Nov. 3, 1931. G. W. SWIFT, JR 1,830,491

CUSHIONING PAD

Filed March 18, 1929 2 Sheets-Sheet 1

Fig. 1.

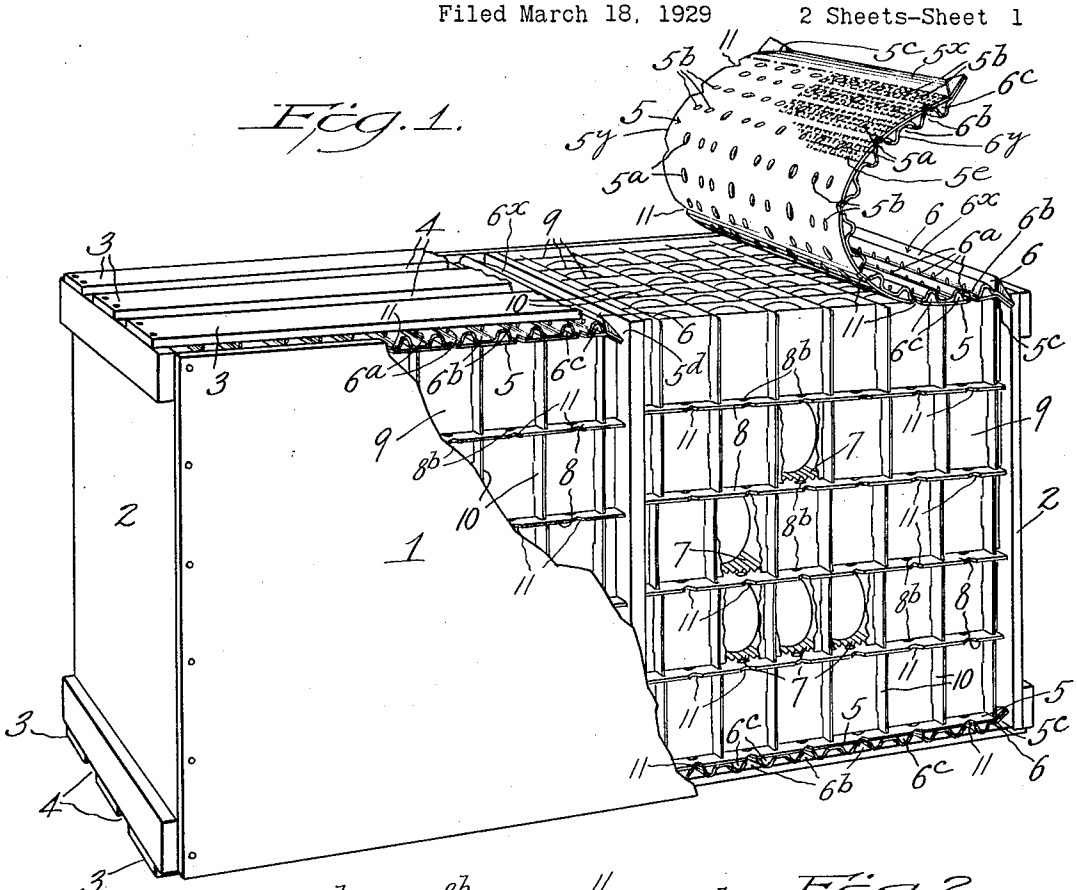
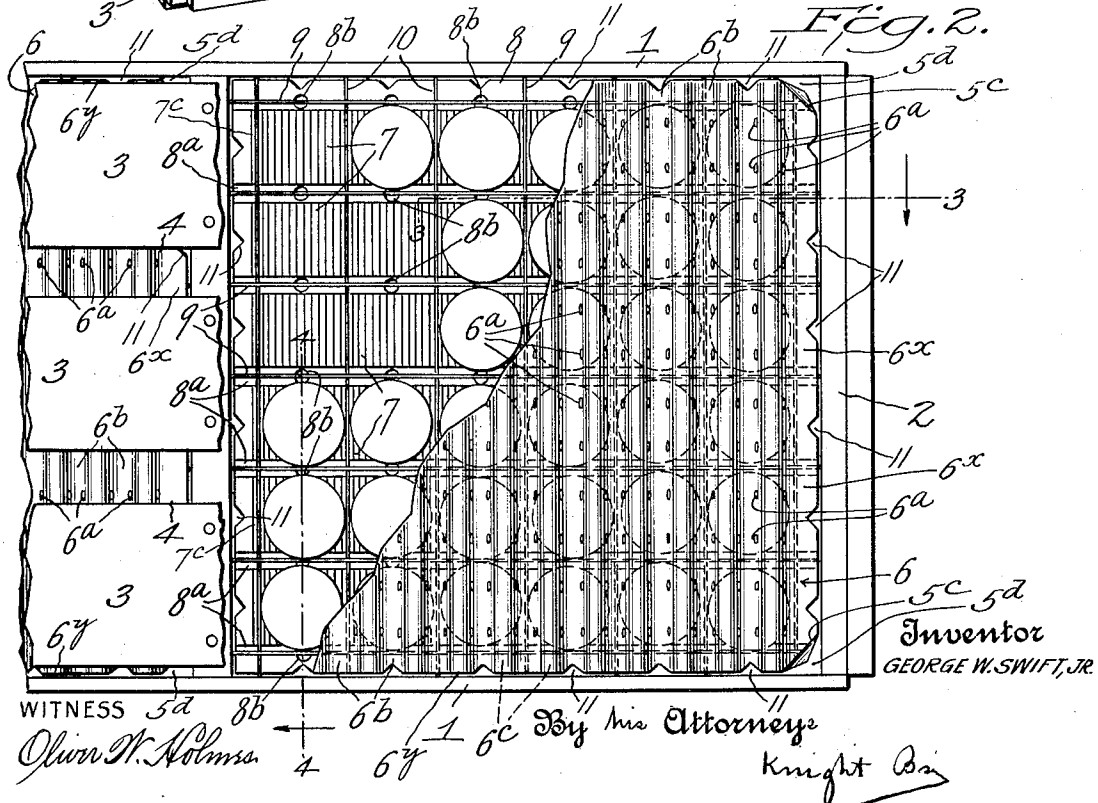


