Oct. 11, 1949. D. GOLDEN 2,484,085

COLLAPSIBLE CARTON

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FIG. 1

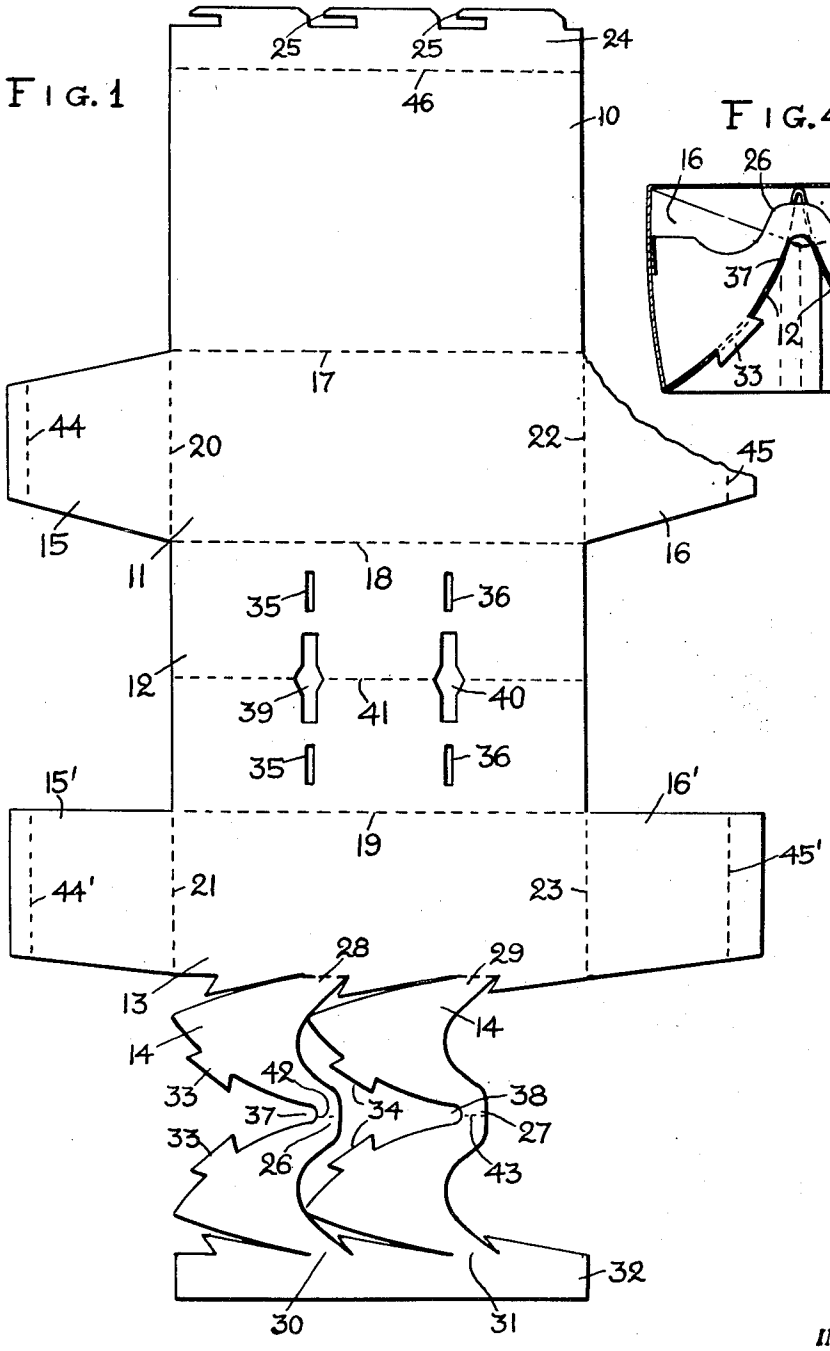


FIG. 4

INVENTOR.
DAVID GOLDEN
BY Edmund J. Hanes
ATTORNEY

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FIG. 2

