Feb. 2, 1937. M. KOPPELMAN 2,069,497

PACKING MEANS

Filed April 21, 1933 2 Sheets-Sheet 1

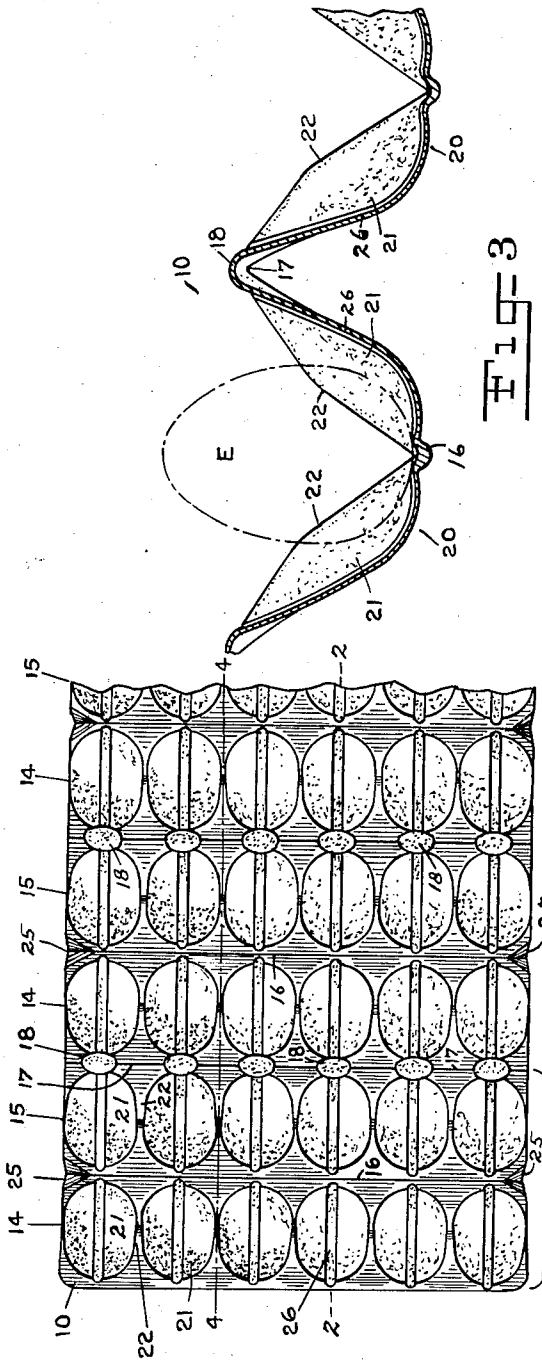


FIG-3

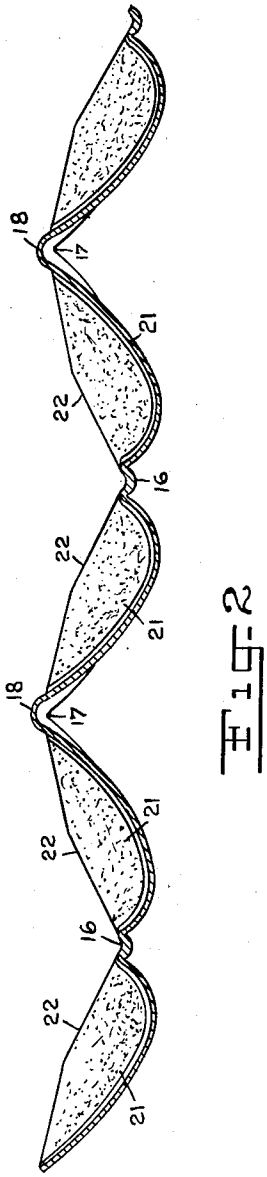


FIG-2

FIG-1

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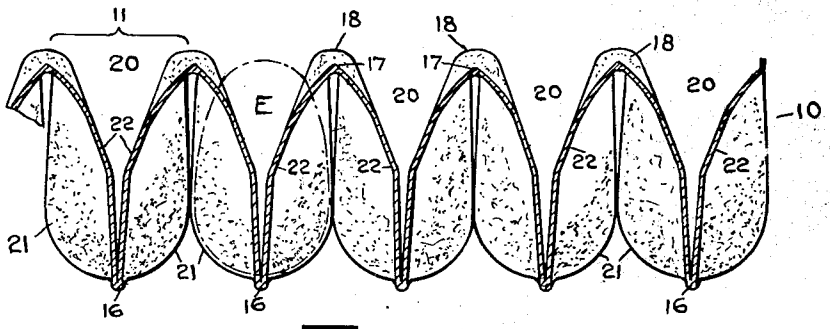