Fig. 2.



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Fig. 3.

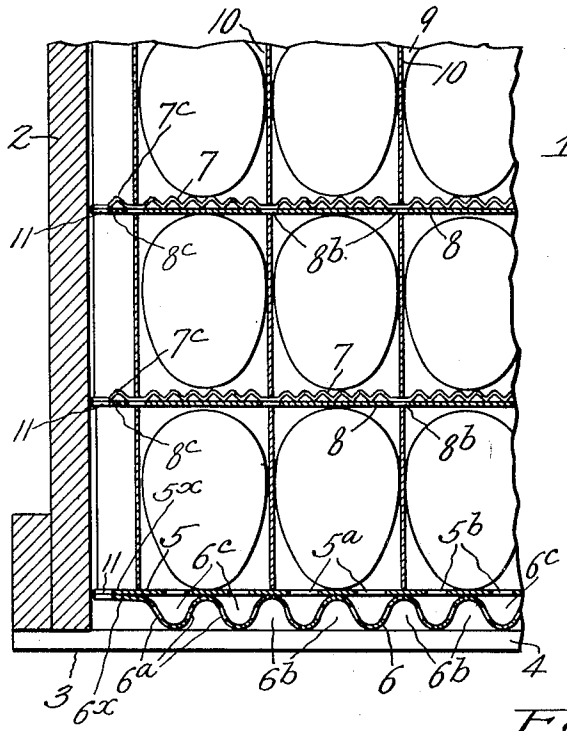



Fig. 4.

