Sept. 6, 1960 S. F. FLYNN 2,951,605

EGG CRATE OR CASE FILLERS OR TRAYS

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Fig. 1.

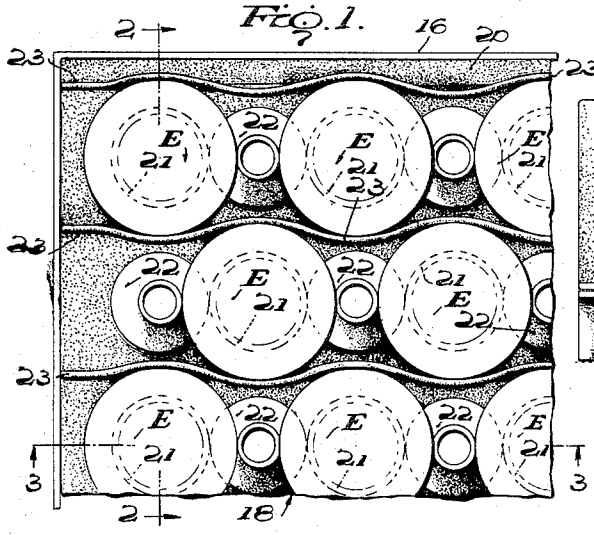


Fig. 2.

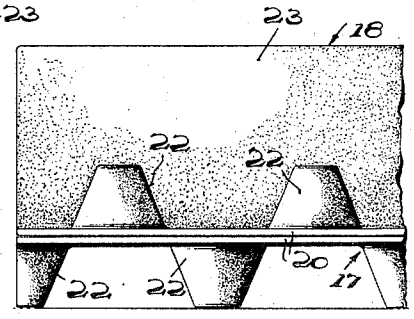


Fig. 4.

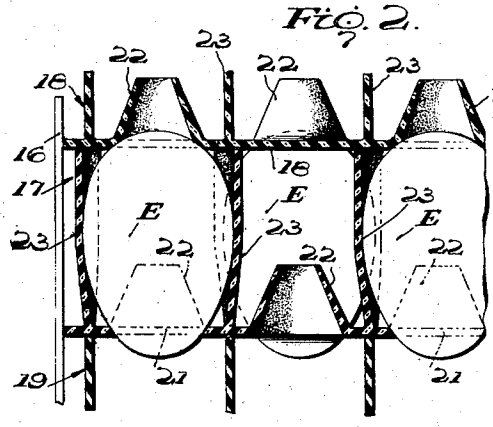


Fig. 3.

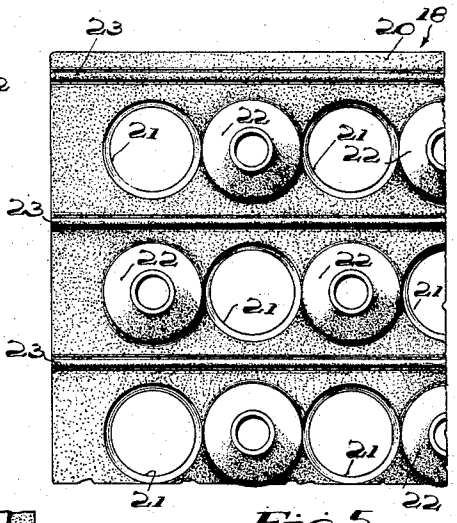
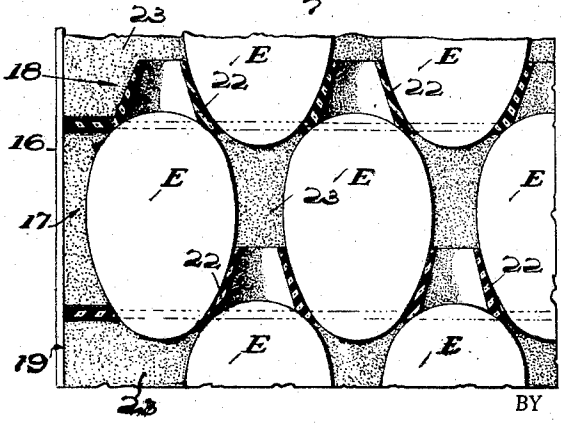


Fig. 5.



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Fig. 6.