Fig-4

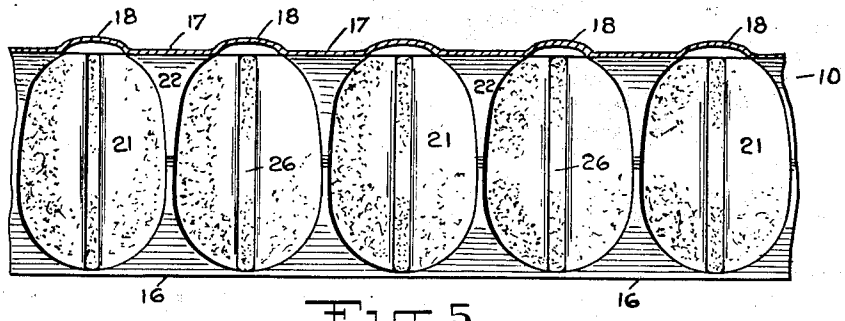


Fig-5

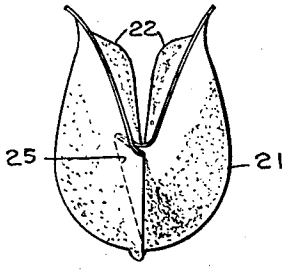


Fig-6

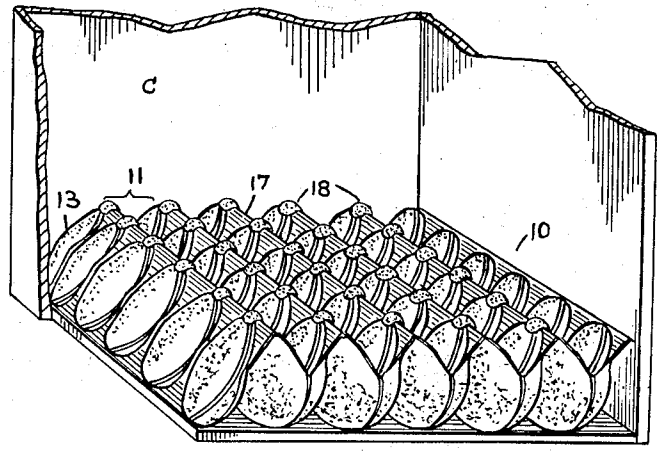


Fig-8

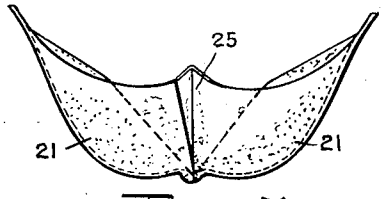


Fig-7

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2,069,497

PACKING MEANS

Morris Koppelman, Brooklyn, N. Y.

Application April 21, 1933, Serial No. 667,137

16 Claims. (Cl. 217—26.5)

The present improvements relate in general to packing means for fragile articles, and more particularly to trays or flats for use in packing eggs in standard crates.

A primary object of the improvements is to provide a novel flat for use in packing eggs in standard crates. A further object is to provide an improved packing for eggs in crates which eliminates the necessity of using the familiar honey-comb filler. Another object is to provide an improved packing means for egg crates which replaces the common two-piece flat and filler, with a one-piece flat serving the purposes of both flat and filler.

Another object is to provide a self sustainable tray or flat which serves the purposes of both a separate flat and separate filler.

A further object is to provide a packing means which automatically and inherently preserves a set position, and returns thereto when distorted.

Another object is to provide novel means and methods for creating and manufacturing a self sustaining upright packing means.

An additional object is to provide an improved method for manufacturing egg flats for standard crates.

