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L. M. R. WETTLEN
COMPACT STACKING ASSEMBLY FOR TETRAHEDRAL
PACKAGES IN A CONTAINER

3,294,232

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2 Sheets-Sheet 1

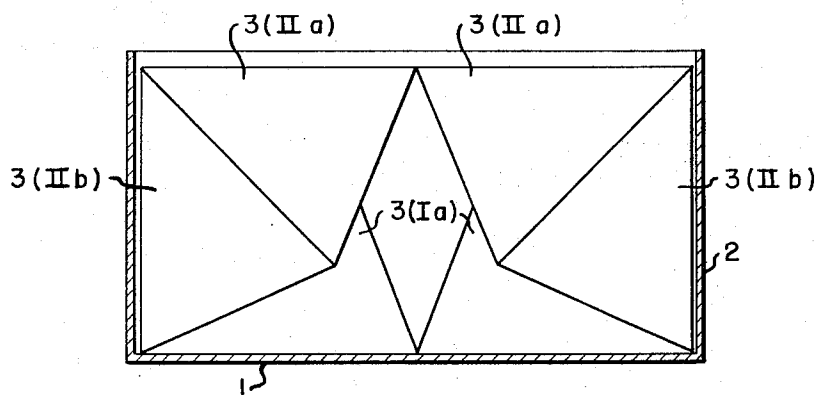
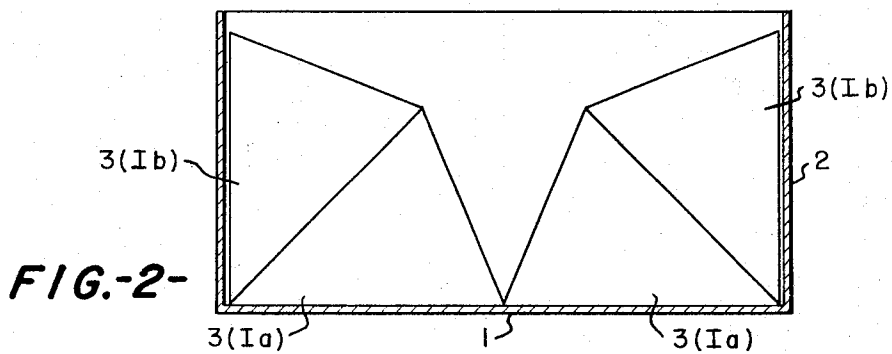
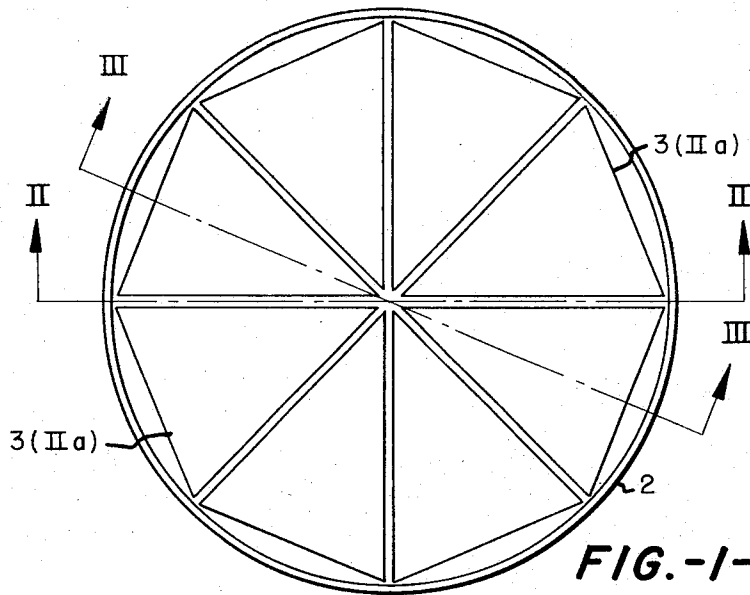


