

Aug. 21, 1956

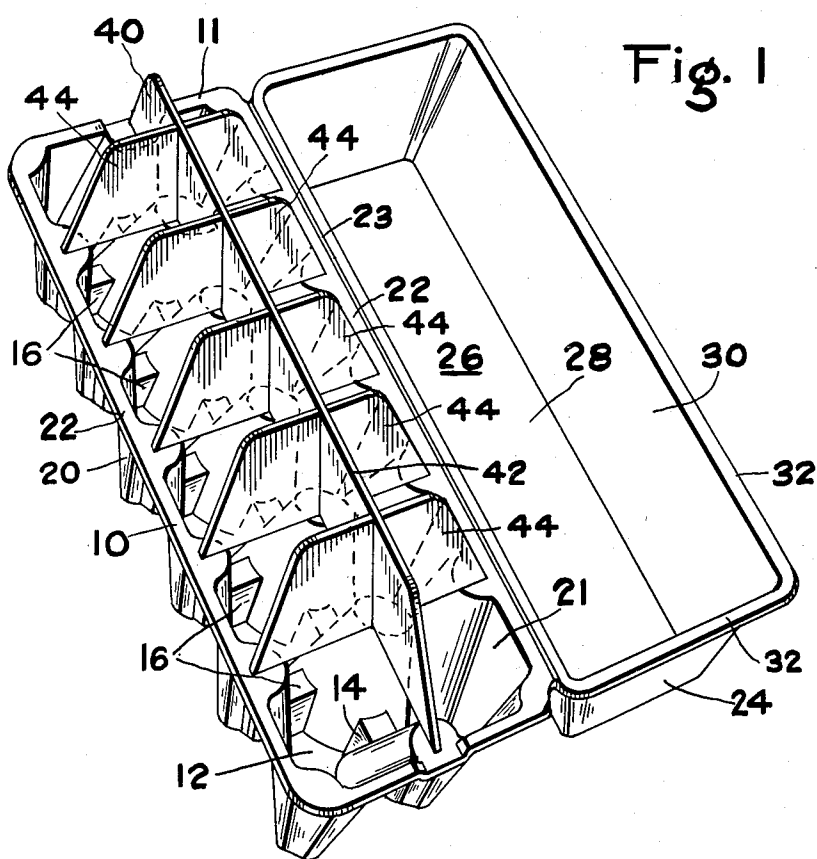
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2,759,650