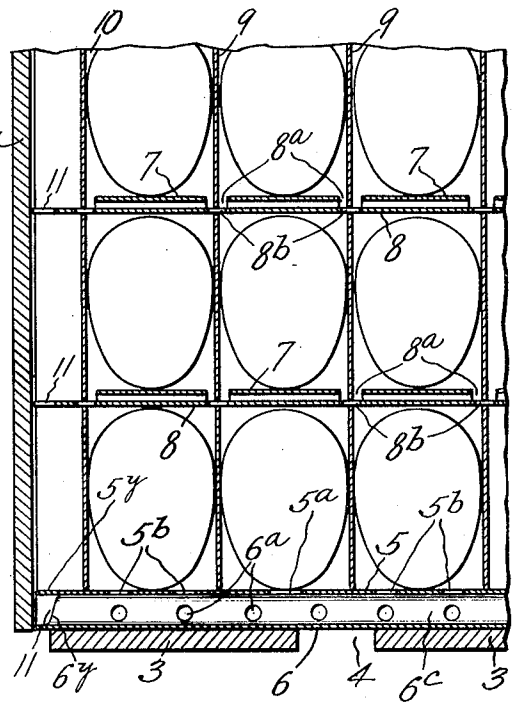
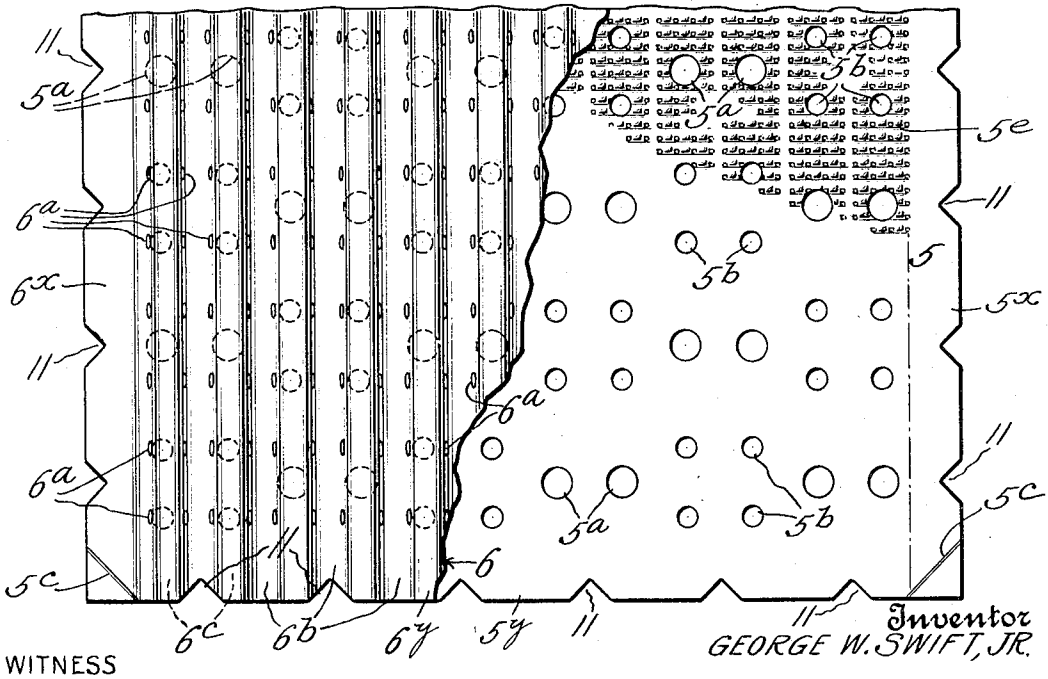



Fig. 5.




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# UNITED STATES PATENT OFFICE

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## CUSHIONING PAD

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This invention relates more especially to cushioning pads for packing cases employed in the transportation and storage of eggs and other fragile articles. These pads as usually constructed consist of or are filled with excelsior made from different kinds of wood. Some, if not most, of this wood is green, the sap or moisture therein being liable to fermentation and hence likely to give off odors. Much of this wood is sour. Thus when excelsior pads are used in packing cases for storing and shipping eggs, the condition of the eggs is likely to be affected by their absorption of odors and tendency to deteriorate. Moreover, when excelsior is used in packing cases for eggs, it soon becomes packed hard and loses its resiliency.

