M. KOPPELMAN.

EGG PACKING.

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EGG-PACKING.


1,378,469.


To all whom it may concern:

Be it known that I, MORRIS KOPPELMAN, a citizen of the United States, and a resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Egg-Packing, of which the following is a specification.

The improvements relate to means for packing eggs for transportation and storage, and have for their object, among others, the provision of simple and effective means which will prevent breaking and which may be used without unnecessary waste of time, labor, or materials.

It is common practice to provide shipping packages for carrier of this character with cells or compartments for receiving and holding eggs, arranged in tiers, one tier placed upon another within a suitable box or case, and long practice and experience have demonstrated that this is the best general plan of construction known. The present improvements employ this general plan, but overcome objections thereto, the principal objection being that the eggs are permitted to move around in their cells and to come in contact with the walls thereof in such a manner that the shell is frequently cracked or broken. This is due to the fact that the ordinary cell is made large enough to take an egg of the largest size, and to simply inclose it without holding it in position therein, with the result that eggs in one cell are in contact with, or in the course of transportation brought substantially into contact with, eggs in the adjoining cells with only a thin sheet of paper between them, and eggs of smaller size are sometimes thrown about with considerable force in the cells. The present improvements are designed to overcome these objections without adding materially to the cost of the packing or the labor involved in packing the eggs therein.

The improvements are illustrated in the accompanying drawings, in which Figure 1 is a perspective of one corner of an egg case broken away, with packing therein, embodying the improvements; Fig. 2 is a vertical medial section of a series of cells with eggs therein; Fig. 3 is a plan of a plurality of the cells broken away, and Fig. 4 is a plan of one of the perforated sheets interposed between the tiers of cells.

The cells 1 are made of any suitable material, such as straw-board, and may be of any desired construction, preferably they are hingedly connected so that each tier of cells may be collapsed so as to occupy a minimum of space when not in use. The interposed perforated sheets 2 are preferably of the same material. Each tier of cells, when opened and in position for use, is co-extensive horizontally with the interposed sheets, so that when they are superposed with their vertical edges coincident, as when they are placed in a box or case of the same size, the openings 3 of the sheets will be centered over the cells.

The openings 3 of the sheets 2 are a little smaller in diameter than the largest transverse diameter of an egg of standard size, so that when an egg is placed in one of them it will project therethrough to a material degree and its weight will therefore be sustained by the edges of the opening, and pressure on the shell due to the gravity of the egg will be exerted around the entire circumference at a point where the circumstance is relatively great. This causes a distribution of the pressure and avoids the danger of cracking which frequently occurs when the egg is brought in contact with a resisting surface tangential to the curve of its outer surface. The supporting and holding surface in the present case is parallel with the surface of the egg and extends around its circumference.

In building up a crate or other package of eggs by the employment of the present packing a shallow tier of cells 4 is first placed at the bottom. This tier is substantially the same as the others except that it is much shallower. On this one of the perforated sheets 2 is placed, and the eggs of the first layer are then placed in position in the openings 3 of this sheet. It will be noted that the eggs of this bottom layer project through the openings 3 and well into the shallower cells 4, but that they are suspended well above the bottom of these cells. In this manner the use of packing such as straw or excelsior in the bottom of a case is obviated and a considerable saving of packing material thus effected. The construction also provides a better cushion between the eggs and the bottom of the case. A cushion between the cells and the sides of the case is provided in the extending...
portions 5' of the vertical sheets 5 forming the walls of the cells.

A tier of cells is next placed over the bottom layer of eggs, and a second perforated sheet placed over this tier of cells for the reception of the eggs of the second layer. It will be noted that the cells 1 are much deeper than the cells 4, and that they are in fact of greater depth than width. They are designed to be greater in depth than the greatest longitudinal diameter of the eggs so that a space will be left between the top of each egg and the bottom of the one next above it. Instead of this however the openings in the sheets 2 may be made progressively smaller—the sheets being marked according to the size of their openings—so that the eggs of each succeeding tier will be higher up in their respective cells. It has been found by experience that this may be used for a crate or case of five or more tiers or superposed compartments.