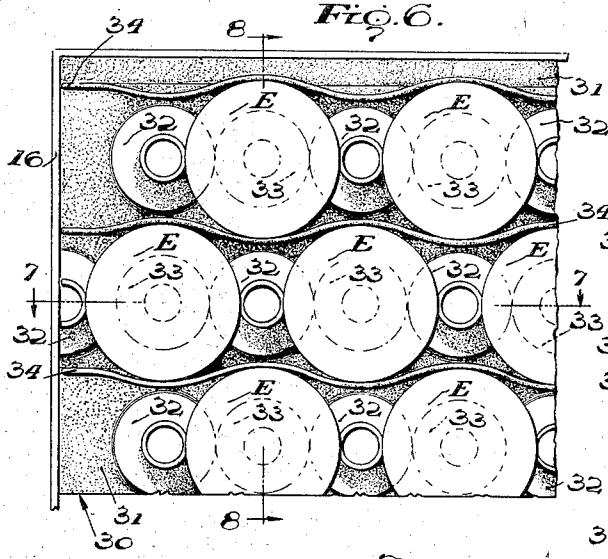


Fig. 9.

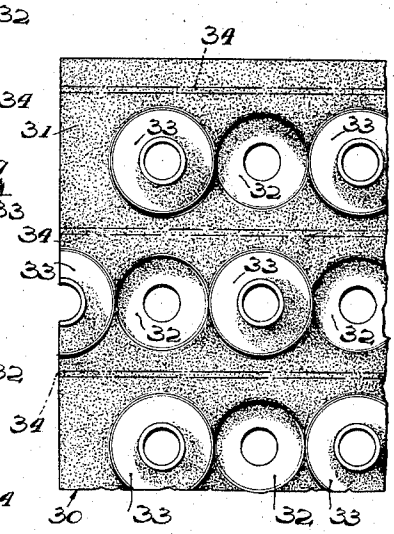


Fig. 7.

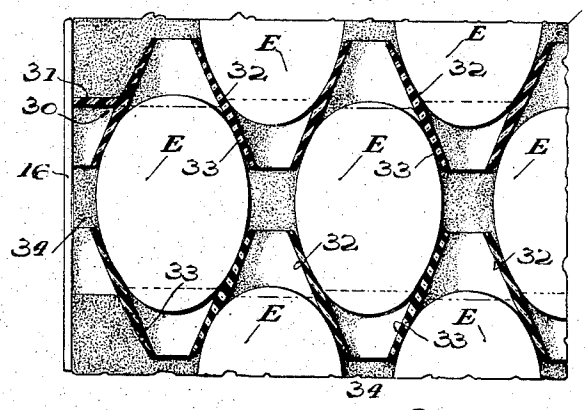


Fig. 10.

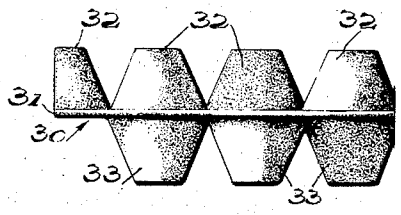
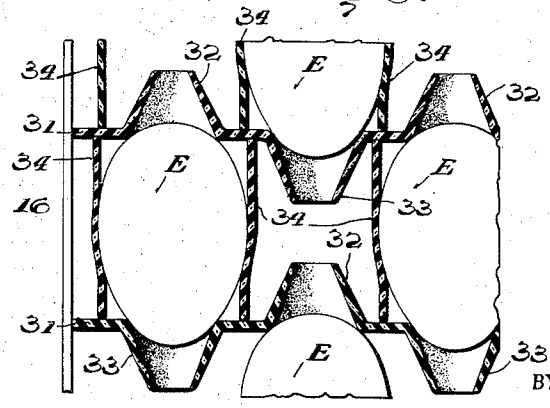


Fig. 8.



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EGG CRATE OR CASE FILLERS OR TRAYS

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Filed June 4, 1958, Ser. No. 739,955

10 Claims. (Cl. 217—35)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

The present invention relates to egg crate or case fillers or trays adapted to be assembled with other like fillers or trays within a crate, to permit the shipment of eggs, Christmas tree ornaments and various other frangible articles placed in the crate or case without the danger of breakage.

The present application is related to my copending application Serial No. 612,339, filed September 26, 1956, for an Egg Tray, now Patent No. 2,867,343.

One of the important objects of the invention is to provide an improved filler or tray which will afford complete protection to the crated fragile articles.

Another object of the invention is to save cubical space occupied by the assemblage of fillers or trays within a crate or case, thereby permitting the use of smaller crates, or to make more space available in crates or cases of standard size.

Another object is to provide an improved preferably one-piece filler or tray which may be molded of some suitable material such, for example, as plastic, thus effecting material savings in labor and manufacturing costs.