The primary object of my invention is to provide an improved construction for cushioning pads of this character which, while overcoming the drawbacks alluded to above, will promote ventilation, expedite refrigeration, and secure better circulation of the fresh damp air now employed in storage warehouses and refrigerator cars.

One of the purposes contemplated by my invention is to facilitate the manipulation of a resilient filler flat or cushioning pad while at the same time contributing to an improved arrangement of ventilating openings for facilitating the circulation of air through the several compartments of an egg case or the like.

One of the objects of my invention is to provide an improved cushioning pad construction whereby the fillers in an egg case may be more definitely located and more securely fastened in position when the cushioning pads are applied thereto under pressure. For this purpose, my invention contemplates the roughening of the inwardly-presented surfaces of the flat web portions of the cushioning flats hereinafter described, said cushioning flats being thereby adapted under the application of pressure to positively interlock with the egg-case filler and thereby to prevent skidding of the latter.

Another object of my invention is to provide an improved construction for cushioning flats whereby said cushioning flats may be simply, economically and durably constructed of light inexpensive materials and suitably reenforced to provide the desired strength and cushioning effects while at the same time avoiding the deleterious effects heretofore produced in packaged eggs by reason of their close association with the materials commonly employed in the manufacture of cushioning pads. My invention furthermore contemplates a simple inexpensive construction which by being made waterproof can be safeguarded against any impairment of its structural competency in the presence of moisture.

Specific details of construction which contribute to the sought-for objects of the present invention will be set forth in the specification and referred to in the appended claims.

A preferred embodiment of my invention is shown on the drawings, in which

Figure 1 is a perspective view of an egg case provided with my improved packing construction, portions of the top and side walls of the outer casing being broken away and a portion of the upper cushioning flat being rolled back to facilitate the display of certain constructional details.

Figure 2 is a top plan view of one end of the egg case with the top slats broken away at that end and with a portion of the top cushioning flat broken away to display portions of the structure beneath.

Figure 3 is an enlarged fragmentary vertical section corresponding to the line 3—3 of Figure 2.

Figure 4 is an enlarged transverse fragmentary section corresponding to the line 4—4 of Figure 2.

Figure 5 is an enlarged bottom plan view of a portion of one of the bottom cushioning flats or pads, part of the corrugated web be-

ing broken away to show the flat perforated web underneath.

While my invention is adaptable to the packaging and shipment of various fragile articles, the drawings show an embodiment of my invention which is peculiarly serviceable in the shipment and storage of eggs.

In the shipment and storage of eggs, it is essential that the eggs be cooled rapidly; that they be kept cool; and that they be surrounded by fresh moist air. For this purpose the containers for storing or shipping eggs should be ventilated at all times by a free circulation of pure fresh air in such a way as to avoid dead air pockets which may cause the absorption of undesirable odors. At the same time the circulating air should have a sufficient amount of humidity to prevent undue evaporation and consequent shrinkage of the fluids in the eggs. Furthermore, when the eggs are removed from storage or taken out of the cool moist atmosphere by which they are refrigerated, it saves time and money for the jobber to subject the eggs to a thorough sweating treatment with as little delay as possible so as to avoid the production and spread of mold. With a view to realizing these desirable conditions in a simple and effective manner while at the same time avoiding the objectionable conditions which accompany the use of excelsior pads alluded to above, the present invention contemplates an improved construction for cushioning pads as well as an improved arrangement of said cushioning pads in an egg case or similar packing container whereby the presence of bad odors and all dead air pockets may be avoided and whereby a free circulation of pure, moist and refrigerated air may be provided under the conditions met with in modern refrigerator cars and cold storage plants.

According to the embodiment of my invention shown on the drawings, the egg case is constructed with closed side and end walls 1 and 2 while the top and bottom walls of the egg case are made up of laterally spaced slats or strips 3 which provide longitudinal slots 4 extending from end to end of the egg case. Within the egg case is a compartment-forming structure comprising cushioning flats at top and bottom, filler flats intermediately arranged with respect thereto, and reticulated partition walls or fillers extending between adjacent filler flats and between the uppermost and lowermost filler flats and the top and bottom cushioning flats respectively.