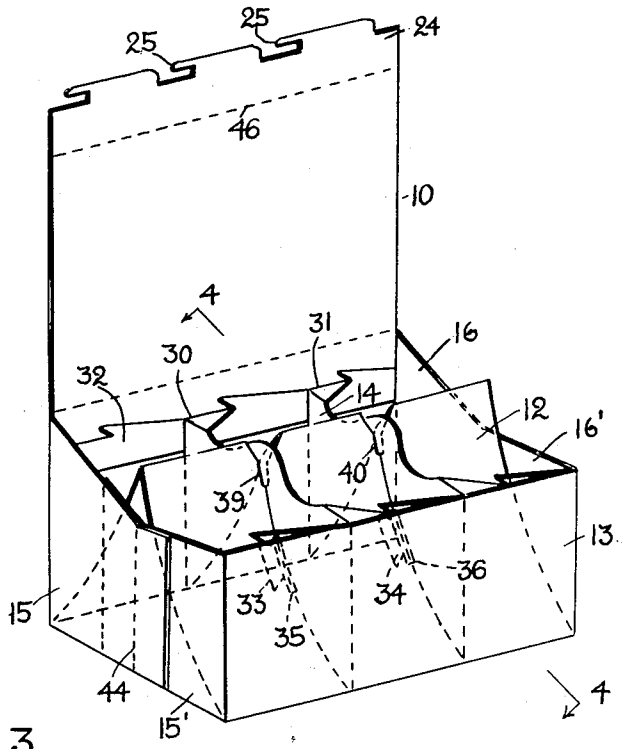
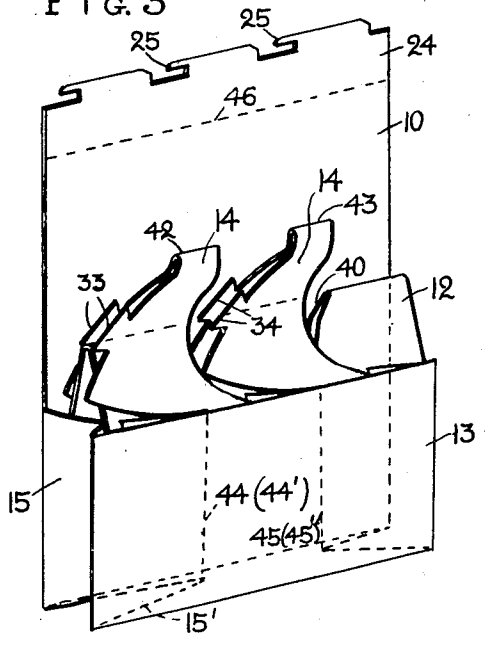


FIG. 3



INVENTOR.
DAVID GOLDEN
BY
Fredrick L. Hamm
ATTORNEY

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FIG. 5

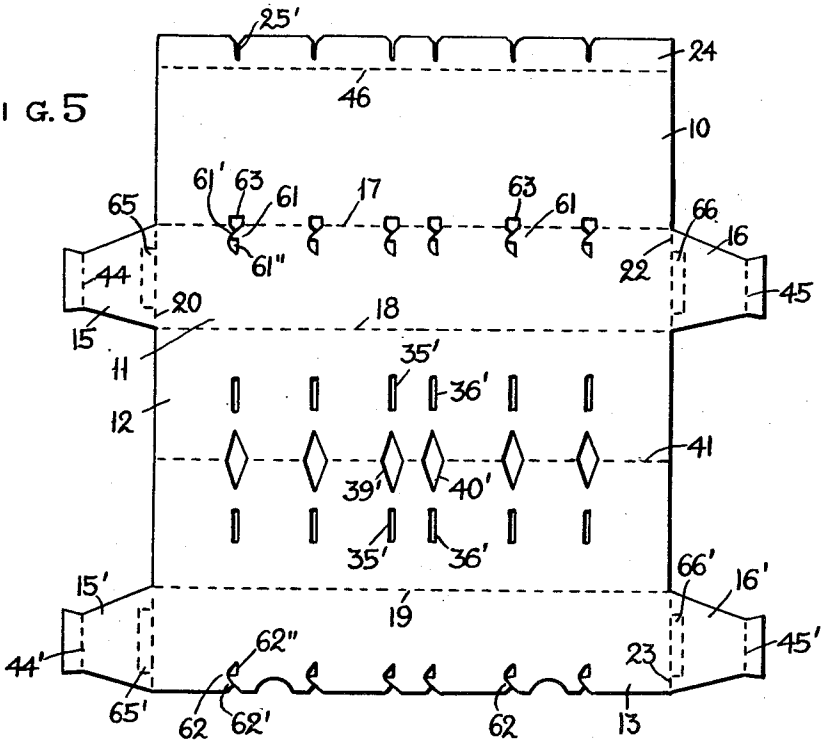
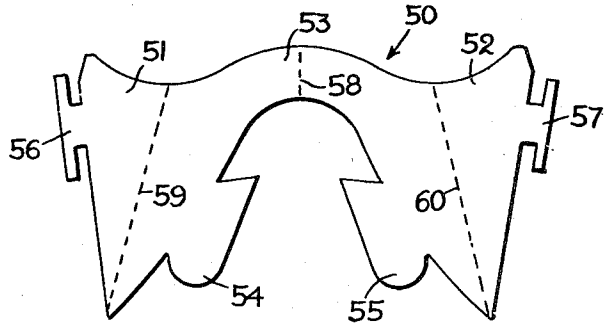