Other objects and advantages of the present improvements will be apparent to those skilled in the art upon reference to the accompanying specification and drawings in which—

Fig. 1 is a fragmentary plan view of the improved flat or tray embodying one form of the present improvements, illustrating the flat in the wet or plastic pulp stage of manufacture;

Fig. 2 is an enlarged section through a portion of the wet pulp member of Fig. 1, illustrating the wet plastic tray in flatwise, unfinished condition, along line 2—2 of Fig. 1;

Fig. 3 is a fragmentary section through the middle of the pockets of rows of the tray, illustrating the final form of the tray, when dried and intended for use;

Fig. 4 is a section through the ends of the pockets, illustrating the shape of the rows and pockets when the tray is crowded into a standard packing case, the section being taken through the packed tray on a line equivalent to line 4—4 of Fig. 1;

Fig. 5 is a longitudinal section through a row of pockets;

Fig. 6 is an end elevation of a row of pockets, in a position equivalent to that of Fig. 4;

Fig. 7 is an end elevation of a row of pockets, in normal position, equivalent to the position illustrated in Fig. 3;

Fig. 8 is a fragmentary view of a standard egg crate, illustrating a tray or flat therein, embodying the present improvements, the eggs being omitted for convenience in illustration.

Referring to the drawings, the improved tray or flat is illustrated in various stages of its manufacture and in various conditions of use. It should be borne in mind therefore, as the description proceeds, that Figs. 1 and 2 illustrate one stage in the course of manufacture of the device while Fig. 3 represents the final and complete manufacturing stage. In this last mentioned figure, the tray is in position to be packed or unpacked, a position in which the tray normally resides when outside of a packing case or crate. In Fig. 8, the tray seen in Fig. 3, is shown in packed position within a case. In such a position, the tray of Fig. 3, when observed in section, assumes the position illustrated in Fig. 4. Accordingly, it is seen that in Fig. 3, the completed tray supports but does not intimately embrace the articles, while in Fig. 4, the tray within the case, both supports and intimately embraces the articles.

The devices of the present improvements are preferably made by the familiar pulp sucking process, wherein a screen or foraminous die is formed into the shape and contour it is desired to give to the individual details of the final article. Such a screen or die, suitably formed, is coated with the pulp from the pulp bath, as is well known in the art. This pulp coating, which ultimately becomes the final sheet member or tray, is wet and plastic as it is withdrawn from the pulp bath. Referring to Figs. 1 and 2, the member 10 is illustrated in such wet and plastic condition. In those figures, the member is seen to have a definite contour, but is flatwise, which is the state in which it was created from the pulp bath.

While the member 10 is still wet and plastic, and before the matted fibres have set or started to dry, the member is transformed to the position shown in Fig. 3, where it is held while the drying and fibre-setting stage is initiated and completed. During this concluding stage of the manufacturing operation, the member 10 is thoroughly dried out whereupon the fibres become set with the tray in the upstanding position illustrated in Fig. 3. By reason of this transition from the wet to the dry phase, accompanied by a fixation of the fibres and of the member, any tendency to return to flatwise condition (Fig. 2) is resisted and prevented

In the final completed state shown in Fig. 3 therefore, the member 10, by reason of its texture and manufacturing operations undergone, as well as because of other features hereinafter described,

is relatively rigid and resists any force tending to contract or expand it from that position. Manifestly, therefore, the member inherently tends to preserve and return to the position of Fig. 3.

Referring more particularly to the details of the member 10, it will be seen upon reference to Fig. 8, that the flat consists of five full rows 11 of pockets 20, there being six pockets in each row. A half-row portion 13 may serve as a spacing or cushioning means, or may be dispensed with entirely. Only a fragment of the member 10 is illustrated in Fig. 1, which discloses the complementary wall portions 14 and 15, which constitute the row 11.

Each row is reinforced at its bottom by a thickened welt 16, which assists in maintaining the position of the wall portions in Fig. 3.

Reinforcement between adjacent rows is observed in the row of alternately disposed welts 17 and knobs or bumps 18. These welts 17 constitute a series in alignment, providing a ridge or crest between adjoining rows.