CONTAINER FOR FRAGILE ARTICLES

Filed Oct. 16, 1951

4 Sheets-Sheet 1



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Fig. 2

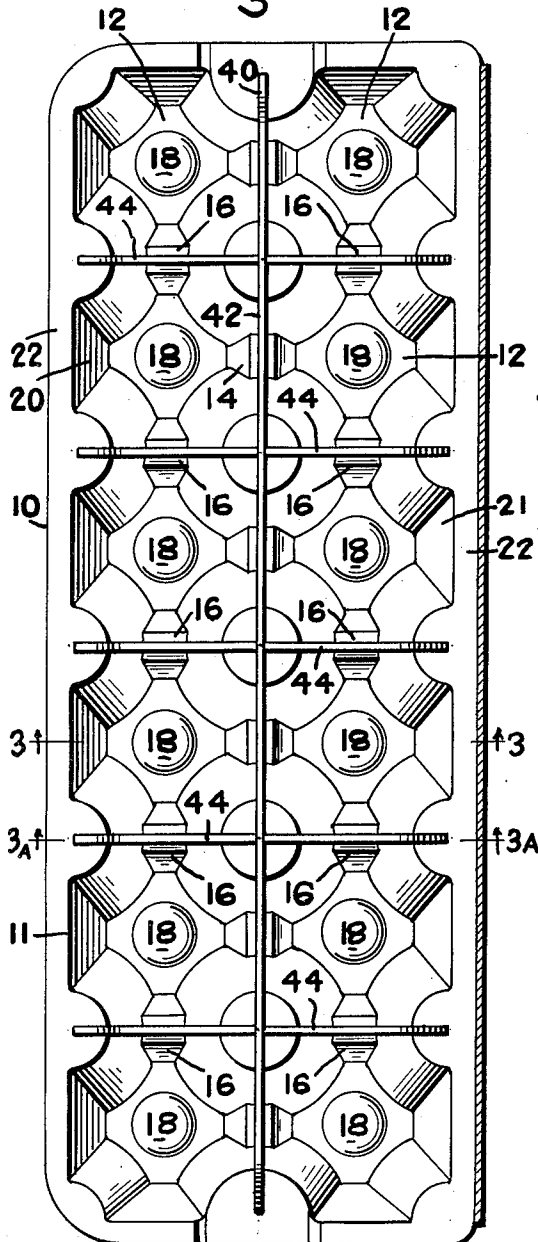


Fig. 3

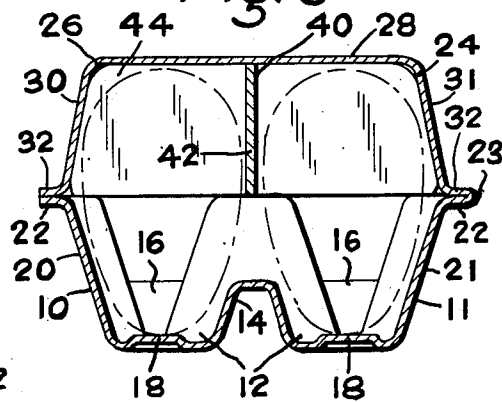
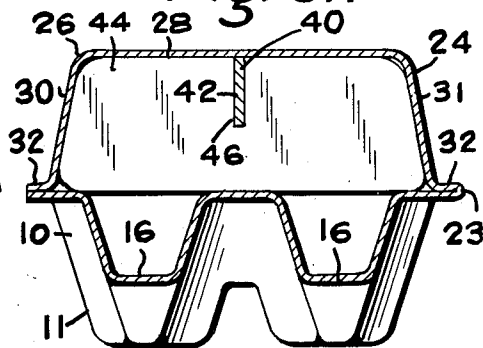


Fig. 3A



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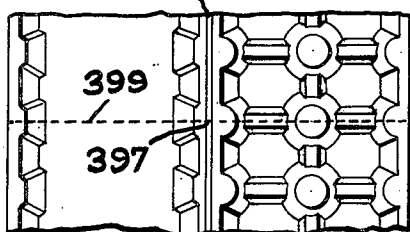
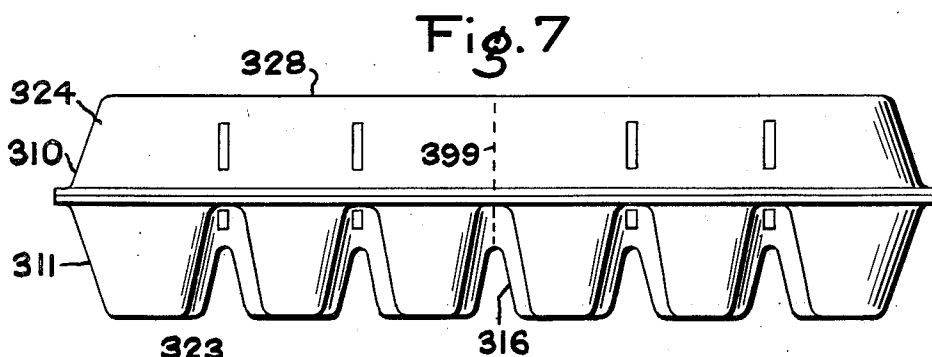
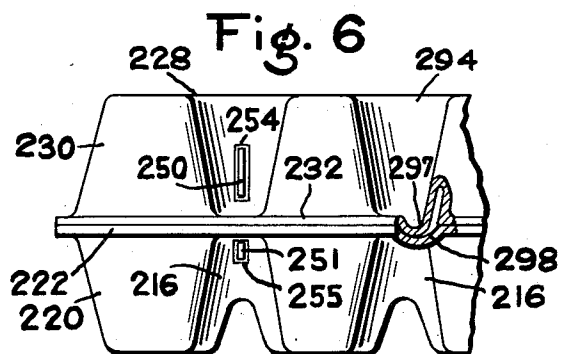
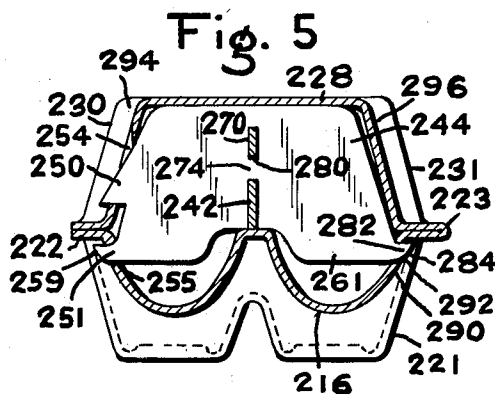
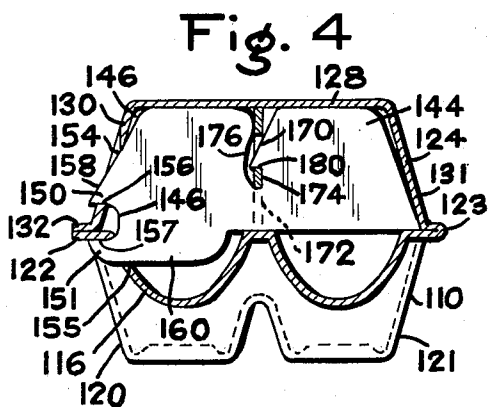
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CONTAINER FOR FRAGILE ARTICLES

