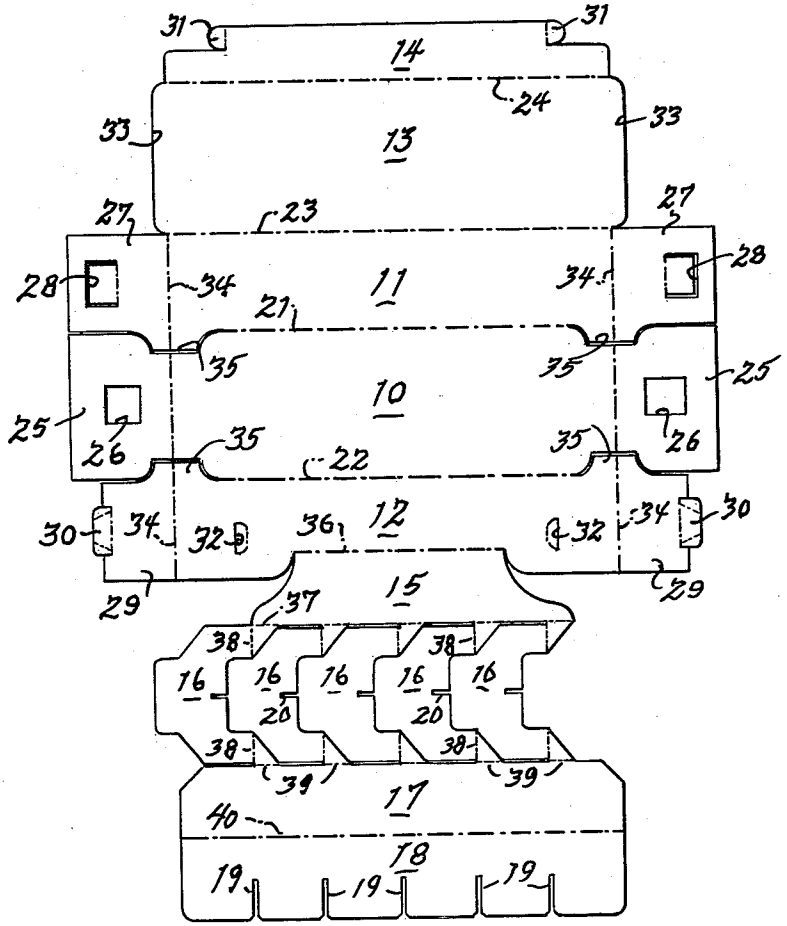
Oct. 15, 1963 C. D. PAINTER 3,107,039

ONE PIECE COLLAPSIBLE AND GLUELESS EGG CARTON

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Fig. 1.



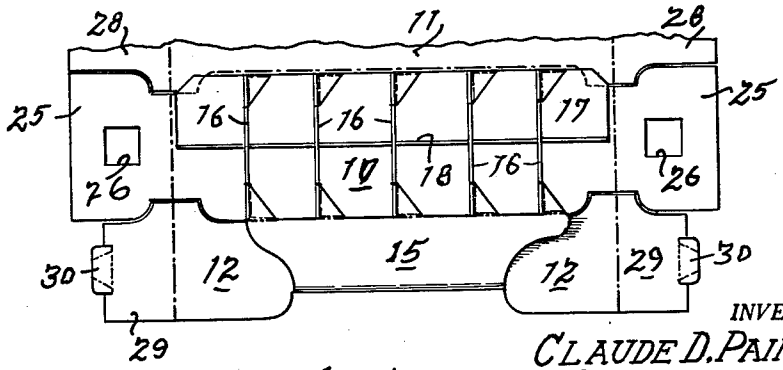


Fig. 2.

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ONE PIECE COLLAPSIBLE AND GLUELESS EGG CARTON

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Fig. 3.

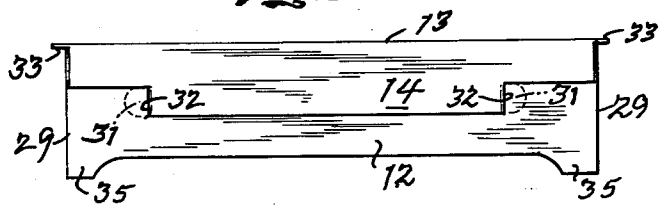


Fig. 4.

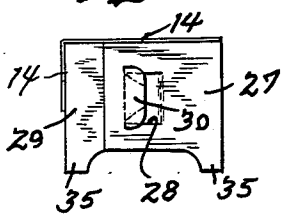


Fig. 5.

