

March 11, 1958

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2,826,296

PACKAGE WITH LOCKING TAB AND SLIT

Filed Feb. 21, 1955

2 Sheets-Sheet 1

fig. 1.

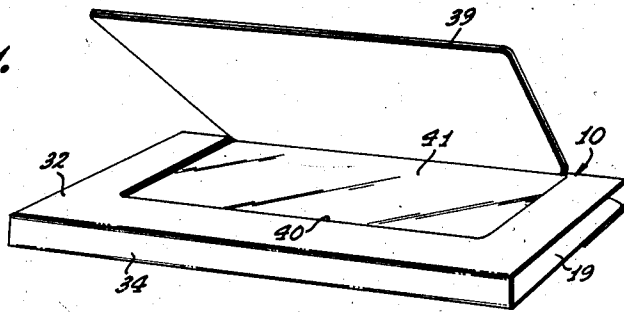


fig. 2.

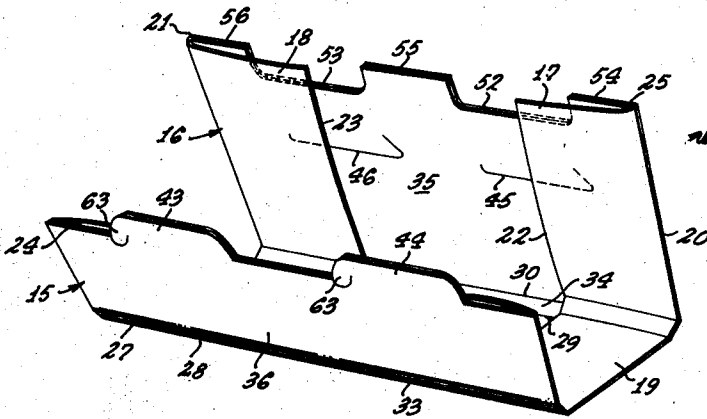


fig. 3.

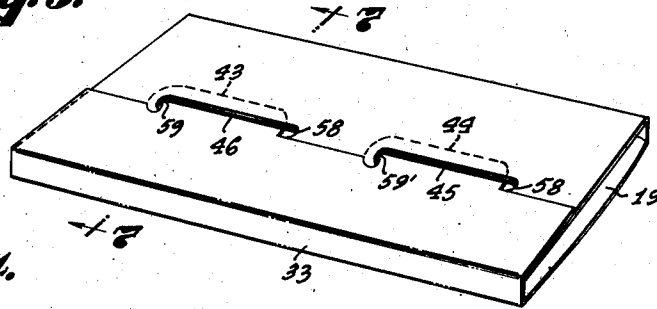
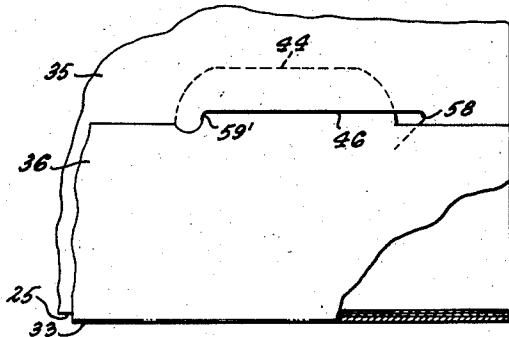


fig. 4.



