Aug. 8, 1939. D. S. BRIGHAM ET AL 2,168,317

PACKING MATERIAL

Filed Nov. 20, 1935 3 Sheets-Sheet 1

Fig. 1.

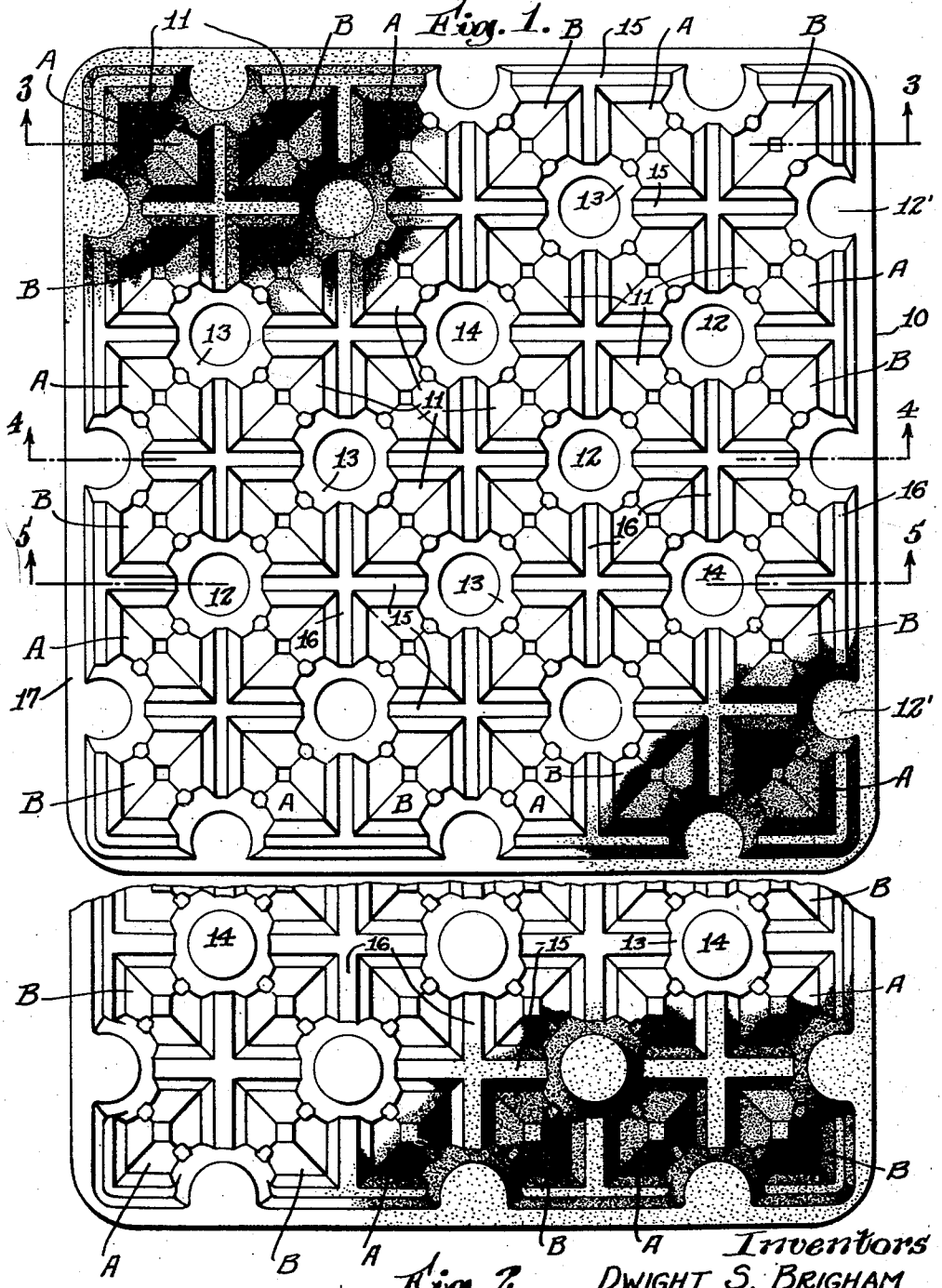

Fig. 2.

