Oct. 10, 1933. M. P. CHAPLIN ET AL 1,929,945

MOLDED PULP ARTICLE

Filed Sept. 29, 1930 2 Sheets-Sheet 1

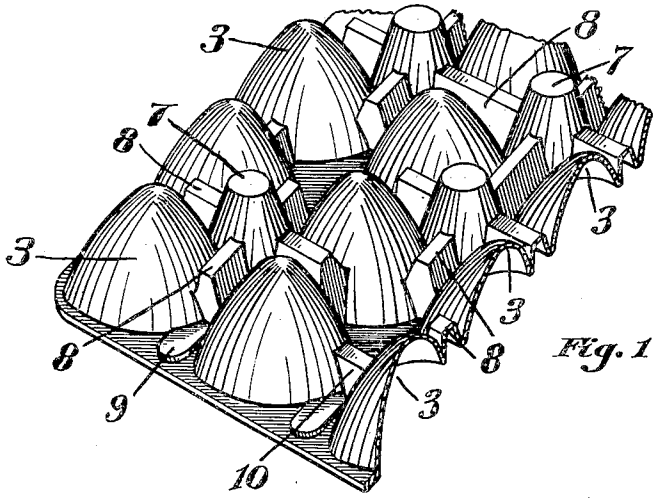


Fig. 1

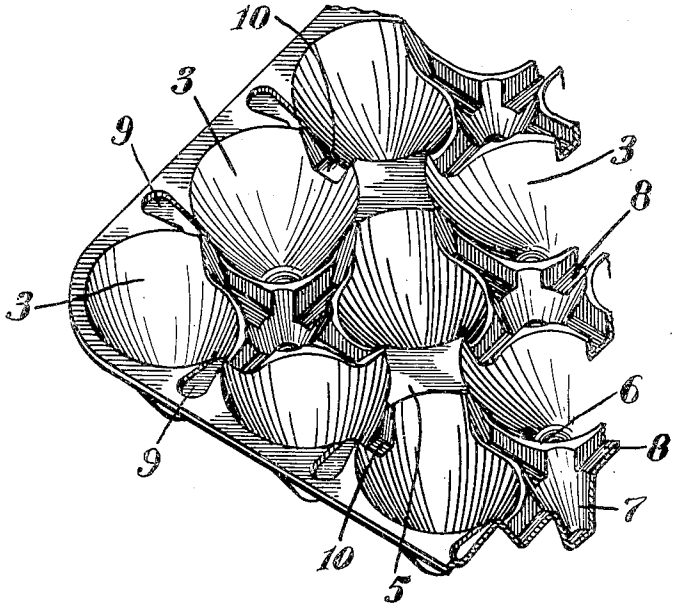


Fig. 2

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MOLDED PULP ARTICLE

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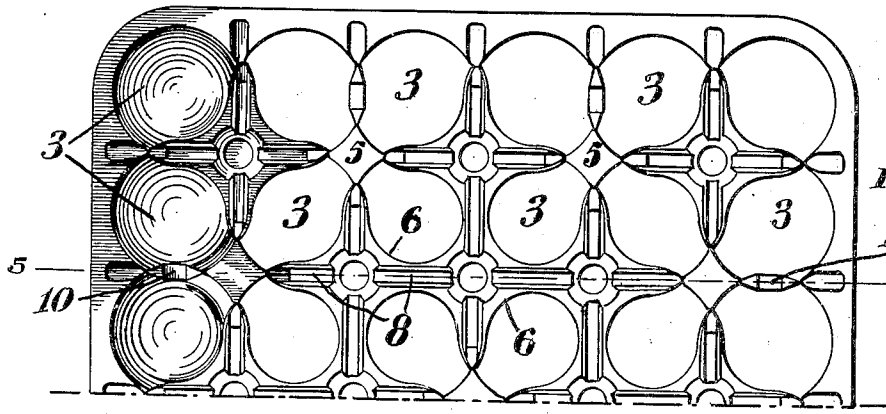


