

Sept. 14, 1937.

M. KOPPELMAN

2,093,280

SELF LOCKING CARTON AND PACKING

Filed Dec. 6, 1934

2 Sheets-Sheet 1

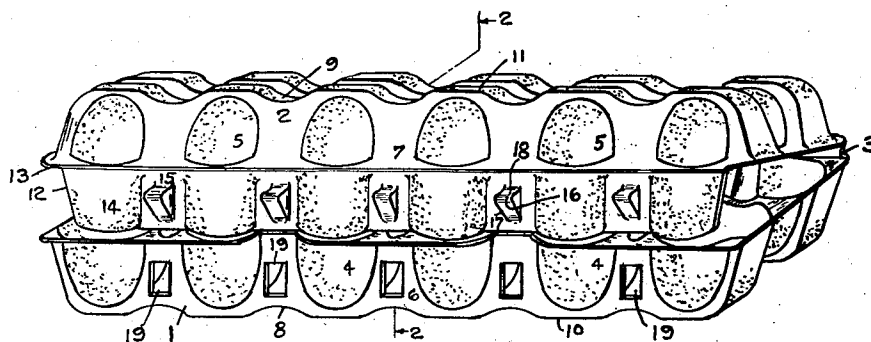


Fig-1

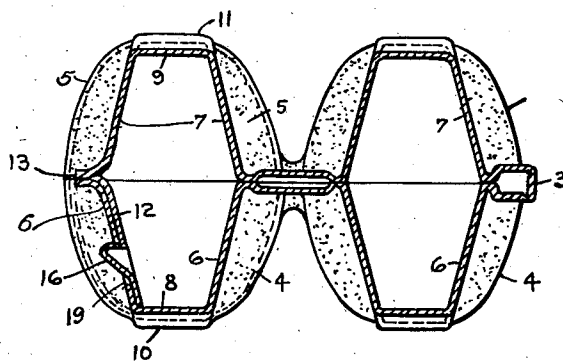


Fig-2

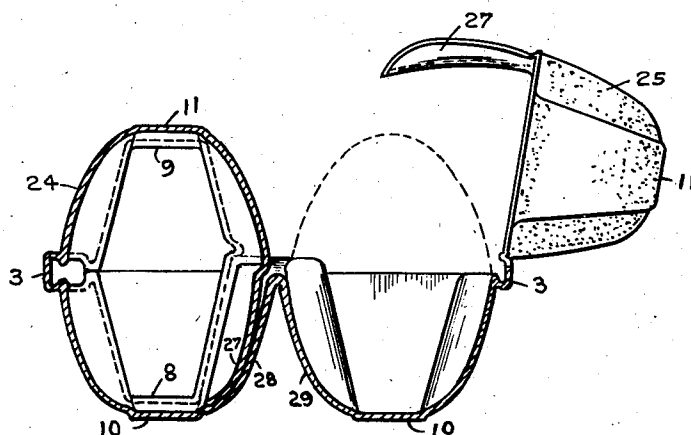


Fig-3

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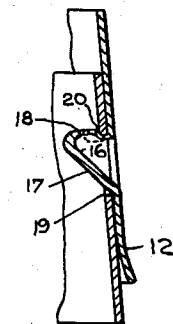
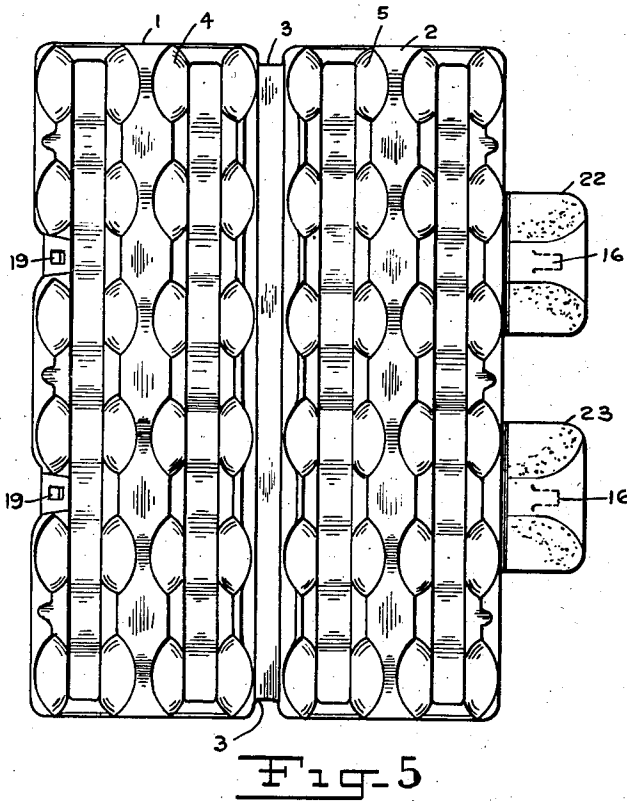
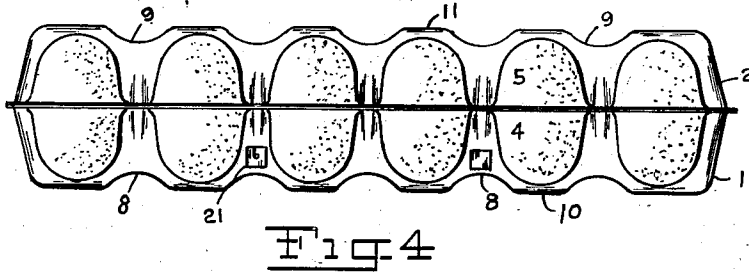
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SELF LOCKING CARTON AND PACKING

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2 Sheets-Sheet 2



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2,093,280

SELF-LOCKING CARTON AND PACKING

Morris Koppelman, Brooklyn, N. Y.

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5 Claims. (Cl. 229—29)

The improvements relate to cartons or carriers for eggs or other articles which require separation from one another and protection from injury through contact with one another or with other objects or by shocks or jars encountered in transportation and handling.

The primary object of the improvements is to provide a carrier of the kind indicated which will serve both as a packing for the articles and as a delivery carton and will be self locking, thus doing away with the necessity for an outer carton or wrapping and also all tying or fastening means, such as cord, hooks or clasps, and saving the time and expense involved in the use of these.

Heretofore it has been the practice to pack eggs and other fragile articles in boxes or cartons having "fillers" inside to receive, separate and protect the said articles, and to close such cartons by means of hooks, latches or the like either formed of the material of which the carton is made or of metal, or