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B. B. BECK

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FRAGILE ARTICLE SUPPORT

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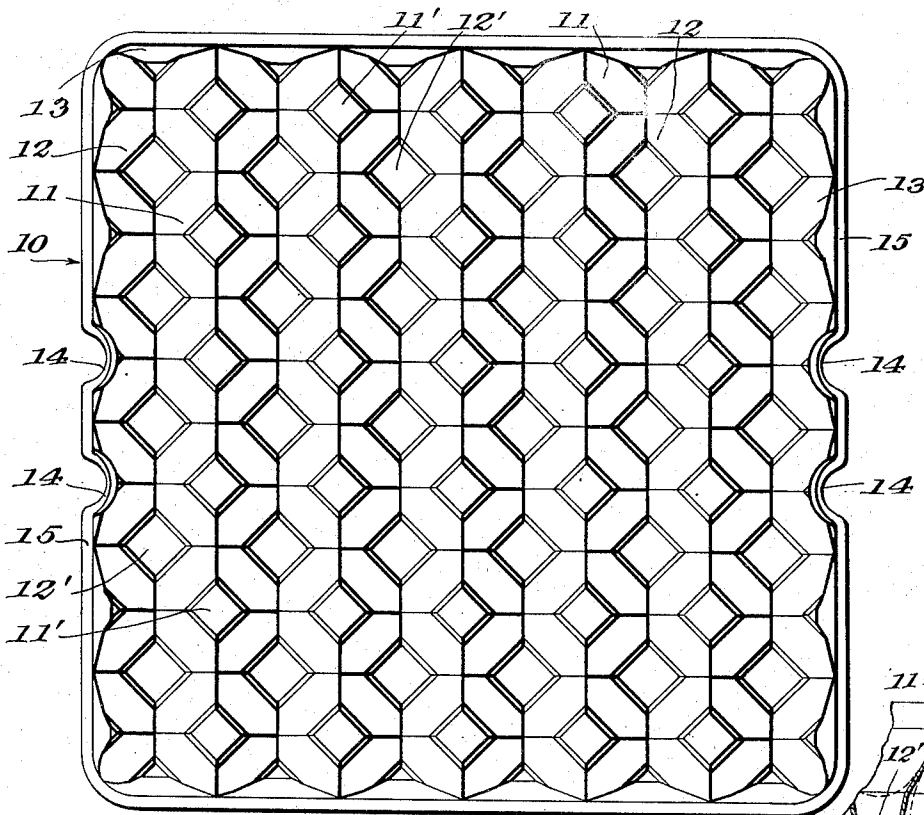
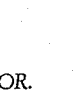
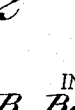
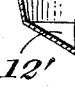
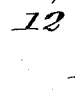
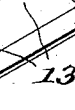
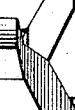
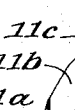
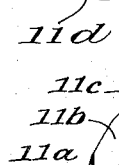
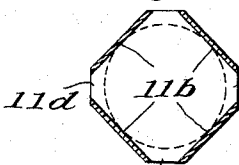


Fig. 4

Fig. 1

Fig. 3



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FRAGILE ARTICLE SUPPORT

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5 Claims. (Cl. 217—26.5)

This invention relates to a protective packing for fragile articles, such as eggs, bulbs, tubes and similar ovate objects which frequently vary in size, both as to length and diameter.

For the purposes of this application I shall discuss my invention in its relation to the packing of eggs, although it will be understood that this discussion is purely illustrative and in no way limiting.

Also for the purposes of this application I shall illustrate my invention as embodied in a combination flat and filler of the type in which the eggs in different layers within the egg case or crate are staggered relative to each other.

It will be understood, however, that my invention may be realized in other types of packing, as for example retail cartons, intended either to be filled by the grocer with eggs removed from the shipping case, or to be used in the shipping case as original packing for the eggs; or as packing sheets for special articles in which event the sheet may be either of larger or smaller size than the conventional combination flat and filler; or as individual packings for single articles.

According to my invention I provide the combination flat and filler or other packing unit with alternately upwardly and downwardly extending regularly spaced hollow posts of compound frusto-pyramidal shape. The space enclosed by any four adjacent posts extending in the same direction constitutes an egg pocket, the side walls of which are furnished by the sides of the compound frustums of the posts.