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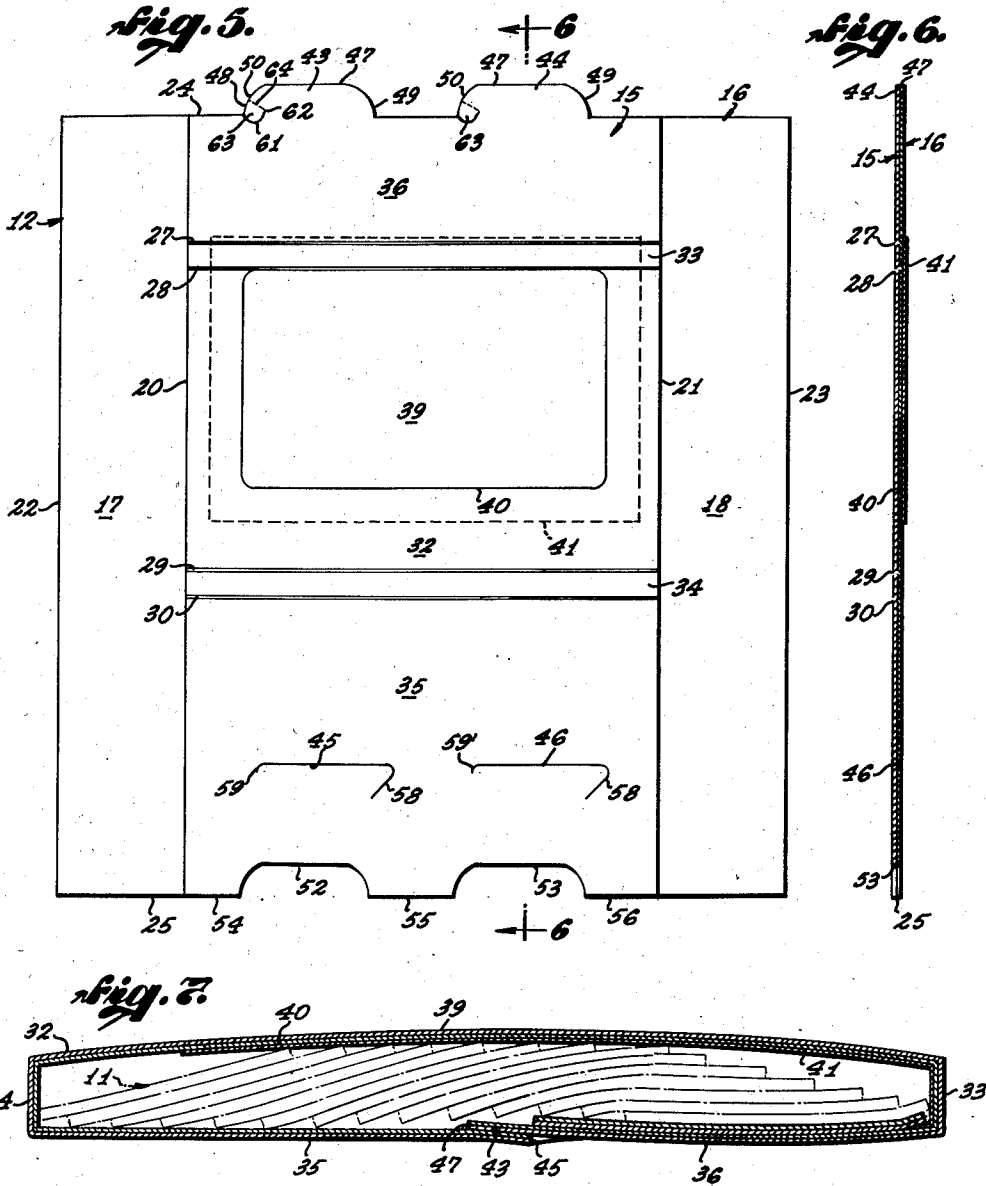
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PACKAGE WITH LOCKING TAB AND SLIT

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5 Claims. (Cl. 206—45.31)

This invention relates to packaging of articles in general, including items of clothing, as for example, socks, neckties, handkerchiefs, and is especially advantageous for packaging sliced meat products, e. g. bacon.

I have chosen to illustrate and describe my invention as the same may be embodied in a form for packaging sliced bacon.

In modern self-service food stores, a purchaser picks up several food packages and inspects them before making his purchase, and when purchasing sliced bacon he may inspect the contents of many packages before selecting one containing lean or fat bacon to his liking. Thus a given package of bacon may have been handled and inspected by numerous purchasers before being selected, and because of this expected handling by purchasers, it is important that the packages be so constructed that they will hold up well under these conditions. It is an object of this invention to provide an improved package of the above mentioned character which will withstand rough handling.