Continuing the packing of the eggs in the manner first described the process is repeated until the desired number of tiers have been placed, when another perforated sheet is placed over the top of the uppermost tier and a shallow member 4' upon that. This shallow member acts as a shock absorber and buffer between the eggs and the top of the case. A shallow compartment may be first placed over the uppermost layer of eggs, so that the upper end of these eggs will be located in the openings of the sheet 2 placed over them. The packing is now complete and the eggs in the case are held in position and against free lateral movement or contact with one another or the walls of the cells.

If by any chance a case containing eggs packed in the manner herein described should be inverted, the eggs will be prevented from coming in contact with one another by the perforated sheets 2, the eggs in each layer moving to a position in which their upper ends are in the openings of the sheet next above, and withdrawing their lower smaller ends from the openings of the sheet next below. In practice the smaller end of the egg will be placed in the opening 3 in each case so that so long as the weight of the egg is supported by the edges of the opening there will be a slight wedging tending to hold the egg in position in the opening by frictional coaction. In this manner the eggs are prevented from moving around laterally in their cells and are kept out of contact with the side walls thereof. In case one of the sheets 2 should be accidentally shifted laterally, by any cause, the eggs in the openings of that sheet may be brought into contact with the walls of their cells on one side, but as the egg in one cell is not in contact with the same wall as the egg in the next cell very little danger of breaking results. The arrangement also serves to position the perforated sheets and to connect one tier of cells with another so that they are not easily moved laterally or caused to collapse.

The improvements herein described may be used in connection with boxes, cases or other containers of various sizes, or may be used without a container, and provided with a suitable wrapping if desired. For instance a parcel post package for one dozen eggs may be provided by using a bottom layer or tier of cells, a top layer or tier, and a middle egg-containing tier, with perforated sheets or flats between the middle tier and the top and bottom tiers. This construction may then be placed in a suitable box or protected by wrapping. The cells may be made of other material than straw board if desired, and the material employed may be treated with a water-proofing or strengthening substance or both. When treated in this manner, certain peculiar and advantageous results are attained, as the water-proofing prevents softening and breaking down of the cells when the packing is subject to moisture from condensation in cold storage, from leakage of the eggs or from external sources, and in the case of cold storage, moisture contaminated by the straw board or other material cannot be absorbed by the eggs, and a “cold storage” flavor thus imparted to the eggs.

The advantages of the improvements will be further understood when it is pointed out that the cells may all be made shallower, so that each egg will project at top and bottom into an intermediate cell and through openings in the flat sheets above and below its cell. In this case there is first a bottom tier of cells, then a perforated sheet, then another tier of cells inclosing the major portions of eggs therein, and then another perforated sheet, and on this a layer of empty cells into which the extremities of eggs in cells above and below project. With this construction each egg is held positively against movement in all directions and separated from the walls of its cell by the openings of the flat sheets which engage it at top and bottom, and each egg is separated from those above and below by blank cells. This modification also has the advantage of being usable in a standard case or receptacle 12½ inches high adapted to contain thirty dozen eggs.

What I claim is:

1. An egg package comprising a plurality of egg receiving cells adapted to be superposed one upon another, said cells having 125 vertical side walls inclosing an egg receiving space, a sheet of material interposed between upper and lower cells having an opening therein of smaller diameter than the greatest lateral diameter of the egg to
be placed therein, but of materially greater diameter than the smallest lateral diameter of the egg, whereby an egg placed in said opening extends therethrough and into two superposed cells, and a sufficient distance to bring the side surfaces of the egg which are at an angle greater than 45 degrees to the plane of the sheet in contact with the edges of the opening.