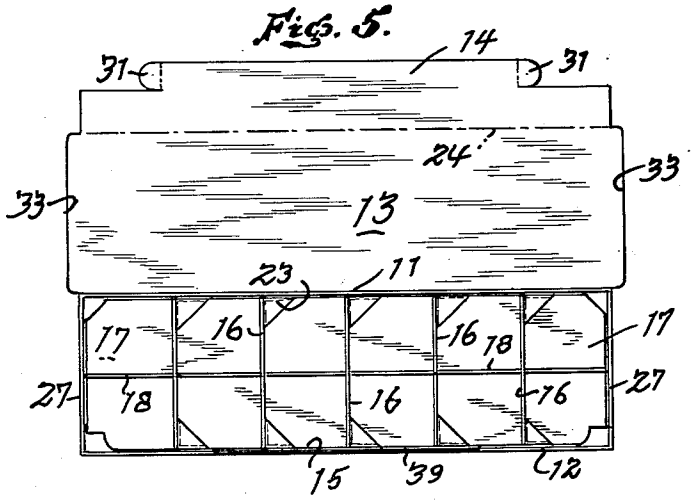


Fig. 6.

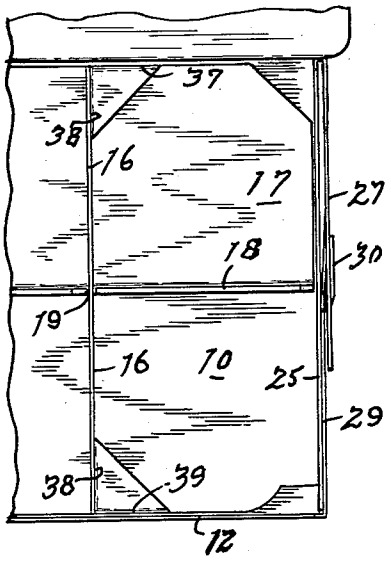
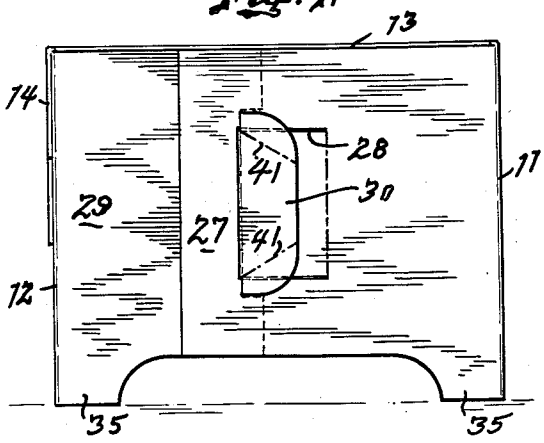


Fig. 7.



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United States Patent Office 3,107,039 Patented Oct. 15, 1963

3,107,039

ONE PIECE COLLAPSIBLE AND GLUELESS EGG CARTON

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Filed Mar. 20, 1961, Ser. No. 96,761
4 Claims. (Cl. 229—28)

My present invention relates to a collapsible multicelled carton primarily intended for packaging eggs, but may also be found suitable for holding any articles having a comparable shape and size.

A carton for packaging eggs or similarly fragile articles must meet two general requirements. It should be such that it can be folded flat for handling and shipment when empty and secondly, it must be easily erected. When erected, it should also have sufficient rigidity to protect the articles contained therein against damage by crushing and joggling. Inasmuch as such cartons are usually intended to be discarded after a single use, they are preferably constructed of inexpensive paper board which of itself has little rigidity. I therefore rely on the arrangement of the various panels and partitions of the erected carton to support and stiffen each other. In practice, such support and stiffening is usually obtained by dovetailing the transverse and longitudinal panels or partitions of the carton in such a manner that no partition has a very extensive unsupported section. This method does not, however, provide more than the inherent stiffness of the paper board material itself, and results in a carton that has relatively small resistance to crushing by transverse forces unless the structure of the carton is made very complex. However, as the carton structure becomes more complex, its production, assembly and erection becomes correspondingly more costly and time consuming. Where dovetailing is not used resort is had to gluing between the various portions of the carton blank when finally or partially erected. By my invention I have now provided a novel egg carton structure, the blank for which may be cut from a single sheet of paper board and which when erected provides increased resistance to transverse crushing of the carton as well as greater overall rigidity.

For an understanding of my invention, reference is now made to the accompanying drawings, wherein like numerals refer to like parts throughout the several views.

In the drawing:

FIGURE 1 is a developed view of the blank from which my improved carton is constructed,

FIGURE 2 is a fragmentary view showing lower portion of the blank of FIGURE 1 as folded in to form the egg or article accommodating cells,

FIGURE 3 is a front view of the carton when completely assembled,

FIGURE 4 is an end view of the carton as shown in FIGURE 3,

FIGURE 5 is a top view of the carton with the cover portion in its open position,

FIGURE 6 is an enlarged fragmentary view showing details of the end flaps assembly, and

FIGURE 7 is an end view showing the locking means for retaining the closed carton when in use.