It is important, too, that bacon packages be so constructed that they will maintain a correct balance of moisture loss and ventilation. If a package of bacon be air-tight, the bacon will in time become sour and slimy, unless, of course, it be vacuum packed. If the package is too airy, the bacon oxidizes and becomes rancid. It is an object of this invention to provide a package which when employed for packaging meat products, will maintain a correct balance of moisture loss and ventilation.

For bacon and various other products it is desirable to employ a window package with a cover flap, which permits a purchaser to view the contents of the package without having to open the package. Although there is no need to open such package for viewing the contents, in practice it is often found that some of these packages have become opened, sometimes during shipment and at times even by purchasers. The present invention provides a package which when closed becomes locked and may not be readily opened except by tearing the package or mutilating the locking parts thereof.

When a customer picks up a package such as that herein described, he usually grasps it at one corner thereof or along an end edge and then holds it in a generally horizontal plane for viewing the contents. These packages, being constructed from laminated paper, paperboard or cardboard stock, tend to flex or bow downwardly and become wrenched or otherwise contorted due to the weight of their contents. The packages of the present invention are so cut and formed that the closure flaps thereof will serve not only to lock the package, but also to support the panels of the package, thereby holding the package against being twisted or otherwise contorted when being handled.

To manufacture packages of the above mentioned character economically, it is desired that they be formed from blanks which may be cut from a long strip or roll of sheet material, and that these blanks be separated from each other by a force applied in the plane of the blanks.

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Also, it is important for economical production that there be no waste sheet material which need be removed from the blanks when they are separated from each other. The package-forming blanks of this invention have been designed to meet these production requirements.

A further object of this invention is to provide a blank of sheet material which may be folded to form a package and closed and locked in a simple and expeditious operation, thereby minimizing the cost of food packaging.

Further objects and advantages of this invention will appear during the course of the following part of this specification, wherein the details of construction of one embodiment thereof, and the manner in which packages are formed from blanks embodying the invention are described with reference to the accompanying drawing, in which:

Fig. 1 shows a completed package embodying the invention,

Fig. 2 shows the package at a stage during the closing thereof,

Fig. 3 is a perspective view of the package with its under side up,

Fig. 4 is a detail plan view of a locking part of the package,

Fig. 5 is a plan view of a blank for forming the package,

Fig. 6 is a cross section of the blank taken substantially on line 6—6 of Fig. 5, and

Fig. 7 is a cross section of the package taken on line 7—7 of Fig. 3.

Referring to the drawing more in detail and with the use of reference numerals, Fig. 1 shows a package, designated generally by reference numeral 10, of relatively thin and rectangular configuration for accommodating a slab of bacon strips 11 (see Fig. 7). The package 10 is formed from a blank 12 shown in Fig. 5.

Having chosen to illustrate the present invention in a form which is especially well suited for packaging sliced bacon, a preferred construction of the package-forming blank is herein shown as being cut from laminated sheet material comprising a relatively heavy paper or cardboard sheet 15 of rectangular configuration, and a relatively light sheet 16 also of rectangular configuration, the heavy sheet being narrower than the light sheet 16 and the sheets being bonded face to face with their longitudinal medial lines coinciding. Thus the light sheet provides marginal portions 17 and 18 extending longitudinally along respective sides of the blank for folding inwardly over the ends of the bacon strips to form end walls or closures 19 of the package. I desire to have it understood, however, that the present invention is not restricted to packages formed from blanks of laminated sheet material, for, as will be apparent to those skilled in the packaging art, my invention is useful and advantageous for packages formed from a single sheet and for packages having end closures of different form than that herein shown, and also even for cylindrical packages having no end walls.

