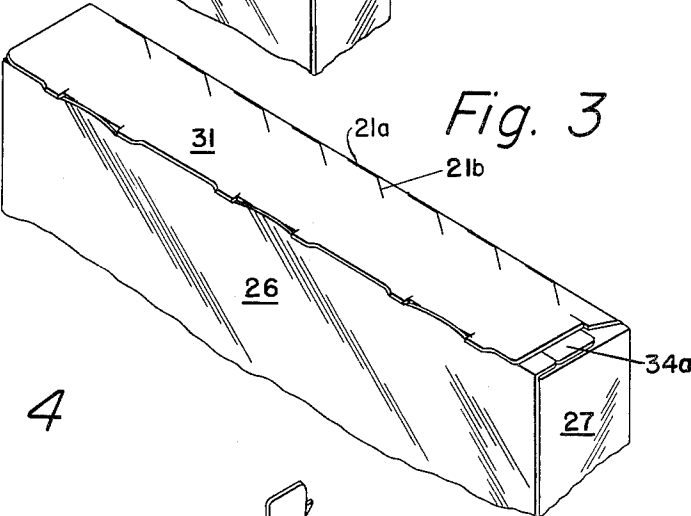
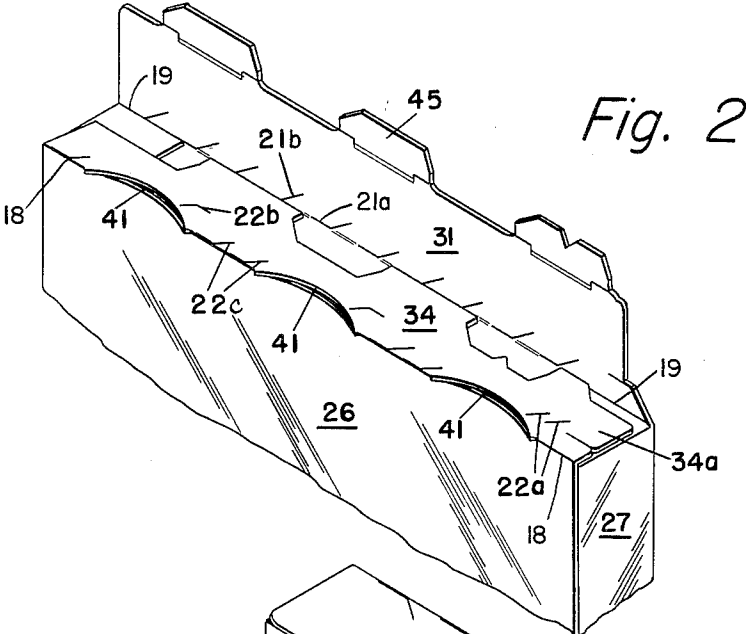
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CARTON OPENING MEANS

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This invention relates to a tamperproof opening means for cartons. More specifically, the invention relates to an opening means employing a tear strip and which is suitable for use on cartons employing locking means.

When employing an opening means on a carton, several features are desirable. The opening means should be essentially tamperproof so that any opening prior to that of the ultimate purchaser is readily ascertainable. Further, the means employed should not materially weaken the carton construction so as to impair the overall strength of the unopened carton. Also, the means should be easy to open as well as readily accessible. Undesirable ripping or tearing otherwise than at the desired areas should be avoided. Finally, the construction of the means should be such as to present an acceptable appearance of the carton after it has been opened.

One of the principal objections to edge-locking cartons employed for packaging is that the contents are not readily accessible. This is due to the fact that the cartons in many instances can only be opened by the tearing or ripping of one of the panels. Not only is this inconvenient and time-consuming, but it may also cause a spilling of the contents. These shortcomings can be overcome by employing the present invention which utilizes the female locking slits which are part of the opening means.

It is therefore the general object of the present invention to provide an opening means employing a tear strip which utilizes the female locking slits of the locking means.

Another object of the invention is to provide an opening means that is essentially tamperproof.

Still another object of the invention is to provide an opening means which does not substantially weaken the initial carton construction.

Yet another object of the invention is to provide an opening means which is readily accessible and which gives a complete detaching action.

This invention provides means for readily detaching a two-ply tear strip formed of the end closure flaps of the carton. One edge of the tear strip is formed by lines of weakness while the other edge is formed by the female locking slits and lines of weakness interposed between them. When the opening means are employed, the tear strip detaches along one edge composed essentially of lines of weakness and along the other edge intermittently because of the alternating lines of weakness and female locking slits.