A further object is to provide a filler or tray having long-lasting qualities and one which is capable of withstanding rough usage over a period of years, this alone being a material improvement over the presently-used molded pulp fillers; another and important object being to provide an improved filler or tray capable of being readily nested to thereby save space in shipping.

The foregoing and other objects and advantages of the present invention will appear from the following description and appended claims when considered in conjunction with the accompanying drawings wherein like reference characters designate corresponding parts in the several views.

In said drawings:

Fig. 1 is a top plan view of one corner of one form of crate filler or tray embodying the present invention;

Fig. 2 is a vertical sectional view taken substantially along the line 2—2 of Fig. 1, looking in the direction of the arrows;

Fig. 3 is a vertical section taken substantially along the line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is an edge view of a fragment of two trays, like those of the preceding views, shown in back-to-back relationship;

Fig. 5 is a top plan view of the upper tray shown in Fig. 4;

Fig. 6 is a view similar to Fig. 1, showing another form of article-containing tray embodying the present invention, showing the separator strips flexed;

Fig. 7 is a vertical section taken substantially along the line 7—7 of Fig. 6, looking in the direction of the arrows;

Fig. 8 is a vertical section on line 8—8 of Fig. 6, looking in the direction of the arrows.

Fig. 9 is a fragmentary bottom plan view of the tray of Fig. 6, without articles in place and with the yieldable separator strips shown unflexed; and

Fig. 10 is an edge view of the tray of Fig. 6.

In all forms of tray of the present invention, the eggs, or other fragile objects, which are supported by each tray are not only individually supported and protected against cracking or breakage by being kept out of contact with all other eggs in a given row of eggs, but by also being kept out of contact and thus damage, with all eggs in adjacent rows in the same tray, as well as from eggs in an overlying and/or underlying tray. This is accomplished without the use of horizontal separator sheets or partitions which are required for conventional egg crates or cases now in widespread use. This individual spacing or separation of the eggs, or other objects, is accomplished either by the use of upright disposed separation strips located between adjacent rows of eggs in certain forms of the invention, or by the particular structure or formation of the trays and without the aid of any separator strips, as in at least one other form embodying the present invention.

One form of tray structure embodying this invention is shown in Figs. 1 through 5. In this form, each layer of rows of eggs is supported and protected by the use of two identical trays, one, the lower one, being upright and the other, the upper tray, being inverted and cooperating with said lower tray, the top inverted tray being turned 180° in its plane before being brought into contact with the lower tray and its supported eggs to properly align the article-seating perforations and resilient flexible tubular members of the two trays.

In Fig. 1, a corner of an egg crate or case is shown at 16 in which is located several superimposed trays of eggs. In Figs. 2 and 3 fragmentary sections, taken at right angles to each other, illustrate a center full height egg-filled tray, shown as a whole at 17, an overlying or upper partial-height tray, shown as a whole at 18, and an underlying or bottom tray, shown as a whole at 19.

Assuming that the tray shown in Figs. 4 and 5 is the top tray of Figs. 1, 2 and 3, before eggs E have been placed in position, the tray 18, as do trays 17 and 19, has a flat plate 20 provided with a plurality of regular rows of alternate article-seating perforations 21 and resilient flexible tubular members 22.

Adjacent two of its outer edges or sides, the flat plate 20 has an upstanding yieldable separator strip 23. In addition, a similar separator strip 23 is disposed on said plate 20 between each of the rows of alternated perforations 21 and flexible tubular members 22.

As seen in Fig. 2, each of the separator strips 23 is attached at one of its longitudinal edges to the flat plate 20 and being formed of preferably a flexible plastic, or the like durable material, can flex from their normally straight condition of Figs. 4 and 5, when eggs are placed in a tray to their flexed or sinuous condition or position, as seen in Figs. 1 and 2. It is to be noted that the height of the separators 23 is such that they serve to control or govern the vertical spacing of the several superimposed trays which are identified for convenience by the numerals 17, 18 and 19. The height of the strips 23 is ample so that each cell or compartment for an egg is of sufficient depth to accommodate eggs of maximum size and weight. Moreover, the flexible character of both the tubular members 22 and the separator strips 23, in cooperation with the precision-sized article-seating perforations 21, provide improved means for accommodating and isolating eggs of varying sizes and weights with equally complete protection from top-side or bottom-side crushing and/or sidewise, or endwise

crowding and thus crushing, thereby affording complete safety against breakage during handling, storage and shipment. If desirable, the outer separator strips **23** near the outer edges above mentioned may be separate members; so may those additional strips between the rows of alternated article-seating perforations **21** and flexible tubular members **22** in said rows. Or, if desirable, the two outer strips **23** may be integral with the flat plate **20**, while those strips in between the rows may be in the form of separate unattached strip-like members.

