June 14, 1960 R. M. DUNNING 2,940,655

FOLDER LOCK

Filed July 16, 1957 2 Sheets-Sheet 1

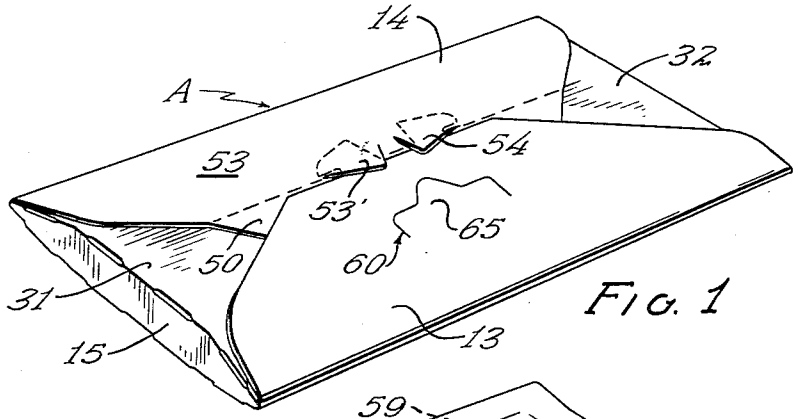


FIG. 1

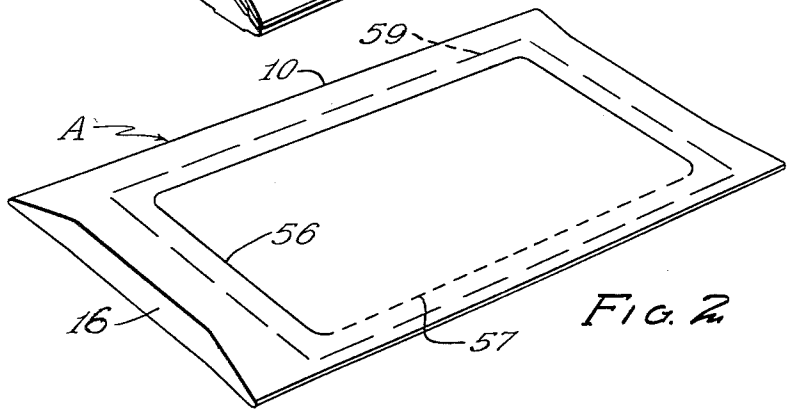


FIG. 2

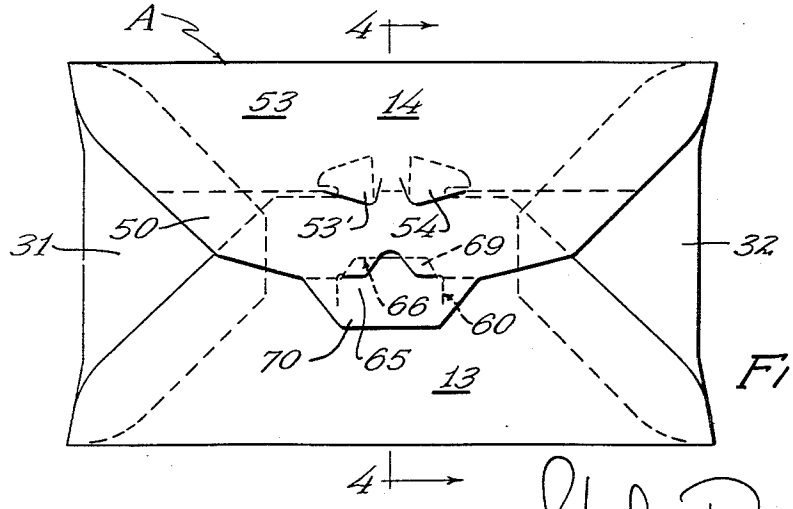


FIG. 3

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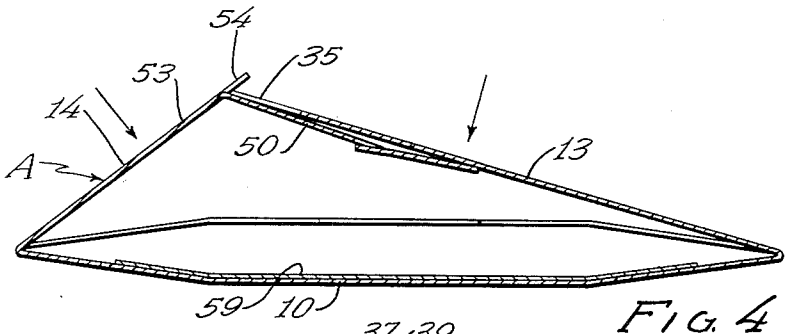


FIG. 4

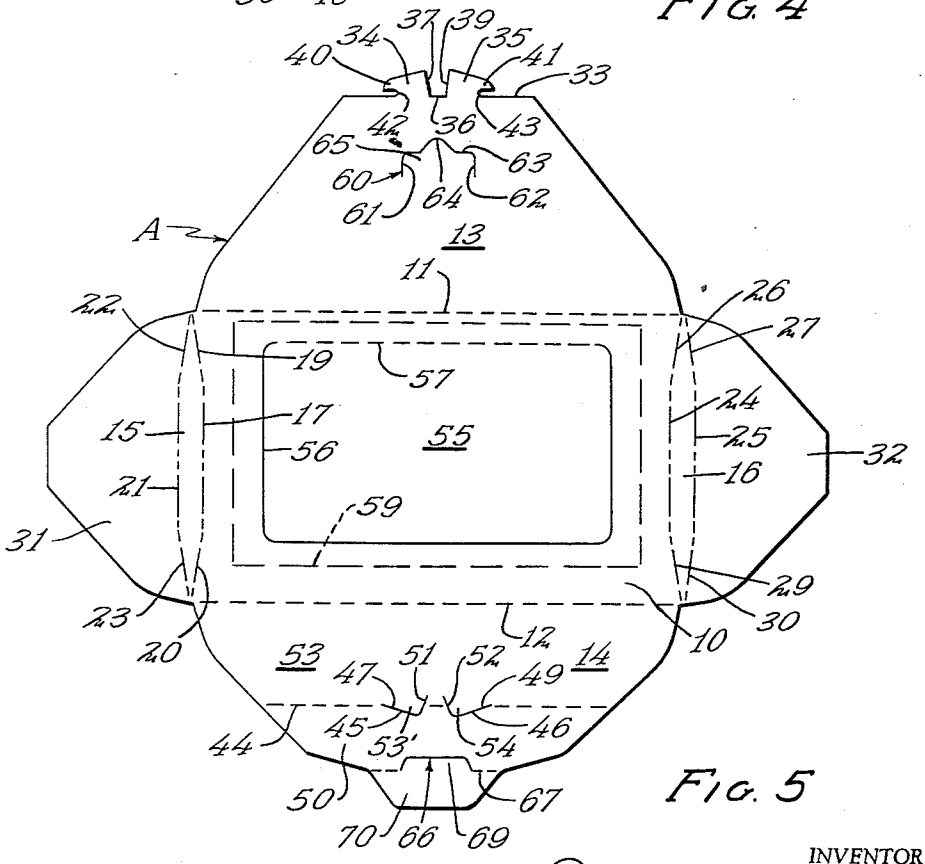


FIG. 5

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FOLDER LOCK

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6 Claims. (Cl. 229—87)

This invention relates to an improvement in carton folder locks and deals particularly with a type of lock which is simple to operate and which readily lends itself to machine operation.

Many producers who produce items packed in small cartons and folders are turning to machine operation in order to cut the labor cost of closing the packages after the contents have been inserted. For example, products such as bacon have for many years been sold in a paperboard package or folder which is often packed by hand and closed by hand. If the operation of closing the carton by hand can be eliminated, considerable labor cost may be saved. As a result, many producers of products of this type are requesting packages which may be closed mechanically through the use of a simple machine once the contents have been placed therein.