Upon referring to FIGURE 1 of the drawing, it will be noted that the box portion of my improved carton comprises a bottom portion **10**, two vertical side portions **11** and **12** and a cover **13** with a flap **14**. Attached to the normally upper edge of the side portion **12** there is a foldable flap **15** to which five cell forming portions **16** are hingedly attached. At the other side of these cell forming partitions **16** there is an additional flap **17** to which there is foldably attached a slotted cell forming partition **18**. This partition forming member **18** is here shown as having slots **19** that normally extend vertically when the blank is folded to complete the carton. Cooperating with the slots **19** of the member **18** the cell partition forming members **16** carry mating slots **20** that serve to form a series of substantially rigid cells within the carton. The box forming portions of the blank, namely the bottom **10**, sides **11** and **12** and the cover portions are connected together by fold lines **21**, **22**, **23** and **24** which extend parallel with each other so that when folded in the manner intended these portions will provide the outline for a substantially rectangular box into which the remaining portions of the blank may be folded and positioned therein as indicated in FIGURE 2 of the drawings. The bottom portion **10** also carries a vertically foldable end closure flap **25** at each end with a cut out portion **26**, the function of which will be pointed out hereinafter. The side portion **11** has a horizontally foldable flap **27** at each end, each of which carry mutilated slot **28** and cooperating with the flap **27** and its mutilated slot **28** the side portion **12** of the carton carries horizontally foldable end flaps **29**, each of which have a deformable locking tongue **30** which when projected through the mutilated slots **28** at the ends of the flaps **27** will serve as a means for securing the box forming portion of the blank in an assembled egg cell accommodating condition. To complete the box when folded as here indicated the cover **13** will form a closure therefor. Hinged to the outer edge of the top portion **13** there is a downwardly foldable flap **14** that carries oppositely extending tongues **31** at its sides which when inserted into slots **32** carried by the side portions **12** will serve to completely secure the cover in its closed position at the vertical corners of the box. At this point it should be noted that the cover portion **13** is also made of a slightly longer length than the box portion by providing outwardly extending portions **33** at each end thereof which, as will be hereinafter explained, serve to center any number of the filled cartons in a standard shipping carton of fiberboard such as are now employed in the wholesale distribution of eggs when boxed as here proposed.

At this point it will be noted that the fold lines **21** and **22** which serve to hingedly attach the side wall portions **11** and **12** to the bottom portion **10** are foreshortened by irregular cuts between the end flaps **25**, **27** and **29** so that when these end flaps are folded along the fold lines **34** a right angled leg or foot **35** will be provided at each lower corner of the box. For a further detail it will be noted that the fold line **36** between the side portion **12** and the foldable flap **15** is likewise foreshortened and disposed inwardly from the normally outer edge of the side portion **12**. As a result, the cell forming portions **16** with the partition **18** interlocked therewith will rest firmly upon the bottom portion **10** of the box when folded in as will be hereinafter described. As shown, the cell forming portions **16** are attached at one side of the foldable flap **15** by right angled fold lines **37** and **38** so that when first folded up along the fold lines **38** the members **16** will

assume vertical position and when again folded as a unit along the fold line **37** they will extend at a right angle to the foldable flap **15** to which they are attached. When the cell forming partitions **16** are thus folded up parallel with each other the portion **17** may be folded thereunder along an interrupted fold line **39** and then the slotted cell forming partition **18** will be folded along a fold line **40** so as to bring the slots **19** carried thereby into mating relation with the slots **20** carried by the cell forming portions **16**. In this manner the cell forming portions **16** and the slotted cell forming partition **18** will be positioned in interlocking vertical relation with each other as shown in FIGURE 2 of the drawing. To complete the box it is then only necessary to fold up the side walls and interlock the end flaps **25**, **28** and **29** at each end thereof.

As will be seen from an examination of FIGURES 3, 4 and 5 of the drawings, the carton or box as formed from the blank cut as shown in FIGURE 1, is of a length that is approximately three times its width, and as for height this will be determined by the nature of the article to be shipped therein. When the top of the box is closed, as shown in FIGURE 3, and the tongues **31** carried thereby are inserted through the slots **32** of the side wall **12** the cover will be firmly locked in its closed condition, and when as indicated in FIGURE 4, the deformable locking tongues **30** carried by the end flaps **29** are projected through the mutilated slots **28** the end flaps **27** and **29** will be likewise firmly secured in overlapping relation. When the box is formed the bottom **10** thereof will be supported by the feet **35** in spaced relation with other boxes when two or more are stacked one above the other. This will provide a space for the circulation of air between the superimposed cartons.

After the carton is formed and opened as shown in FIGURE 5, it will be noted that the egg accommodating cells as defined by the members **16** and the partition **18** will be open and fully exposed so that the eggs or other articles may be easily placed therein.

