June 29, 1965 V. C. ALMQUIST 3,192,050

EGG PACKAGING

Filed Feb. 20, 1963 2 Sheets-Sheet 1

FIG. 1

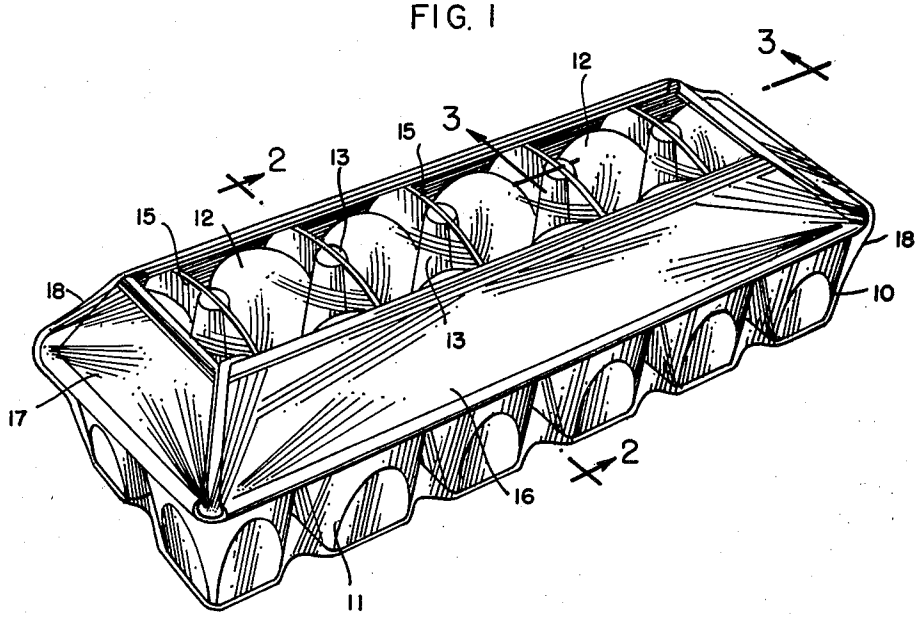


FIG. 2

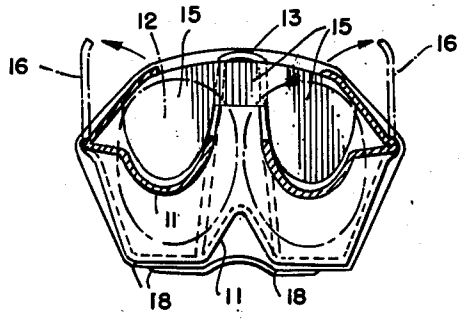
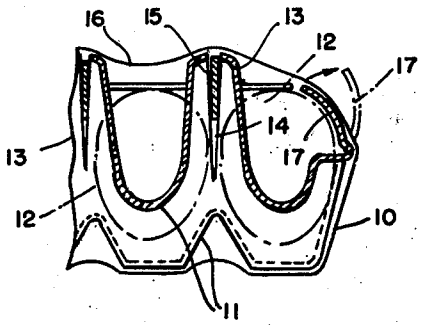


FIG. 3



INVENTOR:
VERNON C. ALMQUIST
BY
Carl C. Batz
ATT'Y

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Filed Feb. 20, 1963 2 Sheets-Sheet 2