Filed Oct. 16, 1951

4 Sheets-Sheet 3



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CONTAINER FOR FRAGILE ARTICLES

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Application October 16, 1951, Serial No. 251,479

8 Claims. (Cl. 229—2.5)

This invention relates to packaging for eggs or other fragile articles, more particularly to such packaging in which a multiplicity of these fragile articles are held in a single container.

Among the objects of the present invention are new and improved containers of the above type in which the possibility of breakage under the usual handling and shipping conditions is reduced.

Further objects of the present invention include the provision of improved containers which are simple to manufacture, handle and use.

Still further objects of the invention include the provision of containers particularly suited for shipment in standard types of shipping crates.

The above, as well as additional objects of the present invention, will be more completely understood from the following description of several of its exemplifications, reference being made to the accompanying drawings wherein:

Fig. 1 is an isometric view of one form of container according to the present invention for holding eggs;

Fig. 2 is a plan view of the lower portion of the container of Fig. 1 with the cover cut away;

Figs. 3 and 3A are vertical sectional views of the container of Figs. 1 and 2 taken along the lines 3—3 and 3A—3A respectively;

Figs. 4 and 5 are sectional views similar to Fig. 3A of modified forms of containers embodying the present invention;

Fig. 6 is a broken-away front view of the container of Fig. 5 showing its locking elements;

Fig. 7 is a view similar to Fig. 6 of a container exemplifying a different phase of the present invention;

Fig. 8 is a fragmentary plan view of a further modified container blank showing further details of the construction of Fig. 7 with a container of the type shown in Fig. 5;

Fig. 9 is a view similar to Fig. 7 showing a further form of container embodying the present invention; and

Fig. 10 is a sectional view of the container of Fig. 9 taken along line 10—10.

In accordance with the present invention a container is provided with a bottom section having a multiplicity of pockets each shaped to receive the lower portion of a fragile article, a recessed upper section is hinged to the bottom section for fitting over and closing against the bottom section to bring its recess into position to cover the upper portions of the pocketed articles, and a filler grid is supported on post projections defining the pockets in the bottom section and has walls defining upper extensions for each of the pockets and supporting the recessed wall of the upper section.

It has been discovered that this type of container, when used to carry eggs for example, results in an insignificantly low egg breakage. Furthermore, the grid acts as a compartmental bulkhead type of reinforcement for the upper section, permitting it to have a smooth upper cover which in itself has very little resistance to

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crushing stresses. It has been found highly desirable for commercial use to have such a smooth cover so that it can be used to receive printed indicia for the purpose of identifying the contents, advertising their suppliers and/or marketer, etc.

In addition to the above, the filler grid not only provides a more uniform support for the container top to prevent it from sagging under the influence of inwardly-directed forces, but can provide a very effective locking element for holding the container closed by interlocking with both its top and bottom. This type of locking is particularly suited for manipulation by hand or by automatic machinery.