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Fig. 3.

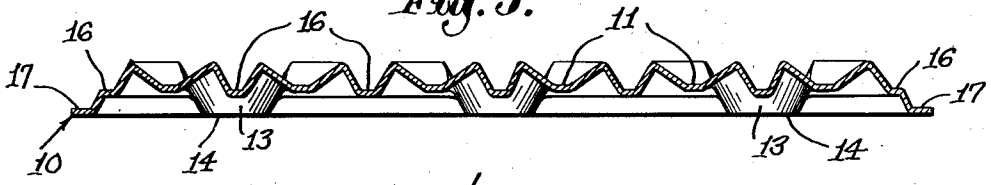

Fig. 4.

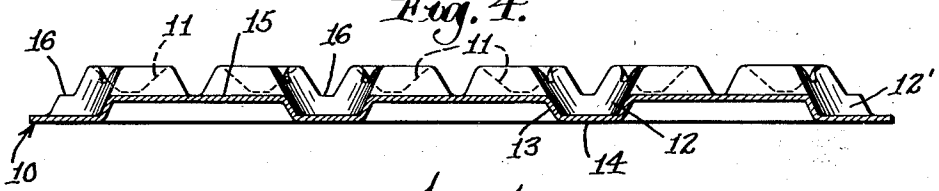

Fig. 5.

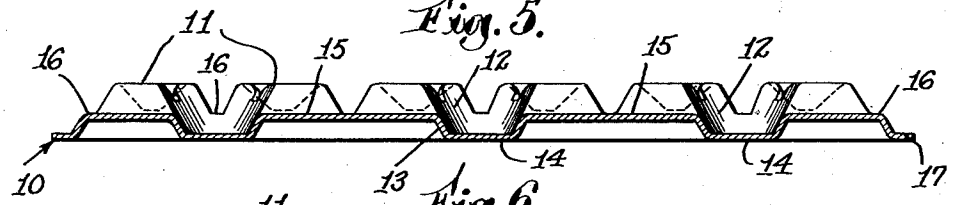

Fig. 6.

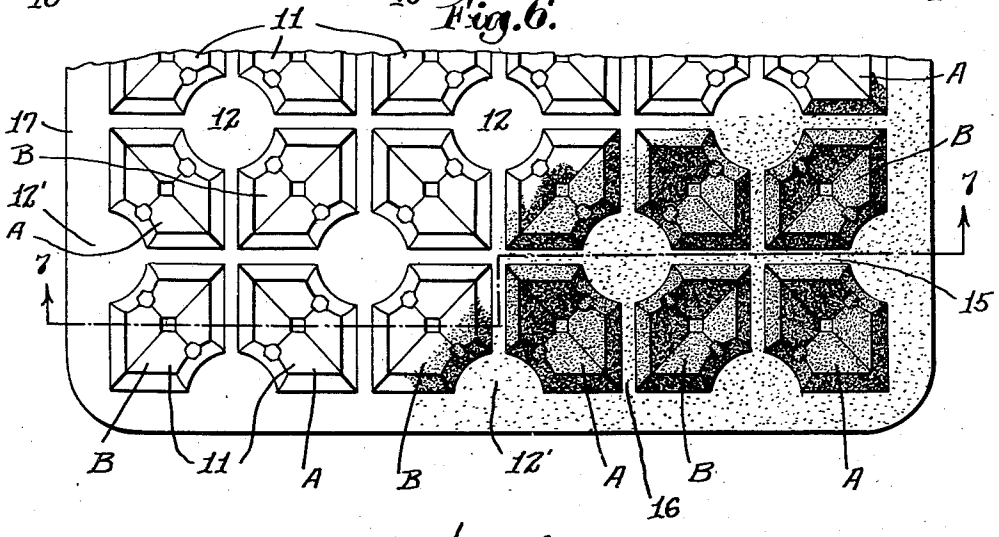

Fig. 7.