FIG. 9



INVENTOR.
DAVID GOLDEN
BY Frederick G. Hamm
ATTORNEY

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FIG. 6

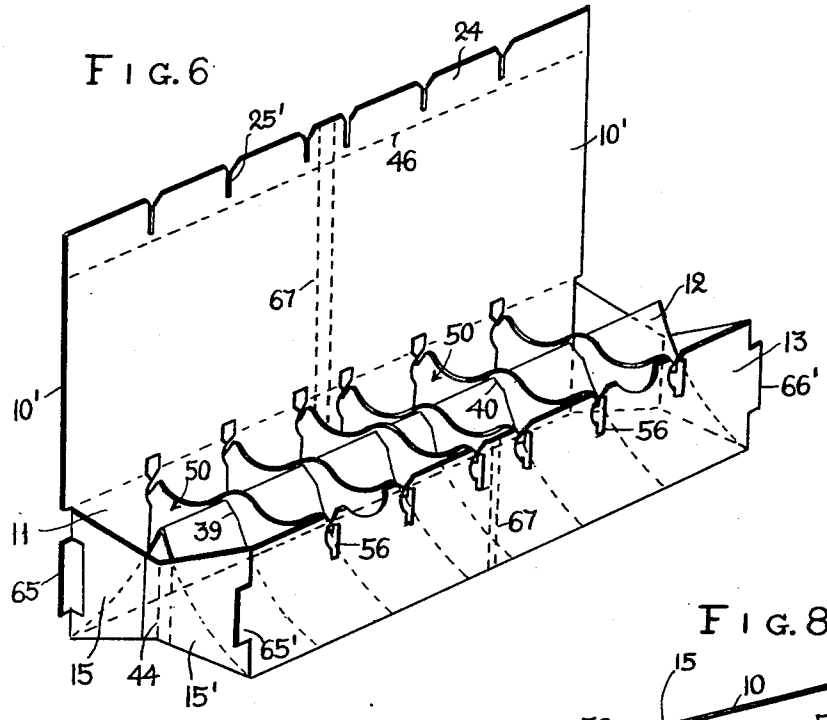


FIG. 8

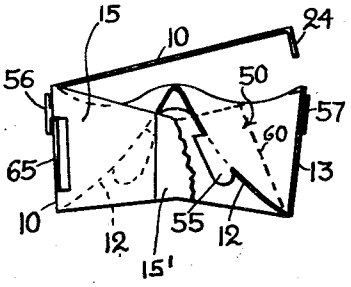
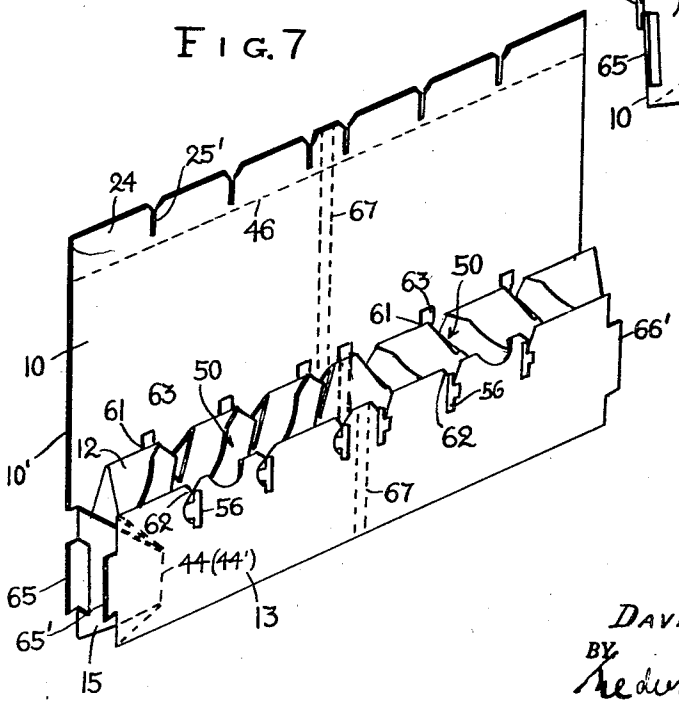