Further details, advantages and objects of the invention will be apparent from the following specification and appended drawings wherein:

FIGURE 1 is a plan view of an integral blank suitably cut and scored to form a tamperproof carton having a tear strip opening means,

FIGURE 2 is a fragmental perspective view of the blank of FIGURE 1 glued and partially set up to form a carton shell,

FIGURE 3 is a fragmental perspective view of the completed carton with the locking tabs engaged in the locking slits, and

FIGURE 4 is a fragmental perspective view of the completed carton with the tear strip partially removed.

Referring to FIGURE 1, the opening means are provided in a carton which is made of a single foldable blank of flexible material, such as paperboard. The blank is divided by score lines 10-19 and cut lines 20, 21a, 22d, 40,

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and 41 into hingedly connected panels and flaps, including main panels 25 and 26, side panels 27 and 28, glue flap 29, dust flap 30 and end closure flaps 31-34. End closure flap 31 is hinged to main panel 25 by fragmental score lines 19 interposed between cut lines 21a while end closure flap 33 is hingedly connected to main panel 26 by fragmental score lines 17 interposed between locking slits 40. End closure flap 34 is hingedly connected to main panel 26 by fragmental score lines 18 interposed between locking slits 41 and cut lines 22d. Cut lines 40 and 41 which comprise female locking slits are of arcuate shape.

Projecting from end closure flaps 31 and 32 are male locking tabs 45 which are hinged to flaps 31 and 32 along score lines 46. The lateral portions of tabs 45 are separated from flaps 31 and 32 by cut lines 47 which terminate in inwardly directed cut line terminal portions 47a. Panel 27, as illustrated, or flap 29 bears an adhesive by which they may be secured together to form the carton shell. Cut lines 21a and 22d define the edges of the tear strip and will be discussed more fully hereinafter.

As shown in FIGURE 2, the carton is partially set up with glue flap 29 adhered to and underlying side panel 27. In this position panels 27, 25, 28 and 26 are positioned consecutively at right angles to each other. Usually the carton is filled and then both ends closed and locked simultaneously. Since the closing and locking steps are the same for both ends of the carton, reference is had to closing just the end of the carton having the opening means. In forming the completed carton, one end of the carton is closed by first infolding one pair of dust flaps 30 and then infolding the adjacent closure flap 34 about score lines 18, as seen in FIGURE 2. Adjacent closure flaps 31 and 34 both have lines of weakness along the edges by which they are hingedly connected. The lines of weakness essentially define the edges of the tear strip. The particular configuration of the lines of weakness is chosen to facilitate rapid and dependable tearing action.

Next, male locking tabs 45 are folded inwardly prior to insertion into the female locking slits 41. When folded inwardly, tabs 45 lie inwardly from the outer edge of closure flap 31 with the distance from the tabs to main panel 25 being less than the distance between the main panels in the closed completed carton. The closure is completed by infolding closure flap 31 about score lines 19 and inserting male locking tabs 45 in female locking slits 41. In the closed carton shown in FIGURE 3 tab portion 34a of closure flap 34 extends beyond the end of closure flap 31 to provide a grasping portion for initiating the opening of the carton.

Referring to FIGURE 4, the carton is opened by grasping tab portion 34a and pulling upwardly and away from one side to the other. As the initial upward pull is made end closure flap 34 is torn starting at the inward end of cut line 24 to the immediately adjacent cut line 22a, which directs the pulling force towards the inner end thereof adjacent score line 18. Tearing begins again at the inner end of the first cut line 22a in a somewhat outwardly direction and proceeds until the outer end of the next cut line 22a is reached. Then the pulling force is directed inwardly toward locking slit 41 with the result that the small segment separating cut line 22a and slit 41 is torn away and the pulling force directed along the configuration of the locking slit. As the pulling force reaches the end of the slit 41, tearing begins again and tearing of the segment between the end of the slit and the outer end of adjacent cut line 22c occurs. The pulling force is then directed in along cut 22c and follows cut line 22d, which parallels the score line 18, until the end of cut line 22d is reached. Again tearing occurs and again cut lines 22c and 22d direct the pulling force along the desired path. When the end of the second cut line 22d is reached, tearing of the portion between the cut line 22d and cut line

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22b occurs with the pulling force consequently directed in along cut line 22c toward locking slit 41. Further pulling removes the segment between the inner end of cut line 22c and locking slit 41. The same pattern is repeated until the end of the tear path is reached.