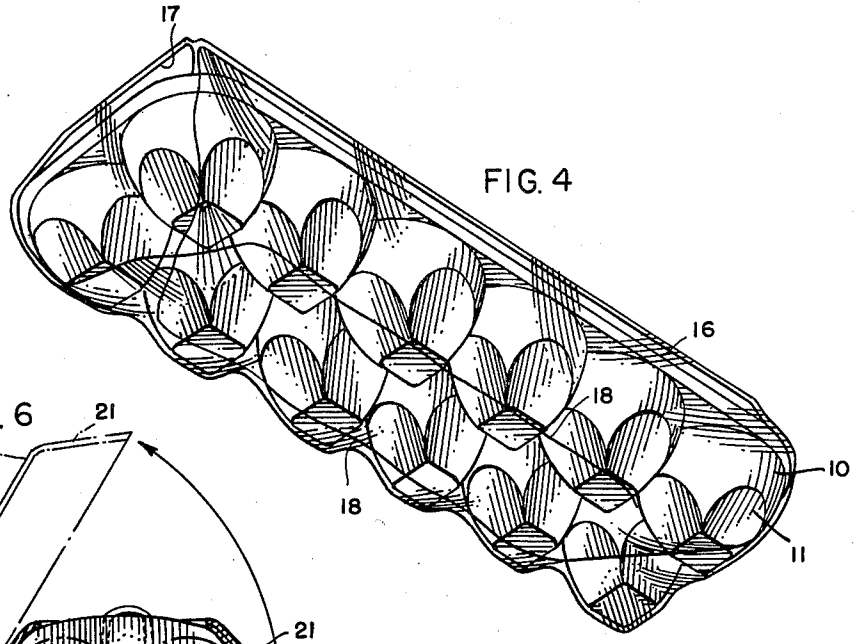


FIG. 4

FIG. 6

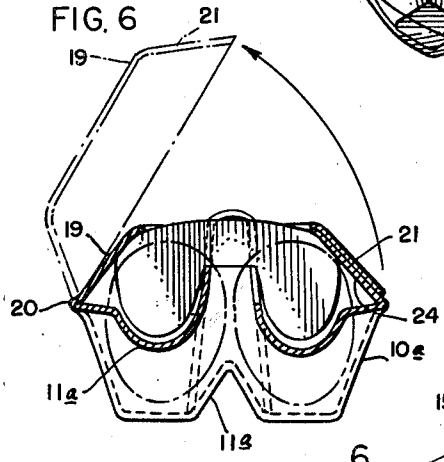
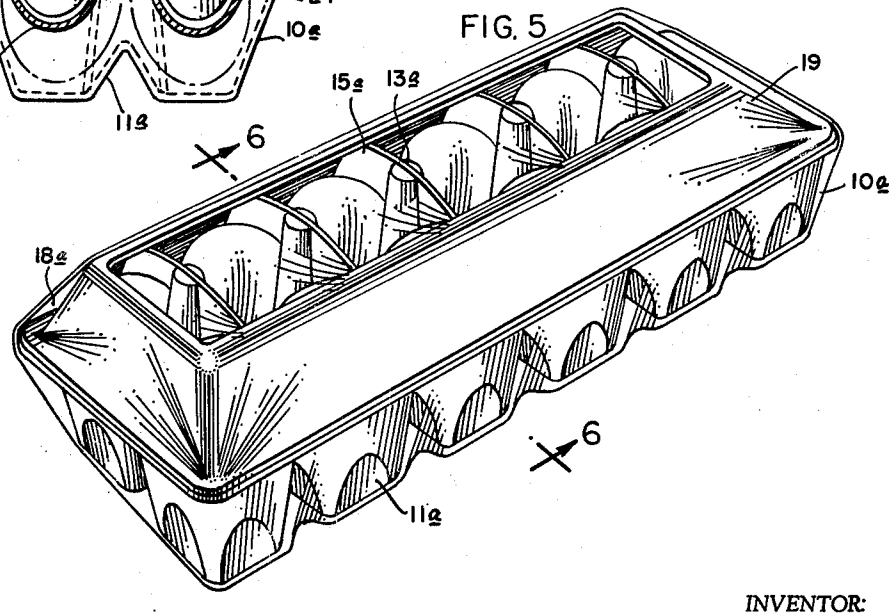


FIG. 5



INVENTOR:
VERNON C. ALMQUIST
BY
Carl C. Batz
ATT'Y

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EGG PACKAGING

Vernon C. Almquist, Western Springs, Ill., assignor to Armour and Company, Chicago, Ill., a corporation of Delaware

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This invention relates to egg packaging, and more particularly to a carton or container and to the packaging of eggs therein.

The problem of packaging eggs so that they may be shipped, handled in grocery stores, and conveyed to the home of the user without breakage, has existed for a long time, and today extensive tests are carried out by technicians in the laboratories of grocery stores or chains of stores to determine the effectiveness of cartons which will prevent breakage while at the same time permitting the purchaser to observe the eggs within the carton before purchase. Such tests include a compression test of individual cartons, a compression test of full cases of cartoned eggs, a shaker vibration test of full cases of cartoned eggs, a shaker vibration test of full cases of cartoned eggs, and shocker tests for such cartoned eggs and cases of cartoned eggs.

An object of the present invention is to provide a carton or container for eggs which meets the foregoing tests, while at the same time permitting the eggs to be exposed to view at the time of purchase and before the containers are opened. A further object is to provide a container and method of filling and closing the same which provides high protection against breakage while exposing the eggs to view. A still further object is to provide a unique container structure with protective transverse dividers, together with means for holding the individual eggs in firm position within the container. A still further object is to provide an egg container formed of molded paper pulp having cells for receiving eggs and central posts which are divided for receiving transverse partitions in combination with a transparent overwrap for restoring and maintaining the rigidity and strength of the posts and package. A still further object is to provide a container structure providing cells for individual eggs and with a top hinged border frame which may be moved to permit filling of the cells and closed to overlap a portion of the tops of the eggs while exposing the eggs to view and in combination with a plastic film overwrap for drawing the frame tightly about the eggs to form a secure package. Other specific objects and advantages will appear as the specification proceeds.

