

Aug. 13, 1968

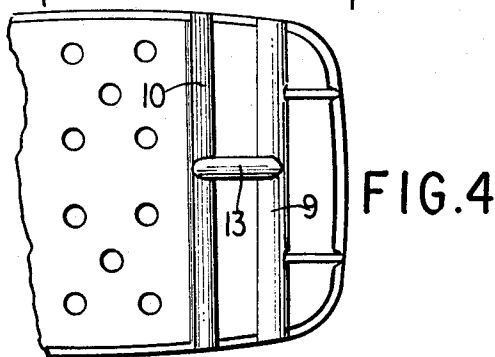
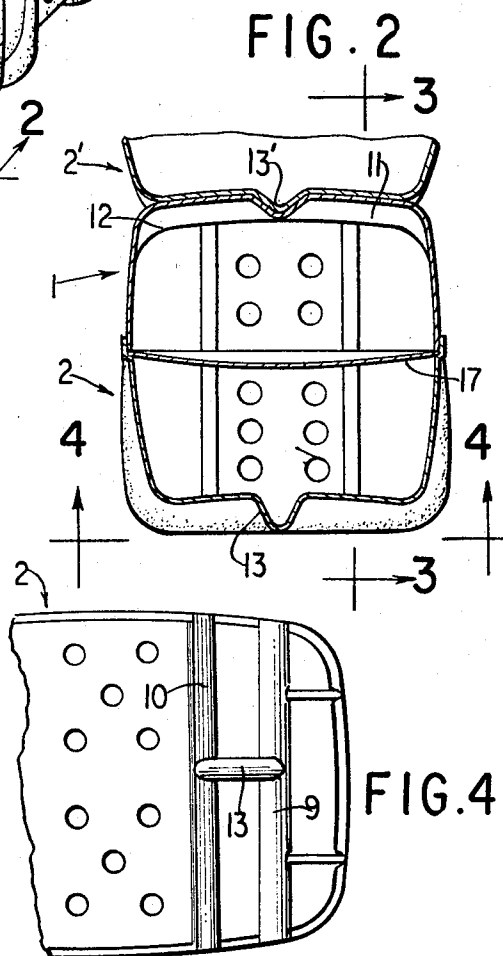
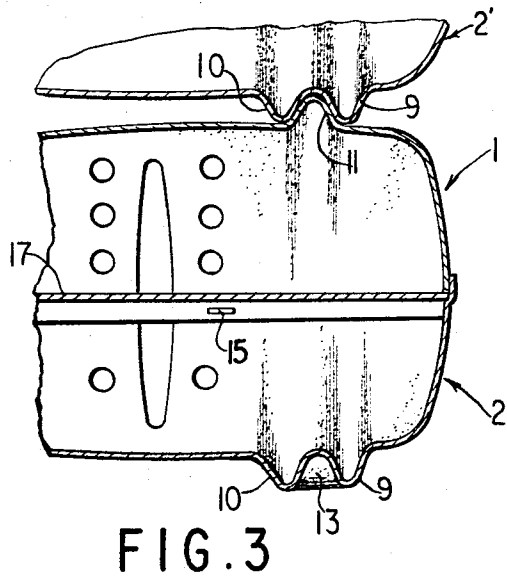
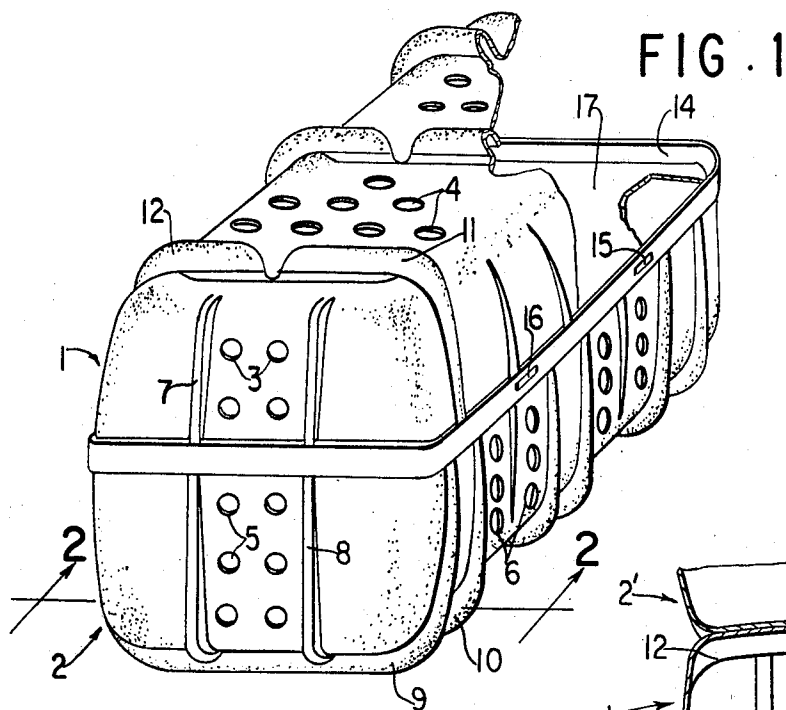
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3,396,867