As shown best in Figure 3, the bottom cushioning flat comprises a flat web 5 and a corrugated web 6, said corrugated web being provided with transverse series of ventilating openings 6*a*, midway between the roots and crowns of the corrugations while the flat web portion 5 of the cushioning flat is provided with transverse series of ventilating openings 5*a* and 5*b* opening into transverse channels 6*c* formed between the flat web 5 and corrugated web 6. The openings 5*a* and 5*b* may be either relatively large or relatively small or both large and small as shown. By an inspection of Figures 3 and 4 of the drawings, it will be seen that the bottom cushioning flat is arranged with the corrugations in the corrugated web 6 extending transversely to the longitudinal slots 4 and with the crowns of the corrugations presented downwardly and resting against the slats or strips 3. By means of this arrangement, the downwardly-opening spaces 6*b* formed between the corrugations of corrugated strip 6, are adapted to form transverse ventilating galleries in open communication with the slots 4. Said galleries 6*b* furthermore communicate through the ventilating openings 6*a* to the transverse channels 6*c* which latter communicate through ventilating openings 5*a* and 5*b* with the egg-containing compartments arranged above the bottom cushioning flat. Successive tiers of these compartments are formed between the bottom cushioning flats just described and the top cushioning flats of like construction but inverted with respect to the bottom cushioning flats. These top and bottom cushioning flats are preferably provided with weakened folding lines 5*c* extending diagonally across the corners thereof, as shown in Figures 1, 2, 3 and 5 of the drawings. This construction permits the corners of the cushioning flats to be pushed downwardly or upwardly or, if desired, said corners may be broken off. In either event, provision is made for the insertion of a finger which facilitates the removal of the cushioning flat. Furthermore, additional ventilating openings past the cushioning pads, are provided at the several corners thereof. Interposed filler flats are employed in connection with reticulated partitions or fillers to form successive tiers of egg-holding compartments. Each of the filler flats comprises a plurality of laterally-spaced corrugated strips 7 glued to a flat web 8, the interposed flat surfaces 8*a* forming alleyways for seating the bottom edges of the longitudinal partitions 9. Transverse partitions 10 have their bottom edges seated in the corrugated strips 7 which interlock therewith. Seated upon the upper edges of the fillers or reticulated partitions 9 and 10 are the flat webs 8 of the next higher filler flats, this construction being repeated until the top cushioning flat is reached. By an inspection of Figures 3 and 4, it will be seen that each of the filler flats as well as both cushioning pads are extended beyond the outside walls of the fillers and abut along their edges against the side and end walls of the egg case. For each of said filler flats, the edge-portions 8*c* of the flat webs 8 are reenforced longitudinally by end-portion 7*c*

of the laterally spaced corrugated ribbons 7. As shown in Figure 3, the end reenforcing extensions of each cushioning pad comprise superimposed flat portions 5*x* and 6*x* of the flat and corrugated webs 5 and 6 while the lateral edge reenforcing extensions thereof comprise corresponding flat and corrugated portions 5*y* and 6*y*. In order to provide free ventilation through the filler flat and cushion pad around the perimetral borders thereof without materially lessening the reenforcement of the interior structure of the egg case, the lateral edges of the filler flats and cushioning pads as well as the extensions thereof at opposite ends, may be provided with ventilating notches 11. If desired, the flat webs 8 of the filler flats may be provided with additional ventilating openings 8*b* arranged in the alleyways 8*a*. The ventilating system thus provided permits an evenly distributed flow of refrigerating and ventilating air through the air spaces extending around and within the side and end walls of the egg case as well as through the egg cells arranged in tiers between the top and bottom covers of the egg case.

In order to make the fillers as well as the filler flats and cushioning flats more durable under the conditions to which they are exposed, the paper out of which these parts are constructed or the parts themselves are subjected to a water-proofing treatment which renders the structure resistant to the softening effects of moisture and prevents a collapse or weakening of the material which would otherwise follow its exposure to moisture.