FIG. 7



INVENTOR.
DAVID GOLDEN
BY
Frederick L. Harris
ATTORNEY

Patented Oct. 11, 1949

2,484,085

UNITED STATES PATENT OFFICE

2,484,085

COLLAPSIBLE CARTON

David Golden, New York, N. Y.

Application March 20, 1946, Serial No. 655,748

3 Claims. (Cl. 229—29)

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This invention relates to cartons, particularly to collapsible egg cartons having a plurality of egg compartments or cells and set up either by machines or by hand.

One object of the invention is to provide a collapsible egg carton of the general type above referred to in which all eggs inserted in the carton are protected against breakage.

Another object of the invention is to provide an egg carton in which inwardly or outwardly foldable end or side walls protect eggs placed in cells or compartments at either end of a carton.

Another object of the invention is the provision of a novel and improved egg carton, all parts of which including the foldable end walls are formed by suitable folding and securing of a single blank.

Another object of the invention is the provision of a novel and improved egg carton of the general type above referred to, which can be inexpensively manufactured, easily expanded for the insertion of eggs and conveniently collapsed for storage and re-use.

Other and further objects, features and advantages of the invention will appear hereinafter and in the appended claims forming part of the application.

In the accompanying drawings several now preferred embodiments of the invention are shown by way of illustration and not by way of limitation.

Fig. 1 is a plan view of a scored blank of an egg carton according to the invention.

Fig. 2 shows a perspective view of a collapsible egg carton according to the invention in its expanded position.

Fig. 3 shows a perspective view of the egg carton according to Fig. 2 in a collapsed position.

Fig. 4 is a section along line 4—4 of Fig. 2.

Fig. 5 is a plan view of a scored blank of a modification of an egg carton according to the invention.

Fig. 6 is a perspective view of an expanded egg carton made of the blank shown in Fig. 5.

Fig. 7 is a perspective view of an egg carton according to Fig. 6 in its collapsed position.

Fig. 8 is a partial sectional side view of Fig. 6.

Fig. 9 is an elevational side view of a cross partition of an egg carton according to Figs. 5 and 6.

Referring now to the drawings more in detail, particularly to the embodiment of the invention as illustrated in Figs. 1 to 4 inclusive, there is shown in Fig. 1 a scored blank which may be produced by any suitable means, for instance by die-cutting. The blank when folded and secured forms a cover