PACKING CASE

Filed June 28, 1966

2 Sheets-Sheet 1



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FIG. 5

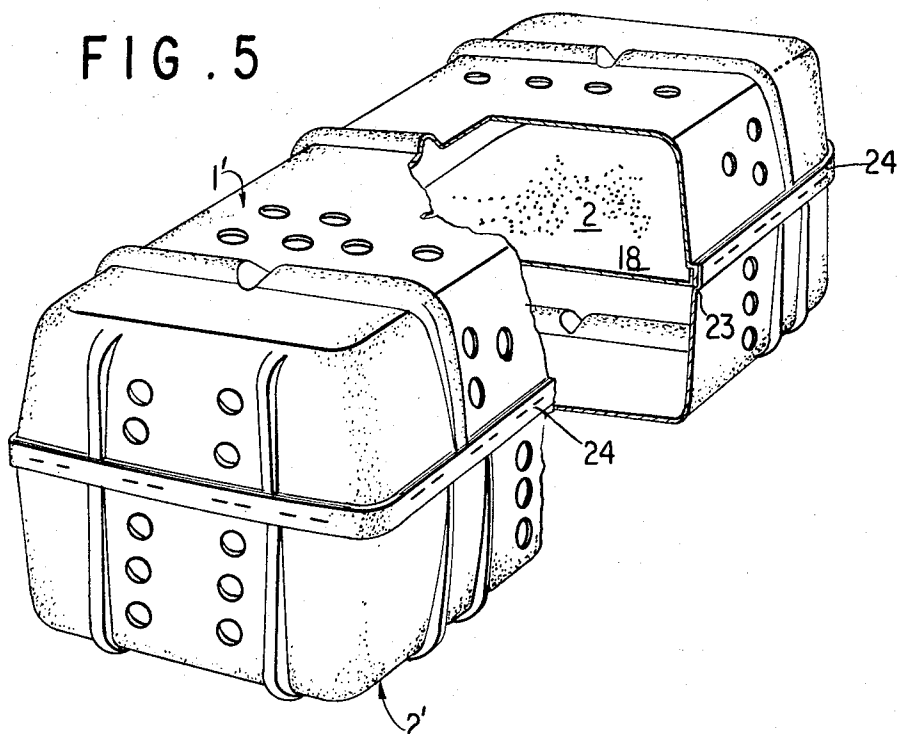
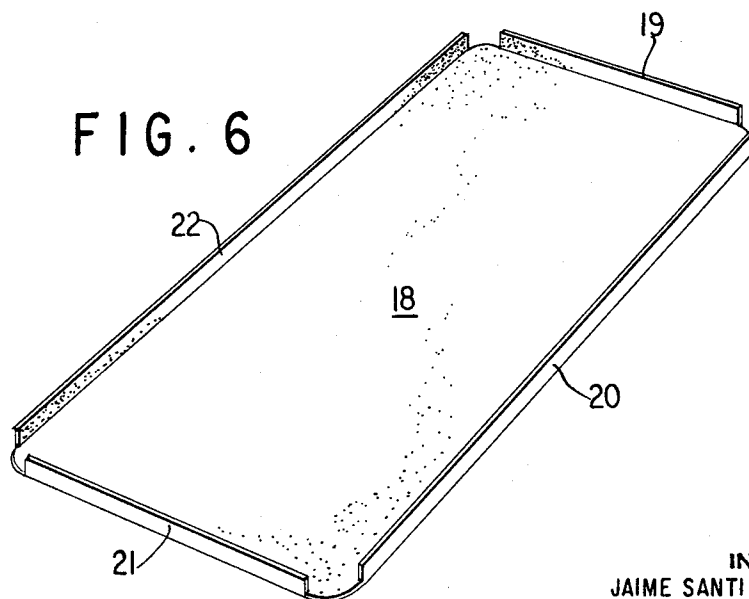