Each row 11 comprises a series of pockets 20 disposed side by side. To provide these pockets, the wall portions 14, 15 are oppositely depressed so that the pocket 20, as seen in final form in Fig. 3, is dished. The depressed wall portions 21, are on either side of the egg E or other fragile article. By depressing the walls of the row at spaced intervals, as at 21, corresponding wall members 22 remain therebetween. These members 22 are on the same side of the egg and are also oppositely disposed. The walls of the pockets conform generally to the contour of the egg or other article which feature serves a distinct purpose, when the device is within the packing case, as seen in Figs. 4 and 8.

However, when the packing member 10 is in the position of Fig. 3, the walls 21 of the pockets 20 are spaced from the eggs and the walls 22 are spaced from each other. Accordingly, the pockets are not in close form-fitting relation with the eggs and are not embracing them, so that the eggs are supported in a free exposed condition. This permits the eggs to be readily candled and facilitates their removal from the member 10. The hands and fingers of the packer may readily seize the eggs and remove them without hampering or impeding his usual speed. The dished contour of the pockets 20 from top to bottom and from side to side, as well as the spaced walls 22, permitting communication between pockets, increases the accessibility of the eggs to the eye of the candler and to the hands of the packer. The eggs may obviously be removed by picking them up, out of the pockets, or by passing the hands longitudinally of the row and thus clearing it of eggs.

In packing a standard case such as partially shown in Fig. 8 at C, the packing member 10 is conveniently placed in the normal non-embracing position as seen in Fig. 3. This condition of the member exists outside of the case C. The eggs E are now placed in the pockets 20 of the member 10, as shown in dotted lines in Fig. 3. The member 10 consists of five rows of pockets 20, the total width of which is greater than the width of case C. Accordingly, the pockets are squeezed or contracted until the entire member 10 is crowded into and can be inserted in the case as seen in Fig. 8.

In such squeezed or crowded position, the pockets 20, as illustrated in Fig. 4, are reduced in width so that the walls thereof are brought towards each other, into embracing and intimate contact with the eggs. In such condition, the eggs are cushioned and protected against shocks and breakage. The pockets also hold and grip them against movement relative to each other or relative to the pocket. There is therefore no opportunity for the eggs to wabble or lean over. They are always maintained in erect vertical position, and separated from the eggs in the companion pockets. The depth of the pockets is such as to equal or be greater than the greater dimension of the egg. Therefore the eggs are protected from above as well as along the sides.

Upon reference to Fig. 8, the extra row 13 of half pockets, is seen to serve as a cushioning means for the tray or flat 10. It also serves to crowd the pockets and the rows so that they may more securely grip and cushion the eggs, and so that the tray itself grips the sides of the case for holding same secure against shifting or other movement.

A second tray or flat 10 may be similarly packed, and after crowding same together, may be placed above the tier illustrated in Fig. 8. Tier upon tier may be thus packed, with the rows either parallel or criss-crossed, as desired. The knobs or bumps 18 of one tray or flat may serve as obstacles for lateral engagement by the welts of a superimposed tray or flat, to preserve the proper position of the rows, and to arrest lateral shifting of the rows, should it occur.

When it is desired to unpack the case C, each tray or flat 10 may be removed as a unit and placed on a table or other convenient support. When the pockets 20 are thus relieved of the pressure imposed by the walls of the case, they resume their normal condition and expand from the position of Fig. 4 to that of Fig. 3. They are accordingly accessible for candling and removal as previously described.

Referring now more particularly to the portions provided for giving additional rigidity to the tray or flat 10, it is seen that the welts 16 and 17 are provided with a greater thickness than the other portions of the pockets. This additional thickness may be dispensed with at parts 17, if desired.

The knobs 18 form part of the ridge or crest between contiguous rows of pockets. These knobs are wet and plastic at the time the pulp coating is initially created. They are preferably dome shaped and are disposed between the depressed pocket portions of adjacent rows. As illustrated, these knobs extend laterally into the wall of each row or pocket and extend longitudinally along the ridge a short distance. They accordingly span the space between pockets of adjacent rows, and may extend into the depressed portions.

When the tray or flat is moved from the wet plastic state of Fig. 2 to that of Fig. 3, the knobs 18 being also wet and plastic, are slightly altered in shape. In that wet state, they are dried out and the matted fibres are set, so that the knobs are in their final completed state in Fig. 3. In such condition, they function as a relatively rigid dome spanning the crest or ridge, and since they have portions extending down into the rows, these portions act like struts or legs against the rows and resist any tendency of the walls to spread. In the final dried and completed state therefore, the knobs 18 serve in the nature of clamps so to speak, for holding the rows in the position of Fig. 3. When the tray

is crowded to the position of Fig. 4, the knobs resist the movement, and function to return the pockets to spread-out position (Fig. 3) upon release of the crowding pressure.