by wrapping the carton in strong paper or a paper bag and/or tie it with a cord. But even when the carton is made of stiff paper board the closures formed of the carton material are insecure and likely to yield or break and permit the carton to open and spill its contents, and where an outer wrapping or metallic fasteners or a cord are used the expense to the vendor of the articles in materials or time or both is considerable and substantially increases the cost to the consumer or reduces the vendor's profit.

When the cartons or carriers are made by the pulp sucking process and have article holding and protecting means integral therewith, the sheet material of which they are thus formed is too pliant and too easily fractured to permit of the formation of dependable fastening means integral therewith and of any known form. Many attempts have been made to provide such a fastening, but so far as can be ascertained they have all been unsuccessful, and no form of fastening has heretofore been devised which can be made integral with the carrier in the pulp sucking process and will provide a secure closure.

It will be understood that cartons or carriers can be made by the pulp sucking process in one molding operation thereby saving the labor and other cost involved in the fabrication of such an article from sheet material and at the same time provide a very efficient protective carton or carrier which has many advantages over those so fabricated. Examples of cartons or carriers of this type are shown in Patents No. 1,780,264 of November 4, 1930, and No. 1,846,561 of February

23, 1932, granted to me. The present improvements relate primarily to cartons of this character and of similar character made by the pulp sucking or molding process.