In explanation of the advantages to be derived from the use of my improved packing case construction, it may be stated that the results derived from numerous tests indicate that in packing eggs, e. g. there must be a tight pack in which the fillers are securely held against skidding. For this purpose, I provide the roughened areas 5*c* on the inwardly-presented sides of the top and bottom cushioning flats, said roughened areas being adapted to interlock effectively with the fillers when the cushioning flats were applied under pressure. With the fillers positively interlocked at top and bottom with filler flats and cushioning pads provided with the reenforcing extensions 7*c*, 8*c*, 5*x*, 6*x*, 5*y*, 6*y*, a tight pack is insured and a relative skidding of the parts is prevented. At the same time, the filler structure as a whole is positively supported from every wall of the egg case while the separately packed eggs are securely supported against skidding when the egg case is subjected to jolts.

I claim:—

1. In an egg case provided with laterally-spaced top and bottom slats, cushioning flats comprising flat and corrugated webs attached together, the corrugations in said corrugated web being presented toward said top and bottom slats and arranged transversely with respect thereto, the flat and corrugated webs of each cushioning flat being provided with ventilating openings into the ventilating galleries formed between them, filler flats intermediately spaced between said cushioning flats, said filler flats being provided with laterally spaced corrugated strips and with ventilating openings arranged in the open spaces between said corrugated strips, and compartment-forming partitions arranged between the spaced filler flats and between said filler flats and cushioning flats.

2. In an egg case, the combination of an outer casing having one of its walls comprising laterally-spaced slats forming longitudinal slots extending from end to end of said casing, a compartment-forming structure arranged within said outer casing and comprising intermediately disposed filler flats having laterally-spaced corrugated ribbons secured thereto and provided with ventilating openings in the spaces between adjacent corrugated ribbons, partition walls extending between adjacently-disposed filler flats and across said ventilating openings in the filler flats, other partition walls presented edgewise upwardly and downwardly from the uppermost and lowermost filler flats respectively and across the ventilating openings therein, and cushion-flats interposed between the laterally-spaced slats at the top and bottom of said outer casing and the upwardly and downwardly-presented partition walls last mentioned, said cushion-flats comprising flat webs in abutment with the edges of said partition walls and corrugated webs arranged transversely across said laterally-spaced slats, said flat and corrugated webs being provided with ventilating openings.

3. In an egg case, the combination of an outer casing with substantially rigid walls, a compartment-forming structure arranged within said outer casing and comprising intermediately disposed filler flats comprising flat webs having laterally-spaced corrugated ribbons attached to their upper surfaces, longitudinal and transverse partition walls extending between adjacent filler flats, said transverse partition walls being seated along their bottom edges between adjacent lines of corrugations in said corrugated ribbons and said longitudinal partition walls being seated along their lower edges in the spaces between said corrugated ribbons, other longitudinal and transverse partition walls presented upwardly from the uppermost filler flat and downwardly from the lowermost filler flat, cushion flats interposed between the top edges of the upwardly-presented last-mentioned partition walls and the top wall of said outer casing and between the bottom edges of downwardly-presented last-mentioned partition walls and the bottom wall of said outer cas-

ing, said cushion flats comprising flat webs provided with roughened areas for interlocking with the adjacent edges of the partition walls and corrugated webs interposed between said flat webs and the top and bottom walls of said outer casing, said filler and cushion flats being extended at opposite ends and sides to abut against the side and end walls of the outer casing.

4. In an egg case, the combination of an outer casing having top and bottom walls comprising laterally-spaced slats with intervening longitudinal slots, cushion flats comprising corrugated webs with relatively large-sized corrugations arranged transversely across said longitudinal slots in the top and bottom walls of said outer casing and flat webs, interposed filler-flats spaced from each other and from said cushion flats, said filler-flats comprising flat webs and laterally-spaced corrugated ribbons with relatively small-size corrugations, partition walls interposed between the laterally-spaced corrugated ribbons of each filler flat and the flat web of an adjacent filler or cushion flat, the outer partition walls on both sides and both ends being spaced from the side and end walls of the outer casing, said filler and cushion flats being provided with extensions across the spaces between said outer partition walls and the side and end walls of the outer casing, said extensions to the filler and cushion flats being provided with communicating ventilating openings in communication with he longitudinal slots in the top and bottom walls of said outer casing.