Fig. 3

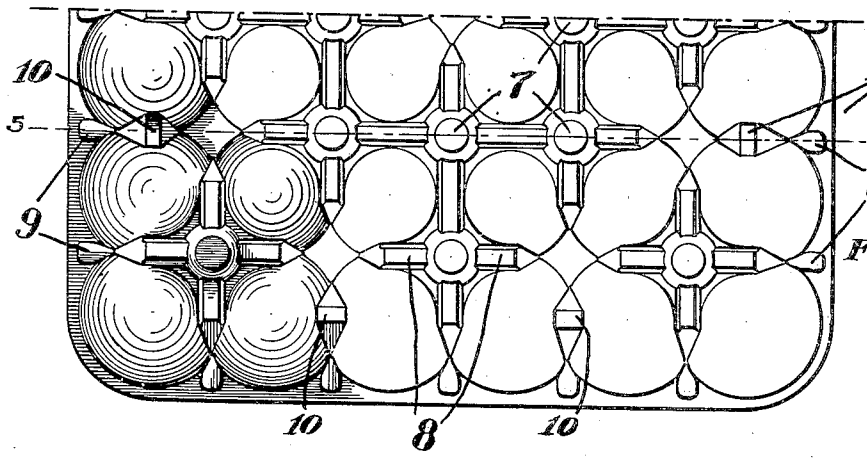


Fig. 4

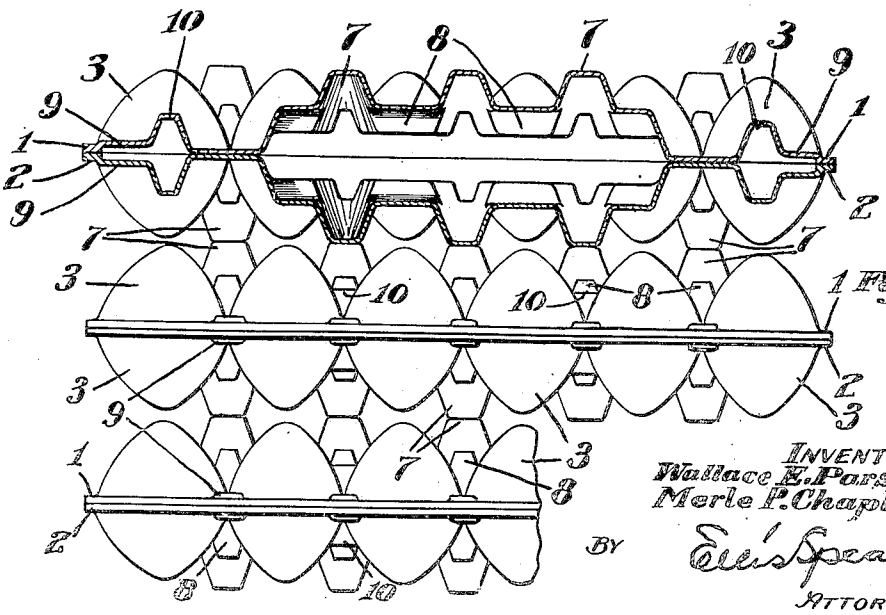


Fig. 5

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MOLDED PULP ARTICLE

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Application September 29, 1930
Serial No. 485,265

9 Claims. (Cl. 217—26.5)

The subject matter herein involved relates to the packing of fragile articles of variable size and of generally ovate shape and while there are many such articles so packed for shipment, the invention will be particularly discussed by way of illustration as applied to egg carriers, but it will be understood that such treatment is not intended as limiting.

The packing of eggs for shipment is illustrative of peculiar problems for which this invention offers a solution. Eggs of varying sizes when packed must be firmly retained against vibration or looseness for both better preserving eggs in storage and reducing breakage during handling. All eggs must be prevented from coming in contact with the case or crate and must be resiliently spaced away from each other and from the enclosing case or crate; also, some eggs have a tendency to leak and others due to especially fragile shells may become broken. When either of these conditions occurs it is necessary that the contents of the leaking or broken eggs do not reach other eggs to cause stains or other injury.

It is customary to pack eggs in tiers, one above the other in cases or crates and the packing material or carriers must not only firmly retain and support each individual egg, but must be able to support successive tiers or layers of eggs one above the other.

It is the purpose of the present invention to provide a carrier for packing eggs or other similar fragile articles of varying sizes which will firmly retain each individual egg or article against vibration or looseness; to provide reinforced edges to better protect eggs from damage by coming in contact with the sides of the case or crate; to provide drainage channels and cavities around and adjacent to all eggs so that any leaking or broken contents will be prevented from reaching other eggs; and structural supports both between carrier halves or sections and between carrier pairs for supporting successive layers or tiers one above the other, and for spacing eggs away from the top and bottom of the case.

The invention contemplates an integral carrier member primarily but not necessarily adapted to be used in pairs so constructed as to be resiliently adaptable to fit eggs of different sizes and provided with supports which carry the weight of articles packed therein and also that of any superimposed carriers and also be individually of such stiffness as to be capable of handling with a filling of articles.