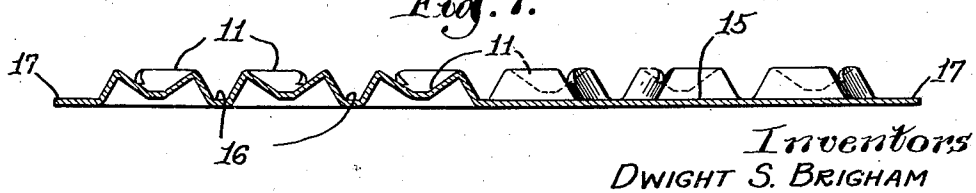

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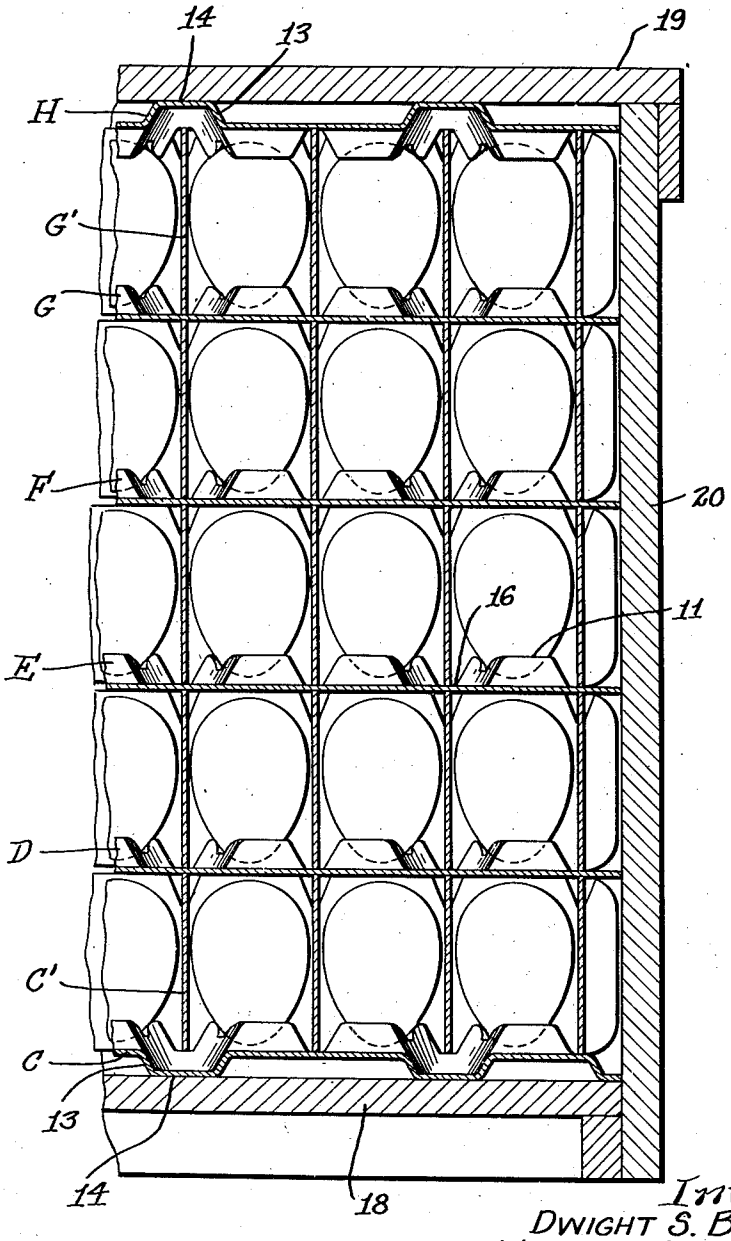
Fig. 8.



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Patented Aug. 8, 1939 2,168,317

UNITED STATES PATENT OFFICE

2,168,317

PACKING MATERIAL

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Application November 20, 1935, Serial No. 50,654

7 Claims. (Cl. 217—27)

This invention relates to devices for supporting fragile articles so that they may be safely handled and shipped, and although not exclusively limited to the packing of eggs, is particularly adapted for such use.