The invention is shown, in illustrative embodiments, by the accompanying drawings, in which:

FIGURE 1 is a perspective view of a container package embodying my invention; FIG. 2, a transverse sectional view, the section being taken as indicated at line 2—2 of FIG. 1; and FIG. 3, a broken longitudinal detail sectional view, the section being taken as indicated at line 3—3 of FIG. 1; FIG. 4, a perspective view of the structure shown in FIG. 1 but exposing the bottom portion of the container and the sealing of the overwrap thereto; FIG. 5, a perspective view of a modified form of the invention; and FIG. 6, a transverse sectional view, the section being taken as indicated at line 6—6 of FIG. 5.

In the modification illustrated in FIGS. 1 to 4 inclusive, 10 designates a base which may be molded from paper pulp to provide pockets or cells 11 adapted to receive individual eggs indicated by the numeral 12. There are two rows of cells 11 arranged in side-by-side relation, and between the rows integral posts 13 extend upwardly, as shown more clearly in FIGS. 1, 2 and 3. In the practice of my invention, each of the posts 13 is split or divided

at 14, and a transverse partition or divider 15 extends through the divided post 13 and laterally of the post so as to provide a partition between the eggs on each side of the post.

Mounted upon the base 10 are side flaps 16 and end flaps 17. If desired, such flaps may be formed integrally with the base 10 or may be formed in separate parts and secured to base 10 by adhesive. The flaps 16 and 17 are formed of flexible material, permitting them to be tilted outwardly or backwardly as illustrated in dotted lines in FIGS. 2 and 3, or the flaps may be drawn inwardly to form a border frame extending over and engaging the eggs, while at the same time such overlapping of the top of the eggs does not prevent the eggs from being observed fully through the open top of the container or carton. Thus, the flaps 16 and 17 may be opened to permit insertion of the eggs, and then closed and drawn about the eggs when the eggs are ready for shipment.

In order to maintain the border frame consisting of flaps 16 and 17 tightly about the eggs and in order to tie the split portions of the posts 13 tightly together, I employ a plastic overwrap or film 18 which is drawn about the case and sealed against the bottom of the case by heat which seals the ends of the film to each other. Any suitable sealing cement or means may be used.

In the preferred practice of my invention, I employ a shinkable plastic film 18 which responds to a change in temperature, thus enabling the tie bond illustrated in FIG. 1 to be obtained in a minimum of time. Such shrinkable plastics, formed of polyethylene and other plastics and laminated plastics, are well known in the art and need not be described in detail. It is sufficient to state that such films have the property of shrinking when exposed to heat, etc., and hence, after the package has been enclosed within a film and the film cemented to the bottom of the container, as illustrated in FIG. 4, the carton may be exposed briefly to heat which will cause a contraction of the film to provide the tight bonding package shown in FIG. 1. In this structure, the shrunken film has the important function of ligating or bonding together the split or divided posts 13 about the dividers 15, while also drawing the flaps 16 and 17 tightly about the individual eggs so as to hold them against movement within their cells and as separated by the dividers 15.

In the structure illustrated in FIGS. 5 and 6, the base 10*a* is substantially as shown in FIGS. 1 to 4 inclusive, but the border frame 19 is not divided at the corners but, instead, is one unitary piece having a hinge at 20, as shown best in FIG. 6. In other words, the border frame here consists of one piece, and the same may be swung rearwardly, as indicated in dotted lines in FIG. 6, to enable the eggs to be placed in position, and then swung to locking position, as shown in solid lines in FIGS. 5 and 6. In this structure, the posts 13*a* and the dividers 15*a* are the same as shown in FIGS. 1 to 4 inclusive. In order to bind the split posts together tightly about the dividers 15*a* and in order to hold the flexible border frame 19 tightly about the top side portions of the eggs, I employ a plastic film 18*a* and secure the film with cement or other means directly to the bottom of the base 10*a* in the manner already described in connection with FIG. 4.

In each of the modifications, the film may be in the nature of a plastic shrinkable bag, and after the bag has been drawn around the package, the mouth portion of the bag may be pressed against the bottom of the carton and secured thereto with pressure-sensitive tape, latex cement, or film sealed to itself by heat.

Operation

In the operation of the structure shown in FIGS. 1 to 4 inclusive, the container is opened by drawing the flaps 16

and **17** outwardly as far as necessary in order to fill the cells with eggs, as illustrated in FIG. 1. The dividers **15** formed of paper or other suitable material provide a buffer between the upper portions of the eggs, and the flaps **16** and **17** when drawn downwardly tightly engage the top side portions of the eggs. A plastic film of cellophane or of shrinkable plastic, such as polyethylene or laminated plastic, etc., is drawn around the container and sealed to the bottom. In the preferred operation, the plastic is of a shrinkable type, and after being sealed is heated to cause the film to tightly engage the container structure so as to confine the flaps **16** and **17** in snug engagement with the individual eggs while at the same time binding the split posts firmly about the dividers **15**.