The spacing members and supporting members provide for flexibility or resiliency for each individual pocket cavity so that they can individually accommodate themselves to larger eggs without interfering with adjacent pockets or the articles in these pockets. However, they must each be transversely rigid. The supports for successive tiers or layers must be definitely spaced as to the individual pockets, and exterior supports on each carrier section in combination with the spacing members inside each section provide adequate supports for the vertical loads encountered when several tiers or layers are placed one above the other. While the accommodating flexibility or resiliency of each pocket is highly important, it is also important that the carrier have a general rigidity transversely in both directions. This is accomplished by channel ribs between pockets which afford rigidity through the structure as a whole without interfering with the flexibility of individual pockets. These channels not only contribute to rigidity but also form a part of a drainage system for leaking or broken eggs.

As an illustrative embodiment there is shown in the accompanying drawings a carrier composed of two similar halves adapted to be inverted upon each other. While this is desirable from an egg packing standpoint in that only one type of carrier is necessary for both bottom and top halves, this construction is not to be considered limiting in any way as in the packing of any such articles particularly as with radio tubes or like objects the bottom halves of the carrier might preferably be of sufficient depth to contain the greater portion of the packed article, the upper simply serving as a cover. In the drawings:

Fig. 1 is a fragmentary perspective view of the outside of the egg carrier.

Fig. 2 is a fragmentary view of the inside of the same.

Fig. 3 represents a half-plan view of the inside of the carrier.

Fig. 4 is the same except that it shows the outside, and

Fig. 5 is a stack of egg carriers, the upper one being in section taken on lines 5—5, Figs. 3 and 4.

In the embodiment shown the carrier consists of a sheet-like packing member adapted to be reversed in pairs and assembled upon one another as indicated in Fig. 5. When so assembled a carrier unit is formed within which the eggs or other articles are adapted to be packed.

The upper member of such unit is indicated at 1 and the lower member at 2 and these members together constitute a packing unit adapted to contain a layer or tier of eggs or other articles and themselves adapted to be superposed upon

other similar layers within any usual packing case or crate.

The members 1 and 2 are preferably duplicates as previously suggested and preferably formed of molded pulp or other fibre stock and of substantially uniform thickness throughout. Each member is molded or formed to a contour providing for the packing cavities or pockets, supporting members, spacing members, drainage channels, etc., as hereinafter described, all being produced as an integral unit.

The packing pockets are indicated at 3 in the drawings, and considering the packing unit as it appears in Fig. 5, the cavities 3 of the upper member 1 project above the plane of the member 1 and those of the member 2 are disposed below the general plane of such member. Together the registering cavities 3 define a series of enclosing compartments or pockets within which the eggs or other articles are received in endwise disposition, these pockets corresponding in general size, depth and contour to the size, depth and contour of the smaller size egg to be packed.

The pockets 3 are defined partly by protuberances or spacing members 5 and partly by intervening webs 6, those pockets at the edge of the carrier being supported by the surrounding edge itself. The webs 6 are formed centrally with depressions or protuberances or supporting members 7, the depressions being on the same side as the holes of the pockets 3, and also with channels 8 which connect up the depressions into which they form drainage channels. The supporting members 7 carry the load of the superimposed layers or carrier pairs. The spacing members 5 keep the carrier pairs apart and protect the egg cells. They appear externally of the carrier as ribs, thus reinforcing the structure between the protuberances 7 which as shown in Fig. 5 act as supports when one carrier pair is supported upon another.

Due to the peculiar structure of the spacing members 5 supporting members 7 and the drainage channels 8 each individual egg cavity 3 has a capacity for expansion in order to receive eggs of unusually large size. In expanding to receive large eggs the walls of these several members grip each egg tightly preventing looseness and vibration.

To provide lateral resistance and stiffening we form the outer edge of the carrier intermediate the pockets with scallop-like depressions 9 which stiffen and reinforce the edge. These scallop-like formations preferably begin just inside of the edge and terminate between the pockets. This lateral stiffening is very important both as to lateral pressures in the crate or case in the pack, and as to the marginal rigidity of the member in individual handling.

Between certain of the spacing members 5 and the edge or rim of the carrier, the drainage channels are omitted and the pocket is formed nearly full depth with only a shallow rib 10 parallel to the carrier edge. This structure reinforces the carrier edge by means of a high pocket wall extending through to the spacing member 5. This structure together with the scalloped-like depressions 9 afford a reinforced, stiff carrier rim or edge adequately protecting eggs in pockets adjacent to the edge from damage by contact with the case or crate in which the carriers may be placed.