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10, a rear wall 11, a bottom wall 12 also constituting a longitudinal partition, as will be more fully explained hereinafter, a front wall 13 and cross or transverse partitions 14. There are further provided end or side walls, each side wall being formed by two portions 15, 15' and 16 and 16' respectively, extending from the front wall section 13 and the rear wall section 11 respectively of the blank. The various wall sections are defined or set off by score or crease lines 17, 18, 19, 20, 21, 22 and 23. Cover section 10 is extended into a flap 24 in which are provided two hooks 25 employed to lock cover 10 when the carton is expanded. Each of the cross partitions 14 comprises two sections joined by a bridge 26, 27, respectively. The cross partitions are joined at 28 and 29 respectively, to front wall 13 and at 30 and 31 respectively, to a fastening or glue flap 32. Each of the inner edges of the two sections of a cross partition is provided with a fin 33, 34 respectively. These fins may have any suitable shape, such as the dove-tail shape shown in Fig. 1. The fins are arranged to enter corresponding slots 35 and 36 respectively in bottom wall 12 when the carton is in an expanded position, as will be more fully explained hereinafter. The sections of the cross partitions may have the approximately triangular shape shown in Fig. 1 but it should be understood that the partition sections may have any other suitable shape, for instance, the lower or top section of the triangles may be cut off. Each cross partition has a recess 37 and 38 respectively, opposite the respective bridges 26 and 27. These recesses serve to secure the cross partitions in their positions on bottom wall 12. For this purpose, slots 39 and 40 respectively are provided in the bottom wall. The shape of slots 39 and 40 can best be seen in Fig. 5. These slots are bisected by a folding or crease line 41. Each cross partition is provided with a folding or crease line 42 and 43 respectively, running through the center of the respective bridges 26 and 27. The partition sections themselves are not weakened by crease or folding lines. As previously mentioned, each side or end wall is formed by two portions 15, 15' and 16, 16'. These portions are so shaped that they overlap each other when the egg carton is assembled. Each portion has a folding or crease line 44, 44' and 45, 45' respectively which are so positioned that respective folding lines are in registry when the portions are joined to form side walls.

Let it now be assumed that it is desired to assemble the carton. Then, the blank is folded along crease lines 17, 18, 19, 41, 20, 21, 22, and

23. Flap 32 is glued or otherwise fastened to the upper edge of rear wall 11, parallel to crease line 17, and portions 15, 15' and 16, 16' are also glued or otherwise fastened together so that their respective crease lines 44, 44' and 45, 45' are in registry. As a result, a carton will be formed having a front wall, a rear wall, a bottom wall and two side walls. As can best be seen in Fig. 2, the bottom wall 12 by being folded along crease line 41 forms a longitudinal partition having walls sloped toward the lower edges of rear wall 11 and front wall 13 respectively. The sloped walls of the longitudinal partition are preferably slightly curved, as can best be seen in Fig. 2, to accommodate the shape of eggs placed in the carton. The front and rear wall are preferably so shaped that the rear wall is slightly higher than the front wall. It has been found that this shape of the carton has certain advantages when the carton is closed by bending flap 24 of cover 10 along folding line 46 and engaging locking hooks 25 with respective cross partitions 14. The registering folding lines 44, 44' and 45, 45' respectively of the side walls are so positioned that they are substantially in alignment with the apex of the longitudinal partition 12. Furthermore, the portions forming the side walls are shaped in such a manner that the upper edges thereof are sloped toward the respective folding lines and lower than the apex of the longitudinal partition at and near the folding lines of the side walls.

Let it be now assumed that it is desired to flatten or collapse the egg carton assembly, as previously described, for storage or shipping purposes. The side walls are pushed inwardly and fitted into the space between the sloped walls of longitudinal partition 12, as can best be seen in Fig. 3 or pushed outwardly. Then the front wall of the carton is simply placed against the rear wall. The cross partitions will assume the positions as shown in Fig. 3 by folding along their respective creased lines 42 and 43 and by also being bent along their joining strips 28, 30 and 29, 31 respectively.

Let it now be assumed that it is desired to expand the carton and to ready it for the insertion of eggs. Then, the side walls are pushed outwardly until they are straightened out and rest against the edges of the sloped walls of partition 12, as can best be seen in Fig. 2. The cross partitions are now set up either by hand or by machine and placed in the positions shown in Figs. 2 and 4 in which fins 33 and 34 enter the respective slots 35 and 36 respectively and the bridges 26 and 27 enter the respective top slots 39 and 40. As will be apparent, the comparatively stiff side walls protect eggs inserted in cells or compartments formed by the side walls and the adjacent cross partitions against breakage. Furthermore, the side walls brace the carton sufficiently against collapsing, thereby preventing breakage of inserted eggs, so that fins and slots for securing the cross partitions in their positions may be omitted, thereby reducing the costs of manufacture of an egg carton and facilitating the expansion and collapse thereof.

It should further be understood that the invention is not limited to the particular shape and arrangement of cross partitions, as shown in the drawings, but that any other suitable shape and arrangement may be selected, as the principal feature of the invention resides in the provision of foldable side walls as previously explained.

It should also be noted that while the embodiment of the invention according to Figs. 1 to 4 inclusive shows a carton for six eggs, the invention may equally well be applied to a carton intended for any other desired number of eggs, such as a dozen eggs.