In the structure shown in FIGS. 5 and 6, the operation is the same as above described except that the unitary border frame **19** is swung rearwardly, as illustrated in dotted lines in FIG. 6, while the cells of the container are being filled with eggs, and thereafter the frame is swung to closed position, as illustrated in FIG. 5, and the plastic overwrap sealed and tightened as above described.

By way of specific example, a container as shown in FIG. 1 was filled with eggs, and the flaps **16** and **17** which had been opened to permit the eggs to be positioned with the carton were pressed inwardly, and a bag of shrinkable plastic (Cryovac) was drawn about the case with the mouth of the bag at the bottom thereof and the mouth portion of the bag was then cemented against the bottom of the container, as illustrated in FIG. 4. The entire container was then exposed to radiant heat for a brief instant to bring about the shrinking of the plastic, thus providing the tightly-drawn closed package illustrated in FIG. 1 and in which the major portion of the eggs was exposed through the top window of the carton. By the method and means set out above, it is found that egg cartons or containers can be filled by machine or by hand very expeditiously, and then the split posts bound or ligated and the hinged border frames drawn tightly about the eggs in an extremely brief time.

While in the foregoing specification I have set forth specific structures and steps of procedure in considerable detail for the purpose of illustrating embodiments of the invention, it will be understood that such detail or details may be varied widely by those skilled in the art without departing from the spirit of my invention.

I claim:

1. In a method of packaging eggs in a container having egg cells, an open top and a hinged border frame overlapping a portion of the cells, the steps of opening said border frame, filling said cells with eggs, drawing a heat-shrinkable plastic film about said container and border frame, securing said film in said enclosing relation, and applying heat to shrink said film for tightening said border frame about said eggs.

2. In a method for packaging eggs in a container having cells and hinged borders overlapping a portion of the cells, the steps of filling said cells, drawing a heat-shrinkable plastic bag about said container and securing the open portion of the bag in closed relation to the bottom of the container, and applying heat to shrink said film and to tighten said bag about said container.

3. An egg package comprising a container having an open top and having cells therein for receiving eggs, side flaps hingedly connected at their bottom edges with the sides of said container, said side flaps extending upwardly from said edges, and transparent film extending upwardly about said container and pressing said side flaps against said cells to bind said flaps against said cells.

4. An egg package comprising a container having an open top and having cells therein for receiving eggs, side flaps hingedly connected at their bottom edges with the sides of said container, said side flaps extending upwardly from said edges, transverse dividers longitudinally spaced within said container, and transparent film extending tightly about said container and pressing said side flaps against said dividers to bind said flaps and dividers in position.

5. An egg package comprising a container having an open top and having cells therein for receiving eggs, side flaps hingedly connected at their bottom edges with the sides of said container, said side flaps extending upwardly from said edges, upwardly-extending posts longitudinally spaced within said container, vertical transverse dividers at longitudinally spaced intervals, means for securing said dividers to said posts, and transparent heat-shrinkable film extending tightly about said container and pressing said flaps against said dividers to bind said flaps and dividers in position.

6. An egg package comprising a container having an open top and having cells therein for receiving eggs, side flaps hingedly connected at their bottom edges with the sides of said container, said side flaps extending upwardly from said edges, upwardly-extending transversely split posts, transverse dividers passing through said split posts at longitudinally spaced intervals within said package, and heat-shrinkable transparent film extending tightly about said container and pressing said side flaps against said dividers and into said posts to form said package.

7. An egg package comprising a container having an open top and having cells therein for receiving eggs, a side hinged unitary border frame adapted to be drawn back for the reception of eggs into said cells and to be moved forward to cover portions of said cells, upwardly extending transversely split posts, transverse dividers passing through said split posts at longitudinally spaced intervals within said package, and transparent heat-shrinkable film extending tightly about said container and pressing said border frame against said dividers and into said posts to form said package.

8. The structure of claim **7** wherein said hinged unitary border frame includes side and end flaps formed by slitting the corners of the border frame.

9. An egg package comprising a container having an open top and having cells therein for receiving eggs, a removable unitary border frame, upwardly extending transversely split posts, transverse dividers extending through said split posts at longitudinally spaced intervals within said package, and transparent heat-shrinkable film extending tightly about said container and pressing said border frame against said dividers and into said posts to form said package.

10. The structure of claim **9** wherein said removable unitary border frame includes side and end flaps formed by slitting the corners of the border frame.

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A. LOUIS MONACELL, *Primary Examiner.*