FIG. 6



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PACKING CASE

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ABSTRACT OF THE DISCLOSURE

This invention relates to a stackable ventilated packing case comprising a bottom half of substantially rectangular dimensions having a bottom, outwardly sloping walls of a conic section and curved junctions, said bottom half having a plurality of sets of parallel transverse outwardly projecting ribs extending continuously about said walls and bottom, each of said set of parallel ribs having at least one outwardly projecting longitudinal rib connecting said set of parallel ribs on the bottom of said bottom half; a top half of substantially rectangular dimensions having a top, outwardly sloping walls of a conic section and curved junctions, said top half having a plurality of transverse outwardly projecting ribs extending continuously about said walls and top positioned on said top to cooperate with and engage in said parallel ribs of said bottom of said bottom half, each of said projecting ribs having indentations positioned on the top of said top half and adapted to cooperate with and engage in said connecting longitudinal ribs on the bottom of said bottom half; both of said top and bottom halves having ventilation perforations; and means for securing said top and bottom halves together, whereby a packing case unit is formed which is stackable on itself.

The packing cases known until now, in particular used for the transport of tropical fruit, have the marked disadvantage that no certain guarantee can be given for an adequate ventilation of the contents. Especially this objection pertains to rectangular packing cases, since the partitions in these cases are disposed so closely to one another, when the contents are filled in, that no ample space is provided for adequate air circulation. That means that there is not sufficient air provided for the packaged goods, even if the case walls are perforated.

An object of the present invention is a stackable ventilated packing case comprising a bottom half of substantially rectangular dimensions having outwardly sloping walls and curved junctions, said bottom half having a plurality of sets of parallel transverse outwardly projecting ribs, each of said set of parallel ribs having at least one outwardly projecting rib connecting said set of parallel ribs on the bottom of said bottom half; a top half of substantially rectangular dimensions having outwardly sloping walls and curved junctions, said top half having a plurality of transverse outwardly projecting ribs positioned to cooperate with and engage in said parallel ribs of said bottom half, each of said projecting ribs having indentations positioned at the top of said top half and adapted to cooperate with and engage in said connecting ribs on the bottom of said bottom half; both of said top and bottom halves having ventilation perforations; and means for securing said top and bottom halves together, whereby a packing case unit is formed which is stackable on itself.

This and other objects of the invention will become more apparent as the description thereof proceeds.

According to the present invention, these disadvantages of the prior art will be avoided in that the elements forming the bottom and cover of the packing case

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are of about identical size and have walls of about the same dimensions and are provided with a slightly conically arranged wall.

By means of this conical form of the walls, an always adequate air space exists between the individual partitions, even on stacking of the cases, so that ventilation is possible at all times. The cases can be easily opened as both halves can be fitted into one another in a simple manner. A further advantage is that on the return of the empty cases, the two halves provided with the conical side walls can be fitted into one another in such a way, that the cover surface of the upper half rests on the bottom of the bottom half, which means a considerable saving on space.