This design provides an egg pocket of maximum size, due to the fact that the maximum available space between eggs in different layers is utilized. Hence the egg pockets will readily accommodate larger than average eggs, or eggs of unusual shape or size, without the necessity of pocket distortion. In the case of an extraordinarily large egg however, the pocket will expand somewhat to permit such egg to be nested therein, due to the inherent resiliency of the material (preferably wood pulp) from which the packing unit is made.

Inasmuch as the posts are of compound frusto-pyramidal shape it results that each pocket space enclosed by any four adjacent posts extending in the same direction presents to the egg four (or more) synclinal supporting surfaces. These are located in the same horizontal plane and the egg contacts them at four (or more) spaced spots as distinguished from a continuous line contact, thus avoiding the formation of a sealed-off or dead air space about the end of the egg.

Adequate circulation of air around the egg and at the ends thereof is assured however by reason of the fact that the synclinal supporting surfaces of each pyramidal post merges with

the corresponding synclinal supporting surfaces of the adjacent posts at points substantially midway of the pocket depth and this leaves openings between the posts above the points of emergence for the passage of air between the pockets and outwardly to the edges of the tray.

The tops of the posts themselves are closed and inasmuch as the posts are of frusto-pyramidal shape such bases are rectangular and present the maximum bearing area to one another when duplicate packing trays are superimposed on one another with said bases in mutual supporting engagement.

Depending on manufacturing methods, the side walls of the several frustums, vertically or transversely, may be straight, broken, concave, convex or a combination of these.

Where my pocket design is embodied in a combination flat and filler, retail carton, or other like tray or sheet, I so construct such sheet as to afford adequate marginal buffers to absorb the shocks of contact with the side walls of the egg case or crate.

In the accompanying specification and drawing, I have described and illustrated a preferred form of my pocket design and have embodied it in a combination flat and filler of the type wherein the pocket forming posts extend alternately upwardly and downwardly. The number and arrangement of such posts over the faces of the sheet may be such as to provide, when the sheet is assembled with a duplicate sheet in the usual egg case, either registering pockets for the eggs, or staggered pockets depending upon which type of packing is preferred. Or the packing unit may be constructed as a foldable carton of any desired pocket capacity, and used either as original packing in the egg case, or as a retail carton into which the eggs are placed for re-sale after removal from the egg case by the grocer.

In the drawing—

Fig. 1 is a plan view showing one face of a combination flat and filler or tray embodying my invention.

Fig. 2 is a fragmentary perspective view thereof.

Fig. 3 is a fragmentary vertical section through a plurality of adjoining assembled trays particularly showing how I utilize to the maximum extent the available pocket space between adjacent eggs in different layers, and

Fig. 4 is a plan diagram of a pocket, particularly illustrating the "spot" contact of the egg with the synclinal walls of the pocket forming posts.

My packing unit may be made of any suitable material, but is preferably molded from wood pulp. When molded from wood pulp, the individual pocket forming posts are preformed to

shape and although relatively rigid possess the inherent quality of returning to shape after deformation.

I have indicated generally at 10 in Fig. 1 a packing sheet of the combination flat and filler type having alternating sets of upwardly and downwardly disposed relatively rigid hollow pyramidal posts 11 and 12.

Adjacent the margins of the sheet, said posts are in the form of half-posts 13 which are slightly inset from the sheet margins. The outer faces of certain of the half-posts 13 are preferably inwardly dished or concaved as at 14 to afford finger grips for lifting a filled sheet out of the egg case (not shown).

The area of the sheet between its margins and the inset half-posts 13 constitute flexible buffers 15 for contact with the side and end walls of the egg case.

Each egg receiving space or pocket is defined by the side walls of four adjacent posts 11 and the reverse post 12, the side walls of which merge with the side walls of said four posts 11. Each post is composed of a plurality of merging frustums 11a, 11b and 11c.

As shown, the lower and upper frustums 11a and 11c are substantially rectangular, the walls thereof being substantially vertical. These walls merge with an intermediate frustum 11b, the walls of which are synclinal and of relatively wider angle than either of the frustums 11a and 11c. These synclinal walls 11b furnish support for the egg at four or more spaced spots (see Fig. 4), thus avoiding the formation of a sealed or dead air space about the end of the egg.

The walls 11b of four adjacent posts merge with each other at 11e and due to the pyramidal form of the posts, openings 11d are left between the posts above the points of intersection 11e. These openings 11d provide ventilating passages extending between the pockets and outwardly to the edges of the tray so as to insure adequate circulation of air around the egg and at the ends thereof.