It is customary to make such cartons of a size to hold one dozen eggs, with the egg pockets or cells arranged in two rows of six each. Such a carton has been chosen for the illustrative embodiment of the invention shown in the accompanying drawings and referred to herein.

In the said drawings, Figure 1 is a perspective view of an egg carton embodying the improvements;

Fig. 2 is an enlarged vertical cross section of the carton shown in Fig. 1 closed, substantially on the line 2—2 in that figure;

Fig. 3 is a view similar to Fig. 2 showing a modification;

Fig. 4 is a front view of the embodiment of Fig. 1 slightly modified and on the same scale as Fig. 1, showing the carton in closed position, whereas in Fig. 1 it is shown partly open;

Fig. 5 is a plan of the embodiment of Fig. 4 showing the carton in open position, as it appears when it comes from the mold;

Fig. 6 is an enlarged vertical section of the locking members and adjacent parts.

The weight of eggs is relatively great, and as cartons and other devices in which they are sold to the consumer and carried must be of relatively light material, due to the cost of manufacture and raw materials and transportation costs, the problem of providing a marketable container in which these heavy fragile articles can be safely carried and handled is a difficult one. The problem of securing the carrier against accidental opening, without using wrapping paper, twine or metal fastenings or an extra outer carton is also serious, and in carriers made of molded pulp has heretofore so far as can be ascertained remained unsolved. By the present improvements a locking device which not only takes advantage of the weight of the eggs and their pressure against the walls of the carton is provided but one which may be easily secured and opened by a simple manipulation. At the same time the closure is such that it will secure the carton in closed position and maintain it in such position against all ordinary shocks and strains due to carrying and handling. It is also of such a character that it can be made complete in the single operation of molding the carton, and without any additional cutting, pressing or other operation.

In the said drawings, 1 represents the bottom and 2 the top section of an egg carton, these two

sections being joined along one edge by a hinge 3 on which they are folded: 4 represents the lower and 5 the upper cups of the carton, which when the carton is folded over and closed constitute egg holding cells. Between these cups are connecting and spacing portions 6 and 7 respectively, and these portions are indented at their outer extremities as shown at 8 and 9, while the extremities opposite the cups are flat, as shown at 10 and 11. These flat portions 10 and 11 provide a secure base upon which the carton may rest and also afford a surface which may be used for printing names, dates, or other matter, if desired. The portions 8 and 9, being arched, tend to strengthen the top and bottom of the carton and also afford a grip for the fingers, when the carton is handled.

In the form of Figs. 1 and 2, a continuous flap 12 runs along the outer longitudinal edge of the upper section 2 and is connected therewith by a hinge 13 formed of a narrow strip of material running between the said section and the flap with a weak line along its center. The flap is molded in open position and extending from the body of the carton in a substantially horizontal plane, as are also the short, separate flaps of the modified form shown in Figs. 4 and 5, so that the first user can on closing the carton on the hinge member 3 turn the flap in to a position substantially at right angles to its original position and slip it inside the outer forward wall of the bottom section 1. This flap is not flat, but is provided with alternate curved portions 14 and relatively flat portions 15 throughout its length, approximating the alternated cups and connecting portions 4 and 6 in contour, but approaching the planiform slightly, so that when forced in between the eggs and their cups and inside the connecting portions 6 it will be placed under tension and distorted slightly, causing substantial frictional coaction tending to hold it in this position. This frictional coaction is also increased by the tendency of the flap to return to its original position which causes it to press outwardly against the inner wall of the lower carton section and causing its button members to be constantly pressed through the apertures in said section.