It is of further particular advantage to provide the upper as well as the bottom half with outwardly projecting bracing ribs. These ribs have the effect that the walls of the cases, even when stacked up, remain at all times spaced at a specific distance from each other, thus furthering the air circulation mentioned above. At the same time, crushing or damaging the contents will be prevented, and even though the sturdiness of the case will be the same, a thinner wall may be chosen.

Advantageously the ribs are formed in such a way, that they effect a balance between the stacked-up cases. This can be achieved advantageously in that two transverse ribs are disposed on one half enclosing a transverse rib on the other half.

Furthermore, according to the invention, a longitudinal rib may be disposed between the two transverse ribs of the one bottom half, the longitudinally rib being in engagement with a recess disposed in each of the transverse ribs of the other half. This arrangement has the result, that when the cases are stacked up, the pertinent upper and bottom halves interlock, so that a shifting even at heavy impacts is not to be feared, especially when the cases are filled and, consequently, have a certain net weight. The stress on the side walls is, therefore, very slight, and the air spaces existing between the cases remain always the same during storage as will be in transport.

According to the invention, air vents can be arranged on the side and front walls. These air vents are never covered for reasons already mentioned, so that a ventilation of the goods can take place at all times, which is of the greatest significance, in particular concerning the packing of tropical fruit.

A further characteristic of the invention is that a removable partition can be disposed in the interior of the case, which divides the case into two, preferably equally large halves. This arrangement has the very marked advantage, that the case becomes considerably reinforced by this partition on the one hand, and that, on the other hand, a division in the case is obtained, so that the two case-halves can be filled separately and that the top half can be fitted into the bottom half after the partition has been inserted. The same procedure can be followed when the case is being emptied, that is to say, each of the two halves of the case can be used as a sales-tray.

It is of particular advantage, to provide the partition disposed in the interior of the case, at least partly, with a vertically deflected edge, placed between the borders of the case halves and preferably connected with these by means of stapling or the like.

A further characteristic of the invention is that the corners and edges of the case are rounded off corresponding with the shape of the goods to be packed. If, for example, fruit is to be packed, the radius of curvature on the corners of the case will be chosen corresponding with the average radius of the fruit to be packed. In this way, a compact arrangement is effected, and even those fruits mostly placed at the outer edges will last through the transport without being damaged, because the impacts

affecting them will not be absorbed in a point, but in a curve, which conforms to a quadrant.

In a very simple manner the packing case, according to the invention, may be constructed of a fiber composition, in particular of a wood fiber composition. In this case a less thick wall can be chosen, and the weight, at identical or even improved stability, and can be reduced to one-third of the weight of the wooden case of the same volume.

The drawings illustrate examples of various embodiments of the packing case according to the invention.

FIG. 1 shows a perspective, partly cut away view of one embodiment of the packing case;

FIG. 2 represents a cross-section of the packing case along the line 2—2 of FIG. 1;

FIG. 3 represents a longitudinal section along the line 3—3 of FIG. 2;

FIG. 4 is a partial bottom view of the case along the line 4—4 of FIG. 2;

FIG. 5 is a partly cut away view of a different embodiment of construction; and

FIG. 6 shows the partition, illustrated in FIG. 5 by itself.

The case as shown in FIGS. 1 to 4 comprises two halves 1, 2 of nearly identical size, provided with vent holes for example, 3, 4, 5 and 6. These openings can be disposed at any number desired on all of the walls of the case halves.

The case halves 1, 2 can be provided with, for example, bracing ribs 7, 8, on the ends, which effect a reduction in the wall thickness, but retaining the same rigidity. For the purpose of balancing the cases, when they are stacked one on top of the other, special bracing ribs are provided. On the case half 2, two ribs 9, 10 each are disposed, while ribs 11, 12 are disposed on the case half 1, separated from one another on the top of case half 1 by an indentation. The ribs are arranged so that they come into engagement with one another when the cases are stacked up (FIG. 3). Between the ribs 9, 10 a small transverse rib 13 (FIG. 4) is disposed, which, if necessary, may extend as a longitudinal rib around the entire case half 8. This rib is arranged so that it may engage the indentation between the ribs 11 and 12 of case half 1, as shown in FIG. 2 for the rib 13' of a second case half 2', which rib is in engagement with the indentation between the ribs 11 and 12 of case half 1.