Eggs are usually packed layer on layer in cases or crates of standard dimension, each layer being supported by a sheet known as a "flat" and each egg in each layer being separated from the remaining eggs in said layer by vertical division strips known as "fillers" or "cell cases".

Protective devices are usually provided at the bottom and/or top of the egg case for cushioning the assembly against shock. In the early art, these were merely lining sheets of straw, excelsior, or the like. As the art developed, cardboard, strawboard, molded pulp, and kindred material was substituted for the straw or excelsior sheets and fabricated into a pad having on its lower face a plurality of pre-formed downwardly extending cushioning projections, as ribs, posts, feet, rings or the like adapted to space the pad from the bottom wall of the egg case and having on its upper face a plurality of preformed upwardly extending projections, as rings, hollow cones, or like holders adapted to receive and grip the individual eggs inserted therein.

Our invention contemplates an improved packing device useful either as an ordinary flat or as a combination flat and lining pad. Embodiments containing the principles involved are illustrated in the accompanying drawings wherein:

Fig. 1 is a top plan view of our device showing the same constructed as a combination flat and lining pad.

Fig. 2 is a fragmentary bottom plan view thereof.

Figs. 3, 4 and 5 are sections on the lines 3—3, 4—4, and 5—5 respectively of Fig. 1.

Fig. 6 is a fragmentary top plan view of our device showing the same constructed as an ordinary flat.

Fig. 7 is a section on the line 7—7 of Fig. 6, and

Fig. 8 is a fragmentary vertical section through a standard egg case showing the device of Figs. 1 to 5 inclusive used as a combination flat and lining pad for the top and bottom layers of eggs and the device of Figs. 6 and 7 used as an ordinary flat for the intermediate layers.

In our present invention, we arrange every alternate diagonal row of the individual egg supports of the flat of the Chaplin Patent No. 1,987,525 at right angles to the diagonal rows which are not re-arranged and thus produce through the sheet groups of four supports wherein two opposite supports have their major axis disposed in another diagonal direction of the sheet and at right angles to said first named pair.

As a result of this arrangement the space enclosed by each group of four supports is an unobstructed area which is symmetrical with all four supports of the group, or in other words, the four supports occupy the four corners of a square which has for its center the center of the central space enclosed by the four supports. Such central space may be converted into a cushioning post or foot by depressing the same downwardly, thus adapting our device for use as a combination flat and lining pad.

Or the spaces may not be depressed to form the cushioning feet, in which event our device would be used as an ordinary flat.

Whether used as an ordinary flat or as a combination flat and pad, and regardless of whether the downwardly extending cushioning feet are or are not present, the sheet may be readily nested with other similar sheets for shipping and storage purposes without the necessity of first arranging all of the sheets with their individual egg supports all pointing in the same diagonal direction, as was necessary with the patented Chaplin flat aforesaid.

Where our device is used as a combination flat and lining pad, the individual egg supports are raised slightly higher above the plane of the sheet than those shown in the patented Chaplin flat aforesaid. In order to compensate for this slight increase in height, those portions of the sheet which separate the individual egg supports from one another transversely and longitudinally of the sheet and which themselves constitute supports for the lower edge of the filler are raised a distance corresponding to the increase in height of the egg supports.

This increase in height of both the egg supports and the filler supports enables us to terminate the downwardly extending cushioning feet or posts at the plane of the sheet rather than having them extend below the plane of the sheet, with consequent tendency for the sheet to buckle under load, as heretofore in the art.

We have indicated at 10 a sheet of material which is preferably although not necessarily made of molded pulp. When made of molded pulp, it is formed by the well known pulp sucking process.

Distributed symmetrically over the upper face of such sheet is a plurality of spaced rows of individual egg supports 11. These may have the

characteristic structure of the said patented Chaplin flat but unlike the flat illustrated in said patent alternate rows of supports are arranged over the face of the sheet at right angles to the rows which they lie between.