The heavy sheet 15 is of relatively stiff paperboard or cardboard, preferably of sulphite or sulphate stock, while the light sheet 16 is a thin glassine sheet. When forming the blank into a package, it is preferred that the heavy sheet be disposed outside the light sheet. The longitudinal edges of the heavy sheet are designated by reference numerals 20 and 21 respectively, while the longitudinal edges of the light sheet, defining the longitudinal edges of the blank, are designated by numerals 22 and 23. The end edges of one sheet coincide with respective end edges of the other sheet, thus defining end edges 24 and 25 of the blank.

The blank is provided with four score lines 27, 28, 29, and 30, along which the blank is folded to form the

package. These fold or score lines extend transversely of the heavy sheet and are parallel to the end edges of the blank. Score lines 28 and 29 define respective longitudinal edges of a top panel 32 of the package. The adjacent pair of score lines 27 and 28 define longitudinal edges of a narrow side wall 33 for the package, while the pair of score lines 29 and 30 define respective edges of an opposite side wall 34. Score line 30 and end edge 25 define a full flap 35, which in the illustrated embodiment is slightly less in width than the top panel 32. The slight difference in width of the flap 35 and the top panel 32, and the reasons therefor, will be explained hereinafter. Score line 27 and end edge 24 define the longitudinal edges of a flap 36 which is of substantially less width than the flap 35. The flaps 35 and 36, when locked together in a manner described hereinafter, constitute a bottom panel of the package.

To permit viewing of the contents of the package without opening the package, the top panel of the package-forming blank has a window flap 39 formed therein by a cut 40 through the laminated sheets 15 and 16 and extending along three sides of the area of the flap, leaving the flap hinged to the blank along a section of score line 28. A sheet 41 of sealable, substantially transparent material, e. g. cellophane, overlies the flap 39 and is bonded as with a suitable adhesive material around and outside the periphery of the flap 39, on the inside surface of one of the sheets 15 and 16. Thus, when the blank is formed into a package, the flap 39 may be lifted to uncover a window through which the contents of the package may be viewed. The transparent sheet 41, which constitutes the window, prevents free circulation of air into the package, while the cover flap 39 protects the contents of the package from light.

The important advantages of the present invention result from the structure by which the package becomes locked when in its closed position and by which the package is kept from being skewed or twisted when picked up at one end thereof. For locking the package in its closed position, the blank 12 is illustrated as having two tabs 43 and 44 extending beyond the straight line sections of the edge 24, and these tabs are so positioned that they will hold the narrow flap 36 down on the full flap 35 when the tabs 43 and 44 are inserted in slots or slits 45 and 46, respectively, in the flap 35.

For increased efficiency in the mass production of package-forming blanks of the type herein contemplated, it is preferred, as stated above, that the blanks be formed by being cut from a long strip or roll of sheet material, and that the locking tabs be so shaped that a given blank may be separated from its adjacent blank merely by pushing on the blanks to force them apart without raising one blank out of the plane of the other. In practice it is often preferred that the transverse cuts formed in the roll of sheet material to define the end edges of the blanks (i. e. edges 24 and 25) be made as aligned slits, i. e. that there be one or a plurality of short nibs (not shown) remaining in the cut line for tacking adjacent blanks together. These tacking nibs are easily broken when separating the blanks as by pushing the blanks apart in a common plane. For this purpose, then, the tabs 43 and 44 have their outside edges (designated by numeral 47) of equal or less, but not greater, length than the base thereof. Thus, with reference numerals 49 and 50 designating opposite side edges of the tab 43, these side edges extend at an angle of 90° or less from the line of the aligned sections of edge 24. In the illustrated embodiment the side edges 49 and 50 are curved from the edge 24 toward the edge 47.

The tabs 43 and 44 leave complementary notches or recesses in an end edge of a blank next above the blank 12. Corresponding notches in the blank 12 appear at 52 and 53 and these result from the forming of locking tabs in the blank next in line below the blank 12. There

being two spaced apart tabs in the illustrated embodiment, and as these are spaced inwardly from their respective adjacent edges 20 and 21 of the heavy sheet, there are three spaced apart and aligned straight edge sections 54, 55, and 56 in the edge 25 of the blank.

