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H. W. FORRER
CONTAINER LOCKING MEANS
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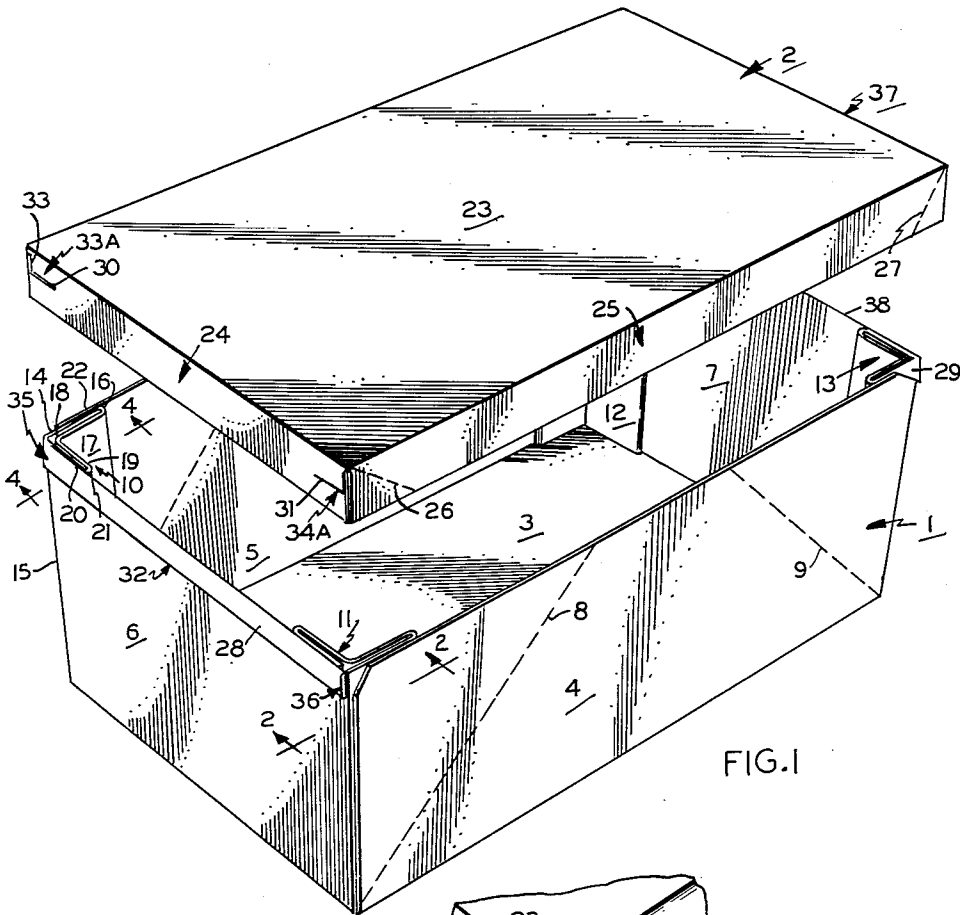


FIG. 1

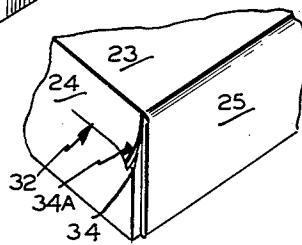


FIG. 2

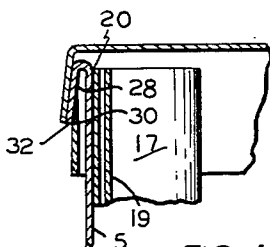


FIG. 4

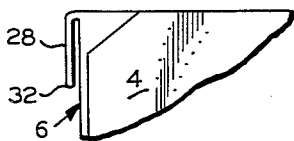


FIG. 3

INVENTOR
HOMER W FORRER
BY *Walter M. Rodgers*

ATTORNEY

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CONTAINER LOCKING MEANS

Homer W. Forrer, East Point, Ga., assignor, by mesne assignments, to The Mead Corporation, Dayton, Ohio, a corporation of Ohio

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5 Claims. (Cl. 229-45)

This invention relates to container locking means and more particularly to a cover lock for folding paperboard boxes which may be used in conjunction with hinged covers or with flanged covers of the separately removable type and is for the purpose of securing the cover in its container closing position.

In folding boxes of the type currently used, for example to package frozen foods, considerable reliance is placed on the presence of the packaged items in the container to provide needed locking pressure so as to insure that the covers of such boxes do not open accidentally. Naturally such constructions are difficult to open when fully loaded due to the locking action of the container contents.