Simultaneously with the tearing along the path defined by locking slits 41 and cut lines 22, tearing occurs along the path defined by cut lines 21. Underlying tab portion 34a directs the tearing force from the internal end of cut line 23 toward cut lines 21 until adjacent cut line 21b is reached. The force then is directed along cut line 21b toward score lines 19 and then along adjoining cut line 21a. Tearing begins again when the end of 21a is reached and occurs in an outwardly direction until the outer end of the next cut line 21b is reached. The pulling force is then again directed inwardly. The same pattern is repeated until the end of the tear path is reached. When the tear strip is removed, the contents of the carton are readily accessible.

The described specific embodiment employs a cut line configuration which insures complete detachment because no undesirable ripping or peeling in areas other than the tear path occurs. Unless the initial tearing is directed into the cut lines forming the tear paths of the opening means, complete detachment of the tear strip will not occur. If the cut lines comprising the tear paths are spaced too far apart the tearing from the terminal end of one cut line will not intercept the next adjacent cut line and hence the tear strip will not be detached along its whole length.

Although the described specific embodiment of the present invention relates to an edge locking carton, the invention may also be employed with other types of locked cartons. For instance, the locks may be located in the middle of the closure flaps. The edges of the tear strip would then essentially be defined by a first tear path comprising lines of weakness along the hinge line joining the outer closure flap and a main panel, and a second tear path comprising lines of weakness and female locking slits in the inner closure flap intermediate the edges thereof. The particular lines of weakness employed may be varied as desired governed only by the necessity of a configuration which insures proper tearing action.

The present invention provides an opening means which does not materially weaken the initial carton, is essentially tamperproof, readily accessible, and easy to detach. The use of the locking slits in conjunction with cut lines to form one edge of the tear strip obviates the necessity of a separate edge defining line of weakness that would be necessary if the slits were not utilized. Although exemplified with a plurality of locking elements, it is understood that the carton may have one or more locking elements depending upon the desired size and shape of the completed carton.

I claim:

1. An opening means for a tamperproof carton, the carton including a pair of opposed main panels, a pair of opposed side panels hingedly connected to said main panels, a pair of end closure flaps hingedly connected to adjacent ends of said main panels, a female locking slit in one closure flap extending in a direction parallel to a first score line connecting said one flap with one main panel, a male locking tab extending outwardly from the edge of the other of said closure flaps opposite the hinge connection of said other flap to the other main panel and engaged in locking relationship in said locking slit; said opening means comprising a tear strip in said closure flaps defined by

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a first weakened tear path in said one closure flap and said female locking slit, and a second weakened tear path in said other closure flap.

2. The opening means of claim 1 wherein said lines of weakness comprise cut lines each of which has a portion extending essentially parallel to said score lines and a portion extending angularly from one end of said parallel cut lines.

3. The opening means of claim 1 wherein said first flap is of greater length than said second flap and has a pull tab at the extending end for grasping and initiating tearing action.

4. The opening means of claim 1 wherein the female locking slit is located at said first score line.

5. An opening means for a tamperproof carton, the carton including a pair of opposed main panels, a pair of opposed side panels hingedly connected to said main panels, a pair of end closure flaps hingedly connected to adjacent ends of said main panels, a plurality of female locking slits in one closure flap extending in a direction parallel to a first score line connecting said one flap with one main panel; a plurality of male locking tabs extending outwardly from the edge of the other of said closure flaps opposite the hinge connection of said other flap to the other main panel and engaged in locking relationship in said locking slits; and said opening means comprising a tear strip in said closure flaps defined by a first tear path in said one closure flap through said slits comprising alternating lines of weakness and said slits, and a second tear path in said other closure flap comprising lines of weakness.

6. The opening means of claim 5 wherein said lines of weakness comprise cut lines each of which has a portion extending essentially parallel to said score lines and a portion extending angularly from one end of said parallel cut lines.

7. The opening means of claim 5 wherein said first flap is of greater length than said second flap and has a pull tab at the extending end for grasping and initiating tearing action.

8. The opening means of claim 5 wherein the female locking slits are located at said first score line.

9. An opening means for a tamperproof carton, the carton including a pair of opposed main panels, a pair of opposed side panels hingedly connected to said main panels, a pair of end closure flaps hingedly connected along score lines to adjacent ends of said main panels, a plurality of female locking slits adjacent the hinge connection of one closure flap with one main panel, male locking tabs corresponding in number to the said female locking slits extending outwardly from the edge of the other of said closure flaps opposite the hinge connection of said other closure flap to the other main panel and engaged in locking relationship in said slits; said means comprising a tear strip in said closure flaps, a first tear path in said one closure flap comprising cut lines and said female locking slits, a second tear path in said other closure flap comprising cut lines, said cut lines each having a portion coincident with said score lines and a portion extending angularly from one end of said parallel cut lines, a pull tab at one end of said first closure flap for grasping and initiating tearing action.

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