The flap 12 is provided with a series of button members 16 projecting therefrom, and formed therein in the molding operation. Each of these button members has an inclined face 17 and an abrupt face 18, and the abrupt face is preferably made thinner than the inclined face, so that the edges 20 of the aperture 19 will tend to bite into it and prevent the button member from slipping out easily (see Fig. 6). These button members may have any serviceable form, but the form shown has been found effective and satisfactory, since it facilitates the insertion of the flap inside the wall of the bottom section, by reason of its beveled lower portion, snaps into the apertures 19, and holds the flap against withdrawal, by reason of the abrupt face 18. The apertures 19 are also formed in the operation of molding the carton, and may have any satisfactory form. In the embodiment shown they are substantially oblong rectangles, corresponding in size and shape to the base of the button members 16, and just large enough to receive the said members and permit them to project therethrough and beyond the wall of the carton section, in which position they are held by the outward pressure of the flap and the pressure of the eggs in the adjacent cells against it. It will be seen that as the flap 12 is forced in between the eggs and the

walls of the lower cups and below the greatest horizontal diameter of both, there will be a substantial gripping of the flap which will prevent it from being easily withdrawn and assist the buttons and apertures in holding it and the sections of the carton securely closed.

The apertures 19 are preferably holes extending through the front wall of the lower carton section, but may be relatively deep recesses or indentations. Such a recess is shown at 21 in Fig. 4. The form shown in Fig. 1, however, has been found desirable not only because it provides relatively sharp edges to engage the button members but because it can be produced in the molding operation by inserting an imperforate piece of sheet metal in the wire mesh of which the molding form is usually made, so that no pulp adheres to the form at that point and an opening is left. The weak portion of the abrupt face 18 of the button may be produced by having the mesh of the screen molding form closer at that point than elsewhere, and thus causing the deposit of a thinner layer of pulp fibres thereon.

In the modified form of Figs. 4 and 5, instead of having a continuous flap along the outer edge of the upper carton section two separate flaps 22 and 23 are employed, each with a button member 16 thereon, and two apertures 19 in line therewith are provided in the forward outer wall of the lower section; otherwise the construction is the same. It will be understood that more than two of these flaps may be employed, and that the apertures may be in the flaps and the button members in the wall, if such an arrangement can be manufactured to advantage.

In the modification of Fig. 3, the upper carton section is made in two parts 24 and 25, each hinged to an outer longitudinal edge of the lower section. In this case each upper part is provided at its outer edge with a flap 27 similar to 22 and 23 or 12, and having substantially the same contour. In this case an effective closure is provided without the employment of the button and socket devices 16, 19, as the flaps are forced in between the inner walls 28 and 29 of the bottom section and the eggs in its pockets. The button and socket or aperture arrangement may, however, be employed in this modification, and for some purposes the said arrangement may be omitted in the form shown in Fig. 1, and the frictional coaction between the flap and the wall and pocketed articles depended on to hold the flap and maintain the closure.

In the use of the device, the eggs or other articles are first placed in the pockets of the lower section and the upper section folded thereover, or otherwise placed thereon, so that its pockets register with the pockets of the lower section and form cells for the said articles. When the flap or flaps of the upper section have their outer edges at the upper edges of the lower section they are pressed inwardly so that their said outer edges enter inside the said upper edge. The top or cover section is then pressed home, forcing the flap or flaps down and between the eggs and the lower walls of their cells and causing the button members to snap into the apertures—where said button members and apertures are employed. To open the carton it is only necessary to press with one finger against the top of the wall which is engaged by the flap, push it outward slightly and pull quickly on the upper section adjacent the flap.

Various modifications in the construction and arrangement shown and described may be made

without departing from the scope of the present invention, two of the most important features of which reside in the construction and arrangement whereby the weight and pressure of the articles in the carton are employed in part to hold the closure and whereby the entire carton and its locking means may be made in a single molding operation.