The modification of an egg carton according to the invention, as shown in Figs. 5 to 9 inclusive, comprises a shell or container which is similar to the shell or container of the egg carton as shown in Figs. 1 to 4 inclusive, with the exception that the egg carton according to Figs. 5 to 9 is intended for the insertion of one dozen eggs. Identical reference characters are therefore employed to designate corresponding parts. The main difference between the egg carton according to Figs. 1 to 4 and the egg carton according to Figs. 5 to 9 resides in the fact that the first mentioned egg carton is made of a single blank, whereas in the second mentioned egg carton, the cross or transverse partitions are made separately before insertion in the shell or container of the carton.

As can best be seen in Fig. 9, each cross partition, generally designated 50, comprises two sections 51 and 52 joined by a bridge 53. Sections 51 and 52 may have a substantially triangular shape as shown in Fig. 9 or any other suitable shape which will separate and protect eggs inserted in the carton. There is provided at the inner edge of each section a fin 54 and 55 respectively, and at the outer edge of each section a fin 56 and 57 respectively. Each of the fins 54 and 55 has a downwardly extending portion and each of the fins 56 and 57 a wide portion and a narrow portion joining the wide fin portion to the respective section 51 or 52. Each partition wall 50 can be folded along a crease or folding line 58 provided at substantially the center of bridge 53, and each individual section 51 or 52 can be folded along a folding or crease line 59 and 60 respectively, extending from a point substantially midway between the center of bridge 53 and the outer edge of the respective section toward the bottom edge thereof.

Fins 54 and 55 are shaped and positioned to be inserted in corresponding slots 35' and 36' provided in the bottom section 12 of the blank employed for forming the shell or container of the egg carton. The length of a slot 35' or 36' corresponds approximately to the width of the root of a fin 54 or 55 so that the downwardly extended portions of these fins will secure an inserted cross partition 50 in the respective slots. The outer fins 56 and 57 are shaped and positioned to be inserted in open slots 61 and 62 respectively, provided in the rear wall section 11 and the front wall section 13 respectively of the blank forming the shell or container. Each of the slots 61 and 62 comprises a preferably narrow entrance section 61' and 62' respectively, extended into a wider substantially triangular section 61'' and 62'' respectively. The vertical width of enlarged slot sections 61'' and 62'' corresponds substantially to the width of the narrow portion of fins 56 and 57. In order to facilitate the insertion of one of the fins 56 or 57 in one of the slots 61, recesses 63 are provided in cover section 10 of the blank in alignment with the entrance slot section 61' of the slots.

The center part of each cross partition is held in position by means of slots 39' and 40' extending from both sides of the folding line 41 of bottom part 12, folding line 41 forming the common base of two triangles. Slots 39' and 40' serve to receive bridge 53 of an inserted cross partition.

Let it now be assumed that the shell or con-

tainer of the egg carton is assembled by folding the blank shown in Fig. 5 along the crease lines thereof and joining side wall portions 15, 15' and 16, 16'.

A shell, thus formed, can be expanded by straightening the side walls formed by the respective wall portions or can be collapsed by pushing the respective wall portions into the space between the sloped walls of bottom section 12, as has been described in detail in connection with Figs. 1 to 4 inclusive. In order to make the egg carton ready for use the shell is expanded and cross partitions 50 are inserted by slipping the fins thereof into the respective slots. As will be observed from Figs. 6 and 8, the plane of the individual fins is vertical to the longitudinal axis of the carton when the carton is in its expanded position.

When it is now desired to collapse the carton, the side walls are pushed between the sloped walls of the bottom section 12 forming the longitudinal partition of the carton and the front wall of the carton is pressed against the rear wall. Folding lines 58, 59 and 60 of the cross partitions will permit such collapse of the carton, and the fins will pivot in their respective slots until they reach positions in which they are substantially parallel to the longitudinal axis of the carton. Fig. 7 shows the position of the various parts in the collapsed position of the carton.

In order to lock cover 10 securely when the carton is expanded, comparatively narrow slots 25' are provided in flap 24 of the cover which are shaped and positioned to engage the upper edges of corresponding cross partitions or fins 57.