The form of the invention shown in Figs. 1, 2, 3 and 3A has the general shape of a standard 2 x 6 (two rows with six article-receiving pockets in each row) pack for a dozen eggs. The pack shown at 10 has a lower section 11 provided with the illustrated double row of pockets 12 separated from each other by longitudinal partition 14 and transverse partitions 16. The bottom walls of the pockets are shown as arched at 18 to improve the cushioning, as is well known. Side walls 20, 21 define the outer walls of the individual pockets and their marginal or upper portions are flanged outwardly as indicated at 22. Hinged to one of these flanges 22 as indicated at 23, is an upper section 24 generally similar in shape to the lower section, but having a single common recess 26 bounded at the top by a generally flat recess wall 28. The wall 28 of the recess is integral with marginal recess-bounding walls 30, 31 which have terminal flanges 32 in a manner resembling and in mating relation with the bottom section. The above two sections form by themselves a standard type of prior art container which is conveniently manufactured as by simultaneously molding from a fibrous slurry the two sections joined to each other along their hinge.

According to the present invention a filler grid 40 is placed over the lower section 11 so that it forms prolongations or upper extensions for the individual pockets 12 and also acts as an additional support for the walls 28 and 24. As indicated in these figures, the filler grid 40 may be formed from a longitudinally extending sheet or strip 42 and a series of spaced transversely extending sheets or strips 44 held together in any convenient manner, as for example by interfitting or dovetailed notches 16. Interlocking notches can be utilized to advantage in place of the simple type shown. The filler grid strips are conveniently made of material such as chipboard or the like, such as is commonly used in the egg crating field, and are conveniently supported by the highest portions of the longitudinal and transverse partitions 14 and 16.

A feature of the invention is that the cover of the new container, with its flat wall 28, will withstand application of forces applied from any direction in the magnitudes generally encountered and in this respect is as strong as the bottom section. Thus substantially any portable article can be placed on top of the carton without causing any breakage. The filler grid appears to effect a more uniform reinforcement of the cover wall 28, than is possible with marginal supports. In addition, the outer surfaces of the cover although reinforced is still flat and can be readily printed upon with a minimum of difficulty. No special printing flap is needed.

The filler grid of the present invention is readily removed and discarded when the carton is opened. This grid is generally not needed when the carton reaches the hands of the ultimate consumer of the packaged articles.

Fig. 4 shows a modified form of the invention in which the filler grid acts as a container-locking device. The construction is generally similar to that of Figs. 1, 2, 3 and 3A, and similar parts are identified by similar ref-

erence characters prefixed by the digit "1." The transverse grid strip 144 is here shown as terminating at edge 146 adjacent cover wall 130 in a pair of locking tongues 150, 151.

Upper tongue 150 projects out through a slot 154 in wall 130 and has a lower locking edge 156 which abuts against the lower edge of this slot to keep the parts assembled, as shown. Extending out to the outer extremity of the locking edge 156 is a tapering or inclined guide edge 158 which acts as a wedging or deflecting cam to permit ready closing of the cover over the tongue 150 by camming out the edge 132 of the cover as it descends causing it to ride over the tongue and snap into place in the position shown, by reason of its inherent resiliency.

Lower tongue 151 is provided on a depending ear 160 of strip 144 and is correspondingly held in place in a slot 155 in partition wall 116, by means of a locking edge 157.

The grid of the construction of Fig. 4 can be readily mounted by merely pushing it down over the open container bottom 110 whether or not the eggs or other fragile articles are in the pockets of the container. This operation can be performed by automatic machinery before or after the fragile articles have been inserted in the carton.

By packing the articles before inserting the grid, it is also feasible to have the grid inserted and the cover closed and locked all at one station by automatic machinery so that a minimum of handling is required. If desired, the grid can be first inserted in the cover 124 while the filled container is still open, and the cover then closed to carry the grid into the locking position shown. This has the further advantage of increasing the positional tolerance of the grid with relation to the container when the grid is being inserted. The tapering walls of the cover, acting as aligning guides, effectively direct the grid into proper position notwithstanding a considerable amount of misalignment.