With special reference to Figs. 6 through 10 of the drawings, another form of tray embodying the invention is shown. In this form, there are a plurality of parallel rows each consisting of alternate article seating projections and resilient tubular members, as in the preceding form of Figs. 1 through 5. In the instant form, however, the tray has a single centrally located flat plate or web and the tubular members project from the rows above and below said plate, as clearly shown in Fig. 10. A corner of a tray embodying this form is shown in place in the crate or case **16**, Fig. 6. This tray is shown as a whole at **30** and has its flat plate or web **31** located midway between, or as forming the base for, the upwardly projecting resilient flexible tubular members **32** and the depending or downwardly extending-like tubular members **33**, see Fig. 10. In other words, tray **30** is a dual-sided tray and its egg-engaging and seating portions **32** and **33** cooperate with like-formed members or portions overlying above and below and in cooperative relationship. The alternating top and bottom tubular members **32** and **33** are arranged in staggered relation in their rows, see particularly the bottom plan view, Fig. 9.

In the form of Figs. 6 through 10, separate or unattached yieldable separator strips **34** extend between the rows of sockets or top tubular members **32** and also the similar rows of bottom or underside tubular members **33**, see especially Figs. 6, 8, and 9. As shown, the several upper and lower strips **34** flex when eggs E are inserted in the reception portions of a tray, like tray **30**, and assume positions or contours as indicated in Figs. 6 and 8. When empty, the tray separator strips **34** extend in substantially straight lines and in generally parallel planes, as seen in Fig. 9.

While a detailed description of several forms of trays has been given, obviously, the invention is not limited to these details, but may assume other forms.

I claim:

1. A tray adapted to be assembled with other like trays inside a crate or case to support and protect a plurality of fragile objects against breakage comprising, in combination, a flat plate made of a relatively stiff material, the plate having article-seating perforations formed in regular rows, a plurality of resilient flexible tubular members upstanding from said plate and alternating with the perforations in said regular rows with their axes substantially perpendicular to the plane of said plate, there being one of said perforations between each pair of flexible tubular members, the tubular members being of a size and shape to contact articles which may be seated with their ends in said perforations, and a yieldable separator strip positioned on said plate and extending between each pair of rows of alternated article-seating perforations and flexible tubular members.

2. A tray according to claim 1, wherein each of the separator strips is attached at a longitudinal edge to the flat plate.

3. A tray according to claim 1, wherein each of the yieldable separator strips is integral with and substantially at a right angle to the plane of the flat plate.

4. A tray according to claim 1, wherein the yieldable separator strips are separate from the flat plate.

5. In a tray arrangement employing trays according to claim 1, wherein the bottom tray is disposed with its flat plate at the top of the tray, and wherein another like tray is inverted and turned 180 degrees in the plane of said tray with its flat plate at the bottom and in contact with said first-named flat plate when the two trays are in stacked cooperative relationship.

6. An egg tray adapted to be assembled with other like trays inside an egg crate or case to support and protect eggs against breakage comprising, in combination, a flat plate made of a relatively stiff material, the plate having a plurality of regular rows of resilient flexible tubular members alternately depending in each row below and upstanding above the flat plate, said plate providing a web for the tray and a support for the upstanding and depending tubular members and being disposed in a plane midway between the top portions of the upstanding tubular members and the bottom portions of the depending tubular members, all of said tubular members having their axes substantially perpendicular to the plate and being of a size and shape to embrace eggs when placed in the tray, said upstanding and depending tubular members in each regular row being staggered with relation to like members in a next adjacent regular row, and a yieldable separator strip disposed between each pair of regular rows of alternate upstanding and depending resilient flexible tubular members above and below said flat plate.

7. An egg tray according to claim 6, wherein all of the yieldable separator strips extend in the same direction.

8. An egg tray according to claim 6, wherein yieldable separator strips are disposed in contact with the flat plate between the rows of alternate upstanding and depending resilient tubular members at opposite sides of said flat plate.

9. An egg tray according to claim 6, wherein yieldable separator strips are disposed between the alternate upstanding and depending resilient tubular members at both upper and lower faces of said flat plate, and wherein all of the yieldable separator strips at a given face of the plate extend in a common direction.

10. An egg tray according to claim 6, wherein the yieldable separator strips are separate from said flat plate.

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