The compound frustum 11a, 11b and 11c making up the pocket side walls makes it possible to utilize to the maximum degree the available space S between adjacent eggs in different layers, and still obtain adequate area at the tops 11' and 12' of the posts for supporting superposed trays. This novel design permits larger eggs to be accommodated in the pockets of my tray without expanding the pocket walls. Due to the flexibility of the material of which the tray is constructed, however, my pocket can expand laterally should a greatly oversized egg be placed therein. Also the pyramidal form of the posts furnishes tops 11' and 12' which are of the maximum area so that when duplicate trays are assembled as in Fig. 3 these tops offer an extended stable bearing contact to one another.

From the foregoing it is obvious that the maximum of available space is utilized to provide for the safe packing of the eggs or other fragile articles during storage or shipment and that due to the novel pocket construction greater packing space is provided within a given cubical area, permitting the packing of larger eggs without pocket distortion and yet maintaining a four point contact so that smaller than average eggs will be held firmly erect on the synclinal pocket walls.

While in the packing illustrated, the posts 11 and 12 are shown in the form of frusto-pyramids 75 having square bases, it will be understood that

the frusto-pyramids may take other forms, as for example, they may have triangular, pentagonal or hexagonal bases.

I claim:

1. The improvement in egg packings of the type which includes a sheet having alternately upwardly and downwardly extending posts defining egg receiving pockets, which comprises posts having the general form of hollow, compound frusto-pyramids each comprising two frustums, one being larger than the other, the smaller frustums being at the extremity of each post and being formed with substantially vertical flat walls and the larger frustum being at the base of the post and being formed with flat, oblique, steeply inclined walls, the oblique side walls of the larger frustum of each upstanding post merging with and forming continuations of the oblique side walls of the larger frustums of the downwardly extending posts surrounding it, so that the walls of each pocket are constituted in part by one compound side wall of each of four upstanding posts and in part by the four compound side walls of a downwardly extending post located in the space separating the four upstanding posts, and so that each of the four side walls of each pocket includes a substantially vertical flat frustum wall at the bottom, a flat oblique frustum wall which increases in width as it recedes from said vertical wall and which merges intermediate the pocket depth with a similar flat oblique frustum wall which decreases in width as it recedes from said vertical wall and another substantially vertical flat frustum wall at the top whereby the pocket is adapted to receive and support with spot contact on the intermediate walls eggs of varying sizes, and whereby the intermediate walls are adapted to flex under the pressure of the egg to adjust themselves automatically to various sizes of eggs, the centers of said posts being so spaced that the oblique side wall of each upstanding post merges with the adjacent oblique side walls of the adjacent downwardly extending posts at a point substantially midway of the pocket depth and thereby provides passages above the points of emergence through which air may circulate from the edges of the sheet and through the spaces at the sides of the spot contacts of the eggs to the pocket spaces beneath the eggs, the air passage between adjacent upstanding posts being generally V-shaped at the bottom near the oblique frustum walls and having generally vertical sides at the top near the substantially vertical frustum walls, whereby said generally vertical sides prevent contact in the air passage between eggs supported in adjacent pockets.

2. An egg packing in accordance with claim 6 in which the oblique side walls merge at a point exactly midway of the pocket depth whereby the posts on the two sides of the sheet are alike in form and dimensions to permit close nesting of superimposed sheets and cartons.

3. A packing for eggs which comprises a sheet having alternately upwardly and downwardly extending hollow frusto-pyramidal posts defining egg receiving pockets, the walls of each pocket being constituted in part by one of the flat side walls of each of four adjacent upstanding posts and in part by the four flat walls of the downwardly extending post located in the space separating the four upstanding posts which four side walls of the downwardly extending post merge with the adjacent side walls of said upstanding posts to form continuous flat surfaces, the side walls of

each pocket space comprising walls of four merging frustums, the walls of the bottom and top frustums being smaller than the intermediate frustums and being approximately vertical and the walls of the intermediate frustums being oblique relative the walls of said top and bottom frustums and merging so as to form four said continuous flat surfaces so that in vertical section each side wall of each pocket consists of a straight oblique line with a substantially vertical line at the top and another substantially vertical line at the bottom whereby the pocket is adapted to receive and support with spot contact on the inclined intermediate frustum walls eggs of varying sizes, and the intermediate frustum walls are adapted to flex under the pressure of the egg to adjust themselves automatically to the size of the egg, each of said oblique pocket walls merging with the adjacent oblique wall of the pocket at a point substantially midway of the pocket depth to provide passages above the points of mergence through which air may circulate from the edges of the sheet and through the spaces at the sides of the spot contacts of the eggs to the pocket spaces beneath the eggs, the air passage between adjacent upstanding posts being generally V-shaped at the bottom near the oblique frustum walls and having generally vertical sides at the top near the substantially vertical frustum walls, whereby said substantially vertical sides prevent contact in the passage between eggs supported in adjacent pockets, and the junctures of the side walls of the posts above said points of mergence form intersecting lines of reinforcement extending across the sheet at right angles and broken only by the ends of the posts.