The locking tongues 150, 151 need not be provided on all the grid edges adjacent the walls 130, 120 opposite the hinge 123. If desired, only a single pair of locking tongues can be used although two or more pairs as indicated in Fig. 7 give somewhat more positive operation. It is not even necessary to have the tongues 150, 151 on the same strip 144, particularly where the strips are held together by interlocking connections.

One form of such interlocking is shown in Fig. 4. Strip 142 here includes a notch 170 and a slot 172, both aligned at each grid intersection. Between the notch and slot is a lock web 174. Cross strip 144 has a positioning slot 176 which provides a locking edge 180 and a curved entranceway for receiving the lock web 174 and guiding it into locking engagement with edge 180. Once interlocked, the grid strips stay together unless the webs are individually shifted out from under their locking edges.

The specific details of the strip interlock form no part of the present invention, however, and any suitable type can be used without affecting the characteristics of the container.

To open the locked container as shown in Fig. 4 all that need be done is the pulling of edge 132 or 128 away from hinge 123 till the slots 154 or 155 have their lower ends extended beyond their locking edges 156, 157. The cover can then be folded back on the hinge into open position.

Figs. 5 and 6 illustrate a further form of locking type grid in accordance with the present invention. Here the locking grid strips are identified at 244 and carry in addition to the locking elements 250, 251 similar to those of Fig. 4, a further locking tongue 282. This tongue projects through a slot 299 in bottom wall 216 and has a locking edge 284 cooperating with the upper end of the slot as in the construction of Fig. 4. The tongue 282, which is conveniently carried by an extension 261 of the strip 244, may have an inclined guide or camming edge 292, similar to edge 259. One of these guide edges can be modified

so as not to provide the above guiding inasmuch as such guides are not needed on both ends of the strips 244. An end not having the inclined guide edge can be inserted into its notch with the other strip end still unseated so that the unguided end moves into place without having to deform the container. The unseated end can then be inserted to effect the desired deformation by its guide edges as explained above in connection with Fig. 4.

According to a further modification of the invention, the locking tongues 151 of the construction of Fig. 4 can also have their edges 159 modified so that they do not act as camming guides. With such a modified construction it is still a simple matter to mount the grid by first inserting the tongue-carrying edge into the container bottom with the grid inclined, as described above in connection with Fig. 6.

Where the container is designed for assembly and closure by automatic machinery, it is preferred to have all the lower tongues provided with inclined guiding edges so that the grid is readily pushed into place without tilting.

If desired, the edge of cross strip 144 or 244 adjacent the cover wall 131 or 231 can be provided with an additional locking tongue similar to that shown on its opposite edge at 150. This extra tongue cooperates with the first tongue to securely lock the grid to the cover. With such a construction the container can be opened by pulling out the edge 128 or 228 until the notch 155 or 255 clears the lower tongue, after which the cover can be hinged back. The grid stays with the cover when it is opened in this manner so that no special manipulation is required to lift it out of the way.

The container of Figs. 5 and 6 also has ribs 294 and 296 formed to project inwardly on the cover side walls 230, 231. Cross strip 234 of the filler grid is accordingly shortened to fit within the space provided between the opposed ribs, and the upper locking tongues 250 are engaged in slots 254 provided in the ribs 294. As shown more clearly in Fig. 6 the cover ribs 294 taper down from a relatively larger width at the recess cover wall 228, to a narrower width where the ribs merge into the marginal flange 232. The partition walls 216 form an additional set of ribs that are aligned with the upper ribs 294. If desired one of these sets of aligned ribs, such as the upper one in Fig. 6 can have an extension 297 projecting out beyond the plane of the marginal flange 232 and receive in a correspondingly shaped seat or socket 298 molded in the mating rib. This rib extension and inter-engagement is more fully described in the co-pending application 796,681, filed December 24, 1947, now Patent No. 2,578,739, granted December 18, 1951, and functions to more positively keep the cover and pocket sections aligned when the container is closed. This is particularly valuable where the container of the invention is intended for use after the filler grid is removed and the container is likely to be subjected to forces tending to press the cover down hard enough for it to spread around and telescope over the pocket section. The interlocking rib feature also cooperates with the locking tongues by reason of this spread-reducing effect to more securely hold the carton sections and resist any deformation that would have a tendency to lead to unlocking.

