

Sept. 9, 1969

K. E. ANDREWS ET AL

3,465,947

CONTAINERS

Filed March 5, 1968

2 Sheets-Sheet 1

FIG. 1.

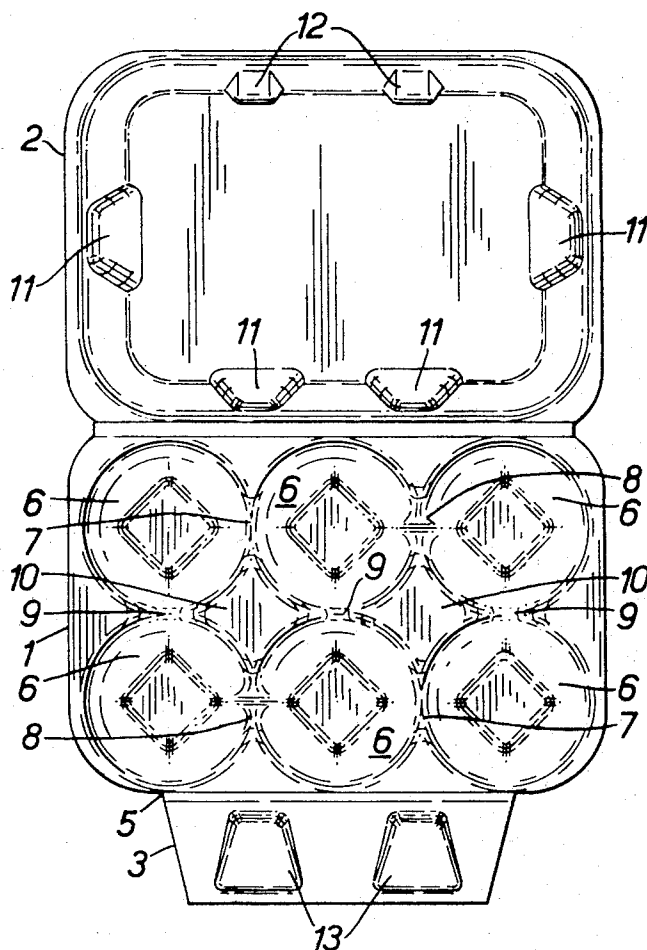
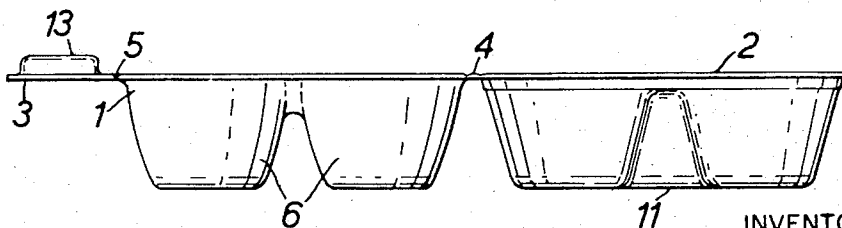


FIG. 2.



INVENTORS,
KENNETH ERNEST ANDREWS
KEVIN WESTMAN
BY
MORGAN, FINNEGAN, DURHAM & PINE

ATTORNEYS

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FIG. 3.