5. In an egg case, the combination of an outer casing having top and bottom walls comprising laterally-spaced slats with intervening longitudinal slots, cushion flats comprising outer webs provided with relatively large-sized corrugations presented outwardly and transversely across said longitudinal slots in the top and bottom walls of the outer casing and inner flat webs, said cushion flats being provided with reenforcing extensions abutting against the end walls of said outer casing and comprising integral flat portions of said corrugated webs and attached integral end portions of the flat web, interposed filler-flats spaced from each other and from said cushion flats, said filler-flats comprising flat webs and laterally-spaced ribbons provided with relatively small-sized corrugations parted into groups by transverse flat-spaces, tiers of longitudinal partition walls seated along one edge in the corridors between adjacent corrugated ribbons and having their opposite edges in abutment with the flat webs of adjacent filler- or cushion-flats, tiers of transverse partition walls seated along one edge in said flat spaces of the corrugated ribbons and having their opposite edges in abutment with the flat webs of adjacent filler- or cushion-flats, said filler-flats being provided with reenforcing extensions in abutment with the end walls of said outer casing and comprising integral end portions of the flat webs and attached corrugated ribbons, ventilating openings being provided in the flat and corrugated webs and reenforcing extensions of the cushion-flats, and in the flat webs of the filler-flats between the corrugated ribbons attached thereto.

6. A cushion pad for egg cases, said cushion pad being adapted to be interposed between the outwardly-presented edges of the top or bottom tier of compartment-forming partitions of an egg case and the inner wall thereof, said cushion pad comprising a flat web adapted to be pressed into engagement with the outwardly-presented edges of said partitions and a corrugated web adapted to form a cushion between said flat web and the inner wall of said egg case the alternate inner bends of said corrugated web being in engagement with said flat web along parallel lines corresponding respectively to the parallelly-arranged partitions in one direction and the inner bends thereof intermediate to said alternate bends being in engagement with said flat web along other lines respectively midway between successive pairs of the first-mentioned parallel lines.

7. In an egg case, the combination with an outer casing, of filler flats spaced from each other and from the top and bottom walls of said outer casing, longitudinal and transverse vertical partition walls interposed between adjacent filler flats and between the uppermost and bottommost filler flats and the top and bottom walls respectively of said outer casing, cushion flats interposed between the uppermost and bottommost tiers of said partition walls and the top and bottom walls of said housing, said filler flats, partition walls and cushion flats being provided with extensions abutting against the side and end walls of said outer casing, each of said cushion flats comprising a flat web interlocking with the edges of the uppermost and bottommost tiers of partition walls and a corrugated web having its inner bends bearing on a flat web and its outer bends bearing against the adjacent top or bottom wall of said outer casing.

8. In an egg case, the combination of an outer casing, filler flats spaced from each other and from the top and bottom walls of said outer casing, partition walls extending between said filler flats and upwardly and downwardly from the uppermost and lowermost filler flats respectively, top and bottom cushion flats comprising flat webs in abutment with the upper edges of said upwardly-presented partition walls and the lower edges of said downwardly-presented partition walls and corrugated webs arranged between said flat webs and the top and bottom walls of said outer casing, every other

inner bend of each of said corrugated webs being arranged in alinement with and opposite to the edge of one of said upwardly-presented or downwardly-presented partition walls and the inner bends intermediate to the first-mentioned inner bends being centrally disposed with respect to the compartments formed between said partition walls.