As illustrated in Figs. 6 and 7, additional means are provided for supplementing the action of the welts 16. Skirts or plaits 25 are provided at either end of the welts 16, as seen in Fig. 1. These plaits are integral with the tray or flat 10, having been created therewith at the time of manufacture. When the tray is dried in its final form, the plait 25 forms an end closure for the lower part of the row, as seen in Fig. 7. When the tray is crowded into the case C, and the pockets are squeezed together as in Figs. 4 and 6, the plait 25 is lapped upon itself in the manner illustrated in Fig. 6. Upon removing the tray or flat 10 from the case, the spreading of the pockets to expose the eggs causes the plait to open slightly to the position of Fig. 7. In this position the plaits 25 function to prevent any further opening of the pockets and in this regard are supplemented by the welts 16. Furthermore, the plaits serve as side walls for the eggs in the outermost pockets.

The tray or flat 10 may be formed with suitable cushioning and reinforcing ribs 26, as illustrated. These members serve to cushion and space the eggs from each other when the rows are back to back as in Fig. 4. These elements may take other forms, or may be dispensed with entirely, if desired.

It will be observed from the foregoing description, that the packing tray or flat by reason of its shape and texture, is inherently resilient, relatively yieldable and at the same time relatively rigid. Accordingly, the device is self sustainable in the spread position of Fig. 3, and therefore automatically returns to such position upon release of any pressure tending to distort it to a more contracted or to a more expanded condition. The knobs prevent any stretching beyond the egg-holding position of Fig. 3. The distribution and arrangement of the knobs 18 may be varied, and their size and shape may likewise be altered. Furthermore, other means for sustaining the walls, and returning them to normal position may be resorted to without departing from the scope of the improvements.

I claim:

1. A flat for supporting eggs or other fragile articles comprising a sheet of relatively yieldable pulp material having upstanding spaced walls defining rows, hinge means connecting said rows, said walls having depressed portions defining pockets for individual articles in said rows, said walls being movable relative to one another for altering the size of the pockets, and means integral with and protruding from said hinges for supporting the walls in upstanding spaced condition, said means being positioned for resisting movement of said walls.

2. A flat for supporting eggs or other fragile articles comprising a sheet of relatively yieldable pulp material having upstanding spaced walls defining rows, hinge means connecting said rows, said walls having depressed portions defining pockets for individual articles in said rows, said walls being movable relative to one another for altering the size of the pockets, and means integral with and protruding from said hinges for supporting the walls in upstanding spaced condition, said means being positioned for returning said walls to normal spaced condition following contraction of said walls beyond normal spaced condition.

3. A cushion support for fragile articles comprising a sheet of pulp material, said sheet having recesses to provide pockets for supporting individual articles in rows, said pockets having upstanding walls canted from the vertical hinge means connecting said walls, said walls being oppositely disposed and spaced from each other whereby contiguous pockets are in communication, and means integral with and protruding from said hinges for sustaining the pockets in erect position.

4. A flat for supporting eggs or other fragile articles comprising a sheet of relatively yieldable pulp material having upstanding spaced walls defining rows, hinge means comprising ridges uniting the uppermost portions of said walls, said walls having depressed portions defining pockets for individual articles in said rows, said walls being movable toward one another for reducing the size of the pockets, and means for supporting said walls in upstanding spaced relation, said means protruding from and comprising part of said ridge.

5. A flat for supporting eggs or other fragile articles comprising a sheet of relatively yieldable pulp material having upstanding spaced walls defining rows, hinge means comprising ridges uniting the uppermost portions of said walls, said walls having depressed portion defining pockets for individual articles in said rows, said walls being movable toward one another for reducing the size of the pockets, and means for supporting said walls in upstanding spaced relation, said means protruding from and being integral with said hinge means and walls.