As also shown in Fig. 5 the filler grid can have an interlocking grid strip engagement the converse of that shown in Fig. 4. Thus, the locking strips 244 can be provided with slots 270 and locking web 274, while locking edge 280 is formed on cross strip 242.

The fragile article container of the present invention can also be arranged to be readily tearable or divisible into smaller portions each suitable for carrying a reduced number of fragile articles. Fig. 7 shows such a construction in which a container 310 generally similar to that shown in Fig. 4, has a line of perforations 399 running completely across the transverse width of both the cover and bottom section of the container. By locating these

perforations along the dividing line of the central partition 316, it becomes a simple matter for a person to tear the container into equally sized halves as by grasping each half with the individual hands and pulling outwardly while at the same time pushing both sections downwardly over a central breaker member such as the edge of a table or even a person's knee. To facilitate the tearing operation the perforations 399 can completely cut through the container walls for about an eighth of an inch each side of the hinge 323 so that the doubled over hinged portion will not offer too much tear resistance. This type of perforation is more clearly shown in Fig. 8 with the continuous hinge cut indicated at 397.

The filler grid, when used, needs no pretreatment for effective tearing. The interlocking joints in this grid work provides all the perforation that may be needed for simple and effective tearing. Unless special provision is made the transverse rib strip at the tear line will drop out when the tearing is completed, or will cling to one or the other of the torn halves, by reason of the severing of the longitudinal grid strip at this point. However, this can be avoided as by providing two transverse grid strips adjacent each other and on each side of the tear line 399 with a sufficient amount of longitudinal strip between them, and by also perforating or completely severing the longitudinal strip in this connecting portion so that both of the adjacent cross strips stay in place in their respective container halves when they are torn apart.

Where the tearing leaves no grid strip, or a very loosely clinging grid strip, at the torn faces of the container halves, it is sometimes possible for the eggs or other fragile articles to tip over and fall through the gap provided in the cover section between torn edge of cover wall 328 and the top of partition 316. For effectively reducing this tendency, it is advisable to make the cover 324 shallower in depth than the pocketed bottom section 311 as indicated in Fig. 7. In this way the pocket partitions 316 can be made to come so close to cover wall 328 that a packaged article cannot work its way through easily or at all. As one example of a suitable divisible container construction, the pocketed lower section can have an overall depth of $1\frac{7}{16}$ ", and the cover section a depth of about 1", although both of these dimensions can be varied to some extent. Such a depth relationship is particularly effective with the filler-grid-incorporating container of the present invention inasmuch as the inclusion of the filler grid enables a reduction in the vertical overall space required for receiving the individual fragile article such as an egg, as described above. The pocket contours of the carton bottom 311 will accordingly not be so deep as to unduly complicate the molding equipment or process.

Figs. 9 and 10 show a further embodiment of the invention in which the filler grid is used with a separate carton locking arrangement. The carton 410 here shown has a cover 424 even shallower than the one shown in Fig. 7, and in this cover is positioned a filler grid 440 which can be identical with that shown in the construction of Figs. 1, 2 and 3. The locking elements are composed of windows 401 formed or cut in the transverse partitions 416 adjacent side wall 420, and locking tabs 402 integrally formed as extensions of marginal flange 432 aligned with the respective windows. These tabs are shown as tapering down to a relatively small end which may be enlarged somewhat as indicated at 404 to provide a narrow neck 406 on which these ends are held. The tabs are made long enough to fold over the marginal flange 422 of wall 420 and reach from there into the windows 401.

For locking the carton, the lock tabs 402 are bent downwardly and their head ends 404 are stuffed into the pockets 401 as indicated in full lines in Fig. 10. The engagement of the enlarged heads in the narrower window is sufficient to hold the tab and the cover closely in place. Not more than two locking tabs need be used for a car-

ton. However, where the carton is severable into smaller portions, as indicated in the construction of Fig. 9 by the tear perforation 499, the original carton can have a larger number of locking tabs positioned so that when torn the tabs will serve to lock the individual portions. The locking tabs can be omitted from the portion of the carton that is perforated as at 499.