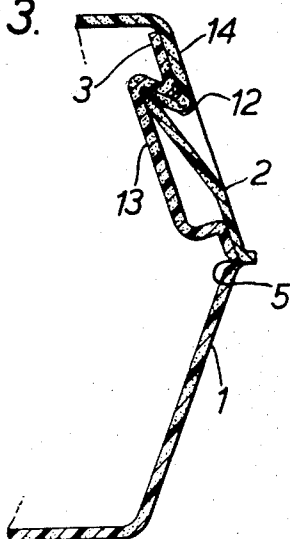
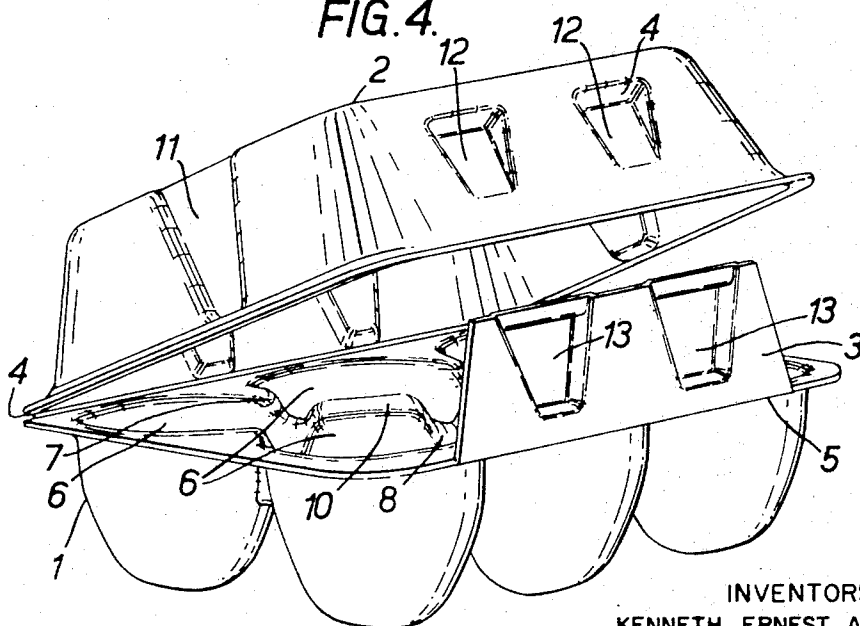


FIG. 4.



INVENTORS,
KENNETH ERNEST ANDREWS
KEVIN WESTMAN

BY
MORGAN, FINNEGAN, DURHAM & PINE

ATTORNEYS

1

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CONTAINERS

Kenneth Ernest Andrews and Kevin Westman, Gloucester, England, assignors to The British Petroleum Company Limited, London, England, a corporation of Great Britain

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10 Claims

ABSTRACT OF THE DISCLOSURE

An egg box incorporates a novel closing device which comprises a locking flap containing a recess which forms a re-entrant with a corresponding projection on the lid of the box when the box is closed. The re-entrant is destroyed by distorting the lid by prising its front surface away from the flap. When this is done, the box opens easily.

The box is thermoformed from foamed polystyrene sheeting.

This invention relates to containers, particularly although not exclusively, to containers for eggs.

For many years, eggs have been transported and sold in disposable egg boxes. These boxes are generally manufactured in moulded pulp and consist of an integral unit comprising a base section, a lid section and a locking flap. The base section is often moulded to provide round or roughly semi-ovoidal depressions into which eggs can nest, the depressions being separated by ribs which prevent eggs from contacting one another and also give strength to the base. The cover may be plain in construction or may be provided with indentations and/or cut outs or may be similar to the base. Sometimes the sides and top of the cover section are contoured. The lid is hinged to the base and it is necessary to provide a locking device which holds the lid firmly in position when it is folded over onto the base, yet which may be released quickly and easily when desired. The locking device is generally a flap hinged to the base on the opposite side of the base from the lid and co-acting in some fashion with the lid when the latter is in the closed position. Many locking devices of this type have been proposed.

It is an object of the present invention to provide a container comprising a new and improved locking device.

Thus according to the present invention there is provided a container of the type comprising a base section, a cover section and a locking flap, the cover section being hinged to the base section along at least part of one side, the locking flap being hinged to the base section along at least part of the opposite side, the locking flap containing at least one recess or projection adapted to fit in locking relationship with at least one corresponding projection or recess on the cover section when the cover section is in the closed position.

Preferably the locking flap is adapted to fit inside the cover section when the latter is in the closed position.

Preferably the recess is located in the flap and the projection in the cover section.

Preferably the projection is in the form of a wedge, the deepest section of the wedge being uppermost when the cover is closed and the container is in its normal position.

The distance of protrusion of the wedge should equal or be slightly less than the depth of the recess.

Preferably the deepest section of the wedge and the

2

corresponding surface of the recess are set at such angles to the side of the cover section and the side of the locking flap respectively, that on closing the box, the deepest section of the wedge forms a re-entrant with the corresponding surface of the recess.

The angles should preferably be such that the re-entrant is destroyed by slightly distorting the wall of the cover portion of the container adjacent to the flap. Thus a closed container may be opened by a forward and upward movement of the front of the cover.

Preferably the level of each hinge is below the level of the upper surfaces of the portions which are united through the hinge. This feature confers resiliency on the hinges, thus holding the locking device more firmly in position when the container is closed and tending to release it more quickly when a slight force is applied to open the container.