As indicated in FIGURE 6, when the end flaps are folded to form the carton the flaps **25** will be innermost and the end flaps **27** and **29** will be disposed outermost in overlapping relation when the deformable locking tongues **30** are projected through the mutilated slots **28**, as is more clearly illustrated in FIGURE 7 of the drawings. With reference to this latter figure of the drawings, it will be noted that the deformable locking tongues **30** are provided with two oppositely disposed angularly extending fold lines **41** which permit the ends of this tongue to be flexed inwardly when being projected through the mutilated slots **28** of the end flaps **25**. During this operation the enclosed rectangular portion defined by the mutilated slot **28** will flex inwardly slightly into the opening **26** carried by the end flaps **25** and thus this flexing portion will serve to complete the closure at the end of the carbon when finally formed.

While I have, for the sake of clearness and in order to disclose my invention so that the same can be readily understood, described and illustrated a specific form and arrangement, I desire to have it understood that this invention is not limited to the specific form disclosed, but may be embodied in other ways that will suggest themselves to persons skilled in the art. It is believed that this invention is new and all such changes as come within the scope of the appended claims are to be considered as part of this invention.

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

1. A one piece foldable egg carton, comprising a one piece foldable blank having a bottom, two side walls and a cover portion all foldable about parallel fold lines to complete an elongated container, the bottom and side walls of said carton having hinged end closure flaps at the ends thereof, said end closure flaps being separated by irregular cuts extending across the fold lines of said end closure flaps and forming right angled feet at the lower corners of the carton when erected, an end closure flap carried by the bottom of the carton defining the width and height of the carton and being foldable innermost with respect to the end closure flaps carried by the side walls of the carton, the end closure flaps upon one of said side walls having a mutilated slot and the end closure flaps upon the other of said side walls having a tongue with deformable laterally extending tabs which interlock with the mutilated slot carried by the end closure flap of said first side wall to complete the box forming portion of the carton without a gluing therebetween, the end closure flap carried by the bottom of the carton having a cut out portion to accommodate the interlocking tongue of said end enclosure flaps, and an egg cell defining structure formed as an integral part of said blank having transverse and longitudinally extending cell wall defining portions foldable and interlocked as a unit independently of the container forming portion of the blank and hinged to one of the side walls of said blank, whereby when set up said egg cell defining structure of the blank may be folded into an egg accommodating position within the box forming portions of the container for use without glue or other securing means.

2. An egg cell forming blank for an egg carton having a bottom, side walls and a cover adapted and arranged to be secured in rectangularly box-like form by glueless interlocking end flaps, comprising an extension of said blank attached by a fold line to the front wall of said box-like form having a plurality of lateral egg cell wall forming portions each having a vertical slot in its lower edge and foldable into a vertical position, and a longitudinally extending central cell wall forming partition having slots engageable with the slots of said lateral cell wall forming portions when said longitudinally extending cell forming partition is reversely folded under and interlocked with the slots of said lateral cell wall forming portions, whereby the egg cell defining portions of the blank may be set up as a cell defining unit and folded over the box forming portion of the blank.

3. In a multiple egg cell container, the combination of a box forming portion having a bottom and side walls secured in erected positions by overlapping end flaps and a cover with closure flap hinged to one of said wall portions, said box forming portion and cover with flap being all foldable in one clockwise direction when viewed at the end of the carton, and a multiple cell forming portion attached by a fold line to the other wall of said box forming portion of the blank, said multiple cell forming portion of the blank having inner wall forming portions with a plurality of lateral cell wall members hinged between said inner wall forming portions, and a foldable extension with vertical slots for retaining said lateral cell wall members in spaced vertical positions, and characterized by the fact that the said multiple cell forming portion of the blank is folded along its fold lines in a reverse clockwise direction, whereby upon completion of said box forming portion or said multiple cell forming portion the latter portion of the container can be folded into cooperating relation with the box forming portion of the container for use without gluing or other securing means.

4. In a multiple egg cell container, the combination of a box forming portion having a bottom and side walls secured in erected positions by overlapping end flaps and a cover with closure flap hinged to one of said wall portions, said box forming portion and cover with flap being all foldable in one clockwise direction when viewed at the end of the carton, and a multiple cell forming portion attached by a fold line to the other wall portion cell forming portion of the blank having inner wall forming portions with a plurality of lateral cell wall members hinged about right angle fold lines between said inner wall forming portions and a bottom portion having a

foldable extension of equal length with spaced vertical slots in which said lateral cell wall members are held in spaced vertical positions, and characterized by the fact that the said multiple cell forming portion of the blank is folded along its fold lines in a reverse clockwise direction, whereby upon a folding of said box forming portion or the multiple cell forming portion of the blank of said box forming portion of the blank, said multiple the two parts of the container can be folded into cooperating relation for use without gluing or other securing means.

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