Special locking constructions of the above described type frequently require a substantial amount of additional material in order to form the locking elements and may also require special machinery to form the locking structure and the associated container. Furthermore in some lock constructions it is difficult to wrap the box with suitable decorative overwrapping material without dislocating the lock or forming a loose and unattractive appearing package.

A principal object of this invention is to provide a container locking means which is effective securely to lock a container cover in its closed position and which is adapted to be opened easily when access to the container contents is desired by the user and so as to be readily reclosed and locked if desired.

Another object of this invention is the provision of an improved cover lock for folding boxes which is adaptable for use either with containers having hinged covers or with containers having flanged covers of the separately removable type.

Still another object of this invention is to provide an improved cover lock for folding boxes which is adapted to be formed on conventional machines and which requires no additional material.

A further object of the invention is the provision of an improved cover lock for folding boxes which is adapted to accommodate a tight overwrap without becoming unfastened or weakened.

The invention in one form as applied to folding boxes may comprise a locking flap foldably joined along the upper edge of a side wall panel forming a part of the main body of the box, the edge of the locking flap remote from its fold line constituting a locking edge, an abutment slot formed in the flange of the cover which is adjacent to the locking flap, the abutment slot being disposed generally parallel to the locking edge of the locking flap and being adjacent one end of the locking flap, and a clearance slot formed in the cover flange and angularly disposed at the outer end of the abutment slot and extending upwardly toward the main panel of the cover, the clearance slot being for the purpose of allowing that portion of the flange of the cover defined by the abutment slot and the clearance slot to bulge outwardly somewhat thereby to expose the abutment slot for engagement by the end of the locking edge of the locking flap.

For a better understanding of the invention reference may be had to the following detailed description taken in conjunction with the accompanying drawings in which FIG. 1 is a perspective view of a folding box embodying

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one form of the invention; FIG. 2 is a fragmentary view of one corner designated 2-2 of the box in FIG. 1 and which shows the box with the cover in its closed position; FIG. 3 is a view similar to FIG. 2 but which shows the box with the cover removed; and in which FIG. 4 is a fragmentary view partially in section taken along the line 4-4 in FIG. 1.

With reference to FIG. 1 the box there depicted comprises a tray portion generally designated by the numeral 1 and a top portion generally designated by the numeral 2. Tray portion 1 of the box comprises a bottom panel 3 and sidewall panels 4, 5, 6, and 7. To facilitate collapsing of the box a pair of score lines 8 and 9 are formed in sidewall 4 and a corresponding and similar pair of score lines are formed in the sidewall 5 in known manner, it being understood that a full view of the score lines in side wall 5 is not possible because of the obstruction of top 2.

For the purpose of reinforcing the box tray 1 suitable corner reinforcing structure is provided and as shown in FIG. 1 such structure is generally designated by the numerals 10, 11, 12 and 13. It is to be understood that the reinforcing elements 10, 11, 12 and 13 form no part of the present invention, such structural features being disclosed and claimed in copending application Serial Number 856,522, filed Dec. 1, 1959.

For purposes of clarity the reinforcing structure generally designated by the numeral 10 and shown in cross section in FIG. 4 will now be described, it being understood that all reinforcing corner elements are identical in construction. The reinforcing structure 10 comprises a first panel 14 which is foldably joined to the end edge 15 of sidewall panel 6. Foldably joined to the edge 16 of panel 14 is a reinforcing panel 17. To the medial fold line 18 defining an edge of panel 17 another reinforcing panel 19 is foldably joined. A securing panel 20 is foldably joined along fold line 21 to reinforcing panel 19 and is secured by glue or other suitable means to the inside surface of panel 6 adjacent the end edge 15 thereof. Secured to the outer surface of panel 14 is the corner defining end 22 of sidewall panel 5.

The top generally designated by the numeral 2 comprises a main panel 23 to the edges of which conventional flanges are foldably joined. Two such flanges are designated in FIG. 1 by the numerals 24 and 25 it being understood that corresponding similar flanges are formed on the opposite edges of main panel 23 of box top 2. The corner of the flanges 24 and 25 is formed by a suitable lap panel which is foldably joined to the end of flange 24 and secured to the inner surface of the left hand end of flange 25. To aid in collapsing the cover 2 suitable score lines 26 and 27 are formed in the flange panel 25 and are disposed angularly as indicated in FIG. 1 in conventional fashion. Similarly score lines are formed in the flange opposite flange 25.