The above locking arrangement is of the type described in the Cox Patent No. 2,529,140, granted November 7, 1950, to which reference can be made for a more complete description of it.

The container of the invention can also be made to hold more or fewer fragile articles and/or can have its pockets arranged in a different manner as for example 3 x 4, etc. Instead of having egg-receiving pockets the container can be shaped to receive other fragile articles such as glassware, electric-light bulbs, fruit, etc.

The 2 x 6 carton construction, however, is particularly desirable for packing and commercial shipping in the standard commercial 30 dozen egg crate. Such crates are of standard design having compartments of square section and of such size that six rows of six eggs each can be cushioned in place as a single layer in them, and a plurality of such layers mounted, one above the other. A 3 x 4 carton cannot be used to pack the individual layers without wasting a large amount of the space and thereby reducing the egg-carrying capacity. Prior art 2 x 6 cartons have been uniformly unsatisfactory, even though they can be squeezed into the compartments without reducing the egg-carrying capacity. The principal difficulty is its inherent lack of rigidity against inwardly directed forces, resulting in fairly high breakage of eggs in normal handling during shipment, whereas the container of the present invention with its molded pockets and bulkhead reinforced cover is highly effective in protecting eggs against all types of shipping and handling hazards.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope hereof, it is to be understood that the invention is not limited to the specific embodiments hereof except as defined in the appended claims. Thus, for example, the tab type container lock construction of Figs. 9 and 10 can be used with a 3 x 4 egg carton otherwise similar to those shown in the above figures, or such carton can have the locking type of filler grid as shown in connection with Figs. 4, 5 and 6. Still further embodiments of the present invention will be obvious to those skilled in the art.

What is claimed is:

1. A container for holding a quantity of eggs, said container including a molded pulp generally rectangular section having a multiplicity of spaced posts defining between them pockets each shaped to receive the lower portion of an egg, a molded pulp tray-like cover section hinged to one side of the bottom section and having a corresponding outline for fitting over and closing against the bottom section to cover the projecting upper portions of pocketed eggs, each section having marginal walls defining a closure stop, and side walls on which the marginal walls are carried, the side walls on the sides opposite the hinge being slotted between the pockets and a removable filler grid of interlocking strips supported by the projecting posts of the bottom section, at least one of the strips having an enlarged end portion extending downwardly into the bottom portion adjacent the side wall opposite the hinge and terminating in at least two locking tongues, received in slots of said slotted side walls, to lock the container in closed position.

2. A container as defined by claim 1 in which both sections are perforated along a dividing line to simplify tearing into two portions each of reduced article-carrying capacity, and the pockets have a greater depth than the recess in the upper section to provide a smaller gap at the torn edges for reducing the possibility of pocketed articles falling out through the gap.

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3. A container as defined by claim 1 in which on the side opposite the hinge the marginal walls of the bottom and cover sections also have inwardly extending ribs.

4. A container as defined by claim 1 in which on the side opposite the hinge the marginal walls of the bottom and cover sections also have inwardly extending ribs and the locking tongue-receiving slots are in said ribs.

5. A container as defined by claim 3 in which at least one rib of the cover section is positioned to have its end engaged by a rib of the bottom section when the container is closed, one of these ribs extends beyond the plane of the marginal walls of its section and the mating rib has its end recessed to receive the extending rib end to help hold the two sections closed in aligned relation.

6. A container as defined by claim 4 in which at least one rib of the cover section is positioned to have its end engaged by a rib of the bottom section when the container is closed, one of these ribs extends beyond the plane of the marginal walls of its section and the mating rib has its end recessed to receive the extending rib end to help hold the two sections closed in aligned relation.

7. A container as defined by claim 6 in which the pockets are arranged in two rows of six pockets each,

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the cover is hinged alongside one row, and the cover and bottom sections are perforated along a line perpendicular to the hinge and passing through the center of the rows for tearing of the container into two halves.

8. A container as defined by claim 7 in which the perforations include a severing of the hinge and the container walls by a cut extending through the hinge and at least an eighth of an inch from the hinge.

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