Where the cartons are to be sold without an overwrap, the cartons are often locked by suitable locking tongues or tabs which engage in suitable slots in co-operable panels. Due to the fact that the slots through which the locking tongues must extend are usually somewhat difficult to force out of the plane of the carton panels or are somewhat difficult to open so that the locking tongues may be inserted, difficulty has often been experienced in providing locked packages which are closed mechanically. An object of the present invention is to obviate some of the difficulty normally experienced in such an operation.

A feature of the present invention lies in the provision of a lock for locking two panels from separation. One of the co-operable panels includes locking tongues which preferably project from an edge thereof. The other of the co-operable panels include locking slots into which the locking tongues may engage. In forming the present lock the slots are formed by curved or angularly related cut lines so as to provide a part of the panel within the cut lines which may be pressed out of the plane of the remainder of the panel. A fold line is provided extending across the panel adjoining the ends of the cut line so that the part of the panel which is within the cut lines may project beyond the fold line. As a result, by folding the panel along this fold line, the portion of the stock defined by the cut lines is folded free of the folded portion of the panel permitting the locking tongues to be readily inserted in the slots.

A further feature of the present invention lies in the fact that the portions of the carton board which are defined by the cut lines projects beyond the unfolded portion of the carton to provide projecting ears against which the locking tongues may engage during the closing operation. These ears guide the locking tongues through the slots as the closing operation continues thus providing a positive engagement between the locking tongues and the slot. As the carton reaches a fully closed position, the portions of the panel containing the slots which are on opposite sides of the transverse fold line fold into substantially a common plane to prevent disengagement of the locking tongues from the slots after the folder has been fully closed.

A further feature of the present invention resides in the provision of a carton having a double lock one of which forms the original seal of the package and the other of which forms a means of reclosure. When the package is filled and closed the producers insist upon the use of a lock which cannot readily be opened without tearing the lock or distorting the package to prevent pilferage of the carton contents. However, once the package is opened and a part of the contents removed a lock of this type is disadvantageous as excessive time is required for reopening the package. As a result a second lock is provided which can be easily employed to reclose the package and which may be easily opened by the purchaser after it has been reclosed.

These and other objects and novel features of the present invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of the specification,

Figure 1 is a perspective view of a folder in locked position as the package would appear as it is stored, shipped, and sold.

Figure 2 is a perspective view of the opposite side of the folder shown in Figure 1.

Figure 3 is a plan view of the package after it has been opened and reclosed.

Figure 4 is a sectional view through the package in partially closed position, the position of the section being indicated by the line 4—4 of Figure 3.

Figure 5 is a diagrammatic view of the blank from which the folder is formed.

The folder is illustrated in general by the letter A. In general, the folder includes a generally rectangular top panel 10 which is foldably connected along parallel fold lines 11 and 12 to locking flaps 13 and 14 respectively. As the particular carton illustrated is designed for use in handling bacon or the like, no vertical side walls are provided on two edges thereof.

However, it should be understood, that sidewalls could be interposed between the top panel 10 and locking flaps 13 and 14 where a definite thickness of carton is desired. It should also be understood that while panel 10 is designated as the top panel, this has been done because the panel 10 is usually uppermost when the package is displayed. During the closing operation, the panel 10 actually forms the bottom panel.

Sidewalls 15 and 16 are foldably connected to the remaining edges of the panel 10. In the particular arrangement illustrated, the sidewall or end wall 15 is connected along a fold line 17 which is at right angles to the fold lines 11 and 12 and which terminates at points spaced from the fold lines 11 and 12. Outwardly directed fold lines 19 and 20 connect the end of the fold line 17 with the ends of the fold lines 11 and 12. The sidewall 15 is further defined by a fold line 21 which is in parallel spaced relation to the fold line 17 and by inwardly inclined fold lines 22 and 23 which converge towards the ends of the fold lines 19 and 20. In other words, the sidewall 15 is provided with tapering ends which permit the package to have thickness through the center portion and taper to a minimum thickness at the ends.