Referring again to the slots or slits 45 and 46, which are formed in the full flap 35, these slits are made slightly longer than the tabs 43 and 44 so that the tabs will slide easily into the slits when the blank is formed into a package. One end of each slit preferably is hook shaped as shown at 58, whereby the sheet material within the hook portion of these slits may be flexed slightly inwardly of the package out of the plane of the flap 35 to receive a tab. Slot 45 terminates at an end 59, opposite end 58, at a predetermined distance from longitudinal edge 20 of the heavy sheet. Also the end 59 preferably is curved downwardly in a direction toward the edge 25 of the blank. This terminal portion at end 59 may also be referred to as a notch.

Exact positioning of the end 59 of slit 45, and the corresponding end 59' of slit 46, with relation to the edges of the heavy sheet, is necessary for keeping the longitudinal edges 20 and 21 of the heavy sheet in a common plane when the blank is folded on its score lines to form a cylindrical package, here of rectangular cross section. The curved ends 59 and 59' as shown are desirable but not essential. It is important, however, that irrespective of the exact configuration of the terminal end portions of the slits adjacent the ears hereinafter referred to, there should be an end abutment in each slit for camming the tabs and engaging the ears.

Each of the tabs 43 and 44 has an arcuate slit or line cut 61 associated therewith and cut through the sheets of the laminated blank. Slit 61 for tab 43 extends from the point of intersection of the edge 24 and the edge 48 of the tab and into the flap 36 and thence upwardly toward edge 47 of the tab where it terminates in what may be referred to as a notch at a location 62 which is spaced from the line of edge 20 by a perpendicular distance equal to the distance of slot end 59 from edge 20. Thus the slit or line cut 61 defines, with the edge 48, an ear 63 on the tab and this ear becomes disposed on the inside surface of flap 35 and to the left of slot end 59 when the flaps 35 and 36 are locked together by the tabs and slits.

To wrap a slab of bacon strips with the blank 12 and thereby form the package 10, the blank is placed on a flat surface preferably with the heavy sheet 15 down against the supporting surface and the light sheet 16 facing upwardly. A slab of bacon strips 11 is then placed on top of the panel 32 with the lean edges of the bacon strips facing downwardly, whereby such lean edges will be seen through the cellophane sheet 41 of the completed package. Next the marginal portions 17 and 18 of the light sheet are folded over respective ends of the slab of bacon strips and then the flaps 35 and 36 are folded over, as best shown in Fig. 2 of the drawing, to place the full flap 35 next against the slab of bacon, during which operation the flap 36 is folded over the flap 35 and the tabs 43 and 44 are inserted in respective slits 45 and 46.

The arcuate outline of the ears provides a cam-like edge which rides smoothly and easily over that point in the flap 35 adjacent the end 59 of the slit 45, whereby in completing the locking operation of the tabs and slits, the flap 36 moves in a direction such that its portion of edge 20 will overlie the portion of edge 20 in the flap 35. By this action of interlocking the tabs in the slits, the ears 63 becomes flexed slightly inwardly of the package. This flexing of ears 63 occurs approximately along a line represented in Fig. 5 of the drawing by dotted line 64. Thus when the flaps 35 and 36 become locked together, one handling the package may not readily, if at all, slide the tabs out from their slits, since in attempting to do so as by movements of the flaps fol-

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lowering a reverse order from that in which they are locked together, the ears 63 will remain under that portion of flap 35 disposed adjacent the slot 45 and nearer the edge 25. The curved end portions 59 and 59' of the slits 45 and 46 slide through the line cuts 61 when an attempt is made to slide the tabs from the slits, and thus to open the package one usually must either tear the ears 63 or mutilate them before the flaps may be separated.