With a sheet having a six by six arrangement of individual egg supports providing thirty-six supports in all distributed over the face of the sheet, there are five spaced diagonal rows, marked A, of supports all having their individual egg supports disposed with their major axis pointing in the same diagonal direction, and five spaced diagonal rows, marked B, of supports intervening between the first named set of rows A and all having their individual egg supports pointing in the same diagonal direction but at right angles to the direction in which the first named set is disposed. Thus the several sheets may be nested for purposes of shipment or storage, without the necessity of first arranging the individual sheets with the egg supports all pointing in the same diagonal direction.

The egg supports themselves are distributed over the face of the sheet in groups of four, each group consisting of two opposite supports furnished by two adjacent rows A and two opposite supports furnished by two intervening rows B, the four supports of the group thus enclosing a common central area 12, or in other words, the four supports occupy the four corners of a square having the enclosed space 12 as a center.

By depressing these central spaces 12 a substantial distance downwardly (Figs. 1 to 5) to form hollow supporting cushions or posts 13 having closed flat bottoms 14, the flat may be converted into a combination flat and lining pad.

The spaces or areas 12' at the four margins of the sheet are of course only one-half the width of the inset spaces 12, and their cushioning posts 13' are only half-posts.

The portions of the sheet intervening between the several egg supports constitutes supporting areas for the bottom edges of a filler. For convenience of designation such portions of the sheet will be referred to as a filler supporting areas. These are distributed over the sheet in transverse and longitudinal rows 15 and 16.

Inasmuch as the individual egg supports 11 however are raised a substantial distance above the plane of the sheet, these filler supporting areas exist as definite channels which extend between the same at right angles to one another and in bisecting relation to the spaces 12 and 12'.

Where the spaces 12 and 12' are not depressed downwardly to form cushiong posts (see Figs. 6 and 7) the rows of filler supports 15 and 16 are not raised above the plane of the sheet, but are co-planar therewith. In fact, with such arrangement said rows of filler supports and the intersected spaces 12 and 12' constitute the plane of the sheet.

Where the intersected spaces 12 and 12' however are depressed downwardly (see Figs. 1 to 5) to form the cushioning feet 13 and 13', the bottoms 14 of said feet, terminate in the plane of the sheet and in fact constitute with the enclosing rim or border 17 of the sheet the sheet plane and the rows of filler supports 15 and 16 are definitely elevated with respect both to said feet bottoms 14 and to said rim or border 17.

In other words, where our device is to be used as a combination flat and lining pad, in order adequately to protect the eggs inserted in the rows of egg supports A and B these supports are desirably raised somewhat higher than they need to be where our device is used as an ordinary flat. This increase in height of the egg supports is compensated for, so that a filler of standard height may be used, by elevating the rows of filler supports 15 and 16 a distance corresponding to the increase in height of the egg supports A and B, and hence the rows of elevated filler supports are no longer in the plane of the sheet but are above it, the plane of the sheet in such case being constituted by the enclosing rim or border 17 and the bottoms 14 of the cushioning posts 13 and 13', and not by such rim and the enclosed spaces 12 and 12' as is the case where our device is used as an ordinary flat.

In Fig. 8, we have shown six of our devices positioned in a conventional egg case or crate of standard dimension as packing for five layers of eggs E.

In this figure, the bottom wall of the case is indicated at 18, the cover at 19 and one of the vertical walls at 20.

The bottom-most packing device, designated for convenience of reference in this figure by the letter C, is a combination flat and pad. Its downwardly extending cushioning feet rest on the bottom wall 18 of the case, and the lowermost layer of eggs is inserted in its egg supports A and B, the individual eggs being separated from one another by the filler C'. The lower edges of said filler are engaged by the filler supports 15 and 16. The upper edges of said filler bear against the underface of the packing device D next above which as shown in this figure is constructed as an ordinary flat, as are also the superposed packing devices E, F and G supporting the intermediate layers of eggs.

The uppermost packing device H is a combination top pad and flat. It is reversed and placed on the top layer of eggs and top filler G' with its cushioning feet 13 abutting the cover of the egg case and its egg supports A and B extending downwardly to receive the upper ends of the top layer of eggs.