The sidewall 16 is similarly constructed and is defined by central parallel fold lines 24 and 25 having converging fold lines 26 and 27 at one end thereof and converging fold lines 29 and 30 at the other end. Thus the package tapers in thickness towards the fold lines 11 and 12. In the event a definite thickness is desired, the parallel fold lines defining the center portions of the sidewalls can extend the entire length thereof to provide a package of a predetermined depth.

The sidewall 15 is foldably connected along the fold lines described to a generally triangular flap 31 while the

sidewall 16 is similarly connected along the fold lines described to a generally triangular flap 32. The locking flaps 13 and 14 are also generally triangular in shape, it being the object of the arrangement to provide a carton formed in a generally square or rectangular blank.

The end of the locking flap 13 is cut off along a line 33 generally parallel to the fold line 11 from which project a pair of locking tongues 34 and 35. The two locking projections 34 and 35 are separated by a notch having a base 36 which is in line with the flap end 33 and the sides of which are preferably defined by slightly diverging cut lines 37 and 39. The projections 34 and 35 are also provided with oppositely directed locking projections 40 and 41 which are spaced from the flap end 33 by notches 42 and 43 respectively.

The opposite flap 14 is provided with a transverse fold line 44 parallel to the fold line 12, and which corresponds with and substantially registers with the flap end 33 of the flap 13. A pair of right angular cut lines 45 and 46 are provided in the flap 14 which have their outer ends terminating along the fold line 44 and which incline outwardly as indicated at 47 and 49 which extend into the portion 50 of the flap 14 which is outwardly of the fold line 44. The angular cuts 47 and 49 also include right angularly turned cuts 51 and 52 which intersect the fold line 44. The portions of the paperboard defined by the cut lines 45 and 46 remain unspaced so that these portions of the blank will remain in the plane of the portion 53 of the panel 14 which is between the fold line 12 and the fold line 44.

The purpose of this arrangement is perhaps best noted from an examination of Figure 4 of the drawings. During the closing of the folder, after the contents are placed upon the panel 10, the end flaps 31 and 32 are folded over to overlie these contents.

The flaps 13 and 14 are then folded toward a closed position. During this operation, the end portion 50 of the flap 14 is folded into angular relation with the portion 53 thereof as is indicated in Figure 4 and the folding of these flaps is timed so that the end portion of the flap 13 which bears the locking projections 34 and 35 overlies the part 50 of the panel.

As will be evident from Figure 4 of the drawings, the folding of the panel portion 50 into angular relation with the panel portion 53 causes the ears 53′ and 54 which are defined by the angular cuts 45 and 46 project beyond the remainder of the panel portion 53 and remain in the plane thereof. Thus as the folding operation continues, the locking projections 34 and 35 engage the projecting ears 53′ and 54 and are guided through the L-shaped slots 45 and 46 thereby. In other words, as the locking projections 34 and 35 are engaged beneath the projecting ears 53′ and 54 the completion of the folding operation must guide these projections into the slot. This is a big advantage particularly when the packages are closed by machine operation. In order to fold the carton mechanically, the flaps 31 and 32 are folded upwardly and over the contents of the package by a mechanism similar to that used to fold the first folded flaps of a regular glued end carton. The flap portion 50 is then folded upwardly by suitable folding guide while the flap portion 53 is held horizontal so as to angularly relate the panel portions 50 and 53. The combined panels 50 and 53 are then folded upwardly and over the carton contents and the flap or locking panel 13 is simultaneously folded up and over the contents until the locking projections 34 and 35 engage in surface contact with the portion 50 of the flap 14. Downward pressure upon the flaps 13 and 14 then automatically lock the carton due to the fact that the locking projections are guided into the slots by the ears 53′ and 54.

In the particular arrangement illustrated, a generally rectangular flap or panel 55 is formed in the top panel 10 by means of a generally U-shaped cut line 56, the ends of which are connected by fold line 57. This flap 55 may be hinged from the plane of the remainder of panel 10 so that the interior of the package may be inspected. A transparent sheet 59 is adhered to the inner surface of the package to provide a window covering the opening left by the pivoting of the flap 55 along its fold line 57.