As will appear from the previous description and an examination of the drawings, the comparatively stiff side or end walls, the only folding line of which (44, 44' and 45, 45') is located between the sloped walls of partition 12, protect eggs inserted in cells or compartments adjacent to the side walls against breakage. Eggs placed in these adjacent cells are further protected by tongues 65, 65' and 66 and 66' provided in side wall portions 15, 15' and 16, 16' respectively, adjacent to the folding lines thereof. These tongues will extend substantially parallel to rear wall 11 and front wall 13 and substantially vertical to the side walls when the carton is assembled as can be clearly seen in Figs. 6 and 7, thereby forming cushions. These cushions will protect the cartons and particularly the side walls thereof against pressure when the cartons are stacked in shipping boxes. The cushioning effect can be further improved by extending the edges 10' of cover 10 slightly beyond the vertical plane of the side walls, as can best be seen in Fig. 6, so that the outer edges 10' are in substantially the same plane as the outer edges of the tongues.

Provisions may be made for for dividing the carton into two cartons each containing six eggs. This can be accomplished by weakening the carton along a dividing strip 67 which may be torn out. The slots for the cross partitions then of course must be positioned in such a manner that the cross partitions adjacent to the dividing strip will form side walls. Fig. 5 clearly shows such positions of the slots and Figs. 6 and 7 illustrate the location of the various parts in a divisible carton.

It will be understood from the previous description that the cushioning means which have been described in connection with the embodiment of the invention as shown in Figs. 5 to 9 inclusive

may also be applied to the embodiment, as shown in Figs. 1 to 4 inclusive.

While the invention has been described in detail with respect to certain now preferred examples and embodiments of the invention it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended therefore, to cover all such changes and modifications in the appended claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. A collapsible egg carton of the type described comprising a front wall, a rear wall, a bottom wall forming a longitudinal partition having sloped wall portions joined to the front wall and the rear wall, foldable side walls joined to the front wall and the rear wall, said foldable side walls being shaped and positioned to be fitted between the sloped wall portions of the bottom wall section when the carton is in its collapsed position, and to abut against the lateral edges of the bottom wall when the carton is expanded, each of said foldable side walls being composed of two wall portions, one extending from the front wall section and the other from the rear wall section, a tongue member extending outwardly from each side wall, and a cover, said cover being extended beyond the side walls to form together with the respective tongue members a protective cushion for eggs placed adjacent to the side walls.

2. A collapsible egg carton of the type described comprising a front wall, a rear wall, a bottom wall forming a longitudinal partition having sloped walls and joined to the front wall and the rear wall, foldable side walls joined to the front wall and the rear wall, said foldable side walls being shaped and positioned to be fitted between the sloped walls of the bottom wall when the carton is in its collapsed position, and cross partitions having fins arranged to engage corresponding slots in the front wall and the rear wall for removably securing the cross partitions to the said walls, each cross partition having a folding line beginning substantially in alignment with the apex of the longitudinal partition and other folding lines beginning at the top of each cross partition on both sides of the longitudinal partition at a point substantially midway between the apex of the longitudinal partition and the front wall and the rear wall respectively and extending in a substantially straight line toward the line at which the sloped walls of the longitudinal partition are joined to the front wall and the rear wall respectively to permit the said walls and partitions to be flattened against each other and to be expanded into egg-receiving compartments.

3. A collapsible egg carton of the type described made of a single blank folded and fastened to produce a bottom wall section forming a longitudinal partition having sloped walls and continued to form a front wall section and a rear wall section, foldable side wall sections joining the front wall and the rear wall section, each of said foldable side wall sections being composed of two wall portions, one extending from the front wall section and the other from the rear wall section, said foldable side wall sections being shaped and positioned to be fitted between the sloped wall portions of the bottom wall section when the carton is in its flattened position, cross partitions joined to the front wall section to form cells in the space between the longitudinal partition and

the front wall and the rear wall sections respectively, each of said cross partitions being composed of two substantially triangularly shaped portions joined approximately at the base by a bridge positioned to straddle the apex of the longitudinal partition when the carton is expanded, a tongue member extending outwardly from each side wall section, and a cover, said cover being extended beyond the side wall sections to form together with the respective tongue members a protective cushion for eggs placed adjacent to the side wall sections.

DAVID GOLDEN.

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