Instead of using for the intermediate layers the flats designated D, E, F and G, we may use combination flats and lining pads like those designated C and H throughout the assembly.

Our invention therefore is both a new flat with re-arranged egg supports 11 (Figs. 6 and 7) and a new combination flat and pad (Figs. 1 to 5) embodying in addition to such re-arranged egg supports 11 the raised filler supports 15 and 16 and the depending cushioning feet 13 and 13' terminating at the plane of the sheet.

Various other modifications in structure and use may obviously be resorted to within the spirit and scope of our invention as defined by the appended claims.

What we therefore claim and desire to secure by Letters Patent is:

1. A packing sheet adapted to be nested with similar sheets, said sheet having distributed over one face thereof two sets of spaced rows of upstanding elongated article supports, the supports of the rows of one set having their major axes disposed in the same direction diagonally of the sheet, the supports of the rows of the other set also having their major axes disposed in the same direction diagonally of the sheet but intersecting the rows of the first set at right angles, the rows of the second named set occupying the spaces between the rows of the first named set, and the arrangement of said sets of rows in diagonally intersecting relationship over the face of the sheet permitting the supports of either di-

agonal set of rows of said sheet to be nested at random with the supports in either of the diagonal sets of rows of a similar sheet.

2. The packing of claim 1, the supports being distributed in groups of four, each group consisting of a pair of oppositely disposed supports from two adjacent rows in one set and a pair of oppositely disposed supports from two adjacent rows in the other set, and the supports of each group occupying the four corners of a square and enclosing a central space.

3. A packing consisting of a sheet having on one face thereof four upstanding elongated article supports occupying the four corners of a square and enclosing a central space, one pair of supports being opposite each other and having their major axes disposed in the same direction diagonally of the sheet and the other support pair being opposite each other and having their major axes disposed in the same direction diagonally of the sheet but at right angles to said first-named pair, the arrangement of said pairs of supports in diagonally intersecting relationship over the face of the sheet permitting either diagonal pair of supports to be nested at random with either diagonal pair of supports of a similar sheet.

4. The packing sheet of claim 3, the enclosed central space being depressed downwardly to form a hollow cushioning member which is out of line with the vertical axes of its enclosing article supports and terminates substantially flush with the plane of the sheet.

5. A packing, consisting of a sheet having on one face thereof two sets of spaced rows of elongated article supports raised above the plane of the sheet, the spaces between the rows of one set being occupied by the rows of the other set, all rows in one set extending diagonally of the sheet in the same direction and all rows of the other set extending diagonally of the sheet in the same direction but at right angles to said first-named set, the supports of the several rows being distributed over the face of the sheet in groups of four and the supports of each group occupying the four corners of a square and enclosing a central space, said spaces being extended downwardly to form cushioning members which are out of line with the vertical axes of their enclosing article supports and the bottoms of which terminate substantially at the plane of the sheet.

6. The packing sheet of claim 5, the sheet also having rows of raised portions extending transversely and longitudinally of the sheet at right angles to one another and spacing the adjacent groups of supports from one another and constituting supports for the lower edge of a superposed compartment forming member.

7. A packing sheet adapted to be nested with similar sheets, said sheet having distributed over one face thereof a first set and a second set of upstanding elongated article supports arranged in rows, each row in the first set being disposed in spaced parallel relation to any other row in said first set and each row in the second set being disposed in spaced parallel relation to any other row in the second set, each support in each row of each set being spaced apart from the adjacent supports in its row and all of the supports in all of the rows of the first set having their major axes disposed in the same direction diagonally of the sheet and all of the supports in all of the rows of the second set having their major axes disposed in the same direction diagonally of the sheet but at right angles to the rows of the first set, the rows of the second set occupying the spaces between the rows of the first set, and the arrangement of said sets of rows in diagonally intersecting relationship over the face of the sheet permitting the supports of either diagonal set of rows of said sheet to be nested at random with the supports in either of the diagonal sets of rows of a similar sheet.

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