In the illustrated embodiment, and with particular reference to Fig. 7, it is seen that top panel 32 of the package is bowed outwardly, due to the strips of bacon being overlapped in a conventional manner, exposing the lean edges of the bacon strips. This bowing of the top panel makes it possible to make flap 35 slightly narrower than panel 32 and still provide a package having optimum rigidity. It is an important feature of this invention that the flap 35 be of such width that its edge 25 will be close to or in contact with the inside surface of side wall 33.

In bacon packages of conventional size, i. e. approximately 9 $\frac{3}{4}$ inches long, 5 $\frac{3}{4}$ inches wide, and $\frac{1}{2}$ inch thick, I have found that the flap 35 may be $\frac{3}{8}$ inch or $\frac{1}{4}$ inch narrower than the top panel 32, and still the package will possess improved rigidity, since with only slight flexing of the package, the straight edge sections 54, 55, and 56 abut against the inside surface of wall 33 and thereby tend to hold the package rigid against further flexing thereof.

The flap 35 may be made to a width equal to that of the top panel 32, for when engaging the tabs in their respective slits, the marginal portion of the flap 35 adjacent edge 25 will be flexed inwardly of the package against the wall 33 and when the locking operation is completed the edge 25 will then raise up against the hinge of flap 36 due to the stiffness of heavy sheet 16, so that it abuts against the inside surface of wall 33. Such flexing of the edge portion of flap 35 when closing the package is permitted, when packaging various articles, such, for example, as sausage links; however, I desire to have it understood that my invention is not limited to packages in which the edge 25 remain in abutment against the inside surface of wall 33, for as will be understood by those skilled in the packaging art, a package of the herein illustrated type will serve well and possess substantial rigidity even in cases where such edge is not in abutment with side wall 33, but is spaced slightly therefrom.

Either spacing of edge 25 from wall 33, or the inward flexing of the flap 35 adjacent its edge 25, is made necessary due to the relative movement of the locking tabs and the slits 45 and 46 when closing the package. It will be apparent that, as the ears 63 ride over respective notches formed by ends 59 and 59' of the slits, the bottom panel of the package will first become narrower than the top panel, and then to engage the ends 59 and 62 it will be necessary to move the flaps 35 and 36 in opposite directions to widen the bottom panel. This relative outward movement of the flaps to widen the panel is equal to the perpendicular distance between the end 62 of the cut 61 and the innermost point on the slit 45, and in cases where no flexing of the flap 35 is permitted inwardly of the package, the flap 35 may be made to a width such that the space between wall 33 and edge 25 is no greater than this perpendicular distance between end 62 and the innermost point on the slit. Where maximum spacing of the edge 25 from wall 33 is permitted, the flap 36 may be made to a width such that ends 62 are spaced from fold line 27 by a distance equal to the sum of the distances between ends 59 and edge 25 and between ends 62 and the most inward point on respective line cuts 61. However, it is not necessary to adhere to these dimensions in order to secure a good locking function. Moreover, while a pair of locking tabs and slits is preferred, a single tab and slit of the

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general character disclosed will perform an excellent locking together of flaps which overlap sufficiently to afford the complementary tab and slit structure.

While I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of my invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent structures.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A closed package of quadrangular cross section having a front panel, back panel, two side panels, and two end closures, said package being formed from a blank comprising a relatively heavy and stiff sheet and a relatively light sheet of paper stock, said sheets being of substantially rectangular configuration, the heavy sheet being narrower than the light sheet and said sheets being laminated together in face to face relation with their medial longitudinal lines coinciding to provide respective longitudinal marginal portions in the light sheet, said marginal portions being folded over the respective ends of the package contents to form said end closures, the front panel having a hinged window flap formed therein, a sheet of transparent material covering the area of the front panel from which the window flap is formed, said transparent sheet constituting a window through which the contents of the package may be viewed when the window flap is hinged out of the plane of the front panel, the back panel comprising a full flap hinged to one side wall of the package and a narrower flap hinged to the other side wall of the package, said narrower flap being disposed outside of and in face to face relation with the full flap, a pair of tabs integral with the narrower flap and extending from that edge thereof opposite the edge along which the narrower flap is hinged to said one side wall, the full flap having a pair of slits formed therein, each of said tabs having a curved cut formed therein extending from the point of intersection of said opposite edge of the narrower flap and a side edge of the tab into said narrower flap and thence curving back into the tab to form an ear, the tabs being inserted into respective slits with the tab cuts being engaged with one end of the respective slits, the full flap being of a dimension taken transversely of the package at least as great as the corresponding dimension of the back panel less the transverse dimension of the ears, whereby the free edge of the full flap abuts against the inside face of said other side wall when the package is twisted.