The shape of the pocket cavity is generally conical, any variation in diameters of the eggs being packed being taken care of by the flexible wall formations of the pockets as explained hereinbefore, so that the eggs are cradled between the protuberances or spacers without the necessity for providing the pockets interiorly with any definite cushioning or supporting elements, as for example, an internal ring or flap series.

It will be noted that the channel members 8 which lie between adjacent pockets are compressible, affording pocket expansion where at the same time they afford rigidity and stiffness between the spacing members 5 and supporting members 7.

The supporting members 7 connected to spacing members 5 by channel members 8 may be considered as individual structural beams. Supporting members 7 carry the weight of the carrier and through the structural beam formed between channels 8, the spacing members 5 and similar structure on the upper half of the carrier, form supports through the successive tiers for adequately carrying the weight of articles packed in these carriers. While these structural beams are reasonably rigid they do however have sufficient flexibility due to the staggered method of support from carrier to carrier so as to cushion the structure as a whole, relieving and distributing excessive shocks during handling. In addition, these channel members together with the supporting members form a drainage system between egg pockets into which any liquid matter from broken eggs will be drained off.

In the form shown it will be noted that the pockets may be considered as grouped about the projecting supports 5 the sides of the supports forming part of the pocket walls and helping to support the eggs on one side as well as protecting the eggs in the pockets from the thrust of other superimposed members. The pockets also may be considered for the most part as grouped around the supports 7. These at their outer end constitute supports, but being hollow also constitute wells or traps for the contents of any broken eggs. The channels 8 formed intermediate of the egg pockets lead to the interior of the supports 7.

While we have referred particularly to the endwise packing of eggs in crates, it will be understood that the principles herein set forth might be embodied in smaller types of carriers, such as grocers' packs or cartons which usually hold one dozen eggs and in certain types could be made to carry the eggs packed on their sides.

The shape of the spacers or protuberances may be varied and the construction of their interior relief varied as to the shape of the crater or thimble and its depth.

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

1. An article carrier, comprising a sheet having a plurality of spaced article receiving depressions and having a plurality of formations spacing said depressions, certain of said formations being extended in one direction for abutment externally of the sheet, and certain in the opposite direction for abutment internally of the sheet when said carrier is assembled with complemental carriers, and said sheet also having hollow ribs disposed in non-connecting relation to said depressions but in connecting relation to certain of said formations and constituting drainage channels to said formations.

2. An article carrier as claimed in claim 1 wherein those formations which are extended for abutment externally of the sheet are hollow and closed at their outer ends, and also constitute col-

lection traps into which said drainage channels discharge.

3. An article carrier, comprising a sheet having a plurality of pocket forming cavities, open top, closed bottom formations spacing certain of said cavities and constituting collection traps, and hollow ribs constituting drainage channels disposed in non-connecting relation to said cavities and discharging into the open tops of said drainage traps.

4. An article carrier comprising a sheet having a plurality of spaced pocket-forming depressions, a set of spacers extending upwardly from the plane of the sheet and spacing certain of said depressions, and a set of spacers extending downwardly from the plane of the sheet and staggered with reference to said first-named set of spacers and spacing those depressions not spaced by said first-named set, said second named set of spacers being hollow and having open tops and closed bottoms and constituting drainage collection traps.

5. An article carrier as claimed in claim 4, wherein the sheet is also provided with hollow ribs constituting drainage channels which discharge into the open tops of said collection traps and are disposed in non-connecting relation to said pocket-forming depressions.

6. An article carrier as claimed in claim 4, wherein the material of the sheet is provided with hollow ribs constituting drainage channels and wherein said ribs extend radially from said first-named sets of spacers in non-intersecting relation to said pocket-forming depressions but in intersecting relation to said collection traps, so as to discharge into said traps.

7. An article carrier as claimed in claim 4, wherein the walls of said pocket-forming depressions are constituted in part by both of said sets of spacers and said spacers offer a resistant deformability to individual pocket expansion upon insertion of an oversized article into a pocket depression.

8. An article carrier comprising a sheet having a plurality of spaced pocket-forming depressions, a set of spacers extending in the same direction as and spacing apart certain of said depressions, said spacers being hollow and having open tops and closed bottoms and constituting drainage collection traps.

9. An article carrier as claimed in claim 8, wherein the sheet is also provided with hollow ribs constituting drainage channels which discharge into the open tops of said collection traps and are disposed in non-connecting relation to said pocket-forming depressions.

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