The height of the flap advantageously corresponds to or is slightly less than the height of the cover section, to add strength to the structure.

Again in the interests of strength the distance from the top of the recess to the internal surface of the top of the cover of the box should be made as short as possible, whilst at the same time maintaining the strength required at the top of the locking flap, and the required nestability of the packs within each other.

Very suitable materials of construction for the containers are formed by thermoplastic resins, particularly formed thermoplastic resin, and more especially foamed polystyrene sheet and toughened polystyrene sheet.

Containers according to the present invention are suitable for use in the storage of eggs, fruit and other fragile or soft commodities, amongst other applications.

The invention is illustrated by the accompanying drawings wherein FIGURE 1 is a plan view of an open egg box according to the present invention. FIGURE 2 is an end elevation of the egg box of FIGURE 1, FIGURE 3 is a section of a portion of the egg box in the closed position and FIGURE 4 is an isometric view of the egg box in a partially open position.

With reference to the figures, the egg box comprises a base portion 1, a lid portion 2 and a locking flap 3. The base 1 is connected to the lid 2 through a hinge 4 which is integral with both the base 1 and the lid 2. Similarly the flap 3 is connected to the base 1 through a hinge 5 which is integral with the base 1 and the flap 3. The hinges 4 and 5 are below the levels of the upper surfaces of the base 1, lid 2 and flap 3.

The base 1 includes 6 egg cells 6 separated by relatively high ribs 7 and low ribs 8 radiating from centres 10. The high ribs 7 provide for maximum egg separation but a structure in which all ribs are high would tend to flex too readily. The staggered low ribs 8 increase the rigidity of the structure. Intermediate ribs 9 are set at such a height that their bases form a guide for an appropriate element of a packing machine.

The lid 2 comprises 4 inserts 11 which serve the double function of partially surrounding eggs, thereby increasing the protection which the box affords them, and reinforcing the strength of the lid 2. The inserts 11 extend for substantially the full height of the lid 2. Two wedge-shaped latches 12 are provided which co-operate with recesses 13 on the locking flap 3. The distance of the base 14 of the latch 12 from the top surface of the cover 2 is the minimum which could readily be achieved. The latches 12 do not extend throughout the full height of the lid 2.

The angles of the recess 13 and the latches 12 are such that when the box is closed, as in FIGURE 3, a re-entrant is formed, and when the front of the cover 2 is prised forward, the re-entrant is destroyed.

3

The material of construction of the egg box is foamed polystyrene sheet.

What we claim is:

1. A container comprising a base section, a cover section and a locking flap, the cover section being hinged to the base section along at least part of one side, the locking flap being hinged to the base section along at least part of the opposite side, the locking flap containing at least one re-entrant portion adapted to fit in locking relationship with at least one corresponding re-entrant portion on the cover section when the cover section is in the closed position.

2. A container as claimed in claim 1 wherein the locking flap is adapted to fit inside the cover section when the latter is in the closed position.

3. A container as claimed in claim 1 wherein said re-entrant portions provide a recess located in the flap and a projection in the cover section.

4. A container as claimed in claim 3 wherein the projection is in the form of a wedge, the deepest section of the wedge being uppermost when the cover is closed and the container is in its normal position.

5. A container as claimed in claim 4 wherein the deepest section of the wedge and the corresponding surface of the recess are set at such angles to the side of the cover section and the side of the locking flap respectively, that on closing the box, the deepest section of the wedge forms

4

a re-entrant with the corresponding surface of the recess.

6. A container as claimed in claim 5 wherein the angles are such that the re-entrant is destroyed by slightly distorting the wall of the cover portion of the container adjacent to the flap.

7. A container as claimed in claim 1 wherein the level of each hinge is below the level of the upper surfaces of the portions which are united through the hinge.

8. A container as claimed in claim 1 wherein the height of the flap substantially equals the height of the cover section.

9. A container as claimed in claim 1 wherein the container is made from a thermoplastic resin.

10. A container as claimed in claim 9 wherein the thermoplastic resin is a foamed thermoplastic resin, e.g. foamed polystyrene sheet or toughened polystyrene sheet.

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DAVID M. BOCKENEK, Primary Examiner

U.S. Cl. X.R.

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