In accordance with this invention means are provided for securing the cover 2 in its closed position atop the tray structure 1. Such locking means may comprise locking flaps such as are designated by the numerals 28 and 29 in FIG. 1. As is apparent from the drawings, the locking flap 28 is foldably joined to the top edge of sidewall 6 and is folded outwardly and downwardly therefrom. It will be understood that the inherent "fight" or bias of the paperboard tends to urge the locking flap outwardly. Furthermore it will be understood that locking flaps 28 and 29 are of identical construction.

For engaging the locking flap 28 a pair of abutment slots 30 and 31 are formed at each end of flange panel 24. These abutment slots are generally parallel to the locking edge 32 of the locking flap 28 and ordinarily when the cover 2 is in its closed position, the abutment slots 30 and 31 are disposed slightly below the locking edge 32.

For the purpose of accommodating outward movement of those parts of flange 24 which are immediately above the locking slots 30 and 31, a clearance slot is provided adjacent the ends of the locking slots 30 and 31. Such clearance slots are vertically disposed and are designated in the drawing by the numerals 33 and 34. It will be understood that the clearance slots 33 and 34 connect with the ends of the abutment slots 30 and 31 respectively. Since there is a natural tendency for the ends of the flange 24 to bow outwardly due to the "fight" of the paperboard, the slots 33 and 34 release the ends of the flange 24 immediately above the abutment slots 30 and 31 respectively and thereby allow those parts of the flange 24 to buckle outwardly as depicted generally in FIG. 2 at 34A. Furthermore since the entire flange 28 and particularly its locking edge 32 is biased upwardly and toward the left due to the inherent "fight" of the paperboard, the end corners 35 and 36 of the locking flap 28 move outwardly in following relation to the outwardly bulging parts 33A and 34A of the panel 24. Thus it will be understood that the ends of the locking edge 32 securely engage the abutment slots 30 and 31 when the cover is in a closed position and thereby prevent opening of the cover.

Furthermore it will be understood that the locking flap 29 is constructed in a manner identical to locking flap 28 and that the end flange opposite flange 24 is provided with suitable abutment slots and clearance slots as described above in connection with flange 24. Thus both ends of the cover 23 are securely locked when in closed position.

While the structure described above is of the type wherein the cover is separately formed and entirely removable from the tray, it will be understood that the invention is applicable equally to a folding box of the type wherein a hinged cover is used. For example, the edge 37 of the top could be hingedly connected to the edge 38 of the tray thereby to form a hinged cover for the box depicted in FIG. 1. In such event the structure above described in connection with flap 28 and flange 24 would perform its locking function.

It is also apparent that no additional material is required to form the lock of this invention and that the box whether of the hinged or separate cover type may be formed on conventional equipment. In addition it will be apparent that reliance is not placed on the contents of the box to exert a lock engaging force along the inner surfaces of the sidewalls 6 and 7. For this reason the lock may be disengaged by hand by suitable application of pressure as will be readily apparent. Furthermore since the center part 23 of the cover 1 may be firmly engaged with the upper edges of the sidewall when the box is closed, an overwrap may be formed about the entire box including the tray and the cover and that such overwrap may be tightly drawn to afford an attractive package.

While I have shown and described particular embodiments of the invention I do not wish to be limited thereto and intend in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. Locking means for preventing relative movement between a pair of closely spaced generally parallel panels in a direction generally parallel to said panels, said locking means comprising a locking flap foldably joined to one of said panels and folded over toward said one panel on the side thereof adjacent the other panel, said locking flap being inherently biased toward said other panel and the edge of said locking flap remote from its fold line constituting a locking edge, a third panel disposed generally normal to said pair of panels and foldably joined to said other panel so that the inherent bias of said other

panel is in a direction away from said locking flap, an abutment slot formed in said other panel adjacent at least one end of said locking edge and generally parallel thereto, said abutment slot being on the side of said locking edge remote from the fold line between said one panel and said locking flap when in locked position, means holding the part of said other panel on the side of said abutment slot remote from the fold line between said one panel and said locking flap in generally normal relation to said third panel, and a clearance slot formed in said other panel in angular relation to said abutment slot and outwardly of said one end of said locking flap, said clearance slot extending from said abutment slot in the general direction of the fold line between said locking flap and said one panel, said clearance slot being effective to accommodate movement of that part of said other panel adjacent the said one end of said locking flap due to the following engagement of said locking flap and the inherent bias thereof in a direction away from said one panel and out of the plane of said other panel to expose said abutment slot for engagement by said one end of said locking flap.