FIG. -3-

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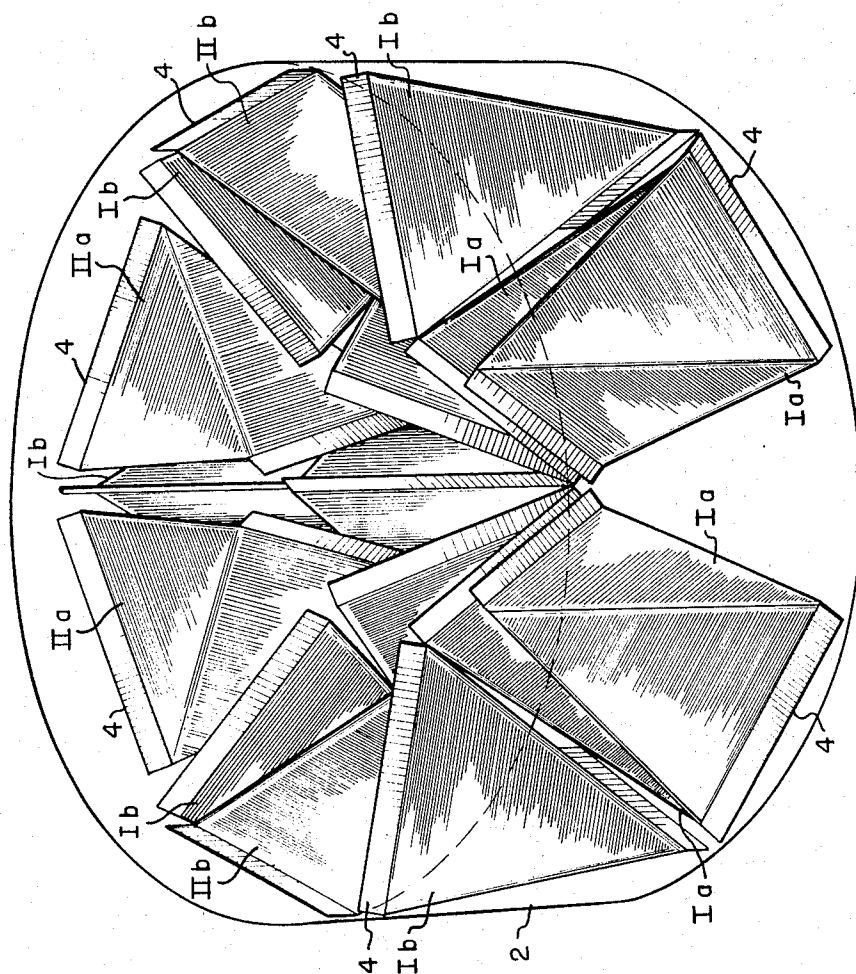


FIG. 4-

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COMPACT STACKING ASSEMBLY FOR TETRAHEDRAL PACKAGES IN A CONTAINER

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The present invention relates to a compact stacking assembly for a number of tetrahedral packages, the four triangular sides of which are essentially congruent in relation to each other, said packages being stacked in a container having a side wall surrounding a central container axis.

Through the invention it has become possible to create a stacking assembly of this kind which makes it possible to utilize the space in the container to the utmost when stacking the tetrahedral package therein, irrespectively of whether their congruent sides are equilateral or isosceles triangles. The chief characteristic feature of this stacking assembly is that the packages stacked in the container form sets having essentially the shape of a sector angle of less than 180° and constituting a sector of a double-coned polygonal disc having a cross-section tapering from the cone axis towards the circumference and in which each package defines, by means of one of two relatively perpendicular and opposed margins provided with sealing fins, a corresponding portion of the sector circumference margin, while by means of the other margin together with the corresponding margins of the other packages of the set it essentially defines the sector apex margin coinciding with the cone axis, and that the sets with their sector circumference margins contained in planes through the container axis have their sector apex margins resting against the inside of the side wall of the container in alternately one and the other of two cross-sectional planes perpendicular to the container axis.

Further particulars of the invention will be apparent from the appended drawings, showing an embodiment of the invention and where

FIG. 1 is a horizontal projection of a container and stacking assembly of tetrahedral packages enclosed thereby;

FIG. 2 is a vertical section through the container and a bottom layer of the stacking assembly on line II—II in FIG. 1;

FIG. 3 is a vertical section through the container and the whole stacking assembly on line III—III in FIG. 1;

FIG. 4 is a top perspective view of the container and the tetrahedral packages placed therein.

The drawings show a container having a plane bottom 1 and a cylindrical side wall 2. In this container tetrahedral packages 3, whose sides are congruent isosceles triangles, are stacked in a specific manner to be described here. The packages 3 are divided up in sets, each comprising two packages put together so as to form a sector of a double-coned polygonal disc having a cross section tapering from the cone axis towards the circumference. In the set thus stacked one of the two margins of each package which are perpendicular in relation to each other and located opposite to each other, i.e. those margins at which the packages are sealed and which consequently have sealing fins 4, falls along the cone axis, while the other one of the said margins forms one of the sides of the circumference of the polygonal disc. Each set could comprise more than two tetrahedral packages, e.g. three, but their total sector angle (adjacent the cone axis) must be less than 180°.

The bottom of the container is covered with a layer (FIG. 2) of eight such sets, each comprising two packages 3, disposed around the axis of the container and

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having their sector circumference margins lying in a plane through the container axis. In FIG. 4 the package sets in this bottom layer are designated I, and in each set the lower package is designated Ia and the upper one Ib. The set which was to be at the bottom in FIG. 4 has been left out, and of the two sets of packages which are closest at both sides of the set which has been left out, only the lower package Ia is shown.