2. A lock for overlapping flaps of a wrap carton made of stiff but flexible sheet material comprising a slit in one flap and a mating tab on the opposite flap, the slit extending in a line generally transverse of the flap and being long enough to readily receive the tab when the tab is pushed longitudinally through the slit, the slit having a terminal portion extending toward the adjacent free end edge of said one flap and providing a notch offset from the general line of the slit toward the tab, the tab comprising a major portion and a minor ear portion formed by a cut extending from one side of the tab and curving into its associated flap and then back into the tab and having a terminal portion extending toward the free end edge of the tab, the ear portion being at the end of the tab adjacent the terminal portion of the slit, and the terminal portion of the cut providing a notch adapted to engage in operative locking position with the notch in the slit, the two notches being located in the same longitudinal plane, the tab and slit being inter-engageable for locking the flaps together by introducing the tab through the slit with the flaps laterally offset from one another until the ear portion has cleared the notch in the slit, then sliding the flaps

laterally back into normal alignment with one another and sliding them longitudinally apart to bring the notches into mutual engagement.

3. A plurality of locks as defined in claim 2 spaced apart in lateral alignment coacting to resist separate disengagement of either lock and imparting rigidity to the flap engagement whereby distortion of the flaps for simultaneously disengaging the locks is also resisted.

4. A double lock for overlapping flaps of a wrap carton made of stiff but flexible sheet material comprising a pair of slits in the underlying flap laterally aligned and spaced apart, and a pair of mating tabs on the overlying flap longitudinally aligned with the respective slits for insertion therethrough, each slit terminating at one end in a notch, each tab being formed by a cut extending from one side of the tab and curving into its associated flap and then back into the tab and having a terminal portion extending toward the free edge of the tab, said terminal portion being normally in longitudinal alignment with said notch, whereby when the tabs are inserted through the slits the overlying flap must be shifted laterally out of normal longitudinal alignment with the underlying flap and beyond normal longitudinal overlapping relationship in order to enable the ears to pass the notches whereupon the overlapping flap may be longitudinally retracted and also shifted laterally back to normal alignment with the underlying flap, bringing the notches and said terminal portions into interlocking relationship.

5. A lock for overlapping flaps of a carton made of stiff but flexible sheet material comprising a slit in the underlying flap extending generally laterally thereof, and a mating tab on the overlying flap in general longitudinal alignment with the slit for insertion therethrough,

said slit having an end abutment, said tab being formed with a line cut extending from one side of the tab and curving into its associated flap and then back into the tab and having a terminal portion extending toward the free edge of the tab, said line cut defining an ear, said terminal portion, when the flaps are in overlapped operative position, being normally in coinciding longitudinal alignment with said end abutment of said slit and the free end portion of said ear offset laterally beyond said end abutment, whereby when the tab is inserted through the slit the flaps must be relatively shifted laterally out of normal longitudinal alignment and beyond normal longitudinal overlapping relationship in order to enable the ear to pass beyond the end abutment of the slit whereupon the flaps may be relatively retracted longitudinally and also shifted laterally back to normal alignment, bringing the end abutment of the slit and said terminal portion into interlocking relationship, in which relationship the free end portion of the ear is offset laterally beyond said end abutment and lies beneath the underlying flap and the slit extends from said end abutment toward the side of said tab remote from said ear.

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