9. In an egg case the combination with an outer casing, of filler flats spaced from each other and from the top and bottom walls of said outer casing, longitudinal and transverse vertical partition walls interposed between adjacent filler flats and between the uppermost and bottommost filler flats and the top and bottom walls respectively of said outer casing, said partition walls and filler flats being provided with extensions abutting against the opposite side and end walls of said outer casing, flat webs extending across the upper edges of the uppermost tier of said partition walls and across the lower edges of the bottommost tier of said partition walls, said flat webs being extended to abut against the opposite side and end walls of said outer casing, and corrugated webs interposed between said flat webs and the adjacent top and bottom walls of said outer casing, said corrugated webs being provided with corrugations suitably proportioned and arranged to have every other inner bend thereof press said flat webs against the edges of the partition walls across which they extend.

10. In an egg case, the combination with an outer casing, of successive tiers of vertical longitudinal and vertical transverse partition walls, filler flats interposed between successive tiers of said partition walls, the upwardly-presented edges of the uppermost tier of partition walls and the downwardly-presented edges of the bottommost tier of said partition walls being spaced from the top and bottom walls respectively of said housing, flat webs provided with roughened areas interlocking with said edges of the uppermost and bottommost tiers of partition walls, said flat webs being provided with extensions abutting against the opposite side and end walls of said outer casing, and a corrugated web arranged between each flat web and the adjacent top or bottom wall of said outer casing for forming a cushion for pressing said flat web against the edges of said partition walls.

11. In an egg case, the combination with an outer casing having ventilating openings in its top and bottom walls, of longitudinal and transverse vertical partitions arranged in tiers between the top and bottom walls of said outer casing, filler flats interposed between successive tiers of said partition walls, and cushion flats interposed between the uppermost and bottommost tiers of partition walls and the top and bottom walls respectively of said outer casing, said filler flats, partitions and cushion flats being provided with extensions projecting beyond the outermost partitions and against the opposite side and end walls of the outer casing, said cushion flats being provided with ventilating channels extending longitudinally and transversely therethrough and said filler flat and cushion flat extensions being provided with ventilating openings in open communication with the longitudinally and transversely extending ventilating channels in said cushion flats, all of said ventilating channels in the cushion flats being in open communication with the ventilating openings in the top and bottom walls of the egg-case.

12. In an egg case, the combination of an outer casing, intermediately disposed filler flats spaced from each other and from the top and bottom walls of said outer casing, partition walls extending between said filler flats and upwardly and downwardly from the uppermost and lowermost filler flats respectively, said filler flats being provided with ventilation apertures opening above and below on opposite sides of said partition walls, and top and bottom cushion flats comprising flat webs in abutment with the upper edges of said upwardly-presented partition walls and the lower edges of said downwardly-presented partition walls and corrugated webs arranged between said flat webs and the top and bottom walls of said outer casing, the flat webs of said cushion flats being provided with ventilation apertures opening into the uppermost and bottommost tiers of compartments and the corrugated webs thereof being provided with ventilation openings along the sides and at the ends of their corrugations for providing free circulation of air in both directions within the top and bottom walls of the egg case.

13. In an egg case, the combination of an outer casing, intermediately disposed filler flats spaced from each other and from the top and bottom walls of said outer casing, partition walls extending between said filler flats and upwardly and downwardly from the uppermost and lowermost filler flats respectively, said filler flats comprising flat web portions interposed between the edges of successive tiers of said partition walls and corrugated web portions arranged in the compartments formed by said partition walls, said flat web portions being provided with ventilating openings in communication with the compartments above and below and on opposite sides of said partitions, and top and bottom cushion flats comprising flat webs in abutment with the upper edges of said upwardly-presented partition walls and the lower edges of said downwardly-presented partition walls and corrugated webs arranged between said flat webs and the top and bottom walls of said outer casing, every other inner bend of each of said corrugated webs being attached to the flat web along and opposite to the edge

of one of said upwardly-presented or downwardly-presented partition walls and the inner bends intermediate thereto being centrally disposed with respect to the compartments formed by said partition walls, said corrugated webs being provided with openings in their side walls and at opposite ends to permit circulation of air in two transverse directions within the top and bottom cushion flats and said flat webs being provided with openings into the interior spaces formed by said corrugated webs.

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