The package sets I rest on the container bottom 1 with the side of the lower package Ia which is opposite to that side with which the said package rests against the top package Ib in each set. Each set I has its sector apex margin, i.e. the margin where the two mentioned sides of the lower package Ia as well as the corresponding sides of the upper package Ib join and where the packages have one of their sealing fins 4 disposed, located adjacent the container side wall 2 in the plane of the bottom 1. The corner opposite to these margins of that side of the lower packages Ia in these sets which rests on the container bottom—said corner forming the lower end point of the sector circumference of each set—lies in the centre of the circular bottom 1. One side of the top package Ib, which faces the side wall 2, lies at least approximately in a vertical plane, i.e. a secant plane in relation to the cylindrical side wall 2. The eight sets I in the bottom layer lie closely adjacent at the bottom 1 of the container around the axis thereof, where the axis may approximately be regarded as a tangent to the sector circumference margins in all the sets, but recede from each other towards the sector circumference margins of the sets, simultaneously forming wedge-shaped interspaces.

The said wedge-shaped interspaces between the package sets I in the bottom layer comprise a top layer of eight package sets designated II and shown in FIG. 3. Each set II also comprises two packages 3 and is entirely identical with the sets I, but it rests in one of the wedge-shaped interspaces in a position contrary to that of sets I, so that it has that side of the present top package IIa which is opposite to the side with which this package rests against the lower package IIb in the same set, located in a horizontal plane at right angles to the container axis spaced from the container bottom. In this case each set II has its sector apex margin, along which the two packages in the set have one of their sealing fins 4, located adjacent the side wall 2, while the corner opposite to the sector apex margin of that side of the package IIa which is located in the horizontal plane—said corner forming the top end point of the sector circumference margin of the set—lies on the container axis. In the top layer the lower package IIb in each set has a side which faces the side wall 2 and lies at least approximately in a secant plane in relation thereto.

The stacking assembly described above and consisting of two layers of package sets partly inserted into each other, where each set contains two packages, is evidently defined by two planes at right angles to the container axis. The spacing of these planes from each other consequently constitutes the height of the stacking assembly. However, other embodiments of the stacking assembly where this is not the case, are also possible within the scope of the invention, viz. assemblies where the number of tetrahedral packages 3 in each set is greater than two, as mentioned above, at least in one layer. If for instance each set in the top layer, in which the sets have their sector apex margins lying in the upper one of the two planes perpendicular to the container axis, contains three packages, and if it is still desired that each set should have a vertical side (parallel to the container axis), the top defining surface of the stacking assembly becomes pyramidal in shape or approximately conical with its apex facing upwards. In the bottom layer, in which the sets have their sector apex margins lying in

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the lower one of the two planes perpendicular to the container axis, each set preferably contains two packages, as in the embodiment described above, although the number of packages in each set in the top layer is greater than two, since it is desirable that the stacking assembly has a plane lower defining surface, with which it rests against the container bottom 1. However, from other viewpoints there are no objections to the sets in the lower layer as well containing e.g. three packages each, so that also the lower defining surface becomes pointed.

I claim:

1. A compact stacking assembly for a number of tetrahedral packages 3, the four triangular sides of which are essentially congruent in relation to each other, said packages being stacked in a container 1, 2 having a side wall 2 surrounding a central container axis, characterized in that the package 3 in the container 1, 2 form sets having essentially the shape of a sector angle of less than 180° and constituting a sector of a double-coned polygonal disc having a cross-section tapering from the cone axis towards the circumference and in which each package defines, by means of one or two relatively perpendicular and opposed margins provided with sealing fins 4, a corresponding portion of the sector circumference margin, while by means of the other one, together with the corresponding margins of the remaining packages in the set, it essentially defines the sector apex margin coinciding with the cone axis, and that the sets with their sector circumference margins contained in planes through the container axis have their sector apex margins resting against the inside of the side wall 2 of the container in alternately one and the other of two cross-sectional planes perpendicular to the container axis.

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2. A stacking assembly as claimed in claim 1, characterized in that the sets (I or II) having their sector apex margins in one of the said two cross-sectional planes, and the sets (II or I) having their sector apex margins in the other one of the said planes form two layers partly inserted into each other.

3. A stacking assembly as claimed in claim 2, characterized in that the sets (I or II) which pertain to one and the same of the two layers comprise an equal number of packages between them.

4. A stacking assembly as claimed in claim 2, characterized in that the sets (I or II) which pertain to one of the two layers each contain a number of packages differing from the number in each of the sets (II or I) which pertain to the other layer.

5. A stacking assembly as claimed in claim 2, characterized in that all sets (I and II) in the two layers comprise an equal number of packages between them.

6. A stacking assembly as claimed in claim 2 characterized in that the axis of the container (1, 2) is a tangent to the sector circumference margins in all the sets of packages.

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