4. The improvement in egg packings of the type which includes a sheet having alternately upwardly and downwardly extending posts defining egg receiving pockets, which comprises posts having the general form of hollow, compound frustopyramids each comprising two frustums, one being larger than the other, the smaller frustums being at the extremity of each post and being formed with substantially vertical flat walls and the larger frustum being at the base of the posts and being formed with flat walls which are more oblique than said first walls, the oblique side walls of the larger frustum of each upstanding post merging with and forming continuations of the oblique side walls of the larger frustums of the downwardly extending posts surrounding it, so that the walls of each pocket are constituted in part by one compound side wall of each of a group of adjacent upstanding posts and in part by the compound side walls of a downwardly extending post located in the space separating the group of adjacent upstanding posts, and so that each of the side walls of each pocket includes a substantially vertical flat frustum wall at the bottom, a flat oblique frustum wall which increases in width as it recedes from said vertical wall and which merges intermediate the pocket depth with a similar flat oblique frustum wall which decreases in width as it recedes from said vertical wall and another substantially vertical flat frustum wall at the top whereby the pocket is adapted to receive and support with spot contact on the intermediate walls eggs of varying sizes, and whereby the intermediate walls are adapted to flex under the pressure of the egg to adjust themselves automatically to various sizes of eggs, the centers of

said posts being so spaced that the oblique side wall of each upstanding post merges with the adjacent oblique side walls of the adjacent downwardly extending posts at a point substantially midway of the pocket depth and thereby provides passages above the points of mergence through which air may circulate from the edges of the sheet and through the spaces at the sides of the spot contacts of the eggs to the pocket spaces beneath the eggs, the air passage between adjacent upstanding posts being generally V-shaped at the bottom near the oblique frustum walls and having generally vertical sides at the top near the substantially vertical frustum walls, whereby said generally vertical sides prevent contact in the air passage between eggs supported in adjacent pockets.

5. The improvement in egg packings of the type which includes a sheet having alternately upwardly and downwardly extending posts defining egg receiving pockets, which comprises posts having the general form of hollow, compound frustopyramids each comprising two frustums, one being larger than the other, the smaller frustums being at the extremity of each post and being formed with substantially vertical flat walls and the larger frustum being at the base of the posts and being formed with flat walls which are more oblique than said first walls, the oblique side walls of the larger frustum of each upstanding post merging with and forming continuations of the oblique side walls of the larger frustums of the downwardly extending posts surrounding it, so that the walls of each pocket are constituted in part by one compound side wall of each of a group of adjacent upstanding posts and in part by the compound side walls of a downwardly extending post located in the space separating the group of adjacent upstanding posts, and so that each of the side walls of each pocket includes a substantially vertical flat frustum wall at the bottom, a flat oblique frustum wall which increases in width as it recedes from said vertical wall and which merges intermediate the pocket depth with a similar flat oblique frustum wall which decreases in width as it recedes from said vertical wall and another substantially vertical flat frustum wall at the top whereby the pocket is adapted to receive and support with spot contact on the intermediate walls eggs of varying sizes, the centers of said posts being so spaced that the oblique side wall of each upstanding post merges with the adjacent oblique side walls of the adjacent downwardly extending posts at a point intermediate the pocket depth and thereby provides passages above the points of mergence through which air may circulate from the edges of the sheet and through the spaces at the sides of the spot contacts of the eggs to the pocket spaces beneath the eggs, the air passage between adjacent upstanding posts being generally V-shaped at the bottom near the oblique frustum walls and having generally vertical sides at the top near the substantially vertical frustum walls, whereby said generally vertical sides prevent contact in the air passage between eggs supported in adjacent pockets, the junctures of the side walls of the posts above said points of mergence forming intersecting lines of reinforcement extending along the sheet.

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