A supplemental locking means is provided in order that the package may be reclosed after opening. The hook ends 40 and 41 of the locking projections 34 and 35 engage in the slots left by the cut lines 45 and 46 so securely that it is difficult to remove these projections without tearing them.

An auxiliary reclosure is provided in order that the package may be reclosed after it has once been opened. The hook shaped projections 40 and 41 on the locking projections 34 and 35 engage the slots 45 and 46 tightly enough so that these projections are usually torn during the original opening of the package. The reclosure lock is provided for this reason.

A U-shaped cut line 60 is provided in the panel 13, the cut line including generally parallel sides 61 and 62 and a connecting base 63 having a central offset 64. The U-shaped cut line 60 thus defines a tab 65 which may be bent out of the plane of the remainder of the flap and which may therefore provide an opening into which a locking tab may engage.

The panel 14 is also provided with a U-shaped cut line 66, the ends of which terminate on a transverse fold line 67 which is parallel to the fold line 12. The cut line 66 defines a tab 69 which is integral with the end section 70 of the flap or panel 14. This tab 69 is designed to engage in the slot which is defined by the cut line 60 in the panel 13 to hold the package reclosed.

In the reclosing operation, the flaps 31 and 32 are folded to overlie the remainder of the carton contents and the panel 13 is then folded over the marginal edges of these flaps 31 and 32. As the panel 14 is folded toward closed position, the end portion 70 of this flap or panel is engaged between the fingers and is held in angular relation to the adjoining portion 50 of the panel 14 so that the tab 69 projects downwardly therefrom. As the panel 14 moves into completely folded position, the tab 65 engages against the tab 65 defined by the cut line 60 and presses this tab downwardly to open the slot defined by the cut line 60. The panel extremity 70 is then folded down flat against the panel 13 to hold the carton in reclosed condition as is illustrated in Figure 3 of the drawings.

In accordance with the patent statutes, I have described the principles of construction and operation of my carton folder and the carton folder locks thereupon and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that obvious changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A folder lock for connecting a pair of panels, means supporting said panels along a pair of spaced parallel fold lines, said panels being foldable into overlapping relation, one of said panels including a pair of spaced locking projections on the free edge thereof, the other of said panels including a transverse fold line extending across said other panel parallel to said first named fold lines, said transverse fold line dividing said other panel into a hinged portion and an end portion, a pair of ears cut from the body of the end portion of said other flap adjacent to the transverse fold line, said ears remaining in the plane of the hinged portion of said other panel when the two portions of said other panel are angularly related, the folding of said ears out of the plane of said end portion of said other panel forming spaced openings in said end portion co-operable with said locking projections, the space between said projections being substantially equal to the distance between said ears at said transverse fold line.

2. The construction described in claim 1 and in which

said ears are defined by a pair of angularly related connected cut lines and are generally triangular in shape.

3. The construction described in claim 1 and in which said ears are defined by a pair of angularly related cut lines one of which terminates substantially on said transverse fold line and the other of which intersects said transverse fold line.

4. A folder for connecting a pair of panels and including means hingedly supporting said panels along substantially parallel lines of fold, said panels being foldable into overlapping relation, one of said panels having a locking projection on the free edge thereof, the other of said panels including a transverse fold line parallel to the first named fold lines and dividing said other panel into a hinged portion and an end portion, an ear cut from said end portion adjoining said transverse fold line and supported by said hinged portion to remain in the plane thereof upon angular relation between said panel portions, said ear, when hinged from the plane of said hinged portion providing an opening therein into which said locking projection may engage, a locking tab on said end portion of said other panel, and a slot in said one panel into which said locking tab may engage.

5. The construction described in claim 4 and including a second fold line extending transversely of said other panel parallel to said transverse fold line dividing said end portion of said other panel into a main portion and an edge extremity, said tab being cut from said main portion adjoining said second fold line and remaining in the plane of said edge extremity when said edge extremity is folded into angular relation with said main portion.

6. The construction described in claim 5 and in which said slot in said one panel comprises a generally U-shaped slot.

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