The molding operation employed is the usual pulp sucking method of molding in which the foraminous forms are passed through a bath of pulp fibres, with their outer surfaces exposed to said bath, while suction is maintained on the opposite side of said forms to draw the fibres against the forms and cause them to form a film or sheet thereon. The forms are then removed from the bath, with these molded sheets thereon, and the sheets then removed and dried. The cartons or carriers embodying the present improvements may however be made by other methods, such as certain paper making methods in which the pulp is sprayed or flowed on to the plates, and in which suction may or may not be employed. But the method or process referred to herein is the most efficient and satisfactory method heretofore practiced for the manufacture of non-planiform sheets of fibres, and the construction and arrangement embodying the improvements has peculiar advantages in connection with the practice of the same, while the said method or process has a peculiar relation to the cartons or carriers embodying such improvements.

Instead of providing the abrupt face of the button member with a weak, yielding portion it may have an aperture therein, formed in manner similar to the aperture 19, and this aperture—or the weak portion—may extend slightly into the adjacent sides thereof, as indicated by dotted lines at 18' in Fig. 6, and instead of inserting an imperforate piece of metal in the foraminous mold or form the small interstices of the form may be filled or closed up by solder or brazing or in other manner where the apertures are to be formed. Various other modifications in or equivalents for the parts described and the method of producing the same may be employed without departing from the scope of the invention.

What I claim is:

1. In a device of the character indicated, a non-planiform, fibrous sheet comprising a plurality of sections having article-receiving recesses therein, one of said sections adapted to be placed upon the other to form a hollow container, a curved extension on one edge of one of said sections normally projecting beyond the other section when said first section is superposed and below the upper portion thereof, said extension being adapted to be passed into the other section between the wall of an article-receiving and article contacting recess of said other section and an article in said recess and partly beneath said article, whereby said two sections are secured together in closed article-containing position.

2. In a device of the character indicated, a non-planiform, fibrous sheet comprising a plurality of sections having article-receiving recesses therein, one of said sections adapted to be placed upon the other to form a hollow container, an extension on one edge of one of said sections nor-

mally projecting beyond the other section when said first section is superposed, said extension being adapted to be passed into the other section between the wall of an article-receiving and article contacting recess of said other section and an article in said recess, whereby said two sections are secured together in closed article-containing position, said extension and wall having one of them an aperture for receiving a button member on the other, and a button member projecting from the other and integral therewith, and constructed and arranged to engage said aperture at a point in the plane of a portion of said article.

3. In a device of the character indicated, a non-planiform, fibrous sheet comprising a plurality of sections having article-receiving recesses therein, one of said sections adapted to be placed upon the other to form a hollow container, an extension on one edge of one of said sections normally projecting beyond the other section when said first section is superposed, said extension being adapted to be passed into the other section between the wall of an article-receiving and article contacting recess of said other section and an article in said recess, whereby said two sections are secured together in closed article-containing position, said extension and wall having one of them an aperture for receiving a button member on the other, and a button member projecting from the other and integral therewith, and constructed and arranged to engage said aperture at a point in the plane of a portion of said article, and said button member having an inclined face toward the outer edge of the extension.

4. In a packing device for fragile articles comprising a fibrous sheet having article-engaging formations therein and adapted to receive and hold such articles, there being an aperture in one side of the sheet, a projection in the other side of the sheet adapted to engage in said aperture to secure the sides of the sheet together, said projection having a face adapted to engage an edge of said aperture and a non-resisting portion at said face adapted when the sides of the sheet are subjected to separating strain to permit said edge to enter beneath the top of said projection and hold said portions of the sheet against relative lateral movement.

5. In a device of the character indicated, a non-planiform fibrous sheet having article-receiving compartments therein, a second sheet adapted to be placed upon the first sheet to close the same and form a hollow container, a curved extension on the second sheet normally projecting beyond and overlapping a portion of the first sheet and extending into at least one article-receiving compartment thereof when the sheets are in superposed relation and below the upper portion thereof, said extension being adapted to pass between a wall of an article-receiving compartment and an article therein and partly beneath said article, whereby said two sheets may be secured together to form a closed container with articles therein, the said extension and compartment wall being constructed to engage each other and the extension to exert pressure between said wall and the article, whereby the container is secured in closed condition by frictional co-action between the parts.

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