Case half 2 has a rim 14, which runs around the case half 2, and into which, as illustrated in FIG. 1, the case half 1 can be placed, or by means of which, when case half 1 is inverted, the case half 2 can be set on top of case half 1. This rim 14 has notches 15 and 16 which serve to engage the projections (not shown) of the partition 17. Thus, the partition is, after being inserted, securely connected with case half 2, and can be, together with case half 2, placed on top of case half 1 when case half 1 is inverted.

In this way, case half 1 may, for example, be first filled with the goods to be packed, and then case half 2 can be filled separately. Next, the partition 17 is placed on top of case half 2, its projections being introduced into the notches 15, 16. The closed case half 2 can now, if necessary after being tied up for example with wire, be placed onto case half 1, and the entire case can be stacked up on one which has been previously filled (FIG. 2). In this manner a series of cases can be stacked one on top of the other with thin ribs and indentations locking as illustrated.

The following procedure may be followed when the cases are emptied. The advantage here is the possibility, that the salesman can sell half the case, as each of the two case halves contains only half of the over-all content. Thus counting or weighing of the goods as required for a wooden case with identical content, becomes un-

necessary. Merely the ties, for example wire, have to be loosened to take case half 2 away with half the content of the whole case.

In certain cases, as shown in FIGS. 5 and 6, these ties can be omitted, if the partition 18 (FIG. 6) is provided with vertically upwardly deflected rims 19, 20, 21 and 22. Firstly, case half 1' can be filled and partition 18 can be fitted onto the upper rim 23 of case half 1' in such way that the edges 19 and 22 grip the upper rim 23. Thereafter case half 2' is filled, and case half 1' with the partition, which if necessary may also have been fastened to the rim 23 by now, is placed, after inverting it, on top of case half 2', so that the edges 19, 22 will come to lie within the upper rim 24, are fastened one to another by stitching or other fastening means. The stitches can be easily removed, when the cases are opened, if necessary, it can be done by forcing the corresponding edges apart.

The edges and the corners of the case are rounded so that the curvature radius conforms nearly to the mean radius of the packed fruit or any other goods. In this way, a careful stacking of the fruit in the case is guaranteed.

The preceding specific embodiments illustrate the invention. It is to be understood, however, that other expedients known to those skilled in the art may be employed without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. A stackable ventilated packing case comprising a bottom half of substantially rectangular dimensions having a bottom, outwardly sloping walls of a conic section and curved junctions, said bottom half having a plurality of sets of parallel transverse outwardly projecting ribs extending continuously about said walls and bottom, each of said set of parallel ribs having at least one outwardly projecting longitudinal rib connecting said set of parallel ribs on the bottom of said bottom half; a top half of substantially rectangular dimensions having a top, outwardly sloping walls of a conic section and curved junctions, said top half having a plurality of transverse outwardly projecting ribs extending continuously about said walls and top positioned on said top to cooperate with and engage in said parallel ribs on said bottom of said bottom half, each of said projecting ribs having indentations positioned on the top of said top half and adapted to cooperate with and engage in said connecting longitudinal ribs on the bottom of said bottom half; both of said top and bottom halves having ventilation perforations; and means for securing said top and bottom halves together, whereby a packing case unit is formed which is stackable on itself.

2. The packing case of claim 1 wherein a removable partition is disposed between said top and bottom halves dividing said case into two parts of approximately equal dimensions.

3. The packing case of claim 2 wherein said removable partition is provided at least partly with a vertically deflected rim which is disposed between the edges of the two halves to form an integral packing case.

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