6. A flat for supporting eggs or other fragile articles comprising a sheet of relatively yieldable pulp material having upstanding spaced walls defining rows, hinge means comprising ridges uniting the uppermost portions of said walls, said walls having depressed portions defining pockets for individual articles in said rows, said walls being movable toward one another for reducing the size of the pockets, and a stiffening member extending over each hinge from contiguous walls, said member being integral with said walls and ridge.

7. A flat for supporting eggs or other fragile articles comprising a sheet of relatively yieldable pulp material having upstanding spaced walls defining rows, ridges uniting the uppermost portions of said walls, said walls having depressed portions defining pockets for individual articles in said rows, said walls being movable toward one another for reducing the size of the pockets, and an integral protuberance extending from one wall to an adjoining wall across the intervening ridge.

8. A flat for supporting eggs or other fragile articles comprising a sheet of relatively yieldable pulp material having upstanding spaced walls defining rows, ridges uniting the uppermost portions of said walls, said walls having depressed portions defining pockets for individual articles in said rows, said walls being movable toward one another for reducing the size of the pockets, and spaced protuberances extending from one wall to an adjoining wall across the intervening ridge.

9. A flat for supporting eggs or other fragile articles comprising a sheet of relatively yieldable pulp material having upstanding spaced walls defining rows, ridges uniting the uppermost portions of said walls, a stiffening welt uniting the

lowermost portions of said walls, said walls having depressed portions defining pockets for individual articles in said rows, said walls being movable toward one another for reducing the space therebetween, and stiffening means along said ridges for maintaining the walls in spaced relation.

10. A flat for supporting eggs or other fragile articles comprising a sheet of relatively yieldable pulp material having upstanding spaced walls defining rows, ridges uniting the uppermost portions of said walls, a stiffening welt uniting the lowermost portions of said walls, said walls having depressed portions defining pockets for individual articles in said rows, said walls being movable toward one another for reducing the space therebetween, stiffening means along said ridges for maintaining the walls in spaced relation and an integral overlapping closure at the ends of the rows.

11. A packing unit for eggs and other fragile globular articles comprising a member formed of molded pulp having a row having only two walls defining article supporting pockets having bases for supporting the articles in erect position, each pocket being dished transversely of the row, said walls at least equal in extent to the greatest dimension of the article to be packed, a protruding hinge means for causing said walls normally extending upwardly and spread outwardly for defining an oversize pocket whereby the articles are supported in exposed condition, the walls of the pockets interposing the pockets longitudinally of the row being spaced for affording relative movement, said walls being contractible from normal spread out position toward one another for bringing the pocket walls into embracing relation with the supported article.

12. A combined flat and filler for packing eggs in crates comprising a sheet of relatively yieldable material having a series of parallel walls, said walls having oppositely disposed depressions and being disposed slantwise for providing a series of pockets therebetween, protuberances on said walls for holding said walls in slantwise position, said walls being normally spaced from one another, so that they may be crowded together for bringing the depressed portions into intimate gripping relation with the eggs.

13. In a combined flat and filler for eggs having upstanding walls connected by relatively yieldable ridges, the combination of an egg pocket formed between two adjoining walls and adapted to be moved to closed egg-holding position and to open egg-supporting position, and means integral with the walls and with the intervening ridge for restricting the movement of the pocket.

14. In combination with an egg crate, a combined flat and filler member therein, said member having at least four rows of egg pockets side by side, and of such an extent as to be greater in width than the width of the crate the walls of the crate serving to hold said rows in upstanding position, and protuberances integral with said rows for spreading said rows open a limited distance upon removal of the member from the crate.

15. A flat for supporting eggs or other fragile articles comprising a sheet of relatively yieldable pulp material having upstanding spaced walls defining rows, ridges uniting the uppermost portions of said walls, said walls being spaced sufficiently for accommodating individual articles in said rows, said walls being movable toward one another for reducing the space therebetween, and an integral protuberance extending from one wall to an adjoining wall across the intervening ridge.

16. A flat for supporting eggs or other fragile articles comprising a sheet of relatively yieldable pulp material having upstanding spaced walls defining rows, hinges uniting the uppermost portions of said rows and the lowermost portions thereof, said walls being spaced for receiving individual articles in said rows, said walls being movable toward one another for reducing the size of the pockets, and integral protuberances extending from one wall to an adjoining wall across the intervening hinges.

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