2. In combination, a container tray having a polygonal bottom and side walls, a complementary container cover having flanges on at least two adjacent edges thereof, said flanges being interconnected at their adjacent ends, a locking flap foldably jointed to a wall of said container adjacent one of said flanges on said cover and folded so that an edge of said flap remote from its fold line is disposed on the side of said fold line opposite from the cover to form a locking edge, said locking flap being inherently biased toward the adjacent cover flange, an abutment slot formed in said one flange of the cover and generally parallel to said locking edge of said locking flap and adjacent an end thereof, said abutment slot being on the side of said locking edge of said locking flap remote from the fold line between said locking flap and said wall and being spaced from said locking edge by a slight clearance distance when the cover is fully closed, and a clearance slot formed in the flange of the cover and extending angularly from said abutment slot and generally in the direction of the cover, said clearance slot being adjacent to but spaced outwardly from said one end of said locking flap, said clearance slot being effective to accommodate movement of that part of the flange between said abutment and clearance slots and adjacent said one end of said locking flap due to its inherent bias and due to the following engagement of said locking flap and the inherent bias thereof in a direction away from said locking flap thereby to expose said abutment slot for engagement by said one end of said locking flap.

3. A cover lock for a folding box comprising a wall of the box, a locking flap foldably joined along an upper edge of said wall and folded downwardly therefrom to form a locking edge along the edge thereof remote from the fold line, said locking flap being inherently biased away from said wall, a cover, a first flange formed on an edge of said cover and arranged in telescoping relation to said locking flap when said cover is in closed position, a pair of flanges formed on opposite edges of said cover and each having one end thereof respectively connected with an end of said one flange, an abutment slot formed in said one flange adjacent one end of said locking flap and generally parallel to said locking edge, and a clearance slot formed in said flange and extending angularly from said abutment slot and generally in the direction of the cover, said clearance slot being adjacent to but spaced outwardly from said one end of said locking flap, said clearance slot being effective to accommodate movement of that part of the flange between said abutment and clearance slots and adjacent said one end of said locking flap due to its inherent bias and due to the following engagement of said locking flap and the inherent bias thereof in a direction away from said locking

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flap thereby to expose said abutment slot for engagement by said one end of said locking flap.

4. A cover lock for a folding box comprising a wall of the box, a locking flap foldably joined along an upper edge of said wall and folded downwardly therefrom to form a locking edge along the edge thereof remote from the fold line, said locking flap being inherently biased away from said wall, a cover, a first flange formed on an edge of said cover and arranged in telescoping relation to said locking flap when said cover is in closed position, a pair of flanges formed on opposite edges of said cover and each having one end thereof respectively connected with an end of said one flange, a pair of abutment slots formed in said one flange and respectively disposed adjacent opposite ends of said locking flap and generally parallel to said locking edge, and a pair of clearance slots formed in said flange and respectively extending from one of said abutment slots and generally toward said cover, said clearance slots being spaced outwardly somewhat from the respective ends of said locking flap, said clearance slots being effective to accommodate movement of those parts of said flange defined by said abutment and clearance slots and adjacent the ends of said locking flap due to its inherent bias and due to the following engagement of said locking flap and the inherent bias thereof in a direction away from said locking flap thereby to expose said abutment slots for respective engagement by the ends of said locking flap.

5. A container comprising a tray portion having a bottom and a side wall, a locking flap foldably joined along the upper edge of said side wall and folded outwardly

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and downwardly therefrom to form a locking edge along the edge thereof remote from the fold line, said locking flap being inherently biased away from said wall, a cover, a first flange formed along an edge of said cover and arranged to telescope over said locking flap when said cover is closed, a pair of flanges formed on opposite edges of said cover and each having one end thereof respectively connected with an end of said one flange, a pair of horizontally spaced abutment slots formed in said one flange adjacent the ends of said locking flap and generally parallel to said locking edge, said slots extending slightly beyond the ends of said locking flap and being spaced slightly below said locking edge when said cover is fully closed, and a pair of clearance slots extending upwardly from the outer ends respectively of said abutment slots, said clearance slots being effective to accommodate movement of those parts of said flange defined by said abutment and clearance slots and adjacent the ends of said locking flap due to its inherent bias and due to the following engagement of said locking flap and the inherent bias thereof in a direction away from said locking flap thereby to expose said abutment slots for respective engagement by the ends of said locking flap.

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