2. An egg package comprising superposed tiers of horizontally arranged cells, each cell having vertical side walls inclosing an egg space, flat sheets interposed between the tiers of cells having openings therein centrally located above and below cells, the said openings being of a size to permit the passage of a sufficient portion of the end of an egg therethrough to bring the side surfaces of the egg which are disposed at an angle greater than 45 degrees to the plane of the flat sheet in contact with the edges of said opening.

3. An egg package comprising superposed tiers of horizontally arranged cells, each cell having vertical side walls inclosing an egg space, flat sheets interposed between the tiers of cells having openings therein centrally located above and below cells, the said openings being of a size to permit the passage of a sufficient portion of the end of an egg therethrough to bring the side surfaces of the egg which are disposed at an angle greater than 45 degrees to the plane of the flat sheet in contact with the edges of said opening.

4. An egg package comprising superposed tiers of horizontally arranged cells, each cell having vertical side walls inclosing an egg space, flat sheets interposed between the tiers of cells having openings therein centrally located above and below cells, the said openings being of a size to permit the passage of a sufficient portion of the end of an egg therethrough to bring the side surfaces of the egg which are disposed at an angle greater than 45 degrees to the plane of the flat sheet in contact with the edges of said opening, the egg being held against lateral motion by wedging action between it and the edges of the opening caused by the gravity of the egg.

5. An egg package comprising superposed tiers of horizontally arranged cells, each cell having vertical side walls inclosing an egg space, flat sheets interposed between the tiers of cells having openings therein centrally located above and below cells, the said openings being of a size to permit the passage of a sufficient portion of the end of an egg therethrough to bring the side surfaces of the egg which are disposed at an angle greater than 45 degrees to the plane of the flat sheet in contact with the edges of said opening, there being a space between the top of the egg in such position and the next egg receiving opening above it greater vertically than the protrusion of the lower end of the egg through its opening.

6. The method or process of packing eggs which consists in placing the eggs in spaced relation to one another and wedging them in openings having relatively sharp edges engaging the outer surface of the egg intermediate its ends so that the eggs are held in such spaced relation and against movement by frictional co-action between their faces and the said edges, and interposing vertical spacing members between the eggs when placed in said openings, then placing over said eggs and on the vertical members a frame and supporting and spacing other eggs thereon, and repeating the operation until the desired number of eggs have been packed.

7. An egg package, comprising a plurality of intersecting connected strips of sheet material, forming cells for the reception of eggs, said cells being arranged in a layer or tier, a flat piece of sheet material placed over the same, and another placed thereunder, said flat sheet having perforations corresponding with the cells, and adapted to receive the end portion of an egg and permit it to project therethrough a distance sufficient to bring the side surfaces of the egg which are disposed at an angle greater than 45 degrees to the plane of the flat sheet in contact with the edges of said opening, and said perforations being smaller in diameter than the diameter of the cells, and each perforation being centered with respect to its cell.

8. The method or process of packing eggs which consists in placing the eggs in openings having a diameter smaller than the greatest lateral diameter of the eggs and spaced apart to hold the eggs separate from one another, interposing vertical spacing and supporting members between said openings, placing members having other and similar openings upon said vertical spacing and supporting members, placing other eggs in the openings thereof in the same manner as the first, placing vertical spacing and supporting members between the said second named openings, and continuing the process until the desired number of eggs have been packed.

9. An egg packing comprising a plurality of flat members having openings therein of a size to receive an egg and to engage the same intermediate its end and middle portion, said members being arranged in vertically spaced relation with a space between them of a size to receive an egg with its longitudinal diameter substantially perpendicular to the plane of the openings, and
said openings having relatively sharp edges adapted to engage the exterior surface of an egg, vertical spacing and supporting members interposed between said flat members and arranged in horizontally spaced relation a distance apart sufficient to permit the insertion of an egg thereinbetween and leave a space between the sides of said egg and said vertical members, said vertical members extending from one flat member to another and spacing and supporting the same.

Witness my hand this 23rd day of June, 1920, at the City of New York, in the county and State of New